TRADITIONAL PLANT FOODS OF CANADIAN INDIGENOUS PEOPLES

Nutrition, Botany and Use

HARRIET V. KUHNLEIN
and NANCY J. TURNER

Food and Nutrition in
History and Anthropology
Volume 8

GORDON AND BREACH PUBLISHERS

Traditional Plant Foods
of
Canadian Indigenous Peoples

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Nutrition, Botany and Use

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Amsteldijk 166, 1st Floor
1079 LH Amsterdam
The Netherlands

Library of Congress Cataloging-in-Publication Data
Kuhnlein, Harriet V., 1939–
Traditional plant foods of Canadian indigenous peoples:
nutrition, botany, and use/Harriet V. Kuhnlein, Nancy J. Turner.
p. cm.– – (Food and nutrition in history and anthropology;
v. 8)
Includes bibiographical references (p.) and index.
ISBN 2-881 24-465-3 (case).
1. Indians of North America—Canada—Ethnobotany. 2. Indians of North America—Canada—Food. 3. Indians of North America—Canada—Nutrition. I. Turner, Nancy J., 1947—. II. Title.
III Series.
E78.C2K92 1991
581.6'3'0971—dc20 90-5239

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FOREWORD

While growing up on my reserve, I remember my parents, aunts, uncles, grandmothers and grandfathers telling me stories about the plants in our area. I would, in turn, explain the stories to my younger brothers, sisters and cousins, and invariably make up something along the way if I couldn't remember all the details. As kids, we would chomp on snake tongues, pilfer berries (we never made it home with enough for a pie), or gather milkweed to relieve our skin from endless mosquito bites. My grandmother had as much success as anyone giving awful-tasting medicine to a kid, especially when it was bitter roots to chew on for a sore throat. I never knew what a weed was, since I was taught that every plant has a purpose on this planet.

I am currently working at the Assembly of First Nations, a national Indian political organization, still pursuing my love of the outdoors as a policy analyst for environment and harvesting—hunting, fishing, trapping and gathering. During the past summer, I introduced this book to Native communities in the course of my work. If there is one way to get a Native person talking, especially an elder, bring up the topic of traditional Native foods. The response was like a dam being opened — people would go into detail to describe some of their practices, or fondly remember what their parents or grandparents did a long time ago. They wanted to know if a certain plant or certain practice was included in the book. If it was, they checked the accuracy of it and felt good about it; if it wasn't included, they let me know about it. If the enthusiasm and knowledge of the few Native communities I visited are any indication, then this book will be a big hit. But we have to realize that it is only scratching the surface of Native knowledge about their plants.

Sadly, though, there is also the realization that the foods themselves, and the skills and practices in using them, are slowly dying. There is a triple threat: the loss of knowledgeable elders, leaving no one to teach; the loss of culture, leaving little incentive to learn; and the loss of healthy ecosystems, leaving no foods available to take even if one wanted to. At this moment there are health advisories in some areas warning people of the potential risks to their health from consuming foods contaminated by industrial emissions and agricultural wastes. It has taken time for these things to be understood, and we are still hopeful that the situation can be turned around.

That is where this book fits in. It can be used as a tool for First Nation People to change their situation. It is probably the first of its kind in Canada to document the literature on the nutrition, botany and use of our traditional plant foods. It describes in simple language not only technical information about the plants, but also how these plants are a part of our distinct culture. To retain this knowledge for succeeding generations is going to take the concerted efforts of people like Dr. Kuhnlein and Dr. Turner, along with academically trained Native youth and the elders and practitioners who maintain a vital link to Canada's environment.

When Canada can no longer support the tiny percentage of people who depend directly on the land for sustenance, how can we expect this country to support an entire population? When Aboriginal People who live off the land in other countries can no longer support themselves with wholesome foods, what does that predict for global survival? Aboriginal People are, in my view, the best indicators of a healthy environment.

As a biologist working with both Native People and non-Native scientists, I appreciate the usefulness of this book in its forthright writing style — it is easy to understand. The respect for the ways of life and foods of Aboriginal People is evident in the writing, which demonstrates the authors' integrity. In addition, the wealth and depth of the material gave me and my summer commentators a wonderful sense of pride in the extent of knowledge accumulated by our people in order to live healthy lives.

We need to work hard together to preserve our knowledge and to protect the environments of the plant foods of the world's Indigenous People. This book is a good step along the way. *Ia: wen*, Dr. Kuhnlein and Dr. Turner.

Laurie Montour
Assembly of First Nations
Ottawa, April 1991

ACKNOWLEDGMENTS

We must first of all acknowledge that it is difficult to identify all of the individuals who have contributed directly or indirectly to this book. The book itself has been in process, on and off, for about ten years. Added to this, our collective experience of working with Indigenous Peoples and their plant foods in many regions of North America spans at least two decades. Where do we begin?

Our collaboration began when we were introduced, as an ethnonutritionist and an ethnobotanist, by our mutual friend, colleague and mentor, Dr. Richard I. Ford of the Department of Anthropology at the University of Michigan. We have shared many delightful and productive research experiences since Dick created this fortuitous event, as our bibliography in this volume will show. Beyond this, and certainly very important to both of us, we developed a close friendship which is shared by our husbands and children as well. We wish to acknowledge our families for their contributions, their good will, and their ever-patience in the completion of this project—Bob Turner and Urs Kuhnlein; Molly, Sarah and Katie Turner; Letitia McCune Haakonsen, Matthew McCune and Peter Kuhnlein.

The actual project began in 1980 with literature searches for nutrient values through funds provided by the National Museum of Natural Sciences, the Health Promotion Directorate of Health and Welfare Canada, and Employment and Immigration Canada. Margo Palmer in the Vancouver office of the Health Promotion Contribution Program assisted by providing funds for summer students from the School of Family and Nutritional Sciences at the University of British Columbia during May-August of both 1980 and 1981. The students who learned well the difficulties of compiling nutrient values were: Janet Madill-Trick, Leslie Helyar, Karen Kristensen, Michaela Palaniak, Letitia McCune, Anne Wheeler, Marilyn Gravelle, Geri Onishi, Rhea Joseph and Anthea Kennally. Very capable library assistance was provided by Dr. Doug Dewar and Bill Parker of the UBC library, and Frederike Verspoor and Carron Nixon of the Royal British Columbia Museum library. Computing assistance was given generously by Frank Flynn of UBC, and by Debra Simpson and Bernard Eckhardt at McGill. Rula Soueida assisted with final computations at McGill, and typing assistance and proofreading were provided at McGill by Francine Tardif, Beth Gunjal and Anju Tehim. Photographic assistance was given by Andrew Niemann and Burton Storey of the Royal British Columbia Museum.

The late Dr. Douglas Leechman, former ethnologist with the National Museum of Canada, originally conceived the idea for a book such as this and compiled many notes on edible wild plants of Canada which he generously allowed us to incorporate. Dr. Adam F. Szczawinski also contributed his knowledge in many ways. Many others contributed information and help at various stages and we are deeply grateful to all of them: Randy Bouchard and Dorothy Kennedy of the British Columbia Indian Language Project; Dr. Adolf Ceska; Brian Compton; Dr. Keith N. Egger; Dr. Richard Hebda; Dr. Timothy Johns; Dr. Andrea Laforet; Dana Lepofsky; Dr. Sandra Lindstrom; Carol McGrath; Judy McCrath; Robin McGrath; Dr. Steven McNeary; Dr. Robin Maries; Dr. Thomas F. Mumford; Dr. R. T. Ogilvie; and Dr. Scott Redhead.

Our greatest acknowledgments, however, go to the many Indigenous People who have contributed to our knowledge and understanding of the vital importance of traditional plant foods to their cultural expression and nutritional health. To mention just a few individuals who have made major contributions to our understanding we would like to note: Bernadette Antoine, Nlaka'pamuk (Thompson); Eliza Archie, Shuswap; Cecilia August, Sechelt; Hilda Austin, Nlaka'pamuk (Thompson); Bertha Blondin, Sahtú Dene; Elsie Claxton, Saanich (Straits); Agnes Cranmer, Kwakwaka 'wakw (Southern Kwakiutl); Florence Davidson, Haida; Kenneth Eaglespeaker, Blackfoot; Bill Edwards, Lillooet; Dora Grandjambe, Hare Dene; Catherine Grevelle, Kootenay; Willie Hans, Nuxalk; Alice Hill, Great Bear Lake, Sahtú Dene; George Ignace, Hesquiat (Nuu-chah-nulth); Chief Charlie Jones, Ditidaht (Nuu-chah-nulth); Ida Jones, Ditidaht (Nuu-chah-nulth); Kilabuck Kooneeliusee, Inuit; Sara Kooneeliusee, Inuit; Margaret Lester, Lillooet; Martin Louie, Okanagan-Colville; Alice Masazumi, Sahtú (Hare) Dene; Chief William and Emma Matthews, Haida; Dr. Louis Miranda, Squamish; Sam Mitchell, Lillooet; Agnes Moody, Haida; Maude Moody, Haida; Helena Myers, Chilcotin; Linda Myers, Chilcotin; Edith O'Donaghey, Lillooet; Alice Paul, Hesquiat (Nuu-

chah-nulth); Christopher Paul, Saanich (Straits); Mary Paul, Kootenay; Alec Peters, Lillooet; Desmond Peters, Sr., Lillooet; Louis Phillips, Nlaka'pamuk (Thompson); Patricia Pierrot, Sahtú (Hare) Dene; Dr. Margaret Siwallace, Nuxalk; John Thomas, Ditidaht (Nuu-chah-nulth); Selina Timoyakin, Okanagan-Colville; Mike Tom, Hesquiat (Nuu-chah-nulth); Felicity Walkus, Nuxalk; Nellie Wallace, Lillooet; Frank Whitehead, Kootenay; Violet Williams, Cowichan (Halkomelem); Solomon and Emma Wilson, Haida; Annie York, Nlaka'pamuk (Thompson); George Young, Haida.

Some of these people have now passed away, but their contributions in preserving knowledge of their cultural traditions and heritage will always remain. Innumerable others, not named above but greatly appreciated, have contributed immeasurably to our knowledge. Many of these people are cited by name in some of the publications listed in the references. We would like to pay a special tribute to the late Dr. Margaret Siwallace, the late John Thomas, and to Ida Jones, Florence Davidson and Annie York, whose love of people and traditional lifeways and dedication in teaching us about their plant foods we will always remember.

Harriet V. Kuhnlein
Nancy J. Turner

CHAPTER 1

Introduction

The primary purpose of this book is to describe and to reference the published literature on the nutritional properties, the botanical characteristics and the ethnic uses of traditional food plants of Canadian Indigenous Peoples. Since it is recognized that Canadian political boundaries are not honored by plants in their biological habitats, the nutritional and botanical information presented here is often relevant to other regions with northern latitudes where the same species are found, such as northern regions of the United States, Europe and Asia. However, the ethnographic information reviewed and presented in this book is only from Canadian Indigenous Peoples and their immediate neighbors in Alaska and other states bordering Canada.

This reference guide is intended for a variety of users: Indigenous People, nutritionists, and other health care professionals working with Indigenous People or with other rural people, biologists, ethnologists, the variety of organizations serving Indigenous People, wildlife enthusiasts, and the academic audience in a variety of disciplines. It is written with academic-style referencing, using language that is intended to be easily understood by a variety of readers.

It is recognized that the identification and description of useful plant species for food and medicinal uses has captivated the attention of academics and botanical entrepreneurs in recent years. The focus of this book is plant species that are "edible". This infers that if a plant food item was used for both food and medicine, it would not be threateningly toxic. Since Indigenous People often do not delineate between "sustenance" and "medicine" in the same way that contemporary academic science tends to do (ie: sometimes a food is a medicine, etc.), this reference work can be generally helpful in identifying useful plants in the general environmental milieu of Indigenous People.

We have not attempted to thoroughly document published knowledge on the possible toxic components of these plants. However, in the sections describing use of particular plant species, warnings are given on known toxic constituents, and how they can be avoided.

The scientific literature was searched for nutrient information for approximately 1,050 species that were identified as edible and available in Canada. An overview of the regions where the plants are available, and their botanical characteristics, is given in order within the major plant groupings. The ethnographic literature of Canadian Indigenous Peoples was searched for available information on the patterns of use of the particular species, and thus is also summarized.

It needs to be stated clearly that the existing knowledge of nutrient contents and ethnic uses of Canadian edible plants is less complete than is the botanical knowledge. Hence, we have made the generally loose supposition that if a particular species has edible parts, then Indigenous People somewhere would have taken advantage of them. Further, that if descriptions of ethnic uses of a particular plant are known, but the nutrient value for a particular plant part is not reported, it is because the knowledge does not exist (no analyses done), not because there are no nutrients in that particular plant. Thus, this book reports our contemporary existing knowledge, as of 1990, on nutritional, botanical and ethnological data for more than 1,000 species of edible plants. It will become obvious to the reader that there are great knowledge gaps, particularly in the ethnic uses and nutritional chemistry of these foods.

Some definitions are in order here:

Indigenous People- For the purposes of this work, the term "Indigenous People" refers to a cultural group in an ecological area that developed a successful subsistence base from the natural resources available in that area. Indigenous People in a particular environment are recognized as the definitive sources of knowledge of successful uses of plant and animal resources, particularly within their culture. The term "Indigenous Peoples" refers to the plural—that is, more than one cultural group considered simultaneously.

Edible- Able to be eaten without recognized hazard, or with only minimum hazard.

Food- Whatever is eaten or drunk for replenishment of the species.

Human Nutrition- The science of food and the nutrients and other substances therein, and their action, interaction and balance in relation to health and disease. It includes the processes by which humans ingest, digest, absorb, transport, utilize and excrete food substances. In addition, human nutrition includes certain social, economic, cultural and psychological characteristics for the successful use of food.

Traditional plant foods- Technically, in the Western Hemisphere, this term implies plant foods from the natural environment used in traditional indigenous cultures before contact with Anglo-Europeans. However, for the purposes of this book, we have included some species introduced from other regions that are either known to have been used by Indigenous People, or which contain edible parts. Generally, we have avoided giving attention to introduced food plants that are used in commercial agriculture, because botanical and

nutritional data on these species is published and readily available elsewhere. We have generally dealt with plant species that grow "wild", or at least are not cultivated in the usual definition of the word in modern agriculture, but we have tried to include plant food species known to have been actively cultivated by precontact Indigenous People (for example, maize, wild rice, etc.).

This book contains several cross-referencing tables that are presented to accommodate readers with different kinds of backgrounds. There is an alphabetized table of common English plant names given with botanical names (Appendix 2); there is an alphabetized table of botanical names given with common English names (Appendix 3); there is a table presenting a composite of information of each species (Chapter 5) alphabetized by botanical name. In addition, there is a chapter giving an overview of the known ethnic uses of the most important and universally used species (Chapter 4); and there are large tables which present the known nutrient contents of the edible parts of approximately 500 species. We would have liked to present a table of indigenous language names used for species, with English names and botanical nomenclature, but the published literature is very sparse in this area. Moreover, the linguistical symbols for the different indigenous languages which are published, often make the interpretation difficult for non-linguists. Furthermore, the large number of different languages and dialects spoken by Canadian Indigenous Peoples, and the complexity of their botanical nomenclature and classification precludes the inclusion of such a table. The index to the book, together with the cross-referencing tables, make the information easy to locate from a number of starting points. Maps of the locations of Indigenous Peoples of Canada are given in Appendix 1.

CHAPTER 2

What's So Special about Indigenous Foods?

Foods from the natural environment which became included into the cultural food use patterns of a group of Indigenous People are known as indigenous foods. There is a great diversity of cultural ecosystems that sustained Canada's Indigenous Peoples throughout history, and hence, there is a great variety of indigenous foods that are part of our collective human knowledge. Indigenous foods can be categorized as plant foods, animal foods, earth elements such as salts, and water. The tremendous diversity of plant foods available to and used by Canada's Indigenous Peoples, which is the subject of this book, is an area deserving of careful study and documentation.

It is common knowledge that the collective wisdom of resource use in natural environments known to Indigenous People is disappearing in the face of "modernization" and "technological development". Young people are no longer systematically taught by their elders to survive using only the natural environment. Hence, valuable information on these resources is being passed to fewer and fewer people, and gradually being lost from indigenous societies, as well as from collective human knowledge. In the face of this loss, one of the purposes of this book is to help bring recognition to the great variety of potentially useful plant foods that exist, and to stimulate research and further documentation on nutritional and botanical properties and use of plants by and for Indigenous People.

Research on indigenous foods can benefit efforts to protect the world's natural environments. By knowing the plants useful to Indigenous Peoples, temporal and longitudinal studies can demonstrate environmental integrity, or lack of it. The knowledge traditionally-living Indigenous Peoples have on the presence, absence, and/or general health of the plants and animals in their cultural milieu can be developed for environmental monitoring. This has been well demonstrated with the use of harvest studies to monitor the presence of animal Wildlife by Indigenous People in the Canadian Arctic.

Indigenous People are logical beneficiaries of attention and documentation of their traditional food resources. In many parts of the world, particularly in the Western Hemisphere, indigenous groups are working diligently to document their elders' knowledge of use of natural food resources, and to revive their use as much as is feasible in a contemporary world (cf. 'Ksan, People of, 1980; Jones, 1983; Kuhnlein and Moody, 1989). This occurs primarily in groups who still have regular access to their aboriginal lands and the natural environment still provides food resources. These people are often eager for scientific (nutritional, zoological, botanical) documentation, since the elders universally relate their impression that young people would be much healthier if they would rely more on these resources and less on marketed foods which are limited in variety and quality in the low-income areas which are usually inhabited by Indigenous People. As well as physical health benefits, it is recognized that leaders and elders of indigenous groups want to preserve and protect the knowledge of traditional environments and lifestyles for the cultural benefits they provide to people of all ages within the group. Hence, both health promotion programs and cultural enrichment programs for Indigenous People will benefit with more and better information about indigenous foods.

The diversity of physical environments in Canada has provided an array of ecologically-determined food systems for Indigenous People. This ecological diversity combined with the broad cultural diversity of Canadian Indigenous Peoples presupposes a wide range of dietary patterns, health patterns, as well as disease risk and risk for morbidity and mortality. By and large, it is assumed that if a population was successfully maintained in an area, the food resources were sufficient and morbidity and mortality was low enough to carry individuals through the reproductive age. It is also recognized that food resources are environmentally dependent and that there were episodes, whether seasonally each year, or in an occasional entire year, when food supplies were short. All groups had access to the variety of nutrients essential to health (carbohydrate, protein, fat, vitamins, minerals, water) but short-term malnutrition probably occurred during food shortage.

In the scheme of dietary diversity, plant foods are generally viewed as good sources of carbohydrates, vitamins and minerals. However, the latitude and climatic patterns greatly influence the type of plant foods, indeed, of all foods, available to indigenous groups. Agricultural groups in

mid-southern to eastern Canada (Huron, Ojibwa, Iroquois) cultivated maize, beans and squashes, and harvested maple sap, and wild rice. West Coast peoples had a great diversity of berries, roots and green plant foods to supplement diets rich in fish and game. Northern peoples utilized seaweeds, berries and tundra greens *(Figure 1).*The quantity and variety of plant foods were balanced

Figure 1. Arctic net-veined willow (*Salix reticulata*). A green herb eaten by Inuit in the Eastern Artic.

with quantity and variety of animal and fish foods utilized to make nutritionally complete dietary patterns. Research and understanding of the nutritional vitality in the diversity of food systems developed by these indigenous societies provides new knowledge and depth of understanding to contemporary dietary patterns of indigenous cultures as well as to our larger multicultural populations.

This kind of research is particularly imperative as we recognize that indigenous dietary patterns are being displaced for Indigenous People with marketed foods. This displacement is accelerated in areas close to urban centers, but it is also taking place in the most remote regions of Canada, including the Canadian Arctic. For a variety of reasons related to the "modernization" of contemporary society, the indigenous ("wild" or noncommercialized) food resources are falling out of use. It is hoped that this resource book will call attention to the variety of useful plant foods in Canadian environments.

It is intended that the definition of indigenous plant foods contained in this reference will be useful as a resource for groups of Indigenous People who wish to stimulate interest in their natural resources, and who can then use it for purposes of nutrition education and health promotion. A parallel effort on traditional food plants of Eastern Africa has recently been undertaken by the Food and Agriculture Organization of the United Nations (Hussein, 1987; FAO, 1988). Ebeling (1986) authored a fine volume on Indian foods and fibers in arid America.

Those participating in wilderness education programs are also potential beneficiaries of published knowledge on indigenous food resources. Plant identifications, ways of preparation,

cautions on potential toxicity, and nutritional benefits of specific plants are highly desired information for individuals who are teaching/learning about wilderness survival. By the same token, this information is useful for general education programs on environment awareness and protection (Kuhnlein, 1984; Kuhnlein, 1985).

Another area of usefulness for information on indigenous plant foods is for genetic research and development of agricultural crops. Germplasm conservation programs and data bases of indigenous foods are valuable resources for enhancing existing crops or for development of new ones (Duke, 1977; Turner, 1981). Wild plants have been shown to successfully improve the genetic stocks of agricultural crops: the cases of Mexican teosinte maize (Robson et al; 1976) and winged bean (NRC, 1981) are excellent examples. Commercially grown fruits have been derived or genetically improved with wild species—this is true for cranberry, gooseberry, grape, blackberry, strawberry and blueberry, among others. Some wild food crops known to be used by Indigenous People, and which have now been directly adapted for commercial markets, are chia seeds, pinyon nuts, Jerusalem artichokes, wild rice, maple syrup, black walnuts, etc. (Nicholson et al., 1971; Turner, 1981). Wild, green plants used by Indigenous People of rural Mexico are actively harvested for commercial markets in urban areas (Bye, 1981). In western Canada, Saskatoon berries have been researched for their marketing potential (Mazza, 1982).

Thus, it is clear that documentation of the knowledge Indigenous People have aquired about the natural plant food resources of Canada, will benefit humankind in many ways.

CHAPTER 3

An Overview of the Nutrient Value and Use of Plant Foods by Indigenous Peoples

MAJOR TYPES OF TRADITIONAL PLANTS AND FOODS

As of 1990, about 550 different species of plants have been documented in the literature as having been utilized in one way or another in the traditional diets of Indigenous Peoples in Canada and neighboring areas. When the variety of food types yielded by these plants is considered, the diversity is even greater, since many plants provide more than one type of food. A summary of the numbers of these traditional plant foods by major plant grouping and by plant food category is given in Tables 3-1 and 3-2.

CATEGORIES OF PLANT FOODS AND THEIR NUTRIENTS

Many traditional indigenous plant foods are comparable to those available in an average market today. These include root vegetables, green vegetables, fleshy fruits, seeds, nuts, and grains, and mushrooms. Indigenous People also have taken advantage of more exotic plant foods such as algae, lichens, flowers and the bark or inner bark of trees.

The root vegetables (i.e., tubers, corms, bulbs, rhizomes and true roots) include such root foods as wild onions, blue camas, spring beauty, yellow avalanche lily, bitterroot, balsamroot, silverweed, springbank clover (*Figure 2*), roseroot and knotweed. Root vegetables are recognized as the storage organs of plants and in this function they contain carbohydrates that are usually maximized at the end of the leaf-growing season, before new shoots appear. Carbohydrates can be present in a variety of forms and flavors, and may not always be readily digestible by humans. Some traditional root foods contain the carbohydrate, inulin, which becomes sweet upon cooking, due to a partial

Table 3-1. Traditional Plant Foods of Indigenous Peoples of Canada and Neighboring Areas by Major Plant Grouping

Major Plant Grouping	Approximate Number of Species Documented as of 1990
Seaweeds (Marine Algae)	20
Lichens	10
Mushrooms and other Fungi	20
Ferns and Fern-allies	15
Conifers (Gymnosperms)	25
Flowering Plants - Monocotyledons	60
Flowering Plants - Dicotyledons	400
TOTAL	550

conversion to the sugar, fructose. (Kuhnlein et al., 1982; Turner and Kuhnlein, 1983). If the skin of the root food is consumed, it can be a good source of mineral nutrients. Usually, root foods provide only small amounts of vitamins in a 100-gram portion.

Green vegetables include stems, leaves, shoots and buds. Examples of stem and shoot vegetables include thimbleberry and salmonberry, fireweed, cow-parsnip, Indian celery, and fiddleheads. Leaf vegetables are plants such as lambsquarters, watercress, mustard greens and nettles. Most are available

Table 3-2. Plant Food Categories in the Traditional Diets of Indigenous Peoples of Canada and Neighboring Areas, Showing Approximate Number of Species Providing Foods within each Category

Plant Food Category	Approximate Number of Species
Inner bark, cambium and sap	35
Flowers	30
Roots (roots, bulbs, tubers, corms, rhizomes)	125
Greens (stems, leaves, buds, shoots, etc.)	125
Seeds, nuts and grains	50
Fleshy fruits (berries, drupes, pomes, etc.)	145
Sweetening agents	20
Beverages (teas and juices)	60
Miscellaneous flavorings, casual edibles and chewing gums	90
TOTAL	680

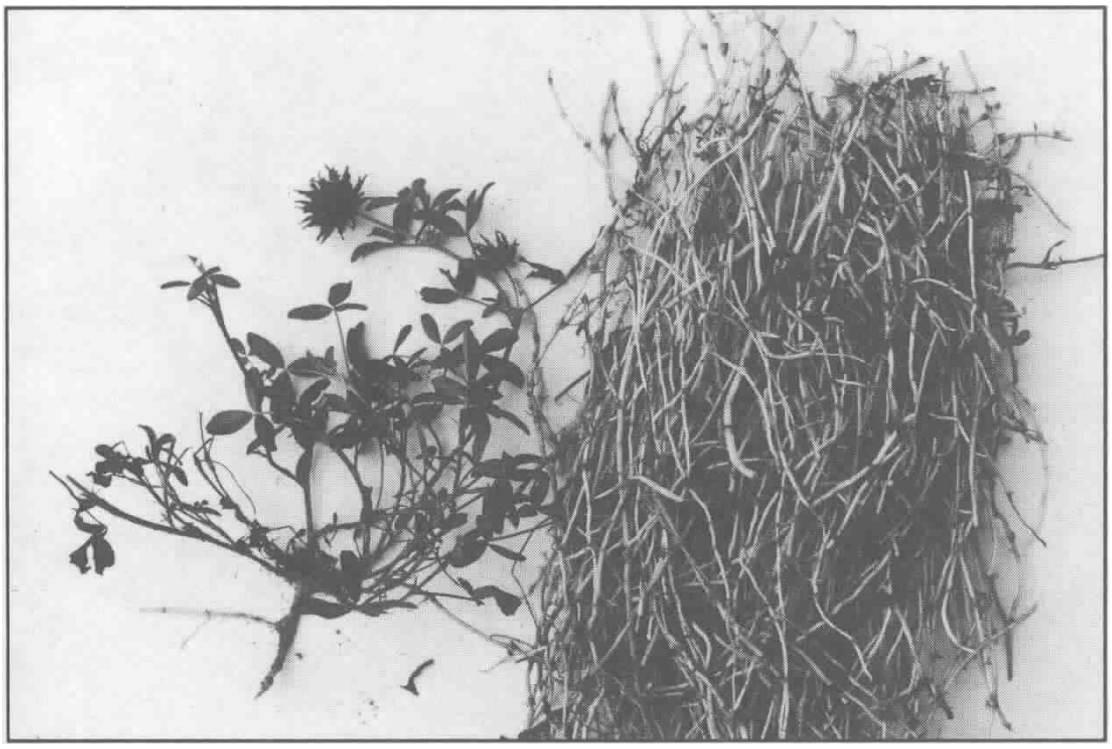


Figure 2. Springbank clover rhizones *(Trifolium wormskioldii).* A root vegetable from British Columbia.

(palatable and digestible) only in their young stages. Green vegetables can be expected to have a high moisture content, carotene and other vitamins (vitamin C and folic acid) and minerals such as iron, calcium, magnesium, etc. (cf. Kuhnlein and Turner, 1987).

Wild berries and other fleshy fruits (including drupes, pomes, and aggregate fruits) are favorite foods of many people, and, of all the traditional plant foods, they are probably the most frequently used by contemporary Indigenous People. Saskatoon berries (serviceberries), blueberries and huckleberries (*Figure 3*), gooseberries and currants, blackberries, raspberries, strawberries, cloudberries, salalberries, crowberries, cranberries, wild plums, grapes, cherries and crabapples—all of these are still harvested and enjoyed. Most wild fruits are good sources of ascorbic acid; some, such as rose hips, are exceptionally high in this important nutrient. Fruits can also contain unexpectedly high amounts of other nutrients such as calcium, vitamin A as carotene, and folic acid (Kuhnlein, 1989).

Seeds, nuts and grains, including maize, wild-rice, oak acorns, beechnuts, hazelnuts (*Figure 4*), black walnuts, balsamroot seeds and whitebark pine seeds, have also been eaten. Such foods are generally known to be good

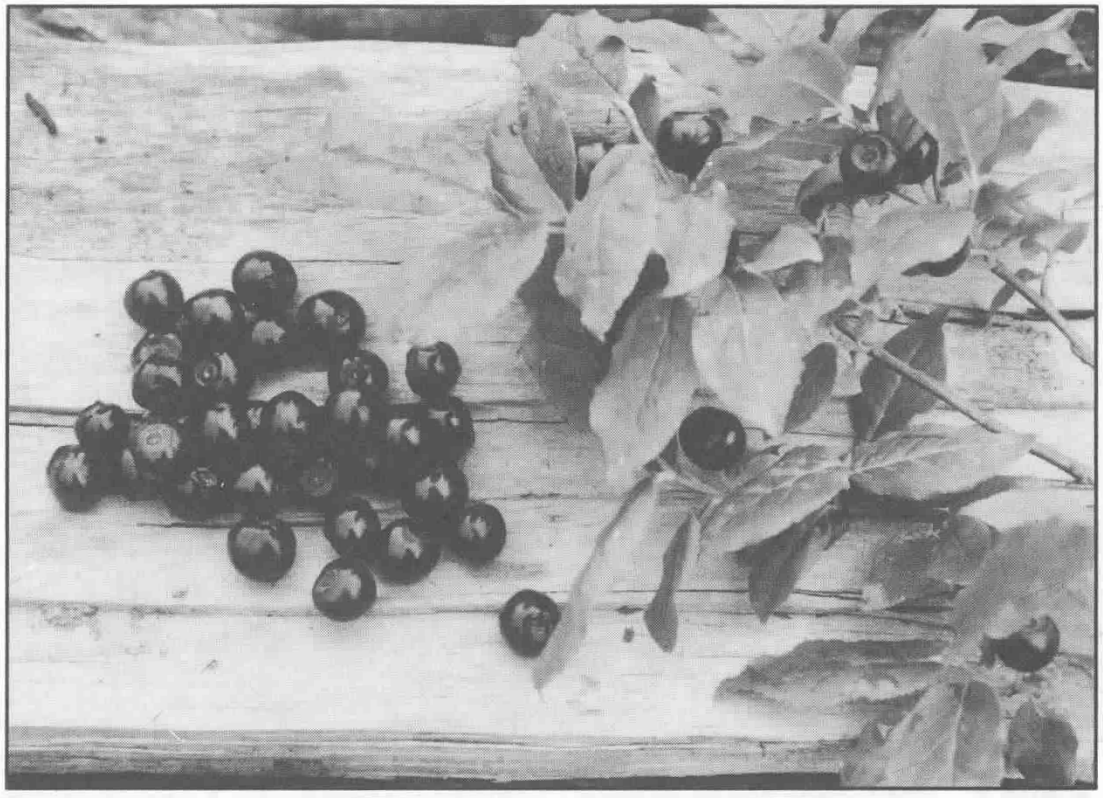


Figure 3. Black mountain huckleberries *(Vaccinium membranaceum),* a delectable wild berry.

sources of protein, fat, carbohydrates, vitamins and minerals. In some cases, oil can be rendered from these foods. Grains from maize and wild-rice would have been used either green or mature and the energy value from stored carbohydrate and fat would vary considerably, depending on the stage of maturation. If the maize were cooked with a wood ash, the mineral contents would be raised substantially. Nuts are considered a rich source of fat and carbohydrate kilocalories, and were consumed raw or cooked. Cooking would certainly enhance their digestibility and nutrient availability. Nuts are also good sources of minerals, such as iron, the B-vitamins, and amino acids.

A relatively small number of mushroom and fungi species was featured in traditional indigenous diets; some of these are still being used. Few studies have been done on the nutrient contents of wild mushrooms, but indications are that they are comparable in nutrients to commercially available types (Turner et al., 1987).

The inner bark tissues of many types of trees have been an unusual source of plant foods. Conifers like western hemlock, Sitka spruce and lodge pole pine, but also cottonwood and other deciduous species, have inner bark tissues that were scraped off from the trees in spring. There is little documentation

Figure 4. Hazelnut (*Corylus cornuta*).

of nutrient content of these foods; however, they would be expected to have a high sap content. Using maple sap as an example, one would expect high carbohydrate/sugar energy values for inner bark foods.

Lichens, especially rock tripe and black tree lichen, were used in some areas, both as food and emergency food. In the far North, lichens were also utilized in a partially digested state from the rumens of caribou. Marine algae, or seaweeds, were used by virtually all coastal peoples, and sometimes were traded inland. Still used at present, they are important sources of vitamins and several minerals, particularly iodine. Both algae and lichens can be difficult to digest unless specially processed. There is little documentation on their nutrient contribution to the diets of Indigenous People. Algae have also been used as an emergency food (energy source) in coastal areas where fish and game were for some reason limited.

Flowers are unusual plant foods which are not usually available on a commercial basis today. Indigenous People took advantage of such delicacies as rose petals, fireweed flowers, and mariposa lily buds. Flowers are high moisture-containing foods, usually low in protein and fat, but some can be surprisingly rich in vitamin A as carotene or vitamin C. There is extremely little published information on the mineral contents of flowers.

There were relatively few very sweet substances in the traditional diet of Indigenous Peoples. In Eastern Canada, sugar maple and related species provided sap for syrup and sugar. In the interior of British Columbia, Douglasfir was an occasional source of a crystalline sugar produced under very unusual environmental conditions. Licorice fern rhizomes (*Figure 5*), were sometimes used by coastal peoples of British Columbia as a sweetener and appetizer, and some of the "root" foods containing inulin, including camas, nodding onion, and balsamroot became very sweet when the inulin was converted to fructose through storage and cooking processes. In general, however, the sweeter types of fruits such as wild strawberries, Saskatoon berries, and salal were the primary sources of sweetness in the diet,

and these were sometimes used to enhance the flavor of other foods. When molasses and refined sugars were introduced, they were quickly adopted into use and were served, along with various oils and fats, with many types of traditional plant foods including greens, roots and berries.

Aside from the various sweeteners, a number of aromatic and otherwise

Figure 5. Rhizomes of licorice fern (*Polypodium vulgare*), which is used as a sweet.

strongly flavored plants were used as condiments in cooking. Several species of the mint family were used as culinary herbs in soups and stews, as were some species of the celery family such as Indian celery greens and seeds. Some of these plants, as well as some aromatic plants in the aster family, also functioned as preservatives for meat and fish.

Many plants in different regions were used for beverage teas or drinks. Of these, perhaps Labrador-tea is the most widely used, although the extent of its original use by Indigenous Peoples was probably much more restricted. Other beverage plants include Canada mint, wild bergamot, trailing wild blackberry and wild rose. Many teas from plants were taken as medicines or tonics as well as regular beverages. As far as can be determined, alcoholic beverages were unknown to Indigenous Peoples in prehistoric times. For example, the Fisherman Lake Slave, who make a variety of "brews" (fermented drinks) from wild plants, were said to have learned to do this from white men from Fort Liard around the turn of the century; the process requires yeast, sugar, and raisins and fermentation usually takes from two to five days (Lamont, 1977). Some specific documentation of the nutrient values of beverage plants are provided in Chapters 4 and 5.

Chapter 4 gives known nutrient values of specific plant foods within the major groups mentioned here.

HARVESTING AND PROCESSING PLANT FOODS

In general, harvesting of plant foods required little in the way of specialized equipment. Root foods were usually dug or pried out with the aid of a pointed digging stick, the design of which varied from one region to another. Originally, digging sticks were made of wood or sometimes

antler, with or without a separate crosspiece for a handle. In historic times, iron digging sticks, sometimes fashioned from the tyne of an old-fashioned harrow, have been used. Other plant-gathering implements included such items as scrapers (originally of bone or antler and later of a rounded and sharpened section of tin can) for removing the edible inner bark tissue from a tree, comb-like tools for harvesting some types of berries, and poles and hooks for gathering high-growing elderberries and black tree lichen, or for pulling up eelgrass from the ocean bottom. Most greens and berries would have been harvested by hand. A wide assortment of burden baskets and containers, most constructed from various types of fibrous plant tissues, were used to transport and store the harvested foods. Birch-bark containers were particularly important for this role in many regions.

Some plant foods, especially greens and berries, could be eaten fresh and raw with little preparation other than peeling green shoots or destemming fruits. Other plant foods were prepared in some way before being served. For some, further processing was essential to render them digestible or to eliminate toxic components. Furthermore, plant foods intended for storage invariably required some degree of processing to allow their preservation.

Many different procedures were used in processing plant foods, and sometimes two or more processing techniques were applied successively. For example, a newly-harvested root food would probably undergo preliminary cleaning and might also be washed or peeled close to the site where it was dug. Then, possibly after transport to a camp area or permanent residence, it might be cooked by boiling or steaming in an underground pit. Following cooking, it might be dehydrated for storage by spreading it out on a mat for several days. At this point, the dried food could be kept for a considerable period of time—months or even years if necessary. Before it was finally consumed, it would probably be reconstituted by soaking in water or boiling in a broth with meat, fish or other foods.

Dehydration, by sun, wind or heating over a fire, was a very common and widespread method of storing plant foods for later use. This technique was especially common for berries and root foods, but was also used for mushrooms, seaweeds, inner bark, and even some greens. Depending on their nature and on their intended use, the foods could be dried loosely or individually, or mashed and dried in loaves or cakes. Roots and mushrooms might be strung on strings or threaded onto skewers for drying. Dehydration had the added advantage of making foods lighter and more compact for transport from the harvesting and processing site to permanent winter quarters. This was an important feature before the convenience of horses and other forms of land transportation. Foods that were properly dried and stored would keep up to several years. Before use, they were usually reconstituted in water.

Some foods, especially roots and certain berries, were preserved without dehydration for considerable periods. They were stored in containers or buried in underground caches. In the northern regions, caches were particularly effective, since the food generally froze if situated next to permafrost, and remained frozen over the winter, to be dug out and thawed as needed (cf. Lamont, 1977; Kari, 1977). Another method of storage used for more tart fruits, such as crabapples, elderberries, cranberries, and soapberries, was to place them in a container covered with water and sometimes a layer of fish or animal grease or oil. Such foods would soften, but remain quite palatable, sometimes becoming sweeter the longer they were kept (Turner, 1975; Port Simpson Curriculum Committee, 1983). The Inuit and some northern Indian Peoples used a fermentation or "souring" technique to preserve some of their greens, berries, and root foods. These foods were often first placed into a seal poke or, recently, a barrel. The techniques of storing and fermenting foods in the North are described in detail by Jones (1983).

Many foods, both fresh and stored, were cooked before being consumed. In some cases, as with the inulin-containing root foods (such as camas and wild onions) and black tree lichen, prolonged cooking greatly enhanced the digestibility of the food, and hence its nutrient value (Turner and Kuhnlein, 1983). Baking or steaming for many hours in an underground pit was a common method of cooking many root foods. Large quantities of food could be prepared with minimal use of containers or utensils (cf. Turner and Kuhnlein, 1982). Foods could also be boiled, either directly over a fire or stove, or using red-hot rocks heated in a fire and dropped into a box or other container with the food and usually water or some other type of liquid. Roasting over an open fire was also used for some foods.

Many plant foods were mixed with other foods, both plant and animal, before being eaten. For example some Interior Salish people of British Columbia made a type of pudding with several ingredients including Saskatoon berries, deer fat, black tree lichen, and tiger lily, and yellow avalanche lily bulbs (Turner et al., 1990). Oils and fats were often used to enhance the flavor of plant foods (Turner, 1975, 1978; 'Ksan, People of, 1980; Port Simpson Curriculum Committee, 1983; Laforet et al., 1990). Pemmican—a mixture of dried meat, berries, and fat, with many variations—is probably the best example of a food incorporating both plant and animal ingredients. In the North, a type of "ice cream" was sometimes made by whipping berries and greens together with fat and, sometimes, snow (cf. Kari, 1977; Jones, 1983).

PLANTS AS RESOURCES IN TRADITIONAL CULTURES

The great majority of Canadian Indigenous People had a traditional economy based primarily on hunting, fishing and plant gathering. Plants were regarded both as direct sources of food, and as secondary sources in the role of food for animals which were eaten. Plants also provided many useful and important materials in hunting and fishing technologies. Some groups, such as the Huron, Ojibwa and Iroquois of the Great Lakes region, practiced agriculture to some degree, growing and apparently selecting and breeding several cultivated varieties of maize, beans, squashes and pumpkins. Sunflowers were also grown, but aside from these few species, virtually all other plant foods were harvested from the wild.

However, since food production may be described as a series of developmental stages in indigenous economies (cf. Ford, 1985), many native plant species could be regarded as being in the initial phases of agriculture ("incipient agriculture"). Various means were used to encourage the growth of these food plants and to foster optimum habitat conditions. For example, controlled burning was practiced on southern Vancouver Island to optimize the production of blue camas, which grows best in an open meadow habitat (Turner and Bell, 1971). Native elders in many parts of British Columbia have recalled that patches of mountainside were formerly burned from time to time to eliminate underbrush and promote the growth and yield of black huckleberries, blackcaps, strawberries, tiger lilies and other economically important plant foods, as well as to provide good browsing areas for deer and other game. Hazelnut bushes were burned back to the ground to stimulate nut production, according to one Nlaka' pamux (Thompson) woman.

From Manitoba to the Maritimes, wild-rice was harvested on a regular, systematic basis, using methods that ensured continued production. Also in eastern Canada, sugar maple trees were tended and used year after year on a sustained yield basis.

The concept of genetic and ecotypic variability was obviously recognized by Indigenous Peoples and was a factor in food gathering. It was widely known that some localities and habitats produced a particular plant food of better quality than others. For example, some Pacific coastal peoples travelled considerable distances to obtain prime cow-parsnip shoots in the spring, even though cow-parsnip could be found nearby (Kuhnlein and Turner, 1987). Salal, thimbleberries, highbush cranberries, Pacific crabapples, camas, springbank clover and Pacific silverweed all had their designated harvesting localities in Pacific coast environments, where they were prolific and of best quality. These localities were visited year after year, and in some cases, generation after generation. This was undoubtedly true of food plants in other regions of the country.

Ownership and stewardship of particular harvesting sites by individuals, families and village groups was also widely recognized. In some cases—as with camas, springbank clover and silverweed—family ownership was established for discrete patches, whose boundaries were sometimes marked off (Boas, 1934), and proprietorship carried on for many successive generations (cf. Turner and Kuhnlein, 1982, 1983). Rocks and brush were generally cleared from these "garden" patches, and only the largest "root" parts were selected, the smaller roots, bulbs, or rhizomes being left for successive harvests. Some Nuxalk people of Bella Coola began more obvious agricultural procedures, with annual plantings of springbank clover rhizomes on the river floodplains (Edwards, 1979).

With traditions of plant resource husbanding already in place, it is not surprising that many Indigenous People became adept gardeners and farmers within the historic period. The Haida of the Queen Charlotte Islands, for example, who were already experienced growers of a

certain type of aboriginal tobacco, became renowned for their expertise in potato production. Haida potato were grown, not only for local consumption, but were traded or sold to the Tsimshian and other mainland peoples, and to trading ships and nearby Hudson's Bay Company posts.

Plant foods, especially after processing for storage, were a common item of exchange in the traditional economies of Indigenous Peoples. Dried berries, nuts and roots, and, on the Pacific Coast, boxes of highbush cranberries and crabapples preserved in water and oil, were traded over wide areas and frequently used as potlatch and ceremonial gifts. The importance of trade and gift-giving as a means of distribution of wealth and coping with relative abundance and scarcity of plant foods in different localities is discussed by Suttles (1987) for the Northwest Coast. Within the historic period, early explorers, traders, missionaries and settlers also benefited by trading plant foods from Indigenous People, and in some cases these foods meant the difference between starvation and survival (cf. Aller, 1954).

The harvesting, preparing and eating of foods often involved ritual and ceremony. In general, plants and animals—particularly those which were important as resources—were viewed with respect and gratitude. These attitudes are evident in ceremonies such as the "First Fruits" and "First Roots" ceremonies of the Okanagan-Colville of British Columbia (Turner et al., 1980).

REGIONAL AND CULTURAL VARIATION IN PLANT FOODS USE

The diversity of plant foods used varied significantly from region to region within Canada. This is due partially to geographical and ecological influences on species distribution and abundance, and partially to cultural traditions and preferences. There is very little literature on individual use frequency or quantitative consumption of plant foods (indeed, of any traditional indigenous foods) by Indigenous Peoples in Canada. The trends in use frequency of 70 traditional food species by the Nuxalk have recently been published (Kuhnlein, 1989a, Kuhnlein and Turner, 1987; Kuhnlein, 1989b). Wein reviewed the frequency of use of contemporary foods by the Wood Buffalo Cree and Chipewyan people, and this included two traditional plant foods (birch syrup and Labrador-tea) (Wein et al., 1989). Honigmann (1949, 1961) also provided quantitative evaluations of food use, including traditional foods, in his studies on Kaska and James Bay Cree.

Throughout Canada the assumption is made that, while Indigenous People collectively have traditional knowledge of use of a tremendous variety of wild plants, this knowledge rests primarily with the elders of groups. The younger generations generally use more marketed foods and fewer traditional foods, particularly plant foods, than did their elders in earlier days. As well, elders are though to use somewhat more traditional foods today than younger generations do. It is the elders who are especially anxious to have traditional foodways documented, because they recognize that the knowledge will be lost to future generations if the current trends continue.

Generally speaking, fewer plant foods (both in terms of species, and in total quantity) have been used by Indigenous People resident in northern latitudes. The greatest variety of plant foods appears to have been in the ecologically diverse plateau and montane region of south central British Columbia. Here, for example, the Nlaka'pamux (Thompson) Interior Salish used no less than 120 plant species in some way as sources of foods, flavorings or beverages (Turner et al., 1990; Laforet et al., 1990). In eastern Canada, as noted previously, cultivated plants including maize and squash, augmented a variety of gathered plant species, with fruit (berries) being the most widely exploited. Published ethnobotanical works often describe the plants used, but give little quantitative information on the extent of use by population groups.

The amount of a plant food used, together with its nutrient contents, are the two essential pieces of information needed to determine the contribution a food makes to the nutrient needs of individuals. In the absence of the first essential piece of information, only generalizations about potential usefulness of a plant food to a population group can be made. However, if a food is known to be a good source of nutrition, and if it is widely available and known to be aesthetically pleasing to the group, assumptions can be made with greater certainty that the food is, or was, widely used.

PLANT FOODS AND THE HEALTH OF INDIGENOUS PEOPLE

The health implications of the use of indigenous plant foods are multifaceted. On the one hand, plant foods contain nutrients that are not as readily found in animal foods, such as fibre, carotenes, vitamin C, and energy-rich carbohydrates. The diets of precontact Indigenous People would be expected to contain reasonable amounts of plants to provide these nutrients, and plant foods were stored for use during seasons when they were not available fresh from the environment. Plant foods also provided variety in flavor and texture to a meat, fish or grain based subsistence pattern.

Since contact with Europeans, many other foods have been introduced and are available for purchase. These can provide energy and variety to Indigenous People, but those that are most frequently purchased (particularly sweet and starchy foods) are not good sources of nutrients usually associated with plant foods—such as vitamins and minerals. Hence, since Indigenous People have been replacing many of their natural plant foods with purchased foods, she overall nutrient quality of the diet has been declining. Recently, a variety of research programs has been conducted in diverse indigenous groups in Canada which clearly documents the poor quality of the diets of the majority of individuals (Kuhnlein, 1984; Sevenheusen and Bogert-O'Brien, 1987; Schaefer and Steckle, 1978). Hence, it would benefit Indigenous People to either begin to reintroduce some of their nutrient-rich traditional plant foods, or to create a more effective demand for plant foods of high nutritional qualiry in die food markets available to them.

Another consideration in the use of plant foods by Indigenous People is the potential toxic constituents contained in them. While most commercially marketed foods are known to contain only very low levels of identified toxins, wild plants are candidates for scrutiny, because toxins have been identified in some of them. Indigenous people are well known for their ingenuity in processing plant foods to remove toxins, and it is thus prudent to note traditional processing techniques that would accomplish detoxification. The major techniques used to remove plant toxins are: heating, leaching, fermenting, adsorption, drying, physical processing, and changing the acid-base ratio; these have been recently reviewed by Johns and Kubo (1988). It is clear that toxicity safety issues cannot be ignored when considering the nutritional value of plant foods. In Chapter 4 the plant foods that contain toxins and which are used by Indigenous People are identified, along with the techniques which remove the toxins. The known presence of potential toxins is also noted in the comprehensive listing of plants in Chapter 5. The most toxic genus of plant food known, that of *Robinia* spp., has not been included in the various lists of edible plants reported here, even though some nutrient information exists for some species in the genus.

CONSERVATION OF PLANT RESOURCES

Indigenous Peoples have developed many conservation strategies to maintain biological populations and productivity of plant and animal food resources. Selective and seasonal harvesting, habitat conservation and maintenance, and use of diverse resource bases are practices which were widely used, and are as applicable to modern resource use as they were in the past.

Today, populations of native plants and animals, and the ecosystems they inhabit, are more vulnerable to destruction than ever before. Modern practices of clearcut logging, strip mining, open range livestock production, and large-scale agriculture have drastically depleted the extent of natural habitats and the plants and animals living within them. Urban expansion, industrial development, widespread use of herbicides and insecticides on forests and farmlands, and the introduction of aggressive weeds and animal pests have taken a further toll on native plant and animal resources. Because of all these pressures on wild biological populations, extreme care must be taken to conserve and maintain natural habitats and native species.

Although overharvesting of wild plant foods by individuals is seldom a problem if done carefully and with discretion, there are certain plants that are particularly affected by disturbance and harvesting practices. This is especially a problem with plants having edible underground parts and edible shoots, where harvesting may destroy an entire plant. For

example, in some areas of eastern Canada, wild leeks *(Allium tricoccum)* and fiddlehead ferns *(Matteuccia struthiopteris)* have been overharvested (mostly by non-Indigenous wild food enthusiasts) from wild areas and their populations have been seriously depleted. People wishing to use wild plant resources should be aware of the effects of harvesting on a plant population and use discretion as to whether a wild food should be taken at all and, if so, what quantity should be used. It is also important to remember that many wild animals depend on the same wild plant foods as used by people, and therefore their needs must be considered in harvesting decisions. As a general rule, harvesting should be widely spaced rather than intensive, with shoots, berries, leaves, and other plant foods being taken in small quantities from many plants rather than in large amounts from just a few plants. Plants in the Comprehensive List (Chapter 5) which are marked with an "R" (rare or endangered, or highly vulnerable to overharvesting) should not be harvested under ordinary circumstances.

Many wild plant foods discussed in this book can be propagated from seeds or cuttings, and grown in garden situations (cf. Nuxalk Food and Nutrition Program, 1984). This is an excellent alternative to harvesting plant foods from natural areas, since it makes them more readily available without affecting their abundance in the wild. Most are attractive in garden and landscape settings, and many have the added advantage of attracting birds and other desirable wildlife. Demonstration gardens of wild plant foods and other culturally important native plants provide an excellent teaching situation for schools, museums, and cultural centers. Those interested in preserving traditional knowledge of Indigenous Peoples should consider the use of living plant material to demonstrate the use and identification of plant resources.

Thus, it is realized that plant foods have been important cultural components and dietary components for Indigenous Peoples. They have provided variety, aesthetic qualities and nutrients not otherwise available in subsistence foods from the natural environment. Although toxic elements are recognized as natural components in plants, technologies developed by Indigenous Peoples minimized their negative effects. In addition, Indigenous Peoples used their knowledge to conserve their natural resources to ensure future availability. In the following chapters we note the many different plant foods used by Indigenous Peoples, the many ways they have been used, and the variety of nutritional properties they contain.

CHAPTER 4

Descriptions and Uses of Plant Foods by Indigenous Peoples

Almost all major groups of wild plants in Canada have edible members that are reported to have been used by Indigenous People. Exceptions are the Bryophytes (Mosses and Liverworts), which were not eaten—as far as can be determined in the literature. Any literature reports of "moss" being eaten seem actually to refer to lichen species. Slime molds, too, have no evidence of having been used as food. In this section plant foods listed alphabetically by scientific name within their major taxonomic categories: ALGAE (Seaweeds); LICHENS; FUNGI (including Mushrooms); PTERIDOPHYTES (Ferns and Fern-allies); GYMNOSPERMS (Conifers and Conifer-allies); and ANGIOSPERMS (Flowering Plants, both Monocotyledons and Dicotyledons). Within the PTERIDOPHYTES, GYMNOSPERMS, and ANGIOSPERMS, the plants are further categorized into families, which are also presented alphabetically by scientific name. Common, or colloquial, names for species and families are provided throughout. For vascular plants, nomenclature generally follows that used by Scoggan (1978-79). Distribution maps of the plant species mentioned (especially the northern species) are provided by Hultén (1968). Detailed records of distribution of vascular plant species in Canada are given by Scoggan (1978-79).

For major edible species, a brief description of botanical characteristics and occurrence is provided, as well as an outline of harvesting, preparation, and usage. Specific references are given at the end of each description for the ALGAE, LICHENS, FUNGI, and PTERIDOPHYTES, but, to avoid too much repetition, are simply provided in the text for the GYMNOSPERMS and ANGIOSPERMS. Minor edible species are mentioned under their families or important related species, or listed in tables for each major group or family.

A summary of the language groups of Indigenous Peoples of the provinces and territories of Canada is provided in Appendix 1. There are definite gaps in our knowledge of traditional food plants. Some important groups of Indigenous People are not mentioned at all in the text because of the lack of information available on their plant foods. Northern peoples, such as the various Athapaskan groups of British Columbia, Alberta, Yukon and Northwest Territories, particularly require further ethnobotanical documentation. Several major references deal with plant foods of the Alaskan Eskimo, and it can be assumed that many of these same foods were used by the Canadian Inuit people, but further research on Inuit plant foods is certainly needed.

Furthermore, although information pertaining to plant foods of a particular indigenous group is often presented as applying to the entire group, the reader should keep in mind that in many cases, it comes from interviews with a limited number of people within that group, and may not be universal. For example, the six groups of Iroquoian Peoples, all included here under the general title, Iroquois, undoubtedly used different plant foods to some extent and had differing methods of preparing them. Similarly, Ojibwa (Ojibway), Cree, and Chipewyan peoples inhabit vast territories, and the variation that must exist in the traditional plant food use within different subgroups is not given sufficient recognition due to lack of available information.

Many of the foods listed are still being eaten by Indigenous People, but often the contemporary pattern of use is unknown. Hence, even though most descriptions of use and preparation of plant foods are written in the past tense, they may well be applicable to contemporary Indigenous People.

ALGAE (SEAWEEDS)

Introduction to Algae

Algae, particularly the macroscopic marine forms known as seaweeds, or sea vegetables, are eaten in many parts of the world, including Japan (where seaweed products may account for up to 10% of the diet), China, Polynesia, Hawaii, Great Britain, Iceland, Norway, and Siberia (Madlener, 1977). In Canada, some types of seaweeds have been eaten traditionally by both Indian and Inuit peoples.

Seaweeds are highly in variable in appearance, palatability, and nutritional content. With the exception of one genus,*Lyngbya,*a hair-like bluegreen alga (Cyanophyta), none of the macroscopic species are highly toxic. However species of *Desmarestia,* a brown alga (Phaeophyta), contain esters of sulfuric acid and can cause severe gastrointestinal upset if consumed excessively, an unlikely occurrence since they taste very sour. Additionally, some of the microscopic golden brown algae (Pyrrhophyta) known as dinoflagellates (mainly of the genus*Protogonyaulax)* produce extremely toxic substances, and under some conditions can accumulate in large concentrations, coloring the water brownish or red, and giving rise to the term, "red tide." Molluscs—clams, scallops, mussels—and other filter-feeding shellfish can concentrate these algae and their toxins, and thereby become extremely poisonous to people eating them. The condition they produce is known as paralytic shellfish poisoning (psp) (Turner and Szczawinski, 1990). Indigenous People would have been aware of the potential for shellfish poisoning, but not that the causative agent was actually a plant.

Digestibility of Algae

Much has yet to be learned of the digestibility of algae. Apparently, due to their complex carbohydrates, or polysaccharides, they can be difficult to digest. Eidlitz (1969) comments, "It seems ...that algae are ...difficult to digest; extensive processing is required before they can become beneficial to man." However, Madlener (1977) claims the digestibility of "sea vegetables" can be enhanced through conditioning of the digestive tract by successive consumption of seaweeds over a period of about a week. This is borne out by one report on Inuit use: "The Angmagssalik Eskimos state that they get stomach pains from eating large quantities of seaweed after a long period without it. But after a few days' training they can again eat it without stomach pain" (Eidlitz, 1969). On the Arctic coast seaweeds were important as a general famine food: "Both summer and winter they [Inuit of Frobisher Bay] collect kelp and eat it, but only as a sort of luxury, except in cases of great scarcity of food, and then they fall back upon this resource" (Hall, 1865). Similarly, Eidlitz (1969) reported that the Greenland Eskimos "...never starve as long as they have blubber and there is seaweed near the settlement to be gathered and eaten." The Broughton Island Inuit also eat one type of kelp (tentatively identified by Dr. Alan Austin from a photograph as *Pterygophora),* which they gather from small boats, while it is still growing.

Significantly, some traditional techniques of preparation of seaweeds may have increased their digestibility. The Kwakwaka'wakw (Southern Kwakuit1), for example, formerly prepared cakes of red laver *(Porphyra perforata)* by covering the harvested seaweed and allowing it to decompose for 4-5 days, then pressing it into wood frames and drying it in the sun. The resulting cakes were than placed in cedar-wood boxes in layers alternating with layers of chiton juice (obtained by chewing the chiton and spitting out the saliva) and young boughs of red-cedar (*Thuja plicata).* When the box was filled, it was weighted with several large rocks, tied down with rope, and left for about a month. Then the entire process was repeated, altogether four times. Finally, the cakes were packed in a box without cedar boughs and stored for winter, when they were eaten with dried salmon at tribal feasts. At this time, they were torn into strips, chopped with adzes, chewed, and put into a large dish. Water was poured overtop, and the seaweed was stirred and allowed to boil for a long time. Then eulachon oil (cf. Kuhnlein et al., 1982) was added and the mixture was served in small dishes and eaten with spoons by the guests (Boas, 1921; Turner and Bell, 1973). This process must surely have aided in the breakdown of the seaweed's polysaccharides into simpler, more digestible sugars.

People of inland regions of the world are more prone to iodine deficiency, and there are many instances of preserved seaweeds being traded to inland areas of the world from the coasts (cf. Eidlitz, 1969; Aaronson, 1986). In Canada, the Carrier and Chilcotin Athapaskan peoples of the interior of British Columbia are known to have acquired dried laver from the Bella Coola, or Nuxalk and used it as a goitre medicine (Morice, 1893; Turner, 1978).

Species of Algae Eaten Traditionally

Unfortunately, few ethnographic reports on indigenous foods in Canada give specific details on species of "seaweeds" eaten, if they are mentioned at all. Among the Inuit on the northern and

northeastern coastline, apparently only those of Baffin Island and Labrador ate seaweeds traditionally; there are no records available of seaweeds being used by the Copper, Mackenzie and Point Barrow Inuit (Hall, 1865; Payne, 1889; Hawkes, 1916; Eidlitz, 1969). On the Pacific Coast, the most important edible type was, and is, red laver *(Porphyra perforata* and related species). Another major edible species is giant kelp *(Macrocystis integrifolia).* Dulse *(Palmaria palmata)* was eaten to some extent by the Inuit, and apparently by Indian groups of both Atlantic and Pacific coasts. These three species are treated in detail. Others reported to have been eaten by Canadian and Alaskan Indigenous Peoples are listed in Table 4-1. Eelgrass and surfgrass, both marine flowering plants, are treated later.

Discussion of Major Species of Algae Used as Food

Giant Kelp *(Macrocystis pyrifera;* syn. *M. integrifolia)* (Brown Algae; Phaeophyta)

Description: One of the largest marine algae, pale yellow-brown, up to 25 m (80 ft) long, with several stipes attached to a single holdfast. Large, flattened leaf-like blades, generally 35-40 cm (14-16 in.) long, and 5-10 cm (2-4 in.) wide, arise at intervals along the stipe. The blades have a wavy, textured surface and a toothed margin, and taper abruptly at the base. Each is subtended by a small, spherical float.

Table 4-1. Marine Algae, or Seaweeds, Eaten Traditionally by Indigenous Peoples of Canada (and Neighboring United States).

Species	Notes	References
Plankton (microscopic) (prob. various species)	Found in whales' stomachs and eaten by Point Barrow Inuit	Eidlitz, 1969;
"Ribbon seaweed" (unidentified: *k'áach*)	Eaten dried or toasted by Tlingit	Jacobs and Jacobs, 1982
Edible kelp (*Alaria esculenta; A. pylaii*)	Eaten by Inuit and Alaska Indians	Yanovsky, 1936; Eidlitz, 1969
"Short" kelp (*Alaria marginata; Alaria* spp.)	Used by Nuu-chah-nulth for collecting herring eggs; sometimes eaten with them	Turner and Efrat, 1982
"Short" kelp (*Costaria costata*)	Used by Nuu-chah-nulth for collecting herring eggs; sometimes eaten with them	Turner and Efrat, 1982
Rockweed (*Fucus* spp.)	Sometimes used by Coast Tsimshian for collecting herring eggs; used by Tanaina as salty seasoning; boiled and eaten by Eskimos of Greenland	D. Leechman, pers. comm., 1980; Port Simpson Curric. Committee, 1983; Kari, 1987
"Bubbly" kelp (*Hedophyllum sessile*)	Used by Ditidaht (Nitinaht) for collecting herring eggs; sometimes eaten with them	Turner et al., 1983
Kelp (*Laminaria* sp.)	Eaten by Inuit	Eidlitz, 1969; D. Leechman, pers. comm., 1980
"Short" kelp (*L. groenlandica; Laminaria* spp.)	Used by Nuu-chah-nulth for collecting herring eggs; sometimes eaten with it	Turner and Efrat, 1982; Turner et al., 1983
"Short" kelp (*Lessoniopsis littoralis*)	Used by Nuu-chah-nulth for collecting herring eggs; sometimes eaten with them	Turner and Efrat, 1982
Giant kelp	Fronds used to collect herring	

(*Macrocystis pyrifera*)	eggs (see detailed discussion)	
Bull kelp (*Nereocystis luetkeand*)	Occasionally used for pickling; formerly for storing oil; poss. used by Coast Tsimshian for collecting herring eggs	Turner, 1979; Turner et al., 1983; Port Simpson Curric. Committee, 1983; Kari, 1987
Dulse (*Palmaria palmata*)	Eaten, apparently mainly in historic period (see detailed discussion)	
Laver (*Porphyra "perforata,*" *P. abbottiae, P. torta,* and *P. pseudolancelata*)	Widely eaten on Pacific Coast, fresh and dried (see detailed discussion)	
"Kelp" (? *Pterygophora* sp.)	Eaten by Inuit of Broughton Island, N.W.T.	H. V. Kuhnlein, unpubl. field notes, 1988
Sea lettuce (*Ulva lactuca*)	Possibly eaten by Kwakwaka'wakw, Heiltsuk, and other Northwest Coast groups	Anderson, 1925; Turner and Bell, 1973

Occurrence: On rocks in subtidal zone, to a depth of about 8 m; usually in large beds in areas close to open ocean, but not in heavy surf, in North Temperate Zone of Pacific coastal waters; found in both Northern and Southern hemispheres.

Food Use: The large, textured fronds are often used by herring as a spawning surface in the spring months. Once the spawn has accumulated, usually after about two days of spawning, it can be harvested at low tide from canoes. Several Northwest Coast groups, including Haida, Coast Tsimshian, and Kwakwaka'wakw, have used giant kelp for gathering herring spawn, and the practice continues to the present. The fronds are usually eaten together with the spawn. For later use they were sun-dried, or in recent times, preserved by salting or freezing, together with the spawn. Sometimes, for drying, the spawn-coated fronds are cut into thin strips; others are dried as whole fronds. The dried product can be reconstituted by soaking in water overnight, or nibbled dry as a casual snack. Haida children, for example, will sometimes take a pocketful of dried herring eggs on kelp to school as a recess snack. The usual method of preparing the fronds is to steam them briefly in a frying pan or fry them in fat until crisp and lightly browned. They are often served with eulachon oil. The Kwakwaka'wakw served reconstituted giant kelp with herring eggs, broken into bite-size pieces and boiled in cedarwood boxes, at feasts, to be eaten from dishes, with special spoons. Giant kelp was apparently not eaten alone, but only with herring eggs on it. (For other plants used for gathering herring spawn, see also Table 4-1 and under western red-cedar, western hemlock, eelgrass, and seagrass in later parts of the volume).

References: Boas, 1921; Turner, unpubl. notes on Haida ethnobotany, 1972; Turner and Bell, 1973; Levine, 1973; Turner, 1975; Madlener, 1977; Port Simpson Curriculum Committee, 1983.

Dulse (*Palmaria palmata;* syn. *Rhodymenia palmata*)
(Red Algae; Rhodophyta)

Description: Rose-red to reddish-purple plant up to 40 cm (16 in.) long, growing from tiny, disk-shaped holdfast. Fronds thin, elastic, irregular, with lobed segments giving the plant a hand-shaped appearance.

Occurrence: On rocks, shells and other algae from midtide to subtidal zone from Temperate to Frigid zones of Atlantic, Pacific and Arctic coastal waters; found in both Northern and Southern Hemispheres.

Food Use: Dulse is widely used as food among the general population of the Canadian Maritimes, as well as in Ireland, Iceland, Wales, Brittany and the Mediterranean. It is commercially produced in Nova Scotia, New Brunswick, and British Columbia, as well as Maine and Washington State in the United States (Madlener, 1977). Records of traditional indigenous use of this alga are fairly limited, and in some cases its identification is questionable. Eidlitz (1969) notes that it was used by some Inuit peoples, and Madlener (1977) records its use by the Tlingit of Yakutat Bay, Alaska and also by the Eskimos of southeastern Alaska. Kari (1987) reports that it is not used by the coastal Tanaina of Alaska, but it may have been in earlier times, and it still is by the Sugpiaq Eskimo, who boil it and eat it with fish.

Although dulse may have been eaten by the Indigenous People of the Maritimes, it is not mentioned in available ethnobotanical accounts (cf. Speck, 1951, who details use of a wide range of molluscs by the Micmac). The widespread eating of dulse by Canadians apparently originates from its traditional use in the British Isles.

References: Eidlitz, 1969; Madlener, 1977; Morgan et al., 1980; Kari, 1987.

Red Laver (*"Porphyra perforata"* complex; including *P. abbottiae, P. torta,* and other*Porphyra* spp.)

(Red Algae; Rhodophyceae)

Description: Purplish-brown to greenish membranous plants, growing to 1 m (3 ft) or more in length; blackish and brittle when dry. When young, long and narrow, with deeply ruffled edges, usually becoming irregularly cut into lobes with age. Holdfast tiny, disk-shaped. Older fronds often perforated with small, irregular holes. Many related species, differing in size and shape, but most reddish and membranous.

Occurrence: On rocks or other algae in sheltered waters of the mid to lower intertidal zone. Found from Polar region to South Temperate zone of the Pacific coastal waters.

Food Use: Red lavers were the most commonly eaten seaweeds along the West Coast of Canada. They were used traditionally by the virtually all coastal groups, with the possible exception of some Nuu-chah-nulth, or Westcoast peoples, and some Salishan peoples of Vancouver Island. Various species were used. They were harvested at their young growing stage in the spring, usually around May, the exact time depending on latitude, local conditions, and type of laver. Older plants were too tough to be eaten. Within the historic period, many Indigenous People, including Coast Salish and Nuu-chah-nulth, used to harvest red lavers and sell them to the Chinese and Japanese people of the Victoria area. Women and children often earned an income from this source.

There were many traditional methods of preparing, preserving and serving red lavers. The most commonly used type, identified from a sample collected by Haida people on the Queen Charlotte Islands as *P. abbottiae* (S. Lindstrom, pers. comm. 1990), was usually called simply "seaweed," or "summer seaweed" by Indigenous People. One method of making dried seaweed "cakes", used by the Kwakwaka'wakw, was described in detail earlier under the discussion on digestibility of seaweeds. The Haida used a similar method, leaving piles of the harvested seaweed to "ferment" for a few days before drying it. Dried seaweed cakes were chopped or shredded into pieces, then boiled or used in soups and stews. Kwakwaka'wakw people sometimes dried and toasted individual sheets of the seaweed on a rack over the fire, then powdered it and boiled it with water. The simplest method of curing the seaweed, most commonly used at present, is to spread it out on rocks in the sun. When dry, it is broken into small pieces and stored. It is then eaten dry, as a snack, or cooked in a variety of dishes. It is commonly mixed or cooked with eulachon oil, halibut heads, clams, fat of deer, bear or seal, or with salmon or salmon eggs. One modern innovation is creamed corn with seaweed**.** Dried seaweed is a common trade item among various families and communities.

An earlier-"ripening" type, called "number one" by the Straits Salish, and "winterseaweed" by the Haida, was identified (from a Haida specimen) as *Porphyratorta,* with a small amount of *P. pseudolanceolata* (Thomas F. Mumford, pers. comm., 1977). Jacobs and Jacobs (1982) note that the "winter growth" of edible seaweeds is tastier than the spring growth, although it is tedious to harvest because it is so short. A specimen of edible laver seaweed from Bella Bella was identified as a mixture of *P. abbottiae, P. torta,* and at least one other species (B. Compton and S. Lindstrom, pers. comm., 1990).

References: Boas, 1921; Turner and Bell, 1971, 1973; Turner, 1975; Madlener, 1977; Williams, 1979; Jacobs and Jacobs, 1982; Turner and Efrat, 1982; Port Simpson Curriculum Committee, 1983; Turner et al., 1983.

LICHENS

Edibility and Digestibility of Lichens

Lichens are a unique complex of two types of plants, an alga and a fungus, growing together in a symbiotic relationship. Several types have been used as food in different parts of the world (Smith, 1921; Llano, 1944; Richardson, 1975) but most are difficult for humans to digest because of their complex polysaccharides. Additionally, many are bitter, irritating to the digestive tract, or even toxic, due to such lichen substances as vulpinic and usnic acids. Wolf lichen (*Letharia vulpina*), a bright yellow-green branching type growing on dry conifer wood and bark in western Canada, is an example. Its high vulpinic acid content makes it poisonous.

Even lichens that were eaten were usually treated to remove some of the toxic components. Often, lichens were eaten only in times of scarcity. The Iroquois, for example, rarely ate lichens, but in emergencies, they scraped them from trees or rocks, washed them in ashes and water to remove the bitterness, then boiled them in grease before eating them (Parker, 1910; Arnason et al.,1981).

Lichen polysaccharides have been shown to be broken down into simple sugars in the digestive tracts of animals by the action of aerobic and anaerobic bacteria (Llano, 1944). Apparently, this is true in the human digestive tract as well, and, as with marine algae, if people eat lichens over a period of time,they are more easily handled by the body than if they are eaten on only one occasion. This is indicated by the following statement from Kari (1987): They...are stuck tight to the bark of the tree. ...The Lime Villagers [Tanaina of Alaska] say that some of these tree lichens taste sweet. They like to snack on them when they're out in the woods. They eat a little bit at a time. If you're not used to them, some of them might give you a stomach ache...

The various lichen species reported to have been eaten are listed in Table 4-2. Major species eaten traditionally include: black tree lichen (*Bryoria fremontii*); rock tripe (*Actinogyra* spp.,*Umbilicaria* spp.); and reindeer lichens (*Cladina* spp.), used fresh or collected partially digested from caribou rumens. These types are discussed in detail.

Detailed Discussion of Major Species of Lichens Used as Food

Black Tree Lichen, "Black Moss," or "Bear Hair" (*Bryoria fremontii;* formerly classed within the *"Alectoria jubata"* complex; *see Figures 6 and 7, page 36)*

Description: A dark-colored, filamentous lichen hanging from the branches of coniferous trees; 10-60 cm (4-24 in.) long. When dry, the thallus is stiff and wiry, when wet, it is soft and limp. The individual branches, or filaments are round to flattened, smooth, and much entangled. *Bryoria fremontii* differs from several closely related, inedible species with which it may grow by its characteristically twisted dark, reddish-brown to chocolate-brown main branches, often flattened or pitted here and there, with short, much more slender, perpendicular side branches. Spore-bearing structures are uncommon. The greenish-yellow pigment in this and related species is a bitter, potentially toxic pulvinic acid derivative unique to lichens called vulpinic acid.

Occurrence: On branches of (usually) coniferous trees such as Douglas-fir, lodgepole pine, ponderosa pine, and western larch in montane and intermontane forests of western Alberta and British Columbia, and south to Baja California.

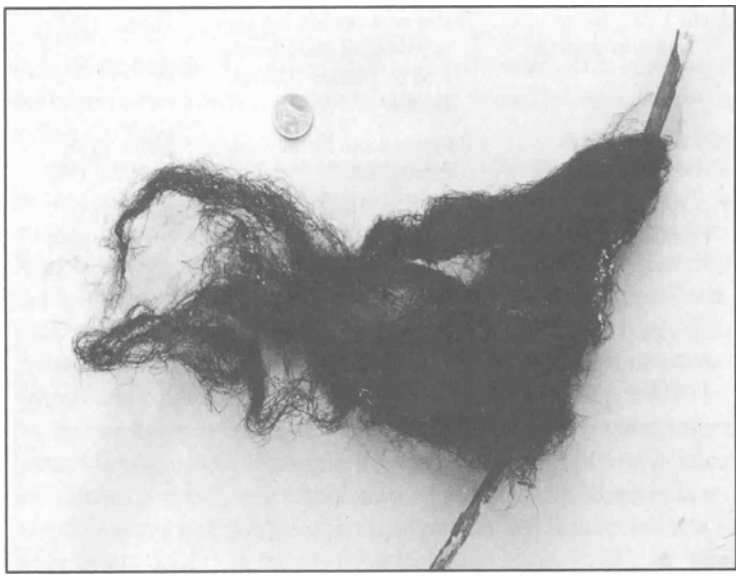
Food Use: This lichen was used as food, and emergency food, by many British Columbia Indian groups, especially those of the Plateau Culture Area (including Carrier, Gitksan, Chilcotin, Kootenay, Lillooet, Okanagan-Colville, Shuswap, and Nlaka'pamux (Thompson), as well as at least two Coastal groups, Coast Tsimshian and Upper Halkomelem), and one Alaska group, the Lime Village Tanaina, who are said to boil it and eat it with fish, grease, or berries. In the British Columbia Interior it was gathered, usually in summer and fall, from branches of coniferous trees with long, sometimes hooked, sticks (or by cutting down the trees). It was usually tasted before harvesting in quantity, to determine if it was too bitter. The harvested lichen was cleaned of debris, then soaked in running water and pounded in an attempt to remove the bitter, greenish vulpinic acid. It was then cooked in layers in underground steaming pits for as long as 24 hours. It could be eaten

Table 4-2. Lichens Eaten Traditionally by Indigenous Peoples of Canada (and Neighboring United States).

Species	Notes	References
Lichens, unidentified	"Moss on white pine eaten by Ojibwa; dried, boiled and used in fish or meat broth	Smith, 1923; Stowe, 1940; Arnason et al., 1981; Black, 1980
Lichens, unidentified	Eaten as a snack by Lime Village Tanaina of Alaska	Kari, 1987
Tree lichen (*Alectoria* spp., *Usnea* spp.)	Boiled by the Lime Village Tanaina of Alaska and eaten with fish, grease, or berries	Kari, 1987
Black tree lichen (*Bryoria fremontii*)	Eaten, after cooking, in western Canada (see detailed discussion	
Cetraria (*Cetraria crispa*)	Used by Western Eskimo of Alaska of flavoring soups	Oswalt, 1957
Cetraria (*Cetraria cucullata*)	Used by Western Eskimo of Alaska for flavoring soups	Oswalt, 1957; Eidlitz, 1969
Reindeer "moss" (*Cladina rangiferina*)	Consumed alone or as stomach contents of caribou (see detailed discussion)	
Arctic kidney lichen (*Nephroma arcticum*)	Boiled with crushed fish eggs, or cooked as strengthening food by Western Alaskan Eskimo	Oswalt, 1957
Puffed shield lichen (*Parmelia physodes*)	Boiled in soups by the Potawatomi	Smith, 1933; Black, 1980
Tree lichen (*Sticta amplissima*)	Eaten by Ojibwa; found at base of old white pine; boiled until they are like scrambled eggs	Smith, 1932; Black, 1980
Rock tripe (*Actinogyra* spp., *Umbilicaria* spp.)	Eaten, cooked, especially as famine and emergency food (see detailed discussion)	

Figure 6 (above). Black tree lichen *(Bryoria fremontii)* growing on western larch (*Larix occidentalis*).

Figure 7. (below). A sample of black tree lichen. The coin above is to illustrate scale.



freshly cooked, or dried for winter use. Resembling gelatinous licorice in appearance, it is bland tasting. It was sometimes cooked with nodding onions (*Allium cernuum*) or other "root" foods to flavor it. Sometimes Saskatoon berry juice was added to it before drying. Recently, brown or white sugar, or molasses, was often mixed with it. Dried lichen was cooked in soups and stews with meat, fish, and other foods. Because it could be gathered in relatively large quantities, and was available for harvesting year-round, it was important as an emergency and famine food. In some areas (Montana) over 10 kg ("25 lb.") per person were reportedly harvested annually. This lichen is scarcely used at all at present. Most elders remember it only from their childhood.

References: Morice, 1893; Turney-High, 1937; Brodo and Hawksworth, 1977; Turner, 1977, 1978; Turner et al., 1980; Turner and Szczawinski, 1980; Galloway, 1982; Kari, 1987; Turner et al., 1990.

Reindeer "Moss," Caribou "Moss," or Reindeer Lichen (*Cladina rangiferina* and related *Cladina* spp.; formerly included in genus*Cladonia*)

Description: An upright, fruticose, ashy gray lichen with thallus forming scattered, entangled masses without discrete heads but with a distinct main stem, 6-10 cm (2.4-4 in.) high. Branching pattern mostly in fours, with open axils. Pycnidia (small, flask-shaped reproductive structures in the

inner part of the thallus) are common, but apothecia (disk-shaped spore-bearing structures) very rare.

Occurrence: Occurring in extensive colonies or mats; common on soil and humus in open areas throughout most of Canada, except the southern Prairie Provinces. Often reindeer lichen grows together with one or more related species in closely intermixed patches. Although distinguishable to the experienced eye, they are apparently all eaten by caribou and all would thus have been consumed by humans as well.

Food Use: Reindeer lichen and its relatives were apparently seldom used fresh by Indigenous Peoples except during times of emergency. According to Hawkes (1916) the Labrador Inuit used "caribou moss" in times of starvation, to sustain life. The Ojibwa were said to have eaten it, but details of its preparation are lacking (Black, 1980). The Inland Tanaina of Alaska boil it or soak it in hot water until it is soft, then eat it plain or mixed with berries, fish eggs or grease. They also cook it and feed it to their dogs. It is sometimes boiled and eaten to stop diarrhea, but it is known to cause stomach trouble in some people if it is not cooked well (Kari, 1987). Porsild (1951) states that lichens were used as emergency food only by White travellers in the North, but not by Indigenous Peoples.

The main food use of reindeer lichen as a major component of the partially digested stomach contents of caribou and other ungulates. Often mixed together with other lichens such as *Cetraria,* mushrooms, horsetails, sedges, grasses, willow, birch, and blueberry leaves and shoots, and other plant foods, it was considered a delicacy in this form. This food was used traditionally by most Inuit peoples (including Igloolik, Copper, Caribou, Netsilik, Baffin Island, Nuamiut, Labrador, and Polar), as well as by the Chipewyan and other northern Indian groups. Because the complex lichen polysaccharides and proteins were apparently partially broken down in the animal's rumen, this material was more easily digestible for humans.

References: Hawkes, 1916; Porsild, 1951; Sinclair, 1953; Eidlitz, 1969; Heller, 1976; Black, 1980; Arnason et al., 1981; Maries, 1984; Kari, 1987.

Rock Tripe, or Tripe de Roche (*Actinogyra* spp., *Umbilicaria* spp., including some formerly classed as *Gyrophora* spp.)

Description: Foliose lichens with flat, leaf-like thalli often 5 cm (2 in.) or more across, attached to the rock substrate at a single central point. When dry, the thallus is rather brittle and grayish to deep brown. When moist, it becomes limp and rubbery and blackish to dark green. The underside is usually darker and often velvety or hairy. In some species the margins are smooth, in others, irregularly lobed or deeply cut. When they do occur, spore-bearing apothecia are small and black, and scattered over the upper surface.

Occurrence: Many species are found in Canada. Most are difficult to distinguish and were apparently seldom differentiated by Indigenous Peoples. Common on exposed granite rock from sea level to mountaintops; various species are very abundant throughout the North. Two species known to have been eaten are *Actinogyra vellea* and *A. muhlenbergii* (formerly included in *Umbilicaria).*

Food Use: Rock tripe was well known as an emergency and famine food to explorers such as Richardson and Franklin, and to French Canadian Jesuit Fathers and voyageurs. They learned of its use from Indigenous Indian and Inuit peoples with whom they travelled or whom they encountered. It was eaten by the Huron and Naskapi (Mistassini band and Lake St. John band), as well as by the Chipewyan of northern Saskatchewan, the Woods Cree of east-central Saskatchewan, and the James Bay Cree. Ekblaw noted that the Inuit ate it in times of starvation, but they knew it would cause disease if eaten continually. It was gathered from rocks, washed, broken into small pieces and boiled in soups or broths, with foods such as fish, fish roe, or caribou blood. When boiled for five minutes to an hour or more, then allowed to cool, it becomes mucilaginous, or gelatinous with "an acidic flavour also reminiscent of mushrooms" (Maries, 1984). Opinions as to its palatibility vary from "by no means unpalatable," to "disagreeable" (Douglas Leech-man, pers. comm., 1980). Some Woods Cree people considered rock tripe cooked with fish broth to be "...good nourishment for a sick person since it would not upset the stomach" (Leighton, 1985). The lichen could be dried, then eaten later as a solid food or boiled in soup. The Attawapiskat Cree of James Bay used to scrape "stone moss" off the rocks in summer and boil it for half an hour with flour, lard and salt. It is seldom

used by anyone at present, but was formerly important in times of food shortage. The Naskapi of Labrador used a kind of plant called "little thing growing on the rocks," apparently rock tripe. As well as boiling it for soup, they cooked it down until hard, then ate like "as though it were a pancake."

References: Franklin, 1823; Richardson, 1823; Chamberlain, 1901; Lips, 1947; Aller, 1954; Honigmann, 1961; Black, 1980; Turner and Szczawinski, 1980; Maries, 1984; Leighton, 1985.

FUNGI (INCLUDING MUSHROOMS)

Low Incidence of Use of Fungi as Traditional Food

Considering the large variety and general abundance of different types of mushrooms and fleshy fungi available to Indigenous Peoples in Canada, it is somewhat surprising that so few were used traditionally as food. Possibly this is because it is difficult to distinguish toxic from non-toxic types. However, Eidlitz (1969) reports that among the Inuit and other northern peoples...

> There seems to have been a general antipathy for mushrooms which... may not necessarily have been due to an inability to distinguish between edible and inedible kinds. According to Porsild (1953), all mushrooms on the tundra were edible except *Amanita rubescens.* The Eskimos and Aleuts not only did not use them but regarded them with disgust.

Eidlitz's comments are reinforced by Jones (1983) for Inupiat Eskimos of Alaska: "Traditionally, the local mushrooms were never eaten. ...The local Inupiat word for mushrooms means "that which causes your hands to come off". Long ago... (shamans) fostered a strong taboo against eating mushrooms..." Kari (1987) notes that the Tanaina Indians disagree amongst themselves as to whether mushrooms were eaten traditionally; many think that People learned to eat them from "non-natives." Lips (1947) noted that, Mushrooms, often growing in abundance, are never picked and eaten" by the Naskapi of Labrador.

Among the Northwest Coast Peoples, despite the availability of innumerable kinds of edible mushrooms, few if any were recognized with genericlevel names, and with some minor exceptions, none was eaten (Turner, 1975; Turner et al., 1987). In some coastal languages, such as Haida, there does not appear to have been even a general name for "mushroom." In the Nuxalk (Bella Coola) language, the name for mushrooms means "hats-on-the-ground" (Turner, 1973). Sometimes puffballs are associated with stars. In the Sechelt language, for example, their name translates as "star-excrement" (Turner, unpubl. notes, 1972). In other areas, such as Nlaka 'pamux (Thompson) Interior Salish, puffballs are associated with ghosts and corpses. Puffballs and some tree fungi (polypores) were used medicinally by Interior Salish and other peoples, but they were not eaten (Burk and Fitzgerald, 1981; Turner et al. unpubl. notes, 1987; Turner et al., 1990). The Interior Salish did, however, eat approximately six different types of mushrooms traditionally (Turner, 1978), and some Chilcotin people were said to eat certain types (Myers et al. unpubl. notes, 1988).

Elsewhere in Canada, several types of mushrooms, and various species of polypore fungi (*Polyporus* spp. and related genera), were eaten by the Iroquois (Waugh, 1916) and possibly peoples of the Great Lakes region (Aller, 1954), but apparently few other indigenous groups ate them (Arnason et al., 1981). Waugh noted that mushrooms were peeled, boiled, drained, and then fried in butter or grease with a little water and seasoning if desired. They were also boiled with meat to make a stew. The *Polyporus* fungi, classified by the Iroquois according to the trees they grow on, were most commonly boiled or cooked in soups. Sometimes they were boiled in two changes of water. The Chipewyan apparently ate mushrooms, but none of the contemporary people consulted recalled which kinds. They also dug up a black substance from under the ground, located by a certain grass growing over it, then washed it, hung it up to dry, and chewed it like bannock (Maries, 1984).

The potentially toxic properties of mushrooms may, indeed, partially account for their sparcity of use. Throughout Canada, except the Far North, there is a significant number of different types of mushrooms that are poisonous, with symptoms ranging from mild nausea, vomiting, and diarrhea, to severe abdominal pain, kidney and liver deterioration, coma, and sometimes death (Turner and Szczawinski, 1990). Indigenous Peoples who did eat some mushroom species were certainly aware of, and had names for, poisonous species as well. For example, the Nlaka'pamux Interior Salish recognized a whole class of "bad mushrooms," including at least one type called "hole-in-the-top," a

Lactarius species (tentatively, *L. resimus).*It was said that if one ate this, his stomach would "swell up"; the only cure was to eat bear grease (Turner et al., 1990).

Additionally, some species, such as fly agaric *(Amanita muscaria)* and "magic mushrooms" *(Psilocybe* spp.), are hallucinogenic. Although these were important in religious rituals in some cultures of the world, Canadian Indigenous Peoples apparently did not use them traditionally as hallucinogens.

Nutritional Value of Fungi

Where they were used, mushrooms added to diversity of the traditional diet, contributing both flavor and nutrients. All mushrooms have a high moisture content and minor amounts of total carbohydrate and fiber, protein, and lipids. The total energy contributions of one selected group of wild mushrooms, calculated using the Atwater factors (Watt and Merrill, 1963), was 21-28 kcal/100 g fresh weight (cf. Turner et al., 1987). The protein contents of mushrooms are often minor, but the amino acid patterns have been reported to be favorable because all the essential amino acids required by humans are present in the mushrooms, with the possible exception of the sulfur-containing amino acids. Relatively low levels of vitamins, and low but meaningful amounts of minerals such as iron, copper and zinc are also present in wild mushrooms such as cottonwood mushroom.

Often it is difficult to identify mushrooms used traditionally, because seasonality and unpredictability of appearance of fungi makes collecting specimens for confirmation with Indigenous consultants difficult. For example, in one early ethnobotany publication (Steedman, 1930), three different types of edible mushroom were identified simply as "variety of mushroom; *Agaricus* sp."; none were actually true *Agaricus* species. Recent studies of edible mushrooms in the Interior Salish area of British Columbia (cf. Turner et al., 1987) have resulted in the collection and verification by mycologists of four traditionally used species (samples verified and reposited in the National Mycological Herbarium of Canada). One (*Tricholoma populinum*) had previously been erroneously suggested by Turner (1978) to be *Phaeolepiota aurea.* Another *(Pleurotus ostreatus*) had been tentatively identified from a sample collection by an Okanagan consultant as sulfur polypore (*Polyporus sulphureus*).Others identified recently are *Tricholoma magnivelare* and *Hygrophorus* sp. (Dr. Scott Redhead, pers. comm. 1987-90).

Three important edible mushroom species of the Interior Salish of British Columbia are described in detail; other mushrooms and fungi eaten traditionally are listed in Table 4-3.

Detailed Discussion of Major Species of Fungi Used as Food

Oyster Mushroom (*Pleurotus ostreatus*; including *P. sapidus*)

Description: Cap is fan-shaped to shell-shaped, elongated, or circular,

Table 4-3. Mushrooms and Other Fungi Eaten Traditionally by Indigenous Peoples of Canada (and Neighboring United States).

Species	Notes	Reference
Mushrooms, gen. (edible fungi)	Eaten by Iroquois	Parker, 1910; Raymond, 1945; Rousseau, 1945; Arnason et al., 1981
Mushrooms, gen.	Eaten by Chipewyan	Maries, 1984
Field mushroom (*Agaricus campestris*)	Eaten by Iroquois; eaten in historic times by Straits Salish	Waugh, 1916; Turner and Bell, 1971; Arnason et al., 1981
Giant puffball (*Calvatia gigantea;* syn. *Lycoperdon giganteum*)	Eaten by Iroquois, and apparently by Upriver Halkomelem	Waugh, 1916; Arnason et al., 1981; Galloway, 1982
Chanterelle	Cooked and eaten by	Turner et al.,

(*Cantarellus ?cibarius*)	Nlaka'pamux; fried or boiled; formerly sliced and dried; often cooked with fish	1990
Shelf fungus (*Ganoderma applanatum*)	Tanaina of Alaska chewed burned fungus with tobacco for flavoring; Athapaskans said to do this too; unidentified alder fungus cooked and eaten by Halkomelem of Fraser Valley	Galloway, 1982; Kari, 1987
"Slippery-top" (*flygrophorus gliocyclus*)	Eaten by Nlaka'pamux; Lillooet; used similarly to *Tricholoma populinum*	Turner et al., ununpubl. notes, 1987; Turner et al., 1990
Wood-rot fungus (*Inonotus obliquus;* syn. *Poria obliqua*)	Pieces of conk boiled for tea by Woods Cree of Saskatchewan	Leighton, 1985
Morel (*Morchella* spp.)	Eaten by Lillooet, Halkomelem, and Iroquois	Waugh, 1916; Arnason et al., 1981; Galloway, 1982; Turner et al., unpubl. notes, 1987
Oyster mushroom (*Pleurotus ostreatus*)	Eaten by Interior Salish (see detailed discussion)	
Bracket fungi (*Polyporus* spp. *P. sulphureus* and other species)	Eaten by Iroquois	Parker, 1910; Waugh, 1916
Jelly fungus (*Tremellodon* spp.)	Eaten raw by Straits Salish; possibly by Upriver Halkomelem	Turner and Bell, 1971; Galloway, 1982
?St.George's mushroom (*?Tricholoma gambosum*)	Called "thunderstorm-head" by Nlaka'pamux; formerly harvested in spring and cooked and eaten like *T. populinum* (ident. not confirmed)	Turner et al., 1990
Pine mushroom (*Tricholoma magnivelare*)	Eaten by Interior Salish (see detailed discussion)	
Cottonwood mushroom (*Tricholoma populinum*)	Eaten by Interior Salish (see detailed discussion)	

white to ashy to brownish, up to 20 cm (8 in.) across. The mushrooms areoftencrowded together in shelf-like layers. The tops are sometimes depressed, with incurved and sometimes lobed margins. Gills are white orgreyish, extending down the stem or stemlike portion of the cap. Flesh thick, whiteand soft when young, with mild taste and odor. Stem is very short orlacking; when present it is often offset from the center of the cap. It is stout,solid and similar in color to cap. Spore print lilac to whitish.

Occurrence: Usually in large clusters on stumps and trunks of dead deciduous trees such as alder or cottonwood. Common; occurring throughout the forested regions of Canada; May-October.

Food Use: The Interior Salish peoples of British Columbia, including the Okanagan, Nlaka'pamux, Lillooet, and Shuswap, formerly ate this mushroom. Some still use it. The usual method of cooking it was to boil it, then fry it. The Okanagan sometimes inserted pieces of the raw mushroom in holes cut in raw meat, then barbecued it, both tenderizing the mushroom and flavoring

the meat. Formerly, it was strung and dried, to be used later uncooked, lightly roasted, or boiled in soups and stews. Today people freeze or can it to preserve it.

This mushroom was identified on the basis of one sample collected in the Nicola Valley, and confirmed as the type eaten by the Nicola Nlaka'pamux people. Various names are used for this mushroom, ranging in meaning from "wood-mushroom" to "cottonwood-head" to "piling-up-in-frills-on-a-tree." It is known often to grow on decaying cottonwood stumps and logs.

References: Turner, 1978; Turner et al., 1980; Turner et al. unpubl. notes, 1987; Turner et al., 1990.

Pine Mushroom, or American Matsutake (*Tricholoma magnivelare;* syn. *Armillaria ponderosa*)

Description: Medium to large mushroom 10-15 cm (4-6 in.) high. Cap is up to 20 cm (8-in.) across, at first convex, becoming nearly flat when expanded; white to pinkish buff, becoming brownish; surface dry to slightly viscid, often with sand and conifer needles adhering to it. Cap margin in-rolled under a slightly persistent veil; usually lighter than the disk. Flesh is white and firm, with an agreeable, somewhat spicy odor and taste. Gills are whitish, becoming buff with age and bruising to brown, running down the stipe, or breaking free at maturity; close and about 1 cm broad. Stem is 2-4 cm (0.8-1.6 in.) thick and 10-15 cm (4-6 in.) long, same color as the cap, scaly, with a single, often upturned ring above the midpoint. Spore print white.

Occurrence: Common on the ground in sandy soil under coniferous trees (such as lodgepole pine, Douglas-fir, western hemlock, and western red-cedar), growing singly or in groups or clumps; often mostly hidden under a layer of needles and twigs, with only a small portion of cap exposed. October-December along the Pacific Coast from British Columbia to California. Also occurs in Ontario, Quebec, and the Maritimes, in the northeastern United State, and in Xlberta and the Northwest Territories; probably occurring across the boreal forest region of Canada in suitable sites.

Food Use: The coastwards groups of Nlaka'pamux and Lillooet Interior Salish, and the Upper Halkomelem of the Fraser Valley used to gather these mushrooms in large quantities. In both Lower Nlaka'pamux and Lower Lillooet dialects, the general name for "mushroom" is synonymous with the term for this species. The mushrooms were harvested, peeled (the cap must be scraped all over with a knife), cut into pieces, and used fresh, or preserved by stringing and drying or, more recently, canning or freezing. They are still gathered today in Coast Mountain regions and are sometimes given as gifts to people from other areas, such as around Lillooet and Merritt, where they do not grow. Care is taken in harvesting to gather only choice, firm specimens without maggots. One Nlaka'pamux woman noted that very young ones should be carefully re-covered with soil and left to mature; they can then be gathered two or three days later. Pine mushrooms are fried or cooked with meat in soups and stews. They were not eaten raw; one woman was warned that they would "cut your tongue" if eaten uncooked. They are called variously, "wood mushrooms," "Japanese mushrooms," or "mountain mushrooms."

Although the Northwest Coast peoples did not use these mushrooms traditionally, some, such as the Nuxalk of Bella Coola, now harvest them commercially for shipment to Japan, where they are highly prized as being virtually identical to the Japanese matsu-take, or red pine mushroom (*Tricholoma matsutake;* syn. *Armillaria matsutake*). Canadians and Americans of Japanese ancestry also gather large quantities of *T. magnivelare* in the Pacific coastal region of North America.

References: Zeller and Togashi, 1934; Turner, 1978; Galloway, 1982; Redhead, 1984; Turner et al. unpubl. notes, 1987; Turner et al., 1990.

Cottonwood Mushroom, or Poplar Tricholoma (*Tricholoma populinum; see* Figure 8, *page 46*)

Description: Medium-sized mushroom, with rounded to flattened cap 7-12 cm (2.8-4.7 in.) across, light brown on the margin to reddish brown towards the center of the disk. The cuticle is slightly viscid, easily peeled off for a third of the radius. Flesh white or pale yellowish, staining reddish, with a pleasant mealy odor. Gills notched near the stipe, or narrowly joined to the stipe, closely spaced, white, staining pale reddish brown. Stipe up to 2 cm (0.R in.) thick and 4-7 cm (1.6-2.8 in.) long, white but aging to reddish brown, slightly enlarged at the base. Spore print white.

Occurrence: Grows singly or in clusters, in sandy ground under poplars (*Populus* spp.), in September to October. Often completely hidden from sight by sand and leaves; detected only by mounds they produce when growing.Widespread in North America and Europe.

Food Use: Details of harvesting, traditional use, and nutrient content of this mushroom are reported in Turner et al. (1987). All four Interior Salish groups of British Columbia—Nlaka'pamux, Lillooet, Shuswap, and Okanagan—used to eat it, and many still do. The mushrooms are sought from sandy riverbanks and lakeshores under cottonwood (*Populus balsamifera*) after the first heavy autumn rains. They are checked for firmness, the stem bases cut off, and cleaned. Up to 1 kg or more can be gathered in a hour. In Preparation for cooking, the brown skin of the cap is peeled off, and sand is scraped off the stem and removed from the gills by hitting the top several times with the flat blade of a knife. The mushrooms are then washed. They

Figure 8. Cottonwood mushroom (*Tricholoma populinum*).

Figure 9. Spiny wood fern (*Dryopteris expansa*), showing frond and longitudinally cut rootstock.

can be eaten raw, but are usually cooked by frying the separated caps and cut-up stems until brown. Formerly the mushrooms were cut in pieces, strung and dried. They were reconstituted by soaking in water overnight, then cooked by frying or boiling in soups or stews. Today the mushrooms are canned or frozen after being lightly sauteed. They are still extremely popular in some Interior Salish communities.

WARNING: There are various kinds of poisonous mushrooms which resemble cottonwood mushroom, at least superficially, and some of these grow in the same type of habitat. Those wishing to eat cottonwood mushroom, or any other edible mushroom, should be absolutely positive of its identity before ingesting it. Additionally, elders warn that care should be taken not to disrupt the ground when collecting the mushrooms, since this might jeopardize their future growth.

References: Turner, 1978; Turner et al. unpubl. notes, 1987; Turner et al., 1987; Turner et al., 1990.

PTERIDOPHYTES (FERNS AND FERN-ALLIES)

Introduction to Ferns

Ferns and fern-allies are classed in a number of different families. A variety were used as foods, and several formed a major part of the diet of some groups. Table 4-4 lists the various species alphabetically by scientific name. Major food species are treated in detail under their family names.

Detailed Discussion of Major Species of Ferns and Fern-Allies Used as Food

Horsetail Family (Equisetaceae)

Giant Horsetail *(Equisetum telmateid)*

Description: Herbaceous perennial growing from deep, branching rhizomes. The stems are annual, jointed, hollow, except at the joints, and rough or scratchy to the touch. They are of two types: light-colored, non-branching fertile shoots about 20 cm (8 in.) high, which appear early in spring and die back as soon as the spores are produced; and green vegetative shoots up to 45 cm (18 in.) or more, with many slender branches borne in whorls from the nodes. The latter appear after the fertile shoots, and remain until fall. Leaves are reduced to papery sheaths surrounding each node.

Occurrence: Wet ground, ditches, seepage areas, and swampy edges along the Pacific coastal region.

Table 4-4. Ferns and Fern-Allies Eaten Traditionally by Indigenous Peoples of Canada (and Neighboring United States).

Species	Notes	References
Horsetail Family (Equisetaceae):		
Common horsetail (*Equisetum arvense*)	Spore-bearing and sterile shoots eaten by Northwest Coast peoples; roots and root nodules ground up and eaten with animal fat and berries or cooked in soups by Western Eskimo; young tubers eaten raw, plain or with grease, in spring by Tanaina of Alaska	Oswalt, 1957; Gunther, 1973; Turner, 1975; Kari, 1987
Branchless horsetail (*E. hiemale*)	Strobili eaten with salmon eggs by the Cowlitz; water sucked from hollow stems by Halkomelem, Gitksan, Ditidaht (Nitinaht) and other groups	Gunther, 1973; Galloway, 1982; 'Ksan, People of, 1980; Turner et al., 1983
Meadow horsetail (*E. pratense*)	Tubers eaten by Ojibwa, and by Alaska Eskimo; gathered from vole caches	Reagan, 1928 Jones, 1983

	and eaten raw with seal oil	
Giant horsetail (*Equisetum telmateia*)	Young shoots eaten in spring by Northwest Coast peoples (see detailed discussion)	
Club-moss Family (Lycopodiaceae):		
Shining club-moss (*Lycopodium lucidulum*)	Plant eaten by Ojibwa	Reagan, 1928; Yanovsky, 1936.
Club-moss (*Lycopodium selago*)	"Moss eaten" by Ojibwa; stems chewed as intoxicant by Alaskan Indigenous Peoples	Gorman, 1896; Reagan, 1928; Amason et al., 1981
Flowering Fern Family (Osmundaceae):		
Cinnamon fern (*Osmunda cinnamomea*)	Base of frond chewed by Iroquois; boiled fronds used by Menomini	Smith, 1923; Rousseau, 1945; Amason et al., 1981
Polypody Family (Polypodiaceae):		
Lady fern (*Athyrium filix-femina*)	"Bulbs" on roots eaten by Makah; shoots eaten by Clallam; rootstocks said to be roasted and eaten by Quileute, Quinault, and Tanaina (poss. mistaken for*Dryopteris*);fronds used for lining steaming pits by Diti-daht (Nitinaht) and others	Gunther, 1973; Turner et al., 1983; Kari, 1987
Deer fern (*Blechnum spicant*)	Fronds used for lining steaming pits, and shoots chewed to suppress hunger by Ditidaht and other Nuuchah-nulth groups	Densmore, 1939; Turner and Efrat, 1982; Turner et al., 1983
Spiny wood fern (*Dryopteris expansa* and related species)	Rootstocks eaten; usually after pit-cooking, by Northwest Coast and neighboring peoples (see detailed discussion)	
Ostrich fern (*Matteuccia struthiopteris*)	Fiddleheads eaten by Maritime peoples (see detailed discussion)	
Sensitive fern (*Onoclea sensibilis*)	Fiddleheads cooked as greens by Iroquois	Waugh, 1916
Licorice fern (*Polypodium vulgare*)	Rhizomes used as mouth sweetener and flavoring (see detailed discussion)	
Sword fern (*Polystichum munitum*)	Rootstocks dug in winter, cooked and eaten with grease or salmon eggs by	Anderson, 1925; Gunther, 1973; Turner, 1975;

	several Northwest Coast groups; regarded as "famine food"; fronds used as "place-mats" and to line steaming pits by Ditidaht (Nitinaht) and others	Galloway, 1982; Turner et al., 1983
Bracken fern (*Pteridium aquilinum*)	Rhizomes baked, pounded into "flour," by western Indigenous Peoples (POSSIBLY CARCINOGENIC AND TOXIC) (see detailed discussion)	

Food Use: The succulent shoots—both spore-bearing and vegetative— were eaten raw or boiled by almost all of the Coast Salish and Nuu-chah-nulth groups of Vancouver Island and the adjacent mainland, as well as by several Washington groups, including the Clallam, Makah, Quileute, and Quinault. Some, such as the Hesquiat (Nuu-chah-nulth) ate only the vegetative shoots, others only the fertile shoots. The Ditidaht (Nitinaht, a Nuu-chah-nulth group), Upriver Halkomelem, and some others also ate the spore-bearing strobili. To eat the shoots, the papery sheathing leaves and, on the vegetative shoots, the young branches, were peeled off, and the stem portion, especially the tender inside part on the lower part of the stalk, was eaten, usually with a dressing of seal oil or some other type of oil. Tough, fibrous portions were chewed and discarded. The Hesquiat, who took special trips to gather the shoots, used to collect as much as 20 kg (40-50 lb.) at a time, and eat them at a special feast. Additionally, small "bulbs" attached to the root-stock were eaten cooked, or occasionally raw, by some groups, including the Clallam, Makah, Cowlitz, and Lower Chinook. The hollow stems of this species and others frequently contain water, and this was believed to be safe for drinking even when nearby water was contaminated.

WARNING: Horsetails are known to be toxic to livestock, and contain thiaminase, an enzyme that destroys thiamine and hence can cause thiamine deficiency. They also contain silicates, especially in the cells of mature plants, making them "scratchy" to the touch, and too tough to eat except in their young stage. However, there is no evidence that giant horsetail caused any problems for Indigenous People in the quantities used and at its young growth stage when normally eaten.

References: Anderson, 1925; Gunther, 1973; Turner, 1975; Galloway, 1982; Turner and Efrat, 1982; Turner etal., 1983; Cooper and Johnson, 1984.

Polypody Family (Polypodiaceae)

Spiny Wood Fern (*Dryopteris expansa* and related species; syn.*D. austriaca, D. assimilis, D. spinulosa, D. dilatata;* also incl.*D. carthusiana; see Figure 9, page 46)*

Description: A variable, complex group of species (cf. Turner et al., 1991). Perennial fern with deciduous fronds growing in a clump from a stout, ascending rootstock. Fronds, Up to 1 m (3 ft) tall, have long stipes, with blades broadly triangular to oval or oblong in outline, 3 times divided, with the basal pinnae broadly triangular and inequilateral, the upper ones lanceolate. Ultimate divisions serrate. The spore-bearing structures, or sori, are rounded and borne on the underside of some fronds.

Occurrence: Common and widespread fern of damp woods, thickets, and swamps, often on rotten stumps and logs; from southern Alaska east to Newfoundland, extending south to California on the Pacific and North Carolina on the Atlantic.

Food Use: There is probably more confusion about the identity of the edible fern rootstock of this and related species than about any other traditional food plant in Western Canada. Many reports have been published concerning the edibility of certain ferns by Pacific Coast Indigenous Peoples, but the identity is often doubtful. Part of the problem is that fern rootstocks are seldom used as food at present, and few elders can recognize those used traditionally or distinguish them from those that

were not used. Edible fern rootstocks, all having more-or-less similar descriptions and methods of gathering and preparation, have been described and identified as *Dryopteris* species (Gorman, 1896—"*Aspidium spinulosum* var. *dilatatum*"; Oswalt, 1957; Turner, 1973, 1975; Heller, 1976; Lepofsky et al., 1985; Kari, 1987). In other cases (cf. 'Ksan, People of, 1980; Norton, 1981) the edible fern has been incorrectly placed in different genera. *Dryopteris filix-mas* (Turner, 1973), *Polystichum munitum* (Turner, 1975) and *Athyrium filix-femina* (Kari, 1987) have also been suggested as having edible rootstocks used by Indigenous Peoples of the Pacific Coast, but evidence suggests that the predominant edible fern rootstocks were of *Dryopteris expansa* (Turner et al., 1991.).

Many descriptions exist of the edible fern and its use. The rootstocks have been variously described as "like 2 hands clasped together" (Norton, 1981), or "like a woody sweet potato" ('Ksan, People of, 1980), or like a bunch of fingers or bananas in a cluster. They were usually dug in spring or fall, and could even be dug out from under the snow in mid-winter. They were baked whole in underground pits, then the "fingers" (fleshy basal stocks of previous years' fronds) were broken off, peeled and eaten, often with animal or fish fat or oil. They are said to resemble sweet potato in texture and taste.

Edible fern rootstocks described as above were used by virtually all Northwest Coast Indigenous Peoples of British Columbia, as well as by the Lower Nlaka'pamux, Lower Lillooet, Nishga, Gitksan, Wet'suwet'en, Carrier, and Chilcotin, and by the southwest Alaskan and western Washington groups. The Kaigani Haida are said to boil and eat the "fiddleheads" (of *"Thelypteris";* based on identification of a specimen later confirmed as *Athyrium filix-femina)* as a vegetable at present. Even some Eskimo peoples, of Bristol Bay and Lower Kuskokwim, Alaska, used the rootstocks (Heller, 1976). Oswalt (1957) notes that the rootstocks were occasionally collected, boiled in water, and added to agutuk, or "Eskimo ice cream." Furthermore, Heller notes that the young shoots, or "fiddlenecks" of *"D. austriaca"* are collected, cooked, and eaten, and even canned for winter use by many Southeast Alaskans. Kari (1987) reports that the "fiddleheads" of several types of ferns were eaten by the Tanaina. Furthermore, the Tanaina in historic times made a type of beer by boiling the edible rootstocks of *Dryopteris* (called *"uh")* and fermenting them with hops, sugar, mashed potato or cornmeal, and yeast. Kari (1987) suggests that this practice was learned from Russians who first "settled" the area.

References: Gorman, 1896; Gunther, 1973; Turner, 1973, 1975; Heller, 1976; 'Ksan, People of, 1980; Norton, 1981; Jacobs and Jacobs, 1982; Kari, 1987; Turner et al., 1991.

Ostrich Fern *(Matteuccia struthiopteris)*

Description: Large perennial with fronds up to 2 m (6.5 ft) tall growing in a circular arrangement from a stout, erect rootstock. Plant is dimorphic, with sterile photosynthetic fronds produced early in spring, followed 1-2 months later by spore-producing, nonphotosynthetic fronds on some of the plants. The sterile fronds have short, scaly stipes and are divided into many long, spreading, deeply lobed, pointed pinnae. The fertile fronds grow stiffly erect within the circle of sterile fronds and are much shorter.

Occurrence: Widespread in temperate latitudes of North America and Eurasia. North American variety sometimes designated var. *pensylvanica.* In Canada, this fern is found in all provinces and territories. Common in shady habitats on or near river flood plains, with high soil moisture and nutrient content; predominant on, but not restricted to calcareous soils.

Food Use: The young vegetative shoots, or "fiddleheads," and sometimes the entire crown, were traditionally eaten, boiled or roasted, as a spring vegetable by the Malecite People of the Penobscot and Saint John River valleys of Maine and New Brunswick, and by the Micmac, Abenaki, Passamoquoddy, and Penobscot. Later, some Indigenous People sold them as spring greens to neighboring settlers, and during the 1880s the Malecite from St. Mary's received as much as 75 cents a peck in the markets of the Fredericton area. Since the United Empire Loyalists first settled in the region, "fiddleheads" have gained in popularity in the entire region. They are cooked and eaten

like asparagus, and today many people freeze them for winter use. Freezing techniques and air shipping have made them a specialty food available worldwide.

NOTE: By the early 1980s, the annual commercial harvest of "fiddlesticks," obtained almost entirely from the wild, was estimated at 225,000 kg. To prevent stress on wild populations, there is a need to domesticate and cultivate this fern. Research on its growth requirements, with a view towards better management of natural stands and eventual field cultivation, is ongoing (Prange, 1980; Von Aderkas, 1984).

References: Speck and Dexter, 1952; Medsger, 1974; Prange, 1980; Stoddard, 1962; Von Aderkas, 1984.

Licorice Fern, or Polypody Fern *(Polypodium vulgare* var. *occidentale;* syn. *P. glycyrrhiza)*

Description: Small fern, usually 20-30 cm (8-12 in.) high, growing from shallow, yellowish-green perennial rhizomes which are scaly at the growing tips, bear black rhizoids, and have a strong licorice flavor. The coarse, light-green fronds are borne singly; they often die back in dry summer conditions. Pinnae are generally in 10-20 offset paris, toothed, pointed, and more or less equal in length, except at the tip, where they diminish to form a point. Sori are round, orange, lacking indusia, occurring in two rows along the backs of the pinnae, especially near the top of the fronds. *Polypodium vulgare* is a variable species, sometimes split into several distinct species. The Pacific coast variety, sometimes called *P. glycyrrhiza,* is apparently the only one eaten to any extent.

Occurrence: Mossy rocks, tree trunks, and talus slopes from British Columbia to southwestern Alberta, north to Alaska and the Yukon, and south to Baja California and New Mexico.

Food Use: The rhizomes have a strong licorice flavor due to the presence of a compound, polypodoside A, which was evaluated in one study as being 600 times sweeter than sugar (Kim et al., 1988). The rhizomes were chewed as an appetite stimulant and mouth sweetener by most Northwest Coast groups, including Straits, Halkomelem, Squamish, Comox, Nuxalk, Haida, and the Nuu-chah-nulth, or Nootkan groups. They were especially appreciated by children, hunters, and wanderers, and were known to make water taste sweet if chewed just before drinking it. They were sometimes used to flavor other foods; the Mainland Comox used them to sweeten Labrador-tea leaves. They were seldom eaten in any quantity. A reference to their more extensive use by the Kwakwaka'wakw (Southern Kwakiutl) (Boas, 1921; cited in Turner and Bell, 1973) in fact relates to the use of spiny wood fern rootstocks (see previous species).

The rhizomes were widely used as a medicine for colds and sore throats, and were sometimes made into a "cough syrup" or used to sweeten other medicines (Turner and Hebda, 1990).

References: Boas, 1921; Gunther, 1973; Turner, 1975; Galloway, 1982; Turner and Efrat, 1982; Turner et al., 1983; Kim et al., 1988; Turner and Hebda, 1990.

Bracken Fern *(Pteridium aquilinum)*

(Sometimes placed in a separate family; Hay-Scented Fern Family, Dennstaedtiaceae)

Description: Large, common fern with deciduous fronds, usually 1-2 m (3-6.5 ft) high, growing from long, black, branching horizontal rhizomes. The young shoots, or fiddleheads, are brownish and scaley, rolled tightly inwards from the tip, and bent over at the top. The mature frond stalks are tall, stiff, and light-brown, and the blades are coarse, broadly triangular, and usually 3 times divided. The leaflet margins are inrolled, and spores, when present, are borne along the undersides of the margins.

Occurrence: Widespread throughout much of the world; many varieties recognized, including a number in North America. Bracken grows in open fields, meadows, and woods, often abundantly.

Food Use: The major traditional food use of bracken is the carbohydrate-rich rhizomes, which were dug and eaten by virtually all coastal groups, and several interior groups (Nlaka'pamux, Lillooet, Carrier) of British Columbia, as well as by the Malecite of New Brunswick and Maine. The rhizomes were dug in late fall or winter by most groups, but in summer by some (e.g., Nuxalk). They were usually roasted over the coals of a fire, then pounded to remove the black "bark" and to separate out the tough, central fibers, which were not eaten. The white, starchy part was often eaten with oil, animal or fish grease, or salmon eggs. The Nuu-chah-nulth groups and the Haida often roasted the rhizomes in underground pits. The Straits Salish, Lillooet, Nlaka'pamux, and several western Washington groups made a type of bread by pounding the edible part of the roasted rhizomes into flour, mixing this with water, and forming the resulting dough into flat cakes, which were then roasted. This may have been a recent practice, but Norton (1980) presents considerable evidence to show that it is a long-standing procedure on the Northwest Coast. Some groups ate the rhizomes only when fresh; others dried them after cooking. Bracken patches were sometimes "owned" by families or individuals and passed through inheritance from generation to generation.

There were some taboos associated with bracken. Among the Kwakwaka'wakw, it was believed that only old women should dig the rhizomes; it would make young women sick. The Lillooet believed that if the central fibers were eaten, they would cause paralysis. Among the Halkomelem, there is a story about a man who dug the rhizomes too late in the season (i.e., in summer) and his body became infested with snakes. Other groups, such as the Clallam of Washington and the Nuxalk, also relate bracken rhizomes to snakes in their traditional beliefs.

The young shoots or fiddleheads feature prominently in Japanese cuisine, but apparently were not eaten traditionally by most of the Indigenous Peoples using the rhizomes. However, the young sprouts were cooked in soup by Ojibwa and have been eaten, at least in recent times, by Sechelt, Halkomelem, Nuu-chah-nulth, and Nlaka'pamux.

WARNING: The bracken plant is known to contain several poisonous compounds, including a cyanide-producing glycoside (prunasin), an enzyme, thiaminase, that reduces the body's thiamine reserves, and at least two potent carcinogens, quercetin and kaempferol. Another, unidentified toxin is believed to be a naturally occurring, radiation-mimicking substance, also apparently mutagenic and carcinogenic. Bracken has caused many livestock deaths. The risks to humans of eating bracken fiddleheads and rhizomes have not been fully established, but their safety is questionable.

References: Smith, 1932; Speck and Dexter, 1952; Gunther, 1973; Turner, 1975, 1978; Norton, 1980; Galloway, 1982; Cooper and Johnson, 1984; Turner and Szczawinski, 1991; Turner et al., 1990.

CONIFERS AND OTHER GYMNOSPERMS (GYMNOSPERMAE)

Cupressaceae

Common Juniper *(Juniperus communis)*

Description: Branched, usually prostrate shrub with stiff, sharp, needlelike leaves 7-12 mm (0.3-0.5 in.) long; male and female "cones" produced on separate plants; berry-like female "cones" take two seasons to mature and are hard and pungent, usually covered with a whitish, waxy coating giving them a grayish cast.

Occurrence: Dry, rocky soil, pastures, fields, meadows, and open woods from near sea level to subalpine or alpine areas; widespread in Canada, from the Arctic southwards, extending to the southern United States.

Food Use: The fleshy, berry-like fruits were eaten at any time of the year by Fisherman Lake Slave of the Northwest Territories, and were also used by them for making "brew" in historic times. The fruits were boiled, sugar and yeast was added, and the mixture was allowed to ferment three days before being drunk (Lamont, 1977). This practice may have been introduced by French traders,

since in France the fruits are fermented with barley to make a beer. The fruits were considered to be inedible by some peoples, such as the Chipewyan of northern Saskatchewan (Marles, 1984).

The boughs, with or without the fruits, were used to make a beverage tea by some groups, such as the Nlaka'pamux (Thompson) and Lillooet of British Columbia, and the Micmac of the Maritimes ["Juniper *Juniperus* sp.)"] (Turner et al, 1990, Wallis and Wallis, 1955; Lacey, 1977). The Nlaka'pamux and others also considered the tea to have medicinal qualities and used it to treat a variety of ailments (cf. Jones, 1983; Turner et al., 1990). The James Bay Cree were said to eat juniper "buds" in early summer, but no more than three or four a day (Honigmann, 1961).

Food Use of Related Species: The berry-like "cones" of Rocky Mountain juniper *(J. scopulorum)* are pitchy and strong-tasting, but were eaten in small quantities by the Lillooet of British Columbia, and possibly some other groups. The Lillooet believed that chewing a few fruits or a small piece of the bark would alleviate hunger for travellers. The branches, like those of the common juniper, were boiled to make a tea, but this was usually used more as a medicine than a beverage (Turner, 1978). Juniper fruit is well known in North America and Europe as a flavoring for gin and beer and as a culinary spice for beef and game. Two other juniper species occur in Canada: creeping juniper *(J. horizontalis)* and eastern juniper *(J. virginiana).* Their berries and boughs can also be used for tea (Turner and Szczawinski, 1978).

The leaves of arbor vitae, or white-cedar *(Thuja occidentalis)* were used for tea by the Ojibwa (Gilmore, 1933), and probably other Indigenous Peoples of eastern North America. It was this species that is credited with having saved French explorer Jacques Cartier and his men from an almost certain death from scurvy (vitamin C deficiency), when they were overwintering in 1535 in the ice-bound St. Lawrence River near the present site of Montreal. Twenty-five men had been lost to the disease, and other crew members severely weakened, when a group of local Indians brought the boughs of this tree to them and showed them how to prepare a tea by boiling the bark and foliage together. Within six days, their recovery was underway, and a grateful Cartier named the tree *Arbre de vie* ("tree of life") (cf. Turner and Szczawinski, 1978). According to Blankinship (1905), the Blackfoot ate the inner bark of western red-cedar *(Thuja plicata)* fresh or pressed into cakes, but this use is not widely reported; possibly another conifer was meant.

WARNING: Junipers are known to have diuretic properties, and juniper tea should be used only in moderation; it should not be drunk by pregnant women because it may cause uterine contractions (Tyler, 1987). The junipers had many medicinal uses among Indigenous Peoples of Canada. Red-cedar and white-cedar contain thujone, a compound that in high concentrations may cause convulsions and other disturbances.

Pine Family (Pinaceae)

True Firs *(Abies* spp.)

Description: There are four species of true fir in Canada: balsam fir, or Canada balsam *(Abies balsamea),* grand fir *(A. grandis),* subalpine fir *(A. lasiocarpa),* and Pacific silver fir *(A. amabilis).* All are erect, needle-bearing trees with flattened, solitary, stalkless leaves, and upright cones with deciduous scales. The young bark often produces conspicuous pitch blisters, containing strong-smelling liquid oleoresins. The true firs are attractive, often spire-shaped trees, and the boughs have a pleasant, spicy fragrance.

Occurrence: True firs are found in Canada in forests from sea level to subalpine elevations. Balsam fir occurs from Alberta to Labrador, Newfoundland and Nova Scotia; grand fir and amabilis fir are restricted to southern British Columbia, and subalpine fir to the mountains of British Columbia and southwestern Alberta. All four species extend into the United States: grand fir and amabilis fir south to California, balsam fir to Ohio and Virginia, and subalpine fir to Arizona and New Mexico.

Food Use: The inner bark of balsam fir was grated and eaten by the Montagnais of Quebec (Speck, 1917). The Micmac of the Maritimes used the bark to make a beverage and medicinal tea

(Speck and Dexter, 1951; Lacey, 1977). The Nlaka'pamux of British Columbia made a beverage tea from the branch tips of grand fir, and reportedly ate the inner bark (Steedman, 1930; Turner et al., 1990). Also in B.C., the Ditidaht (Nitinaht) chewed the sweet, hardened pitch of this species and possibly also amabilis fir as gum (Turner et al., 1983), and the Upriver Halkomelem apparently ate the sweet sap or "bark" of subalpine ("balsam") fir (Galloway, 1982). The Blackfoot of Alberta mixed wild animal marrow and back-fat with pulverized fragments of subalpine fir cones left by squirrels and chipmunks, then served this mixture as a confection and digestive aid (Hellson and Gadd, 1974).

Western Larch *(Larix occidentalis)*

Description: A tall forest tree, up to 70 m (230 ft) high, with flaky, brownish bark and long, straight trunks. The needle-like leaves are pale green, 2.5-4.5 cm (1-1.8 in.) long, and borne in dense clusters of 15 to 30. The needles, unlike those of most conifers, are deciduous, turning golden yellow in fall and dropping. The pollen cones are small and yellowish, the seed cones up to 4 cm (1.6 in.) long, at first purplish-red, later reddish-brown.

Occurrence: Found in well-drained soils to somewhat swampy ground, usually in mixed stands, at mid-altitudes from southern British Columbia to southwestern Alberta, south in the United States to Oregon, Idaho and Montana.

Food Use: This tree (and probably other *Larix* species also) exudes a sweet-tasting gum which hardens when exposed to air. This was chewed for pleasure by the Nlaka'pamux, Okanagan-Colville, and Kootenay of British Columbia, the Blackfoot of Alberta, and probably other groups within the range of the tree (Hellson and Gadd, 1974; Turner, 1978; Turner et al., 1980; Turner et al., 1990). Additionally, the inner bark (cambium and secondary phloem) was reportedly eaten by some peoples, including the Nlaka'pamux, Kootenay, Flathead, and Blackfoot (Hellson and Gadd, 1974; Hart, 1976; Turner, 1978; Turner et al., 1990). The Flathead of Montana and the Kootenay people of southeastern British Columbia and Montana reportedly harvested a sweet sap from hollowed-out cavities of certain individual larch trees. Natural, or man-made cavities in larch trunks were left for half a year or longer, allowing several litres of the liquid sap to accumulate and concentrate. This was then removed and drunk as a sweet beverage, or, at least in recent times, evaporated like maple syrup, then used like honey as a sweetener. Sometimes extra sugar was added. Some trees were said to produce sweeter sap than others; too much was said to be cathartic (Hart, 1976; Turner, 1978).

Food Use of Related Species: The James Bay Cree were said to scrape off the sweet-tasting sap of tamarack *(Larix laricina)* in the early summer and eat it. They also sometimes dug up, peeled and ate the roots of large tamarack trees in summer, but as of the 1940s these foods were little used (Honigmann, 1961).

Sitka Spruce *(Picea sitchensis),* White Spruce *(P. glauca),* and related species (*Picea* spp.)

Description: The spruces are tall, straight forest trees with dense, narrow crowns, and branches often extending to the ground. The bark is scaly, and grayish. The needles are single, stiff, sharply pointed, usually 4-angled, and mostly under 2.5 cm (1 in.) long. The seed cones are cylindrical, with thin, sometimes papery scales; in Sitka spruce they grow up to 10 cm (4 in.) long, with wavy or scalloped scales, and in white spruce they grow up to about 5 cm (2 in.) long, with entire scales.

Occurrence: Sitka spruce occurs in the wet coastal forests of British Columbia; white spruce is found in the boreal-forest region across Canada from the B.C. interior to Newfoundland, extending southwards to the northern United States. Of the three other native spruces, Engelmann spruce *(P. engelmannii)* occurs in the British Columbia interior, red spruce *(P. rubens)* in the Maritimes, and black spruce *(P. mariana)* is transcontinental.

Food Use: Sitka spruce gum, or oleoresin, was chewed for pleasure by Indigenous Peoples of the Pacific Coast, including Upriver Halkomelem, Haida, and Kwakwaka'wakw (Southern Kwakiutl)

of British Columbia, the Makah and Quinault of Washington, and the Kaigani Haida of Alaska. It was sometimes hardened first in cold water (Gunther, 1973; Norton, 1981; Galloway, 1982; Turner, 1975). Several coastal groups, including the Haida and Coast Tsimshian of British Columbia, and the Tlingit and Tanaina of Alaska, used to scrape off the inner bark, usually in late spring, and eat it fresh or dried in cakes for winter. It was often mixed with berries such as highbush cranberries *(Viburnum edule)* before serving. The Haida reportedly learned about this food relatively recently from the Tsimshian; some Tsimshian still use it today. The Nuxalk of Bella Coola ate it in summer, but mainly as a laxative. The Makah used to eat the young shoots of Sitka spruce raw, and the Nuu-chah-nulth (Nootka) of Vancouver Island sometimes tied the branches on submerged fences to collect herring spawn, although they did not eat the needles with the spawn (Gunther, 1973; Turner, 1973, 1975; Turner et al., 1983; Kari, 1987).

White spruce gum was chewed by the Algonquin of Quebec, the Chipewyan of northern Saskatchewan, the Woods Cree of east-central Saskatchewan, the James Bay Cree; the Fisherman Lake Slave (*"Picea* spp."), the Vanta Kutchin of the Yukon *("Picea"),* the Tanaina of Alaska, and the Kaska and Chilcotin of British Columbia, among others. It was said to keep the teeth of Chipewyan women very white (Honigmann, 1949—"red spruce," 1961; Leechman, 1954; Lamont, 1977; Black, 1980; Maries, 1984; Leighton, 1985; Kari, 1987; Myers et al. unpubl. notes, 1988), and was a favorite chewing substance, especially among children. Leechman (1954) notes that, before chewing gum was introduced, spruce gum was to be found in every Vanta Kutchin house, and that the gum exuding from the cones was used. Trees that are scarred from recent burning are said to yield the best chewing pitch (Myers et al. unpubl. notes, 1988). The gum was also chewed for pleasure by the western and northern Eskimo peoples of Alaska, but reportedly should not be used by pregnant women. The needles were chewed raw or boiled to make tea for coughs by the Alaskan Eskimo (Oswalt, 1957; Anderson, 1939). The Vanta Kutchin of the Yukon formerly made spruce beer from the buds of *"Picea"* and drank this for tuberculosis (Leechman, 1954). The bark was used to make a beverage and medicinal tea by the Micmac of the Maritimes (Speck and Dexter, 1951; Wallis and Wallis, 1955; Stoddard, 1962; Lacey, 1977), and the twigs were used for tea by the Montagnais of Quebec (Speck, 1917). The Tanaina of Alaska scraped the "sap" off the wood after the bark is removed in early June and ate this tissue fresh, as well as using it medicinally. They ate the inner bark of white spruce, as well as Sitka and black spruces, at any time of the year as an emergency food (Kari, 1987). The Chilcotin also formerly gathered the inner bark and ate it fresh or dried it for winter (Myers et al. unpubl. notes, 1988). The James Bay Cree also scraped the sweet-tasting "sap" from spruce in early summer and ate it (Honigmann, 1961).

Food Use of Related Species: The inner bark (cambium and secondary phloem) of Engelmann spruce was occasionally eaten by the Nlaka'pamux and Chilcotin of British Columbia (Myers et al. unpubl. notes, 1988; Turner et al., 1990), and the pitch of this species was chewed for pleasure by the Chilcotin and other peoples. The bark of black spruce was used to make a beverage or medicinal tea by the Micmac of the Maritimes (Speck and Dexter, 1951; Wallis and Wallis, 1955; Lacey, 1977), and the fresh or dried leaves of red spruce were used similarly by the Ojibwa of the Great Lakes region (Densmore, 1928). The pitch of black spruce was formerly chewed as a confection by some Chipewyan people of northern Saskatchewan, and was said to keep the teeth of the women white (Maries, 1984). It was also chewed for pleasure by the Woods Cree of east-central Saskatchewan, the Tanaina of Alaska and the Gitksan of northern British Columbia; some people used to sell it from places where it was abundant ('Ksan, People of, 1980; Leighton, 1985; Kari, 1987). Spruce was a preferred species of French Canadians for making "small beer" (Rousseau and Raymond, 1945).

White-bark Pine *(Pinus albicaulis; see figure 10, page 62)*

Description: A small to medium-sized, often gnarled, tree or sprawling shrub seldom over 9 m (30 ft) high, with thin, light-gray bark and yellow-green leaves up to 8 cm (3 in.) long, in clusters of five. The seed cones are oval, up to 8 cm (3 in.) long, deep red, purplish, to gray. They tend to remain closed, shedding seeds slowly, and seldom falling from the tree intact. The seeds are large (8-12 mm, or 0.3-0.4 in. long), brown, and wingless, containing a large, ovoid kernel.

Occurrence: This tree is found in subalpine forests up to the tree line, on ridge-tops and exposed rocky slopes, in the mountains of central and southern British Columbia and western Alberta, south as far as California and Nevada. Rarely found below 1200 m (4000 ft).

Food Use: The Blackfoot of Alberta, the Shuswap of British Columbia, and the Flathead of Montana were said to eat the inner bark, or cambium (Hart, 1974; Palmer, 1975; Turner, 1978; Johnston, 1987). The large seeds were eaten by the Interior peoples of British Columbia—Lillooet, Nlaka'pamux, Shuswap, Okanagan-Colville, Chilcotin and Kootenay—just as the seeds of the pinyon pines were eaten by the peoples of the southwestern United States. The seeds were gathered in the late summer and fall from local mountain ridges, and were regarded as a special treat, "like peanuts."

The cones were picked intact, by people climbing the trees, or the seeds were obtained by shaking the branches until the cones fell apart and seeds and scales dropped. Intact cones were dried slightly by spreading them out in the sun, or were roasted in the coals of a fire or overnight in cooking pits, then pounded until they broke apart and the seeds could be extracted. Sometimes a cache of seeds previously gathered by squirrels or voles was located; this was considered a lucky find. The seeds were occasionally eaten fresh and raw. Preferably, they were roasted, then stored in bags or underground caches for winter use. Sometimes they were crushed and combined with dried Saskatoon berries or some other fruit, or were parched, pounded to a fine flour with a mortar and pestle, then mixed with water or sometimes animal fat to form a mush. Some people maintain they will cause constipation if they are not eaten with animal fat or oil. The seeds were a common trading item. For example, the Lower Nlaka'pamux often obtained them from the Upper Nlaka'pamux in exchange for hazelnuts (Turner, 1978; Turner et al., 1980; Myers et al unpubl. notes, 1988; Turner, 1988; Turner et al., 1990). The boughs of this pine are said to have been used by Chilcotin people to line root-cooking pits, and the inner bark was apparently formerly eaten (Myers et al. unpubl. notes 1988).

Food Use of Related Species: see under lodgepole pine *(Pinus contorta)* and ponderosa pine *(Pinus ponderosa).*

Lodgepole Pine, or Shore Pine *(Pinus contorta; see Figure 11, page 62)*

Description: A small to medium-sized tree, usually 30 m (100 ft) tall, with thin limbs often confined to the top third of the tree when it is growing in a dense stand. There are two phases of this species: shore pine (commonly distinguished as var. *contorta*) a smaller tree, of more scrubby growth, usually with twisted, much forked branches; and lodgepole pine (var. *latifolia*), with taller, straight, relatively slender trunk. Both phases have thin, scaly, reddish brown to grayish brown bark, needles in pairs, usually less than 7 cm (2.8 in.) long, and cones up to 5 cm (2 in.) long, which remain closed for many years, sometimes opening only after a fire. The thick cone scales are often spiny tipped.

Occurrence: There are nine species of pine native to various parts of Canada. Lodgepole pine occurs in western Canada, from British Columbia to southwest Saskatchewan, and southwards to Baja California, Colorado, Utah and South Dakota. Jack pine, or scrub pine (*Pinus banksiana*) occurs across Canada in the northern forests; western white pine (*Pinus monticola*) is found in southern British Columbia and southwest Alberta; and eastern white pine *(Pinus strobus)* from southeast Manitoba to the Maritimes.

Figure 10. Seeds and cones of white-bark pine *(Pinus albicaulis).*

Figure 11. The late Sam Mitchell, a Fraser River Lillooet elder from Fountain, demonstrating the harvesting of inner bark from lodgepole pine *(Pinus contorta).*

Food Use: The pitch was chewed for pleasure by the Blackfoot of Alberta and the Flathead of Montana (Hellson and Gadd, 1974; Hart, 1976), and probably other groups as well. The Flathead also ate the seeds (Hart, 1976). The Stoney (Assiniboin) of Alberta ate the soft white center of the cone, and made a refreshing drink from scrapings of the bark (Scott-Brown, 1977). The Nlaka'pamux of British Columbia ate the young shoots of the branches when at the bud stage; these were said to be very sweet. The Nlaka'pamux also made a tea by boiling the needles of this pine (Turner et al., 1990).

The most important food derived from lodgepole pine, however, was the inner bark, including cambium and secondary phloem tissues, which was an almost universal food of the Interior peoples of British Columbia and neighboring groups. Peoples who used it included: the Tahltan, Beaver, Carrier, Chilcotin, and other Athapaskan groups; Gitksan, Coast Tsimshian, Shuswap, Nlaka'pamux, Lillooet, Okanagan-Colville, Kootenay, and the Flathead of Montana (Gorman, 1896; Palmer, 1975; Hart, 1979; Turner, 1978; 'Ksan, People of, 1980; Turner et al., 1980; Myers et al. unpubl. notes, 1988; Turner et al., 1990). The edible tissue is said to be at its prime for harvesting only for a very limited time in spring, the exact interval being determined by elevation and local weather conditions. It was and is usually obtained in late May or early June, when the sap is running and the cambium and surrounding tissues are thick and juicy. This is about the time when the new

needles are expanding and the pollen cones in full production. Sometimes local testing is required to determine whether the harvesting time is right.

For harvesting, the bark is removed and the ripe cambium tissues scraped off the exposed wood in long, fleshy ribbons 2-3 cm (about 1 in.) wide and up to 60 cm (2 ft) or more long. Special prying implements were used to remove the bark and scrapers, traditionally made of caribou antler, deer ulna or rib, or shoulder blade of deer or bear, were used to harvest the edible tissue. More recently, a sharp knife, or a tool cut from the curved side of a tin can, has been used as a scraper. A basket or container placed at the bottom of the tree is often used to "catch" the edible ribbons, or "pine noodles" as they fall. Sometimes, if it were later in the season, the edible portion is scraped from the inside of the bark after it had been removed. Usually only a rectangular portion of the bark 1 to 2 m (about 3 to 6 ft) from the ground is removed, and the tree will continue to grow, the scar gradually growing over. There are many, many examples of such "culturally modified" trees in the interior of British Columbia, although recently, the practice of harvesting inner bark has been discouraged by Forestry management officials, and few Indigenous People still use this food.

The edible tissue was usually eaten fresh, as it was gathered, or shortly afterwards. When freshly harvested, it is sweet, juicy, and somewhat resinous, but when left it is said to discolor quickly and "go sour." Sometimes, however, it was dried for winter, when it would be soaked in water before use. Some people like to add sugar to this food, making it even sweeter. The Gitksan name for it translates as "tree fat" ('Ksan, People of, 1980).

Bears are said to relish the inner bark of lodgepole pine, and sometimes one can see where they have scratched off the bark to get it.

Food Use of Related Species: The Chipewyan of northern Saskatchewan and the Woods Cree of east-central Saskatchewan sometimes ate the fresh inner bark of jack pine *(P. banksiana)* (Maries, 1984; Leighton, 1985). The gum of western white pine *(P. monticola)* was sometimes chewed for pleasure by the Nlaka'pamux of British Columbia (Turner et al., 1990), and the inner bark was said to have been eaten by Carrier people (Harlan Smith unpubl. notes on Carrier, ca. 1920-22, National Museum of Civilization). The shoots of eastern white pine *(P. strobus)* were eaten raw by Iroquois (Waugh, 1916), and the young staminate cones of this species were stewed with meat by the Ojibwa of Ontario (Smith, 1932). The inner bark was grated and eaten by Micmac of the Maritimes, both as food and medicine (Speck and Dexter, 1951; Wallis and Wallis, 1955; Lacey, 1977). [See also white-bark pine *(P. albicaulis)* and ponderosa pine *(P. ponderosa).]*

Ponderosa Pine, or Yellow Pine *(Pinus ponderosa)*

Description: Medium to large forest tree, up to 30 m (100 ft) or more high, with thick, reddish, flaky bark and long needles, often over 25 cm (10 in.), in clusters of three. The seed cones are broadly ovoid, up to 15 cm (6 in.) long, reddish purple when young and brown at maturity. When ripe, after two years, the prickle-tipped scales open to release prominently winged seeds 6-7 mm (about 0.2-0.3 in.) long.

Occurrence: This pine grows in open stands in well drained valleys and slopes of the drier part of the southern interior of British Columbia, extending south to Baja California and Texas.

Food Use: The inner bark (cambium and secondary phloem tissues) was harvested in spring and eaten in the same manner as lodgepole pine cambium by several groups of the British Columbia Interior, including Nlaka'pamux, southern Shuswap, Okanagan-Colville, and Kootenay. It was also used by the Blackfoot (of Montana, since the tree apparently does not grow in Alberta), according to Johnston (1987), and by the Kootenay, Flathead and other groups of Montana (Hart, 1976). The Flathead were said to have used it even more than lodgepole pine inner bark. The best tissue is said to come from young trees, before they have produced cones, and the food could also be harvested from the twigs and branches of older trees. The tree would be tested first to make sure the sap was sweet, then the bark was removed with a special tool. The edible tissue was scraped from the wood or the inside of the bark pieces. It was usually ready two or three weeks before

lodgepole pine inner bark. It was eaten fresh, or stored briefly, and was sometimes roasted and dried for winter (Hart, 1976; Turner, 1978; Turner et al., 1980; Turner et al., 1990).

The seeds, although smaller than those of white-bark pine, were eaten in a similar manner by the groups listed previously, as well as by the Lillooet. They were gathered, in summer and fall, either after they had fallen from the cones, or from intact cones cut down by squirrels. The squirrel-cut cones were allowed to dry until the scales opened. The seeds were then cracked open and the kernels eaten raw. Sometimes they were placed in a buckskin bag and pounded to a powder, then water was added to make a kind of paste.

The Nlaka'pamux were said to have obtained a sugary substance similar to Douglas-fir sugar (see *Pseudotsuga menziesii)* from some ponderosa pines (Turner et al., 1990). Dried ponderosa pine needles were used in food processing, for drying berries on or lining the bottom of a cooking pit and interspersing between the layers of food being cooked (Turner et al., 1990).

WARNING: Ponderosa pine needles and branches may cause abortions and stillbirths in pregnant cows browsing them, and a tea of the needles is reputed to cause miscarriages in pregnant women (Kingsbury, 1964; Turner et al., 1980).

Food Use of Related Species: see under lodgepole pine *(Pinus con-torta)* and white-bark pine *(P.albicaulis).*

Douglas-fir *(Pseudotsuga menziesii;* syn. *P. taxifolia)*

Description: Medium-sized to tall forest tree with thick, furrowed bark on mature trees, grayish outside and mottled reddish brown and whitish inside. Two races are commonly recognized: a typical coastal form (var. *menziesii)*with bright-green needles and tall, straight trunks up to 70 m (230 ft) high; and an interior form (var. *glauca),* with bluish green needles and trunks rarely over 40 m (130 ft) high. The needles, borne singly, are flat, pointed but not prickly, about 2.5 cm (1 in.) long, and uniformly spaced along the twigs, spreading from the sides and top. The seed cones, which hang from the branches, are green when immature, turning reddish brown, then gray, and soon falling. Prominent, 3-pointed bracts extend well beyond the cone scales. Cones of the coastal form are generally larger, ranging from 6-10 cm (2.4-4 in.) long, than those of the interior form, which average 4-7 cm (1.6-2.8 in.) in length. The small seeds have prominent wings.

Occurrence: Widespread forest tree, from low to fairly high elevations, attaining maximum growth in moist, well-drained soils, from central and southern British Columbia (north to near Babine and Stuart lakes) to southwestern Alberta, and extending southwards to California and Mexico.

Food Use: The small, pitchy seeds were occasionally eaten, especially when they could be located in rodent caches, by the Shuswap of British Columbia, and possibly other groups (Palmer, 1975; Turner, 1978). A beverage tea was made from the needles and twigs by the Nlaka'pamux of British Columbia (Turner et al., 1990). The Kootenay of British Columbia and Montana, and some Washington peoples, including the Clallam, Cowlitz, and Quinault, formerly chewed the pitch as gum (Gunther, 1973; Turner, 1975). The boughs were often used by Interior peoples of British Columbia, such as the Nlaka'pamux, for lining cooking pits and interspersing between layers of food being cooked (Turner et al., 1990).

The most intriguing food use of this tree, however, was of a type of white, crystalline sugar, called "Douglas-fir sugar" or "wild sugar," which was gathered from the branches of certain individual trees in the British Columbia Interior and was formerly a popular confection and sweetener. This substance is described in detail in an article by John Davidson (1919) and was also mentioned by early ethnographers such as James Teit and George Dawson. It seems to have been most commonly used by the Nlaka'pamux; Sugar-loaf Mountain, due east of Merritt, is named after it. Almost all contemporary Nlaka'pamux elders have tasted the sugar in their younger days, but almost no one has heard of it being found today. The Nlaka'pamux name for the sugar translates as "tree-(breast)-milk." Other Interior peoples of British Columbia, including the Shuswap, Lillooet, and

Okanagan-Colville also used the sugar whenever they could obtain it, and although it was rare, it was occasionally found in abundance and was apparently traded to the Upriver Halkomelem of the Fraser Valley and other neighboring groups (Davidson, 1919; Palmer, 1975; Turner, 1978; Turner et al., 1980; Galloway, 1982; Turner et al., 1990).

The sugar was produced from the branch tips of certain fir trees having abundant exposure to the sun and good soil moisture during the hottest days of midsummer. It appears as white, frost-like globules on the branches, and is composed of sucrose and reducing sugars, and over 50 per cent by weight of a rare trisaccharide sugar, melezitose (Davidson, 1919).The sugar was gathered and eaten immediately as a confection, or, if enough could be obtained, taken home in a container and used as a sweetener for other foods such as black tree lichen and balsamroot seeds. Some Indigenous People attribute its "disappearance" today to ants, or to honey bees (Turner et al., 1990).

Western Hemlock *(Tsuga heterophylla)*

Description: An upright evergreen tree, up to 50 m (165 ft) tall, with a narrow crown, and drooping top and branches, especially in young trees. The bark is thick and deeply furrowed in mature trees. The needles, borne singly, mostly spread outwards from the twigs, giving the branches a flattened appearance. They are unequal in length, from 8 to 20 mm (0.3 to 0.8 in.) long, flattened, and blunt, each with two conspicuous white bands underneath. The cones are numerous, hanging, and small, averaging about 2 cm (0.8 in.) long. The scales are rounded, purplish green when unripe, and light brown when fully mature, when they open widely to release the small, winged seeds. The entire tree has a lacy, delicate appearance.

Occurrence: Western hemlock has a high shade tolerance and grows in moist forests from low to fairly high elevations along the British Columbia coast, north to southern Alaska and south to California, and also in the interior wet belt of British Columbia from the Selkirk to the Rocky mountains.

Food Use: Western hemlock was apparently little used as food by Interior peoples of British Columbia, but for the Coastal peoples, the inner bark was formerly an important dietary component. The tree also has other food uses. Almost everywhere along the British Columbia coast where herring are known to spawn—from Coast Tsimshian territory in the north to the Nuu-chah-nulth territory on the coast of Vancouver Island, hemlock boughs, or sometimes entire trees, are immersed in the waters of inlets and river estuaries, or tied onto floating logs anchored close to the shore, to collect herring spawn, which was and still is a valued food. The herring spawning season is usually around April. Certain marine algae, such as giant kelp, eelgrass, and the boughs of some other evergreen trees, were also employed to collect the spawn, but hemlock was considered one of the best materials because it has flexible, easily handled boughs and the needles impart a mild, pleasantly resinous flavor to the spawn. They are not actually eaten with the spawn, but the spawn was often cooked still attached to the needles, and these were then removed by the people eating it. The spawn was also dried while attached to the boughs; today it is preserved by drying, salting, or freezing. Sometimes a few hemlock needles are swallowed with the spawn, but eating too many is said to be harmful, causing appendicitis or perforated intestine, according to some elders (Turner, 1973, 1975; Turner and Efrat, 1982; Turner et al., 1983). The Ditidaht (Nitinaht) of Vancouver Island chewed the young shoots or branch tips of hemlock to suppress hunger if lost in the woods (Turner et al., 1983), and the Cowlitz of Washington used to use the small branch tips as a flavoring when cooking bear meat (Gunther, 1973).

The inner bark (cambium and secondary phloem) of western hemlock, like that of Sitka spruce, lodgepole pine, and other tree species, was harvested in spring, before the bark "sticks" to the tree and gets tough, and was eaten, freshly cooked or dried, by several coastal groups, including Tlingit and Kaigani Haida of southeastern Alaska, and the Coast Tsimshian, Gitksan (an interior group), Haida, Nuxalk (Bella Coola), Kwakwaka'wakw, and some Coast Salish peoples of British Columbia (Turner, 1975; Heller, 1976; 'Ksan, People of, 1980; Norton, 1981; Jacobs and Jacobs, 1982). As with the other edible inner bark species, hemlock bark was considered to be at the right stage to eat for only a short interval of time, usually around May or June, but sometimes as late as July,

depending on the warmth of the season. A sample was often tasted first before large-scale harvesting took place, to make sure the tissue was sweet. Younger trees were said to yield sweeter inner bark. Then, the bark was removed in strips or sheets, using a sharpened stick, and the edible part scraped off the inside of the bark and placed into baskets. This was very tedious work (Jacobs and Jacobs, 1982). Sometimes the trees were climbed by men and the pieces of bark dropped for scraping to the women waiting below. The harvesting process often took several days, and people would make regular springtime expeditions to get this food. As much as 50 kg might be obtained by a family.

The inner bark was usually cooked, often in an underground pit lined with skunk-cabbage leaves or, more recently, in a stove-top kettle. Once cooked, it was pressed or pounded with a hammer, sometimes in a wooden trough, into loaves or cakes. These could be eaten immediately, alone or mixed with dried berries, or dried in trays placed on wooden racks set over a fire. The trays were lined with thimbleberry or skunk-cabbage leaves, and the Gitksan sprinkled fireweed syrup over the leaves to hold them together. The dried product was stored in wooden boxes. Before eating, it was soaked in warm water, and sometimes pounded and boiled to reconstitute it. More recently, the cooked inner bark has been frozen, or preserved in jars using the water-bath method, or cooked in water, ooligan grease, and sugar, then put up in preserving jars. It is served with ooligan grease, bear or seal oil, coho salmon skin, or berries, such as highbush cranberries, and was formerly a popular food for feasts and potlatches [Turner, 1973, 1975; Heller, 1976; 'Ksan, People of, 1980; Port Simpson Curriculum Committee, 1983; Turner (1975) gives a detailed account of harvesting and preparing hemlock inner bark, as told by the late Dr. Margaret Siwallace, Nuxalk elder of Bella Coola].

Food Use of Related Species: Some Coastal people of British Columbia and Alaska occasionally ate the inner bark of mountain hemlock *(T. mertehsiana)* (Gorman, 1896; Turner, 1975). The inner bark of eastern hemlock *(Tsuga canadensis)* was grated and eaten by the Micmac of the Maritimes, and the bark was also used as a beverage and medicinal tea (Speck and Dexter, 1951; Wallis and Wallis, 1955; Stoddard, 1962; Lacey, 1977). The leaves and young branches were steeped for tea, sometimes sweetened with maple sugar, by the Iroquois of the Lake Ontario region, as well as by the Qjibwa of Ontario and the Abenaki of the Maine region; some people dried the leaves, whereas others apparently used them only fresh. The Ojibwa tied them up with basswood bark and boiled them (Waugh, 1916; Densmore, 1928; Rousseau and Raymond, 1945; Rousseau, 1947).

Yew Family (Taxaceae)

Eastern Yew, or Ground Hemlock *(Taxus canadensis)* and Western, or Pacific Yew *(T. brevifolia)*

Description: Eastern yew is a straggling, much branched shrub rarely over 1 m tall, whereas western yew is a small tree, usually 5-10 m (about 16-30 ft) tall, often twisted and leaning. The bark is reddish and scaly, and the needles flattened, up to 20 mm (0.8 in.) long, pointed, and brownish green above, green below. They are borne singly and are 2-ranked, giving the twigs a flattened appearance. The male and female reproductive structures are borne on separate individual plants, the male producing small, yellowish pollen cones, and the female, globular, pinkish-red, berry-like fruits, consisting of a hard, brown seed surrounded by a fleshy cup. These "berries" are borne on the undersides of the twigs and ripen in late summer and fall.

Occurrence: Eastern yew is found in rich woods and thickets from southeastern Manitoba to the Maritimes, south to Iowa and Virginia. Western yew grows in moist woods at low to moderate elevations from coastal British Columbia to southwest Alberta, north to the Alaska Panhandle, and south to California.

Food Use: The yews are well known toxic plants (cf. Kingsbury, 1964). However, the twigs of eastern yew were used for tea by the Micmac of the Maritimes and the Forest Potawatomi (Lacey, 1977; Rousseau and Raymond, 1945), and the Iroquois of the Lake Ontario region made beer from the "berries" and leaves, brewed with maple sugar and water (Rousseau and Raymond, 1945). The

fleshy outer part of the fruit of western yew (apparently the least toxic portion) was eaten in small quantities by the Masset Haida of the Queen Charlotte Islands and the Upper Lillooet of the interior of British Columbia, as well as by the Mendocino County Indians of California, but the seeds are known to be very poisonous. The leaves were used in smoking mixtures by the Straits Salish and some Washington Salish groups, but were said to be very potent (Yanovsky, 1936; Turner, 1975).

WARNING: In view of the known toxicity of the yews the use of any part of them as food is definitely not recommended.

FLOWERING PLANTS (ANGIOSPERMAE - MONOCOTYLEDONS)

Water-Plantain Family (Alismataceae)

Arrowhead, Wapato, or "Indian Swamp Potato" *(Sagittaria latifolia; see Figure 12, page 72)*

Description: Herbaceous perennial of wet places, 15-90 cm (6-35 in.) tall. The rhizomes bear edible, egg-shaped tubers, up to 5 cm (2 in.) long, which are light brown outside and whitish inside. The leaves are long-stalked, basal, and mostly arrowhead-shaped, occasionally thin and ribbonlike. The flowers are white, in whorls, on elongated, leafless stems; petals and sepals are arranged in threes. The fruiting heads are up to 3 cm (1.2 in.) thick, bearing small, winged achenes up to 3.5 mm (0.1 in.) long. The closely related *S. cuneata,* also known as arrowhead, has smaller fruiting heads, less than 1.5 cm (0.6 in.) thick, and smaller achenes, usually about 2.5 mm (less than 0.1 in.) long, but is otherwise very similar.

Occurrence: Both *Sagittaria latifolia* and *S. cuneata*grow in swampy ground or standing water in ponds, lakes, stream edges, and ditches. The former is found from central and southern British Columbia to Nova Scotia and Prince Edward Island, south to California and into South America. The latter is transcontinental, extending from north central Alaska to Labrador, with a generally more northerly distribution, but extending south to California and northern Texas.

Food Use: *Sagittaria latifolia* is the species most commonly reported as having been used as food by Canadian Indigenous Peoples, but *S. cuneata* was also apparently used (cf. Yanovsky, 1936), and it seems likely that both species were used in regions where their ranges overlap.

The small, egg-shaped tubers were eaten by many different Indigenous groups in Canada, including the Iroquois of the Lake Ontario region, the Ojibwa of Ontario (Parker, 1910; Densmore, 1928; Arnason et al., 1981), the Potawatomi (Smith, 1933), the Blackfoot of Alberta (Johnston, 1987), and the Halkomelem of British Columbia (Suttles, 1955; Turner, 1975; Galloway, 1982), as well as many groups of Washington and Oregon (Gunther, 1973). The tubers were also widely traded from harvesting centers to neighboring areas. For example, the Katzie Halkomelem of the Fraser Valley traded them to the Straits and Halkomelem Salish on Vancouver Island, the Squamish, and, inland, to the Lower Nlaka'pamux (Thompson). The tubers were also a major item of commerce on the Lower Columbia in Chinook Territory. Katzie families owned large patches of the plants on the west bank of the Pitt River, and ownership was claimed by clearing the patches. Family groups would camp beside their claimed harvesting sites for a month or more. The tubers were gathered in spring, after flowering, or in the fall, either by pulling up the plants, with the tubers attached, from a canoe or by women wading in the water and dislodging the tubers with their feet, after which they would float to the surface and could be collected (Suttles, 1955; Turner, 1975; Galloway, 1982; Johnston, 1987). The Potawatomi often sought caches of the tubers stored by muskrat and beaver (Smith, 1933).

The harvested tubers could be stored fresh, raw and unwashed, for several months. They were prepared for eating by boiling, or baking in hot ashes or in underground pits, after which they could be eaten immediately or dried for long-term storage or trading. Nlaka'pamux elders recall having imported the tubers in large baskets from the Fraser Valley. The pit-cooked tubers are said to turn dark, "like licorice," and are very sweet. They were commonly served at feasts and potlatches (Turner et al., 1990). Although arrowhead grows further inland in British Columbia, most Interior

Salish apparently did not eat the tubers. The Upper Nlaka'pamux were said to use them only for witchcraft. For the Fraser Valley people, however, before the introduction of the potato, arrowhead tubers were the most important starch food (Suttles, 1955). They should be investigated for their potential as a modern crop (Turner, 1981).

Food Use of Related Species: As mentioned, the tubers of *Sagittaria cuneata* were undoubtedly used in the same way as those of *S. latifolia* in regions were the ranges of the two species overlap. For example, the Ojibwa of Ontario used tubers of both species; they dried and boiled the tubers of *S. cuneata* for winter, and cooked them with deer meat and sugar (Smith, 1932; Stowe, 1940—*"Sagittaria* sp."; Arnason et al., 1981). They were eaten raw or boiled by the Blackfoot of Alberta (Johnston, 1987), and may also have been used by the Algonquin of Quebec (Black, 1980—*"Sagittaria* sp."). Lips (1947) notes that the Naskapi and Montagnais of Labrador considered "arrow root" the most desirable edible root, presumably referring to this species. The leaves of *Alisma plantago-aquatica,* water-plantain, were used as tea by the French Canadian *coureurs des bois* (Rousseau and Raymond, 1945).

Arum Family (Araceae)

Western Skunk-Cabbage, or Yellow Arum *(Lysichitom americanus; see Figure 13, page* 72)

Description: Perennial herb with thick, fleshy rhizomes and large, oval, smoothed-edged leaves, often 1 m (3 ft) or more long. Growing in clumps,

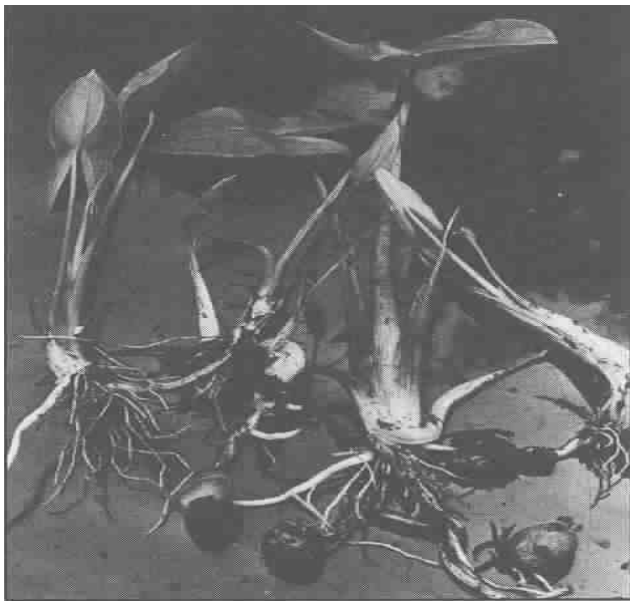


Figure 12 (above). Plant and tubers of wapato *(Sagittaria latifolia).*

Figure 13 (below). Western skunk-cabbage *(Lysichitom americanus).* In western Canada, the leaves were used in food preparation. After cooking, the rhizomes were eaten sparingly—but not the leaves.

the leaves are bright green, with a lustrous, waxy looking surface. The "flowers" appear in early spring, before the leaves have expanded, and consist of a showy, bright yellow sheath up to 20 cm (8 in.) or more long surrounding an elongated, club-like flower spike. At maturity the spike breaks apart to reveal brown oval seeds embedded in a white, pulpy tissue. The entire plant, especially when cut or bruised, gives off a sharp, pungent, skunk-like odor.

Occurrence: This plant is found in swamps and wet woods from southwestern Alaska through British Columbia, east to the Columbia Valley in B.C., and south to California.

Food Use: (See **WARNING**, following). The fleshy rhizomes, which have a strong, peppery taste due to the presence of calcium oxalate crystals, were eaten occasionally by some Indigenous groups of British Columbia. They were roasted and eaten in early spring by the Lower Lillooet, Sechelt, and probably the Lower Nlaka'pamux, and were steamed and eaten by some Nuu-chah-nulth (Nootkan) groups of the west coast of Vancouver Island. The Sechelt were said to cook the "roots" to a "flour-like" consistency before eating (R. Bouchard pers. comm., 1977). They were said to be the first vegetable food to be gathered in the early spring in the Lower Lillooet area. They were dug up with digging sticks, washed, and boiled or pit-cooked. Their name translates as "hot, peppery." The Upriver Halkomelem ate the rhizomes as a spring tonic (Galloway, 1982), and the Squamish also ate them, but only as medicine (Turner, 1975, 1978; Galloway, 1982; Turner et al., 1990). The Gitksan of the Skeena River area used to boil the leaves in two changes of water, then eat them in spring ('Ksan, People of, 1980). The Haida and Kwakwaka'wakw (Southern Kwakiutl) dried and powdered the leaves and mixed them with berries or salmon eggs as a preservative or thickener (Boas, 1921; Turner, 1975).

The plant was also sparingly used by Indigenous Peoples of Washington and Oregon. For example, the leaf-stalks were roasted and eaten by the Quinault, the flower-stalks were steamed and eaten, though sparingly, by the Cowlitz, the young leaves were eaten by the Skokomish, and the rhizomes by the Quileute and Lower Chinook. Nowhere were they highly prized, however, and they seem to have been used mainly as a famine food in early spring when other, preferable foods were not available (Gunther, 1973). Bears are said to be very fond of skunk-cabbage rhizomes and shoots (Gunther, 1973; Turner et al., 1980).

More important and widespread than the actual food use of skunk-cabbage, however, was the use of the large, waxy leaves in various aspects of food preparation. They were employed by virtually all Northwest Coast groups and by some Interior groups as well, like waxed paper, for wrapping food, lining cooking pits, separating foods being cooked together, and drying berries on. They were also used as makeshift plates and folded to make temporary dippers and drinking cups. When used in drying berries, the leaves were prepared by slicing off the thick mid-rib and dipping

the leaves in boiling water or holding them over a fire for a short time to "wilt" them. They were then set on a wooden drying rack and the cooked, mashed berries poured onto them, usually into a rectangular wooden frame to contain them ('Ksan, People of, 1980; Norton, 1981; Turner et al., 1983; Turner and Efrat, 1982). Although most people regarded the leaves as "poisonous," due to their rank smell and their calcium oxalate crystals, their use in food preparation apparently did not cause any tainting of the food; the waxy outer coating of the leaves protected the food.

Food Use of Related Species: Sweetflag *(Acorus calamus)* rootstocks were used by the Micmac of the Maritimes to make a beverage and medicinal tea, and were eaten by Indigenous People of New York State (Yanovsky, 1936; Speck and Dexter, 1951; Wallis and Wallis, 1955; Lacey, 1977). Some American Plains groups also used this plant; the Osage chewed the roots for their flavor, and the Lakota Sioux ate the leaves, stalks, and roots. The young, tender leaves were also eaten, and said to be highly esteemed in ritual and medicine (Kindscher, 1987) (see **WARNING**, following).

The Iroquois of the Lake Ontario—New York State region pounded the dried roots of Jack-in-the-pulpit, or Indian turnip *(Arisaema atrorubens* and related spp.) to make a kind of flour (Parker, 1910; Yanovsky, 1936; Rousseau and Raymond, 1945). The Iroquois also used eastern skunk-cabbage *(Symplocarpus foetidus).* They cooked the young leaves and shoots as greens (Waugh, 1916; Yanovsky, 1936), and used the dried root powder in soups and stews (Parker, 1910).

Harris (1890) provides a detailed discussion of *Arisaema ("Arum triphyl-lum")* and its use by the Seneca, an Iroquois group of western New York state:

> "The root is roundish, flattened, an inch or two [2.5-5 cm] in diameter, covered with a brown, loose, wrinkled epidermis, and internally white, fleshy and solid. In its fresh state it is violently acrid, producing, when chewed, an insupportable burning and biting sensation in the mouth and throat, which continues for a long time, leaving and unpleasant soreness. It is used when fresh, and may be preserved a year by packing in damp sand. When dried and pulverized it produces a beautiful snow white powder, that when properly prepared, may be employed as a substitute for flour in making bread."

Harris cited descriptions by several early chroniclers of this plant and its use as a cooked vegetable; in all cases it is noted to be "poisonous" when raw. Smith (1933) notes the use of Jack-in-the-pulpit by the Potawatomi; it was thinly sliced and pit-cooked to remove the acrid, toxic substance.

Harris (1890) also described the use of the roots of eastern skunk-cabbage, ".. .the most nauseous of all wild plants... As a bread root it was roasted or baked." He noted that its use saved the Seneca from death from scurvy when they were camped at Fort Niagara in the winter of 1779-80 and fed mainly on salt meats by the British.

WARNING: Western skunk-cabbage and other members of the arum family contain microscopic bundles of needle-like crystals, or raphides, or calcium oxalate in their stems, leaves, and underground parts. These are apparently somewhat dispelled with cooking and/or drying, but if the plants are eaten fresh and unprocessed, they cause severe burning and irritation of the mouth, tongue, and throat. Fortunately, the initial burning almost always prevents a person from ingesting seriously toxic quantities of these plants (Kingsbury, 1964). Sweetflag contains an essential oil, oil of calamus (beta-asarone), structurally related to safrole in sassafras, which has caused the growth of tumors in laboratory rats (Miller, 1973).

Sedge Family (Cyperaceae)

Tall Cottongrass, or "Mousenut" *(Eriophorum angustifolium)*

Description: Grass-like herbaceous, perennial growing from a creeping rootstock. The stems are erect, smooth, and slightly triangular, up to 50 cm (20 in.) or more tall. The leaves are long, narrow, flat below the middle, and grass-like, and the flower heads, subtended by two or more leafy

bracts, develop into two to several stalked, nodding clusters of dense, white, silky bristles—the "cotton."

Occurrence: This species is found in damp or wet tundra, bogs and marshy shorelines of lakes and ponds, across northern North America, from British Columbia to Newfoundland, northwards to the Arctic Ocean, and southwards to Oregon and New Mexico, Illinois and New England. There are 10 other species of *Eriophorum* in Canada, but *E. angustifolium* is the only one reported to have been eaten by Indigenous Peoples.

Food Use: Various Eskimo peoples of Alaska ate, and still use to some extent, the fleshy, pinkish stem bases and underground corms. Possibly some Canadian Inuit used them similarly. The stem bases were collected in early summer, and the corms were dug in early spring or fall or, more commonly, they were gathered from the winter caches of tundra mice or voles. Eskimo children enjoy hunting for these caches before the "freeze-up". To prepare the corms, boiling water was poured over them and the thick, black outer covering removed. They were eaten raw or boiled, often with seal oil, and are said to be very sweet. For storage, the cleaned corms were dried or preserved in seal oil (Oswalt, 1957; Heller, 1976; Jones, 1983).

Roundstem Tule, or Roundstem Bulrush*(Scirpus lacustris;* syn. *S. acutus,* and *S. validus,* both now considered ssp. of this complex)

Description: Herbaceous perennial growing from thick, elongated rhizomes. The stems are green, cylindrical, and leafless, with pithy insides, some 2 m (6.5 ft) or more tall. They often grow in dense patches in shallow water around lakes. The brownish, inconspicuous flower cluster, or inflorescence is terminal, but appears to be borne at the side of the upper stem, the tip or continuation of which is actually a single, erect bract subtending the inflorescence.

Occurrence: Widespread in marshes, lakeshores, and pond margins, often in standing water; transcontinental in Canada, from Alaska and British Columbia to Newfoundland, extending to south California and Georgia in the United States, and into tropical America.

Food Use: The fleshy rootstocks and rhizomes, variously called "roots," "bulbs" and "tubers," were eaten by various Indigenous Peoples of Canada. For example, Maries (1984) reports for the Chipewyan of northern Saskatchewan:

> "In the spring the inside of the first 10 cm of the rhizome below the base of the stem, which is white, tender, and rich like fat, is still eaten raw by a few elders, although it was much more popular fifty years ago. It has been gathered at Black Lake and Riou Lake, and people travelling by canoe down the rivers used to stop and pull them up to eat. If it was red instead of white then it was too old and tough, and not good to eat."

The stem bases were also eaten fresh by the Woods Cree of east-central Saskatchewan (Leighton, 1985). The Iroquois of the Lake Ontario region boiled the fresh "tubers" for syrup, and mixed it in cornmeal pudding (Parker, 1910). The Ojibwa of Ontario ate the "bulb" raw in the summer (Densmore, 1928). Montana Indigenous Peoples ate the "roots" both raw and cooked according to Blankinship (1905). Steedman (1930) reported that the Nlaka'pamux of British Columbia, especially the children ate the pollen and flowering spikes of an unidentified species of *Scirpus,* but it seems likely that this information actually pertains to cattail *(Typha latifolia),* which is often confused with tule in the literature (Turner et al., 1990). The pithy, cylindrical stems were important mat-making material for Indigenous Peoples (Turner, 1979).

Food Use of Related Species: Aquatic sedge *(Carex aquatilis)* was used as a food by some Alaskan Indigenous Peoples. The sweet, succulent, pinkish stem bases, up to about 10 cm (4 in.) long, were eaten raw by the people of the Bristol Bay and Lower Kuskokwim (Heller, 1976). The thick stem bases of a large, common sedge, probably also this species, were eaten raw by the Tanaina Indians of Alaska (Kari, 1987). The "bulbs," or fleshy leaf bases of another, similar sedge, beaked sedge *(Carex rostrata)* were apparently eaten by Nlaka'pamux of British Columbia. This

species was also known as muskrat food and was used for hay and animal forage (Turner et al., 1990). The Lower Lillooet of British Columbia reportedly ate the tender, white shoots of "cut-grass" *(Scirpus microcarpus)* (Turner, 1978). Possibly, the young shoots of several similar-looking types of "swamp hay," including the last two species mentioned, were eaten on occasion by the Nlaka'pamux and Lillooet peoples of British Columbia. Blankinship (1905), noted that the large, pear-shaped tuber-like bodies at the rhizome nodes of prairie bulrush *("Scirpus paludosus";* now *S. maritimus* var. *paludosus),* were dug in the fall and eaten by the Indigenous People of Montana.

The early sprouts of another grass-like plant, or soft rush *(Juncus effusus)* in the rush family (Juncaceae), were sometimes eaten raw by the Snuqualmi of Washington (Gunther, 1973), and the "bulb" of *Juncus ensifolius ("J. xiphioides")* was eaten by the Swinomish according to one source (Gunther, 1973).

Plants of yet another grass-like plant, bur-reed *(Sparganium angustifolium,* and possibly also *S. multipedunculatum),* in a family of the same name (Sparganiaceae), were apparently boiled and eaten by the Fisherman Lake Slave of the Northwest Territories (Lamont, 1977), and tubers and stem bases of another species, *S. eurycarpum,* were eaten in Oregon (Yanovsky, 1936).

Arrow-grass Family (Juncaginaceae)

Arrow-grass *(Triglochin maritima)*

Description: A grass-like perennial growing from thick, woody rhizomes. The long, narrow, erect leaves are fleshy, with whitish, succulent bases. They are borne in a basal cluster surrounding one or more flowering stalks. These are erect, up to 80 cm (30 in.) or more high, and leafless, bearing an elongated terminal spike of small, greenish flowers. The fruits are small and oblong or ovoid.

Occurrence: This plant is common in salt marshes, estuarine flats, muddy beaches, and fresh water marshes and shores, often forming extensive patches, across Canada, from British Columbia to Newfoundland, north to Alaska and the Arctic and south to Baja California, Texas, and Pennsylvania.

Food Use: (see **WARNING**, following). The fleshy, succulent, whitish leaf bases of this grass-like plant were relished as a springtime vegetable by peoples of several Coast Salish groups of British Columbia, including Mainland Comox, Sechelt, Squamish, and Straits (Turner, 1975), as well as by the Kaigani Haida and Tlingit of Alaska (Norton, 1981; Jacobs and Jacobs, 1982). The leaf bases were usually collected around April or May, from the inner leaves of the basal cluster. Most people preferred the leaf bases of the vegetative, or non-flowering plants, which were called the "female" plants. Eating the bases of the "male" (flowering) plant was believe by some to cause headaches (Turner, 1975), but other people ate the inner parts of both (R. Bouchard pers. comm., 1977, 1978). The leaf bases were usually eaten raw, and at the right stage have a mild, sweet, cucumber-like taste. The Kaigani Haida boiled them, usually in three changes of water. Until recently, they were gathered in quantity and jarred for winter use. They are called "goose tongue" (a translation borrowing from an English name) (Norton, 1981). According to Blankinship (1906), the seeds of this plant were parched and eaten by the Blackfoot of Montana.

WARNING: Arrow-grass contains cyanide-producing glycosides, and is known to be poisonous, sometimes fatally, to grazing livestock (cf. Kingsbury, 1964). Apparently the young leaf bases in springtime contain minimal amounts of the toxic compounds, because Indigenous People consulted were not aware of the plant's potential toxicity. The mature leaves and flower stalks should never be eaten.

Lily Family (Liliaceae)

Canada Onion, or Canada Garlic *(Allium canadense)*

Description: A perennial, growing from small, spherical bulbs, the outer scales of which are netted and fibrous. A basal clump of long, narrow, flattened leaves is produced in early spring, then a slender stem 30 cm (12 in.) or more tall, at the tip of which develops a cluster of bulblets from within a broad sheath. Flowers are seldom formed; if they do, they are few, pink and long-stemmed, and never produce seeds in our area. Propagation is thus by vegetative means, from the bulblet clusters. The bulblet stems die down and the bulbs go dormant relatively early in the summer, in July, and sprout in late fall or early the next spring. The biology and distribution of this species in Canada has been documented in detail by Dore (1970, 1971).

Occurrence: Grows commonly along rocky shores, cliff tops, islands, and in crevices of bare, exposed rocks, requiring an open, sunny habitat. Its occurrence is rare and scattered in Canada, being restricted to a small corner of southwestern Ontario and adjacent Quebec, and in New Brunswick, but it is prevalent southward throughout the eastern United States. Its dispersal has been aided by early European explorers, traders, and hunters, and some of its growing sites are along historically important travel routes and camping places. The plants adapt well to cultivation and have been suggested as an excellent small-garden crop.

Food Use: (see **WARNING** under following species, *A. cernuum).*The bulbs, mild and pleasant in flavor, were little used by Indigenous Peoples of Canada, because of their restricted distribution. Early Europeans, however, used them commonly and apparently extended their range intentionally or unintentionally. The Iroquois of the Lake Ontario and northeastern states region ate the bulbs and greens raw or cooked them in soups. They boiled the onions and seasoned with oil (Waugh, 1916; Parker, 1910). They were also used by the Potawatomi, Menomini and Meskwaki Indians (Smith, 1933; Yanovsky, 1936). It is likely that other Indigenous groups, such as the Huron, also used them when available. Kindscher (1987) notes that the bulbs of several types of wild onions, including this species, were eaten and used as flavorings and edible greens by Indigenous Peoples of the American prairies.

Food Use of Related Species: (see under *Allium cernuum* and *A. schoenoprasum)*

Nodding Onion *(Allium cernuum; see Figure 14, page 85)*

Description: A perennial herb with a strong "onion" odor, growing from elongated, tapering, usually clustered bulbs, having a pinkish, membranous covering. The leaves are narrow and grass-like, appearing in spring before the flowers, and persisting during flowering. The umbrella-like clusters of whitish, pinkish, or rose flowers are distinctly nodding and are borne on long, angled stalks; flowering is in late spring and early summer. The fruits are small capsules containing black seeds.

Occurrence: Dry woods, rocky bluffs, and prairies from central and southern British Columbia across the southern prairie provinces to southwestern Ontario, south in the United States to Georgia, Texas and Arizona, and into Mexico.

Food Use: (See **WARNING**, following). The bulbs were eaten by Indigenous Peoples throughout the range of the plant, including the Ojibwa of Ontario (Smith, 1932), the Blackfoot and Stoney (Assiniboin) of Alberta, the Flathead and Kootenay of Montana, and many groups in British Columbia and the adjacent States (Yanovsky, 1936; Honigmann, 1949; Hellson and Gadd, 1974; Hart, 1976; Turner, 1975,1978; Scott-Brown, 1977; Johnston, 1987). The Blackfoot gathered the bulbs and leaves in May or June, and ate them raw, boiled them with meat and in soups, or preserved them for later use (Johnston, 1987; Hellson and Gadd, 1974). The Kootenay and Flathead of Montana also ate the bulbs raw, but usually cooked them in soups, stews, and meat dishes (Hart, 1976). In British Columbia, the bulbs were eaten raw sparingly by a few Coastal groups, but apparently were not eaten traditionally by most Nuu-chah-nulth, or Westcoast peoples of Vancouver Island (Turner et al., 1983; Turner and Efrat, 1982). Although Captain Cook and his men found "wild garlick," undoubtedly this species, at Nootka Sound, and his crews obtained it for food, the Nuu-chah-nulth there did not use it (Turner, 1978b). Gunther (1973) reports that the Makah of adjacent Washington State ate the bulbs only when travelling alone. The raw bulbs have a

reputation for their strong smell, as indicated by the Gitksan name for the plant which translates as "Raven's underarm odor," and the Carrier name "stink-grass" (Turner, 1978; 'Ksan, People of, 1980).

The usual, preferred method of preparing the bulbs was to cook them, usually in underground pits. This was a common practice among the Interior peoples—including the Lillooet, Nlaka'pamux, Okanagan-Colville, Shuswap, Chilcotin, Carrier, Slave, and Gitksan—as well as some Coast Salish peoples who used them, for example, the Upriver Halkomelem and Comox (Turner, 1975, 1978; R. Bouchard pens, comm., 1978; Turner et al., 1980; Galloway, 1982; Myers et al. unpubl. notes, 1988). One Lillooet man referred to them as "barbecuing onions." Since the bulbs contain inulin as a major carbohydrate, cooking by this method undoubtedly rendered them far more digestible and sweet-tasting, as attested to by elders who remember eating them (see also discussion of inulin under blue camas, *Camassia*spp.). This is because inulin converts at least partially to its component units of fructose with long-term cooking. Cooking the bulbs in an open fire was also practiced (Palmer, 1975).

The bulbs were normally harvested in spring, around May or June, before the flowers had appeared. For pit-cooking, they were cleaned, and tied in bundles or woven together by their leaves into long "mats". Some people hung them up to dry partially before they were cooked. They were then placed in steaming pits lined and interspersed with vegetation of various types, such as Douglas-fir boughs, ponderosa pine needles, Saskatoon branches, or grasses. The Nlaka'pamux sometimes cooked them with shrubby penstemon *(Penstemon fruticosus),* which apparently imparted some flavor to the onions. They also added scrapings of alder bark *(Alnus* spp.) to the pit to give the cooked bulbs a pinkish color (Turner et al., 1990). The bulbs were frequently pit-cooked together with layers of black tree lichen *(Bryoria fremontii)* and were sometimes used to flavor other, more bland foods, as well as meat and salmon (Turner, 1978; Turner et al., 1980). The Mainland Comox pit-cooked them with seals and ducks; they apparently took away the "fishy" taste of duck (R. Bouchard, pers. comm., 1978). Once properly cooked, the onions lose their strong odor and flavor and become very sweet and blackish in color. The cooked onions were a favorite, almost a delicacy, "like candy." They could be eaten immediately, sometimes after a meal of meat, or dried by stringing them, pressing them into thin cakes, or simply laying them out on mats. The dried bulbs were reconstituted by soaking them in water or cooking them in soup. They could be eaten alone or with salmon, bear grease, or other foods. Nodding onion is an excellent garden perennial in some parts of the country (Turner, 1981).

Food Use of Related Species: Various other wild onions were eaten on occasion by Indigenous Peoples. Hooker's onion *(Allium acuminatum),* for example, was eaten by some Coast Salish groups (Turner, 1975), as well as by the Lower Nlaka'pamux and Lower Lillooet, and peoples of Utah an Nevada (Yanovsky, 1936; Turner, 1978). The Nlaka'pamux may also have eaten the bulbs of Geyer's onion *(A. geyeri)*(Turner et al., 1990), which were used by the Apache and Nez Perce (Yanovsky, 1936). Hart (1974, 1979) reports that the bulbs of A. *douglasii* were eaten, sometimes with black tree lichen, by the Flathead of Montana. Wild onion *(A. textile)* bulbs were eaten by the Blackfoot of Alberta and, apparently also by the Cree (Johnston, 1987). It seems likely that prairie onion *(A. stellatum)* was also used within its range, from Saskatchewan to western Ontario.

The strong-tasting bulbs of wild leek *(A. tricoccum)* were reportedly eaten by the Iroquois, Potawatomi and Cree. They were taken raw with meat, cooked in soups, or boiled and seasoned with oil (Parker, 1910; Waugh, 1916; Smith, 1933; Yanovsky, 1936). They were also used fresh and dried by Ojibwa of Ontario and the Malecite and Micmac of the Maritimes (Smith, 1932; Speck and Dexter, 1952; Stoddard, 1962). Honigmann (1961) stated that the James Bay Cree ate wild onions, but not leeks.

(NOTE: This species is becoming rare in some areas because of over-harvesting by wild food enthusiasts. It should be carefully protected, and harvested only when grown in a garden setting or in places where development is taking place and it will be destroyed in any case.)

WARNING: Those wishing to harvest and eat wild onions should take care not to confuse them with so-called, "poison onions," or death camas or black snakeroot *(Zigadenus* spp.). These are bulb-

bearing plants with grasslike leaves, also in the lily family. They have upright, more elongated (not umbrella-like) clusters of white or cream-colored flowers. They contain a group of highly toxic alkaloids and all parts of the plants, including the bulbs, can be fatal if ingested in any quantity. They lack the characteristic strong odor of onions. In most cases, Indigenous People were well aware of death camas and were careful to avoid it when harvesting onions and other bulbbearing edible plants.

All onions contain volatile sulfur compounds (causing their strong flavor and irritation to the eyes), which may cause goitre when onions are consumed in abnormally large quantities, but are not otherwise known to be harmful (Van Etten and Wolff, 1973).

Wild Chives *(Allium schoenoprasum)*

Description: This is a variable species, with at least two varieties (var. *sibiricum* and var. *laurentianum)* native to North America. A third variety, originating in Eurasia (var. *schoenoprasum),* is the "chives" grown in gardens as a culinary herb and found occasionally as an escape. The native varieties have coarser, shorter leaves, with few, or solitary bulbs. The entire plants have a distinctive, "onion" odor when cut or crushed. The plants are perennials, growing singly or in small clumps from elongated, fibrous-rooted bulbs. The long, thin leaves are pointed, hollow and round in cross section, and persist at flowering. The flowers are pinkish-purple to whitish, borne in dense, globular clusters at the ends of erect, leafless stalks, or scapes.

Occurrence: Found in open, rocky or gravelly areas, and shores across the northern part of the continent, from Alaska and the Yukon across the prairies to northern Ontario and Quebec, Labrador, Newfoundland and the Maritimes (but not Prince Edward Island). In the West, its range extends south to Oregon and in the East, to northern New England.

Food Use: (see **WARNING** under previous species, *A. cernuum).* The leaves and elongated bulbs were used as a flavoring by several Indigenous groups of the North. For example, the Fisherman Lake Slave and other Dene peoples of the Northwest Territories ate them raw with moose meat or boiled them in soup (Honigmann, 1949—"tops of the wild onion"; Lamont, 1977; Porsild and Cody, 1980). The Chipewyan of northern Saskatchewan formerly boiled the bulbs with trout or other fish, although nobody bothers to gather them today (Marles, 1984). The Woods Cree of east-central Saskatchewan ate the fresh leaves and added them as a flavoring to boiled fish (Leighton, 1985). The Blackfoot were also said to use them (Johnston, 1987). In Alaska, they were particularly popular. Inupiaq Eskimos, for example, picked the young, green leaves in spring, until flowering time, and also dug the bulbs in spring or fall. They ate them raw with seal oil, meat, or fish, or cooked them in soups and stews, or, after they were cooked and drained, ate them with seal oil or butter. They could be dried for storage (Jones, 1983). They are said to be very strong, and best in early spring (Heller, 1976). The Tanaina Indians used the bulbs, and especially the leaves, cooked as greens or to flavor soups and stews. They sometimes chopped up the leaves and layered them with rock salt for winter storage (Kari, 1987). A Kaigani Haida elder recalled that a type of "wild onion" which grew on the rocky cliffs of Noyes Island [possibly this species], was previously gathered and eaten after boiling or pit cooking with other roots or greens (Norton, 1981).

Food Use of Related Species: See under previous species, *A. canadense* and *A. cernuum.* The Huron were said to have eaten a type of small onion, or "chives," but the species is not given (Tooker, 1964).

Sagebrush Mariposa Lily, or Desert Lily *(Calochortus macrocarpus)*

Description: Herbaceous perennial growing from a tapering, bulb-like corm. The bluish-green leaves, up to 10 cm (4 in.) long, are narrow and grasslike, and curl and wither before the plant flowers in early to mid summer. The flowering stem is erect and usually unbranched, and the flowers, borne singly or in twos or threes, are upright, large and showy. Up to 5 cm (2 in.) across, they are lavender to pink, and 3-petalled, each broad petal marked with central longitudinal green stripe and usually a transverse band of dark purple near the yellowish, somewhat hairy base. The sepals are

much narrower and project beyond the petals. The seed capsules are erect, angled and narrowly winged.

Occurrence: Dry, sandy soils on plains and hillsides in the southern Interior of British Columbia, extending south to California.

Food Use: The sweet, juicy corms were eaten when available by the Nlaka'pamux, Lillooet, Shuswap, Okanagan-Colville, and Kootenay peoples of British Columbia (Turner, 1978; Turner et al., 1980; Turner et al., 1990), as well as by peoples of California and Oregon (Yanovsky, 1936). They were dug in early spring, before the plants flowered, and were eaten raw or, occasionally, cooked, usually by steaming or boiling. Sometimes they were threaded and dried with or without cooking first. The flower buds were also eaten occasionally, and were said to be very sweet (Turner, 1978; Turner et al., 1990).

NOTE: This plant is becoming rare in some areas, mostly due to habitat destruction and overgrazing. Harvesting the corm destroys the entire plant. Because of this, and because of the plant's rarity and beauty, its use today is not recommended.

Food Use of Related Species: The corms of the three-spot tulip (C. *apiculatus)* were dug and eaten by the Kootenay of British Columbia and Montana and by the Blackfoot of Montana [and possibly in Alberta as well] (Hart, 1974; Turner, 1978; Blankinship, 1905). Some Indigenous groups of southwestern British Columbia ate the corms of cluster lily, or fool's onion *(Brodiaea hyacinthine* and *B. douglasii;* syn. *Triteleia).* Corms of the former species were dug in the early spring by the lower Lillooet of the Pemberton area and the Lower Nlaka'pamux, and were eaten raw or boiled and dried. The Nlaka'pamux also may have eaten the corms of *B. douglasii* (Turner, 1978; Turner et al., 1990). Note that these are rare species.

Blue Camas (or Camass) (including Common Camas,*Camassia quamash,*and Great, or Leichtlin's Camas,*C. leichtlinii; see Figure 15, page 85)*

Description: Herbaceous perennials growing from brown-membraned, dark-scaled onion-like bulbs, with scapose stems and a basal whorl of narrow, grass-like leaves. The flowers, borne in elongated terminal clusters, or racemes, are relatively large and conspicuous, from blue-violet to light blue or occasionally white. There are six "petals, or perianth segments, somewhat spreading and persisting at maturity. The fruits are barrel-shaped to three-angled capsules, splitting into three parts to release black, angled seeds.

The two species are similar in many of their features, and Indigenous People apparently seldom distinguished between them, except by their size. Common camas (C. *quamash)* is generally smaller and shorter, and blooms from April to May, two to three weeks earlier than great camas (C. *leichtlinii).* The latter is proportionately larger and taller. Its flower segments are symmetrical, and when they are finished, twist together in a spiral as they wither; those of common camas are slightly asymmetrical and remain spreading as they wither (cf. Turner and Kuhnlein, 1983).

Occurrence: Common camas is found in moist meadows and rocky outcrops, bluffs, and islands in southwestern British Columbia, mainly on southwestern Vancouver Island and the Gulf Islands, and in southwestern Alberta, extending south to California and Wyoming. Great camas is restricted to wet flats and ditches and moist rocky areas on southern Vancouver Island and the adjacent Gulf Islands, south to California. In the Victoria area, the two species are often found growing together.

Food Use: (see **WARNING**, following). The camasses are one of the most important "root" foods of western North American Indigenous Peoples, from southwestern British Columbia to Montana and south to California. Gunther (1973) wrote, "Except for choice varieties of dried salmon there was no article of food that was more widely traded [in western Washington] than camas" *see Figure 16, page 90).* Their use by Northwest Coast peoples is documented by Turner and Kuhnlein (1983), and various other references pertaining to them are cited there. They were a staple food of the Coast Salish of Vancouver Island, and, in their cooked, dried form, were traded to neighboring

areas—for example to the Nuu-chah-nulth on the west coast of the Island (Turner, 1975; Turner and Efrat, 1982; Turner et al., 1983; Turner and Kuhnlein, 1983). They were used almost universally by Western Washington groups (Gunther, 1973). The Squamish, Sechelt, Comox, and Kwak-

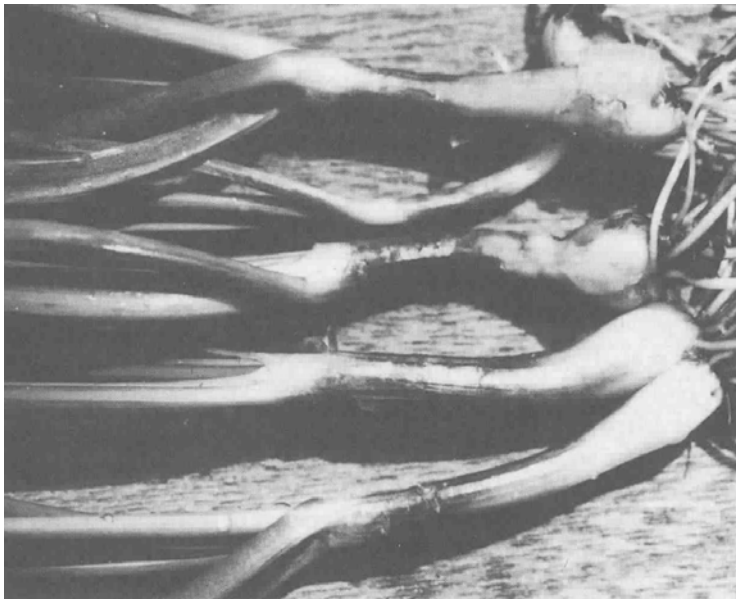


Figure 14 (above). Bulbs of nodding onion *(Allium cernuum).*

Figure 15 (below). Flowers of edible blue camas *(Camassia quamash)* from Vancouver Island, British Columbia.

waka'wakw of the British Columbia coast also used the bulbs, either trading them, or travelling to areas where they could be dug. The Nuu-chah-nulth sometimes travelled down the west coast of Vancouver Island to Victoria to dig these bulbs. There is also some suggestion that plants were dispersed beyond their natural range by transplanting (Turner and Efrat, 1982; Turner et al., 1983).

In the Interior of British Columbia, the dried bulbs were apparently obtained through trade mainly with the Interior Salish peoples of central and eastern Washington, Idaho and Montana, and were known to and used by the Nlaka'pamux and Okanagan-Colville (Turner, 1978; Turner et al., 1980; Turner et al., 1990). The Upriver Halkomelem Salish of the Fraser Valley also obtained them by trade, probably both from the coast—from the Vancouver Island and Washington Salish, and from the Interior, via their Nlaka'pamux neighbors (Galloway, 1982). The Blackfoot of Alberta also used

them, and were said to obtain them by trade from the Kootenay of Montana (Johnson, 1987). The Flathead and Kootenay of Western Montana used them extensively (Hart, 1976, 1979).

The bulbs were usually dug after flowering, in summer, although some peoples dug them in spring. Extensive patches of camas on southern Vancouver Island and the offshore islands were maintained by burning and clearing of brush, and were often "owned" by individual families and passed from generation to generation. Harvesting the bulbs took several days or weeks, with entire families participating. The bulbs were dug with a pointed digging stick; only the larger ones were taken, and the smaller ones were left to grow. The bulbs almost always pit-cooked, usually for 24 hours or more. The Blackfoot left them in the pit with a fire burning overtop for up to 70 hours (Johnston, 1987). Because most of their carbohydrate is in the form of a long-chain sugar, inulin, which is not very digestible, nor very palatable, long term cooking was necessary to chemically break down the inulin into its component fructose molecules. Fructose, a common sugar of fruit and honey, is both easily digested and sweet tasting (cf. Konlande and Robson, 1972). Thus, whereas the raw bulbs are barely usable for human food, the properly cooked bulbs are markedly sweet tasting, and much more digestible.

The steaming pits could be quite large; as much as 50 kg of bulbs could be cooked at a time. The cooked bulbs could be served right away, often at large feasts and potlatches, or sun-dried for storage or trade. The cooked bulbs were described as "something like a prune and a chestnut" (Johnston, 1987; Hellson and Gadd, 1974). The bulbs were often served with oil; for example, the Nuu-chah-nulth (Westcoast) people served them with whale or seal oil, and, in more recent times, with corn oil. Sometimes the bulbs were flattened or broken into pieces before drying. The dried bulbs were reconstituted by soaking in water or by cooking in soups and stews with meat or fish (Gun-ther, 1973; Turner, 1975; Turner and Kuhnlein, 1983).

Food Use of Related Species: The bulbs of eastern camas, or wild hyacinth (C.*scilloides),* whose range extends into southern Ontario, are edible and were "much eaten" by the American Indians according to Medsger (1939). It is not known whether Ontario peoples used them.

NOTE: Great camas (C.*leichtlinii)*is classed as a rare species in British Columbia, and its use is not recommended, unless it is grown in a garden setting.

WARNING: Death camas *(Zigadenus venenosus),* a bulb-bearing plant also in the lily family, often grows in the same habitat as the edible blue camas species, especially on southern Vancouver Island. The flowers are different, being cream-colored and in more compact heads, but the bulbs are very similar, and are highly toxic and potentially fatal. Anyone wishing to eat blue camas bulbs should be extremely careful not to confuse them with those of death camas.

Yellow Avalanche Lily, or Yellow Dogtooth Violet *(Erythronium grandiflorum)*

Description: Herbaceous perennial growing from an elongated, deeply buried bulb (commonly referred to as a corm). The leaves, usually two and basal, are lance- to ellipse-shaped, pointed, and tapering at the base. The flower stalk is erect, up to 15 cm (6 in.) or more high, bearing one or more nodding, golden yellow flowers. These are showy, up to 5 cm (2 in.) across, with the six "petals" strongly recurving at maturity, showing prominent stamens and pistil. The blooming season varies from April to August, depending on elevation. The club-shaped seed capsules are about 3 cm (1.2 in.) long, and split open into three parts to release the light-brown seeds.

Occurrence: Alpine meadows, slopes, and high valleys from southern and central British Columbia to southwestern Alberta, extending south in the United States to California and Colorado.

Food Use: The slender bulbs ("corms") contain the carbohydrate inulin [see under camas *(Camassia* spp.)] and hence are inedible raw. Some Indigenous People believe the raw bulbs to be poisonous (Turner et al., 1990). Nevertheless, as a cooked product, they were an important food of the Interior peoples of British Columbia. The dried bulbs were traded coastward, for example to the Upriver Halkomelem of British Columbia (Galloway, 1982). The bulbs were also eaten occasionally

by the Blackfoot of Alberta, either fresh or cooked with soup (Hellson and Gadd, 1974; Johnston, 1987). They were also eaten occasionally by Montana peoples such as the Flathead, but were said to cause vomiting if taken in quantity (Hart, 1976, 1979).

Among the peoples of British Columbia who used them—the Nlaka'pamux, Lillooet, Okanagan-Colville, Shuswap, Chilcotin, Carrier, and, through trade, the Nuxalk at Bella Coola—the bulbs were often associated with "mountain potato" (spring beauty corms; *Claytonia lanceolata).* In fact, the two "root" foods often grow together and were harvested at the same time. Whereas the *Erythronium* bulbs were normally pit-cooked for an extended period, however, the *Claytonia* corms could be steamed or pit-cooked for only a short time. Each group had its special localities where the bulbs were dug. The slopes and meadows of Botanie Valley near Lytton, for example, were a favorite traditional digging ground for the Nlaka'pamux people. The Lytton people acted as hosts to many families who journeyed there from different parts of the country to partake in the harvest of these and other wild vegetables. Within a period of 10 days to two weeks, a family might obtain 100 kg or more of the bulbs, enough to last them over the winter. Controlled burning of mountain slopes was formerly used to maintain digging sites.

The bulbs could be dug as early as April and May, but usually were obtained from the end of June through until the first snowfall. Their harvesting was often combined with huckleberry picking *(Vaccinium membranaceum)* or hunting. Families camped in the high country, and according to the archaeological findings of many pit-cooking depressions in upland areas throughout the Interior, they used to cook the bulbs on site, then dry them for transport. Sometimes the bulbs were dried raw, but most were left for a few days, then pit-cooked for 24 hours or more. Leaving the bulbs to age or "wilt" slightly before cooking apparently enhanced the conversion of inulin to fructose, because the bulbs were said to become sweeter. One Lillooet man said he had observed grizzly bears, who are known to relish these bulbs, overturn the turf and leave the bulbs exposed for a few days before returning to eat them; evidently bears were aware of their increased sweetness and digestibility (Turner et al. unpubl. notes, 1987).

The bulbs were cooked and dried loose, or were strung on strings or skewered on sticks, especially those destined for trade. The dried bulbs were cooked in soups and stews with fish or meat, or in special "puddings" (including dried black tree lichen. Saskatoon berries, deer fat, salmon eggs, and tiger lily bulbs) (Turner, 1978; Turner et al., 1980; Myers et al. unpubl. notes, 1988; Turner et al., 1990).

Food Use of Related Species: The bulbs of pink fawn lily, or pink Easter lily (*Erythronium revolutum)* were eaten by the Kwakwaka'wakw of Vancouver Island, and possibly some northern Nuu-chah-nulth groups. Boas (1921) describes their use in detail. They were dug with special spades when the leaves first sprouted in the spring, and stored in openwork baskets. Some times they were eaten raw on a hot day; otherwise they were steamed in tall wooden boxes and served with ooligan grease. They could also be baked for a short time in hot ashes and eaten with the fingers; water was drunk afterwards. For storage, the bulbs were dried in the sun (Boas, 1921; Turner, 1975). The related white fawn lily, or white Easter Lily (E.*oreganum)* of British Columbia is not known to have been eaten, and has a reputation for toxicity (Kingsbury, 1964). The Micmac were said to have eaten the "bulbs" of dogtooth violet, presumably *E. americanum.*They dug them in spring and ate them raw, boiled, or baked in the hot ashes of a fire (Stoddard, 1962). Jack (1893) noted that the Abenakis of Saint John River ate the roots of a "yellow lily," possibly also this species, which they called Indian rice.

NOTE: The Erythroniums are beautiful wild flowers and are seldom abundant. Harvesting the bulbs destroys the entire plant. They should not be used today except in an emergency, or by Indigenous People from areas where the bulbs were traditionally used.

Rice Root Lily, Indian Rice, Mission Bells, or Kamchatka Lily (*Fritillaria camschatcensis; see* Figure 17, *page 90)*

Description: Tall herbaceous perennial growing from a white bulb surrounded by numerous, tightly clustered, rice-like bulblets. The stems are usually 20-50 cm (8-20 in.) tall, sturdy and unbranched, bearing 1-5 whorls of smooth-edged, lance-shaped leaves at intervals from the base to the flowers, which are crowded near the top. The flowers, which usually appear in late spring or early summer, are bell-shaped and somewhat nodding, each with six dark brownish purple, unmottled "petals." The flowers have a disagreeable odor. The capsules are angled but scarcely winged. The related chocolate lily (F.*lanceolata),* on the other hand has deeply bowl-shaped, distinctly nodding flowers which are brown mottled with green or yellow, flowers and broadly winged fruiting capsules. Its bulbs are usually smaller, and also surrounded by rice-like bulblets.

Occurrence: *Fritillaria camschatcensis* grows in moist, grassy areas on coastal bluffs, upper edges of tidal flats, and other coastal habitats from southern British Columbia (extending into Washington) northwards to the Queen Charlottes and Alaska, as far as the Aleutian Islands and Kamchatka Peninsula. In northern British Columbia its range extends inland as far as Babine and Alesa lakes, sometimes occurring in mountain meadows up to 1500 m (5000 ft). Chocolate lily is found in open dry woods and meadows from southern coastal British Columbia eastwards to the Okanagan and south to California.

Food Use: The food use of this species and of chocolate lily by British Columbia and neighboring Indigenous groups is discussed by Turner and

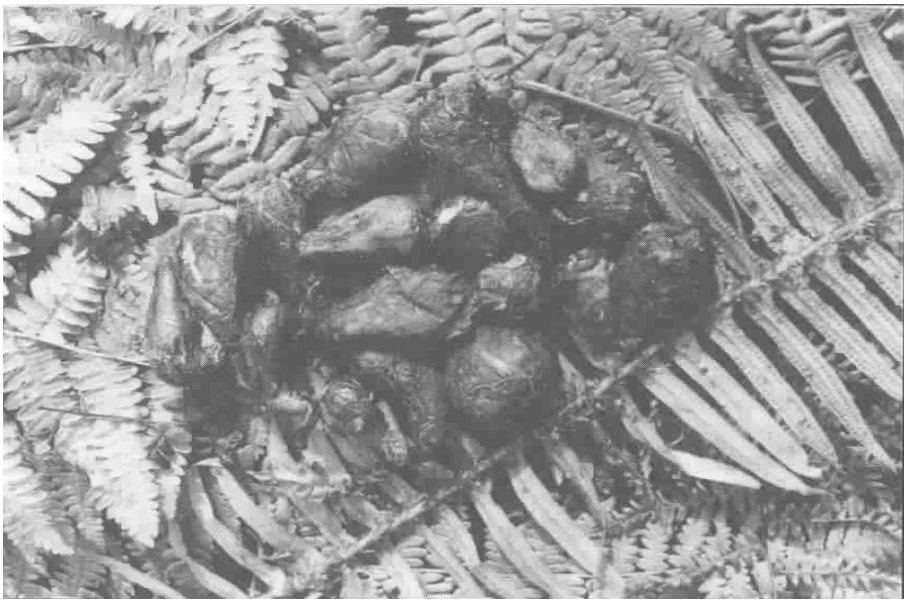
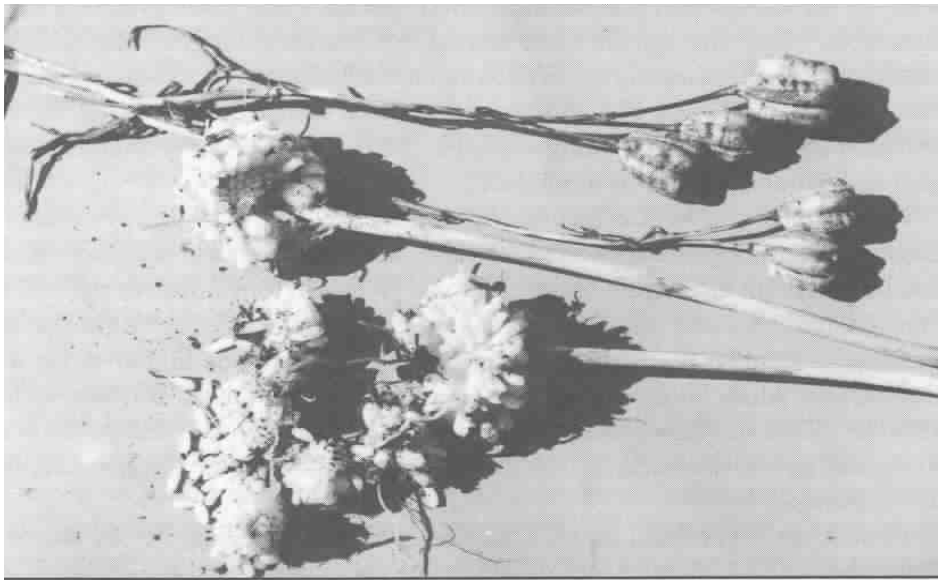


Figure 16 (above). Pit-cooked bulbs of edible blue camas *(Camassia quamash).*

Figure 17 (below). Bulbs and seed capsules of mission bells, or "rice-root" *(Fritillaria camschatcensis).*



Kuhnlein (1983). The bulbs, resembling tight clusters of white rice, were eaten by virtually all Northwest Coast peoples of British Columbia, especially those of the central and northern regions, including the Nuu-chah-nulth of the west coast of Vancouver Island, Comox, Kwakwaka'wakw, Heiltsuk, Haisla, Nuxalk of Bella Coola, Haida, Coast Tsimshian, and by most coastal Alaska groups such as the Kaigani Haida, Tlingit, Tanaina, Kodiak, and the Aleuts. Inland, they were used by the Gitksan and Nisgha, and possibly by the Nlaka'pamux (Gorman, 1896; Boas, 1921; Turner, 1975; Heller, 1976; 'Ksan, People of, 1980; Norton, 1981; Jacobs and Jacobs, 1982; Turner and Efrat, 1982; Turner et al., 1983; Turner and Kuhnlein, 1983; Kari, 1987; Turner et al., 1990).

The bulbs grow relatively close to the surface and are easily extracted. They were dug, usually in spring before flowering or in summer or fall, after flowering, using a digging stick, a wooden spade, or the fingers. They were cooked immediately, or could be partially dried, then stored in a cool place. They were cooked by steaming for about 30 minutes in a cedarwood box, by boiling for a short time then mashing to a paste, or occasionally, by baking in ashes. Sometimes they were dried for winter use ('Ksan, People of, 1980; Turner and Efrat, 1982; Kari, 1987). They were usually eaten with oil of some kind, such as ooligan grease, and, more recently, with sugar or molasses. They were also cooked in stews and soups with fish or meat, or eaten raw with fish eggs. The Gitksan sometimes toasted the kernels and served them with the inner bark of western hemlock. The Kaigani Haida sometimes boiled them with the chopped leaves of western dock (*Rumex occidentalis)* (Norton, 1981). Even when cooked, they are slightly bitter, and some people used to soak them in water overnight to reduce the bitter flavor. A few people still use them, but in many areas they have been forgotten.

Food Use of Related Species: Chocolate lily (*Fritillaria lanceolata),* mentioned above, was also a "root" food of British Columbia Indigenous Peoples. The bulbs were eaten by most Coast and Interior Salish peoples, either boiled or steamed in pits, and were sometimes dried for winter use (Turner, 1975, 1978; Galloway, 1982; Turner and Kuhnlein, 1983; Turner et al., 1990). A third, yellow-flowered *Fritillaria* species, yellowbell (F. *pudica),* is found in the dry Interior of southern British Columbia and southwestern Alberta. Its small bulbs were dug in early spring and eaten by the Nlaka'pamux, Okanagan-Colville, and Shuswap of British Columbia, by the Blackfoot of Alberta and Montana, and by the Flathead of western Montana. They were usually steamed or boiled, or were pit-cooked, and were sometimes dried for winter (Blankinship, 1905; Yanovsky, 1936; Hellson and Gadd, 1974; Hart, 1976, 1979; Turner, 1978; Turner et al., 1980; Turner et al., 1990).

The corms of calypso, a plant in a related family, the orchid family (Orchidaceae), were also eaten occasionally by Indigenous People of British Columbia. Calypso, or false ladyslipper (*Calypso bulbosa)*, is a beautiful exotic-flowered herbaceous plant growing from a small, white corm, and having a single basal, elliptical leaf with distinctive parallel veins. The purplish flowers have a modified "slipper" petal, with five upright "petals." The Haida of the Queen Charlotte Islands called

this plant "black-cod grease," and boiled and ate the corms, in the same way as "Indian rice" *(Fritillaria camschatcensis),* and enjoyed their rich flavor. Young Haida women ate them raw to improve their figures. The Lower Lillooet and some Nlaka'pamux people also ate the raw corms in small quantities (Yanovsky, 1936; Turner, 1975; Turner et al., 1990).

NOTE: The fritillarias and calypso are beautiful and unusual flowers, and are considered rare in many places. Since digging (or corms) destroys the entire plant, their food use is not recommended unless the plants are doomed to destruction by development.

Tiger Lily, Columbia Lily, or Canada Lily *(Lilium canadense* var.*parviflorum;* syn. *L. columbianum)*

Description: Herbaceous perennials with stems up to 1 m (3 ft) or more tall, growing from large, scaly bulbs. The leaves are lance-shaped and borne in whorls at intervals along the stem. The nodding flowers are produced in summer, borne singly or in small clusters at the top of the stem. The "petals" are bright orange to yellowish, spotted on the inside with dark purple; at maturity, they become strongly recurved, making the yellow anthers and pistil prominent. The fruiting stalks become erect, with oblong capsules tapering at the base and splitting in three parts to release flattened, brown seeds.

Occurrence: Meadows, thickets, and moist woods, from sea level to subalpine elevations, from south central British Columbia to Idaho and northern California; other varieties of this species are found from southern Ontario to the Maritimes, south to Kentucky and Alabama.

Food Use: The large bulbs were used by virtually all British Columbia Indigenous Peoples within the range of the plant, including the Straits, Halkomelem, Squamish, Sechelt, and Comox Coast Salish, and the Nuu-chah-nulth groups of the west coast of Vancouver Island, as well as by the Nlaka'pamux, Lillooet, Okanagan-Colville, Shuswap, Kootenay, Carrier, and Chilcotin of the Interior (Morice, 1893; Yanovsky, 1936; Turner, 1975, 1978; Turner et al., 1980; Galloway, 1982; Turner et al., 1983,1990; Myers et al unpubl. notes, 1988). They were also used by most western Washington groups (Gunther, 1973). They are bitter, or peppery tasting, and therefore tended to be used more as a flavoring or condiment than as a food by themselves.

The bulbs were dug at various times: in spring, before flowering, during flowering in early summer, immediately after flowering, or in the fall, after the leaves have died down. In the last case, stakes were sometimes set out around where the flowers were growing, so the bulbs could be located later (Gunther, 1973). Some people say the bulbs are too bitter at flowering time, but become more palatable afterwards. The bulbs were generally steamed, or boiled, but were also pit-cooked (R. Bouchard pers. comm., 1978; Galloway, 1982; Turner et al., 1983, 1990). After cooking, they were usually dried for winter storage.

The bulbs, fresh or dried, were cooked in soups, or with meat or fish. The Nlaka'pamux people liked to cook them with fermented salmon roe, with meat, or in a "vegetable soup" with other "roots" such as nodding onion, salmon heads, and saskatoon berries. More recently, they have been mixed with gravy, or cooked with flour, sugar, and water to make a type of pudding (Galloway, 1982; Turner et al., 1990).

Food Use of Related Species: The Kootenay ate the bulbs of the related wood lily *(L. philadelphicum)* when available (Turner, 1978). These bulbs were also eaten by the Blackfoot and Stoney (Assiniboin) of Alberta. They were dug in mid-summer, and eaten raw or cooked in soups (Scott-Brown, 1977). The Stoney also considered the flower petals to be edible. The bulbs were also eaten, fresh or dried, by the Woods Cree of east-central Saskatchewan and by the Meskwaki of the Midwestern States (Leighton, 1985; Yanovsky, 1936; Smith, 1928). The bulbs of a "red-lily," apparently *L. canadense* were known as a famine food to the Jesuits, as learned from the Indian peoples of the Great Lakes region (Aller, 1954).

Wild Lily-of-the-Valley *(Maianthemum canadense* and *M. dilatatum)*

Description: Herbaceous perennials growing from elongated rhizomes. The leaves, usually 2 or 3, are heart-shaped, those of *M. canadense* being stalkless, those of *M. dilatatum* distinctly stalked. The small, white flowers are borne in dense terminal clusters. The berries are pea-sized, at first hard and green mottled with brown, then turning soft and red. The former species is smaller, commonly less than 20 cm (8 in.) tall, whereas the latter grows to about 40 cm (16 in.) tall.

Occurrence: Both species grow in moist woods and clearings; *M. canadense*is transcontinental, being found from eastern British Columbia to Labrador and Newfoundland; *M. dilatatum* occurs in the Pacific Coastal region from Alaska and western British Columbia east to Idaho and south to California.

Food Use: In spring, the new "folded" leaves of *M. dilatatum* were boiled and eaten as greens by the Kaigani Haida of Alaska (Norton, 1981).

The berries of both species are edible. Those of *M. canadense* were picked in late August or early September, when fully ripe, and eaten by the Fisherman Lake Slave of the Northwest Territories (Lamont, 1977), and likely, on a casual basis by other Indigenous groups within their range. They were also used by the Potawatomi of the Great Lakes (Smith, 1933). The berries of *M. dilatatum* were formerly eaten by many groups of British Columbia and neighboring areas, but were seldom highly regarded (Gunther, 1973; Turner, 1975). The Squamish, Kwakwaka'wakw, Nuxalk (Bella Coola), Nuu-chah-nulth (Westcoast), and Haida were among the peoples who ate them. Usually, they were eaten only casually, by hunters or by children. Sometimes the unripe berries were eaten fresh, or the berries were picked green then stored until red and soft. The Haida apparently used them to the greatest extent. Sometimes the berries boiled while still green, then mixed with other fruits such as salal, and dried in cakes. In one Haida myth, a feast for supernatural beings included highbush cranberries, wild crabapples, salal berry cakes, lupine root cakes, wild lily-of-the-valley berries, and ooligan grease (Turner, 1975). The Kaigani Haida scalded the berries a few minutes and ate them with animal or fish grease, and, recently, sugar. They also stored them in animal or fish grease with other berries for winter use (Norton, 1981). Some Nuu-chah-nulth people believed that the berries could only be eaten ripe, with oil, or they would cause stomach pains (Turner and Efrat, 1982).

False Solomon's-seal, or False Spikenard *(Smilacina racemosa)*

Description: Tall herbaceous perennial growing from thick, whitish, branching rhizomes; often found in dense clusters. The leafy, arching stems grow to about 1 m (3 ft) tall. The leaves are smooth-edged, broad and elliptical, and are borne alternately along the stem in two rows. They are distinctly parallel-veined and often clasping. The flowers are small and cream-colored, in a dense, terminal cluster. The berries are small and densely clustered; at first they are green or brown and mottled or striped, ripening to bright red.

Occurrence: This attractive plant grows in rich woods, thickets, and moist clearings, from British Columbia to the Maritimes, south to California and Georgia in the United States.

Food Use: (**WARNING:** see under twisted-stalk, *Streptopus amplexi-folius,* following). The young greens, fleshy rhizomes, and the ripe berries of this plant were all eaten by Indigenous Peoples in various parts of Canada, but their use was by no means universal. The rhizomes were cooked and eaten by the Ojibwa of Ontario, after first being soaked in lye "to get rid of their disagreeable taste" (Smith, 1932; Fernald et al., 1958). The Okanagan of British Columbia sometimes chewed the rhizomes raw, and used them to flavor black tree lichen and other foods being pit-cooked (Turner, 1978; Turner et al., 1981). The Nlaka'pamux also occasionally ate the rhizomes, but some know them only as food for bears (Turner et al., 1990). Some Kootenay people noted that they are "grizzly bear's favorite food," but did not consider them fit for humans.

The Nlaka'pamux sometimes harvested the young shoots in spring, and cooked and ate them like asparagus, or cooked them as a flavoring with meat (Turner in press., 1989). Fernald et al. (1958) also note the asparagus-like quality of the young shoots.

Some British Columbia Indigenous People, including Kwakwaka'wakw, Nlaka'pamux, Lower Lillooet, Shuswap, Okanagan, Carrier, and Gitksan, ate the berries, although others, such as the Upriver Halkomelem and some Nlaka'pamux and Lillooet people believed the berries of this and related species to be the food of snakes, and avoided them (Turner, 1975; Galloway, 1982; Turner et al., 1990). In most cases when the berries were eaten, their use was casual, by hunters, berry-pickers, or children. Some, however, used them to a greater extent. For example, the Gitksan picked them ripe, in August, and preserved them in ooligan grease, storing them in boxes in a cool place. They were said to be often reserved as food for chiefs ('Ksan, People of, 1980). The Carrier call the fruits "sugar berry," or "saccharin berry," and, as well as eating them themselves, consider them a very important food for bears and many smaller animals (Turner, 1978).

Food Use of Related Species: A variety of other, similar species of the lily family were used as food by Indigenous People (see also under twisted-stalk, *Streptopus amplexifolius,* following), but in most cases, it was on a restricted or casual basis. For example, the berries of star-flowered Solomon's-seal *(Smilacina stellata)* were chewed raw by the Nuxalk of Bella Coola, British Columbia, but were not used by most other Northwest Coast groups (Turner, 1975). The Upriver Halkomelem regarded them as "snake's food" (Galloway, 1982). They were eaten by some Interior British Columbia peoples, including Nlaka'pamux (some people only), Lower Lillooet, Shuswap, Okanagan-Colville, and Carrier (Turner, 1978; Turner et al., 1980). Their young shoots are said to be "quite as palatable as dandelion-greens," when boiled (Fernald et al., 1958).

Berries of three-leaved Solomon's-seal *(Smilacina trifolia)* were eaten in July and August, fully ripe and dark red, by the Fisherman Lake Slave of the Northwest Territories (Lamont, 1977), but were considered inedible by the Chipewyan of northern Saskatchewan (Marles, 1984).

One Nlaka'pamux woman said that the berries of fairybells *(Disporum hookeri)* were edible, and called the plant "tomato plant" because of the appearance of the berries (Turner et al., 1990). Most British Columbia and neighboring peoples, however, considered them poisonous, some calling them "snake berries" (Gunther, 1973; Galloway, 1982). The raw berries of rough-fruited fairybells *(Disporum trachycarpum)* were eaten by the Blackfoot of Alberta (Johnston, 1987; Hellson and Gadd, 1974). The Iroquois of the Lake Ontario region used the dried root powder of Solomon's-seal *(Polygonatum biflorum)* in bread, according to Parker (1910).

Cucumberroot Twisted-Stalk, or Wild Cucumber, Liverberry, Watermelon-berry, or Scootberry *(Streptopus amplexifolius)*

Description: Tall-stalked, herbaceous perennial with stems, sometimes over 1 m (3 ft) tall, that are loosely branched and distinctly angled at each leaf node. The leaves are smooth edged, elliptical, markedly parallel-veined, and clasping at the base, borne alternately at intervals along the stem. The small, bell-shaped flowers are borne, each hanging from a slender, bent stalk, one per leaf, beneath the leaves of the upper part of the stems. The berries are hanging and elongated, red, orange, or yellowish, and somewhat translucent, so that the small, whitish seeds are visible within.

Occurrence: This plant is transcontinental, occurring in moist woods and thickets from British Columbia and the Yukon to Labrador, Newfoundland, and the Maritimes, north to central Alaska, and south to California and Arizona in the West and North Carolina in the East.

Food Use: (see **WARNING**, following). The tender young shoots and clasping young leaves of this plant were relished in spring, raw, by some Alaska Indigenous People, but apparently this use was learned from local non-Indigenous people and was not traditional. Some Alaska Indigenous People actually feel the plant is poisonous (Heller, 1976; Kari, 1987). Norton (1981) notes that some Kaigani Haida people of Alaska now occasionally use the root in salads for its cucumber flavor. Some Nuu-chah-nulth people from the West Coast of Vancouver Island regard the plant as deer food (Turner and Efrat, 1982).

Most Indigenous People do not eat the berries, although they were eaten, when ripe in late August, by the Fisherman Lake Slave of the Northwest Territories, who called the plant by the same

name as *Smilacina trifolia* (Lamont, 1977), and by the Bristol Bay Eskimo of Alaska (Heller, 1976). Kari (1987) noted that both berries and shoots were eaten by some non-Indigenous people of the Tanaina area, and that some Lime Villagers of this group said berries were edible, but most Tanaina considered the berries and plant poisonous (Kari, 1987). Kaigani Haida did not eat the berries originally (Norton, 1981). The Haida of the Queen Charlotte Islands have a deep suspicion of the berries, which they call "witch/owl berries," or "bear berries" (Turner, 1975). The Kwakwaka'wakw call them "frog's berries," believing them to be poisonous for people. The Ditidaht (Nitinaht) considered them to be wolf's food, and the Upriver Halkomelem, Sechelt, and other Coast Salish groups believed them to be food for snakes, not for people (also *S. roseus)* (Turner and Bell, 1973; Turner, 1975; Galloway et al., 1983). Fernald et al. (1958) characterized the berries as "cathartic... insipid, with a cucumber-flavor," and noted they should be partaken of with caution.

Food Use of Related Species: (see also under false Solomon's-seal, *Smilacina racemosa,* discussed previously). Indian cucumberroot *(Mediola virginiana)* is cited in several books on edible plants (e.g., Fernald et al., 1958) as having a pleasant-tasting rootstock, which was said to have eaten by Indians of the Northeastern States (cf. Yanovsky, 1936), but there is little reference to it in ethnobotanical or ethnographic literature. Since it is often rare, and eating the rootstocks can endanger its survival, its use today is not recommended.

The shoots, rootstocks, and fruits of various species of greenbrier *(Smilax* spp.) were used as food by Indigenous Peoples of the Southeastern States (Yanovsky, 1936; Morton, 1960), but although there are four species in Canada, no records could be found of them having been eaten here.

Asparagus *(Asparagus officinalis),* introduced as a garden and crop plant to various parts of the country, and naturalized in some localities, was adopted and used by Indigenous People. The Iroquois, for example, cooked the young new stalks as greens (Parker, 1910), as did the Nlaka'pamux, who learned of their use from local Chinese and European settlers (Turner et al., 1990).

WARNING: Anyone wishing to use the young shoots of twisted-stalk or false Solomon's-seal as edible wild greens should be very careful to identify them correctly. At the shoot stage, these plants resemble the highly toxic false, or Indian hellebore *(Veratrum viride),* which could cause severe poisoning and death if eaten. Although Hellson and Gadd (1974) reported that the young leaves of Indian hellebore were actually added to soups by the Blackfoot, and that children were given its leaves to chew, to stop them from drooling, these uses are definitely not recommended in light of the highly dangerous nature of this plant.

Various other plants in the lily family are known to be very poisonous, including death camas *(Zigadenus* spp.), discussed under onion *(Allium cernuum),* as well as various garden and house plants such as gloriosa lily *(Gloriosa* spp.), star-of-Bethelem *(Ornithogalum umbellatum),* and squill *(Scilla* spp.). Others, such as mountain bells *(Stenanthium occidentale)* and trillium *(Trillium ovatum),* are said by some Indigenous People to be poisonous or inedible (Turner et al., 1990).

Grass Family (Poaceae, or Gramineae)

Grasses, General

Description: Grasses are known to almost everyone by their long, narrow, parallel-veined leaves, the base of which form a sheath around the jointed, or noded flowering stems, or culms, which are usually hollow. Many are annuals, with fibrous roots; many others, especially our native grasses, are perennials, growing from rhizomes. The flowers lack the brightly colored petals of many other plants. They are small, and borne singly to several in spikelets, each of which is subtended by usually two, more or less boat-shaped bracts called glumes. The spikelets are grouped into clusters to form spikes, racemes, or panicles, which can be tightly or loosely arranged. Each flower consists of a pair of bracts, the lemma and palea surrounding 3 to 6 pollen-bearing stamens and/or a single ovary which develops into a grain.

Occurrence: Grasses are one of the most ubiquitous plant families, and there are over 380 species native to Canada, as well as about 100 introduced species to be found growing wild in some localities (Scoggan, 1978). Grasses are found from alpine meadows to salt marshes, from coast to coast, and extending to the Arctic Ocean.

Food Use: The grass family includes some of our most important worldwide economic plants, such as wheat, barley, rye, maize, rice, and other cereal grains, bamboo, and sugar cane. In Canada, however, grasses as a group were relatively little exploited by Indigenous Peoples traditionally. Grains of only two grasses, maize or corn *(Zea mays),* and wild-rice *(Zizania aquatica),* were used in any quantity. Other grasses which may have been used in some localities in Canada are mentioned here.

The grains of many types of grasses whose ranges extend into Canada were eaten by Indigenous Peoples in the adjacent United States, and many occur in archaeological sites (Kindscher, 1987). These include: blue grama *(Bouteloua gracilis),* Canada wild rye *(Elymus canadensis),* June grass *(Koeleria cristata),* muhly *(Muhlenbergia* spp.), Indian rice grass *(Oryzopsis hymenoides),* panic grass *(Panicum* spp.), and sand drop-seed *(Sporobolus cryptandrus).* They were apparently little used by Canadian Indigenous Peoples, but may have been utilized in the past, or in some localities.

The stem bases of reed grass *(Phragmites australis;* syn. *P. communis)* were occasionally eaten in spring by some Chipewyan people, but the plant is rare within their range (Marles, 1984).

Sea lyme grass, or strand-wheat *(Elymus arenarius)* is a species of some interest in Canada. It is described by Scoggan (1978) as having been introduced to Canada, although Griffin and Rowlett (1981) present a distribution map showing its widespread occurrence in sites along the entire coastline of Canada, including the Arctic coast. These authors point out that it was an important cereal grain of the Vikings, and that it occurs in carbonized form in Viking archaeological sites of Iceland and Greenland. They suggest that an increase of *Elymus* pollen contemporary with the Viking homesteads at L'Anse-aux-Meadows, Newfoundland, is probably due to the use of this grain by early (pre-Columbia) Viking settlers. However, there is apparently no evidence to show its use by Indigenous Peoples in Canada.

Various grasses, while not actually eaten, were used in food preparation by Indigenous People. For example, giant wild rye *(Elymus piperi;* syn. *E. cinereus)* and bluebunch wheat grass *(Agropyron spicatum),* were used by Interior Salish peoples of British Columbia in pit-cooking, to line the pits and intersperse between layers of food. The Nlaka'pamux, Chilcotin and other Interior peoples sometimes used bundles of bluebunch wheat grass or "timbergrass" *(Calamagrostis rubescens)* as whippers for soapberries *(Shepherdia canadensis)* and used dried grass used to line storage baskets for berry cakes and dried roots (Myers et al. unpubl. notes, 1988; Turner et al., 1990). Some coastal peoples of British Columbia also used dried grasses of various types to intersperse between layers of dried berries and other food being stored (Turner et al., 1983). Undoubtedly, grasses were used in similar ways by Indigenous Peoples in many regions of the country.

Maize, or Indian Corn *(Zea mays)*

Description: Herbaceous annual growing up to 3 m (10 ft) or more tall, with usually solitary stock growing from fibrous roots. The stock is thick and solid, with joints or nodes at intervals. The leaves, produced at each node and sheathing the stem at the base, are long and pointed, with parallel veins. Male and female floral structures are carried in separate flowers on different parts of the plant. Pollen, spread by wind, is produced by the stamens in terminal tassels, or panicles of male flowers. Female flower spikes, or "ears," are solitary, enclosed within many layers of leafy husks. Each flower produces a long, silky style, combined as "corn silk." The ripened grains remain tightly attached and crowded in rows on the central cob, enclosed within the husks.

Occurrence: Cultivated maize apparently originated in southern Mexico and Guatemala many thousands of years ago. It occurs in Canada only under cultivation, although it sometimes escapes

to roadsides and waste places, as in southern British Columbia, southern Ontario, and southwestern Quebec.

Food Use: For detailed discussion of the taxonomy, domestication and diffusion of maize, the reader is referred to Galinat (1985). At least one variety of maize, northern flint or maiz-de-ocho, an eight-rowed type, was being cultivated in southern Canada, including the Gaspe Peninsula and St. Lawrence Valley, by Huron and Iroquoian peoples when Europeans first came. Jacques Carrier, the first European who ascended the St. Lawrence, found that the Indians of Hochelaga (at the present site of Montreal) had "...good and large fields of corn." Champlain and other early French explorers also reported a large reliance on corn" of Huron and Iroquois peoples. In 1687 Denonville destroyed an estimated 1,000,000 bushels of Iroquois corn in adjacent New York (Geographic Board of Canada, 1913; Waugh, 1916).

Corn, beans, and squash were known as the "Three Sisters" by the Iroquois. They were planted each year with great ceremony by the women. The seeds were planted in rows, and various types of hoes or digging implements were used. Before planting, the corn grains were soaked in herbal solutions made from reed grass *(Phragmites australis;* syn. *P. communis)* and other types of plants. Seeds of beans and squash, and sometimes sunflower, were planted together with the corn; beans would grow up the cornstalks. Prayers were offered and ceremonies performed throughout the growing season, as described by Waugh (1916). The ripened ears were harvested into baskets, then shelled, except for a few husks, which were left on for braiding the ears into long strings for drying. The dried corn was stored in large bins or cribs, or in underground caches.

For Iroquois and Huron, as well as the Potawatomi, Abenaki and others (Jack, 1893; Smith, 1933; Rousseau and Raymond, 1945; Aller, 1954; Tooker, 1964), corn was a staple, being prepared in as many as 40 different ways; many of these ware described in detail by Waugh (1916). Its main use was in bread making, but it was also made into soups and puddings of various types, and was roasted, parched for travelling, or eaten green, on the cob or in soup or bread. Roasted corn was also used to make a coffee-like beverage. The stalks were sometimes chewed as thirst quenchers.

The use of corn spread to other Indigenous groups in Canada during the time of trading and European settlement. For example, it was being cultivated by the Nlaka'pamux and other peoples of the southern Interior of British Columbia by the turn of this century (Teit, 1900).

Wild-rice *(Zizania aquatica* L.; incl. *Z. palustris* L.)

Description: The biology and taxonomy of wild-rice is presented in detail by Dore (1969) and Jenks (1977). It is a tall, annual grass, growing erect in standing water. The hollow, jointed stalks usually do not appear above the surface of the water before mid-June. When mature, the stems often rise 2 m (6.5 ft) or more above the water line. The leaves are long and narrow, up to 3 cm (1.2 in.) or more wide, and the flowers are borne in early August in a loosely branched cluster, or panicle, at the top of the stem. Each panicle bears female, seed-producing flowers on stiff, upper branches and male, pollenbearing flowers on the lower, more flexible, spreading branches. The grains, which ripen over a period of a week or two in late summer, are elongated and brown-skinned. At maturity, the hulls with enclosed grains soon "shatter," or drop off into the water. Four varieties of this species in Canada are recognized by Scoggan (1978), based on relative size, habitat, and flower and grain characteristics. Dore (1969) distinguishes two distinct species, *Z.palustris* and *Z.aquatica.*The varieties delineated by Scoggan (1978) include: *Z.aquatica var. aquatica* (southern wild-rice), a robust plant up to about 3 m (10 ft) tall, with wide leaves (up to 5 cm, or 2 in. across), and long awns (up to 7 cm, or 2.8 in.) on its fruiting lemmas; var. *brevis* (estuarine wild-rice), a smaller type, usually less than 1 m (3 ft) tall, with leaves up to about 1.2 cm (0.5 in.) across, and awns up to 3 cm (1.2 in.) long; var. *interior* (interior wild-rice), a tall plant, up to 3 m (10 ft), with leaves up to 3 cm (1.2 in.) across, and large, many-grained fruiting clusters; and var. *angustifolia* (northern wild-rice), with few-fruited lower branches, narrow leaves, and shorter stems, usually less than 1.5 m (5 ft) tall. This last variety is sometimes called "lake rice," whereas var. *interior* is called "river rice." "Lake rice" has the largest grains of all the varieties; "river rice" has shorter, plumper, more numerous grains (Dore, 1969; Morton, 1980).

Occurrence: Wild-rice is found mainly along the shores of rivers and streams in shallow water, where it often forms dense, continuous beds. It also occurs along lakeshores, especially near inlet and outlet points, but is usually less abundant. It is found from Atlantic Canada to Manitoba and Saskatchewan, south to Texas and Florida. All the varieties mentioned occur in various localities in eastern Canada. Var. *interior,* found in Saskatchewan and Manitoba, is harvested annually by Indigenous People along the eastern shore of Lake Winnipeg., and var. *angustifolia* is considered native in the St. John River valley in eastern New Brunswick. Opinions vary as to the antiquity of some populations, since wild-rice is known to have been planted in many locations in recent times as a source of food, both for humans and ducks.

Food Use: Wild-rice is one of the truly North American foods that has gained commercial importance in world markets. It has been harvested by Indigenous Peoples of eastern North America since prehistoric times, and it is now being marketed by some Indigenous groups. It is the only cereal crop that grows wild in Canada (Dore, 1969).

This grain was an important food for many Indigenous groups, from Lake Winnipeg to New Brunswick, including Cree, Ojibwa, Assinboin, Potawatomi, Menomini (whose name means "wild-rice people"), Ottawa, Huron, Iroquois, and Malecite (Waugh, 1916; Smith, 1933; Speck and Dexter, 1952;Aller, 1954; Jenks, 1977; Arnason et al., 1981; Vennum, 1988). As a trade product, the use of wild-rice extended even further. It is said to have been traded, at least in historic times, by the Nlaka'pamux of British Columbia at Banff and Calgary from the Cree and other eastern groups (Turner et al., 1990). Its harvesting and preparation are described in detail in many sources (Smith, 1932,1933; Reagan, 1928; Densmore, 1928; Stowe, 1940; Dore, 1969; Jenks, 1977). Some people traditionally sowed the wild-rice, whereas others let it seed itself naturally.

Wild-rice is harvested from late August to early September. Similar methods are used today as in the past. The general technique is described by Jenks (1977). Before the grains were ripe, women would often go to the rice fields by canoe and tie the standing stalks into uniform bunches using strings of basswood bark or other materials. Then, during harvesting, two people in a canoe, usually women, would push their way through the wild-rice beds, and while one person poled, the other pulled the bundled stalks over the side of the canoe, and hit the fruiting heads with a stick to knock the grains off into the bottom of the canoe. On the return journey, the other person would harvest grain into her end of the canoe, while the first harvester poled.

The harvested grain was taken out and dried or cured, often on mats set on a scaffold over a fire, or in a kettle. The awned hulls were then thrashed off, a job done by men and boys. This was usually by trampling on the grain, often in a small depression in the ground lined with buckskin. The hulled grains were winnowed, by tossing them on a tray in the breeze, or by fanning them, to separate out the chaff. The grain was then stored in sacks or underground caches for future use, or for trade or sale.

Wild-rice was prepared and served in many different ways. Often it was cooked in soups, or boiled with meat, fish, roe, or with blueberries or other fruits. One favorite dish was wild-rice, corn, and fish boiled together. The cooked grain was also eaten plain, boiled or steamed, and eaten with sweets such as maple sugar. Sometimes it was roasted and eaten dry (Dore, 1969; Jenks, 1977). Wild-rice is an important Canadian product, especially in Manitoba and Ontario, and Indigenous People are the major harvesters. Modern harvesting practices are described by Dore (1969) and Nabhan (1989). Unfortunately, the high prices paid for this "gourmet" food sometimes preclude it use in Indigenous diets.

NOTE: Wild-rice has been suggested as a potential crop plant for the Florida Everglades, among other regions of North America (cf. Morton et al., 1980). In the late 1970s, commercial production of wild-rice began in the Sacramento Valley of California. In 1986, California's 15 thousand acres of wild-rice paddies yielded more than 10 million pounds (4.5 million kg) of wild-rice, estimated to be about 20 times the quantity of wild-rice harvested from natural habitats in its native range. Hence, the future of wild-rice production marketing by Indigenous Peoples is somewhat bleak (Nabhan, 1989).

Cattail Family (Typhaceae)

Common Cattail *(Typha latifolia)*

Description: Tall perennial herb growing from thick, white, fleshy rhizomes. The leaves are tightly clasping at the base, and are long, upright, flat on the inside and rounded on the outside, with a spongy interior. They are mostly about 2 cm (0.8 in.) across and up to 2 m (6.5 ft) or more tall. The flowers are borne in a compact, terminal spike on a round stalk, familiar to most people as the "cat's tail." The male, pollen-producing flowers are produced on the thin, upper portion of the spike, the female, seed-producing flowers on the lower portion. In fruiting, this part turns a deep brown, and the ripe seeds are eventually released as the head breaks apart into a wooly mass of fluff in late summer.

Occurrence: A common plant of shallow marshes, swamps, and lake edges, often forming extensive patches, cattail is found across Canada, from British Columbia and the Yukon to the Maritimes and Newfoundland. Its range extends north to central Alaska and south to Mexico, and it also occurs in Eurasia and North Africa.

Food Use: Sometimes called "Cossack asparagus," cattail is widely known for its edible shoots, rhizomes, and flower spikes (cf. Turner and Szczawinski, 1980). It seems surprising that its used by Indigenous Peoples was not more widespread. In British Columbia, for example, although it is very common, it was far better known for its leaves which were used as a mat-making material (Turner, 1979). However, its rhizomes were eaten in early spring, either pit-cooked or roasted, by the Lower Lillooet, Nlaka'pamux, and Okanagan-Colville, and some Okanagan-Colville, Carrier and Chilcotin people, especially children in the last case, peeled and ate the white lower stem and leaf bases (Turner, 1978; Turner et al., 1980; Myers et al. unpubl. notes, 1988). The Nlaka'pamux possibly also ate the flowering spikes and pollen (Turner et al., 1990). The rhizomes and inner stalks of cattail were also used by the Chehalis and Lower Chinook of Western Washington (Gunther, 1973). Heller (1976) reports that cattails were apparently not used traditionally by Alaska Indigenous Peoples.

The Fisherman Lake Slave of the Northwest Territories ate the rhizomes in the fall, raw or fried in animal or fish grease (Lamont, 1977). Some Chipewyan peoples dug the rhizome in spring when it is "just like fat inside" and ate it raw or roasted in the embers. This use may be fairly recent in the northern part of the territory. The southern Chipewyan sometimes dried the rhizome and ground it for a porridge meal to be used in winter (Marles, 1984). The Woods Cree of east-central Saskatchewan ate the fresh stem bases, young shoots, and peeled rhizomes. They also dried the rhizomes over a fire for winter storage (Leighton, 1985). Honigmann (1961) described the use of a "black-yellow bulbous growth" at the top of a "long reed," which was occasionally picked in summer, peeled with a knife, and eaten by the James Bay Cree. The Ojibwa of Ontario ate the green flower spikes, and used the pollen for flour (Arnason et al., 1981). Cattail was also used as food in the Pacific states and the Southwest (Yanovsky, 1936).

Cattail leaf mats were important in food preparation in many areas. They were used as a surface on which to dry berries and "root" foods, and were also used as "plates" for serving food (cf. Turner et al., 1990).

Food Use of Related Species: Narrow-leaved cattail *(T. angustifolia)* occurs in eastern Canada, from southeastern Manitoba to the Maritimes, and may have been used as food in the same way as common cattail.

Eel-grass, or Pondweed Family (Zosteraceae)

Eel-grass *(Zostera marina; see Figure 18, Page 114)*

Description: Grass-like marine perennial with long, clustered, ribbonlike bright green leaves about 1 m (0.4 in.) wide. The stems are short and light green to brownish, borne on long, whitish to

brown fleshy rhizomes. The flowers and fruits are inconspicuous, encased within the sheathing leaf bases.

Occurrence: Shallow coastal (marine) waters on the Pacific, Arctic and Atlantic coasts of Canada, extending in the West from Alaska and the Aleutian Islands to southern California, and in the East from northern Quebec to South Carolina.

Food Use: The crisp, sweet, salty rhizomes and leaf bases were eaten by several coastal groups of British Columbia, including Straits Salish, Nuu-chah-nulth, Kwakwaka'wakw, and Haida. Some Straits people placed the rhizomes in steaming pits to flavor meat, and sometimes they were formed into cakes and dried for winter. Among the Kwakwaka'wakw, the uncooked rhizomes, stems and leaf-bases were a favorite feast food. They were gathered at low tide from canoes, using a long pole which was twisted around the leaves, then jerked to detach the plants from the bottom. The green leaves were broken off, leaving the whitish basal portions, which were served on mats at feasts. The guests customarily took four together, cleaned them of any rootlets, broke them to the same length, tied them in a bundle, dipped them in ooligan grease, and ate them with the fingers. It was believed that eel-grass was the food of the mythical ancestors of the Kwakwaka'wakw (Boas, 1921; Turner, 1975). The Hesquiat (Nuu-chah-nulth) of Vancouver Island were said to prefer the type with light green rhizomes, rather than dark rhizomes. They pulled them up around May, washed, and ate them in large quantities (Turner and Efrat, 1982).

Eel-grass was also used by various coastal groups, such as the Coast Tsim-shian, Nuu-chah-nulth, and Haida, for collecting herring eggs in the spring. People still go out in row boats or canoes at low tide and use rakes to harvest the spawn by twisting the eel-grass up (Port Simpson Curriculum Committee, 1983). The spawn is then removed and eaten separately, or simply cooked and eaten with the eel-grass leaves (Turner, 1975; Turner and Efrat, 1982).

Food Use of related Species: The long, thin leaves of two related marine species, sea-grass, or surf-grass *(Phyllospadix scouleri* and *P. torreyi)* were eaten fresh or dried, or were used to collect herring spawn by the Nuu-chah-nulth, Kwakwaka'wakw and probably other coastal groups of British Columbia (Turner, 1975; Turner and Efrat, 1982; Turner et al., 1983). Some people ate the leaves with the herring spawn, but usually they were discarded. The Makah of Washington were said to eat the rhizomes of *P. scouleri* raw in the spring (Gunther, 1973), but this information probably refers to *Zostera.*

Another relative of eel-grass, pondweed *(Potamogeton* spp.), is called "deer's food" in Hesquiat (Nuu-chah-nulth), but is not eaten by these people (Turner and Efrat, 1982).

FLOWERING PLANTS (ANGIOSPERMS- DICOTYLEDONS)

Maple Family (Aceraceae)

Bigleaf Maple, or Broad-leaved Maple *(Acer macrophyllum)*

Description: A medium to large tree, up to 30 m (100 ft) or more high and 60 cm (2 ft) or more across. Branching is opposite, and the greyish-brown bark is shallowly furrowed. The wood is hard and light brown. The leaves are deciduous and very large, with long stalks. The blades may be 15 to 30 cm (6 to 12 in.) across, and deeply five-lobed; the lobes are pointed, with a few, irregular, blunt teeth along the edges. When broken, the leaf-stalk exudes a milky sap. The leaves turn yellow in autumn. The greenish yellow flowers appear in spring as the leaves unfold, are produced in drooping clusters. The fruits mature in late summer and are usually paired. The hairy seeds have flattened wings up to 5 cm (2 in.) or more long, which are not spread very far apart.

Occurrence: Moist woods and clearings in southwestern British Columbia, extending south to California.

Food Use: The Lower Nlaka'pamux (Thompson) of British Columbia peeled and ate the young shoots raw in spring, and also boiled and ate the sprouted seeds (Turner, 1978; Turner et al., 1990). The Nlaka'pamux people around Spuzzum reportedly made a type of maple syrup from this species; it was used originally as a tonic, but more recently as a sweetener. It was made especially during the Second World War as a sugar substitute. It took many buckets of sap to obtain a little bottle of syrup (Turner, 1975; Turner et al., 1990). The Sechelt gathered the winged "nuts" and stored them for winter, when they were mixed with other food (R. Bouchard pers. comm., 1977). According to Barnett (1955), the Saanich ate the inner bark fresh or occasionally dried, but it was used sparingly, because it was said to cause constipation. The Nlaka'pamux used the bark to make soapberry whippers and the large leaves in food preparation, to line cooking pits, or to line the pits or birch-bark containers used to make fermented salmon eggs, or "salmon-egg cheese." The Straits and Halkomelem Salish also used the leaves to line cooking pits (Turner, 1975).

Food Use of Related Species: The Blackfoot used the dry, crushed leaves of Rocky Mountain maple, western mountain maple, or Douglas maple *(Acer glabrum)* to spice stored meat (Hellson and Gadd, 1974), and the Lillooet used the inner bark of this species to tie bunches of nodding onions together for pit-cooking and to make soapberry whippers (Turner et al. un-publ. notes, 1987). (See also under *A. negundo* and *A. saccharum.)*

Manitoba Maple, or Box-Elder *(Acer negundo)*

Description: A small to medium-sized tree, usually no more than 15 m (50 ft) high, with a broad, uneven crown, and light gray, smooth bark becoming furrowed and darkening with age. The twigs are stout and light green to purplish, often covered with a whitish coating. The leaves, unlike those of other Canadian maples, are divided into several (usually three to seven) leaflets, which are shallowly lobed or coarsely toothed. The fall coloring is yellow. The flowers appear in spring, with or before the leaves. They are petaless, with male and female flower clusters borne on different trees. The clustered fruits mature in autumn and remain on the tree well into the winter. The seeds are paired, with the seed portion elongated and wrinkled, and the wings forming a narrow angle.

Occurrence: Along rivers and waterways from Alberta to the Maritimes, north to the District of Mackenzie and south in the United States to Texas and Florida. This is a variable species, with several forms and varieties, some of which have been widely planted and have frequently escaped from gardens.

Food Use: The Cree people made sugar from the sap of this species, as described by Lieutenant Hood of the Franklin Expedition. The trees were notched, and a piece of wood driven in below the notch, allowing the sap to drip from it to a birch-bark vessel laid at the foot of the tree. The sap was boiled in kettles, and sugar was produced in the form of hard cakes (Johnston, 1987). The Cheyenne and other Montana Indigenous Peoples also prepared and ate the sap (Hellson and Gadd, 1974). The Ojibwa sometimes mixed the sap together with that of sugar maple *(A. saccharum)* to make a cold drink; Barbeau (1946) states that this maple was still (as of the 1940s) a sugar producer around the Great Lakes and in Manitoba.

Food Use of Related Species: (See under *A. macrophyllum* and *A. saccharum).*

Sugar Maple, Rock Maple, or Hard Maple *(Acer saccharum)*

Description: One of the largest Canadian maples, sugar maple often grows to heights of 25 m (80 ft) or more, attains a diameter of 60 to 90 cm (2 to 3 ft). In a forest setting, the straight trunks may be free of branches for two-thirds of their length; in the open, the crown is typically full and wide. Branching is opposite, and the bark is dark gray, divided into long, vertical, irregular strips. The leaves, up to 12 cm (5 in.) or more across, with long, slender stalks, are usually five-lobed (occasionally with only three lobes), the lobes pointed, with only a few irregular, wavy teeth around the edges. The leaves turn yellow to brilliant orange or scarlet in the fall. The flowers are small, petalless, and tassel-like, appearing with the leaves in spring. Male and female flowers are usually separate, but are somewhat similar in appearance. The paired fruits mature in autumn, and are

borne on long, slender stalks in loose clusters. The seeds are plump and the seed wings almost parallel or slightly diverging; usually only one in a pair of seeds is fertile.

Occurrence: Sugar maple is characteristic of the hardwood stands in the deciduous forests of southeastern Canada, and is common throughout most of the Great Lakes, St. Lawrence, and Acadian forest regions. It grows best in moist, fertile, well-drained soils, and is fairly shade tolerant.

Food Use: By far the most important food from sugar maple was the sap, which was rendered into syrup and sugar by virtually all Indigenous Peoples within the range of the tree. As well, however, a beverage tea was made from the bark and twigs by the Micmac people (Speck and Dexter, 1951; Stoddard, 1962), and the bark was eaten, though rarely, by the Iroquois (Parker, 1910).

Maple sap is a solution of sugar (mostly sucrose) plus small amounts of proteins, lime, and potash in water (Holman and Egan, 1985). The Iroquois, Ojibwa, Potawatomi, Micmac, Malecite, Naskapi, Montagnais and Algonquin are reported to have gathered the sap for making syrup and sugar (Parker, 1910; Waugh, 1916; Densmore, 1928; Reagan, 1928; Smith, 1932, 1933; Gilmore, 1933; Rousseau, 1945; Lips, 1947; Speck and Dexter, 1951, 1952; Aller, 1954; Stoddard, 1962; Black, 1980; Arnason et al., 1981).

Densmore (1928) provides a detailed description of maple sugar making by the "Chippewa" (Ojibwa) people of the Great Lakes region. Holman and Egan (1985) present convincing evidence that maple sugaring was a prehistoric activity, and an important part of the subsistence round of peoples of the Eastern Woodlands. The history of maple sugar making is recounted in detail by Barbeau (1946), who notes that as of 1870, the "Winnebagoes and Chippewas" of the Great Lakes were the largest manufacturers of maple sugar in the northwestern United States and the former were often selling 15,000 pounds (almost 7,000 kg) of maple sugar per year to the Northwest Fur Company.

Sugar-making was an important social activity for Indigenous Peoples; families and small groups gathered in temporary sugaring camps. The following information is from Densmore's (1928) account of Ojibwa sugar-making, supplemented with details from Holman and Egan (1985). Each family or group of families had its own "sugar bush," which was utilized each year. At each camp, two structures were more or less permanent: a conical birch-bark lodge for storing utensils and a larger, wood-framed, bark-covered lodge where the sugar was made and the families lived. The capacity of the "sugar bush" was estimated according to the number of taps made in the trees; a large tree might have two or three taps, and the average number for the entire bush was around 900.

Maple sap gathering commenced in early spring, usually about the middle of March, with the season lasting about a month. Entire families took part in the gathering and preparation of the sap. The trees were tapped by making a diagonal cut about 9 cm (3.5 in.) long and 1 m (3 ft) from the ground with an axe. A strip of bark was removed below the lower end of the cut, and a curved wooden spile about 15 cm (6 in.) long was inserted below this point. Dishes were placed on the ground below the spile, and each day these were emptied into bark buckets. Sometimes wooden spouts, or even porcupine quills, were used to draw off the sap, and more recently, metal spouts were used. The sap was taken back to the camp and put into kettles or poured into wooden troughs. Originally, boiling the sap was done with red-hot stones; after metal kettles were introduced, it was boiled directly over a gentle fire. After all the sap had been boiled, or when sap gathering was discontinued due to bad weather, the "sugaring off commenced. The syrup was slowly heated in carefully cleaned kettles. When it became thick, small pieces of deer tallow were added, to make the sugar less brittle. When the sugar was of the proper consistency, it was quickly transferred to a granulating trough, where it was carefully worked and rubbed when it cooled. The granulated, still-warm sugar was poured into bark vessels. The sap could also be concentrated by freezing it in shallow pans and throwing away the ice. Sometimes the sugar was reboiled, and the thick syrup allowed to harden into a solid block. Very thick syrup, especially from the last run of sap, could be covered and buried in the ground or stored in the sugaring lodge, and where it would keep fresh for a year or more.

Maple sugar was used for seasoning fruit, vegetables, cereals and fish. It was dissolved in water as a cooling summer drink, and was sometimes used to sweeten medicines for children. The granulated sugar and sugar cakes were often used as gifts.

The Iroquois drank the sap fresh and sometimes fermented it as an intoxicant (Parker, 1910; Waugh, 1916). The Ojibwa dissolved maple sugar in cold water to make a summer drink (Densmore, 1928), or mixed the sap with that of *A. negundo* or yellow birch *(Betula lutea)* to make a cold beverage (Smith, 1932). The Micmac also drank the unboiled sap as a beverage and used it as a broth in cooking (Stoddard, 1962).

Food Use of Related Species: The Ojibwa made sugar from the sap of black maple (*Acer nigrum),* and sometimes mixed the sap with that of sugar maple to make a cold beverage (Reagan, 1928; Arnason et al., 1981; Smith, 1932). They also sometimes tapped white birch (Densmore, 1928). The Micmac of the Maritimes used the bark of moosewood, or striped maple *(Acer pensylvanicum)* for tea (Speck and Dexter, 1951; Wallis and Wallis, 1955; Lacey, 1977). The dried bark of red maple *(Acer rubrum)* was pounded into flour for bread by the Iroquois of the Lake Ontario region (Waugh, 1916), and the Algonquin and Abenaki made sugar from the sap of this species (Rousseau, 1947; Black, 1980; Arnason et al., 1981). The Iroquois also pounded the bark of silver maple *(Acer saccharinum)* to make flour for bread, and made sugar and syrup from the sap (Waugh, 1916). The Ojibwa also made sugar from the sap of this species (Reagan, 1928; Gilmore, 1933; Arnason et al., 1981). Sugar maple seeds and those of some other species are said to make a palatable snack, especially when roasted and served with butter and salt (Moore, n.d.).

Amaranth Family (Amaranthaceae)

Redroot Pigweed, or Green Amaranth *(Amaranthus retroflexus)*

Description: Coarse annual with simple or branching stems up to 1 m (3 ft) tall. The leaves are stalked, with simple, dull-green, wavy-edged blades that taper to a blunt tip. The flowers are in a dense, green, scaly spike. The seeds are small, black and glossy.

Occurrence: Considered a native of tropical America, redroot pigweed is a widespread weed of cultivated land and waste places throughout North America.

Food Use: The leaves and stems of this weedy plant and its relatives have been widely used as a potherb by Indigenous Peoples of the Southwestern United States and Central and South America. Additionally, the seeds have been an important "grain." In fact, amaranth was a major cultivated plant of the Aztecs, and has been grown in the Southwest (Palmer, 1878; Gil-more, 1931; Ford, 1981b; Kindscher, 1987). It grows in disturbed habitats and has been associated with the expansion of agriculture. Morton (1963) notes that amaranth species were used as a potherb in the spring and summer in the Northern States and all year in the South. The extent of its use by Canadian Indigenous Peoples is not known. Waugh (1916) reports that *A. retroflexus* was cooked as greens by the Iroquois, whose traditional territory extends into Canada. It is used as a spinach substitute by some Interior Salish people (Turner et al. unpubl. notes, 1987) and probably other Indigenous Canadians as well, but this use is assumed to be relatively recent.

Food Use of Related Species: Prostrate pigweed *(Amaranthus graecizans),* has been used extensively as a potherb, and also for its edible seeds by Indigenous Peoples of the southwestern United States, and also by some groups of Montana (Kindscher, 1987); possibly it was also used in southern Alberta and elsewhere in Canada.

Cashew Family (Anacardiaceae)

Smooth Sumac *(Rhus glabra)* and Staghorn Sumac *(R. typhina)*

Description: These plants are both bushy deciduous shrubs (or, for *R. typhina,*sometimes small trees). The young twigs, when broken, exude a milky juice. The leaves are large and pinnately compound, with 5 to 14 opposite pairs of leaflets and one terminal one. The leaflets are narrowly elliptical or lance-shaped, pointed, and finely toothed along the margins. The leaves turn brilliant orange or scarlet in the fall. The flowers are yellowish green, and borne in dense, upright clusters at the ends of the branches, male and female usually on separate plants. The bright red to deep scarlet fruits are hard and single-seeded, in dense, cone-shaped clusters that usually remain on the branches over the winter. Smooth sumac has smooth twigs and fruits, whereas those of staghorn sumac are densely fuzzy. The two species sometimes hybridize where their ranges overlap.

Occurrence: Smooth sumac ranges in Canada from the dry interior of British Columbia east to the southern Prairie Provinces, southern Ontario, and southwestern Quebec. Southwards, it extends east to Maine and south to Texas, Florida and Mexico. Staghorn sumac occurs in the Great Lakes region of southeastern Ontario and Quebec, east to the Maritime Provinces and south in the United States to Kentucky and North Carolina. Both species grow in open places on dry sandy or rocky soil. Staghorn sumac is widely grown as a garden ornamental.

Food Use: The Iroquois used both species. They peeled and ate the shoots of smooth sumac raw in spring, and ate the fruits, fresh or dried. They boiled the seed clusters of both species to make a beverage (Parker, 1910; Waugh, 1916; Rousseau, 1945; Arnason et al., 1981; Kindscher, 1987). The Ojibwa also used the fruits of both species for beverages. The fresh berries were soaked in water with sugar to make a cold drink like lemonade, and the dried berries were cooked in water with maple for a hot drink (Smith, 1932). Algonquin people also made a cold, lemonade-like beverage by steeping the berries of staghorn sumac in water and sweetening it with sugar (Black, 1980). The berries were eaten occasionally by the Forest Potawatomi (Smith, 1933). The Nlaka'pamux Interior Salish of British Columbia sometimes used the leaves of smooth sumac to line bark receptacles for storing salmon roe (Turner et al., 1990).

WARNING: Smooth and staghorn sumacs are closely related to poison-ivy *(Rhus radicans),* poison-oak *(R. diversiloba),* and poison sumac *(R. vernix)* (all three of which are sometimes placed in a separate genus,*Toxicodendron).*These contain a compound to which many people are highly allergic. It causes severe burning or itching, accompanied by a blistering rash. Poison-ivy and poison-oak are low shrubs or vines with three-parted leaves; poison sumac is a tree with 7- to 13-parted leaves, and, unlike the smooth and staghorn sumacs, it has white fruits in relatively small, open clusters (Turner and Szczawinski, 1991). Some Lillooet people used the leaves of poison-ivy to line the pit used for making ripened salmon eggs and to cover the eggs; "They say it's the best thing that you could use to line that pit" (Turner et al. unpubl. notes, 1987).

Custard-apple Family (Annonaceae)

Pawpaw *(Asimina triloba)*

Description: Upright deciduous shrub or small tree, up to 12 m (40 ft) high, with simple, thin, oblong leaves that tend to hang from the twigs. The leaves, up to 30 cm (1 ft) long, are smooth-edged, with prominent rusty veins looped together near the margins. The flowers are solitary, relatively large, reddish purple, and quite showy. The fruit is fleshy and pale greenish yellow, becoming nearly black when ripe. It can grow to 12 cm (5 in.) long, and varies in shape from elongated to almost round. Several dark brown, flattish seeds are embedded in the orange pulp, which is sweet, fragrant and pleasant to eat.

Occurrence: Pawpaw is restricted in Canada to the moist, rich lowlands of the Deciduous Forest Region of southern Ontario, along the north shore of Lake Erie and the southwestern tip of Lake Ontario. The range extends into the southeastern and central United States. Most of the trees in this genus are tropical or subtropical.

Food Use: The fruits were eaten by Indigenous Peoples throughout the range of the plant. In Ontario and New York State, the Iroquois ate the fruits, fresh or dried (Parker, 1910; Waugh, 1916;

Yanovsky, 1936; Arnason et al., 1981). Aller (1954) notes that they were used by the Great Lakes peoples, but does not specify the group. Weatherbee and Bruce (1980) report that the fruits are best harvested in the fall, after the first frost, and that they must be handled gently to prevent bruising.

Celery Family (Apiaceae, or Umbelliferae)

Angelica, "Wild Celery", or Aleut Celery *(Angelica lucida)*

Description: A coarse, herbaceous perennial with hollow, erect stems up to 1.2 m (4 ft) high. The rootstock is fleshy, rounded and hollow. The leaves are smooth and twice compound, with inflated, sheathing leaf bases. The leaflets, up to 8 cm (3 in.) long and elliptical, are thick and coarsely and unevenly toothed. The white or somewhat greenish flowers are small and numerous, arranged in dense, umbrella-like clusters, each with 20-40 rays, at the top of the stalk. The fruits are dry, brownish, ribbed and narrowly winged. The entire plant has a slightly pungent, celery-like smell.

Occurrence: Meadows, thickets, riverbanks, and coastlines, along the Pacific Coast from British Columbia, Washington and Oregon north to Alaska and the Aleutian Islands and Siberia; also occurs sporadically across northern Canada and in the Maritimes.

Food Use: The leaves and peeled stalks were, and still are, a favorite food of some Indigenous Peoples of Alaska. For example, the Inupiaq Eskimo preserve the very young leaves and peeled stalks in seal oil and eat them year-round. The leaves are said to be much stronger than those of sea lovage *(Ligusticum)* (Jones, 1983). Heller (1976) reports that the stalks and young leaf-stalks were cooked as a green vegetable or boiled with fish by the people of Kodiak, Bristol Bay, Aleutians and Seward Peninsula. The peeled stalks were also eaten raw, alone or dipped in seal oil, and the leaves were simmered and mixed into "Eskimo ice cream" (a whipped mixture of animal fat, greens and berries) with other greens, oil, fish eggs, and sugar by the Western Eskimo of Alaska (Oswalt, 1957). Kari (1987) warns against using it because of its similarity to *Cicuta* (see **WARNING**, following). According to Lamont (1977), the Fisherman Lake Slave call this species "wolverine rhubarb," and eat the stems of the non-flowering plants (called the "mother" plants) raw, sometimes with meat.

Food Use of Related Species: Sinclair (1953) states that the Canadian Inuit eat the stalks of *Angelica archangelica;* since this species is restricted to eastern Quebec, Labrador and Newfoundland, *other Angelica* species might also be implicated. Some Lillooet people of British Columbia used the roots of *Angelica genuflexa* to chew as a flavoring, and especially for colds and sore throats (Turner et al. unpubl. notes, 1987).

Recent ethnobotanical research on the Pacific Coast by Brian Compton (pers. comm., 1989) has confirmed the traditional use of another umbelliferous plant as food. Hemlock-parsley *(Conioselinum pacificum;* syn. C. *chinense)* is now suggested to be one of the "wild carrots," whose roots were eaten. These were sought and eaten, usually cooked or occasionally raw, by Coastal peoples of British Columbia, including Northern Wakashan groups (Kwakwaka'wakw, Haisla, Heiltsuk, Oowekela) and Coast Salish (Sechelt), and probably Squamish, Halkomelem and others. Boas (1921) describes the Kwakwaka'wakw (Southern Kwakiutl) harvesting and preparation of "wild carrots" in detail. They were dug in the spring, placed in a flat-bottomed basket, and cooked in a steaming pit for several hours. In more recent times they were boiled in kettles. Very few people today recall their use, but Brian Compton interviewed some Wakashan elders who were still able to identify them.

WARNING: Do not confuse this plant with water-hemlock *(Cicuta* spp.), a related plant which is highly toxic (for further information and description, see under water-parsnip, *Sium suave).* Oswalt (1957) reports that the green leaves of one species of water-hemlock (C. *mackenzieana)* were cooked in water with fresh fish by Western Eskimo of Alaska, but the plant was otherwise not used. The roots were never eaten, and were considered poisonous to people, although small rodents are said to eat them. Considering the known toxicity of this plant, its use as food is not recommended under any circumstances.

Cow-Parsnip, "Indian Celery", or "Indian Rhubarb" *(Heracleum lanatum; see Figure 19, page 114)*

Description: A robust perennial growing from a stout taproot or cluster of fibrous roots. The stems average 1.5-2 m (5-6.5 ft) high, and the leaves are large and compound, in three segments, with broad, stalked, coarsely toothed and palmately lobed leaflets usually 10-30 cm (4-12 in.) long. The terminal leaflet is usually as wide as it is long, and the two lateral ones are narrower and asymmetrical. The stems and lower leaf surfaces are sparsely to densely hairy. The leafstalks are sheathing and conspicuously inflated at

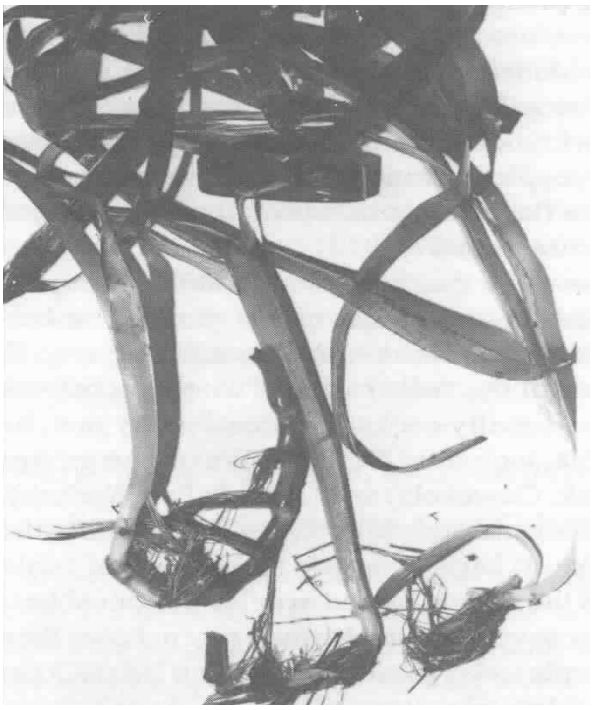


Figure 18. Eelgrass *(Zostera marina),* showing edible leaf bases.

Figure 19. Leaves of cow-parsnip *(Heracleum lanatum),* at the young, edible stage of the plant.

the base. The flower cluster is large, with compound umbels on terminal and auxillary stalks. The terminal cluster can exceed 20 cm (8 in.) across. The flowers are small and white, blooming from June to August depending on latitude and longitude. The dry, light-colored fruits are oval, flattened, and winged. The entire plant, especially when mature, has a strong, pungent odor.

Occurrence: The plant grows, often in dense patches, along stream-banks, and roadsides and moist meadows, thickets, and clearings from sea level to subalpine habitats. It ranges from Alaska to Newfoundland, southwards to California, Arizona, and Georgia. It also occurs in the Aleutian Islands and Siberia.

Food Use: (see **WARNING,** following). Cow-Parsnip has been probably the most intensively used springtime green vegetable among Canadian Indigenous Peoples and their neighbors. One Nlaka'pamux woman called it "...the boss of all the green vegetables..." (Turner et al., 1990). Groups who harvested it include Ojibwa, Slave, Cree, Blackfoot, Stoney (Assiniboin), and virtually all Indigenous People of British Columbia, as well as the Tanaina, Tlingit, Kaigani Haida, and other Alaskan and Aleutian Indigenous groups and several western Washington groups (Gorman, 1896; Reagan, 1928; Gunther, 1973; Turner, 1975,1978; Heller, 1976; Scott-Brown, 1977; Lamont, 1977; Hart et al., 1981; Norton, 1981; Galloway, 1982; Jacobs and Jacobs, 1982; Port Simpson Curriculum Committee, 1983; Leighton, 1985; Johnston, 1987; Kari, 1987). Its traditional use in northwestern North America is discussed in detail by Kuhnlein and Turner (1986). Although it is still used today by some people, it has, in most cases, been replaced by garden vegetables and commercial produce.

Both the young leafstalks and the flower budstalks were eaten. As mentioned in the **WARNING**, this plant contains phototoxic skin-irritating chemicals, which are concentrated on the hairy surface of the stalks and leaves. Because of this, and because the plant becomes tough, woody, and strong-smelling as it matures, it was used only at its young stage, and its stalks were always peeled before being eaten. Some populations of the plant were said to be better tasting than others, and some people state that plants growing in the shade are better tasting than those in the sun (Turner et al., 1983). The usual harvesting time was April to June, depending on local conditions, but always before flowering.

The leafstalks were generally considered to be the "female," or "mother," part of the plant, and the budstalks, the "male," or "father" (Lamont, 1977; Turner et al. unpubl. notes, 1987; Kuhnlein and Turner, 1986). In some languages, these two parts were given totally different names. They were prepared in different ways, the leafstalks usually being split down the length, opened up, and the edible part broken away from the fibrous outer part, and the budstalks simply being peeled *(see Figure 20, page 121).*They were usually eaten raw, sometimes at the site where they grow. Formerly, they were often eaten with some type of fish or animal fat or oil, such as ooligan grease or seal oil; later, dipping them in sugar also became popular. Some people roasted the stalks in the fire or on hot coals before peeling and eating them (Johnston, 1987; 'Ksan, People of, 1980), and they were also often boiled with meat or fish in soups and stews. Some people such as the Gitksan and Nlaka'pamux of British Columbia, used to dry the split stems for year-round use ('Ksan, People of, 1980; Turner et al., 1990). The Kaigani Haida of Alaska used to peel the stalks and store them in marine animal or fish grease (Norton, 1981). Blackfoot women cut the stems in small pieces and dipped them in blood, to be stored for use in soup and broths (Hellson and Gadd, 1974). Cow-parsnip shoots were sometimes regarded as a famine and starvation food (Lamont, 1977; Turner et al., 1990).

As well as being used as a green vegetable, cow-parsnip had other food uses. The Fisherman Lake Slave sometimes used the fruits in making "brew," in historic times (Lamont, 1977). The Sechelt of British Columbia used the seeds for flavoring in winter cooking (R. Bouchard pers. comm., 1977). There have been some reports that the roots were sometimes eaten, but this seems unlikely because they are very pungent and strong tasting.

WARNING: Cow-parsnip, like many other plants in the celery family, contains phototoxic furanocoumarins, especially on the other surface. In the presence of ultraviolet radiation (i.e., sunlight), the unpeeled plants can cause severe blistering and discoloration of the lips and skin; gloves are recommended for harvesting, and the young shoots should always be peeled before being eaten (cf. Kuhnlein and Turner, 1986). Additionally, do not confuse this plant with others in the same family that are highly toxic, including water-hemlock *(Cicuta* spp.) and poison-hemlock *(Conium maculatum),* an introduced weed with finely divided leaves and smaller, more numerous

flower clusters. [For further information and description of *Cicuta,* see under water-parsnip, *Sium suave).]*

Food Use of Related Species: Cow-parsnip is often called "Indian celery" (see also *Lomatium nudicaule* and *Ligusticum scothicum)* or "Indian rhubarb," a name also often applied to species of dock *(Rumex* spp.). A larger species in the genus *Heracleum,* hogweed *(H. sphondylium),* occurs in Canada as an occasional roadside introduction. It is said to have been used as a green vegetable in parts of Europe and the U.S.S.R. (Hedrick, 1972). Beach or Scotch Lovage *(Ligusticum scothicum;* incl. *L. hultenii)*

Description: Herbaceous, glabrous perennial growing from a thick root. The leaves are thick, sheathed, and compound (biternate, or twice three-parted), the leaflets glossy, ovate, and coarsely toothed. The small, white or pinkish flowers are arranged in 7-11 rayed umbrella-like clusters which range from less than 6 to over 10 cm (2.4-4 in.) across, depending on the subspecies. The aromatic fruits have three winged ribs on the back.

Occurrence: Coastal rocks and salt marshes in British Columbia and Alaska, from James Bay to Labrador, Newfoundland, and the Maritimes south to New York and Connecticut; also occurs in Iceland and along the coasts of northern Europe and eastern Asia.

Food Use: This plant is known to some as "wild celery." It was, and still is to some extent, used as a green vegetable by Indigenous Peoples of Alaska, and perhaps by some Canadian peoples as well. The Inupiaq Eskimo of Alaska and the Sugpiaq Eskimo (Aleuts) ate the very young leaves fresh with seal oil. The leaves were said to become sweeter if left in the oil for a few weeks. After awhile, they lose their sweetness, but impart an excellent taste to the oil. Properly stored, they will keep all winter (Heller, 1976; Jones, 1983). Some Tanaina people also eat the leaves and reddish stems. They boil them and eat them with fish, or cook them in fish soup as a flavoring. The greens were picked in the first part of summer before they get tough. They were sometimes dried for winter. It is possible that this use was learned from Russian settlers because the Tanaina name for it,*bidrushga* (Iliamna and Outer Inlet dialects), was derived from Russian (Kari, 1987).

Food Use of Related Species: The root of Canby's lovage *(Ligusticum canbyi)* was used for chewing and as a flavoring for tobacco, as well as a spiritual medicine, by the Shuswap, Okanagan-Colville, and Kootenay of British Columbia and the Kootenay and Flathead Salish of Montana (Turner, 1978; Turner et al., 1980).

Chocolate-tips *(Lomatium dissectum)*

Description: Robust perennial often 1 m (3 ft) or more high, growing as a cluster of stems from a large, woody taproot. The leaves are large, especially the basal ones, and finely 3-times dissected into numerous small segments. The flowers are small and dark brownish purple, clustered in large, rounded, umbrella-like heads. The fruits are elliptic, with narrow, thick, corky wings.

Occurrence: Dry prairies, meadows, rocky slopes and talus at low to moderate elevations from central British Columbia, southwestern Alberta and southwestern Saskatchewan south to Colorado and southern California.

Food Use: (see **WARNING,** following). The mature stalks, leaves, flowers, and roots are considered poisonous by many Indigenous Peoples, including Okanagan-Colville people of British Columbia. In fact, the roots were used as a fish poison and insecticide by peoples of the Columbia Plateau, including Okanagan-Colville, Flathead-Kalispel, and Sahaptin (Turner, 1978; Turner et al., 1980; Hunn and French, 1981). The Okanagan-Colville, however, formerly sought the very young, dill-flavored shoots, before they had emerged from the ground, and ate them raw as a relish, alone or with meat. Some considered them as famine food. The young shoots, after emerging, were peeled and eaten by Shuswap and Nlaka'pamux peoples of British Columbia, as well as by the Nez Perce of the northwestern United States. The Shuswap, Nlaka'pamux, and Lillooet also dug the roots in May, peeled, steamed, and ate them fresh or strung them when partially dried and stored

them for winter use. The dried roots were soaked in water for two nights, then steam-cooked, often together with yellow avalanche lily bulbs *(Erythronium grandiflorum).* Some people liked them, but most people who recalled having eaten them state that they are bitter; the Nlaka'pamux name means "bitter-head" (Teit, 1906; Palmer, 1975; Hart, 1976; Turner, 1978; Turner et al., 1990).

WARNING: This plant contains phototoxic compounds of the furanocoumarin group, related to those in cow-parsnip *(Heracleum lanatum)* and other members of the celery family. Apparently one or more of these compounds is responsible for the fish-poisoning and insecticidal properties of the roots of chocolate-tips (Cox, 1983). The related *L. columbianum* Math. & Const, of the western United States was avoided altogether as food by Indigenous Peoples such as the Sahaptin (Hunn and French, 1981). Probably, only the very young shoots of chocolate-tips should be considered edible.

Food Use of Related Species: See under following species.

Desert Parsley, Biscuit-root, "Wild Carrot," or "Indian Carrot" *(Lomatium macrocarpum;* syn.*Peucedanum)*

Description: A low herbaceous perennial growing from a long, fleshy, sometimes irregularly thickened, taproot. The leaves, clustered near the ground, are finely divided and grayish. The flowers are white, in rounded, umbrella-like clusters. The fruits are narrow, oblong to elliptic, and conspicuously winged.

Occurrence: Rocky hills and plains from the British Columbia Interior to Manitoba, south to California, Colorado and South Dakota.

Food Use: The carrot-like taproots of this plant were eaten by the peoples of the southern Interior of British Columbia—Nlaka'pamux, Lillooet, Shuswap, Okanagan-Colville and Chilcotin—as well as by various groups of the northwestern states, including Flathead and Sahaptin (Hart, 1976; Turner, 1978; Turner et al., 1980; Hunn and French, 1981; Myers et al. unpubl. notes, 1988). They were usually dug in spring, right after flowering, and peeled. Usually, the roots of the flowering plants were avoided, and only those of vegetative plants, sometimes called the "female," were dug. Choice roots could be up to 20 cm (8 in.) long. The roots have a strong, peppery taste, like celery leaves. They could be eaten fresh and raw or cooked in a pit or by boiling. They were often dried for later use, either being spread out on a mat or strung. They were usually served with other foods, as a flavoring. For example, they were sprinkled on dried, heated salmon or cooked with meat, fermented salmon eggs, saskatoon berries, bitterroot, or tiger lily bulbs. The dried roots were traded beyond the range of the plant. Although the roots were an important food in the past, few people use them today.

This plant featured in Interior Salish mythology, and is said to have been the father of an important mythical transformer, called *qw' eqw'i'la* after the plant itself (Turner et al. unpubl. notes, 1987; Turner et al., 1990). In Shuswap, the meadowlark sings, "Don't spoil my *qw' eqw'i'la* root!" (Palmer, 1975).

Food Use of Related Species: (See also under *Lomatium nudicaule.)* The roots of several other species of *Lomatium* were eaten by Indigenous Peoples of western Canada and/or the northwestern States. Geyer's lomatium *(Lomatium geyeri),* whose roots have a number of globular thickenings, were peeled, cooked, and eaten by the Okanagan-Colville of British Columbia and Washington, and sometimes were recognized together with bitterroot *(Lewisia rediviva)* in a "First Roots" ceremony (Turner et al., 1980). They were also apparently eaten by the Nlaka'pamux of British Columbia (Turner et al., 1990). Another species, "white camas" *(Lomatium canbyi),* which grows in central and eastern Washington, was used by the Okanagan-Colville, as well as the Flathead, Kalispel, Nez Perce, and Kootenay of the northwestern United States (Turner, 1978; Turner et al., 1980; Hunn and French, 1981). The range of cous, or racine blanc *(Lomatium cous)* also does not extend into British Columbia, but the root was a staple of the Nez Perce and Sahaptin and was widely traded, to the Flathead, Kalispel, and Southern Okanagan, and probably into the Okanagan and Kootenay re-

gions of British Columbia (Hart, 1976; Turner, 1978; Turner et al., 1980; Hunn and French, 1981). "Little white camas" *(Lomatium farinosum)* also may have reached British Columbia as a trade product (Turner, 1978; Turner et al., 1980). It was eaten in Virginia, Idaho, and Montana. Spring gold *(L. utriculatum)* was possibly eaten by the Upriver Halkomelem of British Columbia (Galloway, 1982), and this plant may have been one of the "wild carrots" used by the Coast Salish and Kwakwaka'wakw (Turner, 1975), but this is problematic, in view of the recent confirmation of *Conioselinum* as a "wild carrot" (see under *Angelica lucida).*

"Indian Celery," Bare-stem Lomatium, or Indian Consumption Plant *(Lomatium nudicaule; see Figure 21, page 121).*

Description: Herbaceous perennial growing from a stout taproot, up to 60 cm (24 in.) or more tall, with solitary or clustered stems. The leaves are thick, bluish green, and compound, being divided into 3-30 oval to lance-shaped leaflets, which are sometimes toothed at the tip. The flowers are light yellow, small, and numerous, in open, umbrella-like clusters with rays of varying lengths. The fruits are oblong or ellipse-shaped, and flattened, with whitish wings and a black-and-white striped appearance.

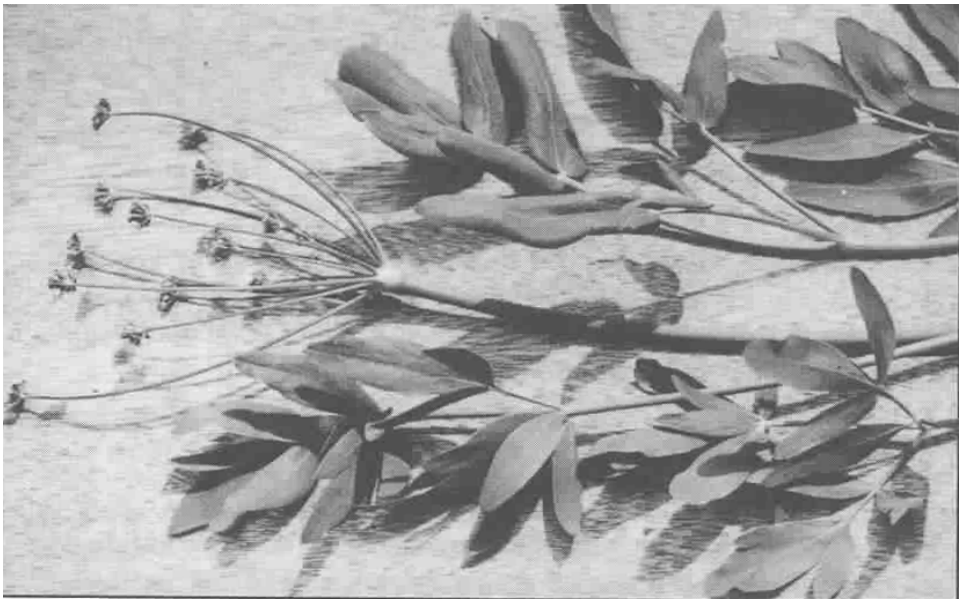
Occurrence: Dry meadows, bluffs, and open woods from low to moderate elevations in southern British Columbia to California and Utah.

Food Use: The young leaves and stalks were an important springtime vegetable of the Nlaka'pamux, Lillooet, Shuswap, and possibly Okanagan-Colville peoples of British Columbia (Palmer, 1975; Turner, 1978; Turner et al., 1990). They were gathered before the plants flower (usually in April and May), and eaten raw or cooked as a potherb. Lower Lillooet people of the Mount Currie area sometimes boiled and left them overnight, then gave them to children as a treat. They are still used, and are sometimes frozen, jarred, or dried for storage (Turner et al. unpubl. notes, 1987). In addition to the plant's use as a green, the leaves and seeds were, and still are, used as flavoring for tea, soups, stews, fish, meat, and smoking tobacco. The Nlaka'pamux reportedly ate the young roots. "Indian celery" tea was considered good as a tonic for colds and sore throats. The Coast Salish of Vancouver Island and Puget Sound, as well as some Nuu-chah-nulth and Kwakwaka'wakw peoples, used the aromatic seeds as a medicine for colds, and as a protective scent (Turner, 1975,1978,1979; Turner et al., 1980; Turner et al., 1990). This plant grows well in a garden situation and should be investigated as a domesticated species (Turner,1981).

Food Use of Related Species: (See also under *L. macrocarpum).*The flowers, leaves, stems, and seeds *of Lomatium ambiguum* were used fresh or dried as a flavoring for teas, soups, stews, and tobacco by some Interior Salish of British Columbia (Turner, 1978). Blackfoot people sometimes mixed the flowers of *L triternatum* with pemmican (Hellson and Gadd, 1974) and were said to have eaten the root, raw or roasted (Johnston, 1987—"prairie parsley,*Lomatium simplex").*The flowers, upper leaves and seeds of this species were also used by the Okanagan-Colville, as a flavoring for meats, stews and other foods being cooked. They could be picked in June

Figure 20 (above). Cow-parsnip contains phototoxins which are concentrated in the outer peeling and leaves.

Figure 21 (below). Leaves and young fruiting pods of "Indian celery" *(Lornatiumnudicaule).*



and dried for later use, but were not usually eaten themselves because their flavor is too strong (Turner, 1978; Turner et al., 1980). The seeds of the introduced caraway *(Carum carvi)* were used as a flavoring for bannock by the Woods Cree of east-central Saskatchewan (Leighton, 1985).

Sweet Cicely *(Osmorhiza chilensis)*

Description: A perennial herb growing from a thick, carrot-like taproot. The stems are solitary or clustered, up to 1 m (3 ft) tall, and the leaves are compound, with oval, mostly coarsely toothed, and notched leaflets, 2-7 cm (0.8-2.7 in.) long. The basal leaves are long stalked. The small, whitish flowers are borned in irregular, few-flowered umbels. The fruits are black, bristly, and needle-like, often catching in one's clothing.

Occurrence: Partially shaded woodlands, from low to moderate elevations, from British Columbia and Alaska across southern Canada to Newfoundland, and south to southern California, Michigan, and Maine. This species also occurs in South America.

Food Use: The taproots were formerly eaten by the Nlaka'pamux and Lower Lillooet of British Columbia. Some Lillooet people know this as "dry land parsnip'* (as contrasted with water-parsnip,*Sium).*The roots were dug in March and April and either pit-cooked if enough could be gathered or boiled alone as a vegetable or with salmon eggs or meat in stews. They are said to have a delicate, sweet, aromatic flavor reminiscent of baby carrots (Turner, 1978; Turner et al. unpubl. notes, 1987; Turner et al., 1990).

Food Use of Related Species: The roots of *O. depauperata* may also have been eaten by the Nlaka'pamux and Lillooet people. The root of western sweet cicely (O. *occidentalis)* has a strong, sweet, licorice-like flavor. The Blackfoot chewed it as a confection, especially during the winter (Hellson and Gadd, 1974), and the Okanagan-Colville valued it as a scent and medicine (Turner et al., 1980).

WARNING: The sharp-pointed, bristly fruits can cause choking if inadvertently swallowed with berries or other food. Indigenous People warn against them, and believe they can travel in the bloodstream. Do not confuse this plant with its poisonous relatives, poison-hemlock *(Conium maculatum)* and water-hemlock *(Cicuta* spp.) (see under water-parsnip,*Sium).*

Yampah, Wild Caraway, Squaw-root, "Wild Carrot," or "Indian Carrot" *(Perideridia gairdneri;* syn.*Carum gairdneri)*

Description: Slender perennial growing up to 1 m (3 ft) high, with a fleshy, often two-forked spindle-shaped tuberous root about 5-10 cm (2-4 in.) long. The leaves are pinnately compound, occasionally twice compound. The leaflets, in 2-5 pairs, are variable, being smooth or toothed, oval or lance-shaped, or very narrow and grass-like. The leaves usually wither in early summer before the plant flowers. The flowers are small, white, and numerous, in rounded, open, umbrella-like clusters, and the fruits are small, grayish and crescent-shaped.

Occurrence: Dry, open woods and meadows, from lowlands to moderate elevations in the mountains, from southern British Columbia to southern Alberta and southwestern Saskatchewan, south to southern California, Colorado and South Dakota.

Food Use: The fleshy, pleasant-tasting taproots were an important food of Indigenous Peoples from British Columbia and Alberta to California and the Great Basin region (Yanovsky, 1936). Groups reported to have eaten it include the Blackfoot of Alberta and Montana, and Straits, Halkomelem, Squamish, Okanagan-Colville, and Kootenay of British Columbia, as well as neighboring Flathead, Kalispel, and Cheyenne peoples (Hellson and Gadd, 1974; Hart, 1976; Turner, 1975,1978; Turner et al., 1980; Galloway, 1982; Johnston, 1987). In British Columbia, there is some confusion over the identity of various types of "wild carrot" (see also under *Angelica lucida* and *Lomatium macrocarpum),* and some literature reports of the use of this species may be inaccurate. For example, the "wild carrot" eaten by the Kwak-waka'wakw, Heiltsuk, and Haisla has been verified as *Conioselinum pacificum* (Brian Compton pers. comm., 1989).

The roots were generally dug before flowering, from early spring to early summer, depending upon elevation. Some people ate them raw; otherwise they were cooked by boiling, or by steaming in pits. Often they were cooked, then dried for winter use, when they would be boiled in soups, or with deer meat, saskatoon berries, or black tree lichen. The fresh roots could be stored for a short while in an underground cache pit lined with pine needles or Cottonwood bark (Hart, 1976; Turner, 1978; Turner et al., 1980; Johnston, 1987). In some areas, the name for this root is now applied to garden carrot, which has apparently replaced its wild counterpart almost entirely (cf. Galloway, 1982). The flavor of wild caraway roots is exceptional, and the plant should be investigated for cultivation (Turner, 1981).

Water-Parsnip, or "Swamp Parsnip" *(Sium suave)*

Description: Perennial herb growing up to 1 m (3 ft) or more high, with stout, hollow, strongly ribbed stems and fibrous roots often originating from the lower nodes of the stem. A cluster of long,

fleshy, irregularly thickened roots is found at the base of the stem. The leaves are singly pinnately compound, with 7-13 narrow, finely toothed leaflets. The flowers are small and white, in rounded, umbrella-like heads.

Occurrence: Swampy places and shallow water along the edges of lakes, ponds, and creeks; often grows together with the highly poisonous water-hemlock (see **WARNING**). The plant ranges from British Columbia and Alaska (not known from the Yukon), to northern Alberta, Saskatchewan, and Manitoba, east to Nova Scotia, Prince Edward Island, and Newfoundland, and south to California, Ohio, and Florida in the United States. It also occurs in Asia.

Food Use: (see **WARNING,** following). The fleshy, finger-like roots are sweet and carrot-flavored. They were eaten by many Indigenous Peoples of British Columbia, including the Halkomelem, Nuxalk (Bella Coola), Shuswap, Lillooet, Nlaka'pamux, Okanagan-Colville, and Kootenay, as well as by the Algonquin, Cree, and probably by the Slave and other northern Athapaskan groups (Turner, 1975, 1978; Black, 1980; Turner et al., 1980; Turner et al. unpubl. notes, 1987; Turner et al., 1990). Honigmann (1949) noted that the Kaska of northern British Columbia and the Yukon sometimes dug "a parsnip-like tuber," probably this root. The Woods Cree of east-central Saskatchewan believed only the roots from the Churchill River were edible, and that elsewhere they were poisonous (Leighton, 1985).

The roots were generally dug in spring and summer, before flowering, or in the fall. They were eaten raw, fried, steamed, roasted, or pit-cooked, and were generally very well liked, although people had to be extremely careful not to confuse them with the roots of the toxic water-hemlock. The Katzie Halkomelem of the Fraser Valley reportedly ate the young stems as well as the roots (Suttles, 1955), but some Shuswap people considered the flowers to be poisonous (Palmer, 1975). Water-parsnip is little used at present.

WARNING: Water-parsnip is very similar in form and habitat to water-hemlock *(Cicuta* spp.), which is generally considered to be the most poisonous wild plant genus in North America (Kingbury, 1964). Both plants at maturity produce white flowers in umbrella-like clusters, and both grow in swampy ground at the edges of lakes and ponds. Whereas water-parsnip has leaves which are once-compound, water-hemlock leaves are three times compound. Water-hemlock also has a distinctive turnip-like swelling at the base of the stem, which is usually chambered when cut open vertically, and exudes a yellowish liquid along the cut surface. Nevertheless, the two plants closely resemble each other.*If there is any doubt at all in the identification of water-parsnip, it should be left strictly alone.*Water-parsnip itself has been implicated in cases of livestock poisoning, although Kingbury (1964) notes that the cases are not entirely convincing. The mature stems and flowering tops of water-parsnip should never be eaten (Turner and Szczawinski, 1991).

Food Use of Related Species: According to Gunther (1973), the young, tender stems of water-parsley *(Oenanthe sarmentosa)* were eaten by some Western Washington peoples. However, other species of this genus are known to be toxic, and until its edibility is more certain, it should not be used.

Ginseng Family (Araliaceae)

Two plants in this family had minor food uses: wild sarsparilla *(Aralia nudicaulis)* and Indian spikenard *(A. racemosa).*The rhizomes of the former were boiled to make a beverage and tonic tea by the Nuxalk (Bella Coola) of British Columbia. The tea was later sweetened with sugar (Turner, 1975). This plant was also used to make a beverage by the Micmac (Speck and Dexter, 1951), and the berries were used to make wine by Algonquin and Montagnais people. The Montagnais also made a tonic from them (Speck, 1917; Black, 1980). The Ojibwa were said to have treated the root of Indian spikenard with lye, then cooked it like potatoes (Smith, 1932). The Forest Potawatomi relished the young tips of this plant in soups (Smith, 1933).*Aralia* is in the same family as ginseng *(Panax* spp.), which is a well known source of tonic tea. It is also related to devil's-club *(Oplopanax horridus),* but this species, although important as a medicine, was apparently not used in any was as food, and the berries were considered inedible (cf. Turner, 1975).

by the Blackfoot of Alberta, either fresh or cooked with soup (Hellson and Gadd, 1974; Johnston, 1987). They were also eaten occasionally by Montana peoples such as the Flathead, but were said to cause vomiting if taken in quantity (Hart, 1976, 1979).

Among the peoples of British Columbia who used them—the Nlaka'pamux, Lillooet, Okanagan-Colville, Shuswap, Chilcotin, Carrier, and, through trade, the Nuxalk at Bella Coola—the bulbs were often associated with "mountain potatoes" (spring beauty corms; *Claytonia lanceolata).* In fact, the two "root" foods often grow together and were harvested at the same time. Whereas the *Erythronium* bulbs were normally pit-cooked for an extended period, however, the *Claytonia* corms could be steamed or pit-cooked for only a short time. Each group had its special localities where the bulbs were dug. The slopes and meadows of Botanie Valley near Lytton, for example, were a favorite traditional digging ground for the Nlaka'pamux people. The Lytton people acted as hosts to many families who journeyed there from different parts of the country to partake in the harvest of these and other wild vegetables. Within a period of 10 days to two weeks, a family might obtain 100 kg or more of the bulbs, enough to last them over the winter. Controlled burning of mountain slopes was formerly used to maintain digging sites.

The bulbs could be dug as early as April and May, but usually were obtained from the end of June through until the first snowfall. Their harvesting was often combined with huckleberry picking *(Vaccinium membranaceum)* or hunting. Families camped in the high country, and according to the archaeological findings of many pit-cooking depressions in upland areas throughout the Interior, they used to cook the bulbs on site, then dry them for transport. Sometimes the bulbs were dried raw, but most were left for a few days, then pit-cooked for 24 hours or more. Leaving the bulbs to age or "wilt" slightly before cooking apparently enhanced the conversion of inulin to fructose, because the bulbs were said to become sweeter. One Lillooet man said he had observed grizzly bears, who are known to relish these bulbs, overturn the turf and leave the bulbs exposed for a few days before returning to eat them; evidently bears were aware of their increased sweetness and digestibility (Turner et al. unpubl. notes, 1987).

The bulbs were cooked and dried loose, or were strung on strings or skewered on sticks, especially those destined for trade. The dried bulbs were cooked in soups and stews with fish or meat, or in special "puddings" (including dried black tree lichen. Saskatoon berries, deer fat, salmon eggs, and tiger lily bulbs) (Turner, 1978; Turner et al., 1980; Myers et al. unpubl. notes, 1988; Turner et al., 1990).

Food Use of Related Species: The bulbs of pink fawn lily, or pink Easter lily (*Erythronium revolutum)* were eaten by the Kwakwaka'wakw of Vancouver Island, and possibly some northern Nuu-chah-nulth groups. Boas (1921) describes their use in detail. They were dug with special spades when the leaves first sprouted in the spring, and stored in openwork baskets. Some times they were eaten raw on a hot day; otherwise they were steamed in tall wooden boxes and served with ooligan grease. They could also be baked for a short time in hot ashes and eaten with the fingers; water was drunk afterwards. For storage, the bulbs were dried in the sun (Boas, 1921; Turner, 1975). The related white fawn lily, or white Easter Lily (E.*oreganum)* of British Columbia is not known to have been eaten, and has a reputation for toxicity (Kingsbury, 1964). The Micmac were said to have eaten the "bulbs" of dogtooth violet, presumably *E. americanum.*They dug them in spring and ate them raw, boiled, or baked in the hot ashes of a fire (Stoddard, 1962). Jack (1893) noted that the Abenakis of Saint John River ate the roots of a "yellow lily," possibly also this species, which they called Indian rice.

NOTE: The Erythroniums are beautiful wild flowers and are seldom abundant. Harvesting the bulbs destroys the entire plant. They should not be used today except in an emergency, or by Indigenous People from areas where the bulbs were traditionally used.

Rice Root Lily, Indian Rice, Mission Bells, or Kamchatka Lily (*Fritillaria camschatcensis; see* Figure 17, *page 90)*

Aster, or Composite Family (Asteraceae, or Composite)

This family includes some important food species, as well as a large number of species used casually as flavorings, beverages, snacks, or in food preparation. The following table is a list of all the various species used. Only the most intensively used are described in detail.

Balsamroot, or Spring Sunflower *(Babamorhiza sagittata; see Figure 22, page 133)*

Description: Herbaceous perennial up to 50 cm (20 in.) or more tall growing from a large, deep taproot. The basal leaves are large, numerous, stalked and broadly triangular or arrowhead-shaped. Stem leaves are few, and much reduced. The entire plant is grayish due to a thick covering of fine white hairs. The bright yellow flowerheads, usually many per plant, are borne on individual stems and are large and sunflower-like, with about 25 petal-like ray flowers per head. The single-seeded fruits, which shake loose easily from the dried mature heads, are like miniature sunflower seeds. Blooming season is from April to July, depending on elevation, and these flowers provide a striking display of springtime color on the hillsides and valleys of the southern Interior of British Columbia.

Occurrence: Open hillsides and prairies at low to moderate elevations from the dry interior of British Columbia to southwestern Alberta, south to California and South Dakota.

Food Use: Balsamroot is one of the most versatile sources of food for Indigenous Peoples within its range: the large taproots, root crowns, young shoots, young leafstalks and leaves, the flower budstalks, and the "seeds" were all eaten in one area or another, and the large leaves were sometimes used in food preparation. For example, they were used by the Blackfoot of Alberta in pit-cooking camas (Johnston, 1987).

The taproots can grow to the size of one's forearm, and are difficult to dig. They were generally obtained in spring, although some people reportedly

Table 4-5. Plants of the Aster, or Composite Family Used Traditionally in Food or Food Preparation by Indigenous Peoples of Canada and Neighboring Areas. (Introduced species marked with an asterisk*; use presumably recent.)

Species	Notes	References
Yarrow *(Achillea millefolium)*	Leaves and/or flowers used for beverage tea by Iroquois and Blackfoot; medicinal tea by many groups; stems used as salmon spreaders by Chilcotin and for drying clams	Waugh, 1916; Turner, 1974; Hellson and Gadd, 1974; Johnston, 1987; Myers et al. unpubl. notes, 1988
Mountain-Dandelion *(Agoseris glauca)*	Milky latex and/or dried leaves chewed as gum by Nlaka'pamux, Okanagan-Colville and Washington Salish	Turner, 1978; Turner et al., 1990
Giant Ragweed *(Ambrosia trifida)*	Cultivated in prehistoric times for its edible seeds in mid west United States (pollen strongly allergenic)	Kindscher, 1987; Gilmore, 1931; Asch and Asch, 1982
Pussytoes *(Antennaria rosea)*	Leaves chewed for their flavor by Blackfoot children, used in tobacco	Johnston, 1987
Great Burdock *(Arcticum lappa)**	Iroquois cooked young leaves as greens, dried roots used in soup	Parker, 1910; Waugh, 1916; Rousseau, 1945
Common Burdock *(Arcticum minus)*	Taproot known to be edible to one Lillooet elder; eaten raw before leaves sprout	Turner et al. unpubl. notes, 1987
Sagewort Wormwood	Leaves chewed by Blackfoot runners	Hellson and Gadd, 1974

(Artemisia campestris)		
Dragon Sagewort or Tarragon *(Artemisia dracunculus)*	Leafy branches used by Okanagan-Colville as salmon spreaders and to separate stored layers of salmon, as insect repellent	Turner et al., 1980
Northern Wormwood or Prairie Sagewort *(Artemisia frigida)*	Leaves used by Blackfoot as preservative for stored meat; known by Chilcotin as horse food	Hellson and Gadd, 1974; Myers et al. unpubl. notes, 1988
Western Mugwort *(Artemisia ludoviciana)*	Leaves chewed as a confection by Blackfoot	Hellson and Gadd, 1974
Northern Sage *(Artemisia tilesii)*	Leaves used for tea and flavoring for chewing tobacco by Alaska Eskimo; leaves cooked in dogfood by some Tanaina of Alaska; widely known as medicinal tea	Oswalt, 1957; Jones, 1983; Kari, 1987
Large-leaved Aster (Aster *macrophyllus)*	Leaves boiled and eaten as greens by Ojibwa and Algonquin; Ojibwa used roots in soup	Densmore, 1928; Smith, 1932; Black, 1980
Aster *(Aster* sp.)	Roots dried, scraped and steeped in cold water to make a beverage by some Vanta Kutchin of the Yukon	Leechman, 1954
Balsamroot, or Spring Sunflower *(Balzamorhiza sagittata)*	Roots, shoots, budstalks, and seeds eaten by western peoples (see detailed discussion)	
Thistles *(Cirsium* spp.)	Roots and young stems eaten by some western peoples (see detailed discussion under *Cirsium undulatum)*	
Common sunflower *(Helianthus annuus)*	Cultivated for its edible "seeds" (see detailed discussion)	
Jerusalem Artichoke *(H. tuberosus)*	Tubers eaten (see under detailed discussion of *Helianthus annuus)*	
Hawkweeds *(Hieracium* spp.)	Coagulated stem latex of 2-3 spp. chewed for pleasure by Nlaka'pamux of British Columbia	Turner, 1978; Turner et al., 1990
Blazing Star *(Liatris punctata)*	Root eaten in spring by Black foot	Johnston, 1987
Pineappleweed, or Wild Chamomile *(Matricaria matricarioides)*	Stems and flowerheads eaten raw, seedheads and whole plants used as beverage and medicinal tea by Eskimo, Tanaina, Kaigani Haida of Alaska; flowerheads eaten by B.C. Okanagan-Colville, Lillooet, Straits and others, especially children; plant used as meat preservative by Flathead of Montana	Oswalt, 1957; Hart, 1976; Norton, 1981; Turner el al., 1980; Kari, 1987; Turner et al. unpubl. notes, 1987; Turner and Hebda, unpubl. notes, 1989
Sweet Coltsfoot *(Petasites frigidus)*	Young leaves eaten mixed with other greens, and leaves used to cover stored food, and ashes mixed with chewing tobacco as flavoring by some Alaskan and Siberian tribes	Oswalt, 1957; Heller, 1976; Hultdn, 1976; Jones, 1983
Common Coltsfoot (P.*palmatus)*	In Washington, the Muckleshoot ate the boiled stems, and the Makah and Quinault used the leaves to cover berries and pit-cooked food; said by Ditidaht (Nitinaht) of V.I. to be elk food	Densmore, 1939; Gunther, 1973; Turner et al., 1983
Northern Dandelions	Young, tender leaves edible raw or cooked;	Porsild, 1964

(*Taraxacum lacerum, T. lapponicum, T. hyparcticum, T. pumilum* and *T. phymatocarpum)*	[possibly used by Inuit]	
Common Dandelion *(Taraxacum officinale)**	Young leaves eaten raw or cooked by Iroquois, Ojibwa, Algonquin, Potawatomi, Micmac, Malecite, Slave, Stoney, Halkomelem, Nlaka'pamux, Lillooet, Carrier, Okanagan-Colville, and Alaska peoples; taproot sometimes eaten as well; flowers made into wine by some; use recent	Parker, 1910; Waugh, 1916; Smith, 1932, 1933; Rous seau, 1945; Speck and Dexter, 1951, 1952; Heller, 1976; Scott-Brown, 1977; Lamont, 1977; Turner, 1978; Black, 1980; Galloway, 1982
Salsify *(Tragopogon* spp.)*	Coagulated latex chewed by some Nlaka'pamux of British Columbia	Turner, 1978; Turner et al., 1990
Mule's-ears *(Wyethia amplexicaulis)*	Roots eaten by Flathead of Montana	Turner, 1978

dug them in summer or fall. The roots contain inulin as a major carbohydrate (for discussion of inulin, see under camas,*Camassia* spp.). They also have a tendency to be woody. Hence, cooking them was a challenge, and few people have undertaken this recently. The roots were peeled by pounding them to remove the "bark," then pit-cooked overnight, usually for 24 hours or longer. They could be eaten fresh or dried for storing or trade. Sometimes they were strung on skewers. Properly cooked, they are very sweet and brownish, due to conversion of inulin to fructose, and they were eaten as a treat or "sort of dessert." The Nlaka'pamux and others observed many rituals in cooking these roots (Turner et al., 1990). All of the Interior Salish groups in British Columbia used the roots, as well as the Chilcotin and Kootenay, and the Flathead, Kootenay, Nez Perce, and other groups of the northwestern United States. More recently, they have been baked in an oven, or steamed, and served hot as a vegetable (Turner, 1978; Myers et al. unpubl. notes, 1988).

The young shoots, before they emerged from the ground in early spring, were sought by the Okanagan-Colville, Nlaka'pamux and others, and eaten raw, or sometimes pit-cooked. After they emerge they become green and bitter. Sometimes they were used as a famine food. Some Nlaka'pamux people cooked the young leaves and leafstalks with fish.

The flower budstalks were, and still are, a favorite springtime food. They were broken off while the buds were still tightly closed, then peeled and eaten raw or sometimes cooked as a green vegetable. They have a pleasant nutty flavor, reminiscent of sunflower seeds. Some people can them or freeze them (Hart, 1976; Turner, 1978; Turner et al., 1980; Turner et al. unpubl. notes, 1987; Turner et al., 1990).

The "seeds" (achenes) were harvested from the dried heads, being shaken out into bags and spread onto mats for drying. They were often toasted slightly. The chaff was removed by winnowing, and the "seeds" stored in bags. They could be eaten whole, but more often, they were ground to a powdery meal with a stone mortar and eaten alone without further preparation or mixed with other foods such as deer grease, white-bark pine kernels, pounded, dried saskatoon berries, Douglas-fir sugar, or, recently, white sugar. Sometimes they were formed into small cakes, and sometimes they were boiled in soup, or cooked with oil, water or broth and eaten as a porridge, especially in times of famine (Hart, 1976; Turner, 1978; Turner et al., 1980; Turner et al., 1990). Some Okanagan-Colville people smoked the leaves as a tobacco (Turner et al., 1980).

Food Use of Related Species: Anderson (1925) implies the use of the seeds, sprouts, and roots of *B. deltoidea* as a food by the Coast Salish people of southern Vancouver Island but since

he includes this species with a discussion on *B. sagittata,*his description may pertain entirely to the latter species.

The former species was also used in Oregon (Yanovsky, 1936). The "seeds" of *B. hookeri,* and the roots of *B. incana* were eaten by various peoples of the northwestern United States (Yanovsky, 1936).

Wavy-leaved Thistle *(Cirsium undulatum)*

Description: Perennial herb growing from a long taproot. The erect stems grow up to 1 m (3 ft) or more tall. The lower leaves, up to 30 cm (1 ft) long, are alternate and elliptical, with wavy, lobed edges, the lobes tipped with yellow spines. The upper leaves become smaller and narrower towards to tops, with more shallowly lobed or smooth edges. The stem and leaves are densely covered with white hairs, giving the plant a gray-silver caste. The globular flower heads are borne in loose clusters, each with a cuplike base of spiny bracts, and purple, tubular florets. The fruits are small and dry, each topped with a prominent tuft of white hairs.

Occurrence: Dry, open woods and prairies from southern British Columbia to Saskatchewan and southwestern Manitoba, south to Oregon, New Mexico, Texas and Missouri.

Food Use: The taproots of various species of thistle were eaten by Indigenous Peoples of North America; Yanovsky (1936) listed 8 species altogether. Wavy-leaved thistle is representative of these. All contain inulin as their major carbohydrate, and hence most were pit-cooked (see under Camas—*Camassia* spp. for a discussion of inulin foods), and, even so, had a reputation for causing gas. For example, the name for wavy-leaved thistle in the Nlaka'pamux language of British Columbia translates as "flatulating-plant" (Turner et al., 1990). The Nlaka'pamux people dug the young taproots from non-flowering (first-year) plants in the fall, pit-cooked them, then ate them immediately or dried them for winter use. They could be boiled in stews and soups. When cooked, they turn brownish and are sweet-tasting. They were considered a "health food," although they caused gas if too many were eaten. The Shuswap of British Columbia also used them, as did the Comanche and Gosiute of the United States, but the roots were apparently not eaten by the Okanagan-Colville, Kootenay, or Chilcotin or other Athapsakan peoples (Turner, 1978; Kindscher, 1987; Turner et al., 1980; Myers et al. un-publ. notes, 1988).

Food Use of Related Species: Some Straits and Halkomelem people of Vancouver Island peeled and ate the taproots of *Cirsium brevistylum* raw or steam-cooked (Turner, 1975; Galloway, 1982). Edible thistle *(Cirsium edule; see Figure 23, page 133)* was quite widely used. The young taproots were eaten by the Nlaka'pamux, like those of C.*undulatum* (Turner et al., 1990). Lewis and Clark mentioned these roots and noted that when cooked like camas they were the sweetest food the Indians had. The fresh flower

Figure 22. Balsamroot *(Balsamorhiza. sagittata)* in flower. The large taproots, young shoots, bud stalks and seeds are edible.

Figure 23. Edible thistle *(Cirsium edule)* in flowering stage.

stalks of this species were eaten by Cheyenne people (Kindscher, 1987). The Blackfoot and Flathead of Montana, as well as the Nlaka'pamux and Shuswap of British Columbia reportedly ate the roots of Hooker's thistle, or white thistle*(Cirsium hookerianum)* raw or cooked with meat, and also ate the flower head stalks fresh (Blankinship, 1905; Hellson and Gadd, 1974; Turner, 1978; Turner et al., 1990). Montana peoples, including Flathead, Kootenay, Nez Perce and others, reportedly ate the young peeled stems of elk thistle *(Cirsium scariosum),* as well as the roots, which could be used raw, but were more commonly pit-cooked (Hellson and Gadd, 1974). The roots of *C.flodmanii* were also undoubtedly eaten by some people within the range of the plant.

Common Sunflower (Helianthus annuus)

Description: Tall, herbaceous annual, growing up to 2.5 m (8 ft) or more, with hairy stems and alternate, heart-shaped to spade-shaped, stalked leaves. The leaves are rough-textured, with toothed margins. Cultivated forms are single-stalked, whereas wild forms are usually much branched. The flower heads are borne at the ends of the branches, and are large and showy, usually single in cultivated forms, several to many per plant in the wild. The petal-like ray florets, at least 2.5 cm (1 in.) long, are bright yellow, numbering 17 or more. The disk florets are numerous and reddish to purple. Disks of cultivated sunflowers may exceed the size of a dinner plate; those of wild forms are much smaller, usually 2-5 cm (about 1-2 in.). The blackish fruits—the well-known "sunflower seeds"—are dry, and single-seeded, up to 5 mm (0.2 in.) long in wild forms, and twice

that length in cultivated forms. They are rounded at one end, tapering to the point of attachment. Flowering is in summer, and the "seeds" ripen from September to October.

Occurrence: Plains, bottomlands and other rich, well drained soils of western North America; cultivated and spread to fields, roadsides, and waste places throughout southern Canada and sporadically in the North; possibly native to southern British Columbia.

Food Use: The oil-rich "seeds" have an extensive history of use by Indigenous Peoples in North America. The domestication of sunflower has been the subject of much interest and research (cf. Heiser, 1951,1976,1985; Asch and Asch, 1985; Kindscher, 1987). Wild sunflower was an important food in the Southwest, then, somewhere in what is now the central United States it became domesticated. As a domesticated plant it spread into eastern North America, Mexico, and, apparently relatively recently, back to the Southwest. Selection and domestication has resulted in larger, single-stalked plants, large flower heads each with a much larger yield of "seeds," and significantly larger size of "seeds" over the wild types. Among the cultivated plants of New World origin, the only one from north of Mexico to become an important crop in modern times is common sunflower.

Sunflower seeds were used for bread or for thickening soup. They were parched, then pounded to a fine meal and made into porridge, or mixed with animal fat and made into flat cakes, to be dried in the sun (Kindscher, 1987). The extent of the use of sunflower in prehistoric times by Indigenous Peoples in Canada is not known. It was certainly being grown and widely used prehistorically by people as far north as what is now Illinois (Asch and Asch, 1985). Tooker (1964) reports it was grown by the Huron of Georgian Bay, Ontario. Yanovsky (1936) lists *H. annuus* and three other *Helianthus* species whose seeds were used by North American peoples, but does not report their use by any Canadian groups. At least in historic times, the Iroquois pounded sunflower seeds into a fine meal, then added it to corn soup, and also extracted the oil (Waugh, 1916). Sunflower seeds *("H. annuus* var. *lenticularis")* were reportedly eaten raw by Blackfoot people of Montana (Blankinship, 1905), but whether this use extends into pre-contact times is not known. In British Columbia, Steedman (1930) reported that sunflower seeds were eaten in quantity by Nlaka'pamux children, but that their introduction was said to be fairly recent. Some reports in Northwest literature of the use of sunflower actually pertain to balsamroot *(Balsamorhiza sagittata),* which is also called spring sunflower or simply sunflower locally. Today, sunflower is an important Canadian oilseed crop.

Food Use of Related Species: Jerusalem artichoke *(Helianthus tuberosus),* found as a garden escape or persisting from old plantings in various parts of Canada and widely distributed as a wild plant or weed in the eastern States, was apparently being cultivated for its edible tubers by Indians in what is now eastern Massachusetts when Champlain visited the area in 1603 (Heiser, 1985). Tubers of wild forms of the plant have been used by the Plains and Eastern Woodland Indians of the United States, including Pawnee, Omaha, Ponca, Winnebago, and Dakota Sioux (this last group extends into southern Saskatchewan and Alberta, where, as the Assiniboin dialect, it is known as Stoney) (Kindscher, 1987). The Iroquois of Ontario, Quebec and New York State used the tubers raw, boiled or fried (Waugh, 1916), possibly from cultivated plants. Ojibwa people ate the tubers raw like a radish (Densmore, 1928), and the Forest Potawatomi also ate them (Smith, 1933). The Huron ate them raw or cooked (Tooker, 1964). The tubers contain inulin as a major form of carbohydrate, and hence were known to be fairly indigestible and gas-producing when eaten raw; cooking helps to break down the inulin to fructose and hence increases their digestibility (see under camas—*Camassia* spp.) (Kindscher, 1987). Within the last few generations, at least, the tubers have been eaten raw, cooked, or dried by Upriver Halkomelem people of British Columbia (Galloway, 1982). Sechelt people have described a plant they used to eat fitting the description of *H. tuberosus,* calling it "wild potato". The tubers of a related species, *H. maximilianii,* were dug and eaten by Indian peoples of eastern Montana (Blankinship, 1905; Johnston, 1987); since this species occurs in southern British Columbia, and across the southern Prairie Provinces to western Ontario, and elsewhere as a garden escape, it is possible that it was also used in Canada.

Barberry Family (Berberidaceae)

Tall Oregon-Grape *(Berberis aquifolium, see Figure 24, page 146,* syn. *Mahonia aquifolium)*

Description: Low to tall (up to 2 m, or 6.6 ft.) evergreen shrub, with shiny, leathery leaves, which are pinnately compound with usually 5-9 prickly-edged, holly-like leaflets per leaf. The flowers are small and bright yellow, in dense, showy clusters and the berries are globular, pea-sized, and deep blue with a grayish waxy coating. The bark of the stems and roots is light gray outside and bright yellow inside.

Occurrence: Woods, open slopes and rocky outcrops in southern and central British Columbia and southwestern Alberta, south to Oregon and Idaho; introduced in southern Ontario and in southwestern Quebec.

Food Use: The berries are very tart, but were eaten by many Indigenous groups in British Columbia, including Straits, Halkomelem, Squamish, Sechelt, and Kwakwaka'wakw, Nlaka'pamux, Lillooet, Shuswap, Okanagan-Colville, Kootenay and Carrier (Turner, 1975,1978; Turner et al., 1980; Galloway, 1982; Turner et al., 1990). The berries were also eaten by some, but not all, Western Washington groups. The Chehalis did not use them, and the Makah believed the berries to make children ill and regarded them only as raven food (Gunther, 1973). Further east, the Blackfoot ate the acrid fruit of creeping Oregon-grape, a low variety of this plant (var. *repens;* syn. *B. repens)* on rare occasions (Johnston, 1987; Hellson and Gadd, 1974), and the Flathead and Kootenay of Montana also ate them sparingly (Hart, 1976).

The berries were generally harvested in August, and were formerly eaten raw, but often only in small quantities. Some people considered them to have "tonic" properties (Turner et al., 1990). One Saanich woman said that the berries were eaten as an antidote to shellfish poisoning (Turner and Hebda unpubl. notes, 1988). The Okanagan-Colville ate the berries fresh, and also stored them, either by covering them fresh with straw and leaves, or by squeezing and mashing them in baskets and spreading them out to dry in cakes. Sometimes they boiled them to a jam-like consistency and made juice from them, which was heated and drank (Turner et al., 1980). Often the berries were mixed with other, sweeter fruits, such as salal on the Coast or saskatoons in the Interior. Nowadays, people make jam or jelly from the berries, or jar them (Turner, 1975, 1978). The Carrier, as well as eating the berries, formerly simmered the young leaves in water and ate them (Turner, 1978).

Food Use of Related Species: Low Oregon-grape *(Berberis nervosa),* a Pacific Coastal species found in shady woods west of the Cascades in southwestern British Columbia, south to California, was used within its range in the same way as tall Oregon-grape (Gunther, 1973; Turner, 1975, 1978; Galloway, 1982; Turner et al., unpubl. notes, 1987; Turner et al., 1990). Some Lower Nlaka'pamux people preferred it over the latter; others did not distinguish between the two species.

The fully ripe fruits of another plant in the barberry family, mayapple, or mandrake *(Podophyllum peltatum),* were eaten fresh or dried by the Iroquois and Ojibwa of the Great Lakes region (Parker, 1910; Waugh, 1916; Gilmore, 1933). The green fruits, leaves, stems, and roots of this plant are toxic.

Birch Family (Betulaceae)

Red Alder *(Alnus rubra)*

Description: Fast-growing, straight-tranked deciduous tree up to 25 m (about 80 ft) tall, with trunks up to 0.8 m (30 in.) in diameter. The bark is smooth and greenish when young, becoming coarse and gray or whitish with age. The bark turns deep red or orange when exposed to moist air. The leaves are bright green, oval-shaped, pointed, and coarsely toothed, with conspicuous veins. The male flowers are borne in long, hanging, clustered catkins which ripen in early spring. The female flowers are short, clustered, ovoid "cones," at first green, and turning brown and woody at maturity. The nutlets are small, flat, and slightly winged at the edges.

Occurrence: Moist woods along the Pacific Coast, from the Alaska Panhandle, through coastal British Columbia to central California, and inland to northern Idaho.

Food Use: The sweet, gelatinous cambium and adjacent inner bark tissues were eaten by some Salishan peoples of British Columbia and Washington, including Sechelt, Comox, Straits, Lillooet, Nlaka'pamux and Swinomish. It was edible only for a short time in the spring. A patch of bark was removed from the tree, and the edible tissue was scraped off with a scraper or knife and eaten fresh, usually with oil, or dried in cakes. More recently, it was mixed with sugar (Gunther, 1973; Turner, 1975, 1978; Turner et al. unpubl. notes, 1987; Turner et al., 1990). Straits Salish (Saanich) people sometimes also chewed on the young, green catkins, and some used the bark to color and flavor camas bulbs being pit-cooked. Some Saanich and Swinomish people believed the inner bark to be thick and edible only when the tide was coming in (Turner and Bell, 1971; Gunther, 1973; Turner and Hebda unpubl. notes, 1989). Nitinaht (Ditidaht) people used alder leaves and branches to line root-cooking pits, and used the presence of alder around a lake or pond as an indicator that the water there was fit to drink (Turner et al., 1983). For virtually all Indigenous Peoples within the range of the tree, the wood of red alder was the preferred fuel for smoking salmon and other foods, and alder wood was often used for wooden food dishes, because it does not impart strong flavor to the food (cf. Norton, 1981; Turner and Efrat, 1982; Port Simpson Curriculum Committee, 1983).

Food Use of Related Species: The wood of mountain alder *(Alnus crispa)* was also a preferred fuel smoking fish and deer meat (cf. Turner et al., 1980; Kari, 1987; Myers et al. unpubl. notes, 1988).

Paper Birch *(Betula papyrifera* Marsh.; including var. *neoalaskana* and several other varieties and forms)

Description: A complex, variable, deciduous tree (or in one variety, a low shrub) usually with straight, white-barked trunks, open crowns, and short, pendulous branches. The bark is white, separating into thin, papery layers and marked by long, narrow, horizontal lenticels. The leaves are stalked, with heart-shaped or oval blades, pointed and coarsely, irregularly, and usually doubly toothed at the margins. Male and female flowers are borne separately in hanging catkins. The nutlets are brownish and flattened, with broad wings at the edges.

Occurrence: Woods and rocky slopes from northern Alaska and the Yukon across the continent to Labrador and Newfoundland, south to the northernmost United States and, sporadically further south (e.g., Colorado).

Food Use: The sap was collected and used by Indigenous Peoples in central and northern Canada, including Woods Cree of east-central Saskatchewan, northern Chipewyan of Saskatchewan, Fisherman Lake Slave of the Northwest Territories and the Vanta Kutchin of the Yukon. Lamont (1977) describes its use by the Slave. In May, before the leaves appeared, the trees were tapped. A V-shaped flap was cut in the outer bark and propped out to make a "spout" by placing a small stick underneath it horizontally. Several cuts were made in the bark directly above, and a birch-bark basket was placed on the ground beneath it. The sap oozed from the upper cuts, dripped from the tip of the V and was caught in the basket. It was drunk as a beverage or added to soups. One man reportedly boiled the sap down to make syrup for bannock. Woods Cree people also made it into syrup, which was thickened with flour and eaten on bannock (Black, 1980; Leighton, 1985). Maries (1984) reports that birch syrup was also formerly made by Chipewyan people, but within recent years. One Vanta Kutchin man noted that the inside bark of birch (*"Betula,"* unspecified) is very good and full of juice, "like peaches" (Leechman, 1954). Birch sap was drunk fresh as a spring tonic and medicine by Tanaina people in Alaska (Kari, 1987), and as a cold medicine by the Nlaka'pamux of British Columbia (Turner et al., 1990).

The inner bark (cambium and associated layers of non-woody tissues) was harvested in spring and eaten fresh by the Woods Cree and northern Chipewyan. Large trees were said to have the sweetest cambium. Children ate it as a treat, and it was also used as a starvation food (Maries, 1984; Leighton, 1985). The Montagnais also grated and ate the inner bark (Speck, 1917). The

Woods Cree also used the root bark as a tea substitute (Leighton, 1985). In the British Columbia Interior and elsewhere, sheets of birch bark were used for lining food storage pits and wrapping food, and birch-bark vessels were used for cooking and food storage (cf. Turner et al. unpubl. notes, 1987; Turner et al., 1990).

Food Use of Related Species: Algonquin people mixed the sap of yellow birch *(Betula lutea)* with maple sap for sugar making (Black, 1980). Ojibwa people sometimes added the sap to maple sap for a cold beverage (Smith, 1932). The Iroquois and Micmac also drank yellow birch sap, rendered it into syrup and sugar, and made tea from the twigs (Waugh, 1916; Stoddard, 1962; Lacey, 1977). The Malecite made tea from the bark (Speck and Dexter, 1952). The twigs and bark of scrub birch *(Betula glandulosa)* were boiled to make a beverage tea by some Chilcotin people of British Columbia (Myers et al. unpubl. notes, 1988).

American Hazelnut and Beaked Hazelnut *(Corylus americana* and C. *cornuta)*

Description: These are both bushy, deciduous shrubs up to 3 m (10 ft.) high. The leaves are broadly oval and doubly toothed, those of C. a*mericana* more finely serrated than those of C. *cornuta.* Male and female flowers are separate but on the same bush. Male flowers are on long, slender catkins that mature in early spring. The female flowers are small, and surrounded by a cluster of reddish scales. The fruits are borne singly or in pairs or small clusters, ripening in autumn, and consist of a smooth, globular, hard-shelled nut enclosed in a greenish, leafy sheath. In C. a*mericana* the sheaths are soft to touch and the ends are lobed and flared, whereas in C. *cornuta,* the sheaths are densely bristly toward the base and taper to a long, slender beak. The nuts resemble those of the closely related domesticated filbert, but are smaller and thicker-shelled. Some filbert cultivars are crosses between European and American hazelnuts (Kindscher, 1987).

Occurrence: Moist, shaded woods. American hazelnut is found from southern Manitoba to southwest Quebec, south to Oklahoma and Georgia. Beaked hazelnut is transcontinental in distribution, occurring from British Columbia to Newfoundland, south to central California, Kansas and Georgia.

Food Use: The nuts of both species were widely eaten, and where their ranges overlap, such as in the territories of the Iroquois and Ojibwa, both were used (Waugh, 1916; Densmore, 1928). American hazelnut was also eaten by the Omaha, Ponca, Winnebago, Potawatomi, Dakota, and various other groups of the United States (the last two named extend into southern Canada) (Kindscher, 1987; Smith, 1933). Hazelnuts have been found in archaeological remains in the midwestem States (Kindscher, 1987; Asch and Asch, 1980).

Beaked hazelnut was used by Algonquin, Cree, Micmac, and Malecite peoples, and by many groups of British Columbia, including Straits, Halkomelem, Squamish, and Nuu-chah-nulth (Nootka) on the Coast, and Nlaka'pamux, Lillooet, Okanagan-Colville, Shuswap, Kootenay, Nishga and Gitksan in the Interior, as well as by virtually all groups of Western Washington (Reagan, 1928; Speck and Dexter, 1951, 1952; Stoddard, 1962; Gunther, 1973; Turner, 1975, 1978; Turner et al., 1980; 'Ksan, People of, 1980; Black, 1980; Galloway, 1982; Leighton, 1985). Some Nlaka'pamux people practiced controlled burning of hazelnut bushes to enhance their nut production (Turner et al., 1990).

Hazelnuts were usually harvested from late August to October, and stored until completely ripe. The prickly husks of beaked hazelnut were sometimes removed by burying the nuts in damp ground for several days or placing a sack of them in a hole and pounding them with a pole. Caches of the nuts made by squirrels and other small mammals were also sought. The nuts were an important trade article. For example, the Lower Nlaka'pamux traded them to the Upriver Nlaka'pamux people in exchange for dried saskatoon berries, soapberries, bitterroot and other commodities (Turner et al., 1990). The Lillooet and Okanagan-Colville also commonly traded them (Turner, 1978).

As well as being eaten raw and fresh, the nuts were boiled in soups, or dried and stored for winter (Densmore, 1928; Smith, 1932, 1933; Gilmore, 1933). The Iroquois cooked the meats of

hazelnuts and other types of nuts with hominy and com soup, ground them and mixed them in puddings and breads, and boiled them to obtain their oil, which was skimmed off and used with bread, potatoes, pumpkin, squash, com, and other foods. The left-overnut-meats were mixed with mashed potatoes or other food (Parker, 1910; Waugh, 1916). As well as eating the nuts whole, like peanuts, Okanagan-Colville people mixed the kernels with bear oil, or pieces of bear meat or grease, or sometimes berries or cooked roots, then formed them into cakes and dried them, or stuffed them into a length of intestine. This mixture was eaten as a relish, like butter (Turner et al., 1980).

Today, most people use commercial filberts, but within the memory of contemporary elders, the wild nuts were especially used around Christmas time, and were relished by children. One Pemberton Lillooet woman remembered picking "sacks and sacks full" when she was a girl (Turner et al. unpubl. notes, 1987).

Borage Family (Boraginaceae)

In this family, only two reports of food plants used by Canadian Indigenous People were found, and these are brief: the large, deep taproots of yellow gromwell *(Lithospermum incisum)* were noted by early ethnographer James Teit to have been cooked and eaten by the Nlaka'pamux of British Columbia (Steedman, 1930; Turner et al., 1990); and Shuswap people apparently formerly made a tea to improve the appetite from the roots of a related species (L. *ruderale).* Both plants yield a red stain or pigment, formerly used for dyeing and painting (Turner, 1978).

Mustard, or Crucifer Family (Brassicaceae, or Cruciferae)

Several plants in this family, some native and some introduced from Europe or elsewhere, were used as greens or condiments by Indigenous Peoples of Canada and neighboring areas. In some cases, these plants are still being used. However, since the use of individual species was generally neither intensive nor particularly widespread, they are simply summarized in the following table (4-6).

Cactus Family (Cactaceae)

Fragile Prickly-pear Cactus *(Opuntia fragilis)*

Description: Succulent, low-growing perennial with fleshy, green, segmented stems which may form extensive mats. The stems are dotted with clusters of a few rigid long spines arising from cushions of numerous short bristles. The stem segments are usually less than 5 cm (2 in.) long, and detach easily from the plant, readily penetrating shoes and clothing with painful results. The flowers are showy and yellow (sometimes pink tinged), borne

Table 4-6. Plants of the Mustard, or Crucifer Family Used Traditionally in Food or Food Preparation by Indigenous Peoples of Canada and Neighboring Areas. (Introduced species marked with an asterisk*; use presumably recent.)

Species	Notes	References
Rock-Cress *(Arabis lyrata)*	Young leaves eaten in spring, raw or cooked by Alaska peoples; use apparently recent	Heller, 1976
Winter-Cress *(Barbarea orthoceras)*	Young leaves eaten in spring, raw or cooked by Alaska peoples; use apparently recent	Heller, 1976
Black Mustard *(Brassica nigra)**	Young greens eaten as potherb by Iroquois; use recent	Waugh, 1916
Wild Mustards *(Brassica* spp.)*	Young greens eaten as potherb by Iroquois, Malecite, Lillooet and others; use recent	Waugh, 1916; Speck and Dexter, 1952; Turner et al. unpubl. notes, 1987
Shepherd's-Purse *(Capsella*	Leaves soaked overnight and eaten raw	Turner et al., 1990

bursapastoris)	or cooked as a potherb by Nlaka'pamux; use recent	
Scurvy grass *(Cochlearia officinalis)*	Succulent leaves eaten in spring, raw or cooked, by explorers and Inuit people	Porsild, 1937, 1964; Sinclair, 1953; Heller, 1976
Two-leaved Pepperroot *(Dentaria diphylla)*	Roots eaten raw or boiled by Iroquois, Ojibwa, Algonquin, Cree and Abenaki; roots also ground mixed with salt. sugar, or vinegar and used as condiment or relish	Waugh, 1916; Rousseau, 1945, 1947; Black, 1980; Amason et al., 1981
Large Toothwort *(Dentaria maxima)*	Roots eaten by Iroquois, as prev. species; Ojibwa cooked the fermented roots with corn or deer meat	Waugh, 1916; Smith, 1932
Peppergrass *(Lepidium virginicum)*	Used by Ojibwa, apparently as condiment	Reagan, 1928
Watercress *(Nasturtium officninale,* syn. *Rorippa nasturtium-aquaticum)**	Eaten raw as greens by Iroquois, Algonquin, Halkomelem, Okanagan-Colville, and others; apparently introduced by prospectors in B.C.	Waugh, 1916; Black, 1980; Turner et al., 1980; Galloway, 1982
Parry's Wallflower *(Parrya nudicaulis)*	Young leaves eaten raw or stored in seal oil by Arctic coastal Eskimos; root added to fish and meat stews as flavoring (horseradish-like)	Heller, 1976
Marsh Cress *(Rorippa islandica)*	Young greens occasionally gathered and cooked with fish by Western Eskimo of Alaska	Oswalt, 1957
Hedge Mustard *(Sisymbrium altissimum)*	Young leaves cooked as springtime potherb by some Upriver Halkomelem and Lillooet people of British Columbia; called "Italian Weed"; use recent	Galloway, 1982; Turner et al. unpubl. notes, 1987

along the margins of the newer segments. The fruits are small, reddish and spiny.

Occurrence: Dry, sandy prairies, hillsides and rocky outcrops from the southwest coast of British Columbia north and east to the Peace River, west to southern Saskatchewan, southern Manitoba, and Ontario, and south to California, Texas and Illinois.

Food Use: The succulent stem segments were formerly an important vegetable for Interior Salish peoples of British Columbia and Washington, as well as the Chilcotin and probably some other Athapaskan peoples (Turner, 1978; Turner et al. unpubl. notes, 1987; Myers et al. unpubl. notes, 1988; Turner et al., 1990). The stems were usually gathered in the spring, but could be obtained any time. The spines could be singed off over an open flame, and the stems were pit-cooked, boiled, or roasted in the coals or on a stick over the fire. When cooked, the insides pop out readily when the segments are squeezed, or can be easily peeled and the spines removed if this was not done earlier. The inner stems were eaten inmiediately, mixed with Saskatoon berries or deer fat and boiled to make soup, or more recently baked in fruit cakes. One Lillooet woman compared them with green gage plums in taste and consistency, and other people say they were eaten as a "dessert," and were a favorite with children. In recent times, some people have caimed the inner stems with berry juice. Because cactus was available any time, even in mid winter if the snow is scraping away, it was an important famine food, and was credited with having saved many lives during a famine that occurred among Nlaka'pamux people in the last centiuy (Turner et al., 1980; Turner et al., 1990). Okanagan-Colville people say that when the prickly-pear cactus blooms, the saskatoon berries are ready to be picked (Turner et al., 1980).

Food Use of Related Species: The stems of the larger, flat-stemmed many-spined prickly-pear, *Opuntia polyacantha,* were eaten by Interior Salish people in the same way as *O. fragilis* (Turner, 1978). Many people do not distinguish between the two species, simply regarding them as different growth stages of the same plant. The stems of *O. polyacantha* were also cooked and eaten by the Blackfoot of Alberta, but apparently mainly in times of food scarcity. The Blackfoot also used pincushion cactus *(Coryphantha vivipara;* syn. *Mamillaria viviparia)* as food. They ate the ripe, berry-like fruits raw as a treat, and also ate the stems, raw or cooked (Hellson and Gadd, 1974; Johnston, 1987). The Cheyenne of the Plams region of the United States also ate the fruits of this species, boiled fresh or dried (Hart, 1981; Kindscher, 1987).

Caper Family (Capparidaceae)

In this family. Rocky Moimtain bee-plant, or spider flower *(Cleome serrulata)* is edible, and its shoots, cooked as a potherb, as well as its seeds, were eaten by Southwestern Indian peoples including the Tewa, Hopi, and Navaho (Harrington, 1967; Kindscher, 1987). It grows in southern British Columbia and the Prairie Provinces, and has been introduced in parts of Ontario and Quebec, but no records have yet been found of its use as food by Canadian Indigenous Peoples. However, the Blackfoot used the whole plant to make a medicinal tea to alleviate fever (Johnston, 1987).

Honeysuckle Family (Caprifoliaceae)

Honeysuckles themselves are generally considered inedible by Indigenous People. In British Columbia, the tubular flowers of orange honeysuckle, or western trumpet honeysuckle *(Lonicera ciliosa)* were, and still are, sucked for their sweet nectar, especially by children, but the berries are believed to be poisonous (Galloway, 1982; Turner, 1978; Turner et al. unpubl. notes, 1987; Turner et al., 1990). Black twinberry, or twinflower honeysuckle (L. *involucrata)* berries are also widely believed to be poisonous, although many people note that ravens, crows, and bears eat them, and a few say it would not be harmful to eat the berries in small quantities (cf. Turner, 1978; Turner et al., 1980; Turner and Efrat, 1982; Turner et al., 1983; Turner et al. unpubl. notes, 1987; Turner et al., 1990). Some Lillooet people use the young twigs of black twinbeny for a beverage tea, but in most cases the plant was used only for medicine. The berries of red twinbeny (L. *utahensis)* were said by some Okanagan-Colville people to be good to eat, and were apparently used as an emergency source of water because they are so juicy (Turner et al., 1980). Lillooet and Kootenay consultants, however, considered them inedible (Turner, 1978).

Another shrub in the honeysuckle family having inedible fruit is waxberry or snowberry *(Symphoricarpos albus)* and related species. The soft, white berries are generally regarded by Indigenous People as poisonous (Turner, 1975, 1978; Gunther, 1973; Turner et al., 1980; Galloway, 1982; Turner and Efrat, 1982; Turner et al., 1983; Turner et al., 1990), although ruffed grouse and other birds are said to eat them. Gunther (1973) reports that the Squaxin in Washington dry and eat them, and some Lillooet people ate two or three berries to settle the stomach after eating too much fatty food (Turner et al. unpubl. notes, 1987).

Blue Elderberry *(Sambucus cerulea, see Figure 25, page 146;* syn. S. *glauca)*

Description: Large, bushy shrub, sometimes tree-like with brittle, pith-filled branches and grayish-brown bark. The leaves are large, opposite and pinnately compound, bearing 5-9 pointed, oval leaflets with toothed margins. The flowers are small and creamy white, crowded in large, flat-topped clusters, and blooming in summer. The berries are dark blue when ripe, but covered with a whitish waxy coating giving them a powder-blue color. They are small, juicy and seedy, but in dense clusters often so heavy they hang downwards.

Occurrence: Valleys and open slopes at low to moderate elevations from southern British Columbia to western Montana and south to California and New Mexico.

Food Use: (see **WARNING** under red elderberry.) In British Columbia, the berries were eaten by all Indigenous groups within the range of the plant, including Straits, Halkomelem and Comox on the

Coast, and Nlaka'pamux, Lillooet, Shuswap, Okanagan-Colville and Kootenay in the Interior (Turner, 1975, 1978). They were also used by many western Washington groups (Gunther, 1973). Usually harvested in August and September, sometimes with a special hooked implement, they were occasionally eaten raw, but more commonly cooked to a jam-like consistency, alone or mixed with other fruit. Recently, sugar was added as a sweetener (Turner, 1975; Galloway, 1982). Sometimes the cooked berries were spread out to dry in cakes for winter, and some people extracted the juice from the cooked berries. Nlaka'pamux people used the juice for marinating fish (Turner et al., 1990), and some Okanagan-Colville people placed the berries with black tree lichen

Figure 24(above). Tall Oregon-grape*(Berberis aquifolium).*

Figure 25(below). Blue elderberry*(Sambucus cerulea).*

(Bryoria fremontii) being pit-cooked, to add flavoring. The fresh berries were apparently not highly regarded by the Okanagan-Colville, but long ago, they used to break off clusters of the berries in November, just before the first snows, and store them surrounded by ponderosa pine needles under a ponderosa pine tree. Then, all winter long, people could go to this spot and dig out the berries and eat them, just a few at a time. They were able to locate them from the pink-colored snow overtop (Turner et al., 1980).

Food Use of Related Species: The berries of common elder *(Sambucus canadensis)* were eaten fresh or dried for winter storage by various eastern Canadian groups including Iroquois, Ojibwa, Algonquin, Micmac and Malecite (Parker, 1910; Waugh, 1916; Gilmore, 1933; Speck and Dexter, 1951, 1952; Black, 1980), as well as peoples of the midwestem United States—Omaha, Pawnee, Ponca and Dakota (extending into southern Canada) (Kindscher, 1987). (See also following species.)

Red Elderberry *(Sambucus racemosa;* syn. *S. pubens)*

Description: Large, bushy, deciduous shrub similar in general appearance to the previous species (S. *cerulea).* However, the flowers bloom earlier, in spring, and are borne in pyramidal or strongly rounded clusters. The berries are correspondingly earlier ripening, often from late June through July depending on elevation, and are usually bright red (occasionally yellow, whitish, or in var. *melanocarpa,* black or purplish-black).

Occurrence: A widespread, common species found in woods, thickets and moist meadows at low to moderate elevations from Alaska and British Columbia to the Maritimes, and south to California and Georgia.

Food Use: (see **WARNING**, following). The juicy, tart berries are little used today, but formerly were an important food for Indigenous Peoples, especially along the Pacific coast. In eastern Canada, they were eaten by the Ojibwa, Micmac and Malecite (Reagan, 1928; Speck and Dexter, 1951, 1952). In British Columbia, they were used by almost every group within the range of the plant, although the Tanaina of Alaska did not eat them and maintained that the seeds are poisonous (Kari, 1987). Large quantities of elderberries have been found in southern British Columbia and Washington in underground caches in archaeological sites dating back hundreds of years (R. Hebda pers. comm., 1989). Groups known to have eaten the berries include: Tlingit, Haida, Coast Tsimshian, Gitksan, Nishga, Ditidaht (Nitinaht) and Hesquiat (Nuu-chah-nulth), Kwakwaka'wakw, Comox, Sechelt, Squamish, Halkomelem, Lower Nlaka'pamux, Lower Lillooet and Kootenay, as well as virtually all groups of Western Washington (Gunther, 1973; Turner, 1975,1978; 'Ksan, People of, 1980; Galloway, 1982; Jacobs and Jacobs, 1982; Turner and Efrat, 1982; Turner et al., 1983; Port Simpson Curriculum Committee, 1983). Many contemporary Indigenous People do not realize these berries are edible, and some believe them to be poisonous (cf. 'Ksan, People of, 1980; Turner and Hebda unpubl. notes, 1988). Within the last century, the berries have been used for jam, jelly, and wine (Turner, 1975; Norton, 1981; Jacobs and Jacobs, 1982; Myers et al. unpubl. notes, 1988).

Red elderberries were harvested using long, hooked poles. The clusters were picked intact, and the stems removed later, before or after being cooked. The berries were invariably cooked before being eaten. A common method was to boil them in a cedar-wood box, mashing and stirring them while cooking, to make a thick, jam-like sauce. This could be eaten immediately, stored, sometimes underground, in boxes lined with birch bark or skunk-cabbage leaves and sealed with grease, or spread out or poured into wooden frames set on skunk-cabbage leaves and dried into cakes for longterm storage. These dried cakes were reconstituted by soaking in water overnight, and were often then mixed with other berries, such as raspberries or blueberries, with oil or fish grease, and, within historic times, sugar (Turner, 1975; Norton, 1981). The berry clusters were sometimes cooked in underground pits lined with skunk-cabbage leaves. If the clusters were pit-cooked or boiled intact, the person eating them would simply suck off the edible juice and pulp and discard the stems, seeds, and skins.

Within the present century, the Kaigani Haida stored the cooked berries in large tins lined with skunk-cabbage and sealed with ooligan grease (Norton, 1981). Some people considered red elderberries inferior to the blue ones; others favored them. Some Nlaka'pamux people used the juice to marinate salmon overnight before it was barbecued, and they cooked the dried berries with salmon-head soup or salmon-egg "cheese" (Turner et al., 1990).

WARNING: The leaves, bark, roots, and seeds of elderberries are poisonous, due to the presence of cyanide-producing glycosides. Red elderberries are reputed to cause nausea if eaten raw,

probably due to these compounds in the seeds. Blue elderberries are not known to have caused digestive upset, but all elderberries should probably be cooked before being eaten, and the leaves, stems and roots should never be consumed (Turner and Szczawinski, 1991).

Food Use of Related Species: See under blue elderberry *(Sambucus cerulea).*

Highbush Cranberry, Squashberry, or Mooseberry *(Viburnum edule)*

Description: An erect, deciduous shrub up to 2.5 m (8 ft) high, with smooth, reddish bark and opposite leaves which are shallowly 3-lobed or occasionally entire. The white flowers are borne in small, rounded clusters, and the fruits are globular, shiny, orange to bright red, berry-like drupes, each containing a single, flattened seed. When unripe, the fruits are hard and extremely acid; later, after they are touched by frost, they become softer and more palatable, though still tart.

Occurrence: Moist woods and thickets across Canada, from British Columbia north to Alaska and the Yukon, to Labrador and Newfoundland (not known from Prince Edward Island), south to Oregon, Colorado, Minnesota and New England.

Food Use: The fruits, although tart, were and still are an extremely important food for Indigenous Canadians. They were used by Ojibwa, Slave, Chipewyan, Cree, and most of the peoples of British Columbia, as well as Indian and Eskimo peoples of Alaska (Densmore, 1928; Honigmann, 1949; Oswalt, 1957; Heller, 1976; Lamont, 1977; Tumer, 1975, 1978; Galloway, 1982; Jacobs and Jacobs, 1982; Jones, 1983; Marles, 1984; Leighton, 1985; Kari, 1987). Their use in northern Canada is probably more extensive than shown in published records.

The fruits begin to ripen in mid-August, and remain on the bushes throughout the fall. If picked too early, they are reputed to have a musty odor, but this dissipates with ripening or cooking (Heller, 1976). They were often picked around September, when still firm, and eaten fresh and raw, cooked, or stored until they became softer and sweeter. They were sometimes even left until mid-winter or spring before being picked (Lamont, 1977). Some people dried the fruits for storage (Densmore, 1928; Turner et al., 1990). However, most stored them in a fresh state, by freezing or keeping them under animal or fish grease or water (Turner, 1975; 'Ksan, People of, 1980).

Despite their tart taste, highbush cranberries were enjoyed by many. In fact, among the Haida, Kwakwaka'wakw, Sechelt and other coastal groups of British Columbia, they were considered a highly prestigious food. In Haida territory, for example, good picking patches of these plants were owned by certain high-class people within a village, and only they were allowed to pick the fruit. Boxes of preserved highbush cranberries were a valuable trading and gift item, and highbush cranberry is the most frequently mentioned plant in Haida myths; it was believed to be the food of supernatural beings (Turner, 1975). In the Kwakwaka'wakw area, the fruits, uncooked or steamed for a short time, were placed in cedarwood storage boxes, covered with water, and allowed to stand for several months until they become soft and red. In winter, they were drained, mixed with grease and other types of berries, and eaten with spoons. The Kwakwaka'wakw sometimes also pit-cooked them, and at special feasts, the fresh, frost-ripened fruits were served in bunches, dipped in ooligan grease, and eaten with the fingers, the stems, skins and seeds being discarded by the eater (Boas, 1921; Turner and Bell, 1973; Turner, 1975).

In the Interior, Carrier people ate highbush cranberries with bear grease and sometimes mixed them with fresh saskatoon berries. The Nishga boiled the berries and mixed them with oil, and sometimes made an "ice-cream" by whipping them with ooligan (eulachon) grease and fresh snow. Eskimo children in Alaska ate them by the handfuls, frozen or thawed, and they were mixed with other berries and animal fat to make a traditional dessert known as "Eskimo ice-cream" (Oswalt, 1957; Jones, 1983). Nlaka'pamux people sometimes cooked them in soups. Tanaina people ate the raw berries for colds (Kari, 1987), and some Sechelt people ate the very ripe berries as a "blood purifier" and diuretic (R. Bouchard pers. comm., 1977, 1978).

Today, many people prefer to make jam or jelly from the fruits, and some make juice and wine (cf. Oswalt, 1957; Maries, 1984; Leighton, 1985). One Lillooet woman likes them boiled with apples (Turner et al. unpubl. notes, 1987). Bears, willow grouse, and other birds are known to eat these fruits (Turner, 1978; Turner et al. unpubl. notes, 1987; Myers et al. unpubl. notes, 1988).

Food Use of Related Species: The fruits of witherod *(Viburnum cassinoides)* were eaten fresh or dried by Algonquin and Abenaki people (Rousseau, 1947; Black, 1980), and probably others as well. Nannyberry (V. *lentago)* fruits were used fresh or in preserves by the Iroquois, Ojibwa, Micmac, and Malecite (Parker, 1910; Waugh, 1916; Smith, 1932; Gilmore, 1933; Speck and Dexter, 1951, 1952). The fruits of American bush cranberry (V. *opulus* var. *americanum;* syn. *V. trilobum)* were also widely eaten, fresh or preserved, by the groups such as the Stoney (Assiniboin), Iroquois, Ojibwa, Algonquin, Micmac, and Malecite (Parker, 1910; Waugh, 1916; Reagan, 1928; Gilmore, 1933; Speck and Dexter, 1951, 1952; Scott-Brown, 1977; Black, 1980), and by the Shuswap, Kootenay, and possibly the Nlaka'pamux of British Columbia (Turner, 1978; Turner et al., 1990).

Pink Family (Caryophyllaceae)

Seabeach-Sandwort, Sea-Chickweed, or "Beach Greens" *(Arenaria peploides;* syn. *Honckenya peploides)*

Description: Yellowish-green, succulent perennial with numerous trailing, freely branching and mat-forming stems. The leaves are succulent and narrow to broadly oval, pointed and smooth-edged, and borne in opposite pairs. The flowers are greenish and inconspicuous, borne in the leaf axils of the upper branches, and the fruits are globular capsules. Several varieties are recognized based on flowers, leaf shape, and general form.

Occurrence: Sandy seabeaches from the Aleutian Islands and Alaska along the Arctic coastline to James Bay and Labrador and southwards along the Pacific and Atlantic coasts to northern Oregon and Maryland respectively.

Food Use: Although no records were found of the use of the edible greens of this plant by Canadian Indigenous Peoples, they were, and still are, an important vegetable for Eskimo peoples of Alaska, and may well have been used similarly by Canadian northern peoples (cf. Porsild, 1964). The Inupiaq Eskimo of Alaska pick the young leaves and shoots before the plants flower, and eat them fresh or preserve them by fermenting them by the barrelful. They cook them and let them "sour." Sometimes they are interspersed with layers of sea lovage leaves *(Angelica lucida)* or sourdock *(Rumex articus),*or blueberries or crowberries. They are eaten with seal oil and sugar, like sauerkraut, especially with fat fish (Jones, 1983). The Eskimo of Saint Lawrence Island and Shishmaref prepared the leaves in the same way, mixing them after souring with fat and berries to make "Eskimo ice cream," and eating them with dry fish. The raw, fresh leaves are reported to be a good source of vitamins C and A, and were brought by early Arctic explorers to cure scurvy (Heller, 1976; Shishmaref Day School, 1952).

Staff-Tree Family (Celastraceae)

Smith (1932,1933) reported that the Ojibwa and Forest Potawatomi cooked the inner bark of climbing bittersweet*(Celastrus scandens)*in soup in winter, and that it was used as a starvation food. However, this plant is reputed to be toxic, and its close relatives, strawberry-bush, wahoo and spindletree *(Euonymous*spp.), have caused serious poisoning (Turner and Szczawinski, 1991). Another shrub in the same family, false box *(Paxistima inyrsinites),*is said by Indigenous People in British Columbia to be a good food for deer and cattle, but was not eaten by people (Turner, et al. unpubl. notes, 1987).

Goosefoot Family (Chenopodiaceae)

Lambsquarters, Pigweed or Goosefoot *(Chenopodium album*complex, including C.*berlandieri, C. bushianum*and C.*macrocalycium)*

Description: A highly variable complex of closely related species and varieties. All are herbaceous annuals with a characteristic mealy covering over the leaves and stems. The stem leaves are usually broadly triangular, with basal lobes and shallowly lobed or toothed above. Upper leaves may be more oval or elliptical, and smaller. The flowers are small and greenish, in tight clusters at the ends of the stems, and the seeds are black, rounded, and flattened. Although the complex is generally considered to have been introduced in Canada (Scoggan, 1978: 649), the last three species mentioned are indigenous in the United States. These have prominently honeycomb-reticulated seed coats, whereas those of C.*album* varieties are smooth.*Chenopodium berlandieri* is known as an ancient food plant of the prairies, whose seeds have been found in archaeological sites of the midwestern United States (cf. Asch and Asch, 1985; Kindscher, 1987). In Canada, there are reports of the occurrence of the seeds at the Ross site, along the Old Man River northeast of Coaldale, Alberta, from a site occupied about 300-400 years ago (Kindscher, 1987).*Chenopodium* seeds have also been found at the Keatley Creek site of the British Columbia Interior Plateau north of Lillooet but these are suspected of being relatively recent (Brian Hayden and Dana Lepofsky pers. comm., 1987).

Occurrence: A very common weedy plant complex of disturbed and cultivated ground in North America; known from all the provinces, Yukon and District of Mackenzie, as well as Alaska, Greenland, and Eurasia.

Food Use: Lambsquarters is well known for its edible greens and seeds. The young plants were cooked as a potherb by the Iroquois, Ojibwa, Forest Potawatomi, Micmac, Malecite, Nlaka'pamux, Lillooet, and Eskimo of Alaska (Parker, 1910; Waugh, 1916; Reagan, 1928; Smith, 1933; Speck and Dexter, 1951,1952; Heller, 1976; Amasonetal., 1981; Jones, 1983; Turner et al. unpubl. notes, 1987; Turner et al., 1990). In many of these reports, recent use is specified. Jones (1983), for example, notes that the plant was probably introduced with hay brought in for horse feed during the gold rush, and that there is no traditional name for the plant among the Inupiaq Eskimo. One Lillooet woman who uses lamsquarters as a potherb, stated that this use was learned from a local Scotsman. In the Chilcotin, where the *Chenopodium album* complex is very prevalent, there is a name for the plants, translating as "wind's whip." The Chilcotin people apparently do not eat the greens, but regard them as cows' food (Myers et al. unpubl. notes, 1988). The Ojibwa boiled the young leaves with fat, and ground the seeds into flour which was made into mush or bread (Stowe, 1940). The Blackfoot of Montana were said to gather the seeds for food (Blankinship, 1905). The greens were used by Plains peoples of the United States, such as the Pawnee, Kiowa and Sioux (who also extend into southern Saskatchewan), and, as mentioned, the seeds are prominent in archaeological sites in Illinois and elsewhere, and there are strong arguments to indicate that it was cultivated and was a major food in the midwestern States (Asch and Asch, 1985; Kindscher, 1987).

NOTE: The greens of lambsquarters and its relatives, like spinach and beet greens, contain oxalic acid and its salts, which can reduce calcium absorption if eaten in large quantities.

Food Use of Related Species: Strawberry blite, or strawberry spinach *(Chenopodium capitatum;*syn.*Blitum capitatum)* has bright red fruits which were nibbled by some, including some Kootenay and Chilcotin people in British Columbia (Teit, 1909; Turner, 1978), but others considered them inedible. The Tanaina and Ahtna of Alaska call it "dog's nose bleed" and say it brings bad luck. It was sometimes used as a stain for the face and for decorating artifacts (Myers et al. unpubl. notes, 1988; Turner et al., 1990). The tender young leaves can be eaten raw or cooked, but were apparently not a traditional food (cf. Heller, 1976).

Also in the goosefoot family, saltbush *(Atriplex argentea*and related spp.) was used by Indigenous Peoples of the Southwest and Great Basin as a green vegetable and salty flavoring (Kindscher, 1987), and was possibly used by peoples of the Plains bioregion in the United States

and Canada. Winterfat *(Eurotia lanata)* was used by the Blackfoot for a beverage tea (Johnston, 1982).

Another plant in this family, glasswort, or beach asparagus *(Salicornia virginica;* syn.*S. pacifica),* has been used along the British Columbia and Alaska coast as an edible green. For example, the Kaigani Haida of Alaska pick the plants from May through June in quantities of a gallon or more, and use them fresh or preserved. The succulent stems are boiled or scalded in several waters, then eaten right away or canned, "jarred," frozen, or pickled. They are also eaten cold in salads with dressing. Nowadays they are preserved in quantity for winter: some people preserve over 60 quarts in a season. Apparently this food was not used traditionally, but was learned about from Norwegian and other "settlers" (Heller, 1976; Norton, 1981). The Tlingit also use it in Oriental-style dishes (Jacobs and Jacobs, 1982). Some Indigenous People on Southern Vancouver Island pick it for sale in markets, where it may bring up to $10.00 per kg (Turner and Hebda unpubl. notes, 1989).

Dogwood Family (Cornaceae)

Canada Bunchberry, Crackerberry or Dwarf Dogwood*(Cornus canadensis; see Figure 26, page 157)*

Description: Herbaceous perermial, usually under 20 cm (8 in.) tall, growing from creeping rhizomes and often forming dense patches. There are many different forms of this attractive plant, and it frequently hybridizes with the closely related C.*suecica.*The leaves are short-stalked, oval, and pointed, the upper ones forming a near whorl at the top of the stem, and the lower ones much reduced or scale-like. The flowering heads resemble those of the flowering dogwood tree *(Cornus nuttallii),* but are much smaller. Four white, petal-like bracts, each up to 2 cm long, surround a tight, greenish cluster of minute flowers. These develop into a rounded cluster of bright red, fleshy, 1-seeded, berry-like drupes. In C.*suecica,* the leaves have no stalks, and are narrower and more spread out along the stem, and the floral bracts are shorter, usually less than 1 cm, and the flower petals are uniformly dark purple.

Occurrence: Woods and damp clearings, often on rotting wood, throughout Canada, north to Alaska and the Aleutians, east to Labrador and Newfoundland, and south in the United States to California and New Mexico, Pemisylvania and New Jersey; also found in Eastern Asia. The range of C. *suecica*is similar, but generally more northerly.

Food Use: The fleshy drupes of bxinchberry are sweet and pleasant tasting, if somewhat pulpy, with a hard seed in the middle. They were eaten by many, though not all. Indigenous Peoples within the range of the plant. They ripen from late July through September, depending on latitude and elevation, and in some places are very plentiful. Some people simply ate them raw, as a snack. Others gathered them in large quantities and stored them for winter. In eastern Canada, the fruits were eaten raw by the Ojibwa, Potawatomi, Algonquin, and Abenaki, and probably others as well (Densmore, 1928; Smith, 1933; Rousseau, 1947; Black, 1980). In central Canada, the Fisherman Lake Slave, the Chipewyan of northern Saskatchewan, and Woods Cree of east-central Saskatchewan also ate them raw and fresh. Slave people sometimes called them "marten berries," and Chipewyan consultants said that they cause a prickly feeling if rubbed on the face (Lamont, 1977; Marles, 1984; Leighton, 1985). The Tanaina of Alaska ate them casually, but not in quantity, and considered them dry and seedy (Kari, 1987). The Kaigani Haida formerly ate them fresh, mixed with other berries, or mashed and dried them for storage (Norton, 1981).

The coastal peoples of British Columbia, including Haida, Coast Tsimshian, Nuxalk (Bella Coola), Kwakwaka'wakw, Ditidaht (Nitinaht), Hesquiat (Nuu-chah-nulth), Comox and Sechelt, used them the most intensively (Boas, 1921; Turner, 1975; Turner et al., 1983; Port Simpson Curriculum Committee, 1983). They were also used by the Lower Lillooet and the Makah of Washington (Gunther, 1973; Turner et al. unpubl. notes, 1987). They were usually eaten raw, with ooligan grease or some other type of fat and, recently, sugar. They were believed to be hard to digest if not eaten with oil or ooligan grease (Turner and Efrat, 1982). Often they were served at large feasts. Sometimes they were steamed and preserved in a mixture of water and grease. The hard seeds were discarded or were chewed and eaten along with the pulp (Turner, 1975). The Gitksan people

of the Skeena River ate bunchberries alone, but more often crushed them and added them to other berries being dried in cakes to thicken them and hold them together better; they were "our ancestors' Certo" ('Ksan, People of, 1980).

Some peoples, such as the Inupiaq Eskimo of Alaska, the Nlaka'pamux, Kootenay and Chilcotin of British Columbia, and the Quinault of Washington, did not eat the fruits of either C.*canadensis*or C.*suecica.* Some people of the last group considered them to be poisonous (Gunther, 1973; Turner, 1978; Jones, 1983; Turner et al., 1990).

Food Use of Related Species: Swedish bunchberry *(Comus suecica),* mentioned above, is often not distinguished from Canada bunchberry; its berries were generally eaten when available, by the same groups using the latter.

Red-osier Dogwood, or "Red Willow" *(Comus stolonifera;* syn. C.*sericea*and C.*occidentalis)*

Description: Slender, branching deciduous shrub usually 2-3 m (6-10 ft) tall, with opposite branches often conspicuously red-barked, smooth and shiny. The leaves are oval to elliptical, smooth-edged, and pointed, turning red in the fall. The flowers are small, white, and numierous, in flat-topped or rounded clusters. The fruits are fleshy, globular drupes, white, often with a bluish tinge. Two major varieties are recognized: var.*occidentalis,* with longitudinally grooved stones, slightly larger flowers; and var.*stolonifera,*with smooth stones and smaller flowers. Hairiness of the leaves, color and shape of drupes, and leaf shape are variable, and several different forms within these varieties have been delineated. It is likely that palatability of the fruit also varies from one form to another, which may explain why the berries were eaten in some areas and not in others.

Occurrence: Moist woods, thickets, marshes, and shorelines across Canada from British Columbia to Newfoundland, north to Alaska, Yukon and the Northwest Territories, and south in the United States to California (also Mexico) and New England.

Food Use: The fleshy drupes are known to be tart and bitter, but were nevertheless eaten by all of the southern Interior peoples of British Columbia, including Nlaka'pamux, Lillooet, Okanagan-Colville, Shuswap and Kootenay, as well as by the Blackfoot and Flathead of Alberta and Montana. In most of these languages, they were named after their bitter taste. They were gathered from August to October and eaten fresh, a few at a time, or, more commonly, pounded and mixed with other fruits such as choke cherries or Saskatoons. Some people mashed them and dried them in cakes; others seldom stored them. Eating a few raw fruits was considered to be a good tonic among the Nlaka'pamux, and the Okanagan-Colville ate them raw as a kind of "relish" (Turner, 1978; Turner et al, 1990). Some Flathead and Kootenay of Montana called the fruits, mixed with saskatoons ("serviceberries") "sweet and sour" (Hart, 1976). One Lillooet woman recalled that when she was a child, her grandmother used to serve these "red willow" fruits to special guests, and then she was required to eat them also, even though she did not like them very much (Turner et al. unpubl. notes, 1987). The Lower Lillooet extracted the stones and ate them like peanuts (Turner, 1978).

The white drupes are believed to be less bitter than those tinged with blue (Turner, 1978). Athapaskan peoples such as the Tainaina of Alaska, the Chilcotin of British Columbia, and the Chipewyan of northern Saskatchewan apparently did not eat the fruits; the Tanaina called them "great homed or boreal owl's berry" (Marles, 1984; Kari, 1987; Myers et al. unpubl. notes, 1988). Black bears are said to be fond of these "berries"; they come down from the mountains to get them and eat them "for dessert" (Turner et al., 1980; Turner et al. unpubl. notes, 1987). The leaves and/or inner bark were used in smoking mixtures by Okanagan-Colville, Flathead, Kootenay, and Blackfoot peoples (Hellson and Gadd, 1974; Hart, 1976; Turner, 1978; Turner et al., 1980; Johnston, 1987). Micmac people made a tea from the bark of dogwood (Wallis and Wallis, 1955), probably this species.

Stonecrop Family (Crassulaceae)

Stonecrop *(Sedum divergens; see Figure 27, page 157)*

Description: Succulent, mat-forming perennial herb with short vegetative stems covered by round or oval shaped, fleshy leaves. The flowering stems are more erect, up to 10 cm (4 in.) tall, and also leafy, with flat-topped clusters of bright yellow flowers. The stems and leaves are frequently red, especially in exposed localities.

Occurrence: Exposed, rocky ledges, ridges and talus slopes from sea level to alpine elevations from British Columbia, generally but not entirely west of the Coast and Cascade Mountains, to Oregon.

Food Use: The small, round, fleshy leaves were generally regarded more as berries than greens. The Kwakwaka'wakw name translates as "crow's strawberry." They were eaten by some British Columbia Indigenous Peoples, including the Gitksan, Nishga, Haida and Lower Lillooet (Turner, 1975). The leafy stems were gathered in the spring, before the plants come into bloom, or in the fall. They were generally eaten raw, formerly with ooligan or other animal grease, more recently with grease and sugar. They are slightly tart (due to the presence of oxalic acid), but drinking water after eating them is said to leave a pleasant taste in the mouth ('Ksan, People of, 1980). The Haida chewed them as a mouth freshener after taking fish-grease

Figure 26. Dwarf dogwood, or bunchberry*(Cornus canadensis).*

Figure 27. Stone-crop*(Sedum divergens).*

laxative. The Nuxalk (Bella Coola) and Lower Lillooet named them after their resemblance to salmon roe. Lower Lillooet children were especially fond of them, and one man recalled they used to eat them "like crazy." The Lillooet also chewed them raw as a cough medicine (Turner et al. unpubl. notes, 1987). The Nuxalk probably ate the leaves as well, and used them medicinally to induce lactation in nursing mothers.

Food Use of Related Species: Oregon stonecrop *(Sedum oreganum)* was called by the same name as the previous species by Nuxalk people, and may have been eaten by them (Turner unpubl. notes, 1984).

Roseroot *(Sedum roseum;*syn.*Rhodiola rosea)*

Description: Fleshy, herbaceous perennial growing from a thick, muchbranched rootstock. The stems, erect and up to 20 cm (8 in.) high, are numerous and leafy, the leaves pale, whitish, elongated and somewhat spoon-shaped, smooth-edged or coarsely toothed. Male and female flowers are borne on separate stems; the male (pollen-bearing) flowers are bright yellow, and the female flowers usually deep purple. The flower clusters are dense and head-like. The fruits are fleshy, erect follicles.

Occurrence: Moist cliffs, talus slopes and alpine ridges across northern Canada and Alaska, and south in the mountains to California and Colorado in the West and Pennsylvania and Virginia in the East. Also grows in Greenland, Iceland and Eurasia.

Food Use: Most Eskimo peoples of Alaska, and probably most Canadian Inuit as well (cf. Porsild, 1964), used the succulent stems and leaves in large quantities as a green vegetable. They were usually gathered in early summer (Heller, 1976). The Inupiaq and Saint Lawrence Island Eskimo formerly fermented them in water, then ate the plants and juice together with walrus blubber or any kind of blubber or oil. Once fermented, the mixture was stored cold to prevent further fermentation. The fleshy, tuberous roots were also dug and eaten in early spring (Jones, 1983). The Tanaina of Alaska did not eat this plant, but used it as a medicinal tea and eye wash (Kari, 1987).

Melon Family (Cucurbitaceae)

Squashes, Pumpkins and Melons *(Cucurbita* spp.)

Description: Trailing annual herbaceous vines, coarse stems and with large, simple, alternate leaves which are commonly palmately lobed and shallowly toothed. Male and female flowers are borne separately; both are yellow, with flaring petals. The fruits are of various shapes, sizes and

colors, consisting of an edible outer fleshy rind and a pulpy interior with large, flat, oval seeds which are more or less pointed at one end.

Occurrence: Gardens and cultivated ground; formerly apparently confined to the Great Lakes region in Canada; now widely grown.

Food Use: Many varieties of cucurbits, including squashes, cucumbers, pumpkins and melons, were cultivated by the Iroquois of the Great Lakes region (Waugh, 1916). Most are considered of American origin, except watermelon, some varieties of cucumber and possibly also *Cucurbita maxima,*including hubbard squash. The identification of the original types is very difficult, because the descriptions are sparse. Jacques Cartier was said to list at least three species, and other early chroniclers mentioned several kinds, including pumpkin, and squashes of different shapes and colors. Everywhere, aboriginal squashes are referred to as having been delicious, and better than those encountered in Europe. Squashes often formed the principal food at certain seasons and were also dried for storage. They also had considerable ceremonial importance. Squashes and pumpkins were commonly planted in hills of maize, the two kinds of seed being planted together. Maize, beans and squash were known as "the Three Sisters."

The Iroquois boiled squashes and pumpkins, baked them in ashes, or fried them. Cooked, they were eaten whole or mashed with deer suet and maple sugar, or, recently, butter and sugar. Mashed squash, or dried, reconstituted squash was mixed into corn bread. The Canadian Onondaga frequently cut squashes and pumpkins into narrow pieces lengthwise, then dried them over the stove in flat trays or baskets. Squashes and pumpkins were boiled with meat for soup, made into sauce or pudding, or cooked with green beans. Cucumbers were said to have been preserved by washing and placing them in a brine made with salt and sheep sorrel *(Rumex acetosella).*Squash flowers were sometimes used, being boiled with the young fruits (Waugh, 1916). The Ojibwa, Huron, and Potawatomi also were said to have had squash and pumpkins before the coming of Europeans; these were cultivated in gardens and eaten fresh or cut in pieces or strips for drying. Dried, they were boiled alone or with game and seasoned with maple sugar. The flowers were used in broth and for seasoning and thickening. Dried pumpkin blossoms were used to thicken soup (Densmore, 1929; Smith, 1933; Tooker, 1964). The Huron also gathered "wild pumpkins" (Tooker, 1964).

Squashes, pumpkins and melons were introduced throughout the country in historic times, and were grown and eaten in large quantities by groups such as the Nlaka'pamux of British Columbia (Turner et al., 1990).

Oleaster Family (Elaeagnaceae)

Silver Buffalobeny *(Shepherdia argentea)*

Description: Deciduous shrub or small tree up to about 6 m (20 ft) tall, with dense silvery scurf on the undersides of the leaves and on the young twigs. The older branches are commonly spine-tipped. The leaves are wedge-oblong and entire. The flowers are small and inconspicuous, in clusters in the leaf axils, and the fruits are scarlet and berry-like.

Occurrence: Open woods, thickets, rocky slopes and shores from the southern Prairie Provinces of Canada, south to California and Iowa in the United States.

Food Use: The ripe fruit, usually picked in the fall after a frost, was eaten raw, cooked, or dried, and also made into juice by the Blackfoot, as well as by other Plains groups—the Stoney (Assiniboin), Omaka, Mandan (who used them to flavor prairie turnip roots), Dakota Sioux, Cheyenne, Pawnee, Ponca, Winnebago, and Crow (Hart, 1976; Johnston, 1987; Kindscher, 1987). The berries are exceedingly tart, almost unpalatable, until they are sweetened by the first frost. They were a favorite fruit of the eastern Montana Indians. Formerly, a sauce from the fruits was used to flavor buffalo meat. Today, they are used for jams and jellies, and are still highly esteemed for this purpose (Hart, 1976). A yellow-fruited cultivar,'*xanthocarpa,'* has been developed (Kindscher, 1987).

Food Use of Related Species: The large, dry, mealy fruits of silverberry *(Elaeagnus commutata)* were eaten by some people, but were not generally highly regarded. Interior peoples of Alaska fried them in moose fat or some other grease (Heller, 1976; Kari, 1987). The Stoney (Assmiboin) and Blackfoot of Alberta ate the fruits as a famine food; they peeled and ate them raw or mixed them with grease and stored them for winter use in soups and broths (Scott-Brown, 1977; Hellson and Gadd,1974; Johnston, 1987). Okanagan-Colville people and others also ate them on occasion (Turner et al., 1980).

Soapberry, Russet Buffaloberry, or Soopolallie *(Shepherdia canadensis; see Figures 28 and 29, page 161)*

Description: Deciduous shrub usually under 2 m (about 6 ft) tall, with oval or oval-lance-shaped, smooth edged leaves. The undersurfaces of the leaves and the twigs are covered with a dense, rust-colored scurf. The flowers are small, greenish, and inconspicuous, blooming in early spring often before the leaves expand. The berries, borne singly or in clusters at the leaf axils, are small, ovoid, and translucent, ranging in color from orange to deep red, and covered with small dots.

Occurrence: Woods, thickets, rocks and shores across Canada from British Columbia to Newfoundland (not known from Prince Edward Island), north to Alaska, Yukon and Northwest Territories, and south in the United States to Oregon, New Mexico, Minnesota and New England.

Figure 28. Soapberry, or soopollalie *(Shepherdia canadensis),* being harvested by hitting the branches with a stick.

Figure 29. Jarred soapberries and soapberry whip. The berries are still widely traded and used as gifts by Indigenous Peoples in British Columbia.

Food Use: The berries, which generally ripen in early July to early August, are extremely bitter. Most of the eastern and central Canadian peoples, such as the Chipewyan of northern Saskatchewan, did not eat them (Marles, 1984), nor did the Tanaina and Inupiaq Eskimo of Alaska (Jones, 1983; Kari, 1987). Others, such as the Fisherman Lake slave, did use them. They carried the berry-laden branches back to camp and stuck them in the ground, to harvest and eat the berries at leisure. They boiled the berries, and sometimes mixed them with a little sugar before or after cooking. They also ate them mixed with cooked moose liver or with animal fat (Lamont, 1977). The Blackfoot also ate the berries, in "lean times" (Hellson and Gadd, 1974). The Stoney (Assiniboin) fried them in grease, and sometimes whipped them (see following), or cooked them with sugar as a dessert (Scott-Brown, 1977).

It is in British Columbia, however, where the berries attained a broader potential of use by Indigenous People. Here, people developed a special confection, often called "Indian ice-cream," by whipping the berries with water and, in recent times, with sugar into a light froth. "Indian ice-cream" is still served in many households, especially at parties and family gatherings (Turner, 1975,1978,198 lb; Turner et al., 1980; 'Ksan, People of, 1980; Galloway, 1982; Jacobs and Jacobs, 1982; Turner et al., 1983; Turner et al., 1990).

The berries fall off the bushes easily when ripe. The usual method of gathering them was to place a container or mat under a berry-laden branch, and then, holding the branch at the end, whack it sharply with a stick, dislodging all the ripe berries. With this method, large quantities can be gathered in a short time. The berries can then be used fresh, but were generally dried individually or in cakes, on mats or layers of dried grass. Sometimes they were boiled first, using red-hot rocks. Today, the berries are jarred in water, with or without sugar, frozen, or made into a purée or concentrate, which can also be used as a base for a thirst-quenching, lemonade-like beverage. A small quantity (50 mL to 1/4 cup) of the berries makes a large bowl (2 L to 2 quarts) of whip. Too much sugar is said to spoil the taste. Formerly, the whip was sweetened with other berries such as saskatoons and salal. Whipping is done with the hands, with salal or thimbleberty branches, fireweed stems, bunches of "timbergrass"*(Calamagrostis rubescens),*or with a specially made whipping instrument consisting of loops of clusters of inner bark of silverberry or maple tied onto a stick. Special baskets, bowls or birch-bark vessels were used to made the whip. Specially carved, paddle-like wooden spoons were used to eat it, and in some households, each person had his or her own spoon, which was carefully hung up when not being used. Care must be taken in picking and preparing soapberries so they do not come in contact with oil or grease of any kind, or they will not whip.

Eating soapberries was, and still is, an art and a pleasurable social event—"a joyous time" (Jacobs and Jacobs, 1982). The whip, some maintain, has to be swished in and out of the mouth to

get the air out of it before being swallowed. People had soapberry contests and soapberry fights, and many people ended up smeared with the whip by the end of a soapberry-eating party ('Ksan, People of, 1980; Port Simpson Curriculum Committee, 1983). Soapberries and soapberry whip were considered healthful foods. The whip was said to be good for settling the stomach after eating rich foods ('Ksan, People of, 1980; Turner et al., 1990).

Soapberries are sporadic in their distribution. They are more common and productive in the Interior than on the Coast, and they do not grow at all in some places, such as the Queen Charlotte Islands. Crops vary from year to year and place to place, and different populations of the fruit are better flavored than others. Hence, there was a wide trading network for soapberries, existing even at the present time. The various names for the berries reflect trading patterns. For example, on the Charlottes, the Skidegate Haida name for soapberries is borrowed from the Coast Tsimshian, whereas the Massett Haida name is related to the Tlingit name. The Port Simpson Coast Tsimshian traded soapberries from the Skeena River Gitksan, in exchange for seaweed, clams, cockles, ooligan grease, and sometimes clothing (Port Simpson Curriculum Committee, 1983). Nuu-chah-nulth people of the West Coast of Vancouver Island traded them from the Fraser Valley people (Turner and Efrat, 1982; Turner et al., 1983). The Nlaka'pamux of Boston Bar brought the dried berries to Spuzzum and the Fraser Valley to trade for fish; half a cake of dried soapberries was said to be worth a salmon (Turner et al., 1990).

Soapberries are made into "Indian ice-cream" throughout British Columbia, and in neighboring Alaska, Alberta, Washington, Idaho and Montana (Gunther, 1973; Hart, 1976; Heller, 1976; Scott-Brown, 1977; Norton, 1981; Jacobs and Jacobs, 1982). The making of this confection seems to have originated somewhere in the B.C. Interior, probably in Interior Salish territory; the derivation of the Interior Salish names is from "foaming or frothing" (Turner et al., 1990).

Food Use of Related Species: See under silver buffaloberry (*S.argentea).*

Crowberry Family (Empetraceae)

Black Crowberry, Curlewberry, or "Blackberry" *(Empetrum nigrum)*

Description: Low growing, shrubby evergreen up to 30 cm (12 in.) high, resembling a miniature fir tree, with short, needle-like leaves, which are turned under at the margins. The flowers are small, pinkish and inconspicuous, in loose clusters at the ends of the stems. The fruits are black to dark purple (in some varieties, pink, bright red or reddish-purple), juicy and beny-like, containing up to 9 hard seeds.

Occurrence: Peat bogs, rocky and gravelly areas, and tundra, across Canada from British Columbia to Newfoundland, north to Alaska and the Arctic Ocean, south to California and New York; also found in Greenland and Eurasia.

Food Use: The mild-flavored, juicy fruits were eaten by many Indigenous Peoples throughout the range of the plant, including Ojibwa, Slave and other Déné, Chipewyan, Cree, Carrier, Haida and Tsimshian, as well as the Inuit of northern Canada and the Inupiaq and other Eskimo peoples of Alaska (Ross, 1962; Reagan, 1928; Sinclair, 1953; Porsild, 1964; Eidlitz, 1969; Turner, 1975,1978; Lament, 1977; Porsild and Cody, 1980; Marles, 1984; Leighton, 1985; Kuhnlein unpubl. notes, 1985; Kari, 1987). Among the northern peoples, they were often a staple, although some Haida people say that they cause hemorrhaging if too many are eaten.

Crowberries ripen in August, but remain on the plants through the winter, and were available fresh or frozen into the early spring, and could be gathered even from under the snow (Porsild, 1964). They are eaten raw or cooked. They are said to "contain lots of water" and were used by the Fisherman Lake Slave to slake the thirst on the mountain slopes when no water was at hand (Lamont, 1977). The Carrier sometimes mixed them with bear grease, and cooked and mashed them then dried them in the sun in cakes (Turner, 1978). The Inupiaq Eskimo, who call them "blackberries," ate them plain with oil and sugar, or mixed them with cloudberries, blueberries or

other fruits, sourdock*(Rumex arcticus),*whipped fat, or fish livers. Mixed whole with greens and other berries and seal oil, they were stored in a seal poke, or other airtight container (Jones, 1983; Heller, 1976).

Today, crowberries are used in pies and jelly (Heller, 1976). The plants were brewed as a beverage tea by Eskimo people living along the Bering Sea coast (Oswalt, 1957). The Tanaina used the cooked berries and a tea from the plant for diarrhea, and drank the berry juice as medicine for the kidneys (Kari, 1987).

Heather Family (Ericaceae)

Alpine Bearberry *(Arctostaphylos alpina;* including ssp.*rubra)*

Description: Low, mat-forming shrub with deciduous leaves which are obovate, tapering at the base and finely toothed around the edges. The foliage turns bright orange or red in the fall. The flowers are white and urn-shaped. and the pea-sized fruits are globular and very juicy, ranging in color from purplish black to scarlet in ssp. *rubra,* known as ted alpine bearberry.

Occurrence: Heaths and dry, open places of the mountains and on rocky barrens throughout much of northern Canada and Alaska, south to Yoho National Park in British Columbia and to Maine and New Hampshire in eastern North America. Red alpine bearberty occurs in similar habitats but tends to extend southward.

Food Use: The insipid, seedy berries are edible but not particularly popular. However, some northern people ate them. The Fisherman Lake Slave picked the berries of both red and black forms in August and ate them fresh or boiled them in soup (Lamont, 1977). The fruits were sometimes cooked and eaten as jam by Chipewyans (Ross, 1862; Marles, 1984), and were sometimes used when other berries were scarce by the Inupiaq and other Indigenous Peoples of Alaska. They were cooked with sugar and other berries, such as cloudberries (Oswalt, 1957;Porsild, 1964; Jones, 1983; Kari, 1987).

Kinnikinnick, or Bearberry *(Arctostaphylos uva-ursi; see Figure 30, page 169)*

Description: Prostrate, mat-forming shrub with dark green, leathery, evergreen leaves. The young branchlets are usually finely hairy and viscid, but may become smooth later. The leaves are obovate, and smooth edged, and generally smaller than those of alpine bearberry. The flowers are white to pinkish and urn-shaped, borne in small clusters at the branch tips. The fruits are red-skinned, the inner pulp whitish, dry and mealy, with several hard nutlets fused together as a single stone. Kinnikinnick is now widely planted as a ground cover in landscaped sites.

Occurrence: Open rocky slopes and sandy areas throughout Canada, the Aleutian Islands and Alaska, south to northern California, New Mexico, Virginia and New England; also found in Greenland and northern Eurasia.

Food Use: This shrub is probably best known for its leaves which were very commonly used in smoking mixtures by Canadian Indigenous Peoples. They were generally toasted over a fire or in the oven, then smoked alone or mixed with tobacco in a pipe. Coastal peoples of British Columbia apparently learned to smoke kinnikinnick leaves relatively recently (Densmore, 1928;Leechman, 1954; Gunther, 1973; Galloway, 1982;Turner et al., 1983; Leighton, 1985; Turner et al., 1990). Some people, including Nlaka'pamux and Blackfoot, made a beverage tea from the leaves (Turner, 1975; Johnston, 1987; Hellson and Gadd, 1974).

The berry-like fruits, though dry and mealy, were widely eaten by Indigenous People. Groups who ate them include Micmac and Malecite (Speck and Dexter, 1951, 1952), Ojibwa (Densmore, 1928; Stowe, 1940), Vanta Kutchin (Leechman, 1954), Fisherman Lake Slave (Lament, 1977), Chipewyan of northern Saskatchewan (Marles, 1984), Woods Cree of east-central Saskatchewan

(Leighton, 1985), Blackfoot and Stoney (Assmiboin) of Alberta, and most of the British Columbia and western Washington groups (possibly excluding some Nuu-chah-nulth and Kwakwaka'wakw) (Turner, 1975,1978; Scott-Brown, 1977; 'Ksan, People of, 1980; Galloway, 1982; Turner and Efrat, 1982).

The berries were usually harvested in late summer, but could be obtained throughout the winter months and even into spring (cf. 'Ksan, People of, 1980; Jones, 1983). They were eaten fresh and raw, or more commonly, cooked. They could be dried for storage, or buried fresh in birch-bark containers (Turner, 1973, 1975,1978; Turner et al., 1990).

A wide variety of dishes were developed using the berries. For example, the Ojibwa cooked them with meat to make a broth (Densmore, 1928; Stowe, 1940). The Chipewyan and Woods Cree cooked them lightly in animal fat, then pounded and mixed them with jackfish or whitefish eggs, sweetened with birch syrup or sugar (Marles, 1984; Leighton, 1985). The Vanta Kutchin of the Yukon ate them with pemmican and fish-eggs, and one woman noted that when eaten with fish-eggs, they help prevent the eggs from sticking to the teeth (Leechman, 1954). Nlaka'pamux and other Interior Salish people of British Columbia usually cooked the berries with bear fat or fish oil, and sometimes fried them in hot lard or salmon oil, or boiled them with salmon eggs or in soups. Fried on a hot stove, they were eaten as a snack or treat by children (Turner et al., 1990). The Okanagan-Colville cooked them with venison or salmon, or dried them into cakes which were eaten ceremonially with salmon eggs (Turner et al., 1980). The Flathead of Montana used the dried, powdered berries as a condiment with deer liver to make a kind of pemmican (Hart, 1976). The Nuxalk (Bella Coola) people formerly cooked them in a pot of melted mountain-goat fat, then served them to chiefs at feasts. More recently, the berries were dried for storage, then boiled and mixed with boiled "dumplings" made with flour and water (Turner, 1975).

The Inupiaq Eskimo of Alaska picked the berries after the first frost, and ate them after they had been stored in oil or bear fat a month or more. They are said to be excellent when mixed together with dried salmon eggs, or with oil when eating dried meat (Jones, 1983). In poor berry years, some Alaska Eskimos pick them and mix them with blueberries (Heller, 1976). The Tanaina of Alaska eat them with animal or fish grease or oil, and use them raw as a laxative (Kari, 1987). (Marles, 1984, notes, however, that they can cause constipation.)

Some localities are said to have better tasting kinnikinnick berries than others (Turner et al., 1980). The berries are known to be a favorite food of bears ('Ksan, People of, 1980), grouse (Turner, 1978; Turner et al., 1983), and deer (Turner et al., 1990).

Wintergreen, Teaberry, or Checkerberry *(Gaultheria procumbens)*

Description: Low, creeping, evergreen shrub, with small, oval leaves that are finely toothed at the margins and tend to be clustered near the ends of the flowering branches. The flowers are small, white and urn-shaped, borne singly or in small clusters in the upper leaf axils. The berries are small and bright red, and remain on the plants throughout the winter. The leaves and fruits have a pleasant aromatic fragrance and taste, familiar to many as the wintergreen flavor in candies, chewing gum and toothpaste.

Occurrence: Dry or moist woods, mainly coniferous, in eastern Canada from southeastern Manitoba to Newfoundland and Nova Scotia, and south in the United States to Minnesota and Georgia.

Food Use: The small berries were eaten fresh or preserved by Iroquois, Ojibwa, Algonquin, Cree, and Malecite peoples (Parker, 1910; Waugh, 1916; Reagan, 1928; Smith, 1932; Adney, 1944; Black, 1980). The Micmac were said to make juice from the berries (Stoddard, 1962). Additionally, the spicy leaves were used by the Ojibwa to season food in cooking (Gilmore, 1933). Many groups, including the Ojibwa, Algonquin, Abenaki, Micmac and Malecite also used the leaves—especially the young, tender ones—fresh or dried, for a beverage tea (Densmore, 1928; Smith, 1932; Gilmore,

1933; Rousseau, 1947; Speck and Dexter, 1952; Lacey, 1977; Black, 1980). The Ojibwa tied them up in basswood bark for this purpose.

WARNING: The wintergreen flavor in this and related species is due to the presence of oil of wintergreen, which, if taken in excess, can be quite toxic, especially to children. There is no danger from the small quantities present in wintergreen tea, but children, especially those having an allergy to aspirin (a related drug), should not eat the plant or berries, or even handle the plant.

Food Use of Related Species: (see also following species). Several related plants were used casually by Indigenous Peoples in Canada. Creeping snowberry *(Gaultheria hispidula)* fruits were eaten by the Cree (Black, 1980), and the wintergreen-flavored leaves were used for tea by the Iroquois and Ojibwa (Waugh, 1916; Densmore, 1928). The berries of Oregon wintergreen or mountain teaberry *(Gaultheria ovatifolia),* which are small, red and very sweet, were eaten fresh by Sechelt and Lower Nlaka'pamux people of British Columbia (R. Bouchard pers. comm., 1978; Turner et al., 1990), and those of alpine wintergreen *(Gaultheria humifusa)* were apparently also used (Turner et al., 1990).

Salal *(Gaultheria shallon; see Figure 31, page 169)*

Description: An erect, freely branching evergreen shrub, growing up to 2.5 m (8 ft.) high, but often much shorter, with tough, resilient stems. The leaves are shiny, leathery and oval, up to about 9 cm (over 3 in.) long, pointed and finely toothed around the margins. The urn-shaped, pinkish to white flowers are borne in elongated, one-sided, clusters, the flowering stems bracted, hairy and glandular. The berry-like fruits are nearly black. They are hairy, thick-skinned and juicy, with numerous tiny seeds. At the tip of each fruit is a conspicuous, star-like depression.

Occurrence: Coniferous forests mainly west of the Coast and Cascade mountains in British Columbia, north to southeastern Alaska, and south to California; also found sporadically in the south Kootenay Valley.

Food Use: Salal berries were undoubtedly the most important traditional fruit of most Northwest Coast peoples. The bushes are often very productive along the coast, and because the berries grow in elongated clusters, large quantities can be harvested quickly and efficiently. Although they vary in taste and quality, they are usually sweet and juicy, and can be readily cooked and dried in cakes, providing a year-round food source. Virtually all coastal peoples of British Columbia, southeastern Alaska, and Washington used them, as did the Lower Lillooet and Lower Nlaka'pamux of British Columbia (Gunther, 1973; Port Simpson Curriculum Committee, 1983; Heller, 1976; Norton, 1981; Turner, 1975; Turner et al., 1983; Turner et al. unpubl. notes, 1987; Turner et al., 1990).

The berries ripen in August, and often remain on the bushes into October. There were many variations in their preparation, but the general methods were the same. They were commonly eaten fresh with ooligan grease or some other type of oil. For preserving, they were generally placed in a bentwood cedar box, mashed and boiled by adding red hot rocks until they were jam-like in consistency, then poured into rectangular cedarwood frames set on wilted skunk-cabbage leaves on a rack and placed over a low fire, usually of alderwood, to dry. The dried cakes were stored in cedar boxes, or openwork baskets set on scaffolding. Before being used, they were usually reconstituted by soaking overnight. They were then broken into small pieces, mixed with grease and eaten with a spoon (Turner, 1975; Turner and Efrat, 1982; Turner et al., 1983; Port Simpson Curriculum Committee, 1983). They were often used to sweeten other berries (Norton, 1981; Galloway, 1982; Turner et al., 1983), although more recently, they have themselves been eaten with sugar, molasses or syrup. The Kaigani Haida mixed them with

Figure 30. Kinnikinnick *(Arctostaphylos uva-ursi);* the bright red berries were commonly "fried" in oil or animal fat.

Figure 31. Salal berries *(Gaultheria shallon).*

fish roe (Norton, 1981). The Nuu-chah-nulth people ate them with whale or seal oil (Turner and Efrat, 1982; Turner et al., 1983).

As well as the berries being eaten, salal leaves were chewed by Ditidaht (Nitinaht) and others to alleviate hunger when lost in the woods. The branches were widely used in pit-cooking, to line the pit and intersperse between layers of food, and were also in stovetop kettle modifications of this cooking technique, and were cooked or smoked with fish and other foods as a flavoring. The branches were often used by Coastal peoples as soapberry whippers (Turner and Efrat, 1982; Turner et al., 1983). Among the Sechelt, dried salal berries were said to be a good blood conditioner and laxative (R. Bouchard pers. comm., 1977).

Food Use of Related Species: (See under wintergreen,*G. procumbens)*

Labrador-tea, or Hudson's Bay Tea *(Ledum groenlandicum*and *L. palustre)*

Description: These two species are treated by some taxonomists as subspecies or varieties of the same species, *L. palustre* (cf. ssp. *groenlandicum* and ssp. *decumbens).*They are similar in many ways, and since they were used similarly by Indigenous Peoples, they are treated together here. They are evergreen shrubs with narrow or oblong, short-stalked leaves that turn under around the edges and are densely wooly beneath. The younger leaves are light green, with white wool;

older leaves are dark green, with rusty-red wool. The leaves of *L. groenlandicum* are larger, up to about 6 cm (2.4 in.) long, and those of *L. palustre* up to about 1.5 cm (0.6 in.). The flowers are white, in clusters at the tips of the twigs, and the fruits are dry, brownish capsules, usually at least 5 mm (0.2 in.) long, and twice as long as thick in *L. groenlandicum;* smaller and more globular in *L. palustre.*

Occurrence: *Ledum groenlandicum* grows in acid peat bogs and muskegs across Canada, from the British Columbia coast to Newfoundland and Nova Scotia, north to Alaska and the Yukon and south in the United States to Oregon, Minnesota and New Jersey. The species is also found in Greenland, which is its type locality. *Ledum palustre* grows in heaths, barrens and dry rocky places in Arctic and Subarctic regions from northern British Columbia, Alaska, Yukon and District of Mackenzie to Labrador. The two species may hybridize where their ranges overlap.

Food Use: The leaves, and sometimes the whole leafy twigs and flowers, of both species were used, fresh or dried, for tea. *Ledum groenlandicum* was used by the Ojibwa, Potawatomi, Algonquin, Cree, Micmac, Malecite and Montagnais in eastern Canada (Speck, 1917; Densmore, 1928; Smith, 1932,1933; Stowe, 1940; Beardsley, 1941; Speck and Dexter, 1951,1952; Wallis and Wallis, 1955; Stoddard, 1962; Lacey, 1977; Berkes and Farkas, 1978; Black, 1980); by the Fisherman Lake Slave, Vanta Kutchin, Chipewyan, Woods Cree, and Stoney (Assiniboin) in central and northern Canada (Honigmann, 1961; Leechman, 1954—*"Ledum,"*unspecified; Lamont, 1977; Scott-Brown, 1977; Marles, 1984; Leighton, 1985), and by virtually all Indigenous Peoples of British Columbia, as well as the Makah and other groups of western Washington (Gunther, 1973; Turner, 1975, 1978; Turner et al., 1980; Turner and Efrat, 1982; Galloway, 1982; Port Simpson Curriculum Committee, 1983; Turner et al., 1983; Turner et al., 1990).*Ledum palustre,*also sometimes called "Eskimo Tea," was used by the Slave and other Déné peoples, Chipewyan, Tanaina of Alaska, and by various Alaskan Eskimo and Canadian Inuit groups (Anderson, 1939; Oswalt, 1957; Lamont, 1977; Porsild and Cody, 1980; Jacobs and Jacobs, 1982; Jones, 1983; Marles, 1984; Kari, 1987), although Anderson (1939) notes that it was not used along the lower Yukon River.

The leaves could be gathered year-round; Slave men dug them out from under the snow when on the trapline (Lamont, 1977). Often, women and children picked the leaves (Port Simpson Curriculum Committee, 1983). They could be used fresh, but were usually dried and stored. To make tea, they were boiled for half an hour or more, until the tea was dark brown, or simply steeped in boiling water (Lamont, 1977; Kari, 1987; Myers et al. unpubl. notes, 1988). Today, people usually sweeten this tea with sugar or honey. The Western Eskimo of Alaska mixed the leaves with commercial tea (Oswalt, 1957). Many people still use Labrador-tea as a beverage. One Lower Lillooet woman sometimes mixes it with wild mint or rose hips.

Although the use of Labrador-tea as a beverage is very widespread in Canada, there is some suggestion, especially in the western and northern part of the continent, that this use is relatively recent. The concept of beverage teas was introduced by traders, according to Morice (1909:604, in Marles, 1984). This is borne out in other records of use (cf. Jones, 1983), and by the names for the shrub in many Indigenous languages, which incorporate the term "ti," borrowed from English "tea." Many people simply call it "Hudson's Bay tea" (Turner, 1975,1978). The Gitksan were said originally to have used it only as a medicinal tonic ('Ksan, People of, 1980), and other groups also used the tea as medicine (Norton, 1981; Gunther, 1973; Turner et al., 1983; Jones, 1983; Kari, 1987). Explorer Samuel Hearne reported in the 1770's that Labrador-tea was ".. .much used by the lower class of the [Hudson's Bay] Company's servants as tea; and by some is thought very pleasant. But the flower is by far the most delicate, and if gathered at the proper time, and carefully dried in the shade, will retain its flavor for many years and make a far more pleasant beverage than the leaves" (Hearne, 1911).

As well as being used for tea and as a medicine, the leaves were sometimes chewed as a flavoring. The Tanaina boil them with strong-tasting meat, such as bear meat, as a spice (Smith, 1932; Kari, 1987). Labrador-Tea should be considered for commercial production as a tea substitute (Turner, 1981).

WARNING: Many plants in the heather family, including *Ledum* species, contain a poisonous compound called andromedotoxin, which if consumed in large concentrations can be harmful, causing vomiting, illness and even death. Labrador-tea evidently has less andromedotoxin than other, related plants such as laurels *(Kalmia* spp.) and rhododendrons and azaleas *(Rhododendron* spp.); nevertheless, Labrador-tea should be used only in moderation, and in relatively dilute infusions. It is important not to confuse *Ledum* with the more toxic swamp-laurel *(Kalmia polifolia)* which grows in similar habitats. The leaves of the latter are smooth rather than hairy underneath, and it has pink, not white, flowers (Turner and Szczawinski, 1990).

Food Use of Related Species: (see **WARNING**, under Labrador-tea). Trappers' tea *(Ledum glandulosum)* leaves were used as tea by the Nlaka'pamux and Okanagan-Colville of British Columbia (Turner et al., 1990). Beverage teas were also made from a number of other plants of the heather family (or related pyrola family). These include: bog-Rosemary *(Andromeda glaucophylla)* and leatherleaf *(Chamaedaphne calyculata),* whose young, tender leaves and tips of the plants were boiled for tea by the Ojibwa (Smith, 1932); prince's pine, or pipsissewa *(Chimaphila umbellata),*which was steeped for beverage and medicinal tea by Upriver Halkomelem and Nlaka'pamux of British Columbia (Galloway, 1982; Turner et al., 1990); swamp-laurel *(Kalmia polifolia),* used by some Chipewyan of northern Saskatchewan as a tea substitute, by others only for medicine (Marles, 1984) (see **WARNING**, above); false-azalea *(Menziesia ferruginea),* whose twigs and leaves were used by some Lower Lillooet people of British Columbia to make a beverage tea (Turner et al. unpubl. notes, 1987); bog wintergreen *(Pyrola asarifolia* var.*purpurea),* whose leaves were boiled and drunk as tea by the Montagnais (Speck, 1917); and white rhododendron *(Rhododendron albiflorum),* the leaves of which were reported by one Okanagan-Colville man to have been used for tea (Turner et al., 1980). Additionally, the Lime Village Tanaina of Alaska eat the raw flowers of bog-Rosemary and leather-leaf (Kari, 1987), and the Blackfoot used prince's pine leaves in smoking mixtures (Johnston, 1987). The leaves and possibly the capsules of *Pyrola asarifolia* and *P. virens* were apparently boiled and eaten by some Fisherman Lake Slave people (Lamont, 1977). The resinous twigs of arctic white-heather *(Cassiope tetragona)* were an important source of fuel for Inuit peoples of the Arctic (Porsild, 1964).

Bog Cranberries *(Oxycoccus* spp.; also commonly included as a subgroup in the genus *Vaccinium)*

Description: Four species of *Oxycoccus* are recognized by Scoggan (1978): *O. macrocarpus,* large or American bog cranberry; *O. microcarpus,*small-fruited bog cranberry;*O. ovalifolius,* oval-leaved bog cranberry; and *O. quadripetalus,* four-petalled bog cranberry. The taxonomy of these species is very complex and confusing. The last three are often included in a complex known as *"Vaccinium oxycoccus."* Many people also often confuse the bog cranberries with mountain or lowbush cranberry *(Vaccinium vitis-idaea)* and the unrelated highbush cranberry *(Viburnum* spp.).

Indigenous People seldom distinguished among the bog cranberries in any formal way. The berries were prepared and eaten in similar ways, and hence the *Oxycoccus* species are treated here together. All are low, slender, creeping, evergreen vines of peat bogs, with thin, flexible branches and tiny, oval to ellipse-shaped, smooth-edged leaves which tend to curl under at the edges. The flowers, borne on thread-like stalks, are small, pink, nodding and four-parted, with recurved petals and exserted stamens. The berries are elongated or globular, bright red when ripe, many-seeded and juicy, but quite acid. The large-fruited *Oxycoccus macrocarpus* is a wild forerunner of the many cultivated forms of cranberry. The species are distinguished on the basis of leaf shape, hairiness of the flower stalks, berry size, and other features. The leaves of *O. microcarpus* and *O. ovalifolius* are broadest at the base and the flower stalks are smooth; in the other two species, the leaves are broadest at the middle and the flower stalks are hairy.*O. macrocarpus* berries may grow up to 2 cm across—almost twice as big as *O. quadripetalus* and *O. ovalifolius,* and over three times as big as *O. microcarpus* berries. The leaves of *O. macrocarpus* are also proportionately larger, up to 17 mm long and 8 mm broad.

Occurrence: These berries grow in sphagnum peat bogs and acid swamps. The large-fruited *O. macrocarpus*is found in Canada from Ontario to Newfoundland and Nova Scotia, south in the United States to Arkansas and North Carolina.*Oxycoccus microcarpus* occurs across the northern part of

Canada, from British Columbia to Newfoundland, north to Alaska and the Mackenzie River delta; *O. ovalifolius* is found in British Columbia, Saskatchewan, and southern Ontario to Newfoundland, south to Oregon, Michigan and North Carolina; and *O. quadripetalus* is found from British Columbia to Nova Scotia, the southern limit of its range as yet undetermined.

Food Use: American cranberries *(O. macrocarpus),* though tart, were eaten fresh by the Iroquois, Ojibwa, Huron, Algonquin, Cree, Micmac and Malecite peoples of eastern Canada, and probably other groups as well (Parker, 1910; Waugh, 1916; Densmore, 1928; Reagan, 1928; Raymond, 1945; Speck and Dexter, 1951,1952; Stoddard, 1962; Black, 1980). Berries of one or more of the other species (in the "*V. oxycoccus* complex") were used by the Malecite, Iroquois, Ojibwa, Algonquin, Potawatomi, Fisherman Lake Slave, Chipewyan and other Déné peoples, and Cree (Ross, 1862; Waugh, 1916; Reagan, 1928; Smith, 1932, 1933; Adney, 1944; Raymond, 1945; Aller, 1954; Tooker, 1964; Lamont, 1977; Black, 1980; Marles, 1984; Leighton, 1985), and by virtually all Indigenous groups of British Columbia and Alaska, as well as some Washington groups (Oswalt, 1957; Gunther, 1973; Turner, 1975, 1978; Fenn et al., 1979; Galloway, 1982; Turner and Efrat, 1982; Turner et al., 1983; Port Simpson Curriculum Committee, 1983; Jones, 1983; Kari, 1987; Turner et al., 1990). The berries were gathered from August through the fall, and even into the following spring. Often they were picked while still firm and a little unripe, and allowed to ripen before being eaten. They were eaten fresh, as a snack or thirst quencher (Lamont, 1977; Marles, 1984; Kari, 1987), or were cooked in various ways. The Woods Cree stewed them and ate them with smoked fish. The coastal peoples of British Columbia and neighboring areas usually cooked them and served them with animal or fish grease or oil and, recently, sugar (Norton, 1981; Port Simpson Curriculum Committee, 1983). More recently, people make jam or jelly from them (Marles, 1984; Leighton, 1985), or store them in jars with water (Turner et al., 1983).

Traditionally, the berries were stored in birch-bark or other containers outside over winter (Gunther, 1973; Leighton, 1985), or steamed and stored in boxes with water and/or ooligan grease or oil, or simply kept raw in damp moss. The Kaigani Haida sometimes dried them with salal berries, and the Lower Lillooet sometimes dried them with deer meat (Norton, 1981; Turner et al. unpubl. notes, 1987).

The Fraser River Valley in British Columbia was a prime area for harvesting bog cranberries. The Halkomelem peoples there used to gather them in large quantities and trade them to Vancouver Island and elsewhere (Turner, 1975; Galloway, 1982). The berries were considered by the Sechelt to be a "special" food, to be used on certain occasions by high-class people (R. Bouchard pers. comm., 1977). Commercial cranberries are often called by the same name as the wild types (Turner et al. unpubl. notes, 1987).

Blueberries, Huckleberries and Bilberries *(Vaccinium* spp., and *Gaylussacia* spp.)

There are many species of *Vaccinium* in Canada, with fruits ranging in color from red to blue and black, and all of them are edible. Members of this genus are variously called blueberries, whortleberries, bilberries, huckleberries and cranberries. These names are often used interchangeably, although some people maintain that true blueberries are those with blue, clustered berries. The name, huckleberry, also applies to *Gaylussacia* species, and cranberry to *Oxycoccus* spp. The various species of blueberries and their relative used or assumed to have been used traditionally by Indigenous Peoples of Canada are listed in the following tables (4-7). Those whose use was intensive and/or widespread are discussed in detail.

Low Sweet Blueberry (*Vaccinium angustifolium*)

Description: Low deciduous bush with narrow to elliptical, finely-toothed (or, in one variety, smooth-edged) leaves. The leaves vary from being hairy beneath to smooth, and from blue-green to bright green. The urn-shaped flowers are borne in clusters at the tips of the twigs. The clustered, juicy berries are light-blue to black, depending on the variety. Five varieties are recognized, based on leaf hairiness and shape, and berry color.

Occurrence: Peat bogs and open barrens from Manitoba to Newfoundland and Nova Scotia, south to Iowa, Ohio and Virginia.

Food Use: The berries were eaten fresh or preserved by Iroquois, Ojibwa, Algonquin, Potawatomi, Abenaki and Cree, and probably by other eastern groups as well (Waugh, 1916; Densmore, 1928; Reagan, 1928; Raymond, 1945; Rousseau, 1947; Smith, 1932, 1933; Stoddard, 1962; Black, 1980). The Ojibwa cooked the dried berries with com in the winter, and baked them in sweet bread (Smith, 1932). They also boiled them and mixed them with moose fat and other foods (Densmore, 1928; Reagan, 1928). The Algonquin used the berries in fruit pate, pemmican or butter, and today can them and use them in pies and cobblers (Black, 1980). Stoddard (1962) noted that the Micmac made juice from blueberries and bilberries for drinking, but did not state which species were involved. Lips (1947) commented on the use of blueberries (species not given, but likely this one) by the Montagnais and Naskapi of Labrador: "The picking of blueberries, however, is an exception to this [general] attitude of disregard concerning plant products. From the beginning of their ripening in August to the time when frost begins to impair them they are picked in very large quantities, serving especially for the manufacture of jam and pemmican... Blueberries are during certain times of the year the back-bone of many an important Naskapi recipe. One of the main standbys is a dehydrated blueberry cake, a very nourishing and satisfying food."

Food Use of Related Species: See under other *Vaccinium* species.

Table 4-7. Blueberries, Huckleberries and Bilberries Used Traditionally as Foods by Indigenous Peoples of Canada (and Neighboring Areas).

Species	Notes	References
Black huckleberry (*Gaylussacia baccata*)	Berries used, fresh or dried, by Iroquois and Ojibwa, and probably other groups	Parker, 1910; Waugh, 1916 Reagan, 1928
Dwarf huckleberry (*G. dumosa*)	Berries probably eaten (see following)	
Huckleberry (*Gaylussacia* sp.)	Berries eaten by Micmac and Malecite; used in beverage, with maple sugar by Iroquois	Waugh, 1916; Speck and Dexter, 1951, 1951
Alaska blueberry (*Vaccinium alaskaense*)	Berries eaten like those of *V. ovalifolium* on the West Coast	Turner, 1975
Low Sweet Blueberry (K*angustifolium*)	Berries eaten in central and eastern Canada (see detailed description)	
Black Highbush Blueberry (*V. atrococcum*)	Berries probably eaten within their range; no reports seen	
Dwarf Bilberry (*V. caespitosum*)	Berries eaten throughout Canada (see detailed description)	
Highbush Blueberry (*V. corymbosum*)	Berries used fresh or preserved by Iroquois and Algonquin	Waugh, 1916; Black, 1980
Cascade Bilberry (*V. deliciosum*)	Berries eaten, fresh, dried, or recently, jammed by Nlaka'pamux of British Columbia; well liked	Turner et al., 1990
Black Mountain Huckleberry (*V. membranaceum*)	Berries widely eaten (see detailed description)	

Sour-top Blueberry (*V. myrtilloides*)	Berries widely eaten (see detailed description)	
Dwarf Bilberry (*V. myrtillus)*	Berries eaten by Kootenay, Shuswap and Carrier; fresh or dried; now made into jam; also reportedly used by Labrador Inuit, Alaska Eskimo, and Lapps of northern Europe	Turner, 1978; Eidlitz, 1969
Newfoundland Bilberry (*V. nubigenum*)	Berries probably eaten traditionally within range of plant (eastern Quebec, Newfoundland)	
Oval-leaved Blueberry (*V. ovalifolium*)	Berries widely eaten (see detailed description)	
Evergreen Huckleberry (*V. ovatum*)	Berries eaten by western British Columbia (see detailed description)	
Red Huckleberry (*V. parvifolium*)	Berries widely eaten in western British Columbia (see detailed description)	
Grouseberry (*V. scoparium*)	Small berries eaten by Nlaka'-pamux, Okanagan-Colville, and Kootenay; picked with combs, usually eaten fresh	Turner, 1978; Turner et al., 1980; Turner et al., 1990
Deerberry (*V. stamineum*)	Berries probably eaten in southern Ontario, but no records of use seen	
Bog Blueberrry (*V. uliginosum*)	Berries widely eaten, especially in the North (see detailed description)	
Low Blueberry (*V. vacillans*)	Berries eaten by Ojibwa	Smith, 1932
Mountain Cranberry, Rock Cranberry, or Lingonberry (*V. vitis-idaea*)	Berries widely eaten (see detailed description)	

Dwarf Blueberry, or Dwarf Mountain Blueberry (*Vaccinium caespitosum*)

Description: Low, tufted shrub up to 30 cm (1 ft) high with angled, yellowish or reddish branches. The leaves are small, and oval, tapering at the base with the widest part above the middle. The tips are blunt and finely toothed. The small, whitish to pink, urn-shaped flowers are borne singly in the leaf axils. The sweet, juicy berries are small, globular, light blue to blackish blue with a pale waxy coating.

Occurrence: Moist tundra and gravelly or rocky shores and ridges, woods and clearings; usually at higher elevations in the southern part of the country; common above timberline, from British Columbia to Newfoundland and Nova Scotia (not known from Prince Edward Island), north to Alaska, the Yukon and southwestern Territories, and south in the United States to California, Minnesota and New England.

Food Use: The berries usually ripen from late July to September, and were eaten wherever they were available (Lamont, 1977; Heller, 1979; Turner, 1978). Many consider them to be the sweetest,

best-flavored kind of blueberry (Turner, 1978; Galloway, 1982; Turner et al. unpubl. notes, 1987; Turner et al., 1990). They were often harvested with a comb-like implement of wood or salmon backbone, or simply by using the fingers to dislodge the berries, allowing them to drop into the other hand. The Fisherman Lake Slave ate them fresh (Lamont, 1977), as did the Upriver Halkomelem of British Columbia (Galloway, 1982). Others, such as the Stoney (Assiniboin) of Alberta, and the Nlaka'pamux, Okanagan-Colville, and Chilcotin of British Columbia, ate them fresh, but also dried them, mashed or whole, for winter. Sometimes they were mixed with saskatoon berries or wild gooseberries (Scott-Brown, 1977; Turner et al., 1980; Myers et al. unpubl. notes, 1988; Turner et al., 1990). The Gitksan ate them fresh, and preserved them in ooligan grease ('Ksan, People of, 1980). They were formerly a common trading item. Today, the berries are canned, frozen or made into preserves. The Okanagan-Colville and other groups used to use controlled burning of mountainsides to improve the growth of these and other berries (Turner et al., 1980).

Food Use of Related Species: See under other *Vaccinium* species.

Black Mountain Huckleberry, or Mountain Bilberry (*Vaccinium membranaceum*)

Description: Abranching deciduous shrub, often low, but growing up to 2 m (6 ft) or more in some places. The leaves, up to 5 cm (2 in.) long, are elliptical and usually pointed (rounded in some forms), with finely saw-toothed margins. The flowers are single and creamy-pink. The berries are large, spherical, sweet, and dark purple or black. In some forms the berries are covered with a waxy bloom; others have shiny dark berries.

Occurrence: Thickets and montane slopes in coniferous woods from British Columbia to Alberta and Ontario, north to the Mackenzie Delta area and south in the United States to California and Wyoming.

Food Use: These juicy, flavorful berries were highly prized by Indigenous Peoples, especially in British Columbia and neighboring areas (Turner, 1975, 1978; Scott-Brown, 1977; Blankinship, 1905). The Déné peoples of the Northwest Territories also ate them (Porsild and Cody, 1980). In some folk taxonomies, they are the "type" for the general category of "fruit." In Nuxalk, for example, their name translates simply as "berry/fruit" (Turner, 1973); in Nlaka'pamux and Okanagan-Colville, they are considered the "head" of all the fruits. Many Indigenous People recognize several varieties of the berries. Botanists distinguish two, one of which (var. *rigidum*) was formerly known as *V. globulare,* whose berries were used by the Kootenay of southeastern British Columbia and the Flathead and other peoples of Montana (Hart, 1976; Turner, 1978).

Black huckleberry fruits were eaten raw and fresh, or were cooked, mashed and dried in cakes (Heller, 1976; Scott-Brown, 1977; Turner et al., 1980; Galloway, 1982; Turner et al. unpubl. notes, 1987; Turner et al., 1990). The Stoney (Assiniboin) sometimes mixed the berries in pemmican (Scott-Brown, 1977). Okanagan-Colville people used the ripening of black hawthorn fruits as an indicator of when black huckleberries would be ripe in the mountains. They ate black huckleberries fresh with meat, or partially dried them, crushed them and formed them into cakes, or fully dried them (Turner et al., 1980). The Kwakwaka'wakw cooked them with salmon roe (Boas, 1921). The Sechelt smoke-dried them, using their own branches as part of the fuel (R. Bouchard pers. comm., 1977). Many people still use black mountain huckleberries. They are usually picked in August, and now are canned, frozen, or made into jam. Bears and other wildlife are known to be fond of the berries (Turner, 1978; Turner et al., 1990). The Nlaka'pamux sometimes used the leaves in smoking mixtures (Turner et al.,1990).

Food Use of Related Species: See under other *Vaccinium* species.

Sour-top Blueberry, Canada Blueberry, or Velvet-leaved Blueberry (*Vaccinium myrtilloides; see Figure 32, page 181*)

Description: Alow, deciduous shrub often growing in dense patches, with twigs and lower leaf surfaces covered with dense, velvety hairs. The leaves are oval to elliptical, thin and smooth-edged.

The flowers are small and greenish-white tinged with pink, borne in short clusters at the ends of the twigs, and blooming before the leaves have fully expanded. The sweet, juicy berries are medium-sized, clustered, and blue with a whitish waxy film.

Occurrence: Peat bogs, moist, shaded woods, clearings and rocky outcrops; transcontinental, from British Columbia to Newfoundland, north to the southern Northwest Territories, and south in the United States to Montana, Iowa and Virginia.

Food Use: The berries were gathered in large quantities and eaten fresh or dried by virtually all groups within their range, including Ojibwa, Potawatomi, Algonquin, Abenaki, Cree, Chipewyan, northern Dene and various groups of British Columbia, especially the Halkomelem of the Eraser Valley, who traded them to the Nuu-chah-nulth, Straits, Squamish, Comox, Nlaka'pamux and other neighboring groups (Reagan, 1928; Smith, 1933; Raymond, 1945; Rousseau, 1947; Honigmann, 1949, 1961; Turner, 1975, 1978; Black, 1980; Porsild and Cody, 1980; Galloway, 1982; Turner et al., 1983; Maries, 1984; Leighton, 1985; Turner and Hebda unpubl. notes, 1989; Turner et al., 1990). The Halkomelem reportedly burned over patches of these berries to improve the yield. The berries were also used by the Carrier, Chilcotin and Kootenay of British Columbia (Turner, 1978).

The berries were particularly important to the Chipewyan people of northern Saskatchewan. They ate them fresh, cooked them with a bit of sugar or other berries (such as *V. vitisidaea*), cooked them in bannock, or canned them. The berries are prepared for winter storage by being cooked in lard which is then allowed to solidify, or being dried in a birchbark basket or burlap sack over a low fire. They were not usually frozen or they would become watery (Maries, 1984). The Woods Cree of east-central Saskatchewan ate the berries raw, made them into jam, or sun-dried them and stored in birch-bark baskets. They boiled the dried berries or pounded them into pemmican (Leighton, 1985). British Columbia peoples such as the Halkomelem ate the berries fresh or sometimes dried them.

Food Use of Related Species: See under other *Vaccinium* species.

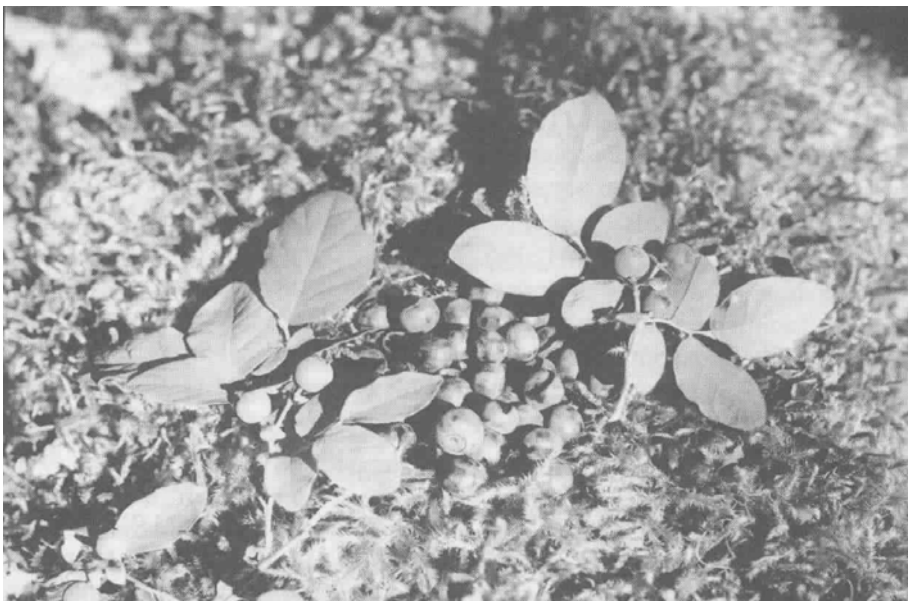
Oval-leaved Blueberry, or Gray Blueberry, or Tall Huckleberry (*Vaccinium ovalifolium; see Figure 33, page 181)*

Description: Deciduous shrub up to 1.5 m (5 ft) tall, with thin, oval, smooth-edged leaves which are rounded at the tip. The flowers, which bloom before the leaves have fully expanded in spring, are solitary, urn-shaped and pinkish. The berries, borne on short, curved stalks, are of a good size and flavor, dark blue, but usually covered with a whitish, waxy coating, giving them a gray coloring. Some Indigenous People call them "mouldy blueberries."

Occurrence: Moist open woods and thickets of western Canada, north

Figure 32 (above). Velvet-leaved or Canada blueberry *(Vaccinium myrtilloides).*

Figure 33(below). Oval-leaved blueberries *(Vaccinium ovalifolium).*



to Alaska and the Aleutians and south to Oregon and Montana, with isolated areas on Lake Superior, and ranging from Quebec to southeastern Labrador, Newfoundland and Nova Scotia.

Food Use: The berries were a favorite fruit and were eaten raw or cooked by western Indigenous Peoples throughout the range of the plant, including all the coastal peoples of British Columbia, Alaska, and Washington (Gunther, 1973; Turner, 1975; Heller, 1976; Norton, 1981; Galloway, 1982; Turner et al., 1983; Kari, 1987), as well as the Gitksan, Nlaka'pamux, Lil-looet, Shuswap, Chilcotin and other interior groups (Turner, 1978; 'Ksan, People of, 1980; Turner et al. unpubl. notes, 1987; Myers et al. unpubl. notes, 1988; Turner et al., 1990). The berries are early ripening, and said to be the first type of blueberries to ripen, following right after salmonberries on the coast. They could also be gathered later and at higher elevations (Turner et al., 1983; Turner et al., 1990).

The berries were sometimes preserved in animal or fish grease ('Ksan, People of, 1980), although the most common method of preserving them was cooking and mashing them and drying them in cakes. Sometimes they were cooked and partially dried right at the picking site, then fully

dried later. The juice could be collected separately when the berries were being cooked, then drunk as a beverage or slowly added to the berries as they dried (Turner, 1978). The Sechelt smoke-dried them over a fire, with some branches of the bush being placed on the smoking fire (R. Bouchard pers. conun., 1977). The berries were often eaten with oil or ooligan grease and were sometimes mixed with other berries such as salal or red elderberries (Turner, 1975; Norton, 1981; Turner and Efrat, 1982). Today people often use them for jam and jelly, and also can them, freeze them or make them into pies (cf. Norton, 1981; Turner and Efrat, 1982). Although we did not find specific reports of their use by Indigenous Peoples of eastern Canada, they were undoubtedly eaten when available, and some references to the use of *"Vaccinium* spp." may well pertain to this species (cf. Parker, 1910; Gilmore, 1933; Adney, 1944; Speck and Dexter, 1951, 1952).

Food Use of Related Species: Alaska blueberry (*Vaccinium alaskaense*), found in coastal woods from southern Alaska through western British Columbia and south to Oregon, was used like oval-leaved blueberry (Turner, 1975; Heller, 1976; Turner, 1978; Norton, 1981;Galloway, 1982; Turner and Efrat, 1982; Turner et al., 1983; Turner et al., 1990). See also other *Vaccinium* species.

Evergreen Huckleberry, or "Winter Huckleberry" (*Vaccinium ovatum*)

Description: Thick, bushy evergreen shrub, up to 2 m (6 ft) high. The leaves are crowded, leathery, shiny, oval and pointed, with finely toothed margins. The small, urn-shaped flowers are white to pink, in clusters at the ends of branches and in the leaf axils. The berries, which ripen late in the season are small and shiny black or dull blue, and are sweet and juicy.

Occurrence: Woods and rocky slopes near the coast, from southwestern British Columbia, south to Califomia.

Food Use: The berries are small, but grow in clusters and are thus relatively easy to harvest. They were eaten by the Sechelt, Comox, Straits, Halkomelem, and Lower Nlaka'pamux Salish, and by the Nuu-chah-nulth of Vancouver Island's West Coast, as well as by the Quinault of Washington (Gunther, 1973; Turner, 1975, 1978; Turner et al., 1990). They were well liked, and people often travelled long distances to get them. Often called "winter huckleberries," they ripen late in the year, and can be gathered in October and November. They are the last fruits to be gathered in the seasonal round and are said to taste even better after freezing (Turner et al., 1983). They were eaten fresh, usually with oil. Some people stored them in jars with water (Turner and Efrat, 1982); others dried them in cakes (Gunther, 1973). Today they are made into jam or used in cooking (Turner and Hebda unpubl. notes, 1989).

Food Use of Related Species: See under other *Vaccinium* species.

Red Huckleberry, or Red Whortleberry (*Vaccinium parvifolium; see Figure 34, page 184*)

Description: Erect, deciduous shrub up to 4 m (13 ft) high, with greenish, prominently angled branches. The leaves are oval shaped, thin, and smooth-edged, except the young, overwintering leaves, which are dark green and serrated. The flowers are small, urn-shaped, and pinkish, home singly in the leaf axils. The berries are pink to red-orange, varying in size, but up to 1 cm (0.4 in.) in diameter, and ripening from July through September, depending on the elevation and latitude. They are acid, but juicy and flavorful.

Occurrence: Woods and slopes, especially on stumps and rotten logs, along the Pacific coastal region from southeastem Alaska and the British Columbia coast to central California; found in one isolated station in the Kootenays.

Food Use: These berries were an important fruit for coastal peoples of British Columbia and neighboring areas. They were used by virtually all groups within the range of the plant, and were eaten fresh or, by some, dried in cakes for winter. Like other fruits, they were often eaten with some type of oil or animal/fish grease, and were often mixed with other berries such as salal. In recent

times, they have been eaten with molasses or sugar (Gunther, 1973; Turner, 1975; 'Ksan, People of, 1980; Norton, 1981; Galloway, 1982; Port Simpson Curriculum Committee, 1983; Turner and Efrat, 1982; Turner

Figure 34. Damion Hall—age 2, of the Nuxalk Nation, British Columbia with red huckleberries*(Vaccinium parvifolium),*which he calls "my berries."

et al., 1983; Turner et al., 1990). They are said to make a superior jelly, and today are still widely used, being jarred, frozen, or made into preserves. They are also excellent in pies and other baking (Heller, 1976; Norton, 1981).

Some people harvested the berries by clubbing the branches on the hand and letting the ripe berries fall into a basket (Galloway, 1982). Others used a comb-like implement (Gunther, 1973). Sechelt people sometimes smoke-dried the berries using the branches of the bush as part of the fuel (R. Bouchard pers. comm., 1977). The Gitksan of the Skeena River sometimes stored the berries fresh and whole in a cool place, or put them in grease to preserve them ('Ksan, People of, 1980). The Lower Nlaka'pamux and Lower Lillooet ate large quantities of these berries, but the Nlaka'pamux did not usually dry or store them unless no other types of berries were available (Turner et al., 1990). The Quinault of Washington used the leaves for tea (Gunther, 1973).

Food Use of Related Species: See under other *Vaccinium* species.

Bog Blueberry, or Alpine Bilberry (*Vaccinium uliginosum*)

Description: A low-growing, deciduous shrub, usually no more than 50 cm (20 in.) high, much branched and spreading. The bluish-green leaves are small, smooth-edged, rounded and broadest at the upper end. They are mostly smooth, but in one subspecies are hairy. The small, pink flowers are borne singly, and the berries are mostly 6-8 mm (0.2-0.3 in.) across, dark blue with a waxy coating, juicy and sweet. Five subspecies are recognized in Canada, based on leaf hairiness, plant habit, fruit shape and taste, and other characteristics.

Occurrence: Peat bogs, rocky barrens and tundra, from low to high elevations throughout most of northern Canada, Alaska and the Aleutian Islands to Labrador, Newfoundland and Nova Scotia, south along the Pacific coast from British Columbia to northern California, and in the east to northern Michigan, New York and Vermont. Also found in Greenland, Iceland and northern Eurasia.

Food Use: The berries were, and still are, a highly important food of northern peoples of Canada and Alaska, and are also used further south when available. Ripening from mid-July to August, and available even when frozen, late into fall, they are eaten both fresh and preserved in various ways. The Fisherman Lake Slave used to place them fresh in birch-bark baskets set in underground caches, covered with leaves and moss. They also boiled them with a small amount of grease, or mashed them with a birch-wood masher, then spread them out in baskets and dried them in the sun. The sun-dried berries were later broken up and boiled (Lamont, 1977). The Chipewyan of northern Saskatchewan eat the berries fresh, cook them with sugar or mountain cranberries, mix them in bannock, or store them for winter by canning, cooking in lard, or drying in a container over a low fire (Maries, 1984).

In inland Alaska, these are said to be the most important of all the berries to the Eskimo or Inuit peoples. The ripe berries are knocked off the low bushes into a large basket. (The leaves can be winnowed away later by dropping the berries into the basket from a large beating spoon.) The berries are eaten fresh or frozen, and sometimes allowed to dry on the plant. If aged slowly before they are frozen, they develop a variety of delicious flavors. Sometimes they are mixed and stored together with "blackberries" (crowberries) or mountain cranberries. Some people squeeze them with fish eggs, seal oil, and sugar, or mix them with sourdock (*Rumex arcticus*), or with blubber, or roots, or pickled seal flipper or blubber (Anderson, 1939; Heller, 1976; Jones, 1983). The Western Eskimo of Alaska do not use them as extensively, but sometimes mix them with cloudberries, and make them into "Eskimo ice-cream" (Oswalt, 1957). The berries were, and are, also used by the Tanaina of Alaska (Kari, 1987), the Canadian Inuit, and the Slave, Tahltan, Kaska, and other northern Athapsakan groups of the Northwest Territories and British Columbia (Sinclair, 1953; Turner, 1978; Kuhnlein unpubl. notes, 1985), and by various British Columbia coastal groups as well, including Straits, Halkomelem, Sechelt, Squamish, Nuu-chah-nulth, Kwakwala'wakw, Haida, and Coast Tsimshian (Turner, 1975; Galloway, 1982; Port Simpson Curriculum Committee, 1983; Turner et al., 1990). They were undoubtedly also used by eastern Canadian groups within the range of the plant. Often, commercial blueberries are called by the same name in Indigenous languages.

Curiously, according to Eidlitz (1969), the Greenland Eskimo and some Lapps and Swedes consider these berries inedible, or even harmful.

Food Use of Related Species: See under other *Vaccinium* species.

Mountain Cranberry, Rock Cranberry, Lowbush Cranberry, Lingonberry, Cow-berry, or Partridgeberry (*Vaccinium vitis-idaea*)

Description: A low, mat-forming evergreen shrub, up to 30 cm (1 ft) tall, with tufted branches. The leaves are small, leathery, shiny, oblong and rounded at the ends. The pinkish white flowers are borne in small clusters at the tips of the branches. The clustered berries are bright red, and usually quite small, but sometimes up to 1 cm (0.4 in.) across, soft when ripe, and acid.

Occurrence: Peat bogs, rocky tundra and barrens across northern Canada and Alaska, and extending south to central British Columbia, to Lake Superior in Ontario, to Quebec and the Maritimes, and as far as New England in the eastern United States.

Food Use: These were, and still are, a highly important fruit for northern peoples, from the Queen Charlotte Islands to Labrador, and were used where available further south. The berries ripen in late August, and can be gathered from then until well into the spring, since they remain on the plants even when frozen. They are said to be best when picked after the first frost, although sometimes they were picked early in the season, while still hard, then stored and allowed to ripen. During the winter, they can be stored frozen. Canadian groups using them include the Labrador and other Inuit, Fisherman Lake Slave, Kaska, and other Déné peoples of the Northwest Territories, the Chipewyan of northern Saskatchewan, the Woods Cree of east-central Saskatchewan, the James Bay Cree, and the Stoney (Assiniboin) of Alberta (Ross, 1862; Honigmann, 1949, 1961; Porsild, 1964; Eidlitz, 1969; Lament, 1977; Scott-Brown, 1977; Porsild and Cody, 1980; Marles, 1984; Leighton, 1985). The Chipewyan used them raw in pemmican, and cooked them with animal grease

in a frying pan and ate them as a relish ("like ketchup") with fried, boiled, or dried meat. They sometimes ate them raw after a frost, but people warn that one should never drink water with lots of table salt or epsom salts after eating cranberries, or it may cause fatal stomach cramps (Marles, 1984). The Woods Cree eat the berries raw, stew and serve them with fish or meat, or mix them with boiled fish eggs, livers, air bladders and fat (Leighton, 1985). Honigmann (1961) noted that "low bush cranberry" was by far the most frequently collected berry among the Attawapiskat (James Bay Cree) of Ontario, and that one family collected about 64 quarts of these berries in one season (1947). In British Columbia, the Haida, Nishga, Gitksan and other northern peoples eat the berries; the Haida name for them means "dog-salmon eggs." Often they were picked, boiled, and stored in oil. The Nishga made a dessert by mixing the berries with snow and whipping them to a froth with ooligan grease. Sometimes they were mixed with bog cranberries or bog blueberries (Turner, 1975; Turner, 1978; 'Ksan, People of, 1980). Today, many people cook the berries with sugar and make them into jam or jelly (Oswalt, 1957; Lamont, 1977; Marles, 1984).

The Inupiaq Eskimo of Alaska use the berries in quantity, picking them almost year-round with the aid of a comb-like berry picker. Though tart, the berries were formerly eaten without sugar, mixed with meat and fats, or fish eggs, fish or blubber. Now, they are usually eaten with sugar and canned milk or oil. They are stored cold or frozen in a cloth sack, or in wooden barrels or buckets. Formerly they were kept in long, low birch-bark baskets with the lid tied or sewn on, and placed in an underground pit or in a tree. Now, gunny sacks or flour sacks are used (Jones, 1983). Heller (1976) reports that Alaskan Eskimo children often collect handfuls of the berries in spring as soon as the snow disappears. The Tlingit, Tanaina, and Kaigani Haida also eat the berries; the latter formerly gathered them while still firm and stored them in fish or animal grease, or mixed them with salal and dried them (Norton, 1981; Jacobs and Jacobs, 1982; Kari, 1987).

These berries are widely used in northern Europe as a preserve (Eidlitz, 1969). Explorers such as Samuel Heame and Alexander Mackenzie also ate them. Heame described them in his journal: "When carefully gathered in the fall, in dry weather, and as carefully packed in casks with moist sugar, they will keep for years, and are annually sent to England in considerable quantities as presents, where they are much esteemed. When the ships have remained in the [Hudson's] Bay so late that the cranberries are ripe, some of the Captains have carried them home in water with great success" (Heame, 1911).

Food Use of Related Species: See under other *Vaccinium* species and bog cranberries (*Oxycoccus* spp.).

Bean Family (Fabaceae, or Leguminosae)

Many species in this family were used as food by Indigenous Peoples of Canada and neighboring areas. These are listed in the following table (4-8), and the most important species are discussed in detail.

Hog-Peanut, or Ground-Bean (*Amphicarpa bracteata*)

Description: Annual herb growing from taproots, with twining or trailing stems up to 2 m (6.5 ft.) long. The leaves are alternate and 3-parted, with oval, pointed, often hairy leaflets. The flowers, borne in elongated clusters, are of two kinds, upper ones with whitish or purplish, pea-like petals, and lower ones, near the ground at the base of the stem which lack petals. The upper fruits are dry, flattened, sickle-shaped pods up to 4 cm (1.8 in.) long, splitting open to produce brown, kidney-shaped seeds. Their counterparts at ground level, or growing underground, are fleshy and globular and do not readily split open. They usually contain a single, large, whitish seed resembling a plump lima bean, and are sometimes mistaken for roots because of their subterranean habit. Two varieties of this plant occur in Canada, one with pale hairs on the leaves and stems, thin, slender stems and whitish or lilac flowers, and one with dense, tawny hairs, stouter stems and deeper purple flowers.

Occurrence: Damp woodlands, shorelines and alluvial soils in southeastern Canada, from a portion of southern Manitoba to southern Ontario and Quebec, and parts of New Brunswick and Nova Scotia, extending south in the United States to the Midwest, Texas and Florida.

Food Use: The sweetish, pleasant flavored underground seeds were dug up in late fall and early spring and eaten raw or boiled by various eastern Indigenous groups, including the Ojibwa and other Great Lakes peoples (Smith, 1932; Densmore, 1928; Gilmore, 1933; Aller, 1954). The aboveground seeds were harvested in the fall and boiled. Both types are rich in starch and protein. People often sought them from the storage caches of field mice, or voles, which are called "bean mice" by the Omaha and others, and in this way could obtain a litre or more of the seeds at a time. The "bean mice" were greatly respected, and often a gift was left in the place of any of their seeds that were taken (Gilmore, 1925). In the midwestem United States, the seeds were used by the Ponca, Pawnee, and Dakota Sioux (who also extend into southern Canada), as well as the Omaha (Kindscher, 1987). They are universally well liked, and are said to be excellent when cooked in stews. This plant has a high potential for garden cultivation as a "root" crop (Dore, 1970).

Table 4-8. Plants in the Bean Family Used Traditionally as Foods by Indigenous Peoples of Canada (introduced species marked with an asterisk *)

Species	Notes	References
Hog-peanut (*Amphicarpa bracteata*)	Nut-like seeds from above and below ground eaten by southeastern Indigenous Peoples (see detailed discussion)	
Groundnut (*Apios americana*)	Tubers eaten raw, cooked, or made into flour by eastern Indigenous Peoples (see detailed discussion)	
Indian Milkvetch (*Astragalus aboriginum*)	Roots reportedly eaten by peoples of the Canadian prairies (see **WARNING**)	Johnston, 1987
American Milkvetch (*Astragalus americanus*)	Roots eaten raw as starvation food by Fisherman Lake Slave, only in very small amounts (see **WARNING**)	Lamont, 1977
Canadian Milkvetch (*Astragalus canadensis*)	Roots harvested in spring or fall, and eaten fresh or boiled in blood or broth by the Blackfoot; also obtained from rodent caches; said to be a staple (see **WARNING**)	Hellson and Gadd, 1974; Johnston, 1987
Groundplum Milkvetch (*Astragalus crassicarpus*)	Immature seed pods eaten raw or cooked by various Indigenous Peoples of the southern prairie: Dakota Sioux, Pawnee, Omaha, Ponca, Blackfoot; said to have a sweetish, insipid taste (see **WARNING**)	Blankinship, 1905; Kindscher, 1987
Milkvetch (*Astragalus miser*)	Whole plants used to wipe the juice from edible pine bark when it was harvested; Okanagan-Colville occasionally ate the seeds; plants considered good	Turner et al., 1980; Turner et al., 1990

	animal forage (see **WARNING**)	
Wild Licorice (*Gfycyrrhiza lepidota*)	Roots eaten, taw or cooked by American prairie peoples, including Pawnee and Paiute; food use by Canadian groups not reported, but Blackfoot chewed the root as a sore throat medicine and tonic; sometimes confused with *Hedysarum alpinum* (see **WARNING**)	Kindscher, 1987; Johnston, 1987
Sweet Vetch (*Hedysarum alpium*)	Roots eaten by northern peoples of Canada and Alaska; see detailed discussion	
Beach Pea (*Lathyrus japoicus*)	New stalks cooked as spring greens by Iroquois; peas eaten by Micmac of the Maritimes and Tanaina of Alaska, who sometimes boiled them with seal oil; food use possibly learned from non-Indigenous people in Alaska (see **WARNING**)	Parker, 1910; Speck and Dexter, 1951; Stoddard, 1962; Kari, 1987
Creamy Vetchling (*Lathyrus ochroleucus*)	Tuberous toots and peas eaten by Ojibwa of Great Lakes region; plant considered good animal forage by Lillooet, Nlaka'pumiax and other British Columbia peoples (see **WARNING**)	Reagan, 1928; Smith, 1932; Turner et al., unpubl. notes, 1987; Turner 1990
Marsh Vetchling (*Lathyrus palustris*)	Cooked peas eaten by Ojibwa (see **WARNING**)	Reagan, 1928; Gilmore, 1933
Beach Lupine, or Chinook Licorice (*Lupinus littoralis*)	Roots roasted or pit-cooked and eaten by Haida of British Columbia, Tlingit of Alaska, Lower Chinook of Washington and probably other coastal groups; peeled and eaten with fish grease and recently, sugar; dried in cakes for storage by Haida (see **WARNING**)	Swanton, 1913; Gunther, 1973; Turner, 1975
Nootka Lupine (*Lupinus nootkatensis*)	Roots roasted or pit-cooked and eaten by Haida, Nuxalk and Kwakwaka'wakw of British Columbia (see previous sp.); also eaten raw in spring as a famine food; cause sleepiness and "drunkeness" (see **WARNING**)	Turner, 1975
Alfalfa (*Medicago sativa*)*	Used by Okanagan-Colville and Spokane to flavor foods being cooked in pits, as a sweetener	Turner et al., 1980

Yellow Oxytrope, or Locoweed (*Oxytropis maydelliana*)	Inupiaq Eskimo of Alaska and other Eskimo and Inuit peoples of Alaska and Canada ate the roots, but only from certain places; in places considered inedible (see **WARNING**)	Jones, 1983
Black Oxytrope (*Oxytropis nigrescens*)	Roots eaten by Eskimo of Barter Island, Alaska, but not by others (see **WARNING**)	Heller, 1976; Jones, 1983
Prairie-clover (*Petalostemon candidum;* syn. *Dalea candida*)	Roots chewed for their pleasant taste by the Blackfoot, and dried leaves used for tea; roots also eaten by other prairie grooups; Kiowa, Dakota Sioux, and Ponca	Johnston, 1987; Kindscher, 1987
Beans (*Phaseolus* spp.)	Possibly cultivated in prehistoric times by Iroquois, Ojibwa, Huron, Potawatomi and other peoples of southern Ontario (see detailed discussion)	
Prairie Turnip, or Indian Breadroot (*Psoralea esculenta*)	Tuber-like roots, a highly important food for Plains peoples (see detailed discussion)	
Red Clover (*Trifolium pratense*)*	Flowers eaten by some Upriver Halkomelem and nectar sucked by Lillooet and other children of British Columbia	Galloway, 1982; Turner et al. unpubl. notes, 1987
White Clover (*Trifolium repens*)*	Flowers eaten by some Upriver Halkomelem of British Columbia	Galloway, 1982
Springbank Clover (*Trifolium wormskioldii*)	Rhizomes an important food of Northwest Coast peoples (see detailed discussion)	
Giant Vetch (*Vicia gigantea*)	Seeds eaten in small quantities by some Nuu-chah-nulth of Vancouver Island, some Kaigani Haida of Alaska, but not widely used. Makah of Washington used vines in cooking pits (see **WARNING**)	Gunther, 1973; Fenn et al., 1979; Norton, 1981

WARNING: Although the bean family contains many important edible species, there are also many, including some in genera listed here, which are toxic. For example, many species of milkvetch and locoweed *(Astragalus* spp. and *Oxytropis*spp.) and lupine *(Lupinus*spp.) are known to be poisonous to livestock and humans, due to the presence of alkaloids and other toxic compounds. Others, such as the vetches *(Vicia*spp.) and wild peas *(Lathyrus*spp.), may also be poisonous if eaten in quantity (see Kingsbury, 1964). Furthermore, some edible species (e.g.,*Glycyrrhiza lepidota*and*Hedysarum alpinum)* may easily be confused with more poisonous species, and care must be taken to identify them correctly (see also **WARNING** under detailed discussion of*Hedysarum alpinum).*Although some of these species were eaten by Indigenous Peoples under various circumstances, extreme caution is advised for anyone wishing to try them. Indications are that Indigenous People recognized the potential toxicity of some of these plants, and were selective in the populations they harvested or in their methods of preparation to avoid poisoning (Turner and Szczawinski, 1991).

Groundnut (*Apios americana*)

Description: Delicate climbing herbaceous perennial vine, growing from slender rhizomes with spherical or oblong tuberous thickenings from walnut-to egg-sized; the tubers exude a milky juice. The leaves are alternate and pinnately divided into 5 to 7 lance-shaped to oval, pointed leaflets each about 5 cm (2 in.) long. The pea-like flowers, borne in dense clusters from the leaf axils, are brownish purple to mauve, and the pods bean-like, up to 10 cm long, and splitting open at maturity to reveal dark brown, wrinkled seeds.

Occurrence: Rich thickets and swampy areas in eastern Canada, from Ontario to the Maritimes, and south in the United States to Colorado, Texas and Florida.

Food Use: The tubers were an important food plant of eastern Indigenous Peoples of Canada and the United States. They were eaten raw, or more commonly boiled or roasted by the Iroquois, Ojibwa, Huron, Abenaki, Micmac and Malecite as well as by the Omaha, Dakota, and Santee Sioux, Cheyenne, Osage, and Pawnee and Potawatomi in the United States (Dakota and Potawatomi extend into southern Canada) (Jack, 1893; Parker, 1910; Waugh, 1916; Gilmore, 1933; Smith, 1933; Beardsley, 1939; Speck and Dexter, 1951, 1952; Tooker, 1964; Kindscher, 1987). The tubers were dug from late fall through early spring. They were eaten fresh, could also be sliced and dried, and sometimes they were ground for flour. When boiled for a few minutes, they are said to be delicious (Beardsley, 1939; Kindscher, 1987), although Smith (1933) notes that they might be simmered for up to 24 hours, when they resemble stewed prunes. They were also cooked with meat or corn, and sometimes seasoned with maple sugar. The seeds are also edible, and can be cooked like peas (Kindscher, 1987). As noted by Beardsley (1939), New England colonists soon adopted groundnut tubers as a food. Within the last century, their use by Indigenous People has almost entirely ceased, but over the years there has been great interest in its introduction as a foods crop. Research is continuing with promising results (Kindscher, 1987). The tubers are rich in starch and protein (Beardsley, 1939). The plant has numerous common names and is often confused with hog-peanut (*Amphicarpa bracteata;* see previous species) and prairie turnip (*Psoralea esculenta*).

Sweet Vetch, "Eskimo Potato," "Indian Potato," Licorice Root, Bear Root, or "Alaska Carrot" (*Hedysarum alpinum*)

Description: Erect, branching herbaceous perennial, up to 75 cm (2.5 ft) tall, growing from long, branching, fleshy roots. The leaves are pinnately compound, with 9 to 21 small, conspicuously veined leaflets. The showy. white to reddish-purple pea-like flowers, borne in elongated clusters, may become darker purple with age. The seed pods are flat and conspicuously net-veined, with 3 to 5 oval joints, each containing one seed. Three varieties are recognized in Canada, based on relative hairiness of the pods and flower size.

Occurrence: Sandy, gravelly, or rocky soils and tundra, often in calcium rich substrate, across northern Canada, west to Alaska and central British Colxunbia, east to Newfoundland and New Brunswick, and south in the United States to Montana, Maine, and Vermont; also found in northern Eurasia.

Food Use: The long, fleshy roots, which may be over 1 cm thick (0.5 in.) in mature plants, are edible, and are said to taste like young carrots when cooked (Porsild, 1964). They were eaten by northern peoples, and were especially important to the Fisherman Lake Slave of the Northwest Territories. In September, people went up to the mountaintops to dig them, and brought them back to camp in quantity. The fresh roots were used for soup. Birch-bark baskets full of the roots were placed in holes in the ground and covered over with moss and leaves for winter storage, in the same manner as berries. The stored roots were then boiled with meat or sliced and fried in animal grease (Lamont, 1977). The Stoney (Assiniboin) of Alberta also ate the roots. The young women picked them in May and early June at the beginning of flowering. The roots were usually eaten raw (Scott-Brown, 1977).

Eskimo and Indian peoples of Alaska also ate the roots, usually digging them from just before freeze-up, after the first hard frosts, until the ground was too hard to dig. They are said to be particularly soft and juicy during this period. The roots could also be dug in spring, and sometimes they were collected from the caches of mice and other small rodents. People stored them in barrels, boxes, or sacks buried in the ground near the house or cache site, and also kept them in seal oil, fish oil, or bear fat, sometimes with kinnikinnick berries. They were always eaten with seal oil or some kind of fat or oil to prevent constipation, and sometimes berries were added (Heller, 1976; Jones, 1983; Kari, 1987). The roots are said to keep well, both raw and cooked, and were used as a winter starvation food, as well as a staple. They were also traded from one group to another (Lamont, 1977; Kari, 1987). Tanaina people of Lime Village make a tea by steeping a piece of the fried root in hot water, and use it as baby food for babies who cannot nurse (Kari, 1987).

WARNING: Care must be taken not to confuse this species with the closely related *Hedysarum boreale* (syn. *H. mackenzii)*, known as "wild sweetpea," or "brown bear's Indian potato," which is said to be quite poisonous. The leaves of the edible species (*H. alpinum*) are conspicuously veined, and the flowers are usually reddish-purple, and smaller (typically under 1.5 cm long), whereas the leaves of *H. boreale* are obscurely veined, and the flowers usually darker (carmine, magenta or purple) and larger, to slightly over 2 cm long. In the early days of Arctic exploration, Sir John Richardson and his men mistook *Hedysarum boreale* for the edible *H. alpinum* and all those who ate it became ill (Heller, 1976).

Beans (*Phaseolus vulgaris* and related spp.)

Description: Herbaceous annuals (occasionally perennials), which are low and bushy or climbing vines, with 3-parted leaves, typical pea-like flowers varying in color from white to purple to scarlet (in the case of scarlet runner bean, *P. coccineus*). There are many varieties, with beans of various sizes and colors, some grown mainly for their fleshy, edible pods which are green, speckled, purple, or yellow. Others, notably the 'haricot beans,' are grown prarily for their ripe seeds which, when dried, can be stored for long periods. The seeds are also highly variable in size, shape, and color.

Occurrence: Beans are widely grown throughout the world today, but apparently two of the most used species, *P. vulgaris* and *P. coccineus,* originated in South America, and spread as cultivated foods throughout Central America and southern and eastern North America long before Europeans came to these areas.

Food Use: Waugh (1916) noted that the growing of beans of several varieties was a long-standing practice of the Iroquois. The "Three Sisters," for example, were a well-known trinity of deities, the guardian spirits of beans, maize, and squashes. Beans were also intimately associated with annual planting and harvesting ceremonies among the Iroquois. The Ojibwa, Huron, Potawatomi and possibly other peoples of southern Ontario also apparently cultivated beans in prehistoric times (cf. Smith, 1933; Tooker, 1964). Early European explorers such as Jacques Cartier and Jno Josselyn reported having seen many varieties of beans being cultivated by Indigenous Peoples they encountered, and even growing wild. Cartier, for example, noted that the Indigenous Peoples he met with on his voyages had "beans of all colors, yet differing from ours."

The Iroquois classified their beans into three major types: "bread beans," used in the making of com bread; "soup beans," used as an ingredient in soup; and "cranberry beans," a short, round type. Each type includes a variety of forms or cultivars with beans of different colors, markings, sizes, and growth habits. Waugh (1916) provides descriptions, Iroquois names, and illustrations of 27 varieties. Some of these were eaten as "green beans" in the pod, cooked and eaten whole, or cut up and boiled with squash, com, or meat. Commonly, however, the beans were left to ripen fully, then shelled, and the seeds cooked and eaten whole, mashed, or mixed with com bread paste and re-cooked in bread-making. Some of the beans grew as short plants; others were climbing vines and were often planted in the same mounds as maize, so that they could climb up the cornstalks.

Within the historic period, many Indigenous Peoples have cultivated beans as a garden crop, and dried navy and kidney beans, together with flour, rice, sugar, and tea, were common early trade provisions. Names for these beans, usually of a descriptive nature, were developed in a number of Indigenous languages. For example, in Hesquiat, a Nuu-chah-nulth language of the west coast of Vancouver Island, the name for small, white navy beans translates as "resembling-periwinkles (tiny marine snails)," and kidney beans are simply called "large resembling-periwinkles" (Turner and Efrat, 1982).

Prairie Turnip or Indian Breadroot (*Psoralea esculenta*)

Description: Herbaceous perennial, up to about 15 cm (6 in.) tall, growing from a much enlarged, tuber-like taproot tapering at each end. The leaves are palmately compound, with mostly 5 narrow, pointed leaflets which are dotted with glands and hairy on the lower surface. The pale blue to yellowish flowers are pea-like, in dense, elongated clusters up to 10 cm (4 in.) long. The fruits are dry, oval, beaked pods and the plump, oblong seeds are olive green to dark brown, often purple-spotted. The entire plant has a more or less dense covering of long, whitish hairs.

Occurrence: Prairies and lower foothills from southern Alberta to Saskatchewan and southern Manitoba, south in the United States to New Mexico, Texas and Missouri.

Food Use: Kindscher (1987) describes this plant as "...probably the most important wild food gathered by Indians who lived on the [American] prairies." The roots were a staple food of the Sioux and Omaha, and were traded by the Dakota to the Arikara for maize. They were also used by the Cheyenne, Blackfoot and other Montana peoples (Hart, 1976). The stringy ends of the roots were braided together like onions or garlic tops for drying and trading; the standard length of a braided string of roots was one armreach. The roots were also important for the Blackfoot, Stoney (Assiniboin—a dialect of Dakota), Sioux, and Plains Cree of the Canadian prairies. The Blackfoot harvested them in late spring and summer, after blooming but before the leaves and stems died down. They ate the roots raw, roasted them over open coals, or sun-dried them for storage. Sometimes the roots were served with boiled beaver's tail, or were cooked in meat stews (Hellson and Gadd, 1974; Scott-Brown, 1977; Johnston, 1987). Children, when cutting teeth, were sometimes given pieces of the root to chew (Johnston, 1987). Henry Youle Hind, near Qu'Appelle Mission in southeastern Saskatchewan, found a party of Plains Cree collecting these roots on July 17th, 1858: "Many bushels had been collected by the squaws and children and when we came to their tents were employed in peeling the roots, cutting them into shreds and drying them in the sun. I saw many roots as large as the egg of a goose, and... some of even larger dimensions" (quoted by Kindscher, 1987). Plains Cree people also enjoyed a kind of pudding of "flour" made from the roots mixed with saskatoon berries. These roots were considered to be a "healthy food" (Scott-Brown, 1977).

Although they were probably not cultivated by the Plains peoples, they may have reseeded, and there have been some attempts to grow them (Kindscher, 1987). They should be considered for adoption into cultivation (Turner, 1981). Prairie turnips were said to be a favorite food of the now-extinct plains grizzly bear.

Springbank Clover, or Perennial Clover (*Trifolium wormskioldii;* syn.*T. fibbriatum*)

Description: Low, glabrous, herbaceous perermial often growing in dense patches from long, slender, white rhizomes, with fibrous roots arising from their nodes. The stems, up to 80 cm (2.4 ft) long, are erect to creeping. The long-stalked leaves are 3-parted, the leaflets highly variable in shape, from narrow to oval, pointed or somewhat rounded at the tips, and finely toothed around the margins. The typically clover-like flower clusters are subtended by a flared, sharply toothed and lobed involucre. The heads, hemispherical to globular, and containing up to about 50 individual flowers, may be up to 2.5 cm (1 in.) across. The flowers are magenta to purple, and often white-tipped. The fruits are tiny, 1 to 5 seeded pods.

Occurrence: Coastal dunes, saline marshes, estuarine flats, meadows and streambanks of coastal British Columbia, north as far as the Queen Charlotte Islands (possibly to the southern Alaska Panhandle) and south to California, and Baja California, Mexico, inland as far as New Mexico.

Food Use: The long, fleshy, white rhizomes were an important food to coastal peoples of British Columbia, including Haida, Kwakwaka'wakw, Nuu-chah-nulth (including Ditidaht), Nuxalk (Bella Coola), Comox, Sechelt, and Straits Salish, as well as by the Makah of Washington (Gunther, 1973; Turner, 1975; Turner and Efrat, 1982; Turner et al., 1983). Their use is discussed in detail by Turner and Kuhnlein (1982) and their nutritional significance by Kuhnlein et al. (1982). A detailed account of their harvest, preparation and serving among Kwakwaka'wakw (Southern Kwakiutl) is given by Boas (1921), among the Nuxalk of Bella Coola by Edwards (1979), and among the Ditidaht (Nitinaht) of Vancouver Island by Turner et al. 1983).

Springbank clover rhizomes were commonly harvested and prepared together with the long, brown roots of Pacific silverweed (*Potentilla anserine* spp. *pacifica*). Both were usually dug in the fall, after the leaves had started to die down for the winter. They both grew in extensive patches along the river estuaries of the British Columbia coast. Among the Kwakiutl and some other groups, these patches were divided into beds, which were owned by families or individuals within a village, and passed from generation to generation. Only the owner and his family had the right to harvest his "roots"; others wishing to dig them had to ask permission and repay the owner in some way. Stones, sticks and intruding vegetation were removed from these beds, and the constant annual cultivation of the soil during the harvesting process undoubtedly improved the habitat for the "root" crop. At some point within the historical period, some Nuxalk people actually did begin to transplant the springbank clover plants and tend them like true garden vegetables.

The rhizomes were pried out with long, pointed wooden digging sticks. They were cleaned and, often, were tied in fist-size bundles using one of the rhizomes as a "tie." Occasionally they were eaten raw, but typically they were cooked by steaming in a box or in an underground cooking pit, interspersed with layers of salal and alder branches and fern fronds, as described in Turner and Kuhnlein (1982). Recently, this cooking method was adapted by some people to a stove-top kettle. The cooked rhizomes were sometimes eaten as an accompaniment to other foods, such as dried salmon or fermented salmon eggs, or were served whole and cold, and eaten with the fingers, almost always being first dipped into some kind of fat, such as whale or seal oil or ooligan grease. The rhizomes were also often dried for winter use. Some people, such as the Nuxalk, stored the roots raw and fresh in boxes buried in the ground or, recently, in a root cellar. Although they are seldom eaten today, elders who ate them in their youth were very fond of them. They have a sweet, pleasing taste, not unlike that of young green peas or beansprouts.

Ducks and geese are known to be fond of the rhizomes, which were sometimes used as bait for hunting these birds (Edwards, 1979).

Beech Family (Fagaceae)

American Beechnut (*Fagus grandifolia*)

Description: Deciduous tree up to 25 m (80 ft) tall, usually with a straight trunk and broad crown. The bark is smooth, light gray, and blotched with darker patches. The simple, elliptical leaves, up to 15 cm (6 in.) long, are alternate, and pointed, with small, short, well spaced teeth around the margins. The flowers are small and inconspicuous, male and female borne separately but on the same tree. The fruit is a prickly husk which splits open into four parts at maturity, revealing a pair of triangular, pointed, thin-shelled brown nuts, each about 2 cm (0.8 in.) long.

Occurrence: Rich woods of southern Ontario, Quebec and the Maritimes, south to Texas and Florida.

Food Use: Beechnuts are sweet and flavorful, and were eaten by Indigenous Peoples throughout the range of the tree. The Iroquois ate them raw or cooked, and crushed the nut meats to mix in breads and puddings. They also rendered the oil from the kemels and used it in cooking. Women and children customarily gathered these and other nuts from the ground in the fall (Parker, 1910; Waugh, 1916). The Ojibwa, Micmac, Malecite, Algonquin and Potawatomi also ate the fresh nuts (Smith, 1932, 1933; Gilmore, 1933; Speck and Dexter, 1951, 1952; Aller, 1954; Stoddard, 1962; Black, 1980). Forest Potawatomi people often relied on the caches of deer mice for their supply of beechnuts; sometimes these hidden stores yield up to eight quarts of the nuts. They can be found in winter from the shells dropped on the snow when the mice eat the kernels (Smith, 1933).

WARNING: The nuts contain a saponin-like substance that may cause gastro-intestinal upset when consumed in very large doses. They should be used only in moderation.

Food Use of Related Species: American chestnut (*Castanea dentata*), in the beech family, was once a common forest tree of dry woods from southern Ontario to Minnesota, south to Mississippi and Florida. However, a chestnut bark fungus disease, believed to have been introduced from Asia around the tum of the century, has devastated the American chestnut, reportedly killing 99 percent of the mature trees within a few decades. Some living roots remain, which sprout suckers that sometimes produce seeds, but the seedlings are invariably killed within a few years. Formerly, chestnuts were an important food of the Iroquois and other Indigenous Peoples of eastern North America. The Iroquois ate the nuts raw or cooked, and dried them and pounded them into flour for bread. They also used them in soups and puddings, and cooked them with potatoes. They even roasted them like coffee beans and made them into a beverage (Parker, 1910; Waugh, 1916; Aller, 1954).

Oaks (*Quercus* spp.)

Description: There are at least ten species of oak native to Canada, nine of which are full-sized trees, and one a shrub: dwarf chestnut oak (*Q. prinoides*Willd.). All are deciduous (there are some evergreen species in the United States), and all have simple, alternate leaves which are variously lobed or toothed. The male, pollen-bearing flowers are clustered catkins; the female flowers are borne singly or in small groups and are generally inconspicuous. Oak fruits—acorns—are thin-shelled, ovoid or globular nuts, each embedded in a woody, scaly cap.

Occurrence: Oaks are found in open woods, dry prairies, or in some cases, swamps, in various parts of Canada. One species, garry oak *(Q. garryana*) is found in the dry forest zone of southeastern British Columbia. Bur oak *(Q. macrocarpa*) grows from New Brunswick to southern Manitoba and Saskatchewan. All the other species are restricted to various parts of southeastern Canada, mostly in the Great Lakes—St. Lawrence region of southern Ontario.

Food Use: The acorns of all the oaks are potentially edible when properly prepared. Those of the white oak group, with round-lobed, non-bristly leaves, and of the chestnut oak group, with regularly toothed, non-bristly leaves, are usually far more palatable than those of the red oak group, whose leaves are sharply-lobed with bristly tips to the lobes or teeth. Acorns of the last group are usually higher in bitter-tasting tannins. However, these also were eaten on occasion by Indigenous People.

Acorns, like other nuts, were commonly gathered from the ground in the fall by women and children. They were cracked with a pair of rounded stones with pitted centres, and the kernels extracted (Waugh, 1916).

Acorns of white oak (*Quercus alba*), swamp white oak (*Q. bicolor*), and chestnut oak (*Q. prinus*) were commonly eaten by the Iroquois of the Great Lakes region (Parker, 1910; Waugh, 1916; Rousseau, 1945). The Ojibwa, Huron, Micmac and Malecite also ate white oak acorns (Waugh, 1916; Smith, 1932; Speck and Dexter, 1951, 1952; Tooker, 1964), and the Ojibwa used those of bur oak, or mossy-cup oak (*Q. macrocarpa*) as well (Densmore, 1928; Smith, 1932).

The bitter acorns of red oak (*Q. rubra*) and black oak (*Q. velutina*) were used in times of necessity by the Iroquois, Huron, Ojibwa, Potawatomi and other peoples (Waugh, 1916; Smith, 1932,1933; Rousseau, 1945; Speckand Dexter, 1951, 1952).

The tannins in acorns, especially the more bitter types, were partially removed by boiling them in several changes of water with lye made from wood-ashes (Waugh, 1916; Aller, 1954). The lye was then leached out with water, and the acorns thus treated were roasted or pounded and mixed with meat for soup (Parker, 1910; Gilmore, 1933). Even "sweet" acorns (e.g., *Q. macrocarpa*) were sometimes buried in the ground over the winter before being used. The "sweet" acorns of white oak were sometimes eaten raw by children, or were simply roasted or boiled and eaten as a vegetable. Sometimes after cooking they were mashed and eaten with animal grease, and were said to be especially good with duck broth (Densmore, 1928; Smith, 1932; Stowe, 1940). Acorns were also dried and made into meal for use in soups and other dishes.

In the West, the acorns of garry oak *(Quercus garryana)* were eaten by some Vancouver Island groups, especially the Straits Salish, as well as by several Washington groups (Nisqually, Chehalis, Cowlitz, and Squaxin). Very bitter and astringent when raw, they were generally cooked by steaming, roasting or boiling. Some people stored them all winter in baskets buried in the damp mud, a practice which would have helped dispel the tannins. Few people today have heard of them being eaten (Gunther, 1973; Turner, 1975).

According to the Jesuit Relations, oak bark was boiled as a famine food by the Great Lakes peoples (Aller, 1954).

WARNING: The foliage, shoots and bark of oaks are poisonous due to their high tannin content, and those people wishing to eat the acorns should make sure that the bitter tannins are first removed by leaching or boiling in several changes of water, since they could be harmful. High intakes of tannin have been implicated in some forms of cancer (Turner and Szczawinski, 1991).

Geranium Family (Geraniaceae)

Indigenous Peoples apparently had culinary use for only two species in this family: Blackfoot people kept the pungent leaves of sticky geranium *(Geranium viscosissimum)* in food storage bags (Hellson and Gadd, 1974), possibly to help preserve the food; and the leaves of a species found in the far north, *G. erianthum,* were boiled to make a beverage tea by the Inland and Upper Inlet Tanaina of Alaska (Kari, 1987).

Gooseberry Family (Grossulariaceae; sometimes included in Saxifrage Family, Saxifragaceae)

Gooseberries and currants, both shrubby deciduous plants of the genus *Ribes,* with palmately lobed leaves and edible berries, are generally differentiated as follows: gooseberries have spines or prickles on their stems, whereas currants are "unarmed" (see *R. lacustre* for exception); gooseberries are usually borne singly or in small clusters, while currants are usual in elongated clusters of mostly more than five. There are about 20 species of gooseberries and currants native to various parts of Canada, and a few introduced species such as the European red currant *(R. sylvestre),* Eurasian black currant *(R. nigrum)* and European gooseberry *(R. grossularia)* are also found as occasional garden escapes. In historic times, these domesticated species have been grown and used by Indigenous Peoples across Canada.

The berries vary in texture and palatability. The choicer, most widely eaten types are described here, with other, lesser used species mentioned under the **Food Use of Related Species** sections.

Wild Black Currant *(Ribes americanum)*

Description: Small, unarmed deciduous shrub growing up to 1 m (3 ft) or more high. The simple, alternate leaves are rounded, up to 10 cm (4 in.) wide, and palmately lobed, with 3 to 5 pointed lobes with doubly toothed margins. The leaf surfaces, especially below, are scattered with resinous dots. The creamy-white to yellowish flowers are bell-shaped and borne in drooping clusters from the leaf axils. The berries are black, globular, and smooth, each with a characteristic brownish "wick" (the residual flower) at the end.

Occurrence: Damp soil along streams, wooded slopes, open meadows, and rocky ground of southern Canada, from Alberta to New Brunswick, south in the United States to Delaware and New Mexico.

Food Use: The berries are juicy and of good flavor, and were widely eaten by Indigenous Peoples, including the Blackfoot, Ojibwa, and probably the Micmac and Malecite (Parker, 1910; Waugh, 1916; Densmore, 1928; Speck and Dexter, 1951, 1952; Johnston, 1987). They were eaten fresh or dried and preserved for winter. The Ojibwa made them into jams and preserves, and cooked the dried berries with sweet corn (Reagan, 1928; Smith, 1932; Gilmore, 1933). They were also used by American Plains groups such as the Hidatsa, who often gathered them together with Saskatoon berries, which ripen at the same time. Hidatsa people normally did not dry the berries, unless there were a few mixed in the saskatoons (Kindscher, 1987).

Food Use of Related Species: Several other types of black-fruited currants were used in different parts of Canada. Northern black currant, or Hudson's Bay currant *(Ribes hudsonianum),* which occurs from Quebec to Alaska, south to northern California and Michigan, was used by many Indigenous groups, but because it is glandular, strong smelling, and often bitter, it was not particularly popular. The berries were eaten by Ojibwa, Slave, Chipewyan, Cree, and various peoples of British Columbia and Alaska (Reagan, 1928; Honigmann, 1961; Heller, 1976; Lamont, 1977; Turner, 1978; 'Ksan, People of, 1980; Marles, 1984; Leighton, 1985; Kari, 1987; Myers et al. unpubl. notes, 1988; Turner et al., 1990). In historic times, some people used them with other berries for "brew" or wine (Marles, 1974; Lamont, 1977). They are also used for jam (Leighton, 1985), but were seldom stored traditionally. It is said that bears love to eat these berries.

Another black-fruited species, swamp black currant, or swamp gooseberry *(Ribes lacustre),* has characteristics of both currants and gooseberries. The branches are armed with many sharp, highly irritating prickles. The berries, shiny black with long gland-tipped hairs, are borne in hanging clusters. Somewhat strong-tasting, the berries are nevertheless quite palatable when fully ripe, and make an excellent jam. They were eaten fresh, cooked or sometimes dried, by the Stoney (Assiniboin) of Alberta, peoples of British Columbia and Alaska, and possibly others within the range of the shrub (Turner, 1975; Heller, 1976; Scott-Brown, 1977; Turner, 1978; Turner et al., 1980; Galloway, 1982; Turner et al., 1990). Nlaka'pamux people sometimes stored the berries fresh by burying them in baskets in the ground (Turner et al., 1990). Some Lillooet and Okanagan-Colville people used the berries and/or twigs to make a beverage and medicinal tea (Turner, 1978).

Trailing black currant *(Ribes laxiflorum)* was occasionally used in western British Columbia, Alaska and Washington, but the berries are not particularly desirable, being small, sparse-yielding, strong-smelling, and hairy, they could be eaten raw or cooked, with animal or fish oil, and were sometimes mixed in with other berries for drying (Gunther, 1973; Turner, 1975; Heller, 1976; Norton, 1981; Turner and Efrat, 1982; Kari, 1987).

The blackish fruits of buffalo currant, or golden currant *(Ribes odoratum),* which has fragrant, golden-yellow flowers, were eaten by Indian peoples of the Plains region, such as the Kiowa (Kindscher, 1987), but this plant is found in Canada only as a garden escape. The blackish berries of sticky currant *(Ribes viscosissimum)* were casually eaten by some Nlaka'pamux, Okanagan-Colville and Kootenay of British Columbia, and possibly by others, but were not highly regarded (Turner, 1978; Turner et al., 1990). (See also under other *Ribes* species.)

Grayberry, Sunberry, Blue Currant, or Stink Currant *(Ribes bracteosum; see Figure 35, page 206)*

Description: An erect, straggly deciduous shrub up to 3 m (10 ft) high, with grayish bark. The leaves are relatively large, long-stalked and palmately lobed, with 5 to 7 sharply pointed, toothed lobes. The leaves are covered with resinous dots and the entire plant emits a characteristic musky odor if brushed or bruised. The flowers are numerous, small and greenish to white, in long clusters. The berries are globular to ovoid, and blue, spotted with dark glands. They are covered with a whitish waxy coating giving them a blue-gray caste.

Occurrence: Streambanks, swamps and moist woods of western British Columbia, north to southern Alaska and south to northwestern California.

Food Use: These berries tend to be slightly bland, but not at all unpleasant, and were widely used by Northwest Coast people of British Columbia and neighboring areas (Gunther, 1973; Turner, 1975; Norton, 1981; Jacobs and Jacobs, 1982; Turner and Efrat, 1982; Turner et al., 1983). Some peoples, such as the Nuxalk (Bella Coola) and the Haida, favored them, and gathered them in large quantities, whereas others used them on a more casual basis. They were generally picked in August and September, and could be eaten fresh. The Kwakwaka'wakw, for example, ate them raw with mountain-goat horn spoons at informal feasts. Even when fresh, they were usually eaten with large quantities of seal or whale oil or ooligan grease; some people claim that without this addition they would cause a stomach ache or constipation (Turner, 1975; Turner and Efrat, 1982). They were generally cooked, by boiling to a jam-like consistency, then eaten with oil or animal/fish grease, and later, sugar or molasses. The Kaigani Haida sometimes mixed them with salmon roe. For winter use, the berries were boiled in wooden boxes, then poured into wooden frames set on skunk-cabbage leaves and dried in cakes over a slow fire. Often they were mixed with salal berries for drying. The dried cakes were reconstituted by soaking overnight in water before being used. The Kaigani Haida formerly stored them fresh in watertight boxes, and more recently, in tins or drums, lined with skunk-cabbage leaves and covered with ooligan grease. Nowadays, they are eaten fresh with milk and sugar, frozen or made into jam (Tumer, 1975; Norton, 1981).

Food Use of Related Species: The grayish blue berries of red-flowering currant *(Ribes sanguineum)* of British Columbia were eaten casually by various groups such as the Straits, Halkomelem, Sechelt, Lillooet, Nlaka'pamux and the Clallam of Washington (Gunther, 1973; Galloway, 1982). Some Nlaka'pamux people dried them and used them in soups as a flavoring (Turner et al., 1990), but usually they were eaten fresh, sometimes mixed with other berries. (See also under other *Ribes* species.)

Canada Gooseberry, or Smooth Gooseberry *(Ribes oxyacanthoides)*

Description: Low deciduous shrub with erect or stiffly ascending branches that are usually armed with stout spines and scattered prickles. The leaves are alternate and simple, palmately lobed with 3 to 5 blunt or rounded, toothed lobes that are usually hairy, especially underneath, with stalked glands along the veins and dotted with resinous glands over the surface. The greenish-yellow, bell-shaped flowers are borne in groups of two or three, and the berries are globular, smooth, and blue-black. Four varieties are recognized in Canada, based on the relative prickliness, and the hairiness and shape of the leaves.

Occurrence: Rocky or sandy shores, talus slopes, woods and clearings, from eastern British Columbia to Newfoundland and the Maritimes, south in the United States to Montana, Ohio and Pennsylvania.

Food Use: The berries are tart, but were eaten by Indigenous Peoples across the country. The Ojibwa ate them fresh, preserved them and cooked them with sweet com (Smith, 1932; Gilmore, 1933; Reagan, 1928). The Fisherman Lake Slave picked the berries green in late June, but apparently did not use them much when ripe (Lamont, 1977). The Chipewyan of north-em Saskatchewan and the Woods Cree of east-central Saskatchewan ate the berries fresh or made them into jam (Maries, 1984; Leighton, 1985). The Dene of the Northwest Territories also ate them, and the Blackfoot and Stoney (Assiniboin) ate them fresh or cooked in soups, but did not usually preserve them (Hellson and Gadd, 1974; Scott-Brown, 1977; Porsild and Cody, 1980; Johnston,

1987). The Iroquois also apparently used them, as did various peoples in British Columbia (Waugh, 1916; Turner, 1978).

Food Use of Related Species: Several other types of gooseberries were eaten in traditional diets. The ripe fruits of prickly gooseberry *(Ribes cynos-bati)* were used fresh and preserved by Ojibwa, Algonquin, Potawatomi and probably other peoples as well (Smith, 1932, 1933; Gilmore, 1933; Black, 1980). The fruits of coastal black gooseberry *(Ribes divaricatum; see Figure 36, page 206)* were widely eaten in British Columbia and neighboring areas, and were well liked (Gunther, 1973; Turner, 1975, 1979; Galloway, 1982; Turner and Efrat, 1982; Turner et al., 1983; Port Simpson Curriculum Committee, 1983; Tumer et al., 1990). They were eaten fresh, right from the bushes, or were picked and mixed, raw or cooked, with oil. Some people dried them in cakes, but this was not common. The Nuxalk liked to pick them green and boil them to make a sauce. Sometimes they were mixed with other fruits such as red elderberries. Today, they are made into jams and jellies. The berries of Idaho black gooseberry *(Ribes irriguum)* were also widely eaten by the Interior Salish groups of the British Columbia Interior, both fresh and dried. They were often mixed, before or after drying, with other foods, such as bitterroots, saskatoon berries, and mountain blueberries. Some people like to eat them green, early in the season, raw or cooked. Today, they are eaten raw or boiled with sugar and flour, or made into jam (Turner, 1978; Turner et al., 1980; Turner et al. unpubl. notes, 1987; Myers et al. unpubl. notes, 1988; Turner et al., 1990). The large, hairy fruits of sticky gooseberry *(Ribes lobbii)* were eaten by the Straits and Halkomelem peoples of south-western

Figure 35 (above). Grayberry *(Ribes bracteosum),*also called sunberry or stink currant.

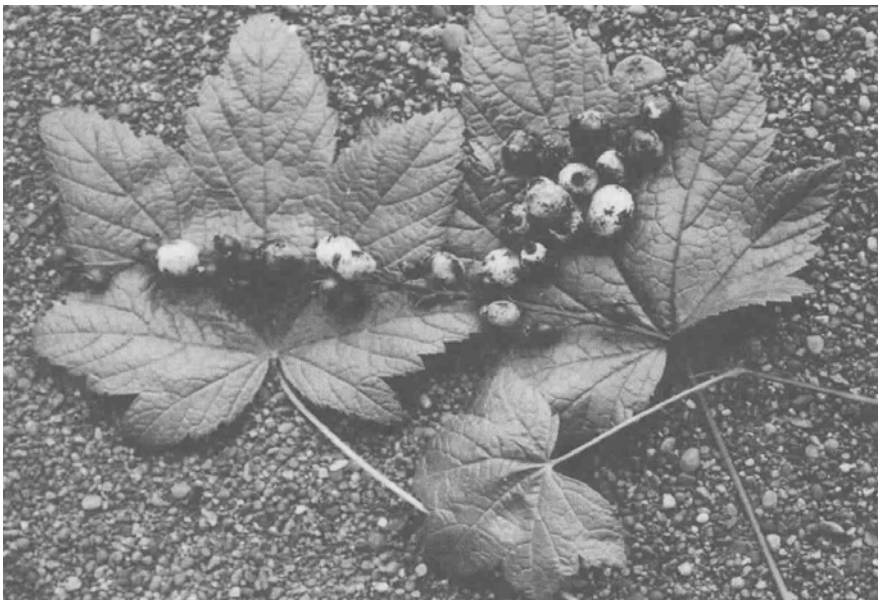


Figure 36 (below). Wild gooseberry *(Ribes divaricatum).*

British Columbia (Turner, 1975; Galloway, 1982). (See also under other *Ribes* species.)

Wild Red Currant *(Ribes triste)*

Description: Low, spreading or lax unarmed deciduous shrub seldom more than 1 m (3 ft) high. The leaves are alternate, simple, with stalks averaging about 5 cm (2 in.) long and blades up to 10 cm (4 in.) across, palmately lobed, with 3 to 5 broad, pointed or rounded lobes which are toothed around the margins. The flowers are small and greenish purple, borne in arching or drooping clusters, and the berries are smooth and bright red, and usually globular, borne in hanging clusters of usually five or more fruits.

Occurrence: Moist woods and rock slopes from the Yukon and District of Mackenzie across the northern Prairie Provinces to Newfoundland and the Maritimes; also found in Alaska, and south in the United States to Oregon, South Dakota and Virginia; also occurring in eastern Asia.

Food Use: The berries are tart, but have a pleasant flavor, and were eaten by many groups of Indigenous Peoples throughout the range of the plant, including the Iroquois, Ojibwa, Algonquin, Cree, Slave, Chipewyan, and the Tanaina and Inupiaq Eskimo of Alaska (Waugh, 1916; Densmore, 1928; Smith, 1932; Heller, 1976; Lamont, 1977; Black, 1980; Maries, 1984; Jones, 1983; Kari, 1987). They were usually gathered in late summer, and were eaten raw or sometimes preserved. Today they are often used to make jams and jellies, and are boiled with other fruits, such as highbush cranberries *(Viburnum edule)* and used to make "catsup" or syrup (Maries, 1984; Black, 1980; Jones, 1983). Apparently, the Woods Cree of east-central Saskatchewan did not eat the berries, and called them "frog berry" (Leighton, 1985).

Food Use of Related Species: The tart, red fruits of golden currant *(Ribes aureum),* when available, were eaten fresh or dried, stored, and made into cakes or juice by the Okanagan-Colville of southern British Columbia and northern Washington, and by the Spokane and other Interior Salish peoples to the south. They were sometimes mixed with other foods (Turner et al., 1980). Squaw currant *(Ribes cereum),* common in the dry interior of British Columbia and also occurring in southwestern Alberta, was used by Interior Salish peoples. However, the berries are somewhat dry and insipid, and were not usually eaten in any quantity, nor were they stored for winter (Turner, 1978; Turner et al., 1980; Turner et al., 1990). The hairy, red fruits of skunk currant *(Ribes glandulosum)* were eaten by the Algonquin, Cree, Slave, Chipewyan, Tanaina of Alaska, and undoubtedly other groups as well (Lamont, 1977; Black, 1980; Maries, 1984; Leighton, 1985; Kari, 1987). They were used fresh, often in considerable quantity, and were also cooked and made into

jelly (Maries, 1984). The Woods Cree of east-central Saskatchewan also made a bitter tea from the stems (Leighton, 1985). (See also under other *Ribes* species.)

Witch-Hazel Family (Hamamelidaceae)

Witch-hazel *(Hamamelis virginiana)* is the only species of this family native to Canada. A decoction of this plant, sweetened with maple sugar, was used as a tea by the Iroquois and Micmac (Waugh, 1916; Stoddard, 1962). Stoddard also reported that the Micmac ate the "nuts" of witch hazel.

Mare's-Tail Family (Hippuridaceae)

Mare's-tail *(Hippuris vulgaris),* an erect, semiaquatic herb bearing whorls of narrow leaves at regular intervals along the stems, was reportedly used as a green vegetable by Eskimo peoples of Alaska (Lantis, 1946; Oswalt, 1957; Heller, 1976), who ate it raw with seal oil and salmon eggs or cooked in soups. However, since Heller (1976) calls the plant "goosegrass" and states that it has a salty taste, it may well be a misidentification for *Plantago maritima,* which is normally called "goosetongue" in that region (cf. Jones, 1983), or for glasswort *(Salicornia virginica),* which is also sometimes called "goosegrass." Both of these last plants are salty tasting.

Waterleaf Family (Hydrophyllaceae)

Ballhead Waterleaf *(Hydrophyllum capitatum)*

Description: Alow herbaceous perennial, up to 40 cm (16 in.) high, growing from a short, deep-seated rhizome bearing a cluster of thick, fingerlike roots. The leaves are long-stalked and relatively large, deeply cleft into 7 to 11 leaflets or bluntly pointed lobes. The lavender or purplish blue (sometimes whitish) flowers are small, with prominent, exerted stamens, and clustered into a globular head (2.5 in.) or more across.

Occurrence: Thickets, woods and moist open slopes from low to fairly high elevations from the southern interior of British Columbia to southwestern Alberta, south to California and Colorado.

Food Use: The long, fleshy roots were eaten long ago by the Nlaka'pamux and southern Shuswap of British Columbia, and possibly by Okanagan-Colville and other Interior Salish groups. They were dug in late spring and cooked by boiling or steaming. Often they were eaten with other "root" foods such as yellow avalanche lily bulbs (Turner, 1978; Turner et al., 1980; Turner et al., 1990).

Food Use of Related Species: Gunther (1973) reports that the roots of *Hydrophyllum tenuipes* were eaten by the Cowlitz of western Washington. The leaves and young plants of the eastern species, *H. virginianum* (known as "John's-cabbage" according to Scoggan, 1978), were cooked as greens by the Iroquois (Waugh, 1916).

Walnut Family (Juglandaceae)

Shagbark Hickory *(Carya ovata)*

Description: Medium-sized, straight-trunked deciduous tree, mature specimens of which have shaggy bark which peels off the trunk in long strips, giving the trunk an untidy appearance. The leaves are pinnately compound, with usually 5 leaflets, which are oval, pointed and finely toothed around the margin. Male and female flowers are borne in separate clusters on the same tree. The nuts are encased in a thick, woody husk which splits to the base at maturity. The nutshells are thick and hard, but the kernels are edible and of good flavor.

Occurrence: Rich woods and bottomlands of southern Ontario and southwestern Quebec, extending south to Texas and Florida.

Food Use: The nuts were eaten by the Iroquois, Ojibwa and Potawatomi of the Great Lakes region, and were highly esteemed (Parker, 1910; Waugh, 1916; Smith, 1932, 1933). They were gathered in the fall, mostly by women and children, and were cracked open with a couple of rounded stones with pitted centres (Waugh, 1916). The nutmeats were used in a wide variety of ways. They could be eaten raw and whole, or crushed and mixed with cornmeal and beans or berries for bread. They were also pounded, then boiled slowly in water, to extract their oil, which was skimmed off into a bowl. The oil was used as a "gravy" with bread, potatoes, pumpkin, squash and other foods, and was often added to special ceremonial mush. The meats left after skimming off the oil were often seasoned and mixed with mashed potatoes. Hickory and other nuts were also crushed and the milky juice extracted was drunk as a beverage or added to hominy and com soup to make it richer. The powdered nutmeats were mixed with dried, powdered deer meat and boiled for baby food (Parker, 1910; Waugh, 1916).

Food Use of Related Species: Bitternut hickory *(Carya cordiformis)* was used by the Iroquois in times of necessity, but the kernels usually had to be boiled in lye made from wood ashes to take away their bitter taste (Waugh, 1916). The other hickory species occurring in southern Ontario, pignut (C. *glabra*) and false shagbark (C. *ovalis*), were probably also used when available.

Butternut *(Juglans cinerea)*

Description: Medium-sized deciduous tree with coarse, spreading branches and smoothly ridged bark. The large, alternate leaves are pinnately compound, with many (usually 11 to 17) pointed, lance-shaped leaflets, the terminal one usually present. Male and female flowers are borne separately but on the same tree, the male flowers forming greenish drooping catkins and the female, short clusters. The nuts, about twice as long as broad, have densely hairy, sticky hulls and grooved, jagged shells. The kernels are rich and flavorful.

Occurrence: Rich woods and river terraces from southern Ontario to New Brunswick, south in the United States to Arkansas and Georgia.

Food Use: The nut kernels were eaten by all Indigenous groups within the range of the tree, including Iroquois, Ojibwa, Potawatomi, Algonquin, Micmac and Malecite (Smith, 1932, 1933; Speck and Dexter, 1951, 1952; Black, 1980). They were apparently gathered, prepared and used in much the same way as shagbark hickory nuts (Waugh, 1916; see previous species).

Food Use of Related Species: Black walnut *(Juglans nigra)* nuts were used by the Iroquois like those of hickory and butternut (Parker, 1910; Waugh, 1916). They were also eaten by the Huron of the Georgian Bay area of Ontario (Tooker, 1964).

Mint Family (Lamiaceae, or Labiatae)

The mint family contains many aromatic plants, and several of these were used for flavoring and beverages by Indigenous Peoples in various parts of Canada. The following table (4-9) lists the species in this family which were eaten or used in food preparation. Two species, water-horehound and field mint, are discussed in detail.

Water-Horehound, or Bugleweed *(Lycopus uniflorus)*

Description: Slender, herbaceous perennial up to about 40 cm (16 in.) high, growing from tuberous roots and spreading by stolons which are often tuber-producing. The stems are square and the leaves opposite, lance-shaped and pointed with sparsely toothed margins. The flowers are small and white, borne in dense clusters at the leaf nodes, and the fruits are small nutlets.

Occurrence: Marshes, streambanks, and lake edges from British Columbia to Newfoundland, north to some isolated stations in Alaska and south in the United States to northern California, Arkansas and North Carolina; also found in eastern Asia.

Table 4-9. Plants in the Mint Family Used Traditionally as Foods, Beverages or in Food Preparation by Indigenous Peoples of Canada (introduced species marked with an asterisk *)

Species	Notes	References
Giant Hyssop *(Agastache foeniculum)*	Leaves used as flavoring for tea by Woods Cree of Saskatchewan, and as tea and flavoring by Montana Indians	Blankinship, 1905; Leighton, 1985
Water-horehound *(Lycopus asper)*	Roots eaten by Ojibwa; see under *L. uniflorus.* **Food Use of Related Species**	
Water-horehound *(Lycopus uniflorus)*	Roots eaten by various British Columbia groups (see detailed discussion)	
Field Mint *(Mentha arvensis)*	Widely used as tea and flavoring (see detailed discussion)	
Peppermint *(Mentha piperita)**	Eaten raw by Iroquois	Waugh, 1916
Wild Bergamot *(Monarda fistulosa)*	Leaves used for tea by Iroquois, Kootenay and others; widely used as a seasoning, scent and food preservative by Flathead, Apache, Tewa, Hopi and other American peoples	Waugh, 1916; Hart, 1976; Turner, 1978; Kindscher, 1987
Coyote Mint *(Monardella odoratissima)*	Stems and leaves used to make a beverage and medicinal tea by Okanagan-Colville of Washington; use not known in Canada	Turner et al., 1980
Catnip *(Nepeta cataria)**	Leaves used for tea by Ojibwa, and for medicinal tea by Okanagan-Colville	Smith, 1932; Turner et al., 1980
Self-heal *(Prunella vulgaris)** (partly native)	Nlaka'pamux of British Columbia made a cold beverage and tonic by soaking the plants in cold water for several hours	Steedman, 1930; Turner et al., 1990
Mountain-mint *(Pycnanthemum virginianum)*	Flowers and buds used to season meat or broth by Ojibwa	Densmore, 1928
Yerba Buena (*Satureja douglasii see Figure 37, page 217)*	Plants used to make a beverage and medicinal teas by Straits Salish of Vancouver Island, and possibly neighboring Halkomelem	Turner, 1975; Turner and Hebda, unpubl. notes, 1989
Hedge-nettle *(Stachys cooleyae)*	Stems apparently chewed by Haida of the Queen Charlotte Islands; flower nectar sucked by Quinault of Washington	Gunther, 1973; Turner, 1975

Food Use: The fleshy, white, tuberous roots were formerly eaten by Interior Salish peoples of British Columbia and neighboring Washington, including Nlaka'pamux, Okanagan-Colville and Shuswap, and possibly also by the Kootenay. They were usually dug from swampy places in spring, before they began to sprout and were eaten raw, boiled or pit-cooked. They were often mixed with meat or fish, and are said to have a sweet, pleasant taste reminiscent of a mild radish (Turner, 1978; Turner et al., 1980; Turner et al., 1990). They could be stored fresh for a few days in a wet sack, and some, but not all; people used to dry them for longer-term storage.

Food Use of Related Species: The roots of *Lycopus asper* were dried and boiled as a vegetable by Ojibwa people, who called them "crow potatoes" (Densmore, 1928).

Field Mint, Common Mint or Canada Mint *(Mentha arvensis)*

Description: Erect, herbaceous perennial, strongly aromatic with a typical "mint" smell, growing from creeping rootstocks. The stems are squarish and the leaves grow in opposite pairs along the stem. Lance-shaped to oval, the leaves are pointed, smooth or hairy, and have toothed margins. The flowers are small and mauve (occasionally white) and are borne in clusters at the axils of the upper leaves. The fruits are small nutlets.

Occurrence: Marshes, streambanks, lake edges and other moist places at low to moderate elevations, from British Columbia to Newfoundland, north to Alaska, Yukon and District of Mackenzie, and south in the United States to California, New Mexico, and Delaware; also found in Eurasia, and some populations said to be introduced from there.

Food Use: The aromatic leaves, with their strong "peppermint" taste and odor, were widely used by Indigenous Peoples of Canada as a beverage and flavoring. For example, Ojibwa people used them to flavor meat in cooking, and also for tea (Smith, 1932; Gilmore, 1933). The Fisherman Lake Slave of the Northwest Territories used the leaves fresh or dry for tea, or as a flavoring for imported tea (Lamont, 1977). The Chipewyan and Woods Cree of Saskatchewan also used them to flavor tea (Marles, 1984), and the latter added them to sturgeon oil to sweeten its odor (Leighton, 1985). Blackfoot people tied the leafy stems in bunches and dried them, then used them to flavor soups, meat and pemmican, as well as for beverage and medicinal teas (Johnston, 1987; Hellson and Gadd, 1974). The Nlaka'pamux ate the warmed greens with dried fish. They and the Lillooet, Okanagan-Colville, Shuswap, Kootenay, Chilcotin and other interior groups of British Columbia also made tea from this mint, said to be especially good for colds and influenza. Some people used the leaves to flavor Labrador-tea *(Ledum* spp.) (Turner, 1978; Turner et al., 1980; Turner et al., unpubl. notes, 1987; Myers et al. unpubl. notes, 1988; Turner et al., 1990). Flathead, Kootenay and other Montana groups also made tea from this plant, mixed the dried, powdered leaves with drying saskatoon berries, and sprinkled the powdered leaves on cooked meat as a flavoring, especially if the meat was fatty (Hart, 1976; Turner, 1978).

Laurel Family (Lauraceae)

The two species in this family native to Canada, spicebush *(Lindera benzoin)* and sassafras *(Sassafras albidum),* are restricted in distribution in this country to southern Ontario. The leaves, twigs and branches of spicebush, and the root bark and leaves of sassafras were used to make beverage teas and to season cooking meat and other foods by the Ojibwa and Iroquois of Ontario and the adjacent United States (Parker, 1910; Waugh, 1916; Gilmore, 1933). Stoddard (1962) stated that the Micmac also made tea from sassafras. (**WARNING**: Sassafras, and possibly also spicebush, contains the aromatic compound safrole, which in high doses has been shown to cause tumors in rats and mice. Recent evidence suggests that humans may not be similarly affected, but caution is advised.)

Melastoma Family (Melastomaceae)

Meadow-beauty *(Rhexia virginica)* is the only member of this plant family native to Canada. It is found in peats and wet sands in southern Ontario and Nova Scotia, extending south to Georgia and Alabama. Its leaves were steeped to produce a sour drink by the Micmac and Montagnais of the Maritimes region (Speck, 1917; Lacey, 1977).

Mulberry Family (Moraceae)

The fruits of red mulberry *(Morus rubra),* the only species of this family native to Canada, and found in southern Ontario, were eaten fresh and preserved by Iroquois and Huron peoples (Parker, 1910; Waugh, 1916; Tooker, 1964). (**WARNING**: The unripe fruits and milky sap in the leaves and stems are toxic and may be irritating to the skin; use only the ripe fruits.)

Wax-Myrtle Family (Myricaceae)

The aromatic leaves of sweet-fern *(Comptonia peregrina),* a shrub occurring in Canada in open woodlands and pastures from southern Ontario to the Maritimes, were used as a beverage tea by the Ojibwa (Gilmore, 1933). The Potawatomi used the leaves to line their berry pails; this is said to keep the berries from spoiling (Smith, 1933).

Four-O'Clock Family (Nyctaginaceae)

Yellow sand-verbena *(Abronia latifolia),* a creeping herbaceous perennial of beaches and dunes along the coast of British Columbia, south to California, has large, tuberous roots which were reportedly eaten by both Clallam and Makah peoples of western Washington. Dug in the fall and cooked, they have been compared with sugar beets in flavor and appearance (Gunther, 1973). They may also have been used by neighboring British Columbia coastal peoples such as Straits Salish, but were not known to contemporary elders consulted (Turner and Hebda unpubl. notes, 1989). This is a rare species in Canada and should not be used.

Water-Lily Family (Nymphaeaceae)

Yellow Pond-Lily, Yellow Water-Lily, or Bullhead-Lily *(Nuphar variegatum)*

Description: Aquatic, herbaceous perennial with large, rounded leaves floating on the surface or submersed in lakes and ponds, and attached by long, cord-like stalks to fleshy rhizomes buried in the mud at the bottom. The leafstalks in this species are flattened on the upper side and narrowly winged. Occasionally, the plants grow in damp mud, with leaves more upright, on shorter stalks. The leaf blades are large, leathery and heart-shaped, with the stalk attached at the indented base. The flowers are relatively large and showy, with 6 or fewer leathery petal-like sepals, mostly yellow but the inner ones red at the base inside. The numerous stamens have yellowish anthers and the pistal is stout and flaring, ripening into a fleshy, green capsule which disintegrates at maturity to release small, edible seeds. Three other *Nuphar* species, and one hybrid, occur in various parts of Canada; *N. variegatum* is the most widely distributed, and the only one with flattened leafstalks.

Occurrence: Ponds, lakes and slow streams from south-central Yukon and northeastern British Columbia to the Atlantic coast, south in the United States to Idaho and Montana, Ohio and Delaware.

Food Use: Many published sources state that the rhizomes of *Nuphar* species can be eaten boiled or roasted (cf. Yanovsky, 1936; Hultén, 1968). In our experience, those *of N. polysepalum* are not at all palatable, and we know of no records of Indigenous People within Canada having used this species. In fact, the Tanaina of Alaska believe it to be poisonous (Kari, 1987), and the Chilcotin of British Columbia know it only as beavers' food (Myers et al unpubl. notes, 1988). However, the rhizomes of *N. variegatum* are apparently more palatable, and there are several reports of their use in traditional diets. They were eaten, boiled or roasted, by the Iroquois (Rousseau, 1945). The Woods Cree of east-central Saskatchewan sliced them and dried them for storage (Leighton, 1985), and the Fisherman Lake Slave harvested them in the fall, wading in the water using their feet or a comb-like implement to uproot them, then sliced them and fried them in fat, or boiled them, with the addition of a little sugar. Eating them was said to make one "get fat quick" (Lamont, 1977). According to Blankinship (1905) and Hart (1976), several tribes in Montana ate the fleshy rhizomes as well. They peeled the rind, then ate the iimer part raw or boiled, often with meat. Thin slices were dried, ground, or pulverized into meal or gruel and used to thicken soups. The seeds of *Nuphar* species are edible, and may have also been eaten by some groups, as they were by peoples of Montana, Oregon, California and elsewhere in the United States (cf. Yanovsky, 1936).

Food Use of Related Species: The rhizomes of *Nuphar advena* were said to have been eaten roasted or boiled with meat by the Iroquois (Parker, 1910). The dried rhizomes of yellow lotus, or water-chinquapin *(Nelumbo lutea)* were cooked with venison, corn, beans by the Ojibwa and

Potawatomi, and the roasted seeds were also eaten (Smith, 1932, 1933). The flower buds of fragrant water-lily *(Nymphaea odorata)* were eaten by the Ojibwa (Smith, 1932).

Olive Family (Oleaceae)

One native species of this family, red ash *(Fraxinus pennsylvanica),* was utilized as food by the Ojibwa of the Great Lakes region. The cambium layers of this tree were scraped down in long, fluffy layers, then cooked and eaten (Smith, 1932). Additionally, Stoddard (1962) reported that the sap of ash was frequently added to maple and yellow birch sap by the Micmac.

Evening-Primrose Family (Onagraceae)

Fireweed *(Epilobium angustifolium; see Figure 38, page 217)*

Description: Tall herbaceous perennial growing from branching rhizomes. The stems grow up to 2 m (6.5 ft.) or more high, and the leaves are alternate, smooth-edged and lance-shaped, often over 8 cm (about 3 in.) long. The showy, red-purple flowers are 4-petalled, and are borne in elongated terminal clusters, blooming throughout the summer in sequence from bottom to top. The fruits are long, narrow capsules which split open longitudinally along all four sides to release small seeds attached to downy "parachutes."

Occurrence: Open woods, burns and recently logged clearings, fields and river gravels across the continent, from British Columbia to Newfoundland, north to the Aleutians and Baffin Island, and south in the United States to California, New Mexico, Ohio and North Carolina; also found in Greenland, Iceland and Eurasia.

Food Use: This plant, especially the young shoots, was widely eaten by Indigenous Peoples. The flowers were eaten raw as a confection by the Fisherman Lake Slave (Lamont, 1977). According to Hellson and Gadd (1974), the fresh roots were eaten by the Blackfoot. In British Columbia, the sweetish, succulent inner tissue from the young stems in spring was eaten raw, or sometimes cooked, by the Haida, Coast Tsimshian, Nuxalk (Bella Coola), Sechelt, Squamish, Halkomelem, Nlaka'pamux, Lillooet, Shuswap, Carrier, Chilcotin, Gitksan, Nishga, and possibly other, but apparently not all, groups (Turner, 1975, 1978; 'Ksan, People of, 1980; Galloway, 1982; Port Simpson Curriculum Committee, 1983). Usually the stems were cleaned of leaves, then split open lengthwise with the thumbnail and the inner part scraped off and eaten. Recently, some people have liked to sprinkle the shoots with a little sugar before eating. Coast Tsimshian people sometimes used the fibrous outer part of the stem as a soapberry whipper and sweetener (Port Simpson Curriculum Committee, 1983). Gitksan people of the Skeena ate the peeled stems raw or roasted them with ooligan grease. They also added the sweet "syrup" from the stems to drying berry cakes as a "glue" ('Ksan, People of, 1980). The Haida formerly ate large quantities of

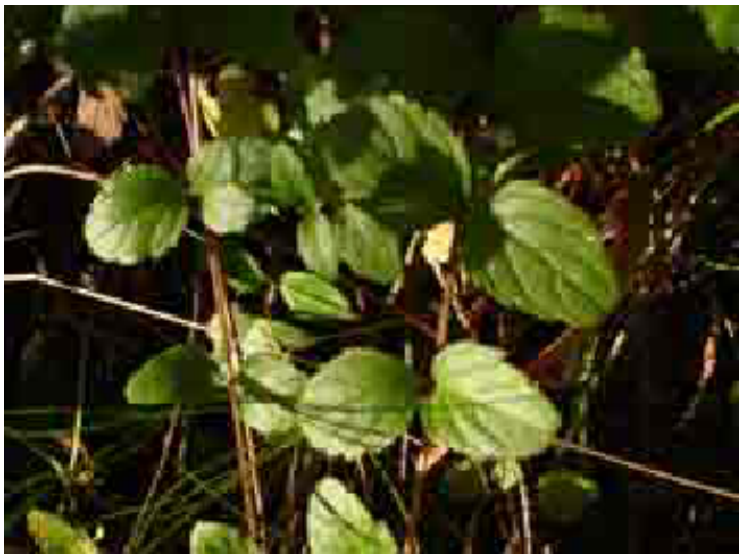


Figure 37. Yerba buena *(Satureja douglasii),*a beverage tea plant.

Figure 38. Edible shoots of fireweed *(Epilobium angustifolium).*

fireweed, and regarded it as a healthful spring tonic. They often served it at feasts. Sometimes, good patches of fireweed were owned by individual Haida families (Turner, 1975). The Lower Nlaka'pamux and Lillooet sometimes boiled or steamed the shoots (Turner et al., unpubl. notes, 1987; Turner et al., 1990). The Okanagan-Colville and Kootenay apparently did not eat fireweed, but considered it to be good food for deer and horses (Turner, 1978; Turner et al., 1980). Some Straits Salish people made tea from the young leaves (Turner, 1975). Chilcotin people sometimes used the leafy stems to intersperse between layers of food in cooking pits (Myers et al. unpubl. notes, 1988).

In Alaska, the young, peeled shoots were eaten raw or boiled by various Indian and Eskimo peoples. The Inupiaq Eskimo cooked them or preserved them raw in seal oil; sometimes they were dried a little first. They were eaten with oil, fish or meat, and the sweet inner pith was enjoyed by children and used to sweeten berries (Jones, 1983). The Western Eskimo and Tanaina Indians ate leaves raw, or dried them and used them for tea in the fall and winter. They also cooked them in meat, fish eggs or fish stew (Oswalt, 1957; Kari, 1987). Sometimes the shoots were mixed with

other greens, such as sourdock (Anderson, 1939; Heller, 1976). The Inland Tanaina mixed cooked fireweed greens with dogfood (Kari, 1987).

Food Use of Related Species: River beauty, or dwarf fireweed *(Epilobium latifolium; see Figure 39, page 223)* was also used as food. The Nuxalk (Bella Coola) and Kaigani Haida of Alaska apparently ate the inner stems in the same manner as fireweed (Turner, 1975; Norton, 1981). The Inupiaq Eskimo of Alaska picked the young leaves in spring and preserved them in seal oil, but ate them within 48 hours, as they soon turn black and slimy. The Saint Lawrence Island Eskimo ferment the leaves and eat them with walrus blubber (Jones, 1983). The young plants were often collected in early summer by the Seward Peninsula and Bering Sea Eskimo and mixed with other greens, with a few of the flower buds mixed in (Heller, 1976). The leaves were also eaten by the Inuit of Broughton Island in the Northwest Territories and other Inuit peoples (Sinclair, 1953; Kuhnlein unpubl. notes, 1985). Porsild (1964) notes that, in Greenland, the young leaves and flowers were occasionally eaten raw with seal blubber.

Broom-rape Family (Orobanchaceae)

Two plants of this family had limited use as food in Indigenous diets. Poque, or ground-cone *(Boschniakia hookeri),* which is parasitic on salal on the Pacific coast, has a round, corm-like rootstock, which was eaten by the Hesquiat and other Nuu-chah-nulth peoples, and by the Kwakwaka'wakw. Sometimes called "Indian potato," it was used especially by children, who peeled it and ate it raw. The common name, poque, is derived from its name in Kwakwala and related languages (Turner, 1975; Turner and Efrat, 1982). The thickened rootstock of another species, *B. rossica,* parasitic on alder and spruce, was occasionally cooked and eaten by the Tanaina Indians of Alaska, and was said to be a favorite food of bears (Kari, 1987).

Wood-Sorrel Family (Oxalidaceae)

The leaves of wood-sorrels (*Oxalis* spp.) contain oxalic acid, giving them a pleasant, sour taste, but should not be consumed in large quantities (see **WARNING** under western dock, *Rumex occidentalis* in Polygonaceae. p. 235). The leaves of at least one species were eaten raw by the Iroquois. The species was identified by Waugh (1916) as *O. corniculata,* an introduced weed, but likely *O. stricta,* a native weedy species, was also used. Called "sour plant," it was eaten raw with sumac sprouts and fruit (Parker, 1910; Waugh, 1916). Ojibwa people reportedly cooked the plants of *O. montana* with sugar and ate them as a dessert (Stowe, 1940). Smith (1933) reports that the leaves of the closely related *O. acetosella* were cooked as a dessert by the Forest Potawatomi. Kindscher (1987) notes that the leaves, flowers and bulbs of a more southerly species, *O. violaea,* were eaten raw or cooked by various Plains groups, including Pawnee, Omaha, Ponca and Kiowa. The Cowlitz, Quileute and Quinault of western Washington ate the leaves of Oregon wood-sorrel (O. *oregana)* (Gunther, 1973).

Pokeweed Family (Phytolaccaceae)

The young shoots of pokeweed *(Phytolacca americana)* were cooked and eaten by Iroquois and Malecite peoples (Parker, 1910; Speck and Dexter, 1952). However, pokeweed is now known to contain potent mitogens, compounds affecting immune-responsive lymphocyte cells in the body. Additionally, the berries are very poisonous. Therefore any use of pokeweed is discouraged.

Plantain Family (Plantaginaceae)

The succulent, salty-flavored leaves of both the narrow-leaved seaside plantain *(Plantago maritima)* and its broader-leaved relative, *P. macrocarpa,* were eaten by the Tanaina of Alaska and other Indigenous Alaskan groups. Known as "goosetongue," the plants, which were not distinguished one species from the other, were harvested in early summer, and the tender young leaves eaten raw or boiled as greens. They were often mixed with marine mammal or fish grease, and today, are jarred for winter use. However, the use of these plants is not necessarily long-standing. There is no

Tanaina name for them, and some say their use was learned from the Russian traders and "settlers" of the region (Heller, 1976; Kari, 1987).

Knotweed Family (Polygonaceae)

Many of the plants in this family contain oxalic acid, giving them a pleasantly sour, rhubarb-like flavor (but see **WARNING**, under western dock, *Rumex occidentalis).* Several species were used as food, especially by northern peoples. The following table (4-10) lists the various edible species used by Indigenous Peoples, with three, more intensively used species described in detail.

Alpine Knotweed, or "Wild Rhubarb" *(Polygonum phytolaccaefolium;* syn. *P. alaskanum,* and *P. alpinum)*

Description: Leafy herbaceous perennial with erect, jointed stems up to 1.8 m (6 ft) tall. The leaves, up to 20 cm (8 in.) long, are alternate, narrowly oval, tapering at the end to a point, and sheathing at the base above the swollen joints on the stems. The margins are smooth or wavy, and the leaves smooth or hairy. The flowers are small, whitish or cream colored, in loose, many-flowered clusters at the tops of the stems.

Occurrence: Subalpine or alpine meadows, riverbanks, talus slopes, and rocky ridges of Alaska and the Yukon; also found in Montana, Idaho, Nevada and northern California; presumed to occur in the mountains of British Columbia.

Food Use: The stems and leaves of this plant, known to some as "rhubarb," have a tart flavor, and were used as a green by northern peoples (cf. Porsild, 1937). The Vanta Kutchin of the Yukon were said to pick the fleshy stems by the bundle ("*Polygonum,"* probably this species), toast them over a fire, peel them, and eat them in spring. Sometimes they were fried in caribou fat (Leechman, 1954). Kari (1987) reports that the Indians of the Upper Yukon River make a thick pudding of flour, sugar and water and add to it the chopped leaves and stems of the young plants. The Inupiaq Eskimo of Alaska pick the leaves and stalks of the young, pre-flowering plants and eat them fresh, dipped in seal oil or with meat or fish. Traditionally they were boiled and stored in a barrel, kept very cold or frozen, alone or mixed with other greens, and the stalks eaten as rhubarb, or made into juice. They are collected in early summer, peeled, cut up and stewed. Often they are eaten with fish eggs and livers, or with fish (Heller, 1976; Jones, 1983). The Lime Village

Table 4-10. Members of the Knotweed Family (Polygonaceae) Used as Food by Indigenous Peoples of Canada and Neighboring Areas. (Introduced species marked with an asterisk *.)

Species	Notes	References
Umbrella-plant *(Eriogonum umbellatum* var. *subalpinum)*	Leaves boiled for beverage tea by Blackfoot; known to some as Kutenai tea; root of *E. flavum* said to cause nosebleeds if too much eaten; other spp. eaten by Southwestern American peoples	Yanovsky, 1936; Johnston, 1987
Mountain-sorrel *(Oxyria digyna; see Figure 40, page 223)*	Leaves apparently eaten raw in summer by Fisherman Lake Slave; Stoney of Alberta cooked them with sugar; Inuit and Eskimo peoples of Canada and Alaska ate the leaves and stems raw, cooked or "soured," with seal oil	Sinclair, 1953; Porsild, 1964; Heller, 1976 Lamont, 1977; Scott-Brown, 1977; Jones 1983; Kuhnlein, unpubl. notes, 1985
Mountain Bistort *(Polygonum bistorta)*	Young leaves eaten raw, preserved in seal oil; or soured," by Alaskan Eskimos; often mixed with other	Porsild, 1937 Heller, 1976; Jones, 1983; Kari, 1987

	leaves; roots also boiled, mixed with seal oil or added to stews; roots eaten raw by some Tanaina of Alaska; chewed to clean the teeth after eating fish eggs; also occurs in Canada and probably used by Inuit	
Smokeweed Bistort *(P. bistortoides)*	Roots used in soups and stews by Blackfoot	Johnston, 1987
Smartweed, or waterpepper *(P. hydropiper)**	Plant used as seasoning by Iroquois, (probably introduced)	Rousseau, 1945
Alpine Knotweed *(P. phytolaccaefolium)*	Greens of young plants eaten by northern peoples (see detailed discussion)	
Alpine Bistort *(P. viviparum)*	Rhizomes eaten by northern peoples; see Food Use of Related Species under alpine knotweed	
Rhubarb *(Rheum rhaponticum)**	Commonly cultivated; also found as garden escape; stalks eaten raw or cooked, jammed, and preserved by Coast Tsimshian, Déné, Cree and many other Indigenous Peoples (**WARNING**: leaves poisonous)	Honigmann, 1961; Turner, 1975, 1978; Porsild and Cody, 1980; Port Simpson Curriculum Committee, 1983
Sheep Sorrel *(Rumex acetosella)**	Sour-tasting leaves eaten raw by Iroquois, Stoney, Straits, Nuu-chah-nulth, Nuxalk, Lillooet, Nlaka'pamux, Okanagan-Colville, Halkomelem and Chehalis of Washington; occasionally cooked; enjoyed by children; some strains may be indigenous	Waugh, 1916; Gunther, 1973; Turner, 1975, 1978; Scott-Brown, 1977; Turner and Efrat, 1982; Galloway, 1982
Sourdock *(R. arcticus)*	Leaves widely used by Alaska Eskimo; see detailed discussion	
Curled Dock *(R. crispus)**	Young leaves cooked as greens by Iroquois	Parker, 1910; Waugh, 1916; Rousseau, 1945
Western Dock *(R. occidentalis)*	Young leaves and stems eaten as greens by British Columbia peoples; see detailed discussion	
Dock *(Rumex* sp.)	Shoots used by Algonquin like rhubarb in pies, and as a salt substitute when added to water	Black, 1980
Dock *(Rumex* sp.)	Green stalks of larger plants cooked and eaten by Chehalis of Washington	Gunther, 1973

Figure 39. Broad-leaved willow herb *(Epilobium latifolium)*

Figure 40. Mountain-sorrel *(Qxyria digyna)* on Baffin Island.

Tanaina of Alaska also boil and eat the stems and leaves. They consider the plant a relative of sourdock *(Rumex arcticus)* (Kari, 1987).

Food Use of Related Species: Alpine bistort *(P. viviparum)* has short, fleshy rhizomes which were eaten by northern peoples of Canada and Alaska (cf. Porsild, 1937, 1964; Sinclair, 1953). They are said to be starchy and slightly astringent, and, although edible raw, they are most palatable when cooked. Porsild (1964) reports that they were a choice delicacy of several Inuit tribes, who preserve them by freezing, or in seal oil. The Fisherman Lake Slave dug them in July and fried them for eating. The fresh rhizomes could be stored in underground caches, like berries (Lamont, 1977). The Lime Village Tanaina of Alaska ate the roots raw, and chewed them to clean the teeth after eating fish eggs (Kari, 1987). The rootstocks are also eaten by ptarmigan and lemmings (Porsild, 1964). (See also other *Polygonum* species, listed in preceding table.)

Sourdock *(Rumex arcticus)*

Description: Herbaceous perennial with erect, usually reddish stems, up to about 1 m (3 ft.) or more high. The basal leaves are large, up to 25 cm (10 in.) long, elongated or somewhat heart-shaped, with round-toothed margins. The stem leaves are smaller, alternate, and narrow. The flowers are green or tinged with purple, small, and numerous, crowded in dense, elongated, terminal clusters.

Occurrence: Moist tundra and shores of lakes and ponds of the Yukon and western Northwest Territories, extending into northeastern Manitoba; common in Alaska.

Food Use: The leaves and stems are an important green vegetable of northern peoples, particularly the Alaskan Eskimo, and probably also Canadian Inuit. The Inupiaq Eskimo gather the leaves, together with some of the stems, all summer, especially in early July when the leaves are largest and best. They are eaten raw, or boiled and eaten hot with seal oil or blubber or butter, or cold with seal oil and sugar. They are preserved in large quantities by boiling them and fermenting, or "souring" them with blubber. In this process, they are stored in a cool place in large (30-gallon) wooden barrels. Blueberries are often added as a flavoring and to hasten fermentation, which takes two to six weeks. The fermented greens are eaten as a dessert, with sugar or "blackberries" (crowberries) (Jones, 1983). Other Eskimo peoples, and the Tanaina Indians of Alaska, also prize this food. Often, the tender leaves are cooked and mixed with other greens, such as those of alpine knotweed. Sometimes the young leaves, finely chopped, simmered and cooled, are added to "Eskimo ice cream," a mixture of blubber, berries, and greens (Oswalt, 1957; Heller, 1976; Kari, 1987).

Food Use of Related Species: (See previous table, and following species.)

Western Dock, or "Indian Rhubarb" *(Rumex occidentalis)*

Description: Herbaceous pereimial growing from a deep taproot, with stout, erect stems up to 2 m (6.5 ft) and often tinged with red. The lower leaves are long-stalked and large, up to 30 cm (1 ft) long, narrowly oval to triangular, round-lobed at the base and tapering to a blunt point. The stem leaves become progressively smaller and narrower towards the upper part of the plant. The flowers are small, green, and numerous, crowded in coarse, terminal clusters, which often become reddish in the fruiting stage.

Occurrence: Moist ground and shores across the northern part of Canada from British Columbia to Newfoundland and Nova Scotia (not known from Prince Edward Island), north to southern Alaska and the Aleutians, and south in the United States to California, Texas and Maine.

Food Use: This plant is known to many Northwest Coast Indigenous Peoples as "Indian rhubarb," and, in the Haida language, at least, the name for rhubarb is the same as the name for this species. The stems and leaves of the young plants, from spring until June when flowering occurs, were, and still are, eaten, usually after cooking. They were steamed, boiled or fried and eaten alone or with meat or other foods. The Nuxalk (Bella Coola) cooked the leaves and mashed them with ooligan grease and ate them "like spinach" (Turner, 1975). The Kaigani Haida of Alaska chopped and boiled the leaves with "Indian rice" bulbs *(Fritillaria camschatcensis)* or in soups and stews. They generally cooked the stems separately (Norton, 1981). Within the last century or so, Haida people have made jam from the reddish stems, cooked with sugar and sometimes mixed with strawberries (Turner, 1975). Other peoples of British Columbia, as well as the Tlingit of Alaska areas also eat the stems and leaves of this species, and probably related*Rumex* species as well, including some of the introduced types (Turner, 1975; Jacobs and Jacobs, 1982). Chilcotin people, for example, eat the leaves of a dock-like plant, probably this species, fresh or boiled with sugar (Myers et al. unpubl. notes, 1988). Both the leaves and seeds of western dock were reportedly eaten by Montana Indians, and other species were utilized in the American Southwest (Blankinship, 1905; Yanovsky, 1936).

WARNING: *Rumex* and *Polygonum*species contain oxalate salts and oxalic acid, which gives them a tart taste. They should not be eaten in large quantities, however, because the oxalates may

interfere with calcium metabolism in the body, especially in a calcium-poor diet. Rhubarb stalks also contain oxalates and should not be eaten in quantity. Rhubarb leaves contain

oxalates and anthraquinone glycosides, and are very poisonous and possibly fatal if eaten (Turner and Szczawinski, 1991).

Purslane Family (Portulacaceae)

Spring-Beauty *(Claytonia caroliniana; see Figure 41, page 229 ;*including vars. *lanceolata* and *tuberosa,* often considered as separate species, C.*lanceolata* and C.*tuberosa)*

Description: Herbaceous perennial up to 15 cm (6 in.) tall, growing from a fleshy, globular corm which may be walnut-sized, but is usually smaller. The corm is brown-skiimed and white inside. Each corm produces one to several basal leaves, which usually die back by flowering time. About midpoint on the flower stems is borne an opposite pair of lance-shaped to oval, pointed leaves. In one variety, var.*carolinana,*these are distinctly stalked, whereas in the other two, listed above, they are stalkless. The flowers are borne in loose, terminal clusters of 3 to 20. Each flower, up to 1 cm (0.4 in.) across, has two broad sepals and five petals, which are white to pink, or white with pink veins. The seeds are small, black and shiny.

Occurrence: Rich woods, thickets, and moist slopes and subalpine meadows, from British Columbia to Newfoundland, north to central Alaska and the Yukon, and south in the United States to southern California and New Mexico in the West, and to Tennessee and North Carolina in the East. Var. *carolinana*is found in Canada from Ontario to Newfoundland, var.*lanceolata* from British Columbia to southwestern Saskatchewan, and var.*tuberosa*from northern British Columbia to west central Yukon and central Alaska.

Food Use: The fleshy, succulent corms of spring-beauty, often called "Indian potato," "wild potato," or "mountain potato," were an important "root vegetable" for many Indigenous Peoples of Canada and neighboring areas. They are still used today, at least in the interior of British Columbia, and in some areas are regarded as one of the most important traditional foods. The corms of var.*tuberosa*were sliced and fried by the Fisherman Lake Slave (Lamont, 1977), and were roasted or added to stews by Eskimo peoples of Alaska, who also ate the basal leaves, raw or cooked (Heller, 1976).

The most extensive food use, however, seems to be in the southern and central interior of British Columbia. In the territory of the Chilcotin people, there is an entire mountain range called the Potato Mountains, after this plant (usually known as *Claytonia lanceolata*in western Canada), where people have dug the corms over many generations. The Nlaka'pamux and neighboring groups used to harvest large quantities at Botanic Valley, near Lytton.These peoples and the Carrier, Upper Lillooet, Shuswap, Okanagan-Colville and Kootenay all used the corms extensively (Turner, 1978). They were also eaten fresh or roasted by the Blackfoot and Flathead peoples of Alberta and Montana (Blankinship, 1905; Hart, 1976). The corms were usually dug from late May to late June, during or inmiediately after flowering. They could also be dug later in summer or fall, but since the stems die down quickly after flowering, the corms are sometimes difficult to locate later in the season. The largest corms are said to come from plants bearing several stems. Some Okanagan-Colville used to have a "First Roots" ceremony for these corms, around the first of June (Turner et al., 1980).

During the root-digging season, entire families and sometimes small groups of families often camped for two or more weeks in the subalpine meadow areas to dig these corms, and the bulbs of yellow avalanche lily *(Erythronium grandiflorum).* Women and children usually dug the corms, prying them up with a pointed, T-shaped digging stick made from a mule deer antler, or from saskatoon (serviceberry) or some other hard wood, or, recently, from the curved, iron tyne of an old-fashioned horse-drawn rake, fitted with a wooden crosspiece for a handle. Often, the corms were sought from the caches of small rodents. Each family might obtain two or more large sacks (each about 10-kg size) of the corms to last them over the winter.

The corms could be stored fresh in underground caches, cooked for immediate consumption, or cooked and dried for winter, either singly or in long strings. If there were large quantities, they were pit-cooked for a short time. Long-term pit-cooking, such as was required for yellow avalanche lily bulbs, was not needed for these corms, since they are apparently easily digested even when raw. Smaller quantities of the corms, especially recently, are boiled or steamed like potatoes. Sometimes, the corms were kept fresh until the saskatoon berries were ripe, then cooked and mixed with mashed saskatoons and dried in cakes for later use. Sometimes the cooked corms were flattened with the hand before being dried; the drying process was said to take about five days. Before use, the dried corms were simply boiled, or might be soaked for a short time.

The dried corms were formerly an important trading item. Since the introduction of pack-horses, the job of carrying the sacks of corms from the digging sites to the permanent winter homes has been much easier (Turner, 1978; Turner et al., 1980; Myers et al. unpubl. notes, 1988; Turner et al. un-publ. notes, 1987; Turner et al., 1990).

Food Use of Related Species: The corms of the related C.*megarhiza* (syn. C.*acutifolia)* were gathered by the Wales area Eskimo of Alaska and eaten fresh, raw or cooked, usually with seal oil (Heller, 1976). The corms of another species, C.*virginica* were eaten by Iroquois and Algonquin peoples (Waugh, 1916; Black, 1980). The young leaves of this species are also known to be edible (Kindscher, 1987). The young, tender leaves of miner's-lettuce (C.*perfoliata;* syn.*Montia)*and Siberian miner's-lettuce, or Siberian sprijig-beauty *(Claytonia sibirica;*syn.*Montia)* are edible, but were apparently not a traditional food of Indigenous Peoples of British Columbia and Alaska. Some people have eaten them recently, however (Heller, 1976; Galloway, 1982; Turner et al., 1990). Purslane *(Portulaca oleracea),* long known as a Eurasian weed, but now suggested to have a long-standing history in North America, was cooked and eaten as a green vegetable by the Iroquois (Waugh, 1916).

Bitterroot *(Lewisia rediviva; see Figure 42, page 229)*

Description: A low herbaceous perermial arising from a stout, branching, fleshy taproot, which is gray-skinned with a white inner core which may turn pink on exposure to the air. The leaves are small, narrow and fleshy, borne in a dense cluster at the surface of the ground and usually withering by flowering time. The showy, pink (or whitish) flowers, up to 5 or 6 per plant, grow on short, leafless stalks. When fully out, they may grow up to 4 cm (1.6 in.) across, with up to 18 narrow, elongated petals, and numerous stamens. Strikingly beautiful, they close at night and reopen with the morning sun. The seeds, several per flower, are black and shiny.

Occurrence: Dry, sandy or gravelly sagebrush plains and slopes at low to moderate elevations in southern British Columbia, south in the United States to California and Colorado.

Food Use: The thick, fleshy roots were an important primary food for Interior peoples of the driest areas of British Columbia, including the Upper Nlaka'pamux, southern Shuswap, Okanagan-Colville, and southern Kootenay. Lower Nlaka'pamux, Lillooet, northern Shuswap and northern Kootenay peoples obtained them through trade (Turner, 1978). Around the turn of the century, ten bundles of bitterroot were said to be equivalent in trade to one large, dressed buckskin (Turner et al., 1990).

The roots were dug in spring, usually from April to early May, before the plants came into bloom. Certain areas, especially upland plains, were said to produce larger, better-tasting roots than others. Okanagan-Colville people formerly held a "First Roots" ceremony each year for bitterroot. The roots were pried out with a digging stick, usually a hard stick of saskatoon or similar wood, or more recently, a piece of iron tyne, with a sharply pointed, curved end and a cross-piece for a handle. Once dug, the roots were usually peeled promptly, and the small red "heart" (embryo of the next year's growth) was removed to reduce their bitter flavor. The roots could be steamed, boiled, pit-cooked and eaten fresh, but large quantities were dried

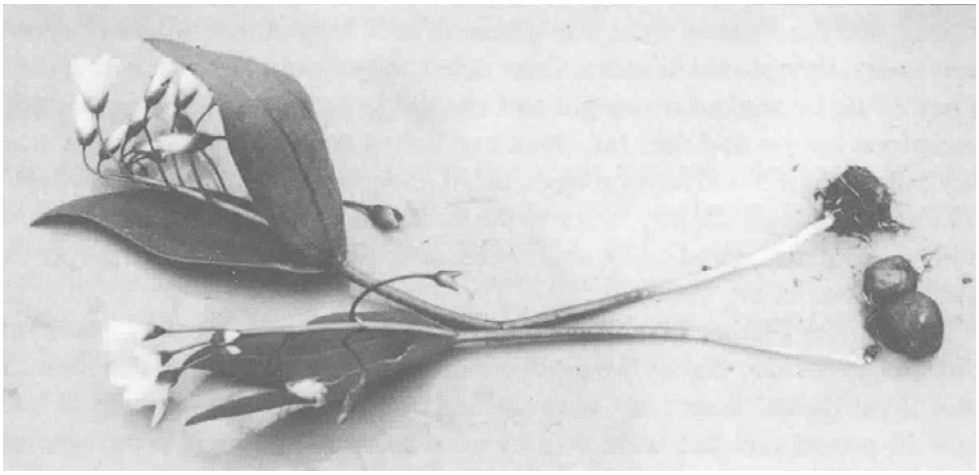
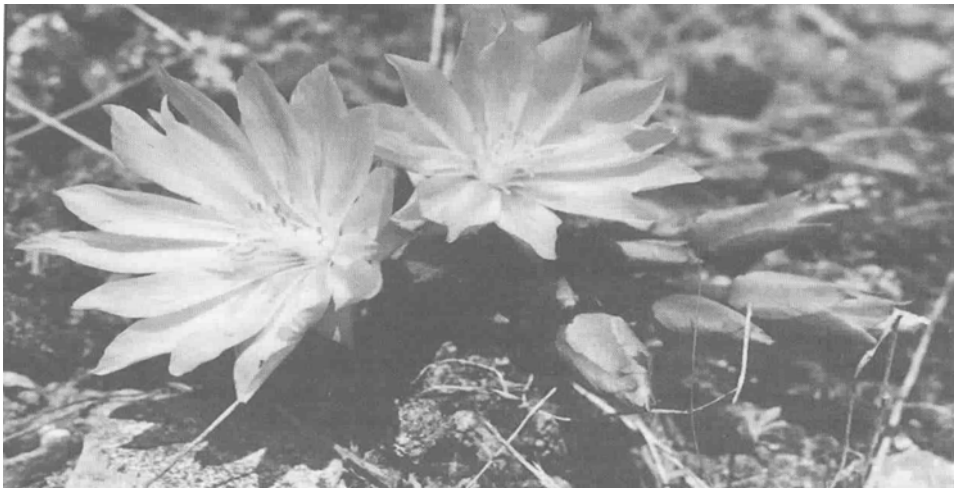


Figure 41 (above). Spring beauty *(Claytonia caroliniana* var. *lanceolata).*

Figure 42 (below). Bitterroot *(Lewisia rediviva),* from Okanagan-Colville territory in south central British Columbia.



for winter use or trade *(see Figure 43, page 233).*Larger roots were generally strung, and the smaller ones, and pieces of root were simply spread out on a mat to dry, then stored in sacks. Once dried, they would keep for a long time. They could be soaked overnight and cooked in soups, boiled together with saskatoon berries and deer fat, black tree lichen and fresh salmon eggs, tiger lily bulbs and ripened salmon eggs, dried gooseberries or other food combinations. Although slightly bitter to the taste, they were greatly appreciated, and were often served on special occasions (Turner, 1978; Turner et al., 1980; Turner et al., 1990).

Among the Flathead and Kootenay and other tribes of western Montana, bitterroot was also one of the most important edible roots, and was honored in a "First Roots" ceremony, as described by Hart (1976). Formerly, at least two 50-poimd sackfiils were dug by each woman—enough to sustain two people through the winter (Hart, 1976).

Some people still use bitterroot today, although the roots are difficult to obtain. Recent recipes include cooking them in puddings and fruitcakes. Bitterroot is considered a rare wildflower in many areas. There is little evidence that harvesting by Indigenous People has contributed to its rare status. Rather, overgrazing and trampling by range livestock, and habitat destruction from agricultural encroachment seem to have caused a major impact on bitterroot populations. Nevertheless, since digging the roots destroys the entire plant, great care must be taken if it is used to ensure its continued existence. Programs to maintain and enhance its habitat are recommended.

Food Use of Related Species: The roots of the related Columbia bitterroot *(Lewisia columbiana)* and pygmy bitterroot (L.*pygmaea)* were reportedly eaten by some Nlaka'pamux people (Steedman, 1930; Turner et al., 1990). Johnston (1987) states that*L. pygmaea*roots were dug by the Blackfoot as soon as the flower buds were visible in spring, then peeled and steamed or dried, to be boiled later. Both of these are rare species which should not be harvested at present.

Primrose Family (Primulaceae)

In this family, sea-milkwort *(Glaux maritima),* a herbaceous perennial of saline coastal marshes and shores, and alkaline regions of the interior across Canada, has fleshy rhizomes which were formerly eaten by Indigenous Peoples of the central British Columbia coast, including Kwakwaka'wakw, Sechelt and Comox. The rhizomes were dug in the fall, or the plants sometimes marked, then harvested the following spring before they had sprouted. They were boiled in a kettle for a long time, then eaten with ooligan grease.They were said to make one feel sleepy and were usually eaten in the evening before bed. Eating too many made one feel sick (Boas, 1921; Turner, 1975).

Buttercup Family (Ranunculaceae)

Only a few plants of this family were eaten, and they are listed in the following table (4-11). [**WARNING:** Most members of the buttercup family contain an irritating compound, protoanemonin, in their fresh leaves, stems, roots, flowers and seeds (cf. Turner, 1984). Hence, all must be cooked before eating. Several, including monkshood *(Aconitum* spp.), baneberry *(Actaea* spp.), and larkspur or delphinium *(Delphinium*spp.), contain other, seriously toxic compounds and can be fatal if eaten.

Cascara Family (Rhamnaceae)

The leaves of New Jersey tea *(Ceanothus americanus)* were used to make a beverage tea by many indigenous groups of the eastern United States, but their use has apparently not been reported for Canadian groups (cf. Kindscher, 1987). In British Columbia, buckbrush *(Ceanothus sanguineus)* was used by the Kootenay, and probably other groups as well, to make a beverage tea, and it and snowbrush (C.*velutinus)* were used for medicinal teas. The branches of these species are considered good deer food (Turner, 1978). The berries of cascara *(Rhamnus purshiana),* whose bark is a well-known laxative medicine, were eaten sparingly by children of some Northwest Coast groups, such as Sechelt and Lower Lillooet, and the Makah of Washington, but too many are said to cause diarrhea. In most cases, the berries are not considered edible for people, although bears and gamebirds are said to like them (Gunther, 1973; R. Bouchard pers. conun., 1977; Turner and Efrat, 1982; Turner et al., 1983; Turner et al. unpubl. notes, 1987; Turner et al., 1990).

Rose Family (Rosaceae)

Saskatoon, Saskatoon-berry or Serviceberry*(Amelanchier alnifolia; see Figure 44, page 233)*

Description: Deciduous, branching shrub, highly variable in size, form and leaf and fruit characteristics. Ranging from less than 1 m (3 ft) to about 7 m (23 ft) high, this shrub has reddish or grayish bark and short-stalked, round to broadly elliptic blue-green leaves which are rounded at the top and usually toothed around the upper part and smooth around the lower part of the margin. The flowers, which bloom from March to June, depending on the locality,

Table 4-11. Members of the Buttercup Family *(Ranunculaceae)* Used as Food by Indigenous Peoples of Canada and Neighboring Areas.

Species	Notes	References
Anemone *(Anemone narcissiflora)*	Leaves "soured" and beaten with oil to make "Eskimo ice cream" (see **WARNING**)	Anderson, 1939
Marsh-marigold *(Caltha palustris)*	Leaves and young plants cooked as greens; sometimes with meat or fat, by Iroquois, Ojibwa, Abenaki; leaves eaten fresh and roots cooked and eaten by Eskimo of Alaska (see **WARNING**)	Parker, 1910; Waugh, 1916; Rousseau, 1947; Smith, 1932; Gil more, 1933; Anderson, 1939; Heller, 1976
Lapland Buttercup *(Ranunculus lapponicus)*	Young leaves and stems cooked with duck or fish by Western Eskimo of Alaska; soaked in water and eaten by starving people before eating other foods; eaten raw on Nunivak Island (but see **WARNING**)	Lantis, 1946; Oswalt, 1957
Pallas Buttercup *(R. pallasii)*	Young, succulent shoots cooked and eaten in spring and fall by people of lower Kuskokwin Valley, Alaska; young rootstocks also eaten (see **WARNING**)	Anderson, 1939; Heller, 1976
Western Meadow-rue *(Thalictrum occidentale)*	Fruit used by Blackfoot to spice penmiican, dried meat and broths (see **WARNING**)	Hellson and Gadd, 1974
Hairy Meadow-rue *(T. pubescens)*	Montagnais used to cut up plant to flavor cooking salmon (see **WARNING**)	Speck, 1917

Figure 43. Peeled roots of bitterroot are soaked to whiten them before they are dried.

Figure 44. Saskatoon berry, or serviceberry *(Amelanchier alnifolia).*

are white and showy, borne in dense, elongated clusters which often cover the bushes. The petals, five per flower, range from 1 cm to 2.5 cm (0.4 -1 in.) long, depending on the variety. The "berries" (technically, pomes) are reddish purple to dark purple, and often quite seedy. They vary considerably in size, taste and texture, but are generally sweet and flavorful. Botanists recognize about four varieties of this species in various parts of Canada, but some Indigenous Peoples distinguish up to eight different types.

Occurrence: Open, well drained woods, thickets and hillsides of western and central Canada, from British Columbia to Ontario and western Quebec, southeast James Bay, extending north to Alaska and the Yukon and Northwest Territories, and south in the United States to California, New Mexico and Iowa.

Food Use: Saskatoon berries were, and still are, without doubt, the most important fruit for Indigenous People of the Interior of British Columbia and the Prairie Provinces and in the western and north central United States, where they are known as serviceberries. Large quantities of them were harvested and dried for winter use, and they were served in dozens of different ways. The Canadian name for this fruit, saskatoon, was derived from its Cree name,*misaskwatomind (h) tik* (Leighton, 1985). The name for the city of Saskatoon is likewise derived from this term; the berries are abundant around this city, and when the townsite was being laid out, local Indian people used to gather them in quantity and walk through the survey camps calling out what sounded like "Saskatoons, Saskatoons" (Turner and Szczawinski, 1979).

The berries, which ripen from early July through August, depending on the elevation and latitude, were used by virtually all Indigenous groups of central and western Canada, including Cree, Slave, Chipewyan, Stoney (As-siniboin), Blackfoot, and all of the peoples of British Columbia, as well as those of southern Alaska and all of the western and north central States (Gun-ther, 1973; Turner, 1975, 1978; Heller, 1976; Lamont, 1977; Scott-Brown, 1977; 'Ksan, People of, 1980; Turner and Efrat, 1982; Galloway, 1982; Maries, 1984; Leighton, 1985; Kari, 1987; Kindscher, 1987; Myers et al. un-publ. notes, 1987; Turner et al., 1990).

The fruits were eaten fresh, alone or with oil. Often they were mixed with other, less palatable berries as a sweetener. For example, some British Columbia peoples used them to sweeten soapberry whip. The Lillooet of British Columbia mixed them with the bitter fruits of red-osier dogwood. Most, but not all, groups also dried saskatoons, although the Fisherman Lake Slave apparently did not (Lamont, 1977). Drying was accomplished by spreading the berries out on mats in the sun to dry like raisins, or by cooking, mashing, and spreading the resulting jam-like mixture on leaves or grass set on racks to dry as cakes or loaves. Sometimes the berries were smoke-dried

over a slow fire, and some people strained off the juice from the drying berries and drank it, used it to marinate other foods, or simply poured it over the berries as they dried (Turner et al. unpubl. notes, 1987). The Gitksan of British Columbia sometimes added extra fresh berries at the end of the drying process, or mixed in crushed bimchberries *(Cornus canadensis)* to prevent the berry cakes from cracking when rolled up for storage ('Ksan, People of, 1980). Dried saskatoons, in sacks or cakes, were formerly an important trade item, for example, from the interior of British Columbia coastwards, where the berries are not as tasty or plentiful (Galloway, 1982; Turner, 1975, 1978). They were also traded widely to early explorers and fur traders (Kindscher, 1987; Johnston, 1970; Hellson and Gadd, 1974).

Saskatoons could be eaten in their dried state as a snack, reconstituted by soaking in water, or cooked in various dishes. The Blackfoot used large quantities of them in soups and stews. Assiniboin people harvested the berries at the end of the season when prairie turnip*(Psoralen esculenta)*roots were dug, then mixed together the fresh berries with dried prairie turnips, dried the mixture and stored it for winter (Kindscher, 1987). The Nlaka'pamux and Okanagan-Colville, for example, cooked them with salmon, salmon-heads or salmon eggs, deer blood and meat, tiger lily bulbs, bitterroot, black tree lichen, and other types of berries, such as mountain blueberries (Turner et al., 1980; Turner et al. unpubl. notes, 1987; Turner et al., 1990).

Pemmican, a well-known, energy-rich food for hunters and travellers, made by the Blackfoot and other Plains peoples, consisted of pounded, dried saskatoons mixed with animal fat and dried meat. The Blackfoot also made "sausages" from the berries and fat stuffed into a length of intestine and boiled (Johnston, 1970; Hellson and Gadd, 1974; Scott-Brown, 1977). Blackfoot people make a special ceremonial soup from blood, with meat, saskatoon berries and, recently, dried apricots, canned peaches and other fruit. This is eaten after the all-night smoke at the Sun Dance ceremonies (K. Eaglespeakerpers. comm. 1990). The Chipewyanof northem Saskatchewan sometimes mixed the berries with dried, powdered caribou meat and lard to make pemmican (Maries, 1984). A comparable mixture was made by the Interior Salish peoples of British Columbia from the dried berries pounded together with salmon oil and dried, powdered sockeye salmon, or cured salmon eggs (Turner et al. unpubl. notes, 1987).

Other parts of the shrub had some food applications as well. The Woods Cree of east-central Saskatchewan boiled peeled saskatoon sticks in sturgeon oil for about 10 minutes to keep the oil fresh during storage (Leighton, 1985). The Blackfoot crushed the leaves, mixed them with bison blood, then dried the mixture and used it to make a rich broth in winter. Some Nlaka'pamux people made a beverage tea from the twigs. Saskatoons are still an important fruit in many parts of Canada and the United States. Some Indigenous People still dry them, but more often they are canned or frozen. They are used to make syrups, puddings, pies and muffins. Saskatoons are being grown for conunercial production in central and north central Alberta in particular, for saskatoon syrup and wine (Johnston, 1987).

Food Use of Related Species: Fourteen other*Amelanchier*species are found in various parts of Canada, almost all restricted in distribution to Ontario and eastwards. (One species,*A. mucronata,*also occurs in southeast Manitoba). All of these have edible fruits, and would be expected to have been eaten within their ranges. Known variously as Juneberry, serviceberry, shadbush, and chuckley pear, fruits*of Amelanchier*species were eaten by Algonquin, Creek, Abenaki, Iroquois and Ojibwa peoples of eastern Canada, and undoubtedly others as well (Parker, 1910; Waugh, 1916; Rousseau, 1947; Black, 1980). The Iroquois made the dried berries, with sugar and water, into a liquor, and also steeped the branches for tea, but the species usfed in these cases is not mentioned (Parker, 1910; Waugh, 1916). The fresh or preserved fruits of high serviceberry *(Amelanchier arborea)* were eaten by the Iroquois, Ojibwa, and other peoples (Parker, 1910; Waugh, 1916; Densmore, 1928; Reagan, 1928; Gilmore, 1933), and the Ojibwa also used the fruits of smooth Juneberry *(Amelanchier laevis)* (Smith, 1932), and the Forest Potawatomi, of another species *(A. spicata)* (Smith, 1933).

Black Hawthorn, or Black Thomberry *(Crataegus douglasii)*

Description: Large, deciduous shrub or small tree, with grayish bark and short, stout thorns, at most 2.5 cm (1 in.) long. The leaves are dark green and shiny, roughly oval or wedge-shaped, and coarsely toothed across the top. The white flowers are borne in flat-topped clusters, and the fruits, in drooping bunches, are purplish black, each containing 3 to 5 large nutlets.

Occurrence: Open, well drained woods and rocky slopes from British Columbia and Alberta to southwest Saskatchewan (possibly also Manitoba), and central Ontario, north to southern Alaska, and south to California and northern Michigan.

Food Use: The fruits of the hawthorns are edible, but most are somewhat insipid, dry and "seedy." Those of black hawthorn were eaten by some western Indigenous Peoples. The Nlaka'pamux, who ate them both fresh and dried, considered them to be a good "health food," for diarrhoea and general sickness (Turner et al., 1990). They were also eaten fresh or dried by the Haida, Coast Tsimshian, Nuu-chah-nulth, Kwakwaka'wakw, Nuxalk (Bella Coola), Straits, Halkomelem, Okanagan-Colville, Lillooet, Shuswap, Kootenay, Gitksan, Nishga and Blackfoot (Turner, 1978; Turner et al., 1980; 'Ksan, People of, 1980; Galloway, 1982; Johnston, 1987; Turner et al. un-publ. notes, 1987), but they were not highly regarded, and were often eaten only if no other berries were available. They were gathered in late July and early August, and through the fall, since they tend to remain on the bushes. They were often eaten with oily foods, such as salmon roe, salmon oil, ooligan grease, marmot fat or bear fat, to relieve some of their dryness (Turner, 1975). The Okanagan-Colville and Lillooet mashed them and dried them into thin, hard cakes, which were eaten as a snack, dipped into soup or boiled with deer fat and bone marrow. Sometimes they were dried loosely like raisins, or baked on slabs of wood over the fire. Another way of preparing them was to mix them with pounded, dried salmon bones and flesh. The dried berries were said not to keep well, and they have a reputation for causing a stomach ache or constipation if too many are eaten. Spitting out the seeds is recommended when eating these berries (Turner et al., 1980; Turner et al. unpubl. notes, 1987). The fruits are little used today, except for making jam and jelly (Turner, 1975, 1978; 'Ksan, People of, 1980; Turner et al., 1990). Other groups such as the Chilcotin, do not generally eat these fruits (Myers et al. unpubl. notes, 1988). Bears and other animals are said to like them.

Food Use of Related Species: There are 12 other species of hawthorn, or thomapple *(Crataegus*spp.) native to various parts of Canada. The fruits, or haws of various, unspecified types were reportedly eaten by Iroquois, Ojibwa, Algonquin, Abenaki, Micmac and Malecite peoples of eastern Canada (Parker, 1910; Waugh, 1916; Densmore, 1928; Smith, 1932; Adney, 1944; Rousseau, 1945, 1947; Speck and Dexter, 1951, 1952; Black, 1980). The Iroquois ate haws raw, or boiled them whole, cooked them in a sauce or baked them in ashes. They also dried and stored them for winter. The Ojibwa squeezed them raw into cakes, and dried them for winter. The berries of *Crataegus rotundifolia,* (including C.*chrysocarpa* and C.*columbiana)* were eaten fresh by the Blackfoot, but were said to cause stomach cramps (Hellson and Gadd, 1974) and by the Forest Potawatomi (Smith, 1933). They were also eaten sparingly by the Nlaka'pamux, Okanagan-Colville, Shuswap and Kootenay. They were picked in August and eaten fresh, or mashed and dried in cakes (Turner, 1978; Turner et al., 1980; Turner et al., 1990). The fruits of red haw (C.*mollis)* were eaten fresh or preserved by the Iroquois and Ojibwa, and the Iroquois, at least, also ate those of punctate hawthorn (C.*punctata)* (Waugh, 1916; Smith, 1932). The fruits of the introduced English hawthorn *(Crataegus oxyacantha;*or more probably C.*monogyna)*were apparently eaten occasionally by the Ojibwa (Reagan, 1928).

Wild Strawberries: Woodland Strawberry*(Fragaria vesca;*including var.*bracteata)*and Blueleaf Strawberry (F.*virginiana)*

Description: Both of these species are herbaceous perennials spreading by means of creeping stolons or runners, with 3-parted, coarsely toothed leaves, white, 5-petalled flowers, and sweet, juicy red fruits known to almost everyone for their fragrance and delicate taste. The leaves of *F. vesca* are bright yellow-green and usually very sparsely hairy on their upper surface. The terminal tooth of each leaflet usually projects well beyond the tips of the two adjacent teeth. The stalks of the flowers and fruit generally surpass the height of the leaves, and the berries are often elongated, with

the "seeds" (achenes) almost completely superficial on the flesh. In*F. virginiana,*the leaves are usually glaucous bluish-green and not at all hairy on their upper surface. In this species, the terminal tooth of each leaflet is usually shorter than the adjacent teeth. The flowers and*fniits are*borne on short stalks, often just at ground level, and the fruits are more globular, with the "seeds" set in shallow pits on the flesh of the receptacle.

Occurrence: Both these species grow in open woods and meadows across Canada from British Columbia to the Maritimes and Newfoundland. Blueleaf strawberry extends further north, into Alaska and Yukon, northwestern District of Mackenzie and Labrador, whereas varieties of woodland strawberry grow north to Great Slave Lake and eastern James Bay.

Food Use: Wild strawberries seem to be the universal fruit of children, and the most common way of eating them is to pick them and eat them right from the plant. Virtually all Indigenous Peoples, especially the children, of Canada enjoyed strawberries fresh, and occasionally they were picked in quantity and preserved for winter by drying. The Okanagan-Colville, for example, sometimes put them in birch-bark containers, allowed them to dry partially, then crushed them and formed them into cakes with saskatoon berries (Turner et al., 1980). They are early ripening, and can be picked from late May through July, depending on the elevation, latitude and species; blueleaf strawberry tends to be somewhat later ripening. In a good strawberry year, it is said one can smell the fragrance of strawberries on the air for long distances. Sometimes the two species (and the third, seaside strawberry, listed below) were distinguished with different names, but often, although they might be recognized as distinct types, they were named and used interchangeably. Some people, such as the Okanagan-Colville, considered blue-leaf strawberry to be sweeter. One or both species were used by the Micmac, Malecite, Iroquois, Huron, Ojibwa, Algonquin, Potawatomi, Cree, Slave, Chipewyan, Stoney (Assiniboin), Blackfoot, and all of the various British Columbia peoples (Parker, 1910; Waugh, 1916; Densmore, 1928; Reagan, 1928; Smith, 1932, 1933; Gilmore, 1933; Adney, 1944; Raymond, 1945; Rousseau, 1945; Speck and Dexter, 1951,1952; AUer, 1954; Tooker, 1964; Gunther, 1973; Turner, 1975, 1978; Scott-Brown, 1977; 'Ksan, People of, 1980; Black, 1980; Turner et al., 1980; Turner and Efrat, 1982; Leighton, 1985; Johnston, 1987; Turner et al, 1990).

Additionally, a beverage tea was made from the leaves by some groups, such as the Upriver Halkomelem and Sechelt of British Columbia (R. Bouchard pers. comm., 1977; Galloway, 1982), the Cowlitz of Washington (Gunther, 1973), the Blackfoot of Alberta and Montana (Johnston, 1987; Kindscher, 1987) and the Micmac of the Maritimes (Lacey, 1977), who also made juice from the berries (Stoddard, 1962). The Nlaka'pamux and Chil-cotin used the strawberry plants in their root-cooking pits, to flavor the food (Myers et al. unpubl. notes, 1988; Turner et al., 1990).

Food Use of Related Species: Seaside, or beach strawberry *(Fragaria chiloensis),* which has thick, deep green, shiny, leathery leaves, and flowers and fruits resembling those of F.*virginiana,*is found along the entire Pacific coast. Its fruits were harvested and eaten fresh, or occasionally preserved by peoples of Alaska and coastal British Columbia and Washington (Gunther, 1973; Heller, 1976; Norton, 1981; Jacobs and Jacobs, 1982; Turner and Efrat, 1982; Turner et al., 1983). They were greatly enjoyed, and are said by some people not to be as numerous today as they were in the past, especially on the Queen Charlotte Islands, where grazing by cattle and introduced deer has taken a toll. Tlingit people made a special sweet substance from well-ripened strawberries, presumably this species, since they are said to grow along the shore. The berries were allowed to set in a shallow dish until the juice separated out. This was saved and allowed to gel into a sticky, taffy-like mass, which was smoked and stored, to be used as a sweetener for other berries, and as an important trade item (Jacobs and Jacobs, 1982).

Silverweed, or Cinquefoil *(Potentilla anserine spp.),* and Pacific Silverweed *(P.anserina* ssp. *pacifica, see Figures 45 and 46, page 240)*; syn.*P. pacifica,*or*P. egedii,*especially ssp.*grandis)*

Description: Herbaceous peremiials with long, jointed stolons, and spreading to upright, pitmately compound basal leaves, usually 10-20 cm (4-8 in.) long. The leaflets are of two types: prominent, oval or elUptical, sharply toothed leaflets up to 3.5 cm (1.4 in.) long, and much smaller, leaflets interspersed with the larger ones. The flowers are solitary, borne at the stolon nodes, on

stalks up to 10 cm (4 in.) long. They are buttercup-like in appearance, with green, triangular sepals and bright, rounded, yellow petals. The mature achenes, borne on a rounded receptacle, are light brown and laterally flattened. A key difference between silverweed and Pacific silverweed is that

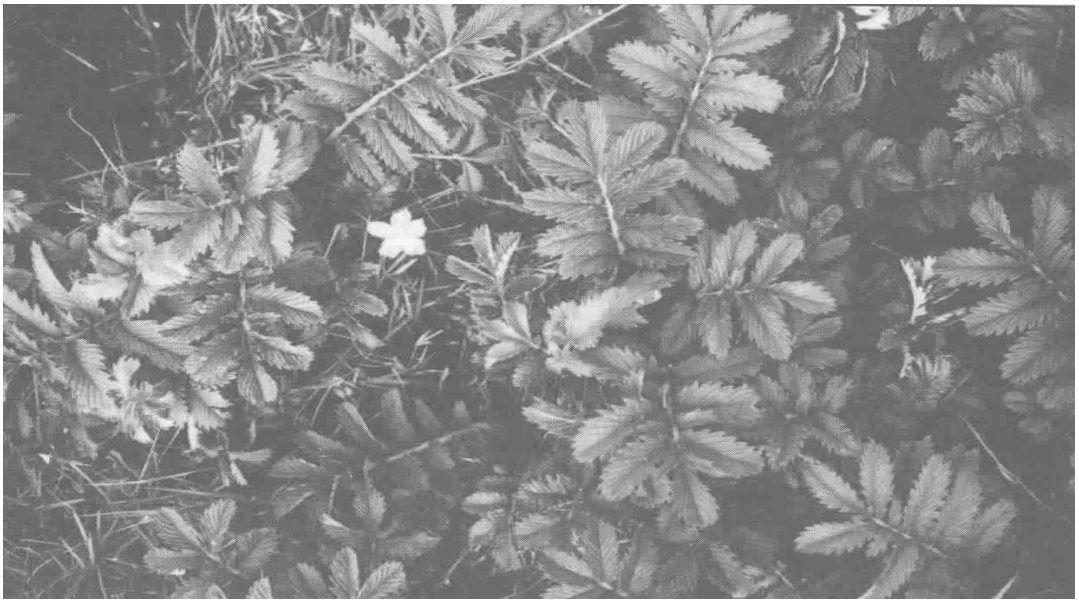


Figure 45 (above). Pacific silverweed *(Potentilla anserina*ssp. *pacifica).*

Figure 46 (below). Harvested roots of Pacific silverweed, ready for cooking.

the leaves—especially on the lower surface, leafstalks and runners of the former are usually densely covered with long, white, silky hairs, giving the plants a silvery appearance, whereas Pacific silverweed leaves are usually less hairy, with shorter hairs in the undersurface (but in some forms may be hairy and silvery all over), and the leafstalks and stolons usually lack hairs. The "seeds," or achenes of silverweed are corky or grooved along the back, whereas those of Pacific silverweed are smooth. Pacific silverweed has generally taller, more upright leaves, whereas those of silverweed are often shorter and spreading. Both types grow from clusters of long, brown-skiimed, edible roots. These plants are highly variable, and their taxonomic relationship is still subject to interpretation. Since the roots of both are similar in edibility, they are treated together here.

Occurrence: Silverweed *(P. anserina)* grows on gravelly or sandy shores and flats, particularly in alkaline habitats, and Pacific silverweed is found on coastal sands, salt and fresh-water marshes and river estuaries and flood plains. Both are transcontinental, with Pacific silverweed being generally more restricted to the Pacific Coast, but also occurring along the Arctic and Atlantic coastlines to Labrador and Newfoundland.

Food Use: The use of Pacific silverweed and silverweed roots as food by Indigenous Peoples of westem North America is discussed in detail by Turner and Kuhnlein (1982), and summaries of their use are provided by Turner (1975, 1978). The nutritional significance of these roots is documented by Kuhnlein et al. (1982). Detailed descriptions of their harvesting and use by the Kwakwaka'wakw (Southern Kwakiutl) is given in Boas (1921), and by the Ditidaht (Nitinaht) in Turner et al. (1983).

Especially in the Northwest Coast region. Pacific silverweed roots were a staple, and were dug in large quantities, cooked, and often dried for winter and as a trade item. The roots were generally harvested in the fall, after the leaves had started to die down for the winter, but could be harvested through the winter, and into the spring, before they could start to sprout, or even in the summer. Clumps of the roots were pried up with digging sticks, and the edible roots—long and sometimes spindle-shaped, with striated, brown skin— were broken off. In some areas, individuals or families owned prime patches of the plants, and maintained them on a sustained yield basis, passing them down from one generation to the next (Turner and Kuhnlein, 1982). The roots were almost always cooked, by steaming in a box, or, if large quantities were to be prepared, in an underground pit. They were often harvested and cooked together with springbank clover rhizomes *(Trifolium wormskioldii).* Often, the roots were tied in fist-sized bundles for cooking.

The cooked roots could be eaten immediately, usually with a dressing of oil or ooligan grease, as part of a family meal, or at special feasts. They were often eaten with duck, meat or fish. They were also dried, before or after cooking, and stored for winter (Turner and Efrat, 1982; Turner et al., 1983). The roots were also used by Indigenous Peoples of Alaska (Heller, 1976; Norton, 1981; Jacobs and Jacobs, 1982) and Washington (Gunther, 1973).

Silverweed roots, common around alkaline lakes and flats m the interior, were cooked in pits or steamed in baskets and eaten by most of the interior peoples of British Columbia (except in the northeastern part), as well as the Blackfoot of Alberta and Montana (Blankmship, 1905; Turner et al., 1980; Turner et al. unpubl. notes, 1937; Myers et al. unpubl. notes, 1988; Turner et al., 1990). They were also dried, and were sometimes traded from one area to another. Some people regarded them as a "dessert."

Roots of silverweed and Pacific silverweed are seldom harvested today, but those who still use them greatly appreciate them.

Food Use of Related Species: The leaves and stems of shrubby cinque foil *(Potentilla fruticosa)* are used for a beverage tea by the Fisherman Lake Slave (Lamont, 1977) and the Inland Tanaina of Alaska (Kari, 1987), and the leaves were mixed with dried meat as a spice and deodorant by the piackfoot (Hellson and Gadd, 1974). The Nlaka'pamux made a tea from the leaves or whole plants of sticky ciixquefoil *(Potentilla glandulosa)* (Turner et al., 1990).

Canada Plum *(Prunus nigra)*

Description: Small, straggling deciduous small tree up to 9 m (3 ft) high with thin, broadly oval, pointed leaves that are doubly toothed along the margins. The flowers grow along the branches on spur-like thorns or short twigs, just before or with the leaves. White, turning to pink, and very showy, they often occur in profusion. The fruits, which ripen in late summer, are orange-red on the outside, and about 2.5 cm (1 m.) long, with yellow, juicy, sour flesh and a single central pit.

Occurrence: Thickets and edges of woods in river valleys and limestone hillsides from southwestern Manitoba to Ontario, Quebec, Nova Scotia and New Brunswick, south in the United

States, to Iowa, Virginia and Georgia. Planted and established as a garden escape beyond its natural range.

Food Use: (see **WARNING** under choke cherry,*P. virginiana,*following.) The ripe fruits were eaten fresh or preserved by Indigenous Peoples throughout their range, including Iroquois, Huron, Ojibwa, Algonquin, Creek, Malecite and undoubedly, Micmac (Waugh, 1916; Smith, 1932; Ad-ney, 1944; Tooker, 1964; Black, 1980). Additionally, the Iroquois cut and pitted the dried plums, then added boiling water to make a coffee substitute (Waugh, 1916). According to Havard (1895), this species and*P. americana*(see below) were planted by New England and Canadian Indians, or may have been accidentally planted from seeds dropped around camping and village sites. The plums are said to be "rough and sharp to the taste" until touched by the first frost. Sometimes Huron women buried them in the ground to sweeten them before they were eaten (Tooker, 1964).

Food Use of Related Species: The ripe fruits of American plum *(Prunus americana)* were eaten in the same way as those of Canada plum by the Iroquois, Ojibwa, Micmac and Malecite (Parker, 1910; Reagan, 1928; Densmore, 1928; Speck and Dexter, 1951,1952; Aller, 1954), as well as by the Pawnee, Cheyenne and other American Plains groups. Sometimes they were cooked into a sauce, or dried whole or in cakes. Similar but with slightly larger, somewhat sweeter fruit and a more southerly distribution, they were also widely used by early explorers and settlers, and are the predecessor of several cultivated plum varieties (Kindscher, 1987).

Pin Cherry *(Prunus pensylvanica)*

Description: Straight-trunked deciduous tree with dark reddish-brown bark having conspicuous horizontal markings (lenticels). The leaves are lance-shaped, gradually tapering to a short tip, with small, uneven teeth along the margins. The flowers are small, white, and long-stalked, in clusters of 5 to 7 along the twigs. The cherries are small and bright red, with thin, sour flesh, ripening in late summer.

Occurrence: Woods, thickets, clearings and bums; its distribution is virtually transcontinental, from the interior of British Columbia to the Maritimes and Newfoundland, extending north into southeastern Yukon and the Northwest Territories and south in the United States to Montana, Colorado, Tennessee and North Carolina.

Food Use: (see **WARNING** under choke cherry,*P. virginiana,*following). Pin cherries, though small and tart, were widely used by Indigenous Peoples of Canada. They were eaten fresh from the trees, or were cooked, or dried and powdered for winter storage. Groups using them include the Ojibwa, Huron, Algonquin, Potawatomi, Cree, Chipewyan, Gitksan, Shuswap, and possibly other British Columbia groups (Hoffman, 1981; Reagan, 1928; Smith, 1932, 1933; Aller, 1954; Tooker, 1964; Turner, 1978; 'Ksan, People of, 1980; Black, 1980; Maries, 1984; Leighton, 1985). They were apparently seldom used by the Iroquois (Waugh, 1916; Rousseau, 1945). Today, the cherries are mostly made into jelly.

Food Use of Related Species: Bitter cherry *(Prunus emarginata)* is now sometimes considered a variety *of P. pensylvanica* (Scoggan, 1978). Its leaves are generally more rounded at the tips, and the cherries are usually too bitter to eat. However, some strains have palatable fruit, which was eaten on a casual basis by some Indigenous Peoples in British Columbia, including the Nlaka'pamux and Lillooet. The Upriver Halkomelem used the cherries for pectin in jam making (Turner, 1978; Galloway, 1982; Turner et al., 1990). They were not used by coastal peoples in British Columbia (Turner, 1975). Bears are said to relish them (Turner et al. unpubl. notes, 1987). Cherries of another species, sand cherry *(Prunus pumila),* were used fresh or dried by the Ojibwa, Potawatomi and Malecite (Smith, 1932,1933; Adney, 1944; Amason et al., 1981), as well as by the Dakota Sioux (Kindscher, 1987). Rum cherry, or black cherry *(Prunus serotina)* fruits were eaten fresh or dried by Iroquois, Huron, Ojibwa, Potawatomi and Malecite peoples. The dried fruits were sometimes powdered, and mixed with dried meat flour to make soup (Parker, 1910; Waugh, 1916; Densmore, 1928; Reagan, 1928; Smith, 1932, 1933; Adney, 1944; Rousseau, 1945; Tooker, 1964). The Ojibwa and Micmac also boiled cherry twigs and bark for tea (Densmore, 1932; Speck and

Dexter, 1951; Stoddard, 1962; Lacey, 1977) and the Ojibwa made whiskey from the ripe fruit, according to Smith (1932). Stoddard (1962) noted that "several wild cherries" provided bark and stems for tea for the Micmac, and that the sap of "wild cherry" was frequently added by them to sugar maple sap, but it imparted a bitter flavour. Indian-plum, or bird cherry, or June plum *(Oemleria cerasiformis;*syn.*Osmaronia cerasiformis)* is a shrub of southwestern British Columbia whose small, bluish fruits were eaten fresh, or occasionally cooked or dried, by some coastal peoples, but only in small quantities (Gunther, 1973; Turner, 1975; Galloway, 1982; Turner et al., 1983; Turner et al., 1990). (See also choke cherry, *P. virginiana* and accompanying **WARNING.**)

Choke Cherry *(Prunus virginiana)*

Description: Deciduous shrub or small tree with alternate, broadly oval, pointed, finely toothed leaves. The flowers are small and whitish, densely crowded in elongated, cylindrical clusters. The fruits are small cherries, varying from blackish to red, yellow or whitish, depending on the color form. At least three major varieties of choke cherry occur in Canada: var.*demissa*of British Columbia and Alberta; var.*melanocarpa*from British Columbia to Saskatchewan; and var.*virginiana,* which is transcontinental.

Occurrence: Open woods, thickets, rocky bluffs and shores across Canada from British Columbia to the Maritimes and Newfoundland, north to the southern Yukon and Northwest Territories, and south in the United States to California, New Mexico, Kansas and North Carolina.

Food Use: (see **WARNING,** following). Choke cherries are small, and before they are fully ripe, are tart and astringent. However, especially after the first frost, they can be sweet and flavorful, and are among the most widely used fruits of Canadian Indigenous Peoples. Ripening in late sunmier or fall, they can be picked in large quantities by harvesting the clusters of fruit. They were, and still are, eaten fresh, but more commonly were cooked or dried for storage, with the pits still intact. They could also be stored fresh, in a cool, shady place, for several months. Today choke cherries are used for juice, jelly and wine, and are often canned or frozen; some people still dry them. Groups using them include the Malecite, Iroquois, Ojibwa, Potawatomi, Algonquin, Cree, Chipewyan, Slave, Stoney (Assiniboin), Blackfoot, and all of the interior peoples of British Columbia (Parker, 1910; Waugh, 1916; Densmore, 1928; Reagan, 1928; Smith, 1932,1933; Adney, 1944; Rousseau, 1945; Lamont, 1977; Scott-Brown, 1977; Turner, 1978; Black, 1980; 'Ksan, People of, 1980; Turner et al., 1980; Amason et al., 1981; Galloway, 1982; Maries, 1984; Leighton, 1985; Myers et al. unpubl. notes, 1988; Turner et al., 1990).

Choke cherries were prepared in many different ways. The Iroquois made soup from them, powdered, dried and mixed with dried meat flour. The Ojibwa mashed them and dried them in cakes. The Chipewyan and Woods Cree of Saskatchewan also dried them in cakes, and sometimes add them to pemmican, cooked meat and stew (Maries, 1984; Leighton, 1985). The Woods Cree usually eat the fruits with grease, or sometimes fish eggs; they are said to cause constipation if eaten in quantity without grease (Leighton, 1985). Choke cherries were a staple of the Blackfoot, who ate them fresh and dried, and often combined them with buffalo meat and fat to make pemmican. They prepared them for storage in various ways; some were greased then dried in the sim, then stored in fawnskin bags. Others were crushed on a stone and mixed with backfat for pemmican or added to soups, and stews (Johnston, 1987).

In British Columbia, two color forms—red and black—are commonly recognized; many people prefer the red ones. The cherries were very important to the Nlaka'pamux, Lillooet, Shuswap, Okanagan-Colville, Chilcotin and Carrier. They dried them separately or mashed them, seeds and all, then placed them on racks to dry into thin cakes. The Okanagan-Colville also stored branches laden with choke cherries in a cool, dry place, then picked the cherries as required over the winter (Turner et al., 1980). The dried cherries were sometimes pounded together with salmon heads or tails, or salmon eggs, or were soaked in water, or boiled with salmon or meat.

Choke cherries were, and still are, widely used as food by neighboring American Indigenous Peoples including Blackfoot, Kootenay, Flathead, Hidatsa, Crow, Cheyeime, Arikara, Dakota Sioux,

and Omaha (Hart, 1976; Kindscher, 1987). The seeds have been found in archaeological remains in some midwestem sites (Kindscher, 1987). People today sometimes use a meat-grinder to pulverize the fruits (Hart, 1976).

Dried choke cherries have been a common and important trading item. The Blackfoot and others used the green sticks as skewers to flavor meat while cooking. People also made beverage and medicinal teas from both the bark and the fresh or dried cherries (Hoffman, 1891; Stoddard, 1962;Hellson and Gadd, 1974; Turner et al., 1980; Kindscher, 1987; Turner et al. unpubl. notes, 1987). Choke cherries are said to be a favorite food of bears. The range of this plant has been extended by people such as the Cree planting it around their homes (Black, 1978).

WARNING: The leaves, bark, and seed kernels of choke cherry, as well as of other species of*Prunus* and *Pyrus,*contain cyanide-producing glycosides. Eating large quantities of the fresh cherries with their pits in can cause nausea and. vomiting, and can even be fatal in some circumstances. Cooking and drying seems to dispel most of glycosides and hence, the seed kernels in dried, mashed choke cherries are apparently not a problem. To be safe, however, it is best to discard the seeds before eating the fruit (Turner and Szczawinski, 1991).

Food Use of Related Species: (see under pin cherry, *Prunus pensylvanica).*

Pacific Crabapple *(Pyrus fusca, see Figure 47, page 257;* syn.*Malus fusca)*

Description: Small to medium-sized deciduous apple-like tree with grayish bark, and simple, deep-green leaves which resemble those of orchard apple but usually have a prominent tooth or lobe along one or both edges. The flowers are white to pinkish, smaller than the blossoms of orchard apple, and in rounded clusters of 5 to 12. The long-stemmed, clustered fruits are small and elongated (about 1.5 cm, or 0.6 in. long), yellow to purplish when ripe, and very tart. After a frost they turn soft and brownish and become sweeter.

Occurrence: Moist woods, thickets, streambanks, lakeshores, swamps and bogs of coastal British Columbia, west of the Coast and Cascade mountain ranges, north to southern Alaska and south to California.

Food Use: The fruits were a highly important food for all of the Indigenous Peoples within the range of the plant (Gunther, 1973; Turner, 1975, 1978; Heller, 1976; 'Ksan, People of, 1980; Norton, 1981; Galloway, 1982; Jacobs and Jacobs, 1982; Turner and Efrat, 1982; Turner et al., 1983; Turner et al. unpubl. notes, 1987; Turner et al., 1990). They were generally picked from late summer until after the first frost in the fall. Formerly, large quantities were harvested, and some people still pick them every year. Often, they are picked while still slightly unripe, then kept until they ripen and become sweeter. These crabapples could be eaten fresh, but were formerly preserved by placing them, raw or cooked for a brief time, in bentwood cedar boxes or large watertight baskets and covering them with water, then with a layer of ooligan grease or some type of oil. Sometimes the boxes were lined with skunk-cabbage leaves, and some people buried them in deep holes over the winter.

The crabapples could also be mixed with other, sweeter fruits such as salal, although they were well liked by themselves, with a dressing of ooligan grease or some other type of fat. Today, they are preserved by jarring, canning, freezing, and making into jelly. They are a good source of pectin in jelly makmg (Heller, 1976; 'Ksan, People of, 1980; Norton, 1981; Port Simpson Curriculum Committee, 1983).

Crabapples mixed with ooligan grease were often served at potlatches and large feasts, especially among the peoples of the central and northern coast— including Kwakwaka'wakw, Nuxalk, Tsimshian, and Haida. Boxes of crabapples were a common item of trade and commerce; at the turn of the century, a single box of crabapples in water might cost about 10 pairs of Hudson's Bay blankets (about $ 10.00). They were also used as gifts for weddings and other important events,

and are frequently mentioned in the myths of Tsimshian, Haida and other peoples (Boas, 1921; Turner, 1975).

Willow grouse are said to be fond of wild crabapples, and were sometimes hunted at the same time the fruit was being harvested (R. Bouchard pers. conrni., 1977; Turner et al., 1983).

Food Use of Related Species: Wild crabapple *(Pyrus coronaria)*, a species of the deciduous forest region of southern Ontario, has round, tart apples which were fresh, raw, cooked or preserved for winter by the Iroquois, Huron, Ojibwa, and other Great Lakes peoples (Parker, 1910; Waugh, 1916; Reagan, 1928; Aller, 1954; Tooker, 1964). Speck and Dexter (1951, 1952) report that the Micmac and Malecite also ate them, but may have referred to introduced species. The fruits of black chokeberry *(Pyrus arbutifolia*var.*niger),* though very bitter, were used by the Abenaki and Forest Potawatomi (Rousseau, 1947; Smith, 1933).

The tart, bitter fruits of mountain-ash *(Sorbus* spp.) were eaten, though sparingly, by some Indigenous Peoples. The Algonquin and Cree ate the berries of 5.*americana,* according to Black (1980). The Ojibwa occasionally ate the fruit of *S. sambucifolia* (Reagan, 1928), and the fruit of *S. sitchensis* and possibly *S. scopulina*was eaten by the Nlaka'pamux, Lillooet, Halkomelem and some other groups of British Columbia. The berries were sometimes buried fresh for storage, and were mixed with other berries or used to marinate marmot and other meat, or to flavor salmon-head soup (Turner, 1978; Galloway, 1982; Turner et al., 1990). The Tlingit believed these fruits to be inedible (Jacobs and Jacobs, 1982).

Prickly Rose *(Rosa acicularis)*

Description: Erect deciduous shrub up to 1 m (3 ft) tall, the stems densely covered with straight, bristly prickles. The leaves are pinnately divided into 5-7 elliptical, coarsely and doubly toothed leaflets. The flowers are usually borne singly on short side branches. They are very attractive, with 5 pink petals and yellow centers with numerous anthers. The fruits, or hips, are reddish to purplish, and rounded to somewhat pear-shaped, with the greenish sepals persisting at the tips.

Occurrence: Open woods, thickets and rocky slopes from the interior of British Columbia to Quebec, north to Alaska, Yukon and southern Northwest Territories, and south in the United States to New Mexico and Vermont.

Food Use: Rose hips of various species were eaten by Indigenous Peoples across the country, although they were not generally used in quantity. Prickly rose was probably the most widely used species. It was used by the Slave, Vanta Kutchin *("Rosa,"*unspecified), Chipewyan, Cree, Blackfoot, Stoney (Assiniboin), Gitksan, Okanagan-Colville, Lillooet, Chilcotin, and various Eskimo and Indian peoples of Alaska (Ross, 1862; Leechman, 1954; Honigmann, 1961; Hellson and Gadd, 1974; Lamont, 1977; Scott-Brown, 1977; Turner, 1978; 'Ksan, People of, 1980; Turner et al., 1980; Jacobs and Jacobs, 1982; Jones, 1983; Maries, 1984; Leighton, 1985; Kari, 1987; Johnston, 1987; Turner et al. unpubl. notes, 1987,1988). The hips were gathered from late August through the winter in times of necessity. Their flavor is said to improve with exposure to frost. The outer rind could be eaten fresh, as a nibble, especially by children, but if the seeds of these and other rose hips are eaten, they cause irritation of the digestive tract, and are said to cause an "itchy bottom," due to the presence of tiny, sharp hairs on the seeds ('Ksan, People of, 1980; Maries, 1984; Leighton, 1985).

Rose hips were important as a starvation food, since they remain on the bushes during the winter. Furthermore, Slave people say they are "good for the stomach" of a starving person (Lamont, 1977; Turner et al., 1980; Maries, 1984; Johnston, 1987). The hips were boiled to make tea, and some Fisherman Lake Slave people made "brew" from them, at least in historic times. They also ate the petals fresh, during June, and may have used them for tea (Lamont, 1977). The Blackfoot mixed crushed rose hips with pemmi-can (Johnston, 1987). In Alaska, the Inupiaq Eskimo eat the rinds of rose hips fresh and also mash them with seal oil and water, sweeten them and eat them as a pudding. Formerly, they added them to chewed, dried salmon tails. The hips used to be frozen or dried for storage; now they are made into syrup, jam, jelly, marmalade and catsup, alone or mixed

with other fruits (Heller, 1976; Jones, 1983). The Tanaina Indians eat rose hips sparingly, but sometimes mix them with grease or fish eggs, or whip them with fat into "ice cream" (Kari, 1987).

The leaves of this and other rose species were used as a flavoring in pit-cooking by the Okanagan-Colville (Turner et al., 1980). The Lillooet used the leaves and twigs for tea (Turner et al. unpubl. notes, 1987). Bears are said to relish rose hips as a pre-hibemation food (Turner et al. unpubl. notes, 1988). This species and other wild roses should be considered as potential commercial crop plants; currently many rose hip products are imported from Europe to Canada (Turner, 1981).

Food Use of Related Species: The hips of many other rose species were eaten in ways similar to those of prickly rose. Arkansas rose, or prairie wild rose *(Rosa arkansana)* fruits were an emergency food for the Blackfoot, and other Plains groups including Hidatsa, Crow, Assiniboin, Pawnee, Omaha, Dakota, Ponca, Osage, and Cheyenne (Hellson and Gadd, 1974; Hart, 1976, 1981; Johnston, 1987; Kindscher, 1987). The small hips of dwarf wild rose, or baldhip rose *(Rosa gymnocarpd)* were eaten raw and dried for tea by some British Columbia groups, including Upriver Halkomelem, Sechelt, Nlaka'pamux, and Okanagan-Colville. The young leaves and stalks were also sometimes used for tea (Turner, 1975, 1978; Turner et al., 1980; Galloway, 1982; Turner et al. unpubl. notes, 1987; Turner et al., 1990).

Nootka rose *(Rosa nutkana)* hips were eaten, usually sparingly, by Northwest Coast and neighboring peoples of British Columbia, Alaska and Washington (Gunther, 1973; Turner, 1975; Heller, 1976; 'Ksan, People of, 1980; Norton, 1981; Turner and Efrat, 1982; Galloway, 1982; Port Simpson Curriculum Committee, 1983; Turner et al., 1990). Some also use them for tea, but this is apparently a recent practice. The Lillooet, Ditidaht (Nitinaht) and others also make a beverage tea from the leaves, twigs or petals (Turner et al., 1983, unpubl. notes, 1987). Swamp rose*(Rosa pisocarpa)*was also used in British Columbia, as was Wood's rose *(Rosa woodsii).* The former was used mainly by coastal peoples, the latter by interior peoples, as well as the Stoney (Assiniboin) of Alberta, both in ways similar to those for prickly rose and Nootka rose (cf. Turner, 1975,1978; Scott-Brown, 1977). The buds of Virginia rose *(Rosa virginiana)* were eaten occasionally by the Ojibwa (Reagan, 1928).

Plants of another genus in the rose family.*Spiraea,*were occasionally used for tea. For example, the Nlaka'pamux used the twigs and leaves of birch-leaved spiraea *(S. betulifolia)* and pyramid spiraea *(S. pyramidata)* (Turner et al., 1990), and the Abenaki used the leaves of meadow-sweet *(S. alba*var.*latifolia)* (Rousseau, 1947).

Wild Raspberries and Blackberries and their relatives (Rubus spp.)

There are at least 25 species of the genus*Rubus* indigenous to various parts of Canada. Most of these have edible berries of the raspberry or blackberry type, which were eaten by Indigenous Peoples. Additionally, several have succulent shoots that were used as springtime vegetables. All of these fruits were eaten fresh, and many were dried for winter use. The following table (4-12) lists the species reported to have been eaten. Additionally, the njost important, intensively used species are discussed in detail.

Cloudberry, Bakeapple, Mars Apple, Foxberry or "Salmonberry" (in the North)*(Rubus chamaemorus)*

Description: Short-stemmed herbaceous perennial growing from long, creeping rhizomes. The unbranched stems, up to 30 cm (1 ft) tall but usually shorter, bear 1-3 dark green, palmately lobed leaves, with usually 5 rounded, sharply toothed lobes. The white flowers are solitary and terminal, male and female on separate plants. The fruits are compoimd, like raspberries, but with fewer, larger drupelets. Before maturity, they are hard and reddish-tinged; when fully ripe they are softer and salmon-colored or yellow.

Occurrence: Peat bogs throughout Canada from British Columbia to the Maritimes and Newfoundland; largely northern in distribution, extending south in western British Columbia but often sterile. Also found in the Aleutians, Alaska, Greenland and northern Eurasia.

Food Use: The berries were, and still are, a staple of Indigenous Peoples of northern Canada. Ripening from July to September, they have a unique, somewhat sour flavor, but people who are used to the taste relish them. Groups who use them include the Labrador and other Inuit peoples, the Slave, Chipewyan, Tahltan, Kaska and other Den6 peoples, Haida, Coast Tsimshian, and Gitksan, and the Tanaina, Tlingit and Eskimo groups of Alaska (Sinclair, 1953; Porsild, 1964; Eidlitz, 1969; Turner, 1975, 1978; Lamont, 1977; 'Ksan, People of, 1980; Porsild and Cody, 1980; Norton, 1981; Jones, 1983; Maries, 1984; Leighton, 1985). It is interesting, however, that some Inuit peoples, notably the Caribou and Copper Inuit, seldom picked cloudberries although they were plentiful, according to one report (Eidlitz, 1969). For the Chipewyan of northern Saskatchewan, cloudberries are said to be the second most important fruit next to blueberries. They were eaten fresh or cooked with a little sugar, or canned, but are said to cause bad stomach cramps if too many are eaten on an empty stomach.

The Haida and Tsimshian picked cloudberries in mid-summer, when they were still hard, and stored them under water and grease in bentwood cedar boxes, or, more recently in tins, jars or barrels. Sometimes they were scalded

Table 4-12. Members of the Genus *Rubus* (in the Rose Family, Rosaceae) Used as Food by Indigenous Peoples of Canada and Neighboring Areas. (Introduced species are marked with an asterisk*.)

Species	Notes	References
Wild Blackberry *(Rubus* sp.)	Berries eaten raw, or dried and cooked in various ways by Iroquois, Huron, Algonquin and Abernaki; berries mixed with maple sugar for beverage by Iroquois; juice also drunk by Micmac	Parker, 1910; Waugh, 1916; Rousseau, 1947; Stoddard, 1962; Tooker, 1964; Black, 1980
Dwarf Raspberry or Dewberry *(Rubus acaulis,*syn. *R arcticus* ssp.*acaulis)*	Berries eaten fresh, stored fresh in buried baskets by Slave, Cree and Chipewyan; very popular fruit; large quantities formerly picked at Lake Athabasca and He Ile a Crosse; probably also eaten by Shuswap and other western peoples	Lamont, 1977; Turner, 1978; Marles, 1984; Leighton, 1985
Allegheny Blackberry *(R allegheniensis)*	Berries eaten fresh or preserved by Ojibwa and Forest Potawatomi	Smith, 1932, 1933; Gilmore, 1933
Arctic Raspberry or Nagoonberry *(R. arcticus)*	Berries eaten fresh or sometimes preserved by Inupiaq Eskimo and other Indigenous Peoples of Alaska; often mixed with cloudberries; said to have superior flavor and aroma	Oswalt, 1957; Heller, 1976; Jacobs and Jacobs, 1982; Jones, 1983; Kari, 1987
Canada Blackberry *(R. canadensis)*	Berries eaten fresh or preserved by Iroquois, Ojibwa, Micmac and Malecite	Waugh, 1916; Gilmore, 1933; Speck and Dexter, 1951, 1952; Arnason et al., 1981
Cloudberry, Bakeapple *(R. chamaemorus)*	Berries highly important to northern Indigenous Peoples (see detailed discussion)	
Dewberry *(R. flagellaris)*	Berries eaten fresh or dried by Iroquois, Ojibwa, and Malecite	Parker, 1910; Smith, 1932; Adney, 1944; Speck and Dexter, 1951, 1952

Wild Raspberry *(R. idaeus)*	Berries an important food for Indigenous Peoples across Canada; shoots also eaten; leaves used for tea (see detailed discussion)	
Evergreen or Cutleaf Blackberry (*R. laciniatus)**	Eaten in historic times by various Indigenous Peoples of coastal British Columbia	Galloway, 1982; Turner and Hebda, unpubl. notes, 1989
Blackcap *(R. leucodermis)*	Berries very important to some British Columbia peoples; sprouts also eaten; considered a variety of R. *occidentalis* by some (see detailed discussion under that species)	Turner, 1975, 1978
Black Raspberry *(K. occidentalis;* incl. *R. leucodermis)*	Berries and shoots edible; locally important (see detailed discussion)	
Purple-flowering Raspberry *(R. odoratus)*	Berries occasionally eaten raw or dried by Iroquois, Ojibwa and Algonquin, but Waugh reports them to be "inedible" (Iroquois)	Parker, 1910; Waugh, 1916; Gilmore, 1933; Black, 1980
Thimbleberry *(R. parviflorus)*	Berries widely eaten; sprouts also used (see detailed discussion)	
Trailing Wild Raspberry *(R. pedatus)*	Berries eaten casually by some in British Columbia and Alaska; seldom picked in quantity; sometimes mixed with other berries	Turner, 1975, 1978; Heller, 1976; Norton, 1981
Pennsylvania Blackberry *(R. pensilvanicus)*	Berries eaten raw and dried by Ojibwa, and possibly others	Densmore, 1928
Japanese Wineberry *(R. phoenicolasius)**	Berries eaten in historic times by Halkomelem and Nlaka'pamux of British Columbia	Galloway, 1982; Turner et al.. 1990
Himalayan Blackberry *(R. procerus)**	Berries eaten in historic times by southwestern British Columbia peoples	Galloway, 1982; Turner et al. unpubl. notes, 1987; Turner and Hebda, unpubl. notes, 1989
Dwarf or Running Raspberry, or Hairy Plumboy *(R. pubescens)*	Berries eaten fresh or dried, or stored in buried baskets, by Iroquois, Ojibwa, Slave, Cree, Chilcotin, Carrier, and probably others	Waugh, 1916; Gilmore, 1933; Lamont, 1977; Turner, 1978; Leighton, 1985; Turner et al., unpubl. notes, 1988
Salmonberry *(R. spectabilis)*	Berries and sprouts eaten by Northwest Coast peoples (see detailed discussion)	
Trailing Wild Blackberry, or Pacific Blackberry *(R. ursinus)*	Berries eaten fresh or dried by peoples of coastal British Columbia and adjacent areas; leaves, especially redcolored ones, used for beverage tea	Gunther, 1973; Turner, 1975, 1978; Galloway, 1982; Turner and Efrat, 1982

briefly before being stored. Haida people say that fruiting plants have become scarce on the Queen Charlotte Islands since deer were introduced.

The Inupiaq Eskimo and other Indigenous Peoples of Alaska prize these berries, which are among the first to ripen. People go every summer to the open tundra to pick them. Formerly, at least each family might gather as much as 30 gallons (about 113 liters). The berries were eaten raw with seal oil and, later, sugar and canned milk. They are also folded into whipped fat, and preserved in a

seal poke or barrel in a cool place. Sometimes the berries are stored temporarily until the "blackberries" (crowberries, *Empetrum nigrum)* ripen in mid-September, then the two are mixed together and stored for winter. Sometimes they were pickled with sourdock leaves *(Rumex arcticus),* or "nagoonberries" *(Rubus arcticus).* They were mixed with blue berries only if eaten right away (Oswalt, 1957; Eidlitz, 1969; Jones, 1983). Today, cloudberries are eaten fresh with milk and sugar, made into jam or jelly, or used in pies and shortcakes (Heller, 1976; Kari, 1987). Canadian Inuit are said to preserve the berries in seal oil (Porsild, 1954).

"Bakeapples" are an important fruit for Newfoundlanders, and are harvested commercially to some extent. Undoubtedly, they were used by the now extinct Beothuk people as well. They are widely used in Siberia and Scandinavia (Eidlitz, 1969).

Food Use of Related Species: (see Table 4-12 on *Rubus* spp.)

Wild Red Raspberry *(Rubus idaeus;* syn. *R. strigosus)*

Description: A variable species, with many different forms, but generally similar to garden raspberry, being an erect, deciduous, often longstemmed shrub usually armed with numerous bristles and/or hooked prickles. The leaves are 3- to 5-parted, with a large, pointed terminal leaflet and 2 or 4 smaller lateral leaflets. The flowers are white (pink in one form), borne singly or in loose clusters, and the fruits are red (amber-white in one form) and raspberry-like, but usually smaller.

Occurrence: Thickets, open woods, fields, burned over areas, and rocky hillsides, throughout most of Canada, from the British Columbia interior to the Maritimes and Newfoundland, north to Alaska, the Yukon and Northwest Territories, and south in the United States to California, Tennessee and North Carolina, extending into northern Mexico; also occurs in Eurasia.

Food Use: The berries are smaller than those of cultivated varieties (which are derived from this species), but usually very flavorful. They were an important and popular food of Indigenous Peoples across Canada, including Micmac, Malecite, Abenaki, Naskapi, Montagnais, Iroquois, Huron, Ojibwa, Potawatomi, Algonquin, Slave, Chipewyan and other Dene peoples, Cree, Stoney (Assiniboin), Blackfoot, and virtually all interior peoples of British Columbia, as well as the Nuxalk (Bella Coola) and Tsimshian on the coast (Ross, 1862; Parker, 1910; Waugh, 1916; Densmore, 1928; Reagan, 1928; Smith, 1932,1933; Gilmore, 1933; Adney, 1944; Raymond, 1945; Rousseau, 1945, 1947; Lips, 1947; Speck and Dexter, 1951, 1952; Aller, 1954; Honigmann, 1961; Stoddard, 1962; Tooker, 1964; Turner, 1975, 1978; Lamont, 1977; Scott-Brown, 1977; 'Ksan, People of, 1980; Black, 1980; Galloway, 1982; Marles, 1984; Leighton, 1985; Johnston, 1987). They were also used, where available, by Indigenous Peoples of Alaska, Washington and elsewhere in the United States (Heller, 1976; Jones, 1983; Kari, 1987).

Ripening from July through September, depending on elevation and latitude, the berries were often eaten fresh, and were also dried, with or without being cooked, for winter storage. The Fisherman Lake Slave, for example, boiled them and placed them in birch-bark baskets in the sun to dry, then stored the dried loaves in a cache, to be broken into pieces and boiled before being eaten (Lamont, 1977). They could also be dried loose, like raisins. They were sometimes mixed with other berries. The Woods Cree ate them with dried fish and fish oil (Leighton, 1985). The Micmac made juice for drinking from the berries (Stoddard, 1962). Some people, such as the Okanagan-Colville, made juice by crushing the berries (Turner et al., 1980). Nowadays the berries are frozen or canned, and used in jams and jellies (Heller, 1976; Marles, 1984).

The fresh shoots in the spring were peeled and eaten raw by the Iroquois, Woods Cree, Lillooet and probably other peoples (Waugh, 1916; Leighton, 1985; Turner et al. unpubl. notes, 1987). Additionally, many people made a beverage tea from the stems and/or leaves (Waugh, 1916; Densmore, 1928; Lamont, 1977; Turner et al. unpubl. notes, 1987; Johnston, 1987). The Fisherman Lake Slave also used the roots for tea, and made a "brew" by boiling the berries and canes together, adding sugar and yeast, and leaving the mixture for about three days (Lamont, 1977).

In historic times, many Indigenous People have grown cultivated raspberries in their gardens.

Food Use: (see Table 4-12 on *Rubus* spp.).

Black Raspberry, or "Thimbleberry" *(Rubus occidentalis* L.; including Blackcap, *R*. *leucodermis,* which is considered by some to be a variety of *R. occidentalis,* var. *leucodermis)*

Description: Deciduous shrub with long-arching branches armed with hooked prickles but no bristles, and covered with a whitish, waxy coating, giving the bark a bluish gray caste. The leaves are raspberry-like, prickly-veined and whitish beneath, pinnately divided into 3-5 pointed and sharply toothed leaflets, the terminal one being the largest. The flowers are white, borne singly or in small clusters, and the berries are usually purple-black (yellowish or whitish in some forms).

Occurrence: Thickets, ravines, open woods, and burned or logged over areas. The typical form,*R. Occidentalis* var. *occidentalis* is found from southern Ontario and Quebec to New Brunswick and south in the United States to Minnesota and Georgia. Blackcap *(R. leucodermis)* occurs in British Columbia, north to southern Alaska and south to California and Utah.

Food Use: The dark-colored berries are flavorful and were eaten raw or cooked by the Iroquois and Ojibwa in the east *(R. occidentalis)* and by virtually all Indigenous Peoples of central and southern British Columbia and washington *(R. leucodermis),* and probably also by the Stoney (Assiniboin) (Parker, 1910; Waugh, 1916; Gilmore, 1933; Gunther, 1973; Scott-Brown, 1977; Turner, 1975,1978; Turner et al., 1980; Galloway, 1982; Turner et al., 1983; Turner et al. unpubl. notes, 1987).

The berries were also dried, later to be cooked with sugar for sauces and puddings, or baked in bread (Waugh, 1916). Interior Salish people of British Columbia picked large quantities of the berries, and many still use them today. They were eaten with dried meat or fish, or were boiled and eaten as a dessert, often mixed with other berries such as blackberries (Gunther, 1973; Turner, 1975, 1978; Turner et al., 1980).

Additionally, in the spring, the young shoots of blackcap were peeled and eaten raw or cooked in some areas of British Columbia (Gunther, 1973; Turner, 1975, 1978; Galloway, 1982; Turner et al. unpubl. notes, 1987; Turner et al., 1990). The leaves are sometimes used for tea (Turner et al. unpubl. notes, 1987).

Food Use of Related Species: (see Table 4-12 on *Rubus* spp.).

Thimbleberry *(Rubus parviflorus)*

Description: Erect, many-stemmed, deciduous shrub with brownish, shredding bark and lacking prickles or spines. The large, maple-like leaves are light green, five-lobed, toothed around the margins, and finely fuzzy on both sides. The flowers are large and white, usually in loose terminal clusters. The shallow-cupped, raspberry-like fruits turn from green to pink to bright red as they ripen, and readily fall off the receptacles when mature. Their taste varies with locality and ripening conditions, but usually they are sweet and flavorful.

Occurrence: Open woods, clearings and thickets of British Columbia to Alberta, extending north to southeastern Alaska and south to southern California and northern Mexico; also occurs in Ontario around northern Lake Superior and Lake Huron.

Food Use: Thimbleberries *(see* figure 48*, page 257)* usually ripen in mid-summer, and in most areas where they grow, they are a favorite fruit, and were picked in large quantities by Indigenous Peoples of British Columbia and neighboring areas (Gunther, 1973; Hellson and Gadd, 1974; Turner, 1975, 1978; Heller, 1976; Norton, 1981; Turner and Efrat, 1982; Turner et al., 1983; Turner et al, 1990). Some peoples did not attempt to store them, but only ate them fresh. Others dried them

in cakes, or stored them in ooligan grease (Turner, 1975,1978; Norton, 1981). In some areas they were picked while still hard and pinkish, then allowed to ripen before being eaten. They were often mixed with other berries. Today they are commonly used for jam.

Figure 47 (above). Pacific crabapple *(Pyrus fusca).*

Figure 48 (below). Thimbleberries *(Rubus parviflorus).*

The young shoots were—and still are in some places—peeled and eaten as a popular, widely used spring green vegetable (Gunther, 1873; Turner, 1975, 1978; Norton, 1981; Galloway, 1982; Turner et al., 1983). Sometimes they were toasted briefly over a fire before being peeled. They were often eaten with fish or meat, or with dried or "ripened" salmon eggs (Turner et al. un-publ. notes, 1987; Turner et al., 1990).

The large, shallowly lobed leaves were also used in food preparation. Some Nuu-chah-nulth people of Vancouver Island boiled them with fish as a flavoring (Turner and Efrat, 1982). They were also used to wipe the slime from fish, to whip soapberries, to line and cover baskets of berries, and as a surface for drying other types of berries (Turner, 1975,1978; Turner et al., 1980; Galloway,

1982). Gitksan children formed the leaves into a cone to use as a container when eating fresh thimbleberries. The berries were crushed and sucked out from the hole in the tip of the cone ('Ksan, People of, 1980).

Food Use of Related Species: (see Table 4-12 on *Rubus* spp.).

Salmonberry *(Rubus spectabilis)*

Description: Tall, many-stemmed, raspberry-like shrub, the bark reddish-brown to yellowish and the stems usually armed with numerous short prickles. The leaves are 3-parted and raspberry-like, with coarsely toothed, pointed leaflets. The flowers, which bloom in early spring, often before the leaves have expanded, are pink-petalled and showy. The fruits are large and raspberry-like, ranging in color from golden to ruby-red to purplish black, depending on the form.

Occurrence: Moist thickets, swampy areas, and woods of coastal British Columbia, north to the Aleutian Islands and southern Alaska, and south to California.

Food Use: Both the large, raspberry-like fruits and the young shoots were widely eaten by coastal peoples of British Columbia and neighboring areas (Turner, 1975; Heller, 1976; 'Ksan, People of, 1980; Norton, 1981; Galloway, 1982; Jacobs and Jacobs, 1982; Turner and Efrat, 1982; Turner et al., 1983; Port Simpson Curriculum Committee, 1983; Kari, 1987; Turner et al., 1990). The berries are generally the first fruits to ripen, and can be harvested as early as May in some areas. In Northwest Coast mythology. Swain-son's thrush is associated with ripening salmonberries, and is often called "salmonberry bird." The berries were seldom preserved, since they are quite watery and do not dry well. Large quantities of fresh berries were picked, however, and they were often served at feasts, usually with oil or ooligan grease, said to prevent constipation (Turner, 1975; Norton, 1981). In some areas, prime patches of salmonberries were "owned" by certain individuals and families, and permission had to be sought for others to pick there. Today salmonberries are still used, especially by children, who eat them right from the bushes. They are also frozen, canned, or made into jams and jellies.

The young growing sprouts were, and still are, harvested from April to early June. They are snapped off with the fingers before they become woody, then peeled, and eaten raw or, more commonly cooked by steaming or boiling. The Ditidaht (Nitinaht) of southwestern Vancouver Island ate them in large quantities, tied in bundles and pit-cooked. They were usually eaten with seal oil or ooligan grease, and, more recently, with sugar, often as an accompaniment to salmon or meat (Gunther, 1973; Port Simpson Curriculum Committee, 1983; Turner et al., 1983). Some Nuu-chah-nulth people boiled the leaves with fish as a flavoring (Turner and Efrat, 1982). The Kaigani Haida used the leaves to line baskets, wipe fish, and cover food in steaming pits (Norton, 1981).

Food Use of Related Species: (see Table 4-12 on *Rubus* spp.).

Madder Family (Rubiaceae)

In this family, evidently only one species, partridge-berry *(Mitchella repens),* was traditionally used as food by Canadian Indigenous Peoples. The berries were eaten fresh or preserved by the Iroquois and Montagnais (Parker, 1910; Waugh, 1916; Speck, 1917), and Micmac people used the plant for a beverage tea (Speck and Dexter, 1951).

Willow Family (Salicaceae)

Cottonwood or Balsam Poplar *(Populus balsamifera,* including ssp. *Trichocarpa,* which was formerly considered a separate species)

Description: Rough-barked deciduous trees up to 50 m (165 ft) tall, with resinous, sweet-smelling spring buds and leaves. The leaves are long-stalked, pointed, and toothed. In shape, they

are generally triangular, but vary from heart-shaped to oval or elliptical and tapering at the base, depending on the variety. The flowers are long, hanging catkins, with male and female on separate trees. The fruiting catkins produce quantities of soft, white, downy "cotton," which is released with the seeds in mid-summer. The fruiting capsules of ssp. *trichocarpa* are 3-valved and hairy; those of ssp. *balsamifera* are 2-valved and smooth. Hybrids readily form between these subspecies.

Occurrence: Moist woods, alluvial plains and shores, and prairie parklands across Canada, especially in the north, from British Columbia to the Maritimes and Newfoundland, north to Alaska, Yukon and Northwest Territories, and south in the United States to Oregon, Colorado and Pennsylvania.

Food Use: The inner bark (cambium and associated secondary phloem tissues) is thick, sweet and juicy for a period of time in the spring and early summer, when the sap is running and the leaves expanding. These tissues were eaten by various Indigenous groups, including the Ojibwa, James Bay Cree, Fisherman Lake Slave, Stoney (Assiniboin), Blackfoot, Kootenay, Halkomelem, Nlaka'pamux, Lower Lillooet, Nuxalk (Bella Coola), Northern Wakashan, Tanaina of Alaska, and Flathead of Montana, who were said to prefer it to the inner bark of any other tree (Hoffman, 1891; Blankinship, 1905; Honigmann, 1961—"poplar"; Turner, 1975, 1978; Hart, 1976; Lamont, 1977; Scott-Brown, 1977; Galloway, 1982; Kari, 1987; Turner et al., 1990).

Generally, the outer bark was removed and the white, succulent inner tissues were scraped off the wood in long ribbon-like strips. They could also be licked or scraped from the inner surface of the peeled bark. Often, a test strip would be peeled off to see whether the inner bark was ready. It was usually eaten fresh "on the spot," or taken home and eaten immediately as a sort of "dessert," sometimes with ooligan grease or other oil. It is said to spoil quickly, and because it is sweet, it ferments readily. The Lillooet sometimes used it for making "home brew" (Turner et al. unpubl. notes, 1987). Few people still use this food at present.

As well as being used as a regular springtime food, the inner bark was also used as a starvation food in times of food shortage, or by hunters trailing game (Lamont, 1977). Additionally, some Kootenay people used to hollow out a portion of cottonwood trunk to collect sap, which was then eaten (Hart, 1976). The sap of cottonwood was collected from the bark in June and given as refreshment to Sun Dance participants during their four-day fast (Scott-Brown, 1977).

Blackfoot peoples sometimes used the inner bark in smoking mixtures (Blankinship, 1905). Some people used the wood as a fuel for smoking fish (Kari, 1987).

Food Use of Related Species: The buds, fruiting capsules, and seeds of another cottonwood, *P. deltoides,* were eaten by the Ojibwa (Reagan, 1928), who also scraped off, boiled, and ate the inner bark of large-toothed aspen *(Populus grandidentata)* (Smith, 1932). Trembling aspen *(P. tremuloides)* was also used for food. The inner bark was scraped off and eaten by the Ojibwa, Chipewyan, Cree, Stoney (Assiniboin), and Blackfoot. It was especially enjoyed by children, although it is stronger tasting than cottonwood inner bark (Densmore, 1928; Hellson and Gadd, 1974; Scott-Brown, 1977; Marles, 1984; Leighton, 1985). The Montagnais steeped the bark for tea (Arnason et al., 1981), and the Fisherman Lake Slave used the ashes from the wood as a source of "salt" before rock salt was introduced by white men (Lamont, 1977). The leaves were considered a famine food by the Great Lakes peoples (Aller, 1954). The wood was sometimes used as a fuel for smoking meat and fish (Turner et al. unpubl. notes, 1988).

Diamond-leaved Willow, or Surah *(Salix phylicifolia,* including *S. pulchra,* now considered a variety, var. *subglauca* of this species) and related species

Description: Erect, freely branching deciduous shrub, with smooth, reddish brown bark and narrow, lanceolate or elliptical leaves which are tender when young, becoming thick and leathery with age. The leaves, which are smooth and lacking hairs, are dark green above, lighter green beneath, and smooth-edged, or finely toothed. The old, dead leaves may persist over the winter. The catkins are thick and large.

Occurrence: Damp thickets and slopes across northern Canada and Alaska, extending south in the mountains through eastern British Columbia and Alberta to California and New Mexico, and in central Saskatchewan and Manitoba, south in the mountains to New England; also occurs in Iceland and Eurasia.

The new shoots of this, and any other of the small, creeping willows of the arctic tundra and mountains, can be peeled and the inner portion eaten raw (Heller, 1976; Kari, 1987). Parts of willows are known to have a high ascorbic acid content. Willow shoots are also a favorite food of ptarmigan (Heller, 1976), and willow buds are one of their principal winter foods. In spring and summer the young leaves and flowering catkins are sought by birds and herbivorous mammals.

Food Use: The succulent, tender young shoots, buds and leaves (of var. *subglauca;* syn. *S. pulchra)* were, and still are, collected in early spring by Eskimo peoples of Alaska, and probably by Canadian Inuit (see under **Food Use of Related Species,** following). The young buds are eaten raw with seal oil, and can be preserved in seal oil or fish oil for up to a year. The young leaves are picked very early in the spring, when they are only about 1-4 cm long. They must be picked at just the right stage, since the larger, older leaves are too strong tasting. They are eaten raw or dried and used to make tea or soup, and are even canned. They taste slightly astringent at first, but leave a sweet aftertaste, and are said to be very refreshing. Mixed with seal oil and placed in barrels, kegs, or seal pokes, they were stored all winter (Heller, 1976; Jones, 1983).

Food Use of Related Species: Porsild (1964) reports that the young leaves and buds of several species of willow are collected regularly by Inuit ("Eskimos") and Chukchi for food. Leechman (1954) states that the tender young shoots of willow *("Salix,"* unspecified) were eaten in spring by Vanta Kutchin children of the Yukon. Honigmann (1961) notes that the James Bay Cree also occasionally ate the buds of "willow," in summer, "...but not more than three or four a day by such older folks as fancy them." The young shoots, buds, young leaves, and inner bark of river willow, or felty-leafed willow *(Salix alaxensis)* were used by the Inupiaq Eskimo of Alaska, and probably by other northern peoples of Canada and Alaska (cf. Porsild, 1964), in the same manner as *S. phylicifolia.*The shoots are said to taste somewhat like cucumber or watermelon. Children sometimes suck on the flowers, called "willow puppies" (Heller, 1976; Jones, 1983). The new leaves of *S. glauca* were apparently also used by Inuit peoples, and were eaten raw as a siuvival food by the Stoney (Assiniboin) of Alberta (Oswalt, 1957; Scott-Brown, 1977). The Inuit of Broughton Island, Northwest Territories, eat the leaves of *S. reticulata* and *S. arctica* (Kuhnlein unpubl. notes, 1985); the buds and leaves of *S. arctica* are reportedly eaten generally by Canadian Inuit (Sinclair, 1953). The Fisherman Lake Slave made a strong "brew" from the branches of various willow species (Lamont, 1977). Speck (1917) reports that the Montagnais steeped the leaves of shining willow *(Salix lucida)* to made a beverage tea.

Sandalwood Family (Santalaceae)

Two species of this family were used for food, but only sparingly. The dry, seedy fruits of bastard-toadflax *(Comandra umbellata)* were occasionally eaten by some Lillooet people of British Columbia, as well as by the Paiute and some other Indigenous groups of the Great Basin and western United States (Turner, 1978; Kindscher, 1987). The berry-like fruits of northern comandra *(Geocaulon lividum)* were eaten by the Fisherman Lake Slave (Lamont, 1977), but were not considered palatable by most people (Heller, 1976; Kari, 1987).

Saxifrage Family (Saxifragaceae)

Gooseberries and currants *(Ribes* spp.) are sometimes placed within this family, but are discussed here in their own family, Grossulariceae. Only about two other species of the saxifrage family were used: One Lillooet elder reported using the leaves of alumroot *(Heuchera cylindrica)* for a beverage tea (Turner et al., unpubl. notes, 1987). The Inupiaq and other Eskimo peoples of Alaska (possibly also some Canadian Inuit) ate the leaves of brook saxifrage, or salad greens *(Saxifraga punctata).*They picked the leaves throughout the spring and summer, but especially in the fall when they are extra big, and preserved them in seal or walrus oil, as well as eating them fresh with fish or

meat (Heller, 1976; Jones, 1983). Heller (1976) also notes that the tender, young leaves of spiked saxifrage *(Saxifrage spicata)* are used as a salad green in Alaska, but that this use is not necessarily traditional.

Figwort Family (Scrophulariaceae)

Wooly Lousewort, or Bumblebee Plant *(Pedicularis lanata)*

Description: Herbaceous perennial up to 20 cm (8 in.) high, growing from a well-developed, bright lemon-yellow taproot. The leaves are finely divided, forming a rosette at the stem base, and spaced alternately up the stem. The stems, one to several per plant, are erect, and terminated by densely woolly white spikes of rose-colored flowers.

Description: Dry gravelly tundra and slopes throughout northern Canada and Alaska, south to British Columbia and northernmost Quebec.

Food Use: The sweet, carrot-like taproots were eaten by Inuit peoples of the north, and are called "**ussusaq,**" according to Porsild (1937). Presumably, too, the young flower tops were used in Canada in the same way as by the Inupiaq and other Eskimo peoples of Alaska (cf. Porsild, 1964). They were picked in June when still small and closed, placed in a barrel, covered with water, and allowed to ferment, or "sour." They were then eaten with oil and sugar, or "like sauerkraut" (Heller, 1976; Jones, 1983). Inuit children are said to suck the sweet nectar from the base of the corolla tubes of this species (Porsild, 1964).

Food Use of Related Species: Porsild (1964) reports that the roots and young flowering stems of three other species, *P. langsdorfii* (ssp. *arctica; "P. arctica"), P. hirsuta,* and *P. sudetica* are also edible, raw or cooked, and that Inuit children suck the flower nectar from *P. langsdorfii* as well as *P. lanata.* In times of starvation, the roots of another species of lousewort *(P. langsdorfii)* were eaten raw by the Fisherman Lake Slave (Lamont, 1977). The leaves and stems of wood betony *(P. canadensis* and *P. lanceolata)* were used as potherbs by the Iroquois (Waugh, 1916), and the root of *P. canadensis* was eaten raw or cooked by the Ojibwa (Gilmore, 1933). The leaves and flowers of shrubby penstemon *(Penstemonfiuticosus)* were used in cooking pits as a flavoring by the Nlaka'pamux and Lillooet of British Columbia (Turner et al. unpubl. notes, 1987; Turner et al., 1990). The flower tubes of Indian paintbrush *(Castilleja miniata* and other species) were often sucked for their sweet nectar by Indigenous children of British Columbia and neighboring areas (Gunther, 1973; Scott-Brown, 1977; Fenn et al., 1979; Turner et al., 1983; Turner et al. unpubl. notes, 1987).

NOTE: The louseworts, especially the arctic species, are vulnerable to disturbance and harvesting. Some are rare or endangered. Hence, they should not be harvested except in emergency situations.

Nightshade Family (Solanaceae)

The ripe fruits of some species of ground-cherry *(Physalis* spp.) were eaten fresh or preserved by the Iroquois (Waugh, 1916). Yanovsky (1936) lists 10 species of this genus used for food by North American Indigenous Peoples. According to Kindscher (1987), fruits of *P. heterophylla* and related species were eaten by American Plains peoples, including Omaha, Ponca, Pawnee, Lakota Sioux, Zuni, Dakota Sioux (who also extend into southern Canada), and Kiowa, and carbonized seeds of *Physalis* have been found in archaeological sites of the Prairie Bioregion.

Potato *(Solanum tuberosum)* was introduced to British Columbia by European fur traders relatively early in the historic period, probably in the early 19th century. The use and cultivation of potatoes was quickly adopted by Indigenous Peoples of the Northwest Coast, as described by Suttles (1951), and potatoes are still a popular garden crop among Indigenous Peoples in British Columbia (Turner, 1975, 1978; Galloway, 1982; Turner et al., 1983).

Linden Family (Tiliaceae)

Basswood *(Tilia americana),* which grows in Canada in rich woods from Saskatchewan to New Brunswick, was used as food by the Iroquois and Ojibwa. The former ate the bark in emergencies (Parker, 1910), and the latter ate the inner bark, the young buds and the twigs, raw or cooked (Densmore, 1928; Gilmore, 1933). The bark was well cooked and pounded, then added to fish broth or mixed with fish oil for making stews. It is said to be as tender as half-cooked radishes (Aller, 1954).

Elm Family (Ulmaceae)

The bark of American elm *(Ulmus americana)* was eaten as an emergency food by the Iroquois (Parker, 1910).

Nettle Family (Urticaceae)

Stinging nettle *(Urtica dioica)* is a variable species having a long association with indigenous North American cultures, particularly on the west coast of British Columbia, Alaska, and the Aleutians, where it was a major source of stem fiber for cordage. It also had innumerable medicinal applications among Indigenous Peoples. According to our evidence, its use as an edible potherb is not traditional, but rather was learned from European traders and "settlers," or in some places, possibly from Chinese immigrants (Heller, 1976; Turner et al., 1990). Nevertheless, it soon became popular as a cooked green, and was used by the Iroquois, and by varied western Indigenous Peoples including the Straits Salish, Halkomelem, Sechelt, Nlaka'pamux, Lillooet, Okanagan-Colville, and Haida, and Tanaina of Alaska (Waugh, 1916; Turner, 1975,1978; Turner et al., 1980; Galloway, 1982; Kari, 1987; Turner et al. unpubl. notes, 1987; Turner et al., 1990).

Valerian Family (Valerianaceae)

Edible Valerian, or Tobacco-root *(Valeriana edulis)* is found in southernmost British Columbia and southern Ontario. Its large, elongated taproots were formerly pit-cooked and eaten by the Okanagan-Colville Indians, and possibly by some Nlaka'pamux, of British Columbia, as well as the Snake and other Montana groups. They are said to have a strong, tobacco-like smell, and were called "stink-root." Nevertheless, they were said to taste sweet. Dug in late summer or fall, they were pit-cooked for up to 48 hours and eaten warm or cold, alone or with other roots or meat. They were stored fresh in underground pits (Blankinship, 1905; Turner et al., 1980; Johnston, 1987; Turner et al., 1990).

Grape Family (Vitaceae)

Wild Grape *(Vitis riparia)*

Description: Woody deciduous vine, trailing or climbing on other plants by means of tendrils. The leaves are 3-lobed and coarsely toothed. The flowers are greenish and inconspicuous, in compact pyramidal clusters. The grapes are small (10-12 mm across), dark and spherical, with a waxy coating giving them a light blue caste. They are tart but juicy and flavorful.

Occurrence: Moist thickets from southern Manitoba to New Brunswick and Nova Scotia, south in the United States to New Mexico, Texas, and Virginia; locally introduced elsewhere. Another species, *V. aestivalis,* is found in southern Ontario, extending south to Georgia and Texas.

Food Use: (see WARNING, below). Grapes, probably mainly of this species, and possibly also of *V. aestival* is*,* were eaten fresh or dried by the Malecite, Iroquois, Huron and Ojibwa (Parker, 1910; Waugh, 1916; Densmore, 1928; Smith, 1932; Adney, 1944; Rousseau, 1945; Tooker, 1964), and probably by other peoples as well. They were generally gathered after the first frost, when they

become sweeter. Recently they have been used for jelly. Additionally, the fresh shoots were eaten by the Iroquois.

Food Use of Related Species: Virginia creeper *(Parthenocissus quinquifolia),* which is considered to have poisonous berries and foliage, was eaten by the Ojibwa. They boiled the stalks and ate the inner bark like com on the cob. They also rendered syrup from the boiled stalks and used this for cooking wild-rice (Densmore, 1928; Smith, 1932).

WARNING: Do not confuse wild grapes with Canadian moonseed *(Menispermum canadense),* a vine unrelated to grape, but superficially similar in appearance. Its dark-blue berry-like fruits are very poisonous. Moonseed can be distinguished from grape by having a single, crescent-shaped seed in each fruit, instead of the several seeds found in grapes. Moonseed leaves have smooth edges, rather than toothed. Virginia creeper is considered a poisonous plant and should not be eaten (Turner and, 1991).

CHAPTER 5
Comprehensive List of Plant Food Species

In the Comprehensive List the following symbols are used:

N	=	nutrient values listed in Chapter 6
E	=	ethnic use described in Chapter 4
T	=	toxin reported in the plant food
(T)	=	toxin reported in a look-alike species (not closely related) or in a part of the plant not listed as edible; or toxin at relatively low levels
I	=	an introduced species
R	=	rare or endangered plant, or highly vulnerable to overharvesting

The nomenclature given generally follows the original sources. As noted earlier, many species have not been reported in the literature as having been used by Indigenous People, or for having nutrient contents. Please refer to Chapters 4 and 6 for details.

Abies balsamea
- E Balsam fir
- Canada balsam
- Pinaceae
- N needles
- N shoot
- inner bark

Abies concolor
- I White fir
- Pinaceae
- N needles

Abies spp.
- E Grand fir
- E Subalpine fir
- Pacific silver fir
- Pinaceae
- needles
- inner bark
- pitch

Abronia latifolia
- E Yellow sand-verbena
- Nyctaginaceae

Acer nigrum
- E Black maple
- Aceraceae
- sap

Acer pensytvanicum
- E Moosewood
- Striped maple
- Aceraceae
- N leaves
- bark
- tea

Acer platanoides
- I Norway maple
- Aceraceae
- sap
- sprouts
- cambium

Acer rubrum
- E Red maple
- Aceraceae
- N leaves
- N sprouts

N R roots

Acer glabrum
E Rocky mountain maple
Aceraceae
leaves

Acer macrophyllum
E Bigleaf maple
Broad-leaved maple
Aceraceae
sap
seeds
sprouts
inner bark

Acer negundo
E Manitoba maple
Box elder
Aceraceae
N sprouts
sap, sugar

Achillea millefolium
E Yarrow
Subalpine yarrow
Asteraceae, Compositae
N Leaves
Flowers

Acorus calamus
E Sweet flag
Araceae
T rootstocks
T Leaves
T Tea

Actinogyra spp.
E Rock tripe
Lichens
(T) thallus

Agaricus campestris
E Field mushroom
Fungi
mushroom

Agastache foeniculum
bark
sap

Acer saccharinum
E Silver maple
Aceraceae
sap
sprouts
cambium
bark

Acer saccharum
E Sugar maple
Rock maple
Hard maple
Aceraceae
N leaves
N sprouts
N sap
N syrup
seeds

Alaria esculenta
E Kelp
Murlins
Algae
N fronds

Alaria marginata
E Kelp
Algae
fronds

Alaria pylaii
E Kelp
Algae
fronds

Alectoria spp.
Tree lichen
Lichens
(T) thallus

Alisma plantago-aquatica
Water plantain
Alismataceae
T roots

Mousenut
Eriophorum angustifolium

Mugwort
Artemisia spp.

Mulberries
Morus spp.

Mule's-ear
Wyethia amplexicaulis

Murlins
Alaria esculenta

Musk mallow
Malva moschata

Musk thistle
Carduus nutans

Mustards
Brassica spp.

Nagoonberry
Rubus acaulis
Rubus arcticus

Nannyberry
Viburnum lentago

Narrow-leaved cattail
Typha angustifolia

Narrow-leaved goosefoot
Chenopodium leptophyllum

Narrow-leaved lomatium
Lomatium triternatum

Narrow-leaved meadowsweet
Spiraea alba

Narrow-leaved puccoon
Lithospermum angustifolium

Narrow-leaved vetch
Vicia sativa

Navybeans
Phaseolus vulgaris

Newfoundland bilberry
Vaccinium nubigenum

Nipplewort
Lapsana communis

Nodding microseris
Microseris nutans

Nodding onion
Allium cernuum

Nodding saxifrage
Saxifraga cernua

Nootka lupine
Lupinus nootkatensis

Nootka rose
Rosa nutkana

Nori
Porphyra spp.

Northern black currant
Ribes hudsonianum

Northern bog violet
Viola cucullata
Viola nephrophylla

Northern comandra
Geocaulon lividum

Northern dewberry
Rubus flagellaris

Northern hedysarum
Hedysarum boreale

Northern hound's tongue
Cynoglossum boreale

Northern iris
Iris setosa

Northern Labrador-tea
Ledum palustre

Northern mannagrass
Glyceria borealis

Nuttall's onion
Liliaceae
N (T) bulbs

Allium schoenoprasum
E Wild chives
Liliaceae
N Greens
Bulbs

Allum stellatum
Prairie onion
Pink-flowered onion
Liliaceae
(T) bulbs
greens

Althaea officinalis
I Marsh mallow
Malvaceae
mucilaginous juice

Althaea rosea
I Hollyhock
Malvaceae
N leaves

Amaranthus albus
I Tumble pigweed
Amaranthaceae
greens
seeds

Amaranthus graecizans
E Prostrate pigweed
Amaranthaceae
N greens
seeds

Amaranthus hybridus
Amaranth
I Amaranthaceae
N greens
N seeds

Amaranthus palmeri
I Pigweed

Alnus crispa
E Mountain alder
American green alder
Betulaceae
N bark

Alnus rubra
E Red alder
Betulaceae
inner bark
catkins

Alnus rugosa
Speckled mountain alder
Betulaceae
inner bark

Ambrosia trifida
I Giant ragweed
Asteraceae, Compositae
seeds

Amelanchier alnifolia
E Common saskatoon
Serviceberry
Rosaceae
N fruit

Amelanchier arborea
E High serviceberry
June berry
Downy shadblow
Rosaceae
Firuit

Amelanchier bartramiana
Juneberry
Bartram shadblow
Rosaceae
fruit

Amelanchier canadensis
Medic-downy shadblow
Rosaceae
N fruit

Amelanchier femaldii

Careless weed
Amaranthaceae
N leaves

Amaranthus retroflexus
IE Redroot pigweed
Amaranthaceae
N greens
N seeds

Amaranthus spinosus
Amaranth
I Amaranthaceae
N greens
seeds

Amelanchier huronensis
Huron shadbush
Rosaceae
fruit

Amelanchier intermedia
Swamp sugar pear
Rosaceae
fruit

Amelanchier laevis
Smooth Juneberry
Alleghany shadblow
Rosaceae
fruit

Amelanchier lucida
Junebeny shadbush
Rosaceae
fruit

Amelanchier mucronata
Juneberry shadbush
Rosaceae
fruit

Amelanchier sanguinea
Shadbush
Wild-pear
Rosaceae
fruit

Fernald's shadbush
Rosaceae
fruit

Amelanchier gaspensis
Gaspe shadbush
Rosaceae
fruit

Amelanchier humilis
Serviceberry
Low shadbush
Rosaceae
fruit

Amphicarpa bracteata
Falcata bracteata
Falcata comosa
Glycine comosa
E Hog-peanut
Ground-bean
Fabaceae, Leguminosae
seeds

Anchusa officinalis
I Alkanet
Boraginaceae
(T) greens

Andromeda glaucophylla
E Bog rosemary
Ericaceae
N T greens dried
T tea
T flowers

Anemone multifida
Pacific anemone
Ranunculaceae
T greens

Anemone narcissiflora
E Anemone
Ranunculaceae
T leaves

Anemonella thalictroides

Amelanchier stolonifera
Wild-pear serviceberry
Rosaceae
fruit

Amelanchier wiegandii
Serviceberry
Shadbush
Rosaceae
fruit

Ammophila breviligulata
Beachgrass
Poaceae, Gramineae
rhizomes

Angelica archangelica
Angelica
Apiaceae, Umbelliferae
N stems dried
condiment

Angelica atropurpurea
Purple angelica
Apiaceae, Umbelliferae
roots
stems
condiment

Angelica genuflexa
E Kneeling angelica
Apiaceae, Umbelliferae
(T) roots
(T) stems
(T) condiment

Angelica lucida
E Sea coast angelica
"Wild celery"
Aleut celery
Apiaceae, Umbelliferae
(T) stems
(T) leaves

Angelica sylvestris
I Woodland angelica
Wild angelica
Apiaceae, Umbelliferae

Rue-anemone
Wild potato
Ranunculaceae
T roots

Anethum graveolens
I Common dill
Apiaceae, Umbelliferae
N greens
seeds

Anthriscus cerefolium
I Common chevril
Apiaceae, Umbelliferae
N (T) greens
condiment

Apios americana
E Groundnut
Indian potato
Potato bean
Fabaceae, Leguminosae
N tubers

Aquilegia canadensis
Wild columbine
Ranunculaceae
T roots

Arabidopsis thaliana
I Common mouse-ear cress
Brassicaceae, Cruciferae
greens

Arabis alpina
Mountain rock-cress
Alpine cress
Brassicaceae, Cruciferae
greens
condiment

Arabis lyrata
E Lyre-leaved rockcress

(T) roots
(T) stems

Antennaria rosea
Pussytoes
Asteraceae, Compositae
leaves

Anthoxanthum odoratum
I Sweet vernal grass
Poaceae, Gramineae
N greens dried
N greens

Aralia racemosa
E Spikenard
Araliaceae
N greens

Aralia spinosa
I Prickly-ash
Devil's walkingstick
Araliaceae
greens

Arbutus menziesii
Pacific madrone
Ericaceae
fruit

Arctium lappa
IE Greater burdock
Asteraceae, Compositae
N stalks
N roots

Arctium minus
IE Lesser burdock
Common burdock
Asteraceae, Compositae
greens
roots

Arctium nemorosum
Burdock
I Asteraceae, Compositae
roots
stalks
Brassicaceae, Cruciferae
greens
condiment

Aralia nudicaulis
E Wild sarsaparilla
Araliaceae
N greens
N leaves
fruit
rhizomes, tea

Arctostaphylos alpina ssp. *rubra*
E Red alpine bearberry
Red manzanita
Ericaceae
N fruit

Arctostaphylos uva-ursi
E Kinnikinnick
Bearberry
Ericaceae
N fruit
N greens
leaves, tea

Arenaria peploides
Honckenya peploides
E Seabeach-sandwort
Sea-chickweed
caryophyllaceae
N leaves
greens

Arisaema spp.
E Jack-in-the-pulpit
Dragon root
Indian turnip
Araceae
T corm, cooked

Armeria maritima
Thrift
Plumibaginaceae
greens, cooked

Arctium tomentosum
I Cotton burdock
Asteraceae, Compositae
roots
stalks

Arctostaphos alpina
E Alpine bearbeny
Alpine manzanita
Ericaceae
N fruit

Artemisia absinthium
I Wormwood
Absinthe
Asteraceae, Compositae
T condiment

Artemisia campestris
E Sagewort wormwood
Asteraceae, Compositae
T leaves

Artemisia dracunculus
E Tarragon
Dragon sagewort
Asteraceae, Compositae
condiment

Artemisia gnaphalodes
I Wormwood
I Asteraceae, Compositae
N greens

Artemisia ludoviciana
E Western mugwort
Asteraceae, Compositae
leaves

Artemisia vulgaris
I Common mugwort
Asteraceae, Compositae
N leaves

Artemisia spp.
E Wormwood
Mugwort

Armoraca rusticana
I Common horseradish
Brassicaceae, Cruiciferae
T condiment

Artemisia abrotanum
I Lemon wood
Asteraceae, Compositae
condiment

Asarum caudatum
E Western wild ginger
Aristolochiaceae
condiment
rhizomes

Asclepias amplexicaulis
Milkweed
Asclepiadaeae
N T greens

Asclepias incarnata
Swamp milkweed
Asclepiadaceae
N T greens

Asclepias speciosa
E Showy milkweed
Asclepiadaceae
(T) shoots
(T) young seedpods
(T) flowers
latex, gum

Asclepias syriaca
E Common milkweed
Asclepiadaceae
NT leaves
NT greens
NT fruits
(T) flowers
(T) shoots

Asclepias tuberosa
E Butterfly weed

Northern sage
Asteraceae, Compositae
flavoring
leaves
tea

Asarum canadense
E Wild ginger
Aristolochiaceae
condiment
rhizomes

Asclepias viridiflora
E Green milkweed
Asclepiadaceae
T greens
T roots

Asimina triloba
E Pawpaw
Custard apple
Annonaceae
N fruit

Asparagus officinalis
IE Asaragus
Liliaceae
N (T) shoots

Aster conspicuus
Showy aster
Asteraceae, Compositae
N greens

Aster laevis
Smooth aster
Asteraceae, Compositae
N leaves

Aster macrophyllus
E Large-leaved aster
Asteraceae, Compositae
N greens
roots

Aster sericeus
Silky aster
Asteraceae, Compositae

Asclepiadaceae
NT greens
NT roots

Asclepias verticillata
Whorled milkweed
Asclepiadaceae
NT greens

Astragalus americanus
E American milkvetch
Fabaceae, Leguminosae
(T) roots

Astragalus canadensis
E Canadian milkvetch
Fabaceae, Leguminosae
(T) roots

Astragalus crassicarpus
E Groundplum milkvetch
Fabaceae, Leguminosae
(T) unripe, pods
seeds

Astragalus miser
E Timber milkvetch
Fabaceae, Leguminosae
(T) seeds

Astragalus serotinus
Timber milkvetch
Fabaceae, Leguminosae
N (T) leaves

Athyrium filix-femina
E Lady fern
Polypodiaceae
N fresh greens
rootstocks

Atriplex glabriuscula
Pigweed
Chenopodiaceae
greens

N greens

Aster simplex
Small blue aster
Asteraceae, Compositae
N greens

Astragalus aboriginum
E Indian millkvetch
Fabaceae, Leguminosae
T roots

Atriplex patula
Common orache
Chenopodiaceae
N leaves

Atriplex rosea
I Red orache
Chenopodiaceae
greens

Atriplex spp.
E Saltbush
Chenopodiaceae
greens

Avena fatua
I Wild oats
Poaceae, Gramineae
N grains

Avena sativa
I Common oats
Poaceae, Gramineae
N grains

Avena spp.
I Wild oats
Poaceae, Gramineae
N grains

Balsamorhiza deltoidea
ER Deltoid balsamroot
Asteraceae, Compositae
N roots
sprouts

Atriplex hortensis
I Garden orache
Chenopodiaceae
greens

Atriplex nuttallii
Salt sage
Chenopodiaceae
N leaves

Baptisia tinctoria
False indigo
Rattleweed
Fabaceae, Leguminosae
shoots

Barbarea verna
I Early winter-cress
Brassicaceae, Cruciferae
greens

Barbarea vulgaris
I Bitter winter-cress
Brassicaceae, Cruciferae
greens

Barbarea spp.
IE Winter cress
Brassicaceae, Cruciferae
N greens
N flowers

Beckmannia syzigachne
American slough grass
Poaceae, Gramineae
grains

Bellis perennis
I English daisy
Asteraceae, Compositae
N greens
flowers

Berberis aquifolium
Mahonia aquifolium
E Tall Oregon-grape

Balsamorhiza sagittata
E Arrow-leaved balsamroot
Spring sunflower
Asteraceae, Compositae
N greens
N stems
N roots
seeds

Berberis repens
Creeping Oregon-grape
Berberdaceae
fruit

Berberis thunbergii
I Japanese barberry
Berberidaceae
N fruit

Berberis vulgaris
I Common barberry
Berberidaceae
fruit

Betula alleghaniensis
Alleghany birch
Berberidaceae
twigs
sap

Betula glandulosa
E Scrub birch
Bog glandular birch
Betulaceae
N bark inner
N leaves
tea

Betula lenta
Black birch
Cherry birch
Sweet birch
Betulaceae
N leaves

Betula lutea
Oregon hollygrape
Berberidaceae
N fruit
young leaves

Berberis nervosa
Low Oregon-grape
E Dull Oregon-grape
Berberidaceae
N fruit

Betula papyrifera
E Common paper birch
Canoe birch
Betulaceae
N leaves
sap
inner bark

Betula pumila
Bog birch
Betulaceae
N shoots

Betula tortuosa
Birch
Betulaceae
N twigs

Betula spp.
Birches
Betulaceae
N leaves, stems

Blechnum spicant
E Deer fern
Polypodiaceae
shoots

Borago officinalis
I Common borage
Boraginaceae
greens
flowers

Boschniakia hookeri
E Poque
Ground-cone

E Yellow birch
Betulaceae
N leaves
sap
tea

Brasenia schreberi
Watershield
Nymphaeaceae
N greens

Brassica hirta
I White mustard
Brassicaceae,Cruciferae
N seeds

Brassica juncea
I Indian mustard
Brown mustard
Brassicaceae, Cruciferae
N seed
N greens

Brassica kaber
Sinapsis arvensis
I Wild mustard
Brassicaceae,Cruciferae
N greens
N seeds

Brassica napus
I Rape
Brassicaceae,Cruciferae
N seeds
N greens

Brassica nigra
IE Black mustard
Brassicaceae,Cruciferae
N pods
N greens

Brassica oleracea
I Cabbage
Brassicaceae, Cruciferae
N greens

Orobanchaceae
rootstocks

Boschniakia rossica
E Ground-cone
Orobanchaceae
rootstocks

Brassica spp.
I Mustards
Brassicaceae, Cruciferae
N greens

Brodiaea coronaria
R Harvest brodiaea
Liliaceae
corms

Brodiaea douglasii
ER Large flowered triteleia
Liliaceae
corms

Brodiaea hyacinthina
ER Cluster lily
White triteleia
Fool's onion
Liliaceae
corms

Bromus tectorum
I Drooping brome grass
Downy brome
Cheat grass
Poaceae, Gramineae
N grains

Bryoria fremontii
E Black tree lichen
Lichens
(T) thallus

Butomus umbellatus
I Flowering rush
Butomaceae
N leaves

Cakile edentula

N seeds

Brassica rapa
I Bird rape mustard
Field mustard
Brassicaceae, Cruciferae
N greens
N seeds

Cakile maritima
European searocket
Brassicaceae, Cruciferae
greens
young pods

Calandrinia caulescens
Red maids
I Portulacaceae
greens
seeds

Calla palustris
Wildca calla
Araceae
T root, cooked

Calluna vulgaris
I Common heather
Ericaceae
N leaves
N shoots
N greens, dried

Calochortus apiculatus
ER Three-spot mariposa lily
Liliaceae
bulbs

Calochortus luteus
R Yellow mariposa
Liliaceae
N bulbs

Calochortus lyallii
R Lyall's mariposa lily
Liliaceae
bulbs

I American searocket
Brassicaceae, Cruciferae
N greens
young pods

Caltha palustris
E Yellow marsh-marigold
Ranunculaceae
N T greens

Calvatia gigantea
E Giant puffball
Fungi
mushroom

Calypso bulbosa
ER Calypso
False ladyslipper
Fairy slipper
Orchidaceae
corms

Camassia leichtlinii
ER Great camas
Leichtlin's camas
Blue camas
Liliaceae
N (T) bulbs

Camassia quamash
E Common camas
Blue camas
Liliaceae
N(T) bulbs

Camassia scilloides
ER Eastern camas
Wild hyacinth
Liliaceae
(T) bulbs

Camelina sativa
I False flax
Large seeded false flax

Calochortus macrocarpus
ER Sagebush mariposa lily
Desert lily
Liliaceae
bulbs
flower buds

Campanula rapanculoides
I Creeping bellflower
Campanulaceae
greens
roots

Cannabis sativa
I Hemp
Marijuana
Cannabinaceae
N (T) seeds, parched

Cantarellus cibarius
E Chanterelle
Fungi
mushroom

Capsella bursa-pastoris
IE Shepherd's-purse
Brassicaceae, Cruciferae
N seeds
N greens

Cardamine bulbosa
Spring cress
Brassicaceae, Cruciferae
greens

Cardamine pensylvanica
Pennsylvania bittercress
Brassicaceae, Cruciferae
greens

Cardamine pratensis
Cuckoo bittercress
Brassicaceae, Cruciferae
greens

Carduus acanthoides
Brassicaceae, Cruciferae
N seeds

Campanula persicifolia
I Peach-leaved bellflower
Campanulaceae
greens
roots

Carduus nutans
I Musk thistle
Asteraceae, Compositae
stems, cooked

Carex aquatilis
E Aquatic sedge
Cyperaceae
stems
rootstocks

Carex rostrata
E Beaked sedge
Cyperaceae
stems
leaf bases

Carpinus caroliniana
American hornbeam
Blue beech
Betulaceae
seeds

Carpinus spp.
Blue Beech
Betulaceae
N seeds

Carum carvi
IE Common caraway
Apiaceae, Umbelliferae
N seeds

Carya cordiformis
E Bitternut hickory
Swamp hickory
Juglandaceae
nuts

I Plumeless thistle
Asteraceae, Compositae
stems, cooked

Carduus crispus
I Curled thistle
Asteraceae, Compositae
stems, cooked

Carya ovata
E Shagbark hickory
Juglandaceae
N nuts

Carya spp.
Hickories
Juglandaceae
N nuts

Castanea dentata
E American chestnut
Fagaceae
N nuts

Castilleja miniata
E Indian paintbrush
Scrophulariaceae
flower
nectar

Ceanothus americanus
E New Jersey tea
Rhamnaceae
N leaves
N greens
leaves, tea

Ceanothus herbaceus
Rhamnaceae
leaves

Ceanothus sanguineus
E Buckbush
Red stemmed ceanothus
Rhamnaceae
leaves, tea

Carya glabra
Pignut hickory
Juglandaceae
N nuts

Carya ovalis
False shagbark hickory
Juglandaceae
nuts

Celastrus scandens
E American bittersweet
Climbing bittersweet
Celastraceae
T bark

Celtis occidentalis
Hackberry
Ulmaceae
N fruit

Cenchrus longispinus
Field sandbur
Poaceae, Gramineae
grains

Centaurea calcitrapa
I Red star thistle
Asteraceae, Compositae
stems
leaves

Cerastium semidecandrum
I Little chickweed
Caryophyllaceae
greens

Cetraria crispa
E Cetraria
Lichens
(T) thallus

Cetraria cucullata
E Cetraria
Lichens
(T) thallus

Chamaedaphne calyculata

Ceanothus velutinus
Snowbrush
Snowbush ceanothus
Rhamnaceae
N greens
leaves, tea

Chamaesaracha grandiflora
Large white ground-cherry
Solanaceae
Fruit

Chenopodium album
Chenopodium berlandieri
Chenopodium bushianum
Chenopodium macrocalycium
IE Lambsquarters
Pigweed
Goosefoot
Chenopodiaceae
N greens
N seeds

Chenopodium ambrosioides
I Mexican tea
Chenopodiaceae
N T leaves

Chenopodium bonus-henricus
I Good King Henry
Chenopodiaceae
N greens

Chenopodium capitatum
Blitum capitatum
E Strawberry blite goosefoot
Strawberry spinach
Chenopodiaceae
greens
fruit

Chenopodium fremontii
Freemont's goosefoot
Chenopodiaceae
N leaves
N greens, cooked

Chenopodium leptophyllum
E Leather-leaf
Ericaceae
N leaves dried
flowers
tea

Chenopodium pumilio
I Rough-leaved goosefoot
Chenopodiaceae
N leaves
N seed heads

Chenopodium spp.
Goosefoot
Pigweed
Chenopodiaceae
N greens
seeds

Chimaphila maculata
Prince's pine
Ericaceae
leaves

Chimaphila umbellata
E Prince's pine
Common western pipsissewa
Ericaceae
N greens
Leaves, tea

Chorispora tenella
I Common blue mustard
Brassicaceae, Cruciferae
greens

Chrysanthemum balsamita
I Costmary
Asteraceae, Compositae
N leaves
flowers

Chrysanthemum leucanthemum
Leucanthemum vulgare
I Ox-eye daisy
Asteraceae, Compositae
N leaves cooked

Narrow-leaved goosefoot
Chenopodiaceae
greens
N seeds

Chrysosplenium alternifolium
Golden saxifrage
Chrysosplene
Saxifragaceae
greens

Chrysosplenium americanum
Golden saxifrage
Saxifragaceae
greens

Cicer arietinum
I Chickpea
Fabaceae, Leguminosae
N legumes dried

Cichorum intybus
I Chicory
Blue sailors
Asteraceae, Compositae
N leaves
roots, beverage

Cirsium arvense
I Canada thistle
Asteraceae, Compositae
roots
stalks

Cirsium brevistylum
E Short-styled thistle
Asteraceae, Compositae
roots
stalks

Cirsium discolor
Field thistle
Asteraceae, Compositae
roots
stalks

Cirsium drummondii
Drunmond's thistle
N leaves
flowers

Cirsium edule
E Edible thistle
Asteraceae, Compositae
roots
stalks

Cirsium flodmanii
Flodman's thistle
Asteraceae, Compositae
roots
stalks

Cirsium foliosum
Leafy thistle
Asteraceae, Compositae
roots
stalks

Cirsium hookerianum
E Hooker's thistle
White thistle
Asteraceae, Compositae
roots
stalks
flowers

Cirsium muticum
Swamp thistle
Asteraceae, Compositae
N Shoots

Cirsium palustre
Marsh thistle
I Asteraceae, Compositae
roots
stalks

Cirsium pitcheri
Pitcher's thistle
Asteraceae, Compositae
roots
stalks

Asteraceae, Compositae
N roots

Cirsium undulatum
E Wavy-leaved thistle
Asteraceae,Compositae
roots
stalks

Cirsium vulgare
I Scottish thistle
I Spear thistle
Bull thistle
Asteraceae,Compositae
roots
stalks

Cirsium spp.
E Thistles
Asteraceae,Compositae
roots
stalks

Cladina rangiferina
Cladonia rangiferina
E "Caribou" moss
"Reindeer" moss
Lichens
thallus

Cladophora rapestris
Cladophora
Algae
N seaweed, dried

Claytonia caroliniana
Claytonia lanceolata
Claytonia tuberosa
ER Spring-beauty
Portulaceae
corms
N "tubers"

Claytonia megarhiza
Claytonia acutifolia

Cirsium pumilum
Thistle
Asteraceae, Compositae
roots
stalks

Claytonia perfoliata
Montia perfoliata
E Miner's lettuce
Portulacaceae
N greens
N greens, cooked

Claytonia sibirica
Montia sibirica
Siberian spring-beauty
Portulacaceae
greens

Claytonia virginica
ER Spring-beauty
Portulacaceae
corms

Cleome serrulata
E Rocky mountain bee-plant
Spider flower
Capparidaceae
N seeds
greens

Clethra alnifolia
R Sweet pepperbush
Clethraceae
greens, cooked

Clintonia borealis
Corn lily
Bluebead lily
Liliaceae
N greens

Cnicus benedictus
I Blessed thistle
Asteraceae, Compositae
roots
flower receptacles

Mousenut
Eriophorum angustifolium

Mugwort
Artemisia spp.

Mulberries
Morus spp.

Mule's-ear
Wyethia amplexicaulis

Murlins
Alaria esculenta

Musk mallow
Malva moschata

Musk thistle
Carduus nutans

Mustards
Brassica spp.

Nagoonberry
Rubus acaulis
Rubus arcticus

Nannyberry
Viburnum lentago

Narrow-leaved cattail
Typha angustifolia

Narrow-leaved goosefoot
Chenopodium leptophyllum

Narrow-leaved lomatium
Lomatium triternatum

Narrow-leaved meadowsweet
Spiraea alba

Narrow-leaved puccoon
Lithospermum angustifolium

Narrow-leaved vetch
Vicia sativa

Navy beans
Phaseolus vulgaris

Newfoundland bilberry
Vaccinium nubigenum

Nipplewort
Lapsana communis

Nodding microseris
Microseris nutans

Nodding onion
Allium cernuum

Nodding saxifrage
Saxifraga cernua

Nootka lupine
Lupinus nootkatensis

Nootka rose
Rosa nutkana

Nori
Porphyra spp.

Northern black currant
Ribes hudsonianum

Northern bog violet
Viola cucullata
Viola nephrophylla

Northern comandra
Geocaulon lividum

Northern dewberry
Rubus flagellaris

Northern hedysarum
Hedysarum boreale

Northern hound's tongue
Cynoglossum boreale

Northern iris
Iris setosa

Northern Labrador-tea
Ledum palustre

Northern mannagrass
Glyceria borealis

roots

Corylus cornuta
E Beaked hazelnut
wild filbert
Betulaceae
nuts

Corylus spp.
Hazelnuts
Betulaceae
N Nuts

Coryphantha vivipara
Mamillaria vivipara
ER Pincushion cactus
Cactaceae
fruits
stems

Costaria costata
E Kelp
Algae
fronds

Crataegus brainerdii
Hawthorn
Rosaceae
fruit

Crataegus calpodendron
Pear hawthorn
Rosaceae
fruit

Crataegus coccinea
Thicket hawthorn
Rosaceae
fruit

Crataegus crus-galli
Cockspur thorn
Rosaceae
fruit

Crataegus dilatata
Hawthorn
Rosaceae

Crataegus douglasii
E Black hawthorn
Black thornberry
Rosaceae
N fruit

Crataegus flabellata
Hawthorn
Rosaceae
fruit

Crataegus intricata
Thicket hawthorn
Rosaceae
fruit

Crataegus mollis
E Red hawthorn
Downy hawthorn
Rosaceae
fruit

Crataegus monogyna
IE English hawthorn
Common hawthorn
Rosaceae
N fruit, dried

Crataegus pruinosa
Frosted hawthorn
Rosaceae
fruit

Crataegus punctata
E Punctate hawthorn
Rosaceae
fruit

Crataegus rotundifolia
Red hawthorn
Rosaceae
fruit

Crataegus succulenta
Long-spined hawthorn
Rosaceae

fruit

Crataegus spp.
E Hawthorns
Rosaceae
fruit

Cryptotaenia canadensis
Honeywort
Wild harvil
Apiaceae, Umbelliferae
greens
roots

Cucurbita spp.
E Squashes
Pumpkins
Melons
Cucurbitaceae
fruits
N flowers
N leaves
seeds

Cymopteris acaulis
R Plains cymopterus
Apiaceae, Umbelliferae
roots

Cynoglossum boreale
Northern hound's tongue
Boraginaceae
greens

Cynoglossum officinale
I Hound's tongue
Boraginaceae
N greens

Cyperus esculentus
Chufa
Yellow nut grass
Cyperus
Cyperaceae
N tuber

Cytisus scoparius
I Scotch broom
fruit

Daucus carota
I Wild carrot
Apiaceae, Umbelliferae
N(T) roots
N(T) seeds

Daucus pusillus
American wild carrot
Apiaceae, Umbelliferae
roots

Dentaria diphylla
E Pepperroot
Two-leaved pepperroot
Brassicaceae, Cruciferae
roots

Dentaria laciniata
Cut toothwort
Brassicaceae, Cruciferae
greens
roots

Dentaria maxima
E Large toothwort
Brassicaceae, Cruciferae
greens
roots

Descurainia pinnata
Western tansy mustard
Brassicaceae, Cruciferae
N seeds

Digitaria ischaemum
I Smooth crabgrass
Poaceae, Gramineae
grains

Digitaria sanguinalis
I Hairy crabgrass
Poaceae, Gramineae
grains

Fabaceae, Leguminosae
N T seeds

Dioscorea villosa
Wild yam
Atlantic yam
Dioscoreaceae
roots

Disporum hookeri
E Hooker's fairybells
Liliaceae
fruit

Disporum lanuginosum
I Fairybells
Liliaceae
fruit

Disporum smithii
Smith's fairybells
Liliaceae
fruit

Disporum trachycarpum
E Rough fruited fairybells
Liliaceae
fruit

Dryas octopetala
White mountain avens
Rosaceae
leaves, tea

Dryas spp.
Mountain avens
Rosaceae
N leaves

Dryopteris expansa
Dryopteris austriaca
Dryopteris assimilis
Dryopteris spinulosa
Dryopteris dilatata
Dryopteris carthusiana
E Spiny wood fern
Polypodiaceae

Echinochloa crusgalli
I Common barnyard grass
Barnyard grass
Poaceae, Gramineae
N grains

Elaeagnus angustifolia
I Russian olive
Elaeagnaceae
N fruit

Elaeagnus commutata
E Silverberry
Wolf willow
Elaeagnaceae
N fruit

Elaeagnus spp.
Silverberry
Elaeagnaceae
N fruit

Eleusine indica
I Goosegrass
Wire-grass
Poaceae, Gramineae
N grains

Elymus arenarius
E Sea lyme grass
Strand-wheat
Poaceae, Gramineae
grains

Elymus canadensis
E Canada wild rye grass
Poaceae, Gramineae
N grains

Elymus mollis
Dune wild rye grass
Poaceae, Gramineae
grains

N rootstock, steamed

Elymus piperi
Elymus cinereus
Giant wild rye grass
Poaceae, Gramineae
grains

Empetrum nigrum
E Black crowberry
Curlewberry
Empetraceae
N fruit
tea

Epigaea repens
Mayflower
Ericaceae
flowers

Epilobium angustifolium
E Fireweed
willowherb
Onagraceae
N greens
N leaves
N stems
flowers
roots

Epilobium latifolium
E River beauty
Dwarf fireweed
Broad-leaved willowherb
Onagraceae
N leaves
stems
flower buds

Equisetum arvense
E Common horsetail
Field horsetail
Equisetaceae
N greens
tubers

Equisetum telmateia
E Giant horsetail

Equisetum spp.
E Horsetails
Equisetaceae
N shoots

Erechtites hieracifolia
Fireweed (also see *Epilobium)*
Asteraceae, Compositae
greens

Erigenia bulbosa
Harbinger-of-spring
Apiaceae, Umbelliferae
roots

Eriogonum umbellatum
E Umbrella-plant
Polygonaceae
leaves, tea

Eriophorum angustifolium
E Tall cottongrass
"Mousenut"
Cyperaceae
stems
corms

Erodium botrys
I Broad leaf alfilaria
Geraniaceae
N greens

Erodium cicutarium
I Red stem alfilaria
Geraniaceae
N greens

Erodium moschatum
I White stem alfilaria
Geraniaceae
N greens

Eruca sativa
I Garden rocket
Brassicaceae, Cruciferae
N greens

Equisetaceae
shoots

Erythronium americanum
R Yellow adder's tongue
Liliaceae
(T) bulbs, cooked

Erythronium grandiflorum
E Yellow avalanche lily
Glacier lily
Yellow dogtooth violet
Liliaceae
N (T) bulbs

Erythronium revolutum
ER Pink fawn lily
Pink Easter lily
Liliaceae
(T) bulbs, cooked

Euphorbia lathyrus
I Caper spurge
Euphorbiaceae
(T) caper substitute

Eurotia lanata
E Winterfat
Chenopodiaceae
greens

Fagopyrum sagittatum
I Buckwheat
Polygonaceae
seeds

Fagopyrum tartaricum
I Tartary buckwheat
Polygonaceae
N seeds

Fagus grandifolia
E American beechnut
Fagaceae
NT nuts

Floerkea proserpinacoides
False mermaid

Foeniculum vulgare
I Common fennel
Apiaceae, Umbelliferae
N greens

Fragaria chiloensis
E Pacific coast strawberry
Beach strawberry
Rosaceae
fruit

Fragaria vesca
Fragaria bracteata
E Woodland strawberry E
Wild strawberry
Rosaceae
N fruit
leaves, tea

Fragaria virginiana
E Blueleaf strawberry
Wild strawberry
Rosaceae
N leaves
fruit
leaves, tea

Fragaria X *ananassa*
I Strawberry
Rosaceae
N fruit

Fragaria spp.
Wild strawberry
Rosaceae
N leaves
N fruit
leaves, tea

Fraxinus americana
White ash
Oleaceae
N leaves

Limnanthaceae
greens

Fraxinus excelsior
I European ash
Oleaceae
seeds pickled
leaves

Fraxinus nigra
Black ash
Oleaceae
seeds pickled
leaves

Fraxinus pennsylvanica
E Red ash
Oleaceae
inner bark

Fraxinus quadrangulata
Oleaceae
seeds pickled
leaves

Fritillaria camschatcensis
ER Riceroot lily
Riceroot fritillary
Mission bells
Indian rice
Kamchatka lily
Liliaceae
N "root"

Fritillaria lanceolata
ER Chocolate lily
Liliaceae
bulbs

Fritillaria pudica
ER Yellowbell fritillary
Liliaceae
N bulbs

Fucus spp.
Rockweed
Algae
fronds
N seeds

Galinsoga ciliata
I Galinsoga
Quick weed
Asteraceae, Compositae
N greens

Galinsoga parviflora
I Small flowered galinsoga
Asteraceae, Compositae
N greens

Galium aparine
Common bedstraw
Common cleavers
Rubiaceae
N greens
fruit, beverage

Galium triflorum
Sweet-scented bedstraw
Rubiaceae
N greens

Galium verum
I Ladies' bedstraw
Rubiaceae
leaves, dried, beverage

Ganoderma applanatum
E Shelf fungus
Fungi
fungus

Gaultheria hispidula
E Creeping snowberry
Ericaceae
N leaves
N shoots
leaves, tea

Gaultheria humifusa
E Alpine wintergreen
Ericaceae
fruit
leaves, tea

Gaultheria ovatifolia
E Oregon wintergreen
Mountain teaberry
Ericaceae
fruit

Gaultheria procumbens
E Wintergreen
Teaberry
Checkerberry
Ericaceae
N (T) shoots
(T) fruit

Gaultheria shallon
E Salal
Ericaceae
N fruit
leaves

Gaylussacia baccata
E Black huckleberry
Huckleberry
Ericaceae
N fruit

Gaylussacia dumosa
E Dwarf huckleberry
Ericaceae
fruit

Genista tinctoria
I Dyer's greenwood
Fabaceae, Leguminosae
buds, pickled

Geocaulon lividum
E Northern comandra
Santalaceae
(T) fruit

Geranium dissectum
I Cut-leaved cranesbill
Geraniaceae
roots

Geranium erianthum
E Sticky geranium
Geraniaceae
leaves, tea

Geranium viscosissimum
E Sticky geranium
leaves

Geum rivale
Water avens
Rosaceae
roots

Geum triflorum
prairie smoke
Old man's whiskers
Rosaceae
roots

Geum urbanum
I Herb bennet
Rosaceae
roots, leaves, beverage

Glaux maritima
E Sea-milkwort
Primulaceae
roots

Glechoma hederacea
I Ground-ivy
Lamiaceae, Labiatae
N leaves

Gleditsia triacanthos
Honey locust
Sweet locust
Fabaceae, Leguminosae
(T) pods

Glyceria borealis
Tall mannagrass
Northern mannagrass
Poaceae, Gramineae
N greens

Glyceria occidentalis
Western manna grass
Poaceae, Gramineae
grains

Glyceria striata
Fowl manna grass
Poaceae, Gramineae
grains

Glycyrrhiza lepidota
E Wild licorice
Licorice
Fabaceae, Leguminosae
NT roots dry

Gymnocladus dioica
Kentucky coffee tree
Fabaceae, Leguminosae
(T) fruit

Hamamelis virginiana
E Witch-hazel
Hamamelidaceae
N leaves, dried
leaves, tea

Hedeoma hispida
Rough pennyroyal
Lamiaceae, Labiatae
(T) condiment

Hedeoma pulegioides
Pennyroyal
Pudding-grass
Lamiaceae, Labiatae
T condiment

Hedophyllum sessile
E "Bubbly" kelp
Algae
fronds

Heracleum lanatum
E Cow-parsnip

Hedysarum alpinum
E Sweet vetch
Alpine hedysarum
Bear root
Alaska carrot
Fabaceae, Leguminosae
NT roots

Hedysarum boreale
R Northern hedysarum
Fabaceae, Leguminosae
T roots

Helianthus annuus
E Common sunflower
Asteraceae, Compositae
N sunflower heads
N seeds

Helianthus giganteus
Giant sunflower
Asteraceae, Compositae
seeds
buds
budstems

Helianthus tuberosus
E Jerusalem artichoke
Asteraceae, Compositae
N tubers

Hemerocallis fulva
I Day lily
Liliaceae
N flowers

Hemerocallis lilioasphodelus
I Day lily
Liliaceae
N flowers

Hemerocallis spp.
I Day lilies
Liliaceae
N buds

Humulus lupulus
I European hops

“Indian celery”
"Indian rhubarb"
Apiaceae, Umbelliferae
N T greens
N T shoots
T (T) stalks

Heracleum sphondylium
I Cow-parsnip
Common cowparsnip
Apiaceae, Umbelliferae
T young shoots
T greens peeled

Heuchera cylindrica
E Round-leaved alumroot
Saxifragaceae
leaves, tea

Hieracium spp.
E Hawkweeds
Asteraceae, Compositae
latex, gum

Hippophae rhamnoides
I Sea buckthorn
Elaeagnaceae
N Fruit
N fruit pulp

Hippuris tetraphylla
Four-leaved marestail
Hippuridaceae
greens

Hippuris vulgaris
E Common mare's-tail
Hippuridaceae
greens

Hordeum jubatum
I Foxtail barley
Poaceae, Gramineae
N grains

Hydrophyllum virginicum
E Virginia waterleaf
Indian salad
Moraceae
greens
condiment, beer

Hydrocotyle americana
Winter pennyroyal
Apiaceae, Umbelliferae
greens

Hydrocotyle umbellata
Water pennywort
Apiaceae, Umbelliferae
greens

Hydrocotyle verticillata
Water pennywort
Apiaceae, Umbelliferae
greens

Hydrophyllum appendiculatum
Waterleaf
Hydrophyllaceae
greens

Hydrophyllum canadensis
Waterleaf
Hydrophyllaceae
roots

Hydrophyllum capitatum
E Ball-head waterleaf
Hydrophyllaceae
roots
stalks

Hydrophyllum fendleri
Fendler's waterleaf
Hydrophyllaceae
roots

Inula helenium
I Elecampane
Asteraceae, Compositae

"John's-cabbage"
Hydrophyllaceae
N greens

Hygrophorus sp.
"Slippery-top"
Fungi
mushroom

Hypochaeris radicata
I Common cat's ear
Asteraceae, Compositae
N greens, dry

Hyssopus officinalis
I Hyssop
Lamiaceae, Labiatae
condiment

Ilex glabra
I Inkberry
Gallberry
Aquifoliaceae
leaves, tea

Ilex verticillata
Common waterberry
Aquifoliaceae
leaves, tea

Impatiens biflora
Spotted touch-me-not
Bakaminaceae
N leaves

Impatiens capensis
Spotted touch-me-not
Balsaminaceae
N greens

Inonotus obliquus
E Wood-rot fungus
Fungi
tea

Juglans nigra
E Black walnut
Juglandaceae
confection

Ipomoea pandurata
Wild sweet-potato vine
Convolvulaceae
root

Iris pseudacorus
I Yellow iris
Iridaceae
T seeds
T rhizomes

Iris setosa
Northern iris
Beachhead iris
Iridaceae
T rootstocks

Iris sibirica
I Siberian iris
Iridaceae
T rootstocks

Isatis tinctoria
I Woad
Brassicaceae, Cruciferae
N leaves, dry

Iva annua
Marshelder
Sumpweed
Asteraceae, Compositae
seeds

Juglans cinerea
E Butternut
Juglandaceae
N T greens
N nuts

Kochia scoparia
I Summer cypress
Chenopodiaceae

N T shoots
N nuts

Juncus balticus
Baltic rush
Juncaceae
N greens

Juncus effusus
E Common rush
Soft rush
Juncaceae
N shoots

Juncus ensifolius
E Sword-leaved rush
Juncaceae
"bulbs"

Juniperus communis
E Common juniper
Cupressaceae
(T) fruit
(T) tea

Juniperus virginiana
E Juniper
Cupressaceae
N shoots

Juniperus spp.
Junipers
Cupressaceae
N leaves
(T) tea

Kalmia polifolia
E Swamp laurel
Ericaceae
T leaves, tea

Lamium purpureum
I Purple dead-nettle
Lamiaceae, Labiatae
N greens
N seeds

Lactuca canadensis
Tall yellow lettuce
Wild lettuce
Asteraceae, Compositae
N greens

Lactuca muralis
I Wall lettuce
Asteraceae, Compositae
greens

Lactuca saligna
I Indian salad
Asteraceae, Compositae
greens

Lactuca scariola
I Prickly lettuce
Asteraceae, Compositae
N greens

Laminaria groenlandica
E Kelp
Algae
fronds

Laminaria spp.
E Kelp
Algae
fronds

Lamium album
I White dead-nettle
Lamiaceae, Labiatae
N greens
N leaves

Lamium amplexicaule
I Henbit dead-nettle
Lamiaceae, Labiatae
(T) greens, cooked

Ledum groenlandicun
E Common Labrador-tea
Hudson's Bay tea

(T) greens, cooked

Lapsana communis
I Nipplewort
Asteraceae, Compositae
greens

Larix occidentalis
E Western larch
Pinaceae
gum
inner bark
sap

Lathyrus japonicus
Lathyrus maritimus
E Beach pea
Fabaceae, Leguminosae
(T) seeds
N T fruit, greens

Lathyrus ochroleucus
E Creamy vetchling
Fabaceae, Leguminosae
roots
(T) greens
(T) seeds

Lathyrus palustris
E Marsh vetchling
Fabaceae, Leguminosae
T seeds

Lathyrus tuberosus
I Tuberous vetchling
Fabaceae, Leguminosae
(T) tubers

Ledum glandulosum
E Trapper's tea
Ericaceae
T leaves, tea

Lepidium spp.
I Peppergrass
Brassicaceae, Cruiciferae
N greens

Ericaceae
NT leaves, tea

Ledum palustre
E Northern Labrador-tea
Hudson's Bay tea
Ericaceae
N T leaves, tea
N flowers

Lepidium campestre
I Field pepergrass
Brassicaceae, Cruciferae
greens

Lepidium densiflorum
Prairie peppergrass
Brassicaceae, Cruciferae
greens

Lepidium latifolium
I Broad-leaved peppergrass
Brassicaceae, Cruciferae
greens

Lepidium ruderale
I Roadside peppergrass
Brassicaceae, Cruciferae
greens

Lepidium sativum
I Garden cress
Brassicaceae, Cruciferae
N seeds
N greens

Lepidium virginicum
E Tall peppergrass
Brassicaceae, Cruciferae
greens
condiment

Ligusticum scothicum
Ligusticum hultenii
E Beach lovage
"wild celery"
Scotch lovage

Lessoniopsis littoralis
E Kelp
Algae
fronds

Levisticum officinale
I Lovage
Apiaceae, Umbelliferae
greens
condiment

Lewisia columbiana
ER Columbia bitterroot
Columbia lewisia
Portulacaceae
roots

Lewisia pygmaea
ER Alpine lewisia
Portulacaceae
roots

Lewisia rediviva
ER Bitterroot
Portulacaceae
N roots

Liatris punctata
E Blazing star
Asteraceae, Compositae
roots

Ligusticum canbyi
E Canby's lovage
Apiaceae, Umbelliferae
roots, condiment

Liriodendron tulipifera
Tulip tree
Magnoliaceae
roots

Apiaceae, Umbelliferae
(T) greens

Lilium bulbiferum
I Lily
Liliaceae
bulbs

Lilium canadensis
Lilium columbianum
ER Tiger lily
Columbia lily
Canada lily
Liliaceae
bulbs

Lilium philadelphicum
ER Wood lily
Liliaceae
bulbs

Lilium tigrinum
I Tiger lily
Liliaceae
bulbs

Lindera benzoin
E Spicebush
Spicewood
Lauraceae
N leaves
twigs, beverage

Linum perenne
Wild flax
Linaceae
N(T) seeds

Linum usitatissimun
I Common flax
Linaceae
N(T) Seeds

Lomatium foeniculaceum
R Hairy-fruited parsley
Fennel-leaved lomatium
Apiaceae, Umbelliferae
roots

Lithospermum angustifolium
Narrow-leaved puccoon
Boraginaceae
roots

Lithospermum incisum
E Yellow gromwell
Boraginaceae
roots

Lithospermum ruderale
E Columbia gromwell
Boraginaceae
roots, tea

Lomatium ambiguum
ER Desert parsley
Apiaceae, Umbelliferae
roots
leaves
seeds
flowers
condiment

Lomatium canbyi
"White camas"
Apiaceae, Umbelliferae
roots

Lomatium cous
E Biscuitroot
Apiaceae, Umbelliferae
N roots
N roots dry
N roots cooked

Lomatium dissectum
E Chocolate-tips
Fern-leaved lomatium
Apiaceae, Umbelliferae
T roots
T young shoots

Lonicera ciliosa
Orange honeysuckle
Western trumpet honeysuckle
Caprifoliaceae
flower nectar

Lomatium geyeri
ER Geyer's lomatium
Apiaceae, Umbelliferae
N roots

Lomatium macrocarpum
E Desert parsley
Biscuit-root
"Wild carrot"
"Indian carrot"
Large-fruited lomatium
Apiaceae, Umbelliferae
N roots

Lomatium nudicaule
E " Indian celery"
Bare-stem lomatium
Indian consumption plant
Apiaceae, Umbelliferae
N greens
seeds, condiment

Lomatium triternatum
E Narrow-leaved lomatium
Apiaceae, Umbelliferae
roots
flowers
seeds
leaves, condiment

Lomatium utriculatum
E Spring gold
Fine-leaved lomatium
Apiaceae, Umbelliferae
roots
shoots

Lonicera canadensis
American fly honeysuckle
Caprifoliaceae
fruit

Lycium halimifolium
I Matrimony vine
Solanaceae
greens cooked
fruit

Lonicera involucrata
E Black twinberry
Twinflower honeysuckle
Caprifoliaceae
T fruit

Lonicera utahensis
E Red twinberry
Utah honeysuckle
Caprifoliaceae
fruit

Lonicera villosa
Blue fly honeysuckle
Caprifoliaceae
fruit

Lunaria annua
I Annual honesty
Brassicaceae, Cruciferae
N seeds
flowers

Lupinus littoralis
E Chinook licorice
Beach lupine
Fabaceae, Leguminosae
T roots

Lupinus nootkatensis
E Nootka lupine
Fabaceae, Leguminosae
NT roots

Lupinus perennis
Wild lupine
Wild pea
Fabaceae, Leguminosae
T seeds
T roots

Macrocystis integrifolia
Macrocystis pyrifera
E Giant kelp
Kelp flag
Sea ivy
Devilsapron

Lycoperdon giganteum
E Giant puffball
Fungi
mushroom

Lycopodium lucidulum
E Shining club-moss
Lycopodiaceae
greens

Lycopodium selago
E Club-moss
Lycopodiaceae
greens

Lycopus asper
E Rough water-horehound
Lamiaceae, Labiatae
roots

Lycopus uniflorus
E Northern water-horehound
Bridgeweed
Lamiaceae, Labiatae
roots

Lygodesmia juncea
Rushlike skeleton plant
Asteraceae, Compositae
latex, gum

Lysichitom americanus
E Western skunk-cabbage
Swamp lantern
Yellow arum
Araceae
(T) rhizomes, cooked
T leaves

Malva neglecta
I Dwarf mallow
Malvaceae
N leaves
fruit

Long bladder kelp
Algae
N fronds, fresh
N fronds, dry

Madia glomerata
Clustered tarweed
Asteraceae, Compositae
seeds

Madia sativa
I Chilean tarweed
Asteraceae, Compositae
seeds

Maianthemum canadensis
E Wild lily-of-the-valley
Canadian mayflower
Liliaceae
N fruit

Maianthemum dilatatum
E Wild lily-of-the-valley
Two-leaved false Solomon's-seal
Liliaceae
fruit

Malva spp.
(see *Pyrus* spp.)

Malva alcea
I Pink mallow
Malvaceae
greens
young fruit

Malva moschata
I Musk mallow
Malvaceae
N leaves

Matteuccia struthiopteris
ER Ostrich fern
Fiddlehead fern
Polypodiaceae
N fiddleheads

Medeola virginiana

Malva parviflora
I Small-flowered mallow
Malvaceae
N greens
young fruit

Malva rotundifolia
Malva pusilla
I Small mallow
Malvaceae
N greens

Malva sylvestris
I Common mallow
High mallow
Malvaceae
N greens

Malva verticillata
I Whorled mallow
Malvaceae
greens
young shoots

Malva spp.
Mallows
Malvaceae
N greens

Marrubium vulgare
I Common horehound
Lamiaceae, Labiatae
Condiment

Matricaria matricarioides
E Pineappleweed
Wild chamomile
Asteraceae, Compositae
stems
flowers

Melissa officinalis
I Lemon balm
Lamiaceae, Labiatae
greens, condiment

Mentha arvensis
E Field mint

R Indian cucumberroot
Liliaceae
roots

Medicago hispida
I Bur-clover
Fabaceae, Leguminosae
N greens

Medicago lupulina
I Black medic
Fabaceae, Leguminosae
N seeds

Medicago polymorpha
I Bur-clover
Fabaceae, Leguminosae
N greens

Medicago sativa
IE Alfelfa
Fabaceae, Leguminosae
N greens
condiment

Melica bulbosa
Onion grass
Poaceae, Gramineae
bulbs

Melica subulata
Alaskan onion grass
Poaceae, Gramineae
bulbs

Melilotus officinalis
I Yellow sweet-clover
Fabaceae, Leguminosae
NT seeds

Mentzelia albicaulis
White-stemmed blazing star
Loasaceae
N seeds

Menyanthes trifoliata
Canada mint
Common mint
Lamiaceae, Labiatae
leaves, tea, condiment

Mentha citrata
I Bergamont mint
Lamiaceae, Labiatae
leaves, condiment

Mentha gentilis
I American apple mint
Labiatae, lamiaceae
leaves, condiment

Mentha longifolia
I Horse mint
Lamiaceae, Labiatae
leaves, condiment

Mentha piperita
IE Peppermint
Lamiaceae, Labiatae
N greens dry
leaves, tea, condiment

Mentha rotundifolia
I Apple mint
Lamiaceae, Labiatae
N leaves, condiment

Mentha spicata
Spearmint
Lamiaceae, Labiatae
N leaves, condiment

Mentha spp.
Mint
Lamiaceae, Labiatae
N leaves, condiment

Monardella odoratissima
E Coyote mint
Labiatae, Laminaceae
leaves, tea

Monotropa uniflora

Buckbean
Gentianaceae
N roots

Menziesia ferruginea
E False azalea
(T) Ericaceae
leaves and twigs, tea

Microseris nutans
Nodding microseris
Asteraceae, Compositae
roots

Milium effusum
Millet grass
Poaceae, Gramineae
grains

Mitchella repens
E Partridge-berry
Squaw-vine
Rubiaceae
N fruit
plant, tea

Mollugo verticillata
I Common carpet weed
Aizoaceae
potherb

Monarda didyma
Oswego tea
Lamiaceae, Labiatae
leaves, condiment, tea

Monarda fistulosa
E Wild bergamot
Lamiaceae, Labiatae
N seeds
leaves, condiment, tea

Myrica gale
Sweet gale
Myricaceae
leaves
fruit, condiment

Indian-pipe
Pyrolaceae
N stalks

Montia perfoliata
(see *Claytonia perfoliata)*

Morchella crassipes
Morel
Fungi
N mushroom

Morchella esculenta
Common morel
Fungi
N mushroom

Morchella hortensis
Morel
Fungi
N mushroom

Morchella spp.
E Morel
Fungi
mushroom

Morus alba
I White mulberry
Moraceae
N fruit

Morus rubra
E Red mulberry
Moraceae
(T) fruit

Morus spp.
Mulberry
Moraceae
N fruit

Nigella damascena
I Love-in-a-mist
Ranunculaceae
N(T) seeds

Nuphar advena

Myrica pensylvanica
Bayberry
Myricaceae
N fruit

Nasturtium officinale
Rorippa nasturtium-aquaticum
IE Common watercress
Brassicaceae, Cruciferae
N greens

Nelumbo lutea
E Yellow lotus
Waternut
Duck acorn
Water chinquapin
Nymphaeaceae
N rhizomes
N seeds

Nemopanthus mucronata
Mountain holly
Aquifoliaceae
fruit

Nepeta cataria
IE Catnip
Catmint
Lamiaceae, Labiatae
N leaves
N seeds
leaves, tea

Nephroma arcticum
E Arctic kidney lichen
Lichens
thallus

Nereocystis luetkeana
E Bull kelp
Algae
fronds, stipes

Nyssa sylvatica
Sourgum
Pepperidge
Nyssaceae
N fruit

E Yellow pond-lily
Common spatterdock
Water lily
Cow lily
Nymphaeaceae
N greens
rhizomes

Nuphar polysepalum
Yellow pond-lily
Nymphaeaceae
seeds
rhizomes

Nuphar variegatum
E Yellow pond-lily
Yellow water-lily
Bullhead-lily
Nymphaeaceae
N greens
rhizomes

Nymphaea odorata
E Fragrant water-lily
Nymphaeaceae
tubers
flowerbuds
seeds

Nymphaea tuberosa
Tuberous water lily
Magnolia water lily
Nymphaeaceae
N greens
tubers

Nymphoides cordata
Floating-heart
Gentianaceae
greens

Opuntia fragilis
E Fragile prickly-pear cactus
Brittle prickly-pear cactus
Cactaceae
stems

Oemleria cerasiformis
Osmaronia cerasiformis
E Indian plum
Bird cherry
June plum
Rosaceae
(T) fruit

Oenanthe sarmentosa
E Water-parsley
Wild celery
Pacific oenanthe
Apiaceae, Umbelliferae
NT tubers
T (T) stems

Oenothera biennis
Yellow evening primrose
Onagraceae
shoots
roots

Onoclea sensibilis
E Sensitive fern
Polypodiaceae
shoots (fiddleheads)

Onoclea struthiopteris
(see *Matteuccia struthiopteris)*

Onopordum acanthium
I Scotch cotton-thistle
Asteraceae, Compositae
stalks
flower receptacles
seed oil

Opuntia compressa
Prickly-pear cactus
Cactaceae
stems
N fruit

Osmorhiza claytonii
Sweet cicely
Apiaceae, Umbelliferae
roots
fruit

Opuntia polyacantha
E Many-spined prickly-pear cactus
Plains prickly-pear cactus
Cactaceae
stems
fruit

Origanum vulgare
I Wild marjoram
Lamiaceae, Labiatae
leaves, condiment

Orobanche ludoviciana
Louisiana broom-rape
Orobanchaceae
stems

Oryzopsis asperifolia
White-grained mountain rice grass
Poaceae, Gramineae
grains

Oryzopsis hymenoides
E Indian rice grass
Poaceae, Gramineae
N grains

Osmaronia cerasiformis
(see *Oemleria cerasiformis)*

Osmorhiza chilensis
E Sweet cicely
Apiaceae, Umbelliferae
(T) roots
condiment

Oxalis stricta
E Wood-sorrel
E Upright yellow oxalis
Oxalidaceae

condiment

Osmorhiza depauperata
E Sweet cicely
Apiaceae, Umbelliferae
T roots
condiment

Osmorhiza longistylis
Smooth sweet cicely
Apiaceae, Umbelliferae
(T) roots
condiment

Osmorhiza occidentalis
E Western sweet cicely
Apiaceae, Umbelliferae
(T) roots
condiment

Osmunda cinnamomea
E Cinnamon fern
Osmundaceae
shoots

Oxalis corniculata
IE Wood-sorrel
Yellow oxalis
Oxalidaceae
N (T) greens

Oxalis dillenii
Wood-sorrel
Oxalidaceae
(T) leaves

Oxalis montana
E Wood-sorrel
Oxalidaceae
(T) leaves

Oxytropis nigrescans
E Black oxytrope
Fabaceae, Leguminosae
roots

Palmaria palmata
(T) leaves

Oxalis spp.
E Wood-sorrel
Oxalidaceae
N (T) leaves

Oxycoccus macrocarpus
Vaccinium macrocarpon
Large-fruited cranberry
Ericaceae
N fruit

Oxycoccus microcarpus
"Vaccinium oxycoccus"
E Small-fruited bog cranberry
Ericaceae
fruit

Oxycoccus ovalifolius
"Vaccinium oxycoccus"
E Oval-leaved bog cranberry
Ericaceae
fruit

Oxycoccus quadripetalus
"Vaccinium oxycoccus"
E Small cranberry
Ericaceae
N fruit

Oxyria digyna
E Mountain-sorrel
Polygonaceae
N (T) leaves

Oxytropis maydelliana
E Yellow oxytrope
Locoweed
Fabaceae, Leguminosae
T roots

Parmelia physodes
E Puffed shield lichen
Lichens
T thallus

Parrya nudicaulis

Rhodymenia palmata
E Dulse
Red alga
Algae
N fronds
N fronds dry

Panax quinquefolius
R American ginseng
Araliaceae
roots for tea
condiment
N roots

Panax trifolius
R Dwarf ginseng
Araliaceae
roots, tea

Panicum miliaceum
I Broomcorn millet
Common millet
Indian millet
Poaceae, Gramineae
N grains

Papaver nudicaule
Iceland poppy
Papaveraceae
leaves
(T) seeds

Papaver rhoeas
I Common field poppy
Papaveraceae
N seeds

Papaver somniferum
I Opium poppy
Papaveraceae
NT Seeds
NT seed capsules

Pedicularis lanceolata
E Wood betony
Scrophulariaceae
greens

Pedicularis langsdorfii
E Parry's wallflower
Brassicaceae, Cruciferae
leaves
roots
condiment

Parthenocissus quinquefolia
E Virginia creeper
Vitaceae
T stalk
T sap

Pastinaca sativa
I Common parsnip
Apiaceae, Umbelliferae
N (T) roots

Pedicularis canadensis
E Wood betony
Scrophulariaceae
greens
roots

Pedicularis capitata
R Capitate lousewort
Scrophulariaceae
roots
shoots

Pedicularis hirsuta
Hairy lousewort
Scrophulariaceae
N leaves

Pedicularis lanata
ER Woolly lousewort
Bumblebee plant
Scrophulariaceae
roots
shoots

Petasites frigidus
E Arctic coltsfoot
Sweet coltsfoot
Asteraceae, Compositae
T stalks
N leaves, young

ER Langsdorf's lousewort
Scrophulariaceae
roots

Pedicularis sudetica
R Sudeten lousewort
Scrophulariaceae
roots
shoots

Peltandra virginica
Arrow-arum
Araceae
roots

Penstemon fruticosus
E Shrubby penstemon
Scrophulariaceae
leaves, condiment

Perideridia gairdneri
Carum gairdneri
E Yampah
Wild caraway
Squaw-root
"Wnd carrot"
"Indian carrot"
Apiaceae, Umbelliferae
N (T) roots

Petalostemon candidum
Dalea candida
E Prairie-clover
Fabaceae, Leguminosae
roots
leaves, tea

Phragmites australis
Phragmites communis
E Reed grass
Common reed
Poaceae, Gramineae
rootstocks
N shoots
sap
grains

Petasites japonicus
I Japanese butterbur
Asteraceae, Compositae
T stalks
T leaves, young

Petasites palmatus
E Palmate coltsfoot
Common coltsfoot
Asteraceae, Compositae
T stalks
T leaves, young

Petasites sagittatus
Arrow-leaved coltsfoot
Asteraceae, Compositae
T leaves, young
T stalks

Petasites vitifolius
Grape-leaved coltsfoot
Asteraceae, Compositae
T stalks
T leaves, young

Phalaris canariensis
I Canary grass
Poaceae, Gramineae
N grains
N roots

Phaseolus vulgaris
Beans
Navy beans
Fabaceae, Leguminosae
N seeds

Physalis virginiana
Virginia ground-cherry
Solanaceae
(T) fruit

Physalis spp.
Ground-cherry
Husk-tomato
Solanaceae
N (T) fruit

Phyllospadix scouleri
E Scouler's surf-grass
Sea-grass
Zosteraceae
rhizomes
leaves

Phyllospadix torreyi
E Torrey's surf-grass
Sea-grass
Zosteraceae
rhizomes
leaves

Physalis alkekengi
I Chinese lantern plant
Solanaceae
N seeds
(T) fruit

Physalis heterophylla
E Yellow ground-cherry
Solanaceae
(T) fruit

Physalis ixocarpa
I Tomatillo
Solanaceae
N (T) fruit
N seeds

Physalis pubescens
I Small yellow ground-cherry
Solanaceae
(T) fruit

Picea sitchensis
E Sitka spruce
Pinaceae
gum
inner bark

Picris echioides
I Bristly oxtongue
Asteraceae, Compositae
N blossoms

Picris hieracioides

Picea abies
I Common spruce
Pinaceae
N needles

Picea engelmannii
E Engelmann spruce
Pinaceae
gum
needles
inner bark

Picea glauca
E White spruce
Pinaceae
gum
tea
sap

Picea mariana
Black spruce
Pinaceae
N needles
gum
tea

Picea rubens
E Red spruce
Pinaceae
N needles
tea

Pinus strobus
E White pine
Pinaceae
N needles

Pinus spp.
E Pines
Pinaceae
gum
N seeds
young needles
inner bark

I Oxtongue
Asteraceae, Compositae
greens, cooked

Pilea pumila
Richweed
Urticaceae
greens, cooked

Pinguicula vulgaris
Common butterwort
Lentibulariaceae
rennet source

Pinus albicaulis
E White-bark pine
Pinaceae
inner bark
seeds

Pinus contorta
Lodgepole pine
Pinaceae
inner bark
tea
seeds

Pinus ponderosa
E Ponderosa pine
Pinaceae
N T needles
inner bark
seeds

Plantago maritima
E Seaside plantain
Goosetongue
Plantaginaceae
leaves
seeds

Plantago rugelii
I Rugel's plantain
Plantaginaceae
N greens

Platanus occidentalis
Plane tree

Plantago coronopus
I Buck's horn plantain
Plantaginaceae
leaves
seeds

Plantago decipiens
I Goosetongue
Plantaginaceae
N greens
N greens, cooked

Plantago lanceolata
I Ribwort plantain
Plantaginaceae
N seeds

Plantago macrocarpa
E Seaside plantain
Goosetongue
Plantaginaceae
leaves

Plantago major
Greater plantain
Broad-leaved plantain
Plantaginaceae
N greens
N seeds
N leaves

Polygonum aviculare
I Common knotweed
Polygonaceae
N greens

Polygonum bistorta
E Mountain bistort
Bistort
Polygonaceae
roots
shoots
N leaves

Polygonum bistortoides

Buttonwood
American sycamore
Platanaceae
sap
beverage

Pleurotus ostreatus
Pleurotus sapidus
E Oyster mushroom
Fungi
mushroom

Podophyllum peltatum
E Mayapple
Mandrake
Berberidaceae
(T) fruit, ripe

Polygala vulgaris
I Common milkwort
Polygalaceae
leaves for tea

Polygonatum biflorum
E Solomon's-seal
Liliaceae
roots

Polygonatum pubescens
Solomon's-seal
Liliaceae
roots

Polygonum pensylvanicum
Pennsylvania smartweed
Polygonaceae
N greens
N greens, cooked

Polygonum persicaria
I Lady's thumb smartweed
Polygonaceae
N leaves
N greens, cooked

Polygonum phytolaccaefolium
Polygonum alaskanum
Polygonum alpinum
E Smokeweed bistort
Polygonaceae
roots

Polygonum convolvulus
I Wild buckwheat
Polygonaceae
N greens
N seeds

Polygonum cuspidatum
I Japanese knotweed
Polygonaceae
shoots

Polygonum douglasii
Douglas' knotweed
Polygonaceae
seeds

Polygonum lapathifolium
Pale smartweed
Polygonaceae
N seeds

Polygonum paronychia
Beach knotweed
Polygonaceae
greens

Polypodium glycyrrhaa
(see *Polypodium vulgare*)

Polypodium vulgare
Polypodium glycyrrhiza
E Licorice fern
Polypody fern
Polypodiaceae
N rhizomes

Polyporus sulphureus
Laetiporus sulphureus
E Bracket fungi
Fungi
fungus

IE Alpine knotweed
"Wild rhubarb"
Polygonceae
greens

Polygonum punctatum
Dotted smartweed
Polygonaceae
N seeds

Polygonum sachalinense
I Giant knotweed
Polygonaceae
N greens

Polygonum scandens
False climbing buckwheat
Polygonaceae
N greens

Polygonum viviparum
E Alpine bistort
Polygonaceae
N leaves
rhizomes

Polygonum spp.
E Knotweeds
Polygonaceae
N greens
N bulbs

Populus grandidentata
E Large-toothed aspen
Salicaceae
inner bark

Populus nigra
I European black poplar
Salicaceae
cambium

Populis tremuloides
E Trembling aspen
Quaking aspen
Salicaceae
N bark

Polyporus spp.
E Bracket fungi
Fungi
fungus

Polystichum munitum
E Sword fern
Polypodiaceae
rootstocks

Pontederia cordata
Common pickerelweed
Pontederiaceae
N greens

Populus alba
I White poplar
Salicaceae
inner bark

Populus balsamifera
Populus trichocarpa
E Cottonwood
Balsam poplar
Salicaceae
N inner bark

Populus deltoides
E Cottonwood
Salicaceae
buds, fruit

Porphyra spp.
E Seaweed
Red laver, nori
Algae
fronds

Portulaca oleracea
E Purslane
Fortulacaceae
N greens
N seeds

Potamogeton natans
Floating-leaved pondweed

N cambium dry
ashes, condiment
bark, tea

Populus trichocarpa
(see *Populus balsamifera*)

Poria obliqua

Porphyra abbottIe
E Laver
Algae
fronds

Porphyra perforata
E Laver
Black seaweed
Algae
N fronds, dried
fronds

Porphyra pseudolanceolata
E Laver seaweed
Algae
fronds

Porphyra torta
E Laver seaweed
Algae
fronds

Primula veris
I Cowslip primrose
Cowslip
Primulaceae
N greens

Proboscidea louisianica
I Common unicorn plant
Martyniaceae
fruit, pickled

Prunella vulgaris
IE Self-heal

N Zosteraceae
roots

Potamogeton pectinatus
Sago pondweed
Zosteraceae
tuberous roots

Potentilla anserina
Potentilla pacifica
Potentilla egedii
E Silverweed
Cinquefoil
Rosaceae
N rhizomes
N rhizomes, steamed

Potentilla fruticosa
E Shrubby cinquefoil
Rosaceae
N leaves, dried (for tea)

Potentilla glandulosa
E Sticky cinquefoil
Rosaceae
leaves for tea

Potentilla nivea
Snow cinquefoil
Rosaceae
N leaves, dried

Potentilla pacifica
(see *Potentilla anserina*)

Prunus pensylvanica
Prunus emarginata
E Pin cherry
Rosaceae
N T fruit

Prunus persica
I Peach
Rosaceae
N T fruit

Prunus serotina
E Rum cherry

Lamiaceae, Labiatae
flowers, leaves, tea

Prunus americana
E Wild plum
American plum
Rosaceae
(T) fruit

Prunus avium
I Sweet cherry
Rosaceae
N (T) fruit

Prunus demissa
(see *Prunus virginiana*)

Prunus domestica
I Garden plum
Dawson plum
Rosaceae
N (T) fruit

Prunus mahaleb
I Mahaleb cherry
Rosaceae
(T) fruit

Prunus nigra
E Canada plum
Rosaceae
T fruit

Prunus padus
I European bird cherry
Rosaceae
(T) fruit

Psoralea esculenta
E Prairie turnip
Indian breadroot
Fabaceae, Leguminosae
N roots

Psoralea physodes
California tea
Fabaceae, Leguminosae
leaves for tea

American cherry
Black cherry
Rosaceae
N fruit

Prunus spinosa
I Sloe plum
Rosaceae
(T) fruit

Prunus tomentosa
I Manchu cherry
Rosaceae
fruit

Prunus virginiana
Prunus demissa
E Choke cherry
Rosaceae
N (T) fruit
bark, tea

Prunus spp.
E Wild cherries and plums
Rosaceae
(T) fruit

Pseudotsuga menziesii
Pseudotsuga taxifolia
E Douglas-fir
Pinaceae
N needles
N sugar
seeds

Pycnanthemum virginianum
E Mountain-mint
Lamiaceae, Labiatae
condiment

Pyrola asarifolia
E Bog wintergreen
Ericaceae
leaves, tea

Ptelea trifoliata
Hop tree
Wafer ash
Rutaceae
beverage, condiment

Pteridium aquilinum
E Bracken fern
Polypodiaceae
N (T) rhizomes
N T rhizomes, dry
greens

Pterygophora spp. (?)
Eastern Arctic kelp
Algae
N greens

Pycnanthemum incamum
Mountain-mint
Lamiaceae, Labiatae
condiment

Pycnanthemum pilosum
Mountain-mint
Labiatae, lamiaceae
condiment

Pycnanthemum tenuifolium
Mountain-mint
Lamiaceae, Labiatae
condiment

Pycnanthemum verticillatum
Mountain-mint
Lamiaceae, Labiatae
condiment

Pyrus prunifolia
I Plum-leaf crabapple
Rosaceae
(T) fruit

Pyrus spp.
Crabapples
Rosaceae
N (T) fruit

Pyrola virens
Wintergreen
Ericaceae
leaves

Pyrus arbutifolia
E Red and black chokeberry
Rosaceae
(T) fruit

Pyrus baccata
I Siberian crabapple
Rosaceae
(T) fruit

Pyrus communis
I Pear
Rosaceae
N (T) fruit

Pyrus coronaria
E Wild crabapple
Garland crabapple
Rosaceae
(T) fruit

Pyrus fusca
Malus fusca
E Pacific crabapple
Wild crabapple
Rosaceae
N (T) fruit

Pyrus malus
I Cultivated apple
Rosaceae
fruit

Quercus prinus
I Chestnut oak
Fagaceae
N T acorns

Quercus robur
I English oak
Fagaceae
T acorns

Quercus alba
E White oak
Fagaceae
N T acorns

Quercus bicolor
E Swamp white oak
Fagaceae
T acorns

Quercus borealis
Red oak
Fagaceae
N T acorns

Quercus ellipsoidalis
Northern pin oak
Fagaceae
acorns
N T seed meal

Quercus garryana
E Garry oak
Fagaceae
N T acorns

Quercus macrocarpa
E Bur oak
Mossy-cup oak
Fagaceae
acorns
N T seed meal

Quercus prinoides
Dwarf chestnut oak
Chinquapin oak
Fagaceae
T acorns

Ranunculus reptans
Creeping spearwort
Ranuncukceae
N T roots

Ranunculus sceleratus

Quercus rubra
Red oak
Fagaceae
T acorns

Quercus velutina
Black oak
Fagaceae
T acorns

Quercus spp.
Oaks
Fagaceae
N T acorns

Ranunculus bulbosus
I Bulbous buttercup
Ranunculaceae
N T greens, cooked

Ranunculus ficaria
I Pilewort
Ranunculaceae
T roots, cooked

Ranunculus pallasi
E Pallas buttercup
Ranunculaceae
N T greens, cooked

Ranunculus repens
I Creeping buttercup
Ranunculaceae
N T greens, cooked

Rhododendron albiflorum
E White rhododendron
Ericaceae
T leaves

Rhododendron lapponicum

I Celery-leaved buttercup
Ranunculaceae
N T greens

Ranunculus spp.
Buttercups
Ranunculaceae
N T greens, cooked

Raphanus raphanistrum
I wild radish
Brassicaceae, Cruciferae
N greens
greens, cooked
N fruit

Raphanus sativum
I Garden radish
Brassicaceae, Cruciferae
N greens

Reseda lutea
I Yellow cut-leaved mignonette
Resedaceae
greens

Rhamnus purshiana
Cascara
Rhamnaceae
(T) fruit

Rheum rhaponticum
IE Garden rhubarb
Polygonaceae
N T stalks

Rhexia virginica
E Meadow-beauty
Melastomataceae
leaves, beverage

Ribes bracteosum
E Grayberry
Sunberry
Blue currant
Stink currant
Grossulariaceae
N fruit

Lapland rhododendron
Ericaceae
T leaves for tea

Rhus aromatica
Skunkbush
Anacardiaceae
fruit

Rhus copallina
Dwarf sumac
Shining sumac
Anacardiaceae

Rhus glabra
E Smooth sumac
Anacardiaceae
N (T) fruit
(T) shoots
seeds

Rhus typhina
E Staghorn sumac
Lemonade tree
Anacardiaceae
N (T) fruit

Ribes americanum
E Wild black currant
Grossulariaceae
N fruit

Ribes aureum
E Golden currant
Grossulariaceae
fruit

Ribes hudsonianum
E Northern black currant
Hudson Bay currant
Grossulariaceae
N fruit

Ribes irriguum
E Idaho black gooseberry

Ribes cereum
E Squaw currant
Grossulariaceae
fruit

Ribes cynosbati
E Prickly gooseberry
American wild gooseberry
Grossulariaceae
fruit

Ribes diacanthum
I Red currant
Grossulariaceae
fruit

Ribes divaricatum
E Coastal black gooseberry
Wild black gooseberry
Grossulariaceae
N fruit
N greens, fruit and leaves

Ribes glandulosum
E Skunk currant
Grossulariaceae
N fruit

Ribes grossularia
I European gooseberry
Grossulariaceae
fruit

Ribes howellii
Currant
Grossulariaceae
fruit

Ribes oxyacanthoides
E Canada gooseberry
Smooth gooseberry
Grossulariaceae
N fruit (green)
N fruit (purple)

Ribes sanguineum
E Red-flowering currant
Grossulariaceae
Grossulariaceae
fruit

Ribes lacustre
E Swamp gooseberry
Swamp black currant
Grossulariaceae
N fruit

Ribes laxiflonum
E Trailing black currant
wild blue currant
Grossulariaceae
N fruit

Ribes lobbii
E Sticky gooseberry
Gummy gooseberry
Grossulariaceae
fruit

Ribes montigenum
Alpine prickly gooseberry
Grossulariaceae
fruit

Ribes nigrum
I European Mack currant
Grossulariaceae
fruit

Ribes odoratum
E Buffalo currant
Golden currant
Grossulariaceae
fruit

Rosa acicularis
E Prickly rose
Rosaceae
N fruit rind
petals

Rosa arkansana
E Arkansas rose
Prairie wild rose
Low prairie rose

fruit

Ribes setosum
Bristly gooseberry
Grossuiariaceae
fruit

Ribes sylvestre
I European currant
Grossulariaceae
fruit

Ribes triste
E Wild red currant
Red swamp currant
Grossulariaceae
N fruit

Ribes viscosissimum
E Sticky currant
Grossulariaceae
fruit

Ribes watsonianum
Watson's gooseberry
Grossulariaceae
fruit

Rorippa amphibia
I Cress
Brassicaceae, Cruciferae
greens

Rorippa islandica
E Marsh cress
Marsh yellow cress
Brassicaceae, Cruciferae
greens

Rosa eglanteria
I Sweet briar
Rosaceae
shoots, young
fruit rind

Rosa gymnocarpa
E Dwarf wild rose
Baldhip rose
Rosaceae
shoots, young
fruit rind

Rosa blanda
Smooth rose
Rosaceae
shoots, young
fruit rind

Rosa canina
I Dog rose
Rosaceae
N flowers
N fruit rind

Rosa carolina
Carolina rose
Rosaceae
shoots, young
fruit rind

Rosa centifolia
I Cabbage rose
Rosaceae
shoots, young
fruit rind

Rosa cinnamomea
I Cinnamon rose
Rosaceae
shoots, young
fruit rind

Rosa pisocarpa
E Swamp rose
Clustered wild rose
Rosaceae
shoots, young
fruit rind
petals

Rosa rousseauiorum

Rosaceae
shoots, young
fruit rind
leaves, twigs, tea

Rosa multiflora
I Japanese rose
Bramble rose
Rosaceae
N fruit rind

Rosa nitida
Wild rose
Rosaceae
shoots, young
fruit rind

Rosa nutkana
E Nootka rose
Bristly Nootika rose
Rosaceae
N fruit
leaves, twigs, tea
flower petals

Rosa odorata
I Tea rose
Rosaceae
shoots, young
fruit rind

Rosa palustris
Swamp rose
Rosaceae
N fruit rind

Rosa woodsii
E Wood's rose
Rosaceae
shoots, young
fruit rind
petals

Rosa spp.
Wild roses
Rosaceae
N fruit

Wild rose
Rosaceae
shoots, young
fruit rind

Rosa rugosa
I Rambling rose
Rugose rose
Rosaceae
N fruit
N fruit pulp, dry

Rosa setigera
Prairie rose
Rosaceae
shoots, young
fruit rind

Rosa spinosissima
I Burnet rose
Rosaceae
shoots, young
fruit rind

Rosa virginiana
E Virginia rose
Rosaceae
shoots, young
fruit rind
flower buds

Rosa williamsii
Wild rose
Rosaceae
shoots, young
fruit rind

Rubus enslenii
Dewberry
Rosaceae
fruit

Rubus flagellaris
E Northern dewberry
Rosaceae
fruit

Rubus hispidus

Rubus acaulis
(see also *Rubus arcticus*)
E Dwarf raspberry
Dewberry
Stemless raspberry
Nagoonberry
Rosaceae
fruit

Rubus allegheniensis
E Blackberry
Allegheny blackberry
Rosaceae
N fruit

Rubus arcticus
Arctic raspberry
Dwarf raspberry
Dwarf nagoonberry
Rosaceae
N fruit

Rubus canadensis
E Canada blackberry
Rosaceae
fruit

Rubus chamaemorus
E Cloudberry
Bakeapple
Rosaceae
N fruit

Rubus nivalis
Snow dewberry
Rosaceae
fruit

Rubus ocidentalis
(see also *Rubus leucodermis*)
E Black raspberry
Thimbleberry
Rosaceae
N fruit
N greens
shoots
Swamp blackberry
Rosaceae
fruit

Rubus idaeus
E Wild raspberry
American red raspberry
Rosaceae
N fruit
shoots
leaves for tea

Rubus illecebrosus
I Strawberry-raspberry
Rosaceae
fruit

Rubus laciniatus
IE Evergreen blackberry
Cutleaf blackberry
Rosaceae
fruit

Rubus lasiococcus
Dwarf bramble
Rosaceae
fruit

Rubus leucodermis
E Blackcap
Black raspberry
Rosaceae
N fruit
shoots

Rubus procerus
IE Himalayan blackberry
Rosaceae
fruit

Rubus pubescens
E Dwarf raspberry
Running raspberry
Plumboy
Dwarf red blackberry
Rosaceae
N fruit

Rubus odoratus
E Purple-flowering raspberry
Thimbleberry
Rosaceae
fruit

Rubus paracaulis
Dwarf raspberry
Rosaceae
fruit

Rubus parviflorus
E Thimbleberry
Rosaceae
N fruit
N fruit dry
N shoots

Rubus pedatus
E Trailing wild raspberry
Rosaceae
fruit

Rubus pensylvanicus
E Pennsylvania blackberry
Rosaceae
fruit

Rubus phoenicolasius
IE Winterberry
Roseceae
fruit

Rubus ursinus
E Trailing wild blackberry
Pacific blackberry
Rosaceae
N fruit
leaves, tea

Rubus ursinus
I Boysenbercy
Rosaceae
N fruit

Rubus ursinus
I Loganberry

Rubus recurvicaulis
Blackberry
Dewberry
Rosaceae
fruit

Rubus saxatilis
I Roeback berry
Rosaceae
fruit

Rubus setosus
Blackberry
Rosaceae
fruit

Rubus spectabilis
E Salmonberry
Rosaceae
N fruit
N fruit, dry
N shoots
N shoots, peeled

Rubus stellatus
Alaska nagoonberry
Rosaceae
fruit

Rubus strigosis
Wild raspberry
Rosaceae
N fruit

Rumex alpinus
I Alpine dock
Polygonaceae
greens

Rumex arcticus
E Sourdock
Arctic dock
Polygonaceae
N greens

Rumex crispus
IE Curly dock
Polygonaceae

Rosaceae
N fruit

Rubus vermontanus
Vermont blackberry
Rosaceae
fruit

Rubus sp.
E Blackberry
Rosaceae
N fruit

Rubus spp.
E Raspberries
Rosaceae
N fruit

Rubus spp.
E Wild dewberries
Rosaceae
N fruit

Rumex acetosa
I Common sorrel
Polygonaceae
N leaves

Rumex acetosella
IE Sheep sorrel
Polygonaceae
N greens

Rumex spp.
Docks
Polygonaceae
N greens cooked
N greens
stalks

Ruta graveolens
I Common rue-herb of grace
Rutaceae
greens

Sagittaria cuneata
E Arum-leaved arrowhead
N greens

Rumex longifolius
I Long-leaved dock
Polygonaoeae
greens

Rumex obtusifolius
I Broad-leaf dock
Polygonaceae
N greens

Rumex occidentalis
E Western dock
"Indian rhubarb"
Polygonaceae
greens

Rumex orbiculatus
Great water dock
Polygonaceae
greens

Rumex patientia
I Spinach dock
Polygonaceae
N leaves

Rumex pseudo-alpinus
I Field dock
Polygonaceae
N greens

Salix arctophila
Creeping willow
Salicaceae
N leaves

Salix barclayi
Barclay's willow
Salicaceae
N greens

Salix exigua
Sandbar willow
Salicaceae
N leaves

Alismataceae
tubers

Sagittaria latifolia
E Arrowhead
Wapato
Alismataceae
N tubers
N greens

Salicornia europaea
Green European glasswort
Chenopodiaceae
greens

Salicornia virginica
Salicornia pacifica
E American glasswort
Beach asparagus
Cheopodiaceae
greens

Salix alaxensis
E River willow
Felty-leaved willow
Salicaceae
shoots
buds
leaves

Salix arctica
Arctic willow
Salicaceae
N leaves

Salsola kali
I Russian thistle
Chenopodiaceae
N seeds
N greens

Salvia verticillata
I Salvia
Lamiaceae, Labiatae
condiment

Sambucus canadensis

Salix phylicifolia
Salix pulchra
E Diamond-leaved willow
Tea-leaved willow
Surah
Salicaceae
N flower buds
N leaf buds
N leaves
shoots

Salix reticulata
Arctic net-veined willow
Arctic greens
Okowyot
Salicaceae
N greens

Salix richardsoni
Richardson's willow
Salicaceae
N flower buds
N leaf buds
N leaves

Salix spp.
Willows
Salicaceae
N leaves
N buds
shoots, leaves, tea

Sanguisorba canadensis
Canada burnet
Sitka burnet
Rosaceae
greens

Sanguisorba minor
I Salad burnet
Rosaceae
greens

Sassafras albidum

E American elder
Common elder
Sweet elder
Caprifoliaceae
N (T) firuit

Sambucus cerulea
Sambucus glauca
E Blue elderberry
Caprifoliaceae
flowers
N (T) fruit

Sambucus ebulus
I Dwarf elder
Caprifoliaceae
flowers
(T) fruit

Sambucus nigra
I European elder
Caprifoliaceae
N (T) fruit

Sambucus racemosa
Sambucus pubens
E Red elderberry
Caprifoliaceae
N T fruit

Sambucus spp.
Elder
Caprifoliaceae
N T fruit

Saxifraga oppositifolia
Purple mountain saxifrage
Saxifragaceae
N greens

Saxifraga pensylvanica
Marsh saxifrage
Saxifragaceae
greens

Saxifraga punctata
Brook saxifrage
Salad greens

E Sassafras
Lauraceae
T bark for tea
T roots for tea

Satureja acinos
I Basil-thyme
Lamiaceae, Labiatae
leaves for tea
condiment

Satureja douglasii
E Yerba buena
Lamiaceae, Labiatae
leaves for tea
condiment

Satureja hortensis
I Summer savory
Lamiaceae, Labiatae
N greens
condiment

Satureja vulgaris
I Wild basil savory
Lamiaceae, Labiatae
leaves for tea
condiment

Saxifraga cernua
Nodding saxifrage
Saxifragaceae
N leaves

Scirpus microcarpus
E Small-flowered bulrush
Cyperaceae
shoots
rootstocks
pollen
fruit

Scirpus robustus
Alkali bulrush
Cyperaceae
shoots

Saxifragaceae
greens

Saxifraga spicata
Spiked saxifrage
Saxifragaceae
greens

Scandix pecten-veneris
I Shepherd's needle
Apiaceae, Umbelliferae
greens

Scirpus lacustris
Scirpus acutus
Scirpus validus
E Tule
Roundstem tule
Roundstem bulrush
Great viscid bulrush
American great bulrush
Cyperaceae
N shoots
rhizomes

Scirpus maritimus
E Prairie bulrush
Alkali bulrush
Cyperaceae
N shoots
rhizomes

Sedum rupestre
I St. Vincent's rock stonecrop
Crassiilaceae
(T) leaves

Sedum telephium
I Orpine
Crassulaceae
(T) leaves

Setaria italica
I Foxtail millet
Gramineae, Poaceae
N greens

Sedum acre
I Goldmoss stonecrop
Crassulaceae
(T) leaves

Sedum divergens
E Stonecrop
Spreading stonecrop
Crassulaceae
(T) leaves

Sedum lanceolaium
Lance-leaved stonecrop
Crassulaceae
(T) leaves

Sedum oreganum
E Stonecrop
Crassulaceae
(T) leaves

Sedum purpureum
I Live-forever
Crassulaceae
N (T) greens
N greens, frozen

Sedum roseum
Rhodiola rosea
E Roseroot E
Crassulaceae
N (T) leaves
roots

Silene acaulis
Moss campion
Caryophyallaceae
greens
roots

Silene cucubalus
Silene vulgaris
I Bladder campion
Caryophyllaceae
(T) greens

Silphium laciniatum
I Mexican campion

Setaria lutescens
I Yellow foxtail
Gramineae, Poaceae
N greens

Setaria viridis
I Green foxtail
Poaceae, Gramineae
N greens

Shepherdia argentea
E Silver buffaloberry
Thorny buffaloberry
Elaeagnaceae
fruit

Shepherdia canadensis
E Soapberry
Russet buffaloberry
Soopolallie
Elaeagnaceae
N fruit

Sicyos angulatus
Bur-cucumber
Cucurbitaceae
(T) greens

Smilacina racemosa
E False Solomon's-seal
False spikenard
Liliaceae
N fruit
(T) greens
(T) rhizomes, condiment

Smilacina stellata
E Star-flowered false Solomon's-seal
Liliaceae
fruit
(T) greens

Smilacina trifolia
E Three-leaved Solomon's-seal
Liliaceae

Asteraceae, Compositae
chewing gum

Silybum marianum
I Milk-thistle
Asteraceae, Compositae
greens

Sisymbrium altissimum
IE Hedge mustard
Tall tumble mustard
Brassicaceae, Cruciferae
greens

Sisymbrium loeselii
I Loesel's tumble mustard
Brassicaceae, Cruciferae
greens

Sisymbrium officinale
I Common tumble mustard
Brassicaceae, Cruiferae
greens

Sium suave
E Water-parsnip
"Swamp parsnip"
Apiaceae, Umbelliferae
(T) shoots, young
(T) roots

Sonchus arvensis
I Rough perennial sow-thistle
Compositae, Asteraceae
N greens

Sonchus asper
I Prickly sow-thistle
Compositae, Asteraceae
greens

Sonchus oleraceus
I Common sow-thistle
Annual sow-thistle
Compositae, Asteraceae
N greens

Sorbus americana

fruit

Smilax herbacea
Greenbrier
Carrionflower
Liliaceae
N fruit, air dried
shoots
rootstocks

Smilax rotundifolia
Horsbier
Common greenbrier
Liliaceae
shoots
rootstocks

Smilax tamnoides
Greenbrier
Liliaceae
N shoots
rootstocks

Solanum triflorum
Cut-leaved nightshade
Solanaceae
(T) fruit, ripe

Sparganium angustifolium
E Broad-fruited bur-reed
Sparganiaceae
N rootstocks
stems

Spergula arvensis
I Common corn spurry
Caryophyllaceae
seeds for meal

Spiraea alba
E Narrow-leaved meadowsweet
Rosaceae
leaves for tea

Spiraea tomentosa
Spiraea
Rosaceae
leaves for tea

E Mountain-ash
Rosaceae
fruit

Sorbus aucuparia
I European mountain-ash
Rowan
Rosaceae
N (T) fruit

Sorbus decora
(see *Sorbus scopulina*)

Sorbus sambucifolia
E Moimtain-ash
Rosaceae
(T) fruit

Sorbus scopulina
E Western mountain-ash
Rosaceae
N (T) fruit

Sorbus sitchensis
E Sitka motmtain-ash
Rosaceae
(T) fruit

Stellaria humifusa
Salt marsh starwort
Caryophyllaceae
N greens

Stellaria media
I Chickweed
Common starwort
Caryophyllaceae
N leaves
N seeds

Sticta amplissima
E Tree lichen
Lichens
(T) thallus

Streptopus amplexifolius
E Cucumberroot twisted-stalk
Wild cucumber

Spiraea spp.
Spiraeas
Rosaceae
leaves, tea

Sporobolus cryptandrus
E Sand dropseed
Poaceae, Gramineae
N grains

Stachys cooleyae
E Cooley's hedge-nettle
Lamiaceae, Labiatae
shoots
flower nectar

Stachys palustris
Swamp hedge-nettle
Lamiaceae, Labiatae
shoots

Staphylea trifolia
Bladder-nut
Staphyleaceae
seeds

Symphoricarpos albus
E Waxberry
Snowberry
Caprifoliaceae
T fruit

Symphytum officinale
I Common comfrey
Boraginaceae
N (T) leaves

Symplocarpos foetidus
E Eastern skunk-cabbage
Araceae
T roots
T shoots

Tanacetum vulgare
I Common tansy
Asteraceae, Compositae

Liverberry
Watermelonberry
Scootberry
Liliaceae
(T) fruit
(T) greens

Streptopus roseus
Simple-stemmed twisted-stalk
Liliaceae
(T) fruit

Streptopus streptopoides
Small twisted-stalk
Liliaceae
(T) fruit

Suaeda maritima
Pursh's sea-blite
Chenopodiaceae
greens, cooked

Suaeda occidentalis
Western sea-blite
Chenopodiaceae
greens, cooked

Taraxacum hyparcticum
Wild dandlion
Asteraceae, Compositae
roots
rootcrowns
leaves

Taraxacum lacerum
Wild dandelion
Asteraceae, Compositae
roots
rootcrowns
leaves

Taraxacum laevigatum
I Red-seeded dandelion
Asteraceae, Compositae
roots
rootcrowns
leaves

T leaves for condiment

Taraxacum ambigens
Wild dandelion
Asteraceae, Compositae
roots
rootcrowns
leaves

Taraxacum ceratophorum
Homed dandelion
Asteraceae, Compositae
roots
rootcrowns
leaves

Taraxacum dumetorum
Wild dandelion
Asteraceae, Compositae
roots
rootcrowns
leaves

Taraxacum phymatocarpum
Wild dandelion
Asteraceae, Compositae
roots
rootcrowns
leaves

Taxus spp.
E Yews
Taxaceae
T twigs
T firuit

Teucrium scorodonia
I Wood gennander
Lamiaceae, Labiatae
beverage
condiment

Thalictrum spp.
E Meadow-rues
Ranunculaceae
T firuit
T greens
condiment

Taraxacum latilobum
Wild dandelion
Asteraceae, Compositae
roots
rootcrowns
leaves

Taraxacum laurentianum
Wild dandelion
Asteraceae, Compositae
roots
rootcrowns
leaves

Taraxacum officinale
IE Common dandelion
Asteraceae, Compositae
N greens
N buds
N flowers (for wine)
N greens, cooked

Thuja plicata
E Western red-cedar
Cupressaceae
T leaves
inner bark

Thymus arnicus
Wild thyme
Lamiaceae, Labiatae
condiment

Thymus serpyllum
Creeping thyme
Lamiaceae, Labiatae
condiment

Tilia americana
E Basswood
Tiliaceae
N leaves
inner bark
buds
twigs

Tolmeia menziesii

Thladiantha dubia
I Manchu tuber-gourd
Cucurbitaceae
fruit

Thlaspi arvense
I Field pennycress
Stinkweed
Brassicaceae, Cruciferae
N greens
N pods
N seeds
N greens, cooked

Thuja occidentalis
E Arbor vitae
White-cedar
Cupressaceae
T leaves

Tragopogon porrifolius
IE Common salsify
Asteraceae, Compositae
N greens
latex, gum

Tragopogon pratensis
IE Goat's beard
Oriental meadow goat's-beard
Asteraceae, Compositae
N greens
N greens, cooked
N latex, gum

Tremellodon sp.
E Jelly fungus
Fungi
fungus

Tricholoma gambosum ?
E St. George's mushroom ?
Fungi
mushroom

Tricholoma magnivelare
Armillaria ponderosa
E Pine mushroom
Piggy-back plant
Youth-on-age
Saxifragaceae
greens, young

Tradescantia virginiana
I Spiderwort
Commelinaceae
greens, cooked

Tragopogon dubius
I Yellow salsify
Asteraceae, Compositae
roots
greens, young
latex, gum

Trifolium wormskioldii
Trifolium fimbriatum
E Springbank cover
Fabaceae, Leguminosae
N rhizomes
N rhizomes, steamed

Triglochin maritima
E Arrow-grass
Sea-side arrow-grass
Juncaginaceae
(T) shoots, young
T seeds
(T) seeds for coffee substitute
T greens

Trigonella caerulea
I Blue fenugreek
Fabaceae, Leguminosae
flowers for condiment

Trillium grandiflorum
R Wake robin
Liliaceae
(T) greens

Fungi
mushroom

Tricholoma populinum
E Cottonwood mushroom
Fungi
N (T) mushroom

Trifolium pratense
IE Red clover
Fabaceae, Leguminosae
N flowers
N leaves

Trifolium repens
IE White clover
Fabaceae, Leguminosae
N greens
N leaves
flowers

Tsuga heterophylla
E Western hemlock
Pinaceae
inner bark
branch tips

Tsuga mertensiana
E Mountain hemlock
Pinaceae
inner bark

Tussilago farfara
I Colt's-foot
Common colt's-foot
Asteraceae, Compositae
N (T) greens

Typha angustifolia
Narrow-leaved cattail
Typhaceae
N greens
N rhizomes
N shoots

Typha latifolia
E Common cattail
Cattail

Triosteum aurantiacum
Wild coffee
Caprifoliaceae
berries, beverage

Triosteum perfoliatum
wild coffee
Tinker's-weed
Caprifoliaceae
berries, beverage

Tsuga canadensis
Eastern hemlock
Pinaceae
N leaves
tea
inner bark

Ulmus rubra
Red elm
Ulmaceae
inner bark

Ulmus thomasii
Rock elm
Ulmaceae
seeds

Ulva lactuca
E Sea lettuce
Algae
N fronds dry
N fronds fresh

Umbilicaria spp.
Rock tripe
Lichens
(T) thallus

Urtica dioica
E Stinging nettle
Urticaceae
N leaves
N greens
leaves, tea

Typhaceae
N seeds
N rhizomes
N stems
N greens
N shoots

Typha spp.
E Cattails
Typhaceae
N pollen
N rootstalk flour, defibered

Ulmus americana
E American elm
Ulmaceae
bark

Vaccinium alaskaense
E Alaska blueberry
Watery blueberry
Ericaceae
fruit
fruit, leaves, tea

Vaccinium angustifolium
E Low sweet blueberry
Blueberry
Ericaceae
fruit
fruit, leaves, tea

Vaccinium atrococcum
Black highbush blueberry
Downy swamp blueberry
Ericaceae
fruit
fruit, leaves, tea

Vaccinium caespitosum
E Dwarf bilberry
Dwarf mountain blueberry
Ericaceae
N fruit
fruit, leaves, tea

Vaccinium corymbosum
E Highbush blueberry

Usnea spp.
E Tree lichen
Lichens
(T) thallus

Uvularia perfoliata
Beltwort
Tiliaceae
shoots
roots

Uvularia sessilifolia
Small bellwort
Liliaceae
N leaves

Vaccinium myrtilloides
E Sour-top blueberry
Velvet-leaved blueberry
Low blueberry
Ericaceae
N leaves
N fruit

Vaccinium myrtillus
E Dwarf bilberry
Bilberry
Ericaceae
N fruit

Vaccinium nubigenum
Newfoundland bilberry
Ericaceae
fruit
leaves, fruit, tea

Vaccinium ovalifolium
E Oval-leaved Blackberry
Grey blueberry
Tall huckleberry
Ericaceae
N fruit
fruit, leaves, tea

Vaccinium ovatum
E Evergreen huckleberry

Ericaceae
N fruit
leaves, fruit, tea

Vaccinium deliciosum
Cascade bilberry
Ericaceae
fruit
leaves, fruit, tea

Vaccinium macrocarpon
(see *Oxycoccus macrocarpon*)

Vaccinium membranaceum
E Black mountain huckleberry
Black blueberry
Ericaceae
N fruit
fruit, leaves, tea

Vaccinium stamineum
E Deerberry
Squaw huckleberry
Ericaceae
fruit
leaves, fruit, tea

Vaccinium uliginosum
E Bog blueberry
Bog whortleberry
Alpine bilberry
Ericaceae
N fruit

Vaccinium vacillans
E Low blueberry
Ericaceae
fruit
leaves, fruit, tea

Vaccinium vitis-idaea
E Mountain cranberry
Rock cranberry
Red whortleberry
Lingonberry
Lowbush cranberry
Partridgeberry
Rock cranberry
Blue huckleberry
Ericaceae
N fruit
leaves, fruit, tea

Vaccinium parvifolium
E Red huckleberry
Red whortleberry
Ericaceae
N fruit
leaves, fruit, tea

Vaccinium scoparium
E Grouseberry
Ericaceae
fruit
leaves, fruit, tea

Vaccinium spp.
Whortleberries
Ericaceae
fruit

Valeriana edulis
E Edible valerian
Tobacco-root
Valerianaceae
roots

Valerianella locusta
I European cornsalad
Valerianaceae
N greens

Verbena hastata
Blue vervain
Verbenaceae
breadstuff

Veronica americana
American speedwell
American brooklime
Scrophulariaceae
greens

Veronica anagallis-aquatica

Cranberry
Ericaceae
N leaves
N fruit

Vaccinium spp.
Blueberries
Ericaceae
N leaves
N fruit

Vaccinium spp.
Huckleberries
Ericaceae
N fruit
N fruit, canned
N fruit, stored

Veronica officinalis
I Speedwell
Scrophulariaceae
greens

Verpa bohemica
E Early morel
Fungi
mushrooms

Viburnum acerifolium
Maple-leaved viburnum
Caprifoliaceae
fruit

Viburnum alnifolium
Hobblebush
Caprifoliaceae
fruit

Viburnum cassinoides
E Witherod
Appalachian tea
Wild raisin
Caprifoliacae
fruit

Viburnum dentatum
Arrow-wood
I Blue water speedwell
Scrophulariaceae
greens

Veronica beccabunga
I European brooklime
Scrophulariaceae
N leaves

Veronica catenata
Water speedwell
Scrophulariaceae
greens

Veronica chamaedrys
I Germander speedwell
Scrophulariaceae
greens

Viburnum opulus
Viburnum trilobum
American bush cranberry
Caprifoliaceae
N fruit, unripe
N fruit, ripe

Viburnum prunifolium
I Blackhaw
Caprifoliaceae
N fruit

Viburnum rafinesquianum
Downy arrow-wood
Caprifoliaceae
fruit

Vicia americana
American vetch
Fabaceae, Leguminosae
N T seeds

Vicia gigantea
E Giant vetch
Fabaceae, Leguminosae
N T seeds

Vica hirsuta
I Hairy vetch

Caprifoliaceae
fruit

Viburnum edule
E Highbush cranberry
Squashbush
Mooseberry
Caprifoliaceae
N fruit

Vibirnum lentago
E Nannyberry
Caprifoliaceae
N fruit

Viola adunca
Early blue violet
Violaceae
greens
flowers

Viola canadensis
Canada violet
Violaceae
greens
flowers

Viola cucullata
Northern bog violet
Violaceae
greens
flowers

Viola glabella
Yellow wood violet
Violaceae
greens
flowers

Viola nephrophylla
Northern bog violet
Violaceae
greens
flowers

Fabaceae, Leguminosae
N T seeds

Vica sativa
I Narrow-leaved vetch
Fabaceae, Leguminosae
N T seeds

Vicia sepium
I Bush vetch
Fabaceae, Leguminosae
T seeds

Vicia viliosa
Shaggy vetch
Fabaceae, Leguminosae
N T seeds

Viola papilionacea
Common blue violet
Violaceae
N leaves

Viola pedata
Pansy violet
Violaceae
greens
flowers

Viola pedatifida
Crowfoot violet
Larkspur violet
Violaceae
greens
flowers

Viola spp.
Violets
Violaceae
N leaves
N flowers

Vitis aestivalis
E Summer grape
Vitaceae
(T) fruit
N (T) leaves

Viola nuttallii
Nuttall's prairie yellow violet
Violaceae
greens
flowers

Viola odorata
I Sweet violet
Violaceae
greens
flowers

Viola palmata
Early blue violet
Palmate violet
Violaceae
greens
flowers

Vitis spp.
Concord grape
Vitaceae
N (T) fruit
(T) leaves

Wyethia amplexicaulis
E Mule's-ears
Asteraceae, Compositae
roots

Xanthium pensylvanicum
Cocklebur
Asteraceae, Compositae
N T seeds

Xanthium strumarium
Rough cocklebur
Asteraceae, Compositae
T greens
T seeds

Yucca glauca
R Yucca
Soapweed
Liliaceae
hearts
buds

Vitis labrusca
I Fox grape
Vitaceae
N (T) fruit
(T) leaves

Vitis riparia
E Riverbank grape
Wild grape
Vitaceae
(T) fruit
(T) leaves

Vitis vinifera
I Zante currant
Vitaceae
N fruit

Zea mays
E Maize
Indian corn
Poaceae, Gramineae
grains

Zizania aquatica
Zizania palustris
Wild-rice
Poaceae, Gramineae
N grains, parched
N grains, unparched
grains

Zostera marina
E Eel-grass
Zosteraceae
N seeds
rhizomes
greens

CHAPTER 6

Nutrient Values of Traditional Plant Foods

Tables of nutrient composition of foods are useful for (a) the calculation of nutrients in the diets of individuals or groups, (b) the planning of food resources for populations, (c) the planning of individual special dietary recommendations and (d) for teaching and research. Food composition tables are difficult and tedious to prepare, and are one of the weak links in field studies of dietary status, since computed dietary intakes can be no more reliable than the composition tables from which they are computed.

Problems common to the preparation of food composition tables relate to compilation of data from diverse sources, often when different methods of analysis are used and sample sizes are small (Southgate, 1974). Notwithstanding these problems, tables of nutrient composition of foods are essential tools in understanding the quality of human food intake. Some data, however limited they may be, are better than no data at all.

A compilation of published nutrient values for traditional plant foods of Indigenous Peoples of Canada is given in this chapter to provide further understanding of the nutritional properties of subsistence diets provided from the natural environment. A search of the peer-reviewed literature was conducted over several years. The list of plant foods in Chapter 5 was submitted by genus and species to computer searchers on three data bases: Agricola, Chemistry Abstracts and Biosis. References were compiled and data were systematically tabulated from them. Information on each species and part of the plant used was kept separately. Data tabulated included botanical name, common name, geographic origin, sampling site, number of samples, state of samples and the method of nutrient analyses. Published data were included from species taken in geographic areas outside Canada as long as the species were identified as also present in Canada. A resource was not used if there was no documentation of a reliable method of nutrient analysis. When needed, data were converted to a fresh weight basis using reported moisture values, and data were compiled to average values when more than one citation was located. A resource was not used if nutrients were given on a zero-moisture basis without moisture values. Of more than 1,000 plant foods searched, approximately 550 or 50% had no nutrient data available. The tables included in this chapter include only those species where some data were available, since it would have been pointless to list the species without any data at all. The literature searches are as complete as possible, and up to date within about five years.

It needs to be stated that a great deal of judgement goes into selecting which published data to use. First of all, it was essential to screen the peer-review nature of the journals cited, and to use only data where the methods of analysis were reported and which were reasonably current and reliable. Sources that gave unpublished data were usually not used, unless contact with the author ensured they had been peer-reviewed and/or were in press at the time. Exceptions to this were the USDA Agricultural Research Service tables, the National Canadian nutrient tables and FAO sponsored tables. All data are given using conventional styles of reporting significant figures.

The ranges and/or standard deviations of values for particular species were not compiled due to space limitations as well as to limited available data. Since the reference sources of the nutrient data are given for each plant species and part used, the reader can refer to the original research reports for further clarification, if needed.

In general, published research on nutrient composition of indigenous plant food resources is sparse, and research questions on nutrient composition are not always easily answered to the satisfaction of laboratory-based scientists. Difficulties include accurate field identification of wild plant foods by knowledgeable Indigenous People, and then confirmation of taxonomic identifications by a botanist. Collection of samples for analysis in remote regions requires careful handling and transportation. It is routinely difficult to get a substantial number of independent samples, but it is usually the case for plant samples to combine multiple numbers of plants or plant parts into a single sample of 500 grams, or more, for analysis. A sample of 500 grams or more is needed for a battery of analyses, and this quantity may require tedious field work with the cooperation of indigenous

consultants. Another hazard is that once a sample is collected and prepared to be edible, it is all too tempting for the sample to be eaten, and thus, it never gets to the laboratory (Kuhnlein, 1986).

In the tables given in this chapter, only single species items are reported where possible, and no multi-ingredient reciped items are included. If samples were reported "cooked," data were used only if the cooking was simply done (roasting, baking, boiling in water) without added ingredients.

The tables are divided into two major sections for presentation of the data. The A Tables (1A to 7A) present data for energy, proximate composition and vitamins. The B Tables (1B to 7B) present data on mineral contents for the identical species of the A Tables. The tables are further divided by plant parts as noted:

	number of pages
1 A/B. bark, cambium, sap, juice	2
2 A/B. flowers	4
3 A/B. roots	10
4 A/B. stems, leaves, shoots	58
5 A/B. seeds, nuts, grains, legumes	20
6 A/B. fruits	28
7 A/B. other parts	2

Within each table, listings are given in alphabetical order by genus and species with family name, common name, part used and reference citations.

As stated, the published data were used to report nutrients per 100 grams fresh weight (ie: non-dessicated) of the plant food. Occasionally, when plant foods were preserved by drying by indigenous groups, fresh and dried samples are reported. This style of reporting facilitates computation with dietary records.

When available, multiple data sources were taken into consideration for reporting a particular value. However when energy content and complete proximate composition (water, protein, fat, ash, carbohydrate) were given in a literature source, these were reported as an intact group in the A tables, because these values are usually intercomputed to provide carbohydrate-by-difference and energy. Vitamin A values reported in the literature were assumed to be as B-carotene and were converted as such to retinol equivalents (RE), usually from International Units of vitamin A. Mineral data, as reported in the B tables were the most universally available data; this is understandable because plant tissues are easily dried in the field without loss of these nutrients, and are therefore a less problematical subject of research.

For further information and understanding of nutrient contents of the species reported here, the reader is referred to three other sources of information:
(1) Duke and Atchley (1986) present a compilation of proximate composition of higher plants that has been published in twenty-two references, including several international tables of food composition. There is a particular emphasis on seeds in this resource, and it covers species known in all parts of the world.
(2) Medical Services Branch of Health and Welfare Canada (1985) have published a handbook which includes composition of several nutrients for many traditional foods of Canadian Indigenous People. The handbook relies primarily on American and Canadian National food nutrient tables, but also includes other published and unpublished values.
(3) The new USDA nutrient composition handbooks (8-2, 8-8, 8-9, 8-11, 8-12, 8-16) present the most comprehensive list of nutrients in plant foods commercially available in North American markets. The foods included in the USDA tables which are parallel to indigenous species reported in this book are shown in Table 6-1. The values presented in these tables have been added where appropriate.

Table 6-1. Commercial Species of Plant Foods Which are Similar to Traditional Species Reported in the USDA Handbook 8 Series, and the National Canadian Nutrient Table

FRUITS	
Blackberries	*Rubus* spp.
Blueberries	*Vaccinium* spp.
Boysenberry	*Rubus ursinus*
Crabapples	*Malus* spp.
Cranberry	*Vaccinium macrocarpon*
Currants, black	*Ribes* spp.
Currants, red and white	*Ribes* spp.
Currants, zante (grape)	*Vitis vinifera*
Elderberries	*Sambucus* spp.
Gooseberries	*Ribes* spp.
Grapes	*Vitis* spp.
Ground cherries	*Physalis* spp.
Loganberry	*Rubus ursinus*
Mulberries	*Morus* spp.
Prickly pear cactus	*Opuntia* spp.
Raspberries	*Rubus* spp.
Strawberries	*Fragaria* spp.
VEGETABLES	
Amaranths	*Amaranthus* spp.
Arrowhead or wapato	*Sagittaria latifolia*
Beans, navy	*Phaseolus vulgaris*
Burdock root	*Arctium lappa*
Butterbur (coltsfoot)	*Petasites japonicus*
Com (maize)	*Zea mays*
Dandelion greens	*Taraxacum officinale*
Docks	*Rumex* spp.
Fiddlehead ferns	(not given)
Jerusalem artichoke	*Helianthus tuberosus*
Kale	*Brassica oleracea*
Lambsquarters	*Chenopodium album*
Mustard greens	*Brassica juncea*
Mustard spinach	*Brassica rapa*
Pumpkin flowers	*Cucurbita* spp.
Pumpkin leaves	*Cucurbita* spp.
Purslane	*Portulaca oleracea*
Seaweed	*Porphyra laciniata*
Seaweed (kelp)	*Laminaria* spp.
Squash	*Curcurbita maxima*
Watercress	*Nasturtium officinale*
NUTS AND SEEDS	
Acorns	*Quercus* spp.
Beechnuts	*Fagus* spp.
Black walnut	*Juglans nigra*
Butternut	*Juglans cinerea*

Chestnut	*Castanea sativa*
Hazelnuts	*Corylus* spp.
Hickory nuts	*Carya* spp.
Oat	*Avena sativa*
Pine nut	*Pinus edulis*
Simflower seed	*Helianthus annuus*
Wild-rice	*Zizania aquatica*

Table 1A. Nutritional constituents of plants: bark, cambium, sap, juice. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Acer saccharum Aceraceae	sugar maple (38,91)	sap	-	96	0.1	-	-	-	-	-	-	-	-	-
Acer saccharum Aceraceae	sugar maple (19,38,73)	syrup	348	35	0.1	-	-	-	-	-	-	-	-	-
Alnus crispa Betulaceae	mountain alder (1)	bark	270	50	4.3	-	-	-	-	-	-	-	-	-
Betula glandulosa Betulaceae	scrub birch (11)	inner bark	-	43	3.1	-	14.0	-	-	-	-	-	11.0	-
Populus balsamifera Salicaceae	balsam poplar (1)	bark	230	49	1.9	-	-	-	-	-	-	-	-	-
Populus tremuloides Salicaceae	trembling aspen (177,180)	bark	-	41	1.3	-	-	31.7	1.6	-	-	-	-	-
Populus trichocarpa Salicaceae	cottonwood (323)	inner bark	27	92	0.2	0.5	6.3	1.5	0.8	-	-	-	-	-
Tsuga heterophylla Pinaceae	western hemlock (122)	cambium	103	70	2.3	0.6	25.9	-	1.1	-	-	-	-	-

Table 1B. Nutritional constituents of plants: bark, cambium, sap, juice. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Acer saccharum Aceraceae	sugar maple (38,91)	sap	0.3	<0.1	-	0.1	0.1	-	-	-	-	-	-
Acer saccharum Aceraceae	sugar maple (19,38,73)	syrup	107	8.7	7.7	163	17.5	0.1	2.9	4.2	-	-	17.3
Alnus crispa Betulaceae	mountain alder (1)-	bark	-	-	-	-	-	-	-	-	-	-	-
Betula glandulosa Betulaceae	scrub birch (11)	inner bark	-	-	-	-	-	-	-	-	-	-	-
Populus balsamifera Salicaceae	balsam poplar (1)	bark	-	-	-	-	-	-	-	-	-	-	-
Populus tremuloides Salicaceae	trembling aspen (177,180)	bark	684	17	1.8	130	53.1	0.5	8.3	4.4	1.2	-	-
Populus trichocarpa Salicaceae	cottonwood (323)	inner bark	10	39	-	-	8.0	0.4	0.4	0.3	0.1	-	-
Tsuga heterophylla Pinaceae	western hemlock (122)	cambium	202	-	-	-	11.6	-	1.6	2.5	-	-	-

Table 2A. Nutritional constituents of plants: flowers. (per l00g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.c mg	Vit.A RE
Barbarea species Brassicaceae	winter cress (124)	flowers	-	84	-	-	-	-	-	-	-	-	163	202
Cucurbita species Cucurbitaceae	pumpkin (4)	flowers	15	95.2	1.0	0.1	3.3	0.6	0.5	0.04	0.08	0.7	28.0	195
Helianthus annuus Asteraceae	common sunflower (163)	flowers	-	-	11.4	1.7	-	-	10.8	-	-	-	-	-
Hemerocallis fulva Liliaceae	day lily (73)	flowers	42	-	2.0	0.4	-	-	-	0.2	0.2	0.8	83.0	300
Hemerocallis lilioasphodelus Liliaceae	day lily (33)	flowers	42	87	2.0	0.4	9.6	1.2	0.8	0.2	0.2	0.8	88.0	
Picris echioides Asteraceae	bristly oxtongue (203)	blossoms	-	-	-	-	-	-	-	-	-	-	-	1700
Rosa canina Rosaceae	dog rose (227)	flowers	-	-	-	-	-	-	-	-	-	-	-	350
Salix phylicifolia Salicaceae	tea-leaved willow (11)	flower-buds	-	65	7.7	-	5.6	-	-	-	-	-	-	-
Salix richardsonii Salicaceae	Richardson's willow (11)	flower-buds	-	68	39	-	8.5	-	-	-	-	-	-	-
Taraxacum officinale Asteraceae	dandelion (162,227)	flowers	-	-	-	-	-	-	-					9.2
Trifolium pratense Fabaceae	red clover (162)	flowers	-	-	-	-	-	-	-	-	-	-	-	-
Typha species Typhaceae	cattail (45)	pollen	-	-	-	-	44.5	-	-	-	-	-	-	-

Table 2B. Nutritional constituents of plants: flowers. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Barbarea species Brassicaceae	winter cress (124)	flowers	-	-	-	-	-	-	-	-	-	-	-
Cucurbita species Cucurbitaceae	pumpkin (4)	flowers	39	49	5	173	24	-	-	0.7	-	-	-
Helianthus annus Asteraceae	common sunflower (163)	flowers	-	-	-	-	-	-	-	-	-	-	-
Hemerocallis fulva Liliaceae	day lily (73)	flowers	87	178	24	170	-	-	-	1.2	-	-	-
Hemeracallis lilioasphodelus Liliaceae	day lily (33)	flowers	87	175	24	170	-	-	-	1.2	-	-	-
Picris echioides Asteraceae	bristly oxtongue (203)	blossoms	-	-	-	-	-	-	-	-	-	-	-
Rosa canina Rosaceae	dog rose (227)	flowers	-	-	-	-	-	-	-	-	-	-	-
Salix phylicifolia Salicaceae	tea-leaved willow (11)	flower-buds	-	-	-	-	-	-	-	-	-	-	-
Salix richardsonii Salicaceae	Richardson's willow (11)	flower-buds	-	-	-	-	-	-	-	-	-	-	-
Taraxacum officinale Asteraceae	dandelion (162,227)	flower	-	-	-	-	-	-	-	-	-	-	-
Trifolium pratense Fabaceae	red clover (162)	flowers	-	-	-	-	-	-	-	-	-	-	-
Typha species Typhaceae	cattail (45)	pollen	-	-	-	-	-	-	-	-	-	-	-

Table 2A. Nutritional constituents of plants: flowers. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit A RE
Viola species Violaceae	violet (124)	flowers	-	86	-	-	-	-	-	-	-	-	150	-

Table 2D.Nutritional constituents of plants: flowers. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Viola species Violaceae	violet (124)	flowers	-	-	-	-	-	-	-	-	-	-	-

Table 3A. Nutritional constituents of plants: roots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Abronia latifolia Nyctaginaceae	yellow sand-verbena (75)	nuts	-	90	1.1	-	-	-	1.8	-	-	-	-	-
Allium nuttallii Liliaceae	Nuttall's onion (73,75)	bulbs	-	64	2.8	0.2	-	-	1.0	0.25	0.08	0.5	15.0	-
Allium tricoccum Liliacene	wild leek/ wild garlic (73)	bulbs	-	-	22	0.3	-	-	-	0.11	0.06	0.5	17.0	-
Apios americana Fabaceae	groundnut (7,120,313)	tubers	-	81	3.1	0.7	14.9	-	1.0	-	0.03	-	-	-
Arctium lappa Asteraceae	greater burdock (4,235)	roots	72	80	1.5	0.2	33.4	1.9	0.9	0.01	0.03	0.3	3.0	0
Asclepias tuberosa Asclepiadaceae	butterfly weed (75)	roots dry	-	9	6.3	-	11.7	-	9.5	-	-	-	-	-
Balsamorhiza deltoidea Asteraceae	deltoid balsamroot (75)	roots dry	-	8	-	-	-	-	-	-	-	-	-	-
Balsamorhiza sagittata Asteraceae	arrow-leaved balsamroot (75)	roots dry	-	8	4.1	-	-	-	5.5	-	-	-	-	-
Calochortus luteus Liliaceae	yellow mariposa lily (75)	bulbs	-	77	2.1	0.1	4.0	-	1.4	-	-	-	-	-
Camassia leichtlinii Liliaceae	great camas (319)	bulbs	-	82	1.0	0.1	16.4	-	0.9	-	-	-	-	-

Table 3B. Nutritional constituents o£ plants: roots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Alironia latifolia Nyctaginaceae	yellow sandverbena (75)	nuts	-	-	-	-	-	-	-	-	-	-	-
Allium nuttallii Liliaceae	Nuttall's onion (73,75)	bulbs	29	202	19	529	-	-	-	1.5	-	-	-
Allium tricoccum Liliaceae	wild leek/ wild garlic (73)	bulbs	52	50	5.0	347	-	-	-	1.1	-	-	-
Apios americana Fabaceae	groundnut (7,313)	tubers	-	-	-	-	-	-	-	-	-	-	-
Arctium lappa Asteraceae	greater burdock (4,235)	roots dry	41	51	5	308	38.0	-	-	-	-	-	-
Asclepias tuberosa Asclepiadaceae	butterfly weed (75)	roots dry	-	-	-	-	-	-	-	-	-	-	-
Balsamorhiza deltoirlea Asteraceae	deltoid balsamroot (75)	roots dry	-	-	-	-	-	-	-	-	-	-	-
Balsamorhiza sagittata Asteraceae	arrow-leaved balsamroot (75)	roots	-	-	-	-	-	-	-	-	-	-	-
Calochortus luteus Liliaceae	yellow mariposa lily (75)	bulbs	-	-	-	-	-	-	-	-	-	-	-
Camassia leichtlinii Liliaceae	great camas (319)	bulbs	19	49	-	-	8.6	0.1	0.4	0.6	0.3	-	-

Table 3A.Nutritional constituents of plants: roots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Camassia quamash Liliaceae	common camas (75,93,319)	bulbs	61	83	0.9	0.1	14.8	0.5	0.8	0.07	0.05	-	4.0	-
Cirsium drummondii Asteraceae	Drummond's thistle (75)	roots	-	78	2.9	-	-	-	1.7	-	-	-	-	-
Claytonia lanceolata Portulacaceae	spring-beauty (75)	tubers	-	75	2.0	0.2	22.2	-	1.0	-	-	-	-	-
Cyperus esculentus Cyperaceae	chufa/yellow nut grass (35,73,153,262)	tubers	-	90	1.5	7.5	-	0.9	0.2	0.48	0.06	-	-	-
Daucus carota Apiaceae	wild carrot (85,187)	roots	-	-	-	-	-	-	-	-	-	-	24.0	-
Dryopteris expansa Polypodiaceae	spiny wood fern (320, 323)	roots steamed	74	81	0.7	0.5	16.5	6.5	1.0	0.06	0.04	0.6	-	0.3
Erythronium grandiflorum Liliaceae	yellow avalanche lily (75)	bulbs	-	21	4.2	-	-	-	2.9	-	-	-	-	-
Fritillaria camschatcensis Liliaceae	riceroot lily (75,319,323)	bulbs	98	74	2.9	0.3	21.8	1.9	1.0	0.04	0.04	0.2	29.0	0
Fritillaria pudica Liliaceae	yellowbell fritillary (75,122)	bulbs	64	79	2.3	0.4	13.1	-	1.7	-	-	-	-	-
Glycyrrhiza lepidota Fabaceae	wild licorice (75)	roots dry	-	6	14.4	1.1	71.9	47.6	8.0	-	-	-	-	-

Table 3B. Nutritional constituents of plants: roots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Camassia quamash Liliaceae	common camas (75,93,319)	bulbs	17	45	-	-	8.6	0.1	0.5	1.6	0.3	-	-
Cirsium drummondii Asteraceae	Drummond's thistle (75)	roots	-	-	-	-	-	-	-	-	-	-	-
Claytonia lanceolata Portulacaceae	spring-beauty (75)	tubers	-	-	-	-	-	-	-	-	-	-	-
Cyperus esculentus Cyperaceae	chufa/ yellow nut grass (35,73,153,262)	tubers	31	108	-	-	-	-	-	2.4	-	-	-
Daucus carota Apiaceae	wild carrot (85,187)	roots	<0.1	-	-	-	-	<0 1	<0.1	0.1	-	0.1	-
Dryopteris expansa Polypodiaceae	spiny wood fern (320,323)	roots steamed	34	38	-	-	68.0	0.3	0.3	4.2	0.3	-	-
Erythronium grandiflorum Liliaceae	yellow avalanche lily (75)	bulbs	-	-	-	-	-	-	-	-	-	-	-
Fritillaria camschutcensis Liliaceae	riceroot lily (75,319,323)	bulbs	10	61	18	-	23	0.2	0.7	2.2	0.4	-	-
Fritillaria pudica Liliaceae	yellowbell fritillary (75,122)	bulbs	38	-	-	-	17.7	-	0.4	16.5	-	-	-
Glycyrrhiza lepidota Fabaceae	wild licorice (75)	roots dry	-	-	-	-	-	-	-	-	-	-	-

Table 3A. Nutritional constituents of plants: roots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Hedysarum alpinum Fabaceae	alpine hedysarum (28)	roots	-	-	-	-	-	-	-	-	-	-	29.0	-
Helianthus tuberosus Asteraceae	Jerusalem artichoke (73,75,194,247, 278)	tubers	77	75	2.6	0.5	17.4	0.8	2.5	0.20	0.10	1.3	4.0	2
Lewisia rediviva Portulacaceae	bitterroot (122)	roots dry	343	12	4.0	0.6	81.0	-	-	-	-	-	-	-
Lewisia rediviva Portulacaceae	bitterroot (93)	roots frozen	94	76	0.9	0.2	22.1	1.3	1.2	0.10	0.03	-	17.0	-
Lewisia rediviva Portulacaceae	bitterroot (93,122)	roots fresh	94	76	1.6	0.4	21.6	1.5	0.9	0.10	0.02	-	27.0	-
Lomatium cous Apiaceae	biscuitroot (93)	roots boiled	-	-	-	-	-	-	-	0.03	0.20	-	4.0	-
Lomatium cous Apiaceae	biscuitroot (93)	roots fresh	127	67	1	0.4	30.0	2.6	1.5	0.06	0.07	-	17.0	-
Lomatium cous Apiaceae	biscuitroot (93,122)	roots dry	371	11	3.4	1.2	87.2	7.9	2.9	0.12	0.10	-	8.0	-
Lomatium geyeri Apiaceae	Geyer's lomatium (122)	roots	101	74	2.7	0.6	21.8	-	1.5	-	-	-	-	-
Lomatium macrocarpum Apiaceae	desert parsley (122)	roots	190	51	2.2	1.0	43.5	-	2.0	-	-	-	-	-

Table 3B.Nutritional constituents of plants: roots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc rag	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Hedysarum alpinum Fabaceae	alpine hedysarum (28)	roots	-	-	-	-	-	-	-	-	-	-	-
Helianthus tuberosus Asteraceae	Jerusalem artichoke (73,75,194,247, 278)	tubers	14	78	-	-	17.0	-	-	3.4	0.1	-	-
Lewisia rcdiviva Portulacaceae	bitterroot (122)	roots dry	168	-	-	-	19.8	-	1.3	5.3	-	-	-
Lewisia rediviva Portulacaceae	bitterroot (93)	roots frozen	22	-	20	85	3.1	0.1	0.7	1.6	-	-	-
Lewisia rediviva Portulacaceae	bitterroot (93,122)	roots fresh	39	-	16	75	10.9	-	1.0	4.9	-	-	-
Lomatium cous Apiaceae	biscuitroot (93)	roots boiled	-	-	-	-	-	-	-	-	-	-	-
Lomatium cous Apiaceae	biscuitroot (93)	roots fresh	79	-	-	-	57.2	0.2	0.8	3.6	-	-	-
Lomatium cous Apiaceae	biscuitroot (93,122)	roots dry	88	-	70	200	15.1	0.8	1.9	2.6	-	-	-
Lomatium geyeri Apiaceae	Geyer's lomatium (122)	roots	65	-	-	-	17.3	-	0.7	5.9	-	-	-
Lomatium macrocarpum Apiaceae	desert parsley (122)	roots	80	-	-	-	13.0	-	0.8	10.6	-	-	-

Table 3A. Nutritional constituents of plants: roots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Lupinus nootkatensis Fabaceae	Nootka lupine (323)	roots	71	82	2.0	0.4	15.4	7.8	0.8	004	0.05	0.1	-	-
Menyanthes trifoliata Gentianaceae	buckbean (190)	roots	-	-	-	-	-	-	-	-	-	-	-	-
Nelumbo lutea Nymphaeaceae	waternut/ duck acorn (75)	tubers	-	18	8.9	-	-	-	3.8	-	-	-	-	-
Oenanthe sarmentosa Apiaceae	wild celery/ water parsley (75)	tubers	-	58	2.4	-	-	-	2.2	-	-	-	-	-
Panax quinquefolius Araliaceae	American ginseng (107)	roots	-	50	4.4	0.3	-	-	-	-	-	-	-	-
Pastinaca sativa Apiaceae	common parsnip (33,78)	roots	76	79	1.7	0.5	17.5	2.0	1.2	0.08	0.09	0.2	16.0	3
Perideridia gairdneri Apiaceae	yampah (93,122)	roots dry	350	11	6.2	1.7	79.3	-	2.3	0.17	0.34	-	3.0	-
Phalaris canariensis Poaceae	canary grass (182)	roots	-	-	4.6	-	-	-	-	-	-	-		-
Polygonum species Polygonaceae	knotweed (243)	bulbs	-	-	1.7	0.2	1.8	0.6	0.3	-	-	-		-

Table 3B. Nutritional constituents of plants: roots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Lupinus nootkatensis Fabaceae	Nootka lupine (323)	roots	31	33	123	-	78.0	0.2	0.2	10.4	0.5	-	-
Menyanthes trifoliata Gentianaceae	buckbean (190)	roots	7.1	-	53	197	4.2	-	-	-	-	-	58.4
Nelumbo lutea Nymphaeaceae	waternut/ duck acorn (75)	tubers	-	-	-	-	-	-	-	-	-	-	-
Oenanthe sarmentosa Apiaceae	wild celery/ water parsley (75)	tubers	-	-	-	-	-	-	-	-	-	-	-
Panax quinquefolius Araliaceae	American ginseng (107)	roots	125	-	-	-	-	-	-	-	-	-	-
Pastinaca sativa Apiaceae	parsnip (33,78)	roots	50	77	12	541	-	-	-	0.7	-	-	-
Perideridia gairdneri Apiaceae	yampah (93,122)	roots dry	74	-	-	-	80.3	0.1	1.6	7.5	-	-	-
Phalaris canariensis Poaceae	canary grass (182)	roots	272	136	181	523	90.7	0.5	4.0	181	8.7	4.2	-
Polygonum species Polygonaceae	knotweed (243)	bulbs	11	44	3.8	71	33	-	-	2.3	0.4	-	-

Table 3A. Nutritional constituents of plants: roots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Polypodium glycyrrhiza Polypodiacea	licorice fern (323)	roots	138	70	0.9	4.6	24.0	8.2	0.9	-	-	-	-	-
Potamogeton natans Zosleraceae	floating-leaved pondweed (190)	roots	-	-	-	-	-	-	-	-	-	-	-	-
Potentilla pacifica Rosaccae	silverweed (317)	roots	-	77	1.6	0.3	19.5	-	1.4	-	-	-	-	-
Potentilla pacifica Rosaceae	silverweed	roots steamed	132	66	3.1	0.6	29.5	9.5	0.9	0.01	0.01	2.4	-	0.2
Psoralen esculenta Fabaceae	Indian breadroot/ Prairie turnip (34,75)	roots	-	34	6.0	0.8	66.6	3.6	1.6	-	-	-	-	-
Pteridium aquilinum Polypodiaceae	bracken fern (132)	roots dry	-	14	9.0	-	-	-	-	-	-	-	-	-
Pteridium aquilinum Polypodiaceae	bracken fern (132)	roots fresh	-	68	12.5	-	-	-	-	-	-	-	-	-
Sagittaria latifolia Alismataceae	wapato/arrowhead (73,120,122)	tubers	103	68	4.7	0.2	20.0	0.8	1.5	1.60	0.25	1.4	5.0	0
Sparganium angustifolium Spargamaceae	broad-fruited bur-reed (204)	roots	-	-	1.1	-	-	-	-	-	-	-	-	-

Table 3B. Nutritional constituents of plants: roots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg		Manganese mg	Molybdenum mg	Chloride mg
Polypodium glycyrrhiza Polypodiaceae	licorice fern (323)	roots	84	37	1.6	-	53	0.7	0.7	4.4	2.6	-	-	
Potamogeton natans Zosteraceae	floating leaved pondweed (190)	roots	15	-	53	330	3.4	-	-	-	-	-	243	
Potentilla pacifica Rosaceae	silverweed (317)	roots	41	53	-	-	49.1	0.2	0.5	9.1	0.9	<0.1	-	
Potentilla pacifica Rosaceae	silverweed (323)	roots steamed	37	109	65	-	60.0	1.1	1.1	3.5	0.8	-	-	
Psoralen esculenta Fabaceae	Indian breadroot/ Prairie turnip (34,75)	roots	-	-	-	-	-	-	-	-	-	-	-	
Pteridium aquilinum Polypodiaceae	bracken fern (132)	roots dry	-	-	-	-	-	-	-	-	-	-	-	
Pteridium aquilinum Polypodiaceae	bracken fern (132)	roots fresh	-	-	-	-	-	-	-	-	-	-	-	
Sagittaria latifolia Alismataceae	wapato/arrowhead (4,73,120,122)	tubers	12	165	22	922	51.0	-	0.7	6.6	-	-	-	
Sparganium angustifolium Sparganiaceae	broad fruited bur reed (204)	roots	46	41	-	126	-	-	-	-	20.0	-	-	

Table 3A. Nutritional constituents of plants: roots. (per l00g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Tragopogon pratensis Asteraceae	goat's beard (120)	roots	-	80	-	-	-	-	-	-	0.05	-	-	-
Trifolium wormskioldii Fabaceae	springbank clover (317)	roots	-	84	1.8	0.3	-	-	0.9	-	-	-	-	-
Trifolium wormskioldii Fabaceae	springbank clover (323)	roots steamed	74	81	0.7	0.5	16.5	6.5	1.0	0.06	0.04	0.6	-	0.3
Typha angustifolia Typhaceae	narrow-leaved cattail (212)	rhizomes	-	-	-	-	-	-	-	-	-	-	-	-
Typha latifolia Typhaceae	common cattail/ cattail (84)	rhizomes dry	-	9	7.7	4.9	79.1	-	2.5	-	-	-	-	-

Table 3B. Nutritional constituents of plants: roots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Tragopogon pratensis Asteraceae	goat's beard (120)	roots	-	-	-	-	-	-	-	-	-	-	-
Trifolium wormskioldii Fabaceae	springbank clover (317)	roots	38	26	-	-	38.6	0.2	0.2	4.6	0.4	<0.1	-
Trifolium wormskioldii Fabaceae	springbank clover (323)	roots steamed	34	38	-	-	68.0	0.3	0.3	4.2	0.3	<0.1	-
Typha angustifolia Typhaceae	narrow-leaved cattail (212)	rhizomes	-	-	-	-	-	-	-	-	-	-	-
Typha latifolia Typhaceae	cattail (84)	rhizomes dry	-	-	-	-	-	-	-	-	-	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Abies balsamea Pinaceae	Canada balsam/ balsam fir (29,50,68)	greens	-	-	8.8	11.8		21.7	-	-	-	-	243	-
Abies concolor Pinaceae	white fir (133,242)	needles	-	49	4.1	-	-	-	2.0	-	-	-	-	-
Acer negundo Aceraceae	Manitoba maple/ box elder (160)	sprouts	-	43	9.7	-	-	-	-	-	-	-	-	-
Acer pensylvanicum Aceraceae	striped maple/ moosewood (6)	leaves	-	90	1.2	-	-	-	-	-	-	-	-	-
Acer rubrum Aceraceae	red maple (22,160,173)	sprouts	266	53	2.6	-	-	15.0	-	-	-	-	-	-
Acer rubrum Aceraceae	red maple (6,44,58,71)	leaves	242	53	3.8	-	-	20.0	-	-	-	-	-	-
Acer saccharum Aceraceae	sugar maple (22,160)	sprouts	-	50	2.3	-	-	-	-	-	-	-	-	-
Acer saccharum Aceraceae	sugar maple (6,44)	leaves	-	59	9.4	-	-	-	-	-	-	-	-	-
Achillea millefolium Asteraceae	subalpine yarrow/ yarrow (23,104,131,232)	leaves	-	79	3.8	-	-	-	-	-	-	-	-	-
Alaria esculenta Phaeophyta	kelp/murlins (120)	seaweed fresh	-	75	-	-	-	-	-	-	-	-	-	-
Alliaria officinalis Brassicaceae	garlic mustard/ jack-by-the-hedge (258)	leaves dry	-	-	-	-	-	-	-	-	-	-	-	692

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Abies balsamea Pinaceae	Canada balsam/ balsam fir (29,50,68)	greens	75	13	-	46	13.0	<0.1	0.5	1.2	8.6	-	1.5
Abies concolor Pinaceae	white fir (133,242)	needles	197	70	-	577	65.8	-	-	0.1	0.1	-	-
Acer negundo Aceraceae	box elder maple (160)	sprouts	-	182	-	1075	364	0.3	1.4	19.1	4.7	-	50.2
Acer pensylvanicum Aceraceae	striped maple/ moosewood (6)	leaves	158	26	-	175	-	-	-	-	-	-	-
Acer rubrum Aceraceae	red maple (22,160,173)	sprouts	502	37	-	187	176	0.2	1.1	8.4	20.7	-	116
Acer rubrum Aceraceae	red maple (6,44,58,71)	leaves	554	107	-	380	-	-	-	-	-	-	-
Acer saccharum Aceraceae	sugar maple (22,160)	sprouts	507	60	-	196	226	0.5	2.1	7.9	40.4	-	11.5
Acer saccharum Aceraceae	sugar maple (6,44)	leaves	548	84	-	409	-	-	-	-	-	-	-
Achillea millefolium Asteraceae	subalpine yarrow/ yarrow (23,104,131,232)	leaves	225	76	59	645	53.0	0.2	0.7	13.1	4.0	-	-
Alaria esculenta Phaeophyta	kelp/murlins (120)	seaweed fresh	-	-	-	-	-	-	-	-	-	-	-
Alliaria officinalis Brassicaceae	garlic mustard/ jack-by-the-hedge (258)	leaves dry	-	-	-	-	-	-	-	-	-	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Allium schoenoprasum Liliaceae	wild chives (73)	greens	27	-	2.7	0.6	-	-	-	0.10	0.06	0.5	32.0	-
Allium tricoccum Liliaceae	wild leek/ wild garlic (97)	leaves	-	-	-	-	-	-	-	-	-	-	16.7	-
Allium vineale Liliaceae	onion grass/ field garlic/ crow garlic (74)	leaves	-	-	-	-	-	-	-	-	-	-	130	-
Allium species Liliaceae	garlic/onion (226)	tops	37	89	1.5	0.8	6.0	1.3	1.2	-	-	0.2	27.0	-
Althaea rosea Malvaceae	hollyhock (67)	leaves	-	-	-	-	-	-	-	-	-	-	89.4	-
Amaranthus graecizans Amaranthaceae	prostrate pigweed (308,314)	greens	43	84	3.7	0.5	-	-	3.5	-	-	1.0	127	-
Amaranthus hybridus Amaranthaceae	green amaranth/ purple amaranth (149,154,237)	greens	-	86	4.2	-	-	1.1	1.8	0.02	0.13	1.3	62.7	572
Amaranthus palmeri Amaranthaceae	pigweed/ careless weed (73,76)	leaves	39	-	3.7	0.8	-	-	-	0.05	0.24	1.2	72.5	385
Amaranthus retroflexus Amaranthaceae	redroot pigweed (42,77,131,151, 234,255)	greens	33	87	2.6	-	-	2.8	-	-	-	-	56.5	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Allium schoenoprasum Liliaceae	wild chives (73)	greens	83	41	-	-	-	-	-	0.8	-	-	-
Allium tricoccum Liliaceae	wild leek/ wild garlic (97)	leaves	-	-	-	-	-	-	-	-	-	-	-
Allium vineale Liliaceae	onion grass/ field garlic/ crow garlic (74)	leaves	-	-	-	-	-	-	-	-	-	-	-
Allium species Liliaceae	garlic/onion (226)	tops	92	10	-	-	-	-	-	6.0	-	-	-
Althaea rosea Malvaceae	hollyhock (67)	leaves	-	-	-	-	-	-	-	-	-	-	-
Amaranthus graecizans Amaranthaceae	prostrate pigweed (308,314)	greens	292	72	1.8	36	231	-	-	-	-	-	-
Amaranthus hybridus Amaranthaceae	green amaranth/ purple amaranth (149,154,237)	greens	334	77	10	622	210	0.2	2.0	6.0	4.2	-	24.7
Amaranthus palmeri Amaranthaceae	pigweed/ careless weed (73,76)	leaves	362	74	-	411	-	-	-	4.5	-	-	-
Amaranthus retroflexus Amaranthaceae	redroot pigweed (42,77,131,151, 234,255)	greens	215	58	24	641	150	0.2	0.6	6.8	1.2	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Amarnthus spinosus Amaranthaceae	pigweed (33,308,314)	greens	56	80	6.0	0.9	-	-	4.7	0.01	0.03	1.6	63.2	665
Amaranthus species Amaranthaceae	amaranth (4,77,124)	leaves	36	87	3.5	0.5	6.5	1.3	2.6	0.08	0.16	1.4	43.3	292
Andromeda glaucophylla Ericaceae	bog rosemary (22)	greens dry	-	-	3.8	-	-	-	-	-	-	-	-	-
Anethum graveolens Apiaceae	common dill (276)	greens	-	83	3.4	-	-	-	3.3	-	-	-	11.2	-
Angelica archangelica Apiaceae	angelica (139)	stems dry	-	-	7.6	-	-	-	-	-	-	-	-	-
Anthoxanthum odoratum Poaceae	sweet vernal grass (310)	greens	-	-	46	-	-	3.9	2.2	-	-	-	-	376
Anthoxanthum odoratum Poaceae	sweet vernal grass (23)	greens dry	-	-	10.4	-	-	-	-	-	-	-	-	-
Anthriscus cerefolium Apiaceae	common chervil (324)	greens dry	237	7	23.2	3.9	49.1	11.3	16.6	-	-	-	-	-
Aralia nudicaulis Araliaceae	wild sarsaparilla (63)	leaves	-	-	0.4	-	-	-	-	-	-	-	-	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Amaranthus spinosus Amaratithaceae	pigweed (33,308,314)	greens	377	90	27	71	461	-	-	2.2	-	-	-
Amaranthus species Amaranthaceae	amaranth (4,77,124)	leaves	267	67	20	611	55.0	0.2	0.9	3.9	-	-	-
Andromeda glaucophylla Ericaceae	bog rosemary (22)	greens dry	330	50	-	330	90.0	26.0	2.2	13.8	53.1	<0.1	16.1
Anethum graveolens Apiaceae	common dill (276)	greens	161	-	-	-	-	-	-	14.4	-	-	-
Angelica archangelica Apiaceae	angelica (139)	stems dry	840	260	-	1320	210	-	-	-	-	-	-
Anthoxanthum odoratum Poaceae	sweet vernal grass (310)	greens	140	90	-	-	60.0	0.3	-	13.0	1.7	-	-
Anthoxanthum odoratum Poaceae	sweet vernal grass (23)	greens dry	630	252	240	1570	200	0.3	2.7	51.8	15.8	-	-
Anthriscus cerefolium Apiaceae	common chervil (324)	greens dry	1346	450	83	4740	-	-	-	32.0	-	-	-
Aralia nudicaulis Araliaceae	wild sarsaparilla (63)	leaves	182	22	-	79	46.0	0.1	2.7	3.9	28.8	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Aralia nudicaulis Arahaceae	wild sarsaparilla (22)	greens	-	90	1.2	-	-	-	-	-	-	-	-	-
Aralia racemose Araliaceae	spikenard (22)	greens	-	90	0.8	-	-	-	-	-	-	-	-	-
Arctium lappa Asteraceae	greater burdock (73)	stalks	89	-	2.5	0.1	-	-	-	0.25	0.03	<0.1	2.0	-
Arctium minus Asteraceae	lesser burdock (97)	greens	-	-	-	-	-	-	-	-	-	-	15.0	-
Arctostaphylos uva-ursi Ericaceae	bearberry/ kinnikinnick (68)	greens	-	49	1.7	3.1	-	4.2	1.0	-	-	-	-	2.1
Arenaria peploides Caryophyilaceae	seabeach-sandwort (28)	leaves	-	-	-	-	-	-	-	-	-	-	42.5	575
Artemisia gnaphalodes Asteraceae	wormwood (31)	greens dry	-	7	10.8	3.8	-	25.3	9.6	-	-	-	-	6.0
Artemisia vulgaris Asteraceae	common mugwort (33,73)	leaves	35	87	5.2	0.8	4.5	2.2	-	0.15	0.16	3.0	72.0	-
Asclepias amplexicaulis Asclepiadaceae	milkweed (22)	greens	-	-	2.7	-	-	-	-	-	-	-	-	-
Asclepias incarnata Asclepiadaceae	swamp milkweed (22)	greens	-	-	2.0	-	-	-	-	-	-	-	-	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Aralia nudicaulis Araliaceac	wild sarsaparilla (22)	greens	97	30	-	225	34.0	0.1	0.4	1.5	6.0	0	2.4
Aralia racemosa Araliaceae	spikenard (22)	greens	85	29	-	361	36.0	0.1	0.4	1.8	1.3	0	3.9
Arctium lappa Asteraceae	greater burdock (73)	stalks	50	58	30	180	-	-	-	1.2	-	-	-
Arctium minus Asteraceae	lesser burdock (97)	greens	-	-	-	-	-	-	-	-	-	-	-
Arctostaphylos uva-ursi Ericaceae	bearberry/ kinnikinnick (68)	greens	221	39	-	-	-	-	-	12.7	0.6	-	-
Arenaria peploides Caryophyllaceae	seabeach-sandwort (28)	leaves	-	-	-	-	-	-	-	-	-	-	-
Artemisia gnaphalodes Asteraceae	wormwood (31)	greens dry	859	177	-	-	-	-	-	-	-	-	-
Artemisia vulgaris Asteraceae	common mugwort (33,73)	leaves	82	40	-	-	-	-	-	1.5	-	-	-
Asclepias amplexicaulis Asclepiadaceae	milkweed (22)	greens	195	41	14	166	232	0.2	0.9	4.5	0.7	<0.1	148
Asclepias incarnata Asclepiadaceae	swamp milkweed (22)	greens	194	46	1.7	251	92.0	0.1	0.4	1.8	3.3	-	78.3

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Asctepias syriaca Asclepiadaceae	common milkweed (22,73,97,98, 120,151)	greens	-	80	2.0	0.5	54.4	-	-	-	0.04	-	391	1210
Asclepias tuberosa Asclepiadaceae	butterfly weed (75)	greens dry	-	6	9.6	-	-	-	8.9	-	-	-	-	-
Asclepias verticillata Asclepiadaceae	whorled milkweed (22)	greens	-	-	2.0	-	-	-	-	-	-	-	-	-
Asparagus officinalis Liliaceae	asparagus (73,124)	shoots	-	92	2.4	0.2	5.0	0.7	0.6	0.16	0.18	1.4	29.0	90
Aster conspicuus Asteraceae	showy aster (90)	greens	-	90	2.3	-	-	1.5	1.3	-	-	-	-	-
Aster laevis Asteraceae	smooth aster (9,94)	leaves	-	90	1.7	-	-	1.3	1.2	-	-	-	-	-
Aster macrophyllus Asteraceae	large-leaved aster (22)	greens	-	90	-	-	-	-	-	-	-	-	-	-
Aster sericeus Asteraceae	silky aster (22)	greens	-	90	0.9	-	-	-	-	-	-	-	-	-
Aster simplex Asteraceae	smallblue aster (22)	greens	-	90	0.6	-	-	-	-	-	-	-	-	-
Astragalus serotinus Fabaceae	timber milkvetch (90)	leaves		90	2.0			2.2	0.8	-	-	-	-	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Asclepias syriaca Asclepiadaceae	common milkweed (22,73,97,98, 120,151)	greens	437	146	21	619	194	0.4	0.8	6.3	1.8	<0.1	154
Asclepias tuberose Asclepiadaceae	butterfly weed (75)	greens dry	-	-	-	-	-	-	-	-	-	-	-
Asclepias verticillata Asclepiadaceae	whorled milkweed (22)	greens	204	28	1.1	240	108	0.1	0.8	2.2	1.4	<0.1	36.0
Asparagus officinalis Liliaceae	asparagus (73,124)	shoots	22	56	1.0	267	-	-	-	0.8	-	-	-
Aster conspicuus Asteraceae	showy aster (90)	greens	68	72	-	-	-	-	-	-	-	-	-
Aster laevis Asteraceae	smooth aster (9,94)	leaves	11	42	-	-	-	-	-	-	-	-	-
Aster macrophyllus Asteraceae	large-leaved aster (22)	greens	130	26	0.4	511	29.0	0.1	0.6	1.5	-	-	17.4
Aster sericeus Asteraceae	silky aster (22)	greens	121	90	0.6	141	34.0	0.1	0.6	0.1	0.6	<0.1	9.8
Aster simplex Asteraceae	smallblue aster (22)	greens	54	17	0.2	92	46.0	0.1	0.4	0.5	0.3	-	23.7
Astragalus serotinus Fabaceae	timber milkvetch (90)	leaves	72	27	-	-	-	-	-	-	-	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Athyrium filix-femina Polypodiaceae	lady fern (296)	greens	34	91	3.2	0.2	4.9	-	0.6	-	0.25	2.0	8.9	134
Atriptex nuttallii Chenopodiaceae	salt sage (94)	leaves	-	90	2.3	0.3	5.1	1.2	2.4	-	-	-	-	204
Atriplcx patula Chenopodiaceae	common orache (120)	leaves	-	92	-	-	-	-	-	-	0.13	-	-	-
Balsamorhiza sagittata Asteraceae	arrow-leaved balsamroot (110)	stems	-	-	0.3	-	-	-	-	-	-	-	-	-
Balsamorhiza sagittata Asteraceae	arrow-leaved balsamroot (90,122,127)	greens	-	-	1.6	0.3	-	1.9	1.5	-	-	-	13.8	-
Barbarea species Brassicaceae	winter-cress (124)	greens	-	87	-	-	-	-	-	-	-	-	152	507
Bellis perennis Asteraceae	English daisy (232)	greens	-	87	3.2	-	-	-	-	-	-	-	-	-
Betula glandulosa Betulaceae	dwarf birch/ scrub birch/ bog glandular birch (11)	leaves	-	58	8.1	-	8.5	-	-	-	-	-	-	-
Betula lenta Betulaceae	black birch/ cherry birch/ sweet birch (6)	leaves	-	90	1.3	-	-	-	-	-	-	-	-	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Athyrium filix-femina Polypodiaceae	lady fern (296)	greens	23	-	-	-	-	-	-	0.8	-	-	-
Atriplex nuttallii Chenopodiaceae	salt sage (94)	leaves	106	48	-	-	-	-	-	-	-	-	-
Atriplex patula Chenopodiaceae	common orache (120)	leaves	-	-	-	-	-	-	-	-	-	-	-
Balsamorhiza sagittata Asteraceae	arrow-leaved balsamroot (110)	stems	241	47	-	-	-	-	-	-	-	-	-
Balsamorhiza sagittata Asteraceae	arrow-leaved balsamroot (90,122,127)	greens	173	43	-	-	-	-	-	-	-	-	-
Barharea species Brassicaceae	winter-cress (124)	greens	-	-	-	-	-	-	-	-	-	-	-
Bellis perennis Asteraceae	English daisy (232)	greens	-	-	-	-	-	-	-	-	-	-	-
Betula glandulosa Betulaceae	dwarf birch/ scrub birch/ bog glandular birch (11)	leaves	-	-	-	-	-	-	-	-	-	-	-
Betula lenta Betulaceae	black birch/ cherry birch/ sweet birch (6)	leaves	110	20	-	179	-	-	-	-	-	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Betula papyrifera Betulaceae	common paper birch (68,160)	twigs/ leaves	-	48	4.9	5.5	-	11.6	1.6	-	-	-	-	157
Betula pumila Betulaceae	bog birch (22)	shoots	-	-	1.3	-	-	-	-	-	-	-	-	-
Betula tortuosa Betulaceae	birch (139)	twigs	-	-	4.3	-	-	-	-	-	-	-	-	-
Betula species Betulaceae	birch (11)	leaves/ stems	-	-	-	-	-	-	-	-	-	-	58.0	-
Brasenia schreberi Nymphaeaceae	watershield (33,169)	greens	10	93	0.7	0.2	1.8	0.1	4.7	0.03	0.03	0.3	-	-
Brassica juncea Brassicaceae	Indian mustard (4,308)	greens	26	91	2.7	0.2	4.9	1.1	1.4	0.08	0.11	0.8	70.0	530
Brassica kaber Brassicaceae	wild mustard (42)	greens	-	-	-	-	-	-	-	-	-	-	-	-
Brassica napus Brassicaceae	rape (236,280)	greens	61	83	2.5	1.0	11.2	19	1.2	0.08	0.15	0.5	120	134
Brassica nigra Brassicaceae	black mustard (78)	greens	31	90	3.0	0.5	5.6	1.1	1.4	0.11	0.22	0.8	97.0	-
Brassica oleracea Brassicaceae	cabbage (202,219,237,251)	greens	45	90	1.6	0.8	-	1.2	1.1	0.04	0.03	0.4	77.4	5.8
Brassica oleracea Brassicaceae	kale (4)	leaves	50	85	3.3	0.7	10.0	1.5	1.5	0.11	0.13	1.0	120	890
Brassica rapa Brassicaceae	bird rape mustard (4,43,73,113, 228,291)	greens	22	92	2.2	0.3	3.9	1.0	1.4	0.12	0.29	1.1	130	990

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Betula papyrifera Betulaceae	common paper birch (68,160)	twigs/ leaves	434	118	-	-	-	-	-	7.3	10.5	-	-
Bctula pumila Betulaceae	bog birch (22)	shoots	62	11	0.2	40	44.0	0.1	1.6	0.9	5.0	-	0.1
Betula species Betulaceae	birch (11)	leaves/ stems	-	-	-	-	-	-	-	-	-	-	-
Betula tortuosa Betulaceae	birch (139)	twigs	230	80	-	160	5.5	-	-	-	-	-	-
Brasenia schreberi Nymphaeaceae	watershield (33,169)	greens	15	21	18	16	2.2	0.5	4.5	11.0	18.5	-	-
Brassica juncea Brassicaceae	Indian mustard (4,308)	greens	103	43	25	354	32.0	-	-	1.5	-	-	-
Brassica kaber Brassicaceae	wild mustard (42)	greens	0.2	<0.1	-	0.2	0.1	1.0	6.2	40.7	4.1	-	-
Brassica napus Brassicaceae	rape (236,280)	greens	133	46	-	27	-	-	-	4.6	-	-	-
Brassica nigra Brassicaceae	black mustard (78)	greens	183	50	32	377	-	-	-	3.0	-	-	-
Brassica oleracea Brassicaceae	cabbage (202,219,237,251)	greens	163	34	-	362	42.0	0.1	-	2.0	-	-	-
Brassica oleraceae Brassicaceae	kale (4)	leaves	135	56	43	447	34.0	0.3	0.4	1.7	0.8	-	-
Brassica rapa Brassicaceae	bird rape mustard (4,43,73,113,228, 291)	greens	252	62	-	-	-	-	-	3.0	-	-	-

Table4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Brassica species Brassicaceae	mustard (73,120)	greens	23	85	2.2	0.4	-	-	-	0.80	0.26	0.6	48.0	570
Butomus umbellatus Butomaceae	flowering rush (221)	leaves	-	-	-	-	-	-	-	-	-	-	-	-
Cakile edentula Brassicaceae	American searocket (120)	greens	-	94	-	-	-	-	-	-	-	-	-	4.4
Calluna vulgaris Ericaceae	common heather (265)	greens dry	-	-	-	-	-	-	4.7	-	-	-	-	-
Calluna vulgaris Ericaceae	common heather (104,164,243)	shoots	-	90	0.7	0.7	2.0	1.9	0.3	-	-	-	-	-
Caltha palustris Ranunculaceae	yellow marsh marigold (22,279)	greens	-	90	1.6	-	-	-	-	-	-	-	-	-
Capsella bursa-pastoris Brassicaceae	shepherd's purse (30,33,73,74,109, 120)	greens	33	87	3.0	0.5	-	3.4	1.5	0.25	0.17	0.4	63.5	327
Ceanothus americanus Rhamnaceae	New Jersey tea/ butersweet (22,231,233)	leaves	-	-	1.7	1.0	-	2.6	0.7	-	-	-	-	-
Ceanothus velutinus Rhamnaceae	snowbrush (68)	greens	-	51	3.0	1.7	-	3.5	0.7	-	-	-	-	30.0
Chamaedaphne calyculata Ericaceae	leather-leaf (22)	leaves dry	-	-	6.8	-	-	-	-	-	-	-	-	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Brassica species Brassicaceae	mustard (73,120)	greens	138	32	18	220	-	-	-	1.8	-	-	-
Butomus umbellatus Butomaceae	flowering rush (221)	leaves	-	-	-	-	-	-	-	-	-	-	-
Cakile edentula Brassicaceae	American scarocket (120)	greens	-	-	-	-	-	-	-	-	-	-	-
Calluna vulgaris Ericaceae	common heather (265)	greens dry	0.5	0.2	-	0.5	0.3	-	-	-	0.2	-	-
Calluna vulgaris Ericaceae	common heather (104,164,243)	shoots	32	10	7.0	4.0	12.0	-	-	2.4	3.8	-	-
Caltha palustris Ranunculaceae	yellow marsh marigold (22,279)	greens	96	37	0.8	587	49.0	<0.1	0.6	1.2	0.8	-	176
Capsella bursa-pastoris Brassicaceae	shepherd's purse (30,33,73,74,109, 120)	greens	235	81	47	376	19.2	0.1	-	4.8	0.4		80.6
Ceanothus americanus Rhamnaceae	New Jersey tea/ bittersweet (22,231,233)	leaves	254	14	1.8	95	50.0	0.2	0.4	3.8	5.8	<0.1	40.4
Ceanothus velutinus Rhamnaceae	snowbrush (68)	greens	195	43	-	-	-	-	-	2.8	2.7	-	-
Chamaedaphne calyculata Ericaceae	leather-leaf (22)	leaves dry	410	100	2.0	460	170	0.5	3.2	12.3	64.1	<0.1	53.3

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Chenopodium album Chenopodiaceae	lambsquarters (78,120)	greens cooked	32	89	3.2	0.7	5.0	1.8	2.2	-	0.75	0.9	37.0	970
Chenopodium album Chenopodiaceae	lambsquarters (4,30,42,78,88, 97,98,120,121, 124,232,234,235, 255,262,323)	greens	34	88	3.3	0.6	5.7	1.5	2.3	0.18	0.49	1.4	98.3	1277
Chenopodium ambrosioides Chenopodiaceae	Mexican tea (73,236)	leaves	42	86	3.8	0.7	7.6	1.3	2.4	0.09	0.28	0.8	11.0	-
Chenopodium bonus-henricus Chenopodiaceae	Good King Henry (232)	greens	-	83	5.7	-	-	-	-	-	-	-	-	-
Chenopodium fremontii Chenopodiaceae	Freemont's goosefoot (76)	greens cooked	32	-	-	-	-	-	-	-	-	-	37.0	970
Chenopodium fremontii Chenopodiaceae	Freemont's goosefoot (75)	leaves	43	-	-	-	-	-	-	-	-	-	80.0	1160
Chenopodium pumilio Chenopodiaceae	rough-leaved goosefoot (88)	leaves	-	84	3.3	-	-	-	2.9	-	-	-	-	-
Chenopodium species Chenopodiaceae	goosefoot/ pigweed (76,98)	greens	43	-	2.4	1.1	-	2.4	0.7	-	-	-	80.0	1160

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Chenopodium album Chenopodiaceae	lambsquarters (78,120)	greens cooked	258	45	-	-	-	-	-	0.7	-	-	-
Chenopodium album Chenopodiaceae	lambsquarters (4,30,42,78,88, 97,98,120,121, 124,232,234,235, 255,262,323)	greens	309	76	-	874	177	0.2	0.7	1.2	1.1	-	-
Chenopodium ambrosioides Chenopodiaceae	Mexican tea (73,236)	leaves	304	52	-	-	-	-	-	5.2	-	-	-
Chenopodium bonus-henricus Chenopodiaceae	Good King Henry (232)	greens	-	-	-	-	-	-	-	-	-	-	-
Chenopodium fremontii Chenopodiaceae	Freemont's goosefoot (76)	greens cooked	258	-	-	-	-	-	-	0.7	-	-	-
Chenopodium fremontii Chenopodiaceae	Freemont's goosefoot (75)	leaves	309	-	-	-	-	-	-	1.2	-	-	-
Chenopodium pumilio Chenopodiaceae	rough-leaved goosefoot (88)	leaves	-	-	-	-	-	-	-	-	-	-	-
Chenopodium species Chenopodiaceae	goosefoot/ pigweed (76,98)	greens	309	-	-	-	-	-	-	1.2	-	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Chimaphila umbellata Pyrolaceae	prince's pine/ common western pipsissewa (22)	greens	-	-	0.7	-	-	-	-	-	-	-	-	-
Chrysanthemum balsamita Asteraceae	costmary (97)	leaves	-	-	-	-	-	-	-	-	-	-	79.5	-
Chrysanthemum leucanthemum Asteraceae	Ox-eye daisy (97,120,162)	leaves	-	77	-	-	-	-	-	-	0.39	-	29.3	-
Chrysanthemum leucanthemum Asteraceae	Ox-eye daisy (120)	leaves cooked	-	93	-	-	-	-	-	-	0.05	-	-	-
Cichorum intybus Asteraceae	chicory (73,97,124,234)	leaves	24	93	1.8	0.3	3.8	0.8	1.3	0.05	0.10	0.5	28.6	400
Cirsium muticum Asteraceae	swamp thistle (22)	shoots	-	-	0.9	-	-	-	-	-	-	-	-	-
Cladophora rapestris Unknown	cladophora (130)	kelp dry	-	-	30.5	0.5	-	16.6	29.3	0.19	0.59	2.6	-	-
Clintonia borealis Liliaceae	corn lily (22,120)	greens	-	90	1.1	-	-	-	-	-	0.18	-	-	-
Cochlearia officinalis Brassicaceae	scurvygrass (8,28,52)	greens	-	-	-	-	-	-	-	-	-	-	111	455

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Chimaphila umbellata Pyrolaceae	prince's pine/ common western pipsissewa (22)	greens	100	15	-	93	37.0	0.1	0.6	1.0	3.0	-	2.4
Chrysanthemum balsamita Asteraceae	costmary (97)	leaves	-	-	-	-	-	-	-	-	-	-	-
Chrysanthemum leucanthemum Asteraceae	Ox-eye daisy (97,120,162)	leaves	-	-	-	-	-	-	-	-	-	-	-
Chrysanthemum leucanthemum Asteraceae	Ox-eye daisy (120)	leaves cooked	-	-	-	-	-	-	-	-	-	-	-
Cichorum intybus Asteraceae	chicory (73,97,124,234)	leaves	86	40	-	420	-	-	-	0.9	-	-	-
Cirsium muticum Asteraceae	swamp thistle (22)	shoots	304	13	0.5	69	45.0	<0.1	0.3	0.8	0.4	-	44.3
Cladophora rapestris Unknown	cladophora (130)	kelp dry	1520	270	2500	3280	730	3.1	9.2	440	126	0.2	6340
Clintonia borealis Liliaceae	corn lily (22,120)	greens	19	31	1.1	554	28.0	0.1	0.4	4.3	3.2	-	37.0
Cochlearia officinalis Brassicaceae	scurvygrass (8,28,52)	greens	-	-	-	-	-	-	-	-	-	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Commelina communis Commelinaceae	common dayflower (179)	leaves	-	-	-	-	-	-	-	-	-	-	-	-
Commelina species Commelinaceae	dayflower (73)	greens	43	-	1.8	0.4	-	3.3	1.7	-	-	-	-	-
Comptonia peregrina Myricaceae	sweet fern (63)	leaves	-	-	1.2	-	-	-	-	-	-	-	-	-
Coriandrum sativum Apiaceae	coriander (236)	greens	42	86	3.3	0.7	8.0	1.7	2.0	0.15	0.28	1.6	75.0	160
Cornus stolonifera Cornaceae	red osier dogwood (160)	twigs	-	48	-	-	-	-	-	-	-	-	-	-
Cryptotaenia species Apiaceae	honeywort/ wild chervil (73)	greens	18	-	2.0	0.1	-	-	-	0.15	0.20	0.5	60.0	48
Cucurbita species Cucurbitaceae	pumpkin	leaves raw	19	93	3.2	0.4	2.3	1.0	1.2	0.10	0.13	0.9	11.0	194
Cynoglossum officinale Boraginaceae	hound's tongue (93)	greens	-	-	-	-	-	-	-	-	-	-	20.5	-
Dryas species Rosaceae	mountain avens (243)	leaves	-	-	1.4	0.4	1.7	1.6	0.5	-	-	-	-	-
Epilobium angustifolium Onagraceae	fireweed/ willowherb (8,28,32,36,52, 109,263)	leaves	-	76	6.5		2.9	1.4	1.8	-	-	-	88.0	22

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Commelina communis Commelinaceae	common dayflower (179)	leaves	-	-	-	-	-	-	-	-	-	-	-
Commelina species Commelinaceae	dayflower (73)	greens	210	52	-	-	-	-	-	-	-	-	-
Comptonia peregrins Myricaceae	sweet fern (63)	leaves	54	18	0.1	72	18	0.1	1.7	21	11.8	-	-
Corinndrum sativum Apiaceae	coriander (236)	greens	188	72	-	-	-	-	3.0	-	-	-	-
Cornus stolonifera Cornaceae	red-osier dogwood (160)	twigs	-	-	-	-	-	-	-	-	-	-	-
Cryptotaenia species Apiaceae	honeywort/ wild chervil (73)	greens	81	45	7	490	-	-	-	1.8	-	-	-
Cucurbita species Cucurbitaceae	pumpkin (4)	leaves raw	39	104	11	436	38	-	-	2.2	-	-	-
Cynoglossum officinale Boraginaceae	hound's tongue (93)	greens	-	-	-	-	-	-	-	-	-	-	-
Dryas species Rosaccae	mountain avens (243)	leaves	85	17	7.5	40	38.0	-	-	4.1	3.1	-	-
Epilobium angustifolium Onagraceae	fireweed/ willowherb (8,28,32,36,52)	leaves	175	132	50	404	70.0	0.2	0.9	2.7	<0.1	<0.1	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate **g**	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Epilobium angustifolium Onagraceae	fireweed/ willow herb (323)	shoots peeled	17	92	0.2	0.3	4.0	0.9	0.5	-	-	-	-	4
Epilobium latifolium Onagraceae	river beauty dwarf fireweed (28,49,118,120)	leaves	-	78	3.0	0.8	6.3	-	1.6	0.40	0.54	1.4	128	1700
Equisetum arvense Equisetaceae	commmon horsetail (22,33,36,73)	greens	20	90	1.0	0.2	4.4	1.1	0.7	0	0.07	5.6	50.0	18
Erodium botrys Geraniaceae	broad leaf alfilaria (25)	greens	-	90	2.1	-	-	1.8	-	-	-	-	-	-
Erodium cicutarium Geraniaceae	red stem alfilaria (25,73)	greens	-	90	2.3	-	-	1.6	-	-	-	-	-	700
Erodium moschatum Geraniaceae	white stem alfilaria (25)	greens	-	90	2.6	-	-	1.5	-	-	-	-	-	-
Eruca sativa Brassicaceae	garden rocket (310)	greens	-	-	1.8	-	-	5.8	1.5	-	-	-	-	-
Foeniculum vulgare Apiaceae	common fennel (73)	green	31	-	2.9	0.5	-	-	-	0.12	0.15	0.7	34.0	157
Fragaria virginiana Rosaceae	blueleaf wild strawberry (120)	leaves	-	62	-	-	-	-	-	-	3.20	-	-	-
Fragaria species Rosaceae	wild strawberry (124)	leaves	-	67	-	-	-	-	-	-	-	-	229	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Epilobium angustifolium Onagraceae	fireweed/ willowherb (323)	shoots peeled	32	31	0.6	-	20.0	0.7	0.7	0.5	0.1	-	-
Epilobium latifolium Onagraceae	river beauty/ dwarf fireweed (28,49,118,120)	leaves	13	89	-	-	-	-	-	2.1	-	-	-
Equisetum arvense Equisetaceae	common horsetail (22,33,36,73)	greens	120	54	-	116	101	0.1	0.5	2.9	0.6	<0.1	56.8
Erodium botrys Geraniaceae	broad leaf alfilaria (25)	greens	136	38	-	-	-	-	-	-	-	-	-
Erodium cicutarium Geraniaceae	red stem alfilaria (25,73)	greens	237	49	-	-	-	-	-	-	-	-	-
Erodium moschatum Geraniaceae	white stem alfilaria (25)	greens	216	43	-	-	-	-	-	-	-	-	-
Eruca sativa Brassicaceae	garden rocket (310)	greens	-	-	-	-	-	-	-	-	-	-	-
Foeniculum vulgare Apiaceae	common fennel (73)	green	114	54	-	333	-	-	-	2.9	-	-	-
Fragaria Virginians Rosaceae	blueleaf wild strawberry (120)	leaves	-	-	-	-	-	-	-	-	-	-	-
Fragaria species Rosaceae	wild strawberry (124)	leaves	-	-	-	-	-	-	-	-	-	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Fraxinus americana Oleaceae	white ash (6)	leaves	-	-	1.0	-	-	-	-	-	-	-	-	-
Galinsoga parviflora Asteraceae	small flowered galinsoga (73,236)	greens	42	86	3.2	0.5	8.3	1.3	1.9	0.11	0.27	2.1	30.0	112
Galium aparine Rubiaceae	common bedstraw/ cleavers (109)	greens	-	-	1.6	-	-	2.1	1.8	-	-	-	-	-
Galium triflorum Rubiaceae	sweet-scented bedstraw (97)	greens	-	-	-	-	-	-	-	-	-	-	22.3	-
Galium verum Rubiaceae	ladies' bedstraw (104)	greens	-	90	-	-	-	-	-	-	-	-	-	-
Gaultheria hispidula Ericaceae	creeping snowberry (22)	shoot	-	-	5.9	-	-	-	-	-	-	-	-	-
Gaultheria procumbens Ericaceae	wintergreen/ teaberry (22)	shoots	-	-	0.5	-	-	-	-	-	-	-	-	-
Gaultheria procumbens Ericaceae	wintergreen (120,230)	leaves	-	57	2.7	-	-	7.7	2.0	-	-	-	-	7
Glechoma hederacea Lamiaceae	ground-ivy (124,232,258)	leaves	-	83	6.1	-	-	-	-	-	-	-	55.0	73
Glyceria borealis Poaceae	tall manna grass (94)	greens	-	-	0.6	-	-	3.0	1.1	-	-	-	-	-

Table 4B. Nutritional constituents of plants: steins, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Fraxinus americana Oleaceae	white ash (6)	leaves	174	24	203	-	-	-	-	-	-	-	-
Galinsoga parviflora Asteraceae	small flowered galinsoga (73,236)	greens	245	45	-	-	-	-	-	7.1	-	-	-
Galium aparine Rubiaceae	common bedstraw/ cleavers (109)	greens	145	65	39	517	13.0	0.1	-	3.2	0.7	-	97.0
Galium triflorum Rubiaceae	sweet-scented bedstraw (97)	greens	-	-	-	-	-	-	-	-	-	-	-
Galium verum Rubiaceae	ladies' bedstraw (104)	greens	-	24	-	-	-	-	-	-	-	-	-
Gaultheria hispidula Ericaceae	creeping snowberry (22)	shoot	640	120	-	680	410	0.5	3.5	26.2	300	<0.1	44.2
Gaultheria procumbens Ericaceae	wintergreen/ checker berry (22)	shoots	96	9.0	-	60	46.0	<0.1	0.3	1.3	7.0	-	3.8
Gaultheria procumbens Ericaceae	wintergreen/ teaberry (120,230)	leaves	549	33	-	-	-	-	-	-	-	-	-
Glechoma hederacea Lamiateae	ground-ivy (124,232,258)	leaves	-	-	-	-	-	-	-	-	-	-	-
Glyceria borealis Poaceae	tall manna grass (94)	greens	40	16	-	-	-	-	-	-	-	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Hamamelis virginiana Hamamelidaceae	witch-hazel (6,63)	leaves dry	-	-	9.0	-	-	-	-	-	-	-	-	-
Hemerocallis species Liliaceae	day lily (124)	buds	-	87	3.1	-	-	-	-	-	-	-	43.0	98
Heracleum lanatum Apiaceae	cow-parsnip (75,120,122)	greens	-	91	1.6	-	-	-	1.5	-	0.11	-	-	-
Heracleum lanatum Apiaceae	cow-parsnip (310,323)	stalks peeled	20	95	0.4	0.2	3.8	0.9	0.6	<0.01	0.12	0.3	3.5	7.5
Hydrophyllum virginicum Hydrophyllaceae	Indian salad (93)	greens	-	-	-	-	-	-	-	-	-	-	24.5	-
Hypochaeris radicata Asteraceae	common cat's ear (88)	greens dry	-	-	9.4	-	-	-	20.9	-	-	-	-	-
Impatiens biflora Balsaminaceae	spotted touch-me-not (120)	leaves	-	83	-	-	-	-	-	-	0.60	-	-	-
Impatiens capensis Balsammaceae	spotted touch me-not (223)	greens	-	-	2.2	0.7	-	0.8	1.2	-	-	-	-	-
Isatis tinctoria Brassicaceae	woad (260)	leaves	-	-	22.5	-	-	-	-	-	-	-	-	-
Juglans cinerea Juglandaceae	butternut (22)	greens	-	-	1.1	-	-	-	-	-	-	-	-	-

Table 4D.Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Hamamelis virginiana Hamamelidaceae	witch hazel (6,63)	leaves dry	1607	190	50	1020	240	1.5	15.0	34.0	146	-	-
Hemerocallis species Liliaceae	day lily (124)	buds	-	-	-	-	-	-	-	-	-	-	-
Heracleum lanatum Apiaeae	cow-parsnip (75,120,122)	greens	-	-	-	-	-	-	-	-	-	-	-
Heraclcum lanatum Apiaceae	cow-parsnip (310,323)	stalks peeled	28	19	0.5	-	11.7	0.4	04	0.3	0.1	-	-
Hydrophyllum virginicum Hydrophyilaceae	Indian salad (93)	greens	-	-	-	-	-	-	-	-	-	-	-
Hypochaeris radicata Asteraceae	common cat's ear (88)	greens dry	-	-	-	-	-	-	-	-	-	-	-
Impatiens biflora Balsaminaceae	spotted touch-me-not (120)	leaves	-	-	-	-	-	-	-	-	-	-	-
Impatiena capensis Balsaminaceae	spotted touch-me-not (223)	greens	-	-	-	-	-	-	-	-	-	-	-
Isatis tinctoria Brassicaceae	woad (260)	leaves	-	0.3	19	-	-	1.4	-	-	-	-	-
Juglans cinerea Juglandaceae	butternut (22)	greens	11	4.4	0.2	8.2	7.2	0.1	0.6	-	-	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Juglans nigra Juglandaceae	black walnut (22)	shoots	-	-	1.2	-	-	-	-	-	-	-	-	-
Juncus balticus Juncaceae	baltic rush (90)	greens	-	-	8.5	-	-	32.2	-	-	-	-	-	-
Juncus effusus Juncaceae	common rush (192,193)	shoots	-	-	0.9	-	-	-	0.4	-	-	-	-	-
Juniperus virginiana Cupressaceae	juniper (63,98)	shoots	-	90	0.9	1.5	7.3	3.0	0.3	-	-	-	-	-
Juniperus species Cupressaceae	juniper (14,29)	leaves	-	-	12.8	-	-	-	-	-	-	-	167	-
Kochia scoparia Chenopodiaceae	summer cypress (89)	greens	-	72	5.1	-	-	7.7	4.1	-	-	-	-	-
Lactuca canadensis Asteraceae	wild lettuce (120,233)	greens	-	85	2.6	0.8	-	1.8	-	-	0.40	-		131
Lactuca scariola Asteraceae	prickly lettuce (234,312)	greens	31	-	2.0	-	-	-	-	-	-	-	41.0	-
Laminaria species Algae	kelp (4)	leaves	43	82	1.7	0.6	9.6	1.3	6.6	0.05	0.15	0.5	-	12
Lamium album Lamiaceae	white dead-nettle (30,124,232,258)	leaves	-	85	6.5	-	-	-	-	-	-	-	76.0	644
Lamium album Lamiaeae	white dead-nettle (109,263)	greens	-	-	1.0	-	-	1.9	1.2	-	-	-	58.6	-
Ledum groenlandicum Ericaceae	common Labrador-tea (11,22,157,323)	leaves dry	-	42	4.2	0.7	-	-	-	0.01	0.40	92.0	98.2	-

Table 4D Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Juglans nigra Juglandaceae	black walnut (22)	shoots	9.5	5.4	0.2	15	10.1	0.1	0.5	2.9	0.8	-	-
Juncus balticus Juncaceae	baltic rush (90)	greens	305	165	-	-	-	-	-	-	-	-	-
Juncus effusus Juncaceae	common rush (192,193)	shoots	41	20	46	123	11.9	-	-	1.2	-	-	-
Juniperus virginiana Cupressaceae	juniper (63,98)	shoots	147	23	5	75	24.5	0.1	3.1	2.9	5.0	-	-
Juniperus species Cupressaceae	juniper (14,29)	leaves	500	260	-	1150	180	2.4	-	22.0	5.2	-	-
Kochia scoparia Chenopodiaceae	summer cypress (89)	greens	-	-	-	-	-	-	-	-	-	-	-
Lactuca canadensis Asteraceae	wild lettuce (120,233)	greens	337	67	-	747	-	-	-	-	-	-	-
Lactuca scariola Asteraceae	prickly lettuce (234,312)	greens	-	-	-	-	-	-	-	-	-	-	-
Laminaria species Algae	kelp (4)	leaves	168	42	233	89	121	-	-	-	-	-	-
Lamium album Lamiaceae	white dead-nettle (30,124,232,258)	leaves	-	-	-	-	-	-	-	-	-	-	-
Lamium album Lamiaeae	white dead-nettle (109,263)	greens	76	34	23	411	23.0	0.1	-	3.4	0.3	-	56.0
Ledum groenlandicum Ericaceae	common Labrador-tea (11,22,157,323)	leaves	215	93	3.7	-	73.0	2.4	2.4	184	45.4	0.2	31.0

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Ledum palustre Ericaceae	northern Labrador -tea (11,210)	leaves dry	-	47	4.4	-	8.7	-	-	-	-	-	13.8	-
Lepidium sativum Brassicaceae	garden cress (33,73,78)	greens	32	89	2.6	0.7	5.5	1.1	1.8	0.08	0.26	1.0	69.0	930
Lindera benzoin Lauraceae	spicewood/ spicebush (63)	leaves	-	90	1.2	-	-	-	-	-	-	-	-	-
Lomatium nudicaule Apiaceae	Indian celery/ barestem lomatium (122)	shoots	-	-	-	-	-	-	-	-	-	-	40.7	-
Lomatium nudicaule Apiaceae	Indian celery/ barestem lomatium (93)	greens	-	88	-	-	-	-	-	0.02	0.08	-	66.0	-
Macrocystis integrifolia Phaeophyta	giant kelp (286,287,288)	fronds dry	-	-	10.7	-	-	-	39.4	-	-	-	-	-
Macrocystis integrifolia Phaeophyta	giant kelp (286,287,288)	fronds fresh	-	87	1.4	-	-	-	5.0	-	-	-	-	-
Malva moschata Malvaceae	musk mallow (232)	leaves	-	80	6.3	-	-	-	-	-	-	-	-	-
Malva neglecta Malvaceae	dwarf mallow (232)	leaves	-	77	8.6	-	-	-	-	-	-	-	-	-
Malva parviflora Malvaceae	small-flowered mallow (18)	leaves	36	86	4.8	0.2	6.4	1.5	2.3	-	-	-	65.0	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Ledum palustre Ericaceae	northern Labrador -tea (11,210)	leaves dry	-	-	-	-	-	-	-	-	-	-	-
Lepidium sativum Brassicaceae	garden cress (33,78)	greens	81	76	14	606	-	-	-	1.3	-	-	-
lindera benzoin Lauraceae	spicewood/ spicebush (63)	leaves	156	23	5.0	155	49.0	-	4.0	5.0	-	-	-
Lomatium nudicaule Apiaceae	Indian celery/ barestem lomatium (122)	shoots	-	-	-	-	-	-	-	-	-	-	-
Lomatium nudicaule Apiaceae	Indian celery/ barestem lomatium (93)	greens fresh	37	-	-	304	22.3	0.1	0.4	0.7	-	-	-
Macrocystis integrifolia Phaeophyta	giant kelp (286,287,288)	fronds dry	650	340	4140	13100	540	-	0.3	9.3	-	-	13.7
Microcystis integrifolia Phaeophyta	giant kelp (286,287,288)	fronds fresh	0.1	<0.1	0.5	1.7	0.1		<0.1	1.2	-	-	-
Malva moschata Malvaceae	musk mallow (232)	leaves	-	-	-	-	-	-	-	-	-	-	-
Malva neglecta Malvaceae	dwarf mallow (232)	leaves	-	-	-	-	-	-	-	-	-	-	-
Malva parviflora Malvaceae	small-flowered mallow (18)	leaves	324	67									

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Malva rotundifolia Malvaceae	small mallow (93)	greens	-	-	-	-	-	-	-	-	-	-	82.5	-
Malva sylvestris Malvaceae	high mallow/ common mallow (33,73,232)	greens	23	79	4.6	1.4	-	-	-	0.17	0.29	0.5	24.0	331
Malva species Malvaceae	mallow (73)	greens	37	-	4.4	0.6	-	-	-	0.13	0.20	1.0	35.0	219
Medicago hispida Fabaceae	bur-clover (25)	greens	-	90	2.4	-	-	1.8	-	-	-	-	-	-
Medicago polymorpha Fabaceae	bur-clover (33)	greens	38	87	4.8	0.3	6.7	0.9	1.6	0.18	0.28	0.7	98.0	-
Medicago sativa Fabaceae	alfalfa (73)	greens	52	83	6.0	0.4	9.5	3.1	2.3	0.15	0.18	0.5	152	341
Mentha piperita Lamiaceae	peppermint (290)	greens dry	-	-	7.9	2.3	-	30.2	4.6	-	-	-	-	-
Mentha rotundifolia Lamiaceae	apple mint (95)	greens	-	80	2.8	-	-	-	1.9	-	-	-	-	-
Mentha spicata Lamiaceae	spearmint (116,124)	leaves	-	82	4.8	0.6	10.0	2.0	1.6	0.05	0.08	0.4	68.0	858
Mentha species Lamiaceae	mint (73,120,213,263)	leaves	39	81	2.9	1.0	7.7	1.1	1.8	0.13	0.25	0.8	64.0	1334
Monotropa uniflora Pyrolaceae	Indian-pipe (181)	greens	-	-	-	-	-	-	-	-	-	-	-	-
Montia perfoliata Portulacaceae	miners lettuce (53)	greens fresh	20	92	2.8	0.3	3.2	0.9	1.3	0.08	0.13	0.2	29.4	109

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Malva rotundifolia Malvaceae	small mallow (93)	greens	-	-	-	-	-	-	-	-	-	-	-
Malva sylvestris Malvaceae	high mallow/ common mallow (33,73,232)	greens	90	42	-	-	-	-	-	3.7	-	-	-
Malva species Malvaceae	mallow (73)	greens	249	69	-	-	-	-	-	12.7	-	-	-
Medicago hispida Fabaceae	bur-clover (25)	greens	125	35	-	-	-	-	-	-	-	-	-
Medicago polymorpha Fabaceae	bur-clover (33)	greens	133	62	-	314	-	-	-	5.1	-	-	-
Medicago sativa Fabaceae	alfalfa (73,236)	greens	690	110	110	650	-	-	0.9	5.4	-	-	-
Mentha piperita Lamiateae	peppermint (290)	greens dry	1670	340	9	2540	410	-	2.0	21.5	3.2	-	-
Mentha rotundifolia Lamiaceae	applemint (95)	greens	326	-	-	-	-	-	-	-	-	-	-
Mentha spicata Lamiateae	spearmint (116,124)	leaves	200	80	-	-	-	-	-	15.6	-	-	-
Mentha species Lamiateae	mint (73,120,213,236)	leaves	166	45	2.0	179	-	-	-	5.3	-	-	-
Monotropa uniflora Pyrolaceae	Indian-pipe (181)	greens	-	-	-	-	-	-	-	-	-	-	-
Montia perfoliata Portulacaceae	miners lettuce (53)	greens fresh	52	79	18	317	40.0	-	-	2.9	-	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Montia perfoliate Portulacaceae	miners lettuce (53)	greens cooked	20	30	2.8	0.3	3.2	0.9	1.3	0.08	0.13	0.2	29.4	109
Nasturtium officinale Brassicaceae	common watercress (4,73,124,172, 289)	greens	19	93	2.2	0.3	3.0	0.7	1.2	0.08	0.16	0.9	44.6	490
Nepeta cataria Lamiaceae	catnip/ catmint (124)	leaves	-	82	-	-	-	-	-	-	-	-	83.0	-
Nuphar advena Nymphaeaceae	yellow pond-lily (169)	greens	-	-	-	-	-	-	-	-	-	-	-	-
Nuphar variegatum Nymphaeaceae	bullhead lily/ yellow pond-lily (105,169)	greens	-	90	1.6	0.3	-	2.3	0.1	-	-	-	-	-
Nymphaea tuberosa Nymphaeaceae	tubrous water lily (105,169)	greens	-	90	2.0	0.2	7.7	1.6	0.1	-	-	-	-	-
Onoclea struthiopteris Polypodiaceae	ostrich fern (120,158)	fiddle-heads	20	80	3.0	0.0	3.0	-	-	0.00	0.21	-	10.0	4
Oxalis corniculata Oxalidaceae	wood-sorrel yellow oxalis (73,226)	greens	49	86	2.3	0.8	8.2	0.9	-	-	-	0.6	78.0	-
Oxyria digyna Polygonaceae	mountain-sorrel (8,28,301)	leaves	-	87	3.8	0.9	7.6	-	1.3	-	-	-	40.0	890
Palmaria palmata Rhodophyta	red algae/ dulse (87,282,296)	fronds dry	323	7	19.9	0.6	59.5	-	12.8	0.23	0.76	5.4	4.8	2

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Montia perfoliata Portulacaceae	miners lettuce (53)	greens cooked	52	79	18	317	40.1	-	-	2.9	-	-	-
Nasturtium officinale Brassicaceae	common watercress (73,124,172,289)	greens	151	54	52	282	21.0	-	-	1.7	-	-	-
Nepeta cataria Lamiaceae	catnip/ catmint (124)	leaves	-	-	-	-	-	-	-	-	-	-	-
Nuphar advena Nymphaeaceae	yellow pond-lily (169)	greens	7.4	3.3	0.8	32	1.5	0.2	0.7	9.1	3.4	-	-
Nuphar variegatum Nymphaeaceae	bullhead lily/ yellow pond-lily (105,169)	greens	31	13	31	97	97.1	0.2	0.5	7.6	5.7	0.1	-
Nymphaea tuberosa Nymphaeaceae	tubrous water lily (105,169)	greens	145	8.5	18	95	23.2	0.3	0.5	7.5	5.0	0.1	-
Onoclea struthiopteris Polypodiaceae	ostrich fern (120,158)	fiddle-heads	6	-	1.5	232	-	-	-	1.0	-	-	-
Oxalis corniculata Oxaltdaceae	wood-sorrel/ yellow oxalis (73,226)	greens	150	78	-	-	-	-	-	8	-	-	-
Oxyria digyna Polygonaceae	mountain-sorrel (8,28,301)	leaves	116	87	18	-	75.0	0.1	0.6	3.2	1.7	<0.1	-
Palmaria palmata Rhodophyta	red algae/ dulse (87,282,296)	fronds dry	375	360	1740	7000	450	4.0	71.1	11.0	4.5	-	7500

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Palmaria palmata Rhodophyta	red algae/ dulse (87,282)	fronds	-	87	1.8	-	6.1	-	3.6	0.63	0.51	0.2	38.0	285
Pedicularis hirsuta Scrophulariaceae	hairy lousewort (49)	leaves	-	-	-	-	-	-	-	-	-	-	22.5	-
Petasites japonicus Asteraceae	butterbur	leaves	14	95	0.4	0.1	3.6	1.3	1.5	0.02	0.02	0.2	32.0	5
Phragmites australis Poaceae	reed grass (116)	shoots dry	-	5	5.2	0.9	89.0	32.0	5.8	-	-	-	-	-
Phytolacca americana Phytolaccaceae	pokeweed/ pokeberry (73)	shoots	23	-	2.6	0.4	-	-	-	0.80	0.33	1.2	136	870
Picea abies Pinaceae	common spruce (29,44,242)	needles	-	58	4.7	-	-	-	1.8	-	-	-	174	-
Picea mariana Pinaceae	black spruce (11,50)	needles	-	49	2.5	-	11.8	-	-	-	-	-	120	-
Picea rubens Pinaceae	red spruce (50)	needles	-	-	-	-	-	-	-	-	-	-	168	-
Pinus ponderosa Pinaceae	ponderosa pine (68)	needles	-	52	3.1	4.5	39.9	14.1	1.0	-	-	-	-	385
Pinus strobus Pinaceae	white pine (50)	needles	-	-	-	-	-	-	-	-	-	-	31.5	-
Plantago decipiens Plantaginaceae	goosctongue (120)	greens	-	93	-	-	-	-	-	-	0.11	-	-	338

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Palmaria palmata Rhodophyta	red algae/ dulse (87,282)	fronds	48	-	-	-	60.1	0.2	0.8	-	0.6	<0.1	1306
Pedicularis hirsuta Scrophulanaceae	hairy lousewort (49)	leaves	-	-	-	-	-	-	-	-	-	-	-
Petasites japonicus Asteraceae	butterbur (4)	leaves	103	12	7.0	655	14.0	-	-	0.1	-	-	-
Phragmites australis Poaceae	reed grass (116)	shoots dry	-	-	-	-	-	-	-	-	-	-	-
Phytolacca americana Phytolaccaceae	pokeweed/ pokeberry (73)	shoots	53	44	-	-	-	-	-	1.7	-	-	-
Picea abies Pinaceae	common spruce (29,44,242)	needles	289	85	-	313	-	-	-	10.8	-	-	-
Picea mariana Pinaceae	black spruce (11,50)	needles	-	-	-	-	-	-	-	-	-	-	-
Picea rubens Pinaceae	red spruce (50)	needles	-	-	-	-	-	-	-	-	-	-	-
Pinus ponderosa Pinaceae	ponderosa pine (68)	needles	166	68	-	-	-	-	-	6.8	1.6	-	-
Pinus strobus Pinaceae	white pine (50)	needles	-	-	-	-	-	-	-	-	-	-	-
Plantago decipiens Plantaginaceae	goosetongue (120)	greens	-	-	-	-	-	-	-	-	-	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Plantago decipiens Plantaginaceae	goosetongue (120)	greens boiled	-	91	-	-	-	-	-	-	0.11	-	-	-
Plantago major Plantaginaceae	broad leaved plantain (109,162,263)	greens	-	-	1.6	-	-	1.6	1.7	-	-	-	33.3	-
Plantago major Plantaginaceae	greater plantain (33,232)	leaves	61	84	2.5	0.3	14.6	-	1.2	-	0.28	0.8	8.0	252
Plantago rugelii Plantaginaceae	Rugel's plantain (234)	greens	29	-	1.1	-	-	-	-	-	-	-	-	-
Polygonum aviculare Polygonaceae	common knotweed (93,263)	greens	-	-	-	-	-	-	-	-	-	-	77.9	-
Polygonum bistorta Polygonaceae	mountain bistort (52)	leaves	-	-	-	-	-	-	-	-	-	-	158	-
Polygonum convolvulus Polygonaceae	wild buckwheat (93)	greens	-	-	-	-	-	-	-	-	-	-	86.0	-
Polygonum pensylvanicum Polygonaceae	Pennsylvania smartweed (42,98,120,131, 151)	greens	-	84	1.3	0.5	8.6	2.6	0.3	-	0.04	-	-	-
Polygonum pensylvanicum Polygonaceae	Pennsylvania smartweed (120)	greens cooked	-	90	-	-	-	-	-	-	0.01	-	-	-
Polygonum persicaria Polygonaceae	lady's thumb smartweed (120)	greens cooked	-	89	-	-	-	-	-	-	0.18	-	-	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Plantago decipiens Plantagmaceae	goosetongue (120)	greens boiled	-	-	-	-	-	-	-	-	-	-	-
Plantago major Plantaginaceae	broad-leaved plantain (109,162,263)	greens	241	41	25	382	22.0	0.1	-	5.6	0.4	-	191
Plantago major Plantaginaceae	greater plantain (33,232)	leaves	184	52	16	277	-	-	-	1.2	-	-	-
Plantago rugelii Plantaginaceae	Rugel's plantain (234)	greens	-	-	-	-	-	-	-	-	-	-	-
Polygonum aviculare Polygonaceae	common knotweed (93,263)	greens	-	-	-	-	-	-	-	-	-	-	-
Polygonum bistorta Polygonaceae	mountain bistort (52)	leaves	-	-	-	-	-	-	-	-	-	-	-
Polygonum convolvulus Polygonaceae	wild buckwheat (93)	greens	-	-	-	-	-	-	-	-	-	-	-
Polygonum pensylvanicum Polygonaceae	Pennsylvania smartweed (42,98,120,131, 151)	greens	122	467	3.2	322	95.6	0.2	0.5	3.1	1.7	-	-
Polygonum pensylvanicum Polygonaceae	Pennsylvania smartweed (120)	greens cooked	-	-	-	-	-	-	-	-	-	-	-
Polygonum persicaria Polygonaceae	lady's thumb smartweed (120)	greens cooked	-	-	-	-	-	-	-	-	-	-	-

Table 4A.Nutritional constituents of plants: stems, leaves, shoots. (perr 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Polygonum persicaria Polygonaceae	ladies thumb smartweed (93,120)	leaves	-	80	-	-	-	-	-	-	0.33	-	60.0	12
Polygonum sachalinense Polygonaceae	giant knotweed (93)	greens	-	-	-	-	-	-	-	-	-	-	259	-
Polygonum scandens Polygonaceae	false climbing buckwheat (98)	greens	-	90	1.0	0.3	8.6	0.9	0.2	-	-	-	-	-
Polygonum viviparum Polygonaceae	alpine bistort (28)	leaves	-			-	-	-	-	-	-	-	158	-
Polygonum species Polygonaceae	knotweed (73,243)	greens	-	-	3.3	0.4	1.4	1.1	0.7	-	-	-	-	-
Pontederia cordata Pontederiaceae	common pickeretweed (169,191,212)	greens	-	-	-	-	-	-	-	-	-	-	-	-
Porphyra laciniata Algae	seaweed	leaves	35	85	5.8	0.3	5.1	0.3	3.8	0.10	0.45	1.5	39.0	520
Porphyra perforata Rhodophyceae	laver/black seaweed (296,300,323)	fronds dry	279	10	24.4	1.4	58.0	25.2	16.1	0.37	1.79	6.7	11.6	263
Portulaca oleracea Portulacaceae	purslane (4,73,74,76,83, 93,120,124,131, 137)	greens	24	91	1.7	0.4	4.3	0.9	1.7	0.04	0.14	0.5	26.2	550
Potentilla fruticosa Rosaceae	shrubby cinquefoil (32)	leaves dry	-	-	-	-	-	9.6	0.5	-	-	-	-	-
Potentilla nivea Rosaceae	snow cinquefoil (49)	leaves dry	-	-	-	-	-	-	-	-	-	-	314	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Polygonum persicaria Polygonaceae	ladies thumb smartweed (93,120)	leaves	-	-	-	-	-	-	-	-	-	-	-
Polygonum sachalinense Polygonaceae	giant knotweed (93)	greens	-	-	-	-	-	-	-	-	-	-	-
Polygonum scandens Polygonaceae	false climbing buckwheat (98)	greens	-	-	-	-	-	-	-	-	-	-	-
Polygonum viviparum Polygonaceae	alpine bistort (28)	leaves	-	-	-	-	-	-	-	-	-	-	-
Polygonum species Polygonaceae	knotweed (73,243)	greens	99	50	2.8	240	80.0	-	-	4.1	0.7	-	-
Pontederia cordata Pontederiaceae	common pickerelweed (169,191,212)	greens	9.8	4.5	-	39	2.0	0.2	0.5	10.8	-	-	-
Porphyra laciniata Algae	laver seaweed (4)	leaves	70	58	48	356	2.0	0.3	1.1	1.8	0.9	-	-
Porphyra perforata Rhodophyceae	laver/black seaweed (296,300,323)	fronds dry	230	474	3300	3140	623	1.7	1.7	10.5	1.6	-	-
Portulaca oleracea Portulacaceae	purslane (4,73,74,76,83, 93,120,124,131, 137)	greens	120	35	45	698	560	0.1	0.3	4.2	-	-	-
Potentilla fruticosa Rosaceae	shrubby cinquefoil (32)	leaves dry	520	190	-	-	-	-	-	-	-	-	-
Potentilla nivea Rosaceae	snow cinquefoil (49)	leaves dry	-	-	-	-	-	-	-	-	-	-	-

Table 4A.Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Primula veris Primulaceae	cowslip primrose (176)	greens	-	-	-	-	-	-	-	-	-	-	-	-
Pseudotsuga menziesii Pinaceae	Douglas-fir (103,242,245)	needles	-	-	2.8	-	-	-	1.4	-	-	-	-	-
Pteridium aquilinum Polypodiaceae	bracken fern (300)	shoots	20	93	2.4	-	3.1	-	-	-	-	-	15.0	-
Pteridium aquilinum Polypodiaceae	bracken fern (120)	greens	-	64	-	-	-	-	-	-	-	-	-	1250
Pterygophora species (?) Algae	Eastern Arctic kelp (301)	greens	-	78	2.0	0.9	14.7	-	4.1	-	-	-	-	-
Ranunculus bulbosus Ranunculaceae	bulbous buttercup (109)	greens	-	-	2.0	-	-	1.5	1.6	-	-	-	-	-
Ranunculus pallasii Ranunculaceae	pallas buttercup (118)	greens	-	89	2.5	0.6	6.3	0.9	1.3	0.04	0.69	1.2	36.0	-
Ranunculus repens Ranunculaceae	creeping buttercup (279)	greens	-	-	-	-	-	-	-	-	-	-	-	-
Ranunculus sceleratus Ranunculaceae	celery-leaved buttercup (199,211)	greens	-	-	1.3	-	-	1.5	0.6	-	-	-	-	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Primula veris Primulaceae	cowslip primrose (176)	greens	-	-	-	-	-	-	-	-	-	-	-
Pseudotsuga menziesii Pinaceae	Douglas-fir (103,242,245)	needles	272	78	-	264	612	-	-	11.4	42.0	-	-
Pteridium aquilinum Polypodinceae	bracken fern (300)	shoots	5.0	-	2.0	221	-	-	-	0.8	-	-	-
Pteridinm aquilinum Polypodiaceae	bracken fern (120)	greens	-	-	-	-	-	-	-	-	-	-	-
Pterygophora species (?) Algae	Eastern Arctic kelp (301)	greens	149	80	618	-	128	<0.4	0.2	0.3	0.1	<0.1	-
Ranunculus bulbosus Ranunculaceae	bulbous buttercup (109)	greens	108	63	64	561	22.0	0.2	-	-	0.8	-	138
Ranunculus pallasii Ranunculaceae	pallas buttercup (118)	greens	11	-	-	-	-	-	-	2.9	-	-	-
Ranunculus repens Ranunculaceae	creeping buttercup (279)	greens	-	-	-	-	1.2	0.2	0.3	1.9	-	-	-
Ranunculus sceleratus Ranunculaceae	celery-leaved buttercup (199,211)	greens	78	215	65	300	65.0	0.1	0.3	5.9	70.0	<0.1	130

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat **g**	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Raphanus raphanistrum Ranunculaceae	wild radish (120)	greens	-	93	-	-	-	-	-	-	0.92	-	-	-
Raphanus sativus Brassicaceae	garden radish (236)	greens	52	86	2.8	0.5	9.9	1.3	1.2	0.14	0.26	0.6	122	165
Rheum rhaponticum Polygonaceae	garden rhubarb (78)	stalks raw	16	95	0.6	0.1	3.7	0.7	0.8	0.03	0.07	0.3	9.0	10
Kubus occidentalis Rosaceae	black raspberry (22)	greens	-	-	-	-	-	-	-	-	-	-	-	-
Rubus parviflorus Rosaceae	thimbleberry (122,323)	shoots peeled	22	93	0.6	0.4	5.5	1.0	0.6	0.01	0.09	0.3	5.9	41
Rubus spectabilis Rosaceae	salmonberry (122,323)	shoots peeled	26	93	0.5	0.6	5.8	1.0	2.3	0.01	0.02	0.2	7.5	-
Rumex acetosella Polygonaceae	sheep sorrel (49,73,120,230, 232,263,323)	greens	43	88	1.1	0.6	9.6	1.1	0.9	0.02	0.12	0.4	33.5	560
Rumex arcticus Polygonaceae	Arctic dock/ sourdock (118)	greens	-	90	2.3	0.7	6.5	1.1	0.8	0.90	0.54	1.1	-	-
Rumex crispus Polygonaceae	curly dock (73,93,120,124, 291)	greens	24	89	2.6	0.3	5.5	0.8	1.1	0.06	0.20	0.4	88.3	1014
Rumex obtusifolius Polygonaceae	broad-leaf dock (93,109,120)	greens	-	87	3.3	-	-	1.7	1.3	-	0.24	-	143	-
Rumex patientia Polygonaceae	spinach dock (291,293)	greens	-	-	0.6	-	-	-	-	-	-	-	25.4	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Raphanus raphanistrum Ranunculaceae	wild radish (120)	greens boiled	-	-	-	-	-	-	-	-	-	-	-
Raphanus sativus Brassicaceae	garden radish (236)	greens	238	44	-	-	-	-	-	2.8	-	-	-
Rheum rhaponticum Polygonaceae	garden rhubarb (78)	stalks raw	96	18	2.0	251	-	-	-	0.8	-	-	-
Rubus occidentalis Rosaceae	black raspberry (22)	greens	82	24	0.4	195	40.0	0.1	0.4	1.4	1.4	-	0.7
Rubus parviflorus Rosaceae	thimbleberry (122,323)	shoots peeled	24	26	1.0	-	29.0	0.4	0.4	0.4	0.2	-	-
Rubus spectabilis Rosaceae	salmonberry (122)	shoots peeled	8.0	27	2.5	-	17.0	0.1	0.2	0.3	732	-	-
Rumex acetosella Polygonaceae	sheep sorrel (49,73,120,230, 232,263,323)	greens	57	45	2.3	-	31.0	1.2	1.2	2.3	0.9	-	-
Rumex arcticus Polygonaceae	Arctic dock/ sourdock (118)	greens	2.0	55	-	-	-	-	-	0.8	-	-	-
Rumex crispus Polygonaceae	curly dock (73,93,120,124, 291)	greens	72	44	-	370	56.9	-	-	3.6	-	-	-
Rumex obtusifolius Polygonaceae	broad-leaf dock (93,109,120)	greens	108	69	43	416	33.8	0.1	-	2.3	0.4	-	160
Rumex patientia Polygonaceae	spinach dock (291,293)	greens	-	-	-	-	-	-	-	-	-	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Rumex pseudo-alpinus Polygonaceae	field dock (60)	greens	-	-	1.3	0.2	-	2.0	-	-	-	-	-	-
Rumex species Polygonaceae	dock (4,73,78,128)	greens	28	91	2.1	0.3	5.6	0.8	1.1	0.09	0.22	0.5	48.0	400
Sagittaria latifolia Alismataceae	wapato/arrowhead (169)	greens	-	-	-	-	-	-	-	-	-	-	-	-
Salix arctica Salicaceae	Arctic willow (32)	leaves	-	-	6.9	-	-	-	2.0	-	-	-	-	-
Salix arctophila Salicaceae	creeping willow (28)	leaves	-	-	-	-	-	-	-	-	-	-	332	1787
Salix harclayi Salicaceae	Barclay's willow (90)	greens	-	-	5.4	-	-	5.9	2.2	-	-	-	-	-
Salix reticulata Salicaceae	Arctic willow/ okowyot (301)	leaves	-	67	3.8	2.0	25.9	-	1.7	-	-	-	-	-
Salix richardsonii Salicaceae	Richardson's willow (11)	leafbud	-	43	3.7	-	11.8	-	-	-	-	-	95.8	-
Salix richardsonii Salicaceae	Richardson's willow (11)	leaves	-	64	5.8	-	6.1	-	-	-	-	-	-	-
Salix species Salicaceae	willow (1,8,36,41,49,52, 94)	leaves	-	66	5.1	-	28.0	3.3	2.8	0.09	0.19	-	41.0	1830
Salix species Salicaceae	willow (11,49)	buds	-	-	-	-	-	-	-	-	-	-	24.0	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Rumex pseudo-alpinus Polygonaceae	field dock (60)	greens	-	-	-	-	-	-	-	-	-	-	-
Rumex species Polygonaceae	dock (4,73,78,128)	greens	44	63	4.0	390	103	-	-	2.4	-	-	-
Sagittaria latifolia Alismataceae	wapato/arrowhead (169)	greens	6.5	5.7	15	49	2.8	0.4	0.9	-	17 3	-	-
Salix arctica Salicaceae	Arctic willow (32)	leaves	170	190	-	-	-	-	-	-	-	-	-
Salix arctophila Salicaceae	creeping willow (28)	leaves	-	-	-	-	-	-	-	-	-	-	-
Salix barclayi Salicaceae	Barclay's willow (90)	greens	260	150	-	-	-	-	-	-	-	-	-
Salix reticulata Salicaceae	Arctic willow okowyot (301)	leaves	267	89	15	-	167	0.2	3.5	5.7	5.0	<0.1	-
Salix richardsonii Salicaceae	Richardson's willow (11)	leafbud	-	-	-	-	-	-	-	-	-	-	-
Salix richardsonii Salicaceae	Richardson's willow (11)	leaves	-	-	-	-	-	-	-	-	-	-	-
Salix species Salicaceae	willow (1,8,36,41,49,52, 94)	leaves	268	127	-	472	-	0.2	2.9		<0.1	-	-
Salix species Salicaceae	willow (11,49)	buds	-	-	-	-	-	-	-	-	-	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Salsola kali Chenopodiaceae	Russian thistle (110,200)	greens	-	90	-	1.5	6.2	0.2	2.3	-	-	-	-	-
Satureja hortensis Lamiaceae	summer savory (276)	greens	-	87	2.6	-	-	-	2.3	-	-	-	0.5	74
Saxifraga cernua Saxifragaceae	nodding saxifrage (49)	leaves	-	-	-	-	-	-	-	-	-	-	86.6	-
Saxifraga oppositifolia Saxifragaceae	purple mountain saxifrage (49)	greens	-	-	-	-	-	-	-	-	-	-	54.0	-
Scirpus lacustris Cyperaceae	tule/roundstcm bulrush (208,210)	shoots	42	-	-	-	-	-	0.9	-	-	-	-	-
Scirpus maritimus Cyperaceae	Prairie bulrush (208)	shoots	43	-	-	-	-	-	1.0	-	-	-	-	-
Sedum purpureum Crassulaceae	live forever (120)	greens	-	93	-	-	-	-	-	-	0.12	-	-	510
Sedum purpureum Crassulaceae	live-forever (120)	greens frozen	-	94	-	-	-	-	-	-	0.06	-	-	283
Sedum rosea Crassulaceae	roseroot (8,41,52,118,141)	leaves	-	89	1.7	1.1	8.3	0.7	0.5	0.07	0.28	0.8	64.0	518
Smilax tamnoides Liliaceae	greenbrier (233)	greens	-	-	1.4	0.4	-	2.3	0.9	-	-	-	-	-
Sonchus arvensis Asteraceae	rough perennial sow-thistle (93)	greens	-	-	-	-	-	-	-	-	-	-	38.5	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Salsola kali Chenopodiaceae	Russian thistle (110,200)	greens	206	18	-	-	-	-	-	-	-	-	-
Satureja hortensis Lamiateae	summer savory (276)	greens	160	-	-	-	-	-	-	23.8	-	-	-
Saxifrage cernua Saxifragaceae	nodding saxifrage (49)	leaves	-	-	-	-	-	-	-	-	-	-	-
Saxifraga oppositifolia Saxifragaceae	purple mountain saxifrage (49)	greens	-	-	-	-	-	-	-	-	-	-	-
Scirpus lacustris Cyperaceae	tule/roundstem bulrush (208,210)	shoots	-	-	-	-	-	-	-	-	-	-	-
Scirpus maritimus Cyperaceae	Prairie bulrush (208)	shoots	-	-	-	-	-	-	-	-	-	-	-
Sedum purpureum Crassulaceae	live-forever (120)	greens	-	-	-	-	-	-	-	-	-	-	-
Sedum purpureum Crassulaceae	live-forever (120)	greens frozen	-	-	-	-	-	-	-	-	-	-	-
Sedum rosea Crassulaceae	roseroot (8,41,52,118,141)	leaves	132	20	-	-	-	-	-	0.6	-	-	-
Smilax tamnoides Liliaceae	greenbrier (233)	greens	87	16	-	244	-	-	-	-	-	-	-
Sonchus arvensis Asteraceae	rough perennial sow-thistle (93)	greens	-	-	-	-	-	-	-	-	-	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein S	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin rag	Niacin mg	Vit.C mg	Vit.A RE
Sonchus oleraccus Asteraceae	common sow-thistle (18,73,118,120)	greens	20	88	1.9	0.3	-	-	-	0.70	0.96	0.4	5.0	869
Stellaria humifusa Caryophyllaceae	salt marsh starwort (49)	greens	-	-	-	-	-	-	-	-	-	-	59.1	-
Stellaria media Caryophyllaceae	chickweed/ common starwort (30,79,93,109, 116,120,131)	leaves	-	90	1.6	0.2	5.3	1.8	1.3	0.02	0 14	0.5	34 8	613
Symphytum officinale Boraginaceae	common comfrey (93,258,279)	leaves	-	-	-	-	-	-	-	-	-	-	19.0	42
Taraxacum officinale Asteraceae	common dandelion (4,8,52,73,77,78, 93,109,120,124, 131,141,162, 235)	greens	45	85	2.7	0.7	9.2	1.6	1.8	0.19	0.28	-	35.0	1400
Taraxacum officinale Asteraceae	common dandelion (16,124)	buds	-	86	3.1	-	-	-	-	-	-	-	30.0	80
Thlaspl arvense Brassicaceae	field pennycress/ stinkweed (116,120)	greens cooked	-	93	7.7	-	4.7	-	-	-	0.07	-	270	-
Thlaspi arvense Brassicaceae	field pennycress/ stinkweed (120)	greens	-	91	-	-	-	-	-	-	0.23	-	-	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Sonchus oleraceus Asteraceae	common sowthistle (18,73,118,120)	greens	93	35	-	-	-	-	-	3.1	-	-	-
Stellaria humifusa Caryophyllaceae	salt marsh starwort (49)	greens	-	-	-	-	-	-	-	-	-	-	-
Stellaria media Caryophyllaceae	duckweed/ common starwort (30,79,93,109,116, 120,131)	leaves	91	56	122	585	41.7	0.1	-	3.5	1.7	-	70.0
Symphytum officinale Boraginaceae	common comfrey (93,258,279)	leaves	-	-	-	-	-	1.1	3.5	16.6	6.0	-	-
Taraxacum officinale Asteraceae	common dandelion (4,8,52,73,77,78, 93,109,120,124, 131,141,162,235)	greens	209	64	73	422	51.5	0.3	-	4.1	0.7	-	329
Taraxacum officinale Asteraceae	common dandelion (16,124)	buds	-	-	-	-	-	-	-	-	-	-	-
Thlaspi arvense Brassicaceae	field pennycress/ stinkweed (116,120)	greens cooked	-	-	-	-	-	-	-	-	-	-	-
Thlaspi arvense Brassicaceae	field pennycress/ stinkweed (116,120)	greens	-	-	-	-	-	-	-	-	-	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots (pre 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Tilia americana Tiliaceae	basswood (6,93)	leaves	-	90	1.5	-	-	-	-	-	-	-	67.5	-
Tragopogon porrifolius Asteraceae	common salsify (73)	greens	89	-	1.4	0.2	-	-	-	0.04	0.04	0.3	10.0	-
Tragopogon pratensis Asteraceae	goat's beard (93,120)	greens	-	88	-	-	-	-	-	-	0.18	-	37.5	-
Tragopogon pratensis Asteraceae	goat's beard (120)	greens cooked	-	90	-	-	-	-	-	-	0.18	-	-	-
Trifolium pratense Fabaceae	red clover (93,120,162,250, 258,263,297,298.303)	leaves	-	78	5.0	-	-	-	-	0.56	-	-	71.0	1330
Trifolium repens Fabaceae	white clover (23,51,93,218)	greens	-	44	2.5	-	-	-	1.0	-	-	-	95.5	-
Trifolium repens Fabaceae	white clover (256)	leaves	-	-	-	-	-	-	-	-	-	-	-	-
Tsuga canadensis Pinaceae	eastern hemlock (6,50,71)	leaves	-	55	3.4	3.9	-	-	-	-	-	-	238	-
Tussilago farfara Asteraceae	coltsfoot (109,271)	greens			1.4			1.4	1.5				13.0	

Table 4B. Nutritional constituents of plants: stems, leaves, shoots (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Tilia americana Tiliaceae	basswood (6,93)	leaves	290	29	-	230	-	-	-	-	-	-	-
Tragopogon porrifolius Asteraceae	common salsify (73)	greens	48	50	-	-	-	-	-	1.4	-	-	-
Tragopogon pratensis Asteraceae	goat's beard (93,120)	greens	-	-	-	-	-	-	-	-	-	-	-
Tragopogon pratensis Asteraceae	goat’s beard (120)	greens cooked	-	-	-	-	-	-	-	-	-	-	-
Trifolium pratense Fabaceae	red clover (93,120,162,250, 258,263,297,298, 303)	leaves	64	4.0	-	70	9.0	0.2	2.5	16.3	1.5	-	-
Trifolium repens Fabaceae	white clover (23,51,93,218)	greens	150	46	24	270	29.0	0.2	0.4	39.3	0.7	-	-
Trifolium repens Fabaceae	white clover (256)	leaves	-	-	-	-	-	0.1	0.8	5.0	1.0	-	-
Tsuga canadensis Pinaceae	eastern hemlock (6,50,71)	leaves	310	80	-	470	-	-	-	-	-	-	-
Tussilago farfara Asteraceae	coltsfoot (109,271)	greens	190	29	26	406	31.0	0.1	-	2.2	0.3	-	165

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit. C mg	Vit. A RE
Typha angustifolia Typhaceae	narrow-leaved cattail (150,208)	shoots, greens	44	-	0.7	0.1	5.5	2.8	0.7	-	-	-	-	-
Typha latifolia Typhaceae	common cattail (22,169,191)	greens	-	90	0.6	-	-	-	-	-	-	-	-	-
Typha latifolia Typhaceae	common cattail (120,208,216, 241,252)	shoots	68	83	1.7	0.7	-	5.7	1.0	-	0.13	-	-	-
Ulva lactuca Chlorophyta	sea lettuce (140,273,281, 283,284,285)	seaweed dry	-	-	23.5	2.6	6.8	-	25.9	-	-	-	-	-
Ulva lactuca Chlorophyta	sea lettuce (136,140,273,281, 283,284,285)	seaweed fresh	-	81	5.0	0.5	-	-	4.7	-	-	-	28.0	-
Urtica dioica Urticaceae	stinging nettle (73,120,223,259)	leaves	38	89	1.8	0.6	7.9	1.4	1.2	0.01	0.22	0.3	75.0	2248
Urtica dioica Urticaceae	stinging nettle (22,109,259,263, 265)	greens	-	-	2.3	-	-	1.4	1.9	-	-	-	89.8	-
Uvularia sessilifolia Liliaceae	small bellwort (63)	leaves	-	-	0.5	-	-	-	-	-	-	-	-	-
Vaccinium myrtilloides Ericaceae	sour-top blueberry (157)	leaves	-	-	-	-	-	-	-	-	-	-	-	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride tag
Typha angustifolia Typhaceae	narrow-leaved cattail (105,208)	shoots	69	17	12	88	-	-	-	16.5	5.0	0.2	-
Typha latifolia Typhaceae	common cattail (22,169,191)	greens	51	10	16	59	44.0	0.1	0.3	0.7	1.7	-	88.0
Typha latifolia Typhaceae	common cattail (120,216,208,241, 252)	shoots	133	11	118	367	31.0	-	-	-	-	-	-
Ulva lactuca Chlorophyta	sea lettuce (140,273,281, 283,284,285)	seaweed dry	582	290	2601	2436	1710	<0.1	0.1	83.6	-	-	5330
Ulva lactuca Chlorophyta	sea lettuce (136,140,273,281, 283,284,285)	seaweed fresh	108	48	483	452	317	<0.1	<0.1	15.5	-	-	989
Urtica dioica Urticaceae	stinging nettle (73,120,223,259, 323)	leaves	236	73	0.8	-	63.0	1.9	1.9	1.0	0.7	-	-
Urtica dioica Utricaceae	stinging nettle (22,109,259,263, 265)	greens	263	59	12	321	24.1	0.1	0.3	3.0	2.3	-	55.0
Uvularia sessilifolia Liliaceae	small bellwort (63)	leaves	85	26	5.0	87	21.0	0.1	20.0	31.0	6.1	-	-
Vaccinium myrtilloides Ericaceae	sour-top blueberry (157)	leaves	-	-	-	-	-	4.5	20.3	0.2	2.3	-	-

Table 4A. Nutritional constituents of plants: stems, leaves, shoots. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit. C mg	Vit. A RE
Vuccinium vitis-idaea Ericaceae	mountain cranberry/red whortleberry (138)	leaves	-	-	-	-	-	-	-	-	-	-	-	-
Vaccinium species Ericaceae	blueberry (120)	leaves	-	62	-	-	-	-	-	-	0.12	-	-	-
Valerianella locusta Valerianaceae	European corn-salad (78,299)	greens	21	93	2.0	0.4	3.6	0.8	1.2	-	-	-	11.4	-
Veronica beccabunga Scrophulariaceae	European brooklime (232)	leaves	-	78	3.8	-	-	-	-	-	-	-	-	-
Viola papilionacea Violaceae	common blue violet (79)	leaves	-	-	-	-	-	-	-	-	-	-	197	1750
Viola species Violaceae	violet (8,52,73,124)	leaves	-	83	-	-	-	-	-	-	-	-	210	824
Vitis aestivalis Vitaceae	summer grape (233)	leaves	-	-	1.3	0.5	-	1.6	0.8	-	-	-	-	-

Table 4B. Nutritional constituents of plants: stems, leaves, shoots.

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Vaccinium vitis-idaea Ericaceae	mountain cranberry/red whortleberry (138)	leaves	50	16	-	58	12.5	-	-	-	-	-	-
Vaccinium species Ericaceae	blueberry (120)	leaves	-	-	-	-	-	-	-	-	-	-	-
Valerianella locusta Valerianaceae	European corn-salad (78,299)	greens	-	-	-	-	-	-	-	-	-	-	-
Veronica beccabunga Scrophulariaceae	European brooklime (232)	leaves	-	-	-	-	-	-	-	-	-	-	-
Viola papilionacea Violaceae	common blue violet (79)	leaves	-	-	-	-	-	-	-	-	-	-	-
Viola species Violaceae	violet (8,52,73,124)	leaves	-	-	-	-	-	-	-	-	-	-	-
Vitis aestivalis Vitaceae	summer grape (233)	leaves	-	22	-	206	-	-	-	-	-	-	-

Table 5A. Nutritional constituents of plants: seeds, nuts, grains, legumes, (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit. C mg	Vit. A RE
Agropyron repens Poaceae	quackgrass/ couchgrass (92)	seeds	-	-	18.5	1.8	-	16.7	5.3	-	-	-	-	-
Amaranthus hybridus Amaranthaceae	green amaranth/ purple amaranth (111)	seeds	-	10	14.5	5.9	-	-	-	-	-	-	-	-
Amaranthus retroflexus Amaranthaceae	redroot pigweed (56,60,92,111,135, 145,160)	seeds	422	11	15.5	7.0	62.2	12.1	3.2	-	-	-	-	-
Avena fatua Poaceae	wild oat (60,145,310)	grains	435	9	14.7	7.9	-	2.3	3.3	0.10	0.16	2.8	-	-
Avena sativa Poaceae	common oat (2,42,59,236, 300,311)	grains	384	9	16.0	6.3	67.0	1.1	1.9	0.73	0.14	0.8	-	10
Avena species Poaceae	wild oat (25)	grains	-	10	6.1	-	-	29.8	-	-	-	-	-	-
Brassica hirta Brassicaceae	white mustard (197)	seeds	544	-	32.4	-	-	10.0	3.6	-	-	-	-	-
Brassica juncea Brassicaceae	Indian mustard/ brown mustard (92,201,240)	seeds	-	-	28.0	29.9	29.1	8.8	4.4	-	-	-	-	-
Brassica kaber Brassicaceae	wild mustard (145,240)	seeds	561	8	29.4	20.0	-	-	5.6	-	-	-	-	-
Brassica napus Brassicaceae	rape (195,197,240)	seeds	616	-	24.2	37.2	-	9.4	3.5	-	-	-	-	-
Brassica oleracea Brassicaceae	cabbage (85,92,111)	seeds	-	-	25.1	29.9	32.1	8.1	4.4	-	-	-	49.0	-

Table 5A. Nutritional constituents of plants: seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Brassica rapa Brassicaceae	bird rape mustard (92)	seeds	-	10	23.5	32.4	30.1	9.1	4.0	-	-	-	-	-
Bromus tectorum Poaceae	downy brome/ drooping brome grass (90,92)	grains	-	10	7.32	-	72.7	19.1	5.5	-	-	-	-	-
Camelina sativa Brassicaceae	false flax/ large seeded false flax **(**111**)**	seeds	-	-	46.0	29.9	-	10.6	5.7	-	-	-	-	-
Cannabis sativa Cannabinaceae	hemp/marijuana (33)	seeds	421	14	27.1	25.6	27.6	20.3	6.1	0.32	0.17	2.1	0	0.5
Capsella bursa-pastoris Brassicaceae	shepherd's purse (92)	seeds	-	10	12.4	22.6	50.3	14.3	4.7	-	-	-	-	-
Carpinus species Betulaceae	blue beech (244)	nuts	462	-	-	-	-	-	-	-	-	-	-	-
Carum carvi Apiaceae	common caraway (310,324)	seeds	333	10	24.9	14.6	49.9	15.9	7.8	0.38	0.38	3.6	-	-
Carya glabra Juglandaceae	pignut hickory (231)	nuts	373	53	-	-	-	-	-	-	-	-	-	-
Carya ovata Juglandaceae	shagbark hickory (231)	nuts	495	36	10 2	-	-	-	-	-	-	-	-	-

Table 5B. Nutritional constituents of plants: seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Brassica rapa Brassicaceae	bird rape mustard (92)	seeds	-	-	-	-	-	-	-	-	-	-	-
Bromus tectorum Poaceae	downy brome/ drooping brome grass (90,92)	grains	250	130	-	-	-	-	-	-	-	-	-
Camelina sativa Brassicaceae	false flax/ large seeded false flax (111)	seeds	-	-	-	-	-	-	-	-	-	-	-
Cannabis sativa Cannabinaceae	hemp/marijuana (33)	seeds	12.0	970	-	-	-	-	-	12 0	-	-	-
Capsella bursa-pastoris Brassicaceae	shepherd's purse (92)	seeds	-	-	-	-	-	-	-	-	-	-	-
Carpinus species Betulaceae	blue beech (244)	nuts	-	-	-	-	-	-	-	-	-	-	-
Carum carvi Apiaceae	common caraway (310,324)	seeds	689	568	17	1351	-	-	-	16.2	-	-	-
Carya glabra Juglandaceae	pignut hickory (231)	nuts	-	-	-	-	-	-	-	-	-	-	-
Carya ovata Juglandaceae	shagbark hickory (231)	nuts	64	233	2.6	360	98.0	-	-	-	-	-	-

Table 5A. Nutritional constituents of plants: seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Carya species Juglandaceae	hickory (10,73,78)	nuts	673	3	13.2	63.7	12 8	1.9	2.0	-	-	-	-	-
Castanea species Fagaceae	chestnut (10,73)	nuts	213	48	2.4	2.3	45.5	1.7	1.1	0.24	0.17	1.2	43.0	3
Chenopodium album Chenopodiaceae	lambsquarters (56,92,111,135, 145)	seeds	414	10	16.6	4.2	49.6	12.5	8.6	-	-	-	-	-
Chenopodium leptophyllum Chenopodiaceae	narrow-leaved goosefoot (319)	seeds	-	-	16.7	6.9	-	-	-	-	-	-	-	-
Chenopodium pumilio Chenopodiaceae	rough-leaved goosefoot (88)	seeds	-	50	7.6	-	-	-	3.8	-	-	-	-	-
Cicer arietinum Fabaceae	chickpea (78,114)	legume dry	360	10	19.5	4.8	61.0	5.0	3.0	0.31	0.15	2.0	-	5
Cleome serrulata Capparidaceae	spider flower (111)	seeds	-	-	20.8	25.7	-	-	2.8	-	-	-	-	-
Coriandrum sativum Apiaceae	coriander (315)	seeds	-	-	13.8	22.2	-	-	-	-	-	-	-	-
Corylus americana Betulaceae	American hazelnut (73)	nuts	634	-	12.6	62.4	-	-	-	0.46	-	0.9	-	-
Corylus species Betulaceae	hazelnut (10,78)	nuts	634	6	12.6	62.4	16.7	3.8	3.6	0.46	0.10	1.1	1.0	7
Cytisus scoparius Fabaceae	scotch broom (111)	seeds	-	-	29.3	5.4	-	-	3.4	-	-	-	-	-

Table 5B. Nutritional constituents of plants: seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Carya species Juglandaceae	hickory (10,73,78)	nuts	61	360	1.0	436	173	0.7	4.3	2.4	-	-	-
Castanea species Fagaceae	chestnut (10,73)	nuts	27	93	6.0	518	32	0.5	0.5	1.7	1.0	-	-
Chenopodium album Chenopodiaceae	lambsquarters (56,92,111,135, 145)	seeds	1017	-	8.0	1656	675	2.1	-	62.9	5.2	-	-
Chenopodium leptophyllum Chenopodiaceae	narrow-leaved goosefoot (315)	seeds	-	-	-	-	-	-	-	-	-	-	-
Chenopodium pumilio Chenopodiaceae	rough-leaved goosefoot (88)	seeds	-	-	-	-	-	-	-	-	-	-	-
Cicer arietinum Fabaceae	chickpea (78,114)	legume dry	150	331	26	797	-	-	-	6.9	-	-	-
Cleome serrulata Capparidaceae	spider flower (111)	seeds	-	-	-	-	-	-	-	-	-	-	-
Coriandrum sativum Apiaceae	coriander (315)	seeds	-	-		-	-	-	-	-	-	-	-
Corylus americana Betulaceae	American hazelnut (73)	nuts	209	337	2.0	704	-	-	-	3.4	-	-	-
Corylus species Betulaceae	hazelnut (10,78)	nuts	209	337	2.0	704	-	-	-	3.4	-	-	-
Cytisus scoparius Fabaceae	scotch broom (111)	seeds	-	-	-	-	-	-	-	-	-	-	-

Table 5A. Nutritional constituents of plants seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Daucus carota Apiaceae	wild carrot (92)	seeds	-	10	22.1	7.8	-	19.9	6.9	-	-	-	-	-
Descurainia pinnata Brassicaceae	western tansy mustard (315)	seeds	-	-	24 4	38.4	-	-	-	-	-	-	-	-
Echinochloa crusgalli Poaceae	common barnyard grass (56,92,145)	seeds	417	9	15.9	4.2	68.8	26.2	5.6	0.33	0.10	4.0	-	-
Eleusine indica Poaceae	goosegrass (92)	seeds	-	10	25.7	0.2	61.3	9.4	2.8	-	-	-	-	-
Elymus canadensis Poaceae	Canada wild rye grass (111)	grains	-	-	24.2	2.6	-	-	2.0	-	-	-	-	-
Fagopyrum tartaricum Polygonaceae	tartary buckwheat (111,310)	seeds	-	-	11.5	2.4	-	11.5	2.2	-	-	-	-	-
Fagus grandifolia Fagaceae	American beechnut (10,73,78,99)	nuts	568	7	6.2	50.0	33 5	3.7	3.7	-	-	-	-	-
Fraxinus americana Oleaceae	white ash (111)	seeds	-	-	22.7	30.1	3.2	-	-	-	-	-	-	-
Helianthus annuus Asteraceae	common sunflower (10,56,73,92,111, 167,168,198,201)	seeds	580	9	27.5	49.6	18.8	4.2	3.5	2.3	0.23	5.4	-	5
Hordeum jubatum Poaceae	foxtail barley (310)	grains	-	-	3.8	-	-	39	16.9	-	-	-	-	-

Table 5B. Nutritional constituents of plants: seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Daucus carota Apiaceae	wild carrot (92)	seeds	-	-	-	-	-	-	-	-	-	-	-
Descurainia pinnata Brassicaceae	western tansy mustard (315)	seeds	-	-	-	-	-	-	-	-	-	-	-
Echinochloa crusgalli Poaceae	common barnyard grass (33,56,92,145)	seeds	212	581	10	738	360	0.2	11.2	62.5	6.4	-	-
Eleusine indica Poaceae	goosegrass (92)	seeds	-	-	-	-	-	-	-	-	-	-	-
Elymus canadensis Poaceae	Canada wild rye grass (111)	grains	-	-	-	-	-	-	-	-	-	-	-
Fagopyrum tartaricum Polygonaceae	tartary buckwheat (111,310)	seeds	150	350	-	500	-	-	-	-	-	-	-
Fagus grandifolia Fagaceae	American beechnut (10,73,78)	nuts	1.0	0	-	-	0	-	-	-	-	-	-
Fraxinus americana Oleaceae	white ash (111)	seeds	-	-	-	-	-	-	-	-	-	-	-
Helianthus annuus Asteraceae	common sunflower (10.56,73,92,111, 167,168,198,201)	seeds	120	837	3.0	689	354	1.8	5.1	7.1	2.0	-	-
Hordeum jubatum Poaceae	foxtail barley (310)	grains	-	-	-	-	-	-	-	-	-	-	-

Table 5A. Nutritional constituents of plants seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Juglans cinerea Juglandaceae	butternut (10,78)	nuts	629	4	23.7	61.2	8.4	1.9	2.9	-	-	-	-	-
Juglans nigra Juglandaceae	black walnut (10,64,73,165)	nuts	607	4	25.4	58.9	12.1	6.5	2.6	0.22	0.11	0.7	-	30
Kochia scoparia Chenopodiaceae	summer cypress (111,126,135,145)	seeds	459	7	25.0	-	-	5.7	6.4	-	-	-	-	-
Lepidium sativum Brassicaceae	garden cress (33,186)	seeds	-	6	23.5	23.1	-	-	5.7	-	-	-	-	-
Linum perenne Linaceae	wild flax (248)	seeds	-	-	-	-	-	-	-	-	-	-	-	-
Linum usitatissimum Linaceae	common flax (18,111,175,195, 240,248)	seeds	498	6	23.1	36.3	-	6.1	3.8	0.17	0.16	1.4	-	-
Lunaria annua Brassicaceae	annual honesty (111)	seeds	-	-	22.1	29.6	-	-	3.8	-	-	-	-	-
Medicago lupulina Fabaccae	black medic (111)	seeds	-	-	33.4	5.2	-	-	3.9	-	-	-	-	-
Melilotus officinalis Fabaceae	yellow sweet clover (111)	seeds	-	-	34.6	6.0	-	-	4.0	-	-	-	-	-
Mentzelia albicaulis Loasaceae	white-stemmed blazing star (111)	seeds	-	-	-	31.1	-	-	17.6	-	-	-	-	-
Monarda fistulosa Lamiaceae	wild bergamot (56)	seeds	-	8	19.8	17.4	-	26.6	6.7	-	-	-	-	-

Table 5B. Nutritional constituents of plants seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
.luglans cinerea Juglandaceae	butternut (10,78)	nuts	53	446	1.0	421	237	0.5	3.1	6.8	6.6	-	-
Juglans nigra Juglandaceae	black walnut (10,64,73,165)	nuts	56	464	3.8	545	234	1.0	3.4	6.0	4.3	-	-
Kochia scoparia Chenopodiaceae	summer cypress (111,126,135,145)	seeds	-	811	-	-	-	-	-	-	-	-	-
Lepidium sativum Brassicaceae	garden cress (33,186)	seeds	310	1650	-	-	-	-	-	-	-	-	-
Linum perenne Linaceae	wild flax (248)	seeds	-	-	-	-	-	-	-	-	-	-	-
Linum usitatissimum Linaceae	common flax (18,111,175,195, 240,248)	seeds	220	520	-	780	400	-	-	43.8	6.1	-	-
Lunaria annua Brassicaceae	annual honesty (111)	seeds	-	-	-	-	-	-	-	-	-	-	-
Medicago lupulina Fabaceae	black medic (111)	seeds	-	-	-	-	-	-	-	-	-	-	-
Melilotus officinalis Fabaceae	yellow sweet clover (111)	seeds	-	-	-	-	-	-	-	-	-	-	-
Mentzelia albicaulis Loasaceae	white-stemmed blazing star (111)	seeds	-	-	-	-	-	-	-	-	-	-	-
Monarda fistulosa Lamiateae	wild bergamot (56)	seeds	-	-	-	-	-	-	-	-	-	-	-

Table 5A. Nutritional constituents of plants: seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Nelumbo lutea Nymphaeaceae	yellow lotus/ waternut (75)	nuts	-	8	15.4	2.1	-	-	4.9	-	-	-	-	-
Nepeta cataria Lamiaceae	catnip/ catmint (56)	seeds	-	10	17.2	4.8	64.9	22.3	3.1	-	-	-	-	-
Nigella damascena Ranunculaceae	love-in-a-mist (111)	seeds	-	-	23.1	38.4	-	-	4.8	-	-	-	-	-
Oryzopsis hymenoides Poaceae	Indian rice grass (75,90,94,111, 311)	grains	-	10	8.2	1.9	76.1	31.5	5.1	-	-	-	-	3.8
Panicum miliaceum Poaceae	broomcorn millet/ common millet/ Indian millet (174,178,310)	grains	-	11	9.7	2.7	60.9	4.6	2.2	0.73	0.38	2.3	0.0	-
Papaver rhoeas Papaveraceae	common field poppy (111,135)	seeds	-	-	19.7	43.0	-	-	7.2	-	-	-	-	-
Papaver somniferum Papaveraceae	opium poppy (170,189,324)	seeds	533	7	18.0	44.7	23.7	6.8	6.8	0.85	0.17	1.0	-	-
Phalaris canariensis Poaceae	canary grass (111,182,215,292)	grains	-	9	18.0	5.5	-	1.5	2.9	-	-	-	-	-
Phaseolus vulgaris Fabaceae	navy beans (61)	seeds	335	12	22.3	1.3	60.5	5.5	3.4	0.65	0.23	2.1	3.0	-
Physalis alkekengi Solanaceae	Chinese lantern plant (183,315)	seeds	-	-	16.2	10.7	-	-	-	-	-	-	-	-
Physalis ixocarpa Solanaceae	tomatillo (183)	seeds	-	-	-	15.0	-	-	-	-	-	-	-	-

Table 5B. Nutritional constituents of plants: seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Nelumbo lutea Nymphaeaceae	yellow lotus/ waternut (75)	nuts	-	-	-	-	-	-	-	-	-	-	-
Nepeta cataria Lamiateae	catnip/ catmint (56)	seeds	-	-	-	-	-	-	-	-	-	-	-
Nigella damascene Ranunculaceae	love-in-a mist (111)	seeds	-	-	-	-	-	-	-	-	-	-	-
Oryzopsis hymenoides Poaceae	Indian rice grass (75,90,94,111, 311)	grains	363	126	-	-	-	-	-	-	-	-	-
Panicum miliaceum Poaceae	broomcorn millet/ common millet/ Indian millet (174,178,310)	grains	25	163	18	3.5	169	1.6	4.9	5.5	1.8		
Papaver rhoeas Papaveraceae	common field poppy (111,135)	seeds	-	-	-	-	-	-	-	-	-	-	-
Papaver somniferum Papaveraceae	opium poppy (170,189,324)	seeds	1448	848	21	700	-	-	-	9.4	-	-	-
Phalaris canariensis Poaceae	canary grass (111,182,215,292)	grains	27	580	18	363	181	0.1	4.5	6.4	3.6	0.4	-
Phaseolus vulgaris Fabaceae	navy beans (61)	seeds	155	443	14	1140	173	0.9	2.5	6.4	1.3	-	-
Physalis alkekengi Solanaceae	Chinese lantern plant (183,315)	seeds	-	-	-	-	-	-	-	-	-	-	-
Physalis ixocarpa Solanaceae	tomatillo (183)	seeds	-	-	-	-	-	-	-	-	-	-	-

Table 5A. Nutritional constituents of plants: seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Pinus edulis Pinaceae	pine nut (10)	nut	568	6	11.6	61.0	19.3	4.7	2.3	1.24	0.22	4.4	2.0	3
Plantago lanceolata Plantaginaceae	ribwort plantain (111)	seeds	-	-	16.9	6.8	-	-	-	-	-	-	-	-
Plantago major Plantaginaceae	greater plantain (56)	seeds	-	11	17.0	7.6	59.5	13.7	4.6	-	-	-	-	-
Polygonum convolvulus Polygonaceae	wild buckwheat (60,111,145,310)	seeds	425	7	11.2	2.4	-	9.0	-	0.03	0.13	3.9	-	-
Polygonum lapathifolium Polygonaceae	pale smartweed (92)	seeds	-	-	10.2	4.2	71.6	14.4	4.0	-	-	-	-	-
Polygonum punctatum Polygonaceae	dotted smartweed (69,315)	seeds	-	-	8.1	1.7	-	-	-	-	-	-	-	205
Pontederia cordata Pontederiaceae	common pickerel-weed (56)	seeds	-	8	8.9	7.0	70.8	9.3	4.9	-	-	-	-	-
Portulaca oleracea Portulacaceae	purslane (56,92,111,135)	seeds	-	-	18.7	12.7	57.4	19.6	4.5	-	-	-	-	-
Quercus alba Fagaceae	white oak (35,64,73,96,165, 229,231)	acorns	219	40	2.8	3.5	52.6	11.3	1.6	-	-	-	-	-
Quercus borealis Fagaceae	red oak (96)	seeds	-	10	7.2	14.5	65.7	-	3.1	-	-	-	-	-

Table 5B. Nutritional constituents of plants: seeds, nuts, grams, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Pinus edulis Pinaceae	pine nut (10)	nut	8	35	72	628	234	1.0	4.3	3.1	-	-	-
Plantago lanceolata Plantaginaceae	ribwort plantain (111)	seeds	-	-	-	-	-	-	-	-	-	-	-
Plantago major Plantaginaceae	greater plantain (56)	seeds	-	-	-	-	-	-	-	-	-	-	-
Polygonum convolvulus Polygonaceae	wild buckwheat (60,111,145,310)	seeds	56	290	6.1	1019	486	1.5	13.6	112	1.0	-	-
Polygonum lapathifolium Polygonaceae	pale smartweed (92)	seeds	-	-	-	-	-	-	-	-	-	-	-
Polygonum punctatum Polygonaceae	dotted smartweed (69,315)	seeds	-	-	-	-	-	-	-	-	-	-	-
Pontederia cordata Pontedenaceae	common pickerelweed (56)	seeds	-	-	-	-	-	-	-	-	-	-	-
Portulaca oleracea Portulacaceae	purslane (56,92,111,135)	seeds	-	-	-	-	-	-	-	-	-	-	-
Quercus alba Fagaceae	white oak (35,64,73,96,165, 229,231)	acorns	109	55	1.5	454	42.3	-	-	-	-	-	-
Quercus borealis Fagaceae	red oak (96)	seeds	-	-	-	-	-	-	-	-	-	-	-

Table 5A. Nutritional constituents of plants: seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crade Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Quercus ellipsoidalis Fagaceae	northern pin oak (96)	seedmeal	-	20	9.7	18.0	60.6	-	1.7	-	-	-	-	-
Quercus garryana Fagaceae	Garry oak (115)	nuts	-	9	3.9	4.5	68 9	12.0	1.8	-	-	-	-	-
Quercus macrocarpa Fagaceae	bur oak (96,165,231)	seedmeal	419	-	7.1	7.1	71.4	-	26	-	-	-	-	-
Quercus prinus Fagaceae	chestnut oak (35,229,231)	acorns	171	46	10.6	1.6	40.8	12.2	1.5	-	-	-	-	-
Quercus species Fagaceae	oak (10,73,99,244)	acorns	369	28	6.2	23.9	40.7	2.6	1.4	0.11	0.12	0.5	0.0	0.6
Salsola kali Chenopodiaceae	Russian thistle (126,311)	seeds	-	10	44.9	-	-	9.4	6.7	0.40	0.20	0.1	-	-
Setaria italica Poaceae	foxtail millet (33,92,174,196, 239,302)	seeds	331	11	11.9	4.2	63.1	6.3	3.6	-	-	-	-	-
Setaria lutescens Poaceae	yellow foxtail (92,145)	seeds	400	10	13.4	6.5	63.9	23.1	8.7	-	-	-	-	-
Setaria viridis Poaceae	green foxtail (60,92,111,145)	grains	395	10	14.5	5.9	64.7	10.9	7.3	-	-	-	-	-
Sporobolus cryptandrus Poaceae	sand dropseed (90,111,311)	seeds	-	10	10.1	2.5	-	26.7	5.4	-	-	-	-	3.6
Stellaria media Caryophyllaceae	chickweed (92)	seeds			17.5	0.5	51.7	8.8	16.5	-	-	-	-	-

Table 5B. Nutritional constituents of plants: seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Quercus ellipsoidalis Fagaceae	northern pin oak (96)	seedmeal	-	-	-	-	-	-	-	-	-	-	-
Quercus garryana Fagaceae	Garry oak (115)	nuts	-	-	-	-	-	-	-	-	-	-	-
Quercus macrocarpa Fagaceae	bur oak (96,165,231)	seedmeal	49	82	0.9	1062	63.0	-	-	-	-	-	-
Quercus prinus Fagaceae	chestnut oak (35,229,231)	acorns	76	49	-	-	-	-	-	-	-	-	-
Quercus species Fagaceae	oak (10,73,99,244)	acorns	41	79	0	5.9	62.0	0.6	0.5	0.8	-	-	-
Salsola kali Chenopodiaceae	Russian thistle (126,311)	seeds	60	340	20	460	120	0.8	3.0	8.0	6.7	-	-
Setaria italica Poaceae	foxtail millet (33,92,174,196, 239,302)	seeds	31	279	-	-	-	-	-	-	-	-	-
Setaria lutescens Poaceae	yellow foxtail (92,145)	seeds	927	342	14	2493	-	<0.1	25.4	142	12.2	-	-
Setaria viridis Poaceae	green foxtail (60,92,111,145)	grains	270	324	67	536	252	0.1	7.5	59.3	5.6	-	-
Sporobolus cryptandrus Poaceae	sand dropseed (90,111,311)	seeds	300	240	-	-	-	-	-	-	-	-	-
Stellaria media Caryophyllaceae	chickweed (92)	seeds	-	-	-	-	-	-	-	-	-	-	-

Table 5A. Nutritional constituents of plants: seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Thlaspi arvense Brassicaceae	field pennycress/ stinkweed (60,92,186,240)	seeds	-	10	17.9	27.6	35.4	17.1	4.6	-	-	-	-	-
Typha latifolia Typhaceae	common cattail (84)	seeds	-	9	7.7	4.9	79.1	-	-	-	-	-	-	-
Vicia americana Fabaceae	American vetch (31,90)	seeds	-	10	12.7	2.3	66.6	27.9	7.5	-	-	-	-	693
Vicia gigantea Fabaceae	giant vetch (111)	seeds	-	-	34.3	1.1	-	-	2.7	-	-	-	-	-
Vicia hirsuta Fabaceae	hairy vetch (111)	seeds	-	-	24.8	0.5	-	-	3.4	-	-		-	-
Vicia sativa Fabaceae	narrow-leaved vetch (111)	seeds	-	-	2.9	0.7	-	-	2.9	-	-	-	-	-
Vicia villosa Fabaceae	shaggy vetch (111)	seeds	-	-	23.0	0.8	-	-	3.0	-	-	-	-	-
Xanthium pensylvanicum Asteraceae	cocklebur (145)	seeds	488	7	22.9	12.3	-	-	3.6	-	-	-	-	-
Zea mays Poaceae	corn, maize (4)	immature grain	86	76	3.2	1.2	19.0	0.7	0.6	0.20	0.06	1.7	6.8	28
Zea mays Poaceae	corn, maize (300)	mature dry grits	371	10	8.8	1.2	79.6	0.5	0.4	0.13	0.04	1.2	-	-

Table 5B. Nutritional constituents of plants: seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Thlaspi arvense Brassicaceae	field pennycress/ stinkweed (60,92,186,240)	seeds	-	-	-	-	-	-	-	-	-	-	-
Typha latifolia Typhaceae	common cattail (84)	seeds	-	-	-	-	-	-	-	-	-	-	-
Vicia americana Fabaceae	American vetch (31.90)	seeds	1265	149	-	-	-	-	-	-	-	-	-
Vicia gigantea Fabaceae	giant vetch (111)	seeds	-	-	-	-	-	-	-	-	-	-	-
Vicia hirsuta Fabaceae	hairy vetch (111)	seeds	-	-	-	-	-	-	-	-	-	-	-
Vicia sativa Fabaceae	narrow-leaved vetch (111)	seeds	-	-	-	-	-	-	-	-			
Vicia villosa Fabaceae	shaggy vetch (111)	seeds	-	-	-	-	-	-	-	-	-	-	-
Xanthium pensylvanicum Asteraceae	cocklebur (145)	seeds	383	486	8.6	962	298	5.2	10.6	65.1	4.9		
Zea mays Poaceae	corn, maize (4)	immature grains	2	89	15	270	37	0.1	0.5	0.5	0.2	-	-
Zea mays Poaceae	corn, maize (300)	mature grains	2	73	1	137	27	0.1	0.4	1.0	0.1	-	-

Table 5A. Nutritional constituents of plants: seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Zizania aquatica Poaceae	wild-rice (12,57,108,148, 246)	grains/ parched	357	10	14.5	0.7	-	0.9	1.2	0.29	0.45	6.6	-	-
Zizania aquatica Poaceae	wild-rice (12,57,73,75,78)	grains/ un-parched	355	9	11.5	0.8	75.3	1.0	1.5	0.44	0.60	6.2	-	-
Zosters marina Zosteraceae	eel-grass (80)	seeds	-	-	13.2	1.0	50.9	-	-	-	-	-	-	-

Table 5B. Nutritional constituents of plants: seeds, nuts, grains, legumes. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Zizania aquatica Poaceae	wild-rice (12,57,108,148, 246)	grains/ parched	18	411	59	140	125	0.5	6.3	1.9	1.3	-	-
Zizania aquatica Poaceae	wild-rice (12,57,73,75,78)	grains/ unparched	20	348	26	257	139	0.3	-	4.2	1.1	-	42.0
Zostera marina Zosteraceae	eel-grass (80)	seeds	-	-	-	-	-	-	-	-	-	-	-

Table 6A. Nutritional constituents of plants: fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Amelanchier alnifolia Rosaceae	common Saskatoon (48,306,307,322)	berry	90	76	0.7	1.2	21.4	6.4	0.7	<0.01	<0.01	0.3	15.7	86
Amelanchier canadensis Rosaceae	medic-downy shadblow (75)	berry	-	63	-	-	-	-	-	-	-	-	-	-
Arctostaphylos alpina Ericaceae	alpine bearberry (28)	berry	-	-	-	-	-	-	-	-	-	-	52.5	30
Arctostaphylos rubra Ericaceae	red manzanita (11)	berry	-	85	0.5	-	5.9	-	-	-	-	-	82.3	-
Arctostaphylos uva-ursi Ericaceae	bearberry/ kinnikinnick (75,112,322)	berry	92	75	0.7	1.1	22.4	14.8	0.6	-	-	-	-	-
Asimina triloba Annonaceae	pawpaw (73,78)	fruit	85	77	5.2	0.9	16.8	-	0.5	-	-	-	-	-
Berberis aquifolium Berberidaceae	tall Oregon-grape (75)	berry	-	76	-	-	-	-	-	-	-	-	-	-
Berberis nervosa Berberidaceae	low Oregon-grape (122)	berry	72	81	3.4	1.5	13.4	-	0.7	-	-	-	27.6	-
Berberis thunbergii Berberidaceae	Japanese barberry (35)	berry	-	-	3.2	2.0	-	2.7	1.0	-	-	-	-	-

Table 6B. Nutritional constituents of plants: fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Amelanchier alnifolia Rosaceae	common Saskatoon (48,306,307,322)	berry	69	40	0.6	244	26.0	0.4	0.4	0.5	2.2	-	-
Amelanchier canadensis Rosaceae	medic-downy shadblow (75)	berry	-	-	-	-	-	-	-	-	-	-	-
Arctostaphylos alpina Ericaceae	alpine bearberry (28)	berry	-	-	-	-	-	-	-	-	-	-	-
Arctostaphylos rubra Ericaceae	red manzanita (11)	berry	-	-	-	-	-	-	-	-	-	-	-
Arctostaphylos uva-ursi Ericaceae	bearberry/ kinnikinnick (75,112,322)	berry	37	35	0.5	-	17.0	1.3	0.5	0.7	0.2	-	-
Asimina triloba Annonaceae	pawpaw (73,78)	fruit	-	-	-	-	-	-	-	-	-	-	-
Berberis aquifolium Berberidaceae	tall Oregon-grape (75)	berry	-	-	-	-	-	-	-	-	-	-	-
Berberis nervosa Berberidaceae	low Oregon-grape (122)	berry	36	-	-	-	16.2	-	0.9	0.7	-	-	-
Berberis thunbergii Berberidaceae	Japanese barberry (35)	berry	83	83	-	-	-	-	-	-	-	-	-

Table 6A. Nutritional constituents of plants: fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Brassica nigra Brassicaceae	black mustard (56)	pods	-	10	19.5	15.2	20.5	15.2	5.0	-	-	-	-	-
Celtis occidentalis Ulmaceae	hackberry (67)	berry dry	-	17	-	2.3	-	-	24.1	-	-	-	-	-
Cornus canadensis Cornaceae	Canada bunchberry (322)	berry	52	81	0.6	0.8	16.6	5.2	0.5	0.01	0.03	0.5	2.1	4
Crataegus douglasii Rosaceae	black hawthorn (75,322)	berry	79	84	1.2	1.4	17.5	2.6	0.7	-	-	-	9.5	8
Crataegus monogyna Rosaceae	English hawthorn (207)	fruit dry	-	-	-	-	-	-	-	-	-	-	-	69
Cucurbita maxima Cucurbitaceae	winter squash (4)	fruit raw	37	89	1.5	0.2	8.8	1.4	0.8	0.10	0.03	0.8	12.3	406
Elaeagnus angustifolia Elaeagnaceae	Russian olive (35)	fruit	-	90	0.8	0.5	8.6	2.0	0.2	-	-	-	-	-
Elaeagnus commutata Elaeagnaceae	silverberry (33)	fruit	51	86	1.3	0.9	10.9	0.5	0.7	0.03	0.05	0.4	10.0	-
Elaeagnus species Elaeagnaceae	silverberry (73)	fruit	51	-	1.3	0.9	-	-	-	0.03	0.05	0.4	10.0	1
Empetrum nigrum Empetraceae	black crowberry/ curlewberry (11,28,75,95,138, 322)	fruit	35	89	0.2	0.7	9.5	5.9	0.7	<0.01	<0.01	0.1	51.0	-

Table 6B. Nutritional constituents of plants fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	- Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Brassica nigra Brassicaceae	black mustard (56)	pods	-	-	-	-	-	-	-	-	-	-	-
Celtis occidentalis Ulmaceae	hackberry (67)	berry dry	-	-	-	-	-	-	-	-	-	-	-
Cornus canadensis Cornaceae	Canada bunchberry (322)	berry	52	19	0.4	-	12.0	0.1	0.1	0.6	0.1	-	-
Crataegus douglasii Rosaceae	black hawthorn (75,322)	berry	31	12	6.9	-	12.0	0.3	0.2	0.5	0.2	-	-
Crataegus monogyna Rosaceae	English hawthorn (207)	fruit dry	-	-	-	-	-	-	-	-	-	-	-
Cucurbita maxima Cucurbitaceae	winter squash (4)	fruit raw	31	32	4	350	21	0.1	0.1	0.6	-	-	-
Elaeagnus angustifolia Elaeagnaceae	Russian olive (35)	fruit	22	4.0	-	-	-	-	-	-	-	-	-
Elaeagnus commutata Elaeagnaceae	silverberry (33)	fruit	7.0	20	-	-	-	-	-	0.4	-	-	-
Elaeagnus species Elaeagnaceae	silverberry (73)	fruit	7.0	20	-	-	-	-	-	0.4	-	-	-
Empetrum nigrum Empetraceae	black crowberry/ curlewberry (11,23,75,138, 322)	fruit	90	11	2.5	87	7.9	1.0	0.1	0.4	0.4	-	-

Table 6A. Nutritional constituents of plants: fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Empetrum species Empetraceae	crowberry (243)	berry	-	-	0.6	1.4	2.4	1.4	0.2	-	-	-	-	-
Fragaria vesca Rosaceae	woodstrawberry/ wild strawberry (270,322)	fruit	54	85	0.6	0.9	12.5	2.9	0.6	<0.01	<0.01	<0.3	23.8	-
Fragaria X ananassa Rosaceae	strawberry (3)	fruit	30	92	0.6	0.4	7.0	0.5	0.4	0.02	0.07	0.2	56.7	3
Fragaria species Rosaceae	wild strawberry (35,73,120)	fruit	-	89	0.7	0.6	-	2.1	0.7	0.03	0.07	0.6	5.9	8
Gaultheria shallon Ericaceae	salal (122)	berry	63	83	2.1	0.7	14.0	-	0.6	-	-	-	68.5	-
Gaultheria shallon Ericaceae	salal (122)	berry dry	282	17	5.0	-	71.3	-	3.1	-	-	-	570	-
Gaylussacia baccata Ericaceae	black huckleberry (231)	fruit	136	69	-	-	-	-		-	-	-	-	-
Hippophae rhamnoides Elaeagnaceae	sea buckthorn (265,268,274,275)	fruit	-	81	-	1.0	-	-	-	-	-	-	31.1	86
Hippophae rhamnoides Elaeagnaceae	sea buckthorn (265,266,277)	fruit pulp	-	64	-	9.2	-	-	-	-	-	-	355	985
Lathyrus japonicus Fabaceae	beach pea (120)	green peas	-	68	-	-	-	-	-	-	0.19	-	-	-
Malus species Rosaceae	crabapple (3)	fruit	76	79	0.4	0.3	20.0	0.6	0.4	0.03	0.02	0.1	8.0	4

Table 6B. Nutritional constituents of plants: fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Empetrum species Empetraceae	crowberry (243)	berry	40	9.5	3.9	46	11.3	-	-	2.4	2.1	-	-
Fragaria vesca Rosaceae	woodstrawberry/ wild strawberry (270,322)	fruit	64	35	0.6	18	54.0	0.8	0.2	0.4	0.8	-	-
Fragaria X ananassa Rosaceae	strawberry (3)	fruit	14	19	1.0	166	10	<0.1	<0.2	0.4	0.3	-	-
Fragaria species Rosaceae	wild strawberry (35,73,120)	fruit	43	25	1.0	164	-	-	-	1.0	-	-	-
Gaultheria shallon Ericaceae	salal (122)	berry	51	-	-	-	14.1	-	0.6	0.7	-	-	-
Gaultheria shallon Ericaceae	salal (122)	berries dry	276	-	-	-	16.8	-	1.2	3.6	-	-	-
Gaylussacia baccata Ericaceae	black huckleberry (231)	fruit	-	-	-	-	-	-	-	-	-	-	-
Hippophae rhamnoides Elaeagnaceae	sea buckthorn (265,268,274,275)	fruit	-	-	-	-	-	-	-	-	-	-	-
Hippophae rhamnoides Elaeagnaceae	sea buckthorn (265,266,277)	fruit pulp	-	-	-	-	-	-	-	-	-	-	-
Lathyrus japonicus Fabaceae	beach pea (120)	green peas	-	-	-	-	-	-	-	-	-	-	-
Malus species Rosaceae	crabapple (3)	fruit	18	15	1	194							

Table 6A. Nutritional constituents of plants: fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein 8	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Mitchells repens Rubiaceae	squaw vine/ partridge berry (56)	berry	-	90	1.0	-	7.7	2.7	0.4	-	-	-	-	-
Morus alba Moraceae	white mulberry (33,35,73,93)	fruit	53	85	1.0	0.6	8.2	0.8	0.6	0.03	0.05	0.7	12.0	1
Morus species Moraceae	mulberries (3,235)	berry	43	88	1.2	0.6	9.8	1.0	0.7	0.03	0.10	0.6	36.4	3
Myrica pensylvanica Myricaceae	bayberry (35)	berry	-	90	0.7	2.5	6.6	4.12	0.2	-	-	-	-	-
Nyssa sylvatica Nyssaceae	sourgum/ pepperridge (56)	fruit	-	90	0.5	1.7	7.3	0.9	0.5	-	-	-	-	-
Opuntia compressa Cactaceae	prickly-pear cactus (3,78)	fruit	42	88	0.5	0.1	10.9	1.6	0.5	0.01	0.03	0.4	22.0	6
Oxycoccus quadripetalus Ericaceae	small cranberry (272,274)	fruit	-	-	0.4	-	3.6	-	-	-	-	-	5.5	-
Physalis ixocarpa Solanaceae	tomatillo (116,225)	fruit	-	92	0.7	0.6	6.4	0.6	0.6	0.05	0 02	2.1	36.0	-
Physalis species Solanaceae	ground-cherry/ husk-tomato (3,73,183)	fruit	53	85	1.9	0.7	11.2	2.8	0.8	0.90	0.04	2.4	11.0	72

Table 6B. Nutritional constituents of plants: fruits.(per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Mitchells repens Rubiaceae	squaw vine/ partridge berry (56)	berry	-	-	-	-	-	-	-	-	-	-	-
Morus alba Moraceae	white mulberry (33,35,73,93)	fruit	52	28	37	152	-	-	-	3.7	-	-	-
Morus species Moraceae	mulberries (3,235)	berry	36	48	-	-	-	-	-	2.6	-	-	-
Myrica pensylvanica Moraceae	bayberry (35)	berry	13	3.0	10.0	194	18.0	-	-	1.9	-	-	-
Nyssa sylvatica Nyssaceae	sourgum/ pepperridge (56)	fruit	-	-	-	-	-	-	-	-	-	-	-
Opuntia compressa Cactaceae	prickly-pear cactus (3.78)	fruit	56	28	2.0	220	85	-	-	0.3	-	-	-
Oxycoccus quadripetalus Ericaceae	small cranberry (272,274)	fruit	-	-	-	-	-	0.1	0.2	0.8	1.7	-	-
Physalis ixocarpa Solanaceae	tomatillo (116,225)	fruit	7	40	0	243	-	-	-	1.4	-	-	-
Physalis species Solanaceae	ground-cherry/ husk-tomato (3,73,183)	fruit	10	34	-	-	-	-	-	0.9	-	-	-

Table 6A. Nutritional constituents of plants fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Prunus avium Rosaceae	sweet cherry (73,116)	fruit	48	83	0.9	0.2	14.8	0.3	0.6	0.02	0.02	0.2	3.0	6
Prunus demissa Rosaceae	western chokecherry (93)	fruit	-	-	-	-	-	-	-	0.02	0.30	-	11.0	-
Prunus domestica Rosaceae	garden plum/ Damson plum (236)	fruit	47	87	0.6	0.2	11.9	0.4	0.3	0.03	0.04	0.5	6.0	4
Prunus pensylvanica Rosaceae	pin cherry (305)	fruit	-	-	-	-	-		-		-	-	30.0	-
Prunus persica Rosaceae	peach (78)	fruit	38	89	0.6	0.1	9.7	0.6	0.5	0.02	0.05	1.0	7.0	133
Prunus serotina Rosaceae	black cherry/ rum cherry (35,56,236)	fruit	81	90	0.8	0.4	8.5	2.3	0.3	0.04	0.04	1.1	18.0	9
Prunus virginiana Rosaceae	choke cherry (93,120)	fruit	-	79	-	-	-	-	-	0.05	-	-	30	-
Pyrus communis Rosaceae	pear (78)	fruit	61	83	0.7	0.4	15.3	1.4	0.4	0.02	0.04	0.1	4.0	2
Pyrus fusca Rosaceae	Pacific crabapple wild crabapple (323)	fruit	82	79	1.2	1.6	17.7	6.0	0.8	0.03	0.01	1.9	-	
Pyrus species Rosaceae	crabapple (73)	fruit	63	-	0.4	0.3	-	-	-	0.03	0.02	0.1	8.0	4

Table 6B. Nutritional constituents of plants: fruits.(per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Prunus avium Rosaceae	sweet cherry (73,116)	fruit	15	13	1.0	130	-	-	-	0.3	-	-	-
Prunus demissa Rosaceae	western chokecherry (93)	fruit	-	-	-	-	-	-	-	-	-	-	-
Prunus domestica Rosaceae	garden plum/ Damson plum (236)	fruit	8.0	15	-	-	-	-	-	0.4	-	-	-
Prunus pensylvanica Rosaceae	pin cherry (305)	fruit	-	-	-	-	-	-	-	-	-	-	-
Prunus persica Rosaceae	peach (78)	fruit	9.0	19	1.0	202	-	-	-	0.5	-	-	-
Prunus serotina Rosaceae	black cherry/ rum cherry (35,56,236)	fruit	40	35	-	-	-	-	--	0.8	-	-	-
Prunus virginiana Rosaceae	choke cherry (93,120)	fruit	-	-	-	-	-	-	-	-	-	-	-
Pyrus communis Rosaceae	pear (78)	fruit	8.0	11	2.0	130	-	-	-	0.3	-	-	-
Pyrus fusca Rosaceae	Pacific crabapple wild crabapple (323)	fruit	29	33	21	-	28.0	0.5	0.2	0.6	0.3	-	-
Pyrus species Rosaceae	crabapple (73)	fruit	6.0	13	1.0	110	-	-	-	0.3	-	-	-

Table 6A. Nutritional constituents of plants: fruits.(per l00g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Rhus copallina Anacardiaceae	dwarf sumac/ shining sumac (35)	fruit	-	-	2.7	6.0	-	10.0	1.2	-	-	-	-	-
Rhus glabra Anacardiaceae	smooth sumac (35,69,70,107, 231)	fruit	-	66	1.5	2.7	14	9.9	1.7	-	-	-	-	80
Rhus typhina Anacardiaceae	staghorn sumac (70)	fruit	-	-	-	-	-	-	-	-	-	-	-	49
Ribes americanum Saxifragaceae	wild black currant (305)	fruit					-						89.0	
Ribes bracteosum Saxifragaceae	grayberry/ sunberry (322)	berry	63	83	0.8	1.2	13.9	4.4	0.8	-	-	-	27.5	4
Ribes divaricatum Saxifragaceae	coastal black gooseberry (300)	berry	69	82	1.1	1.5	14.7	4.6	0.9	0.02	0.01	1.0	40 2	29
Ribes divaricatum Saxifragaceae	wild green gooseberry and leaves (322)	berry and leaves	58	85	1.7	0.9	12.5	4.3	0.2	0 01	0.01	0.5	12.6	
Ribes glandulosum Saxifragaceae	skunk currant (305)	fruit	-	-	-	-	-	-	-	-	-	-	55.0	-
Ribes hudsonianum Saxifragaceae	northern black currant (305)	fruit											41.0	
Ribes lacustre Saxifragaceae	Swamp gooseberry (122,322)	berry	59	86	1.5	2.3	9,7	3.5	0.9	0.04	<0.01	<0.1	58.2	3

Table 6B. Nutritional constituents of plants fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	; Sodium mg	Potassium mg	- Magnesium mg	- Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Rhus copallina Anacardiaceae	dwarf sumac/ shining sumac (35)	fruit	56	56	-	-	-	-	-	-	-	-	-
Rhus glabra Anacardiaceae	smooth sumac (35,69,70,107, 231)	fruit	61	54	-	-	-	-	-	-	-	-	-
Rhus typhina Anacardiaceae	staghorn sumac (70)	fruit	-	-	-	-	-	-	-	-	-	-	-
Ribes americanum Saxifragaceae	wild black currant (305)	fruit	-	-	-	-	-	-	-	-	-	-	-
Ribes bracteosum Saxifragaceae	grayberry/ sunberry (322)	berry	98	47	1.8	-	19.0	0.7	0.8	0.8	0.6	-	-
Ribes divaricatum Saxifragaceae	wild green gooseberry and leaves (322)	berry and leaves	124	46	1.1	-	26.0	0.4	0.4	0.9	0.4	-	-
Ribes divaricatum Saxifragaceae	coastal black gooseberry (300,322)	berry	111	53	0.6	155	23.0	0.4	0.2	0.7	0.5	-	-
Ribes glandulosum Saxifragaceae	skunk currant (305)	fruit	-	-	-	-	-	-	-	-	-	-	-
Ribes hudsonianum Saxifragaceae	northern black currant (305)	fruit	-	-	-	-	-	-	-	-	-	-	-
Ribes lacustre Saxifragaceae	swamp gooseberry (122,322)	berry	68	47	0.6	-	22.0	0.1	0.2	0.4	0.3	-	-

Table 6A. Nutritional constituents of plants fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Ribes laxiflorum Saxifragaceae	trailing black currant/wild blue currant (322)	berry	59	84	07	06	14 2	52	05	<0 01	<0.01	0.4	3.3	2
Ribes oxyacanthoides Saxifragaceae	Canada gooseberry smooth gooseberry (301)	berry green	45	86	09	1.2	9.1	1.9	-	-	-	-	-	-
Ribes oxyacanthoides Saxifragaceae	Canada gooseberry smooth gooseberry (301)	berry purple	58	82	1.0	03	14.6	1.9	0.7	-	-	-	-	-
Ribes triste Saxifragaccne	red swamp currant /wild red currant (305)	fruit	-	-	-	-	-	-	-	-	-	-	51.5	-
Ribes species Saxifragaceae	currant (3,18,116)	fruit	50	86	1.4	02	12 1	34	0.6	0.04	0 05	01	41.0	72
Ribes species Saxifragaceae	gooseberry (3)	fruit	44	88	0.9	0.6	10 2	1.9	05	004	0.03	0.3	27 1	29
Rosa acicularis Rosaceae	prickly rose (269)	fruit pulp dry	-	-	-	-	-	-	-	-	2.2	-	277	310
Rosa acicularis Rosaceae	prickly rose (29,62,112)	fruit	55	65	2.4	0.7	21.3	-	2.0	0 12	0 10	1.1	1481	263
Rosa canina Rosaceae	dog rose (207,261,295,304)	fruit	-	-	-	-	-	-	-	-	-	-	359	783
Rosa multiflora Rosaceae	Japanese rose/ bramble rose (35,70)	fruit	-	-	33	21	23.3	8.1	1.8	-	-	-	-	-

Table 6B. Nutritional constituents of plants: fruits.(per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Ribes laxiflorum Saxifragaceae	trailing black currant/wild blue currant (322)	berry	51	23	1.8	-	18.0	0.1	0.4	0.6	1.2		
Ribes oxyacanthoides Saxifragaceae	Canada gooseberry smooth gooseberry (301)	berry green	43	39	0.1	276	14.6	<0.1	0.2	0.2	0.2	<0.1	-
Ribes oxyacanthoides Saxifragaceae	Canada gooseberry smooth gooseberry (301)	berry purple	91	83	0.3	613	28.4	0.1	0.3	0.9	0.3	<0.1	
Ribes triste Saxifragaceae	red swamp currant wild red currant (305)	fruit	-	-	-	-	-	-	-	-	-	-	-
Ribes species Saxifragaceae	currant (3,18,116)	fruit	32	23	20	257	13.0	0.1	0.2	1.0	0.2	-	-
Ribes species Saxifragaceae	gooseberry **0)**	fruit	25	27	1.0	198	10.0	0.1	0.1	0.3	0.1	-	-
Rosa acicularis Rosaceae	prickly rose (269)	fruit pulp dry	-	-	-	-	-	-	-	-	-	-	-
Rosa acicularis Rosaceae	prickly rose (29,62,112)	fruit	-	-	-	-	-	-	-	-	-	-	-
Rosa canina Rosaceae	dog rose (207,261,295,304)	fruit	-	-	-	-	-	0.1	-	3.9	1.5	<0.1	-
Rosa multiflora Rosaceae	Japanese rose/ bramble rose (35,70)	fruit	355	110									

Table 6A. Nutritional constituents of plants fruits.(per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Rosa nutkana Rosaceae	Nootka rose/ bristly Nootka rose (75,322)	fruit	74	79	1.6	0.6	17.6	4.4	1.4	-	-	-	413	180
Rosa palustris Rosaceae	swamp rose (35)	fruit	-	-	3.4	2.5	27.5	11.0	1.6	-	-	-	-	-
Rosa rugosa Rosaceae	rambling rose (269)	fruit pulp dry	-	-	-	-	-	-	-	-	5.8	-	430	808
Rosa rugosa Rosaceae	rambling rose (35,264)	fruit	-	-	3.5	2.2	28.3	14.0	1.0	-	-	-	184	-
Rosa species Rosaceae	wild rose (69,120)	fruit	-	54	-	-	-	-	-	-	-	-	-	358
Rubus allegheniensis Rosaceae	blackberry/ Allegheny blackberry (56)	berry		84	1.5	1.3	12.8	3.8	0.7	-	-	-	-	-
Rubus arcticus Rosaceae	dwarf raspberry/ dwarf nagoonberry (28)	berry	-	-	-	-	-	-	-	-	-	-	38.8	11
Rubus chamaemorus Rosaceae	cloudberry (8,28,54,118, 119,206,301)	berry	50	84	2.0	1.0	96	6.0	0.5	0.05	0.07	0.9	130	-
Rubus idaeus Rosaceae	American red raspbery/ wild raspberry (73,119,124,206, 270,300,322)	fruit	65	83	0.6	0.8	15 8	4.5	0.5	0.03	0.09	0.1	22.3	13

Table 6B. Nutritional constituents of plants: fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Rosa nutkana Rosaceae	Nootka rose/ bristly Nootka rose (75.322)	fruit	77	37	1.8	-	26.0	<0.1	0.2	0.3	0.9	-	-
Rosa palustris Rosaceae	swamp rose (35)	fruit	320	80	-	-	-	-	-	-	-	-	-
Rosa rugosa Rosaceae	rambling rose (269)	fruit pulp dry	-	-	-	-	-	-	-	-	-	-	-
Rosa rugosa Rosaceae	rambling rose (35,264)	fruit	300	70	-	-	-	-	-	-	-	-	-
Rosa species Rosaceae	wild rose (69,120)	fruit	-	-	-	-	-	-	-	-	-	-	-
Rubus allegheniensis Rosaceae	blackberry/ Allegheny blackberry (56)	berry	-	-	-	-	-	-	-	-	-	-	-
Rubus arcticus Rosaceae	dwarf raspberry/ dwarf nagoonberry (28)	berry	-	-	-	-	-	-	-	-	-	-	-
Rubus chamaemorus Rosaceae	cloudberry (8,28,54,118, 119,206,301)	berry	17	53	0.6	231	40.8	0.1	0.7	0.4	0.5	<0.1	-
Rubus idaeus Rosaceae	American red raspberry/wild raspberry (73,119,124,206, 270,300,322)	fruit	36	38	0.4	-	-	0.5	0.6	1.0	2.8	<0.1	-

Table 6A. Nutritional constituents of plants fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Rubus leucodermis Rosaceae	black raspberry/ blackcap (124,322)	fruit	79	79	1.2	1.4	17.5	11.5	0.5	<0.01	<0.01	0.7	18.0	4
Rubus occidentalis Rosaceae	black raspberry/ thimbleberry (64,73)	berry	57	81	1.4	1.0	15.5	4.1	0.6	0.03	0.09	0.9	66.9	13
Rubus parviflorus Rosaceae	thimbleberry (122)	berry dry	-	-	-	-	-	-	-	-	-	-	259	-
Rubus parviflorus Rosaceae	thimbleberry (17,122)	berry	105	70	3.1	1.2	24.7	-	1.1	-	-	-	78.0	-
Rubus parviflorus Rosaceae	thimbleberry (322)	berry	99	74	1.7	1.2	23.0	11.9	0.6	0.03	<0.01	<0.6	63.6	-
Rubus pubescens Rosaceae	dwarf red raspberry (305)	fruit	-	-	-	-	-	-	-	-	-	-	21.0	-
Rubus spectabilis Rosaceae	salmonberry (41,122,296,300, 322)	berry	47	88	1.4	0.8	9.9	2.6	0.2	0.04	<0.01	0.5	30.4	79
Rubus spectabilis Rosaceae	salmonberry (122)	berry dry	-	-	-	-	-	-	-	-	-	-	371	-
Rubus strigosis Rosaceae	wild raspberry (325)	berry	67	79	1.6	1.1	14.6	-	0.5	-	-	-	-	-
Rubus ursinus Rosaceae	Pacific trailing blackberry (122,300)	berry	57	84	3.2	0.8	12.6	-	0.6	0.03	0.05	0.5	21.2	1
Rubus ursinus Rosaceae	boysenberries (3)	berry	88	76	1.0	0.1	22.3	1.9	0.3	0.03	0.03	0.2	6.2	4

Table 6B. Nutritional constituents of plants: fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Rubus leucodermis Rosaceae	black raspberry/ blackcap (124,322)	fruit	38	40	0.8	199	28.0	0.2	0.6	0.7	0.3	-	-
Rubus occidentalis Rosaceae	black raspberry/ thimbleberry (64,73)	berry	26	31	1.0	168	30.0	-	-	0.9	-	-	-
Rubus parviflorus Rosaceae	thimbleberry (322)	berry	89	62	0.8	-	44.0	0.2	0.4	0.7	1.8	-	-
Rubus parviflorus Rosaceae	thimbleberry (122)	berry dry	-	-	-	-	-	-	-	-	-	-	-
Rubus parviflorus Rosaceae	thimbleberry (17,122)	berry	129	-	-	-	19.6	-	0.7	0.9	-	-	-
Rubus pubescens Rosaceae	dwarf red raspberry (305)	fruit	-	-	-	-	-	-	-	-	-	-	-
Rubus spectabilis Rosaceae	salmonberry (41,122,296,300, 322)	berry	15	24	2.6	89	16.0	0.5	0.2	0.6	0.7	-	-
Rubus spectabilis Rosaceae	salmonberry (122)	berry dry	-	-	-	-	-	-	-	-	-	-	-
Rubus strigosis Rosaceae	wild raspberry (325)	berry	47	36	0.1	176	29.1	0.1	0.4	1.0	0.3	<0.1	-
Rubus ursinus Rosaceae	Pacific trailing blackberry (122,300)	berry	32	-	0.7	81	18.8	-	0.4	0.7	-	-	-
Rubus ursinus Rosaceae	boysenberry (3)	berry	18	10	3.0	90	11.0	0.1	0.2	0.4	0.3	-	-

Table 6A. Nutritional constituents of plants: fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Rubus ursinus Rosaceae	loganberries (3)	berry	55	85	1.5	0.3	13.0	-	0.5	0.05	003	0.8	15.3	4
Rubus species Rosaceae	raspberry (3,120)	berry	49	86	0.9	0.6	11.6	3.0	0.4	0.03	0.09	0.9	25	13
Rubus species Rosaceae	blackberry (3,73,120,124)	berry	52	86	0.7	0.4	12.7	4.1	0.5	0.03	0.04	0.4	21.0	16
Rubus species Rosaceae	wild dewberry (35)	berry	-	84	0.9	0.8	14.0	-	0.6	-	-	-	-	-
Sambucus canadensis Caprifoliaceae	American elder/ sweet elder (56,64,73,78,120)	fruit	72	80	2.6	0.5	16.5	4.8	1.1	0.07	0.1	0.5	37.0	60
Sambucus cerulea Caprifoliaceae	blue elderberry (122)	fruit	74	79	3.4	1.2	14.6	-	2.2	-	-	-	33.3	-
Sambucus nigra Caprifoliaceae	European elder (238,294)	fruit	-	83	0.5	-	-	-	0.6	-	-	-	-	-
Sambucus racemosa Caprifoliaceae	red elderberry (119,122,322)	berry	103	78	1.1	5.6	14.6	9.3	0.9	-	-	-	81.0	30
Sambucus species Caprifoliaceae	elderberry (3,124)	fruit	73	80	0.6	0.5	18.4	0.9	1.0	-	-	-	10.0	330

Table 6B. Nutritional constituents of plants: fruits.(per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Rubus ursinus Rosaceae	loganberry (3)	berry	26	26	1.0	145	21.0	0.1	0.3	0.6	1.3	-	-
Rubus species Rosaceae	raspberry (3,120)	berry	22	12	0.0	152	18.0	0.1	0.5	0.6	1.0	-	-
Rubus species Rosaceae	blackberry (3,73,120,124)	berry	32	21	1.0	196	20.0	0.1	0.3	0.9	1.3	-	-
Rubus species Rosaceae	wild dewberry (35)	berry	54	31	-	-	-	-	-	-	-	-	-
Sambucus canadensis Caprifoliaceae	American elder/ sweet elder (56,64,73,78,120)	fruit	35	45	-	300	50.0	-	-	1.6	-	-	-
Sambucus cerulea Caprifoliaceae	blue elderberry (122)	fruit	25	-	-	-	14.7	-	0.3	1.0	-	-	-
Sambucus nigra Caprifoliaceae	European elder (238,294)	fruit	-	-	-	-	-	-	-	-	-	-	-
Sambucus racemosa Caprifoliaceae	red elderberry (119,122,322)	berry	98	84	1.3	-	44 0	0.8	0.5	1.1	1.0	-	-
Sambucus species Caprifoliaceae	elderberry (3,124)	fruit	81	54	-	294	-	-	-	1.7	-	-	-

Table 6A. Nutritional constituents **of** plants: fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Shepherdia canadensis Elaeagnaceae	soapberry/ soopolallie (159,301,322)	fruit	72	81	1.8	0.7	6.6	1.1	-	-	-	-	-	-
Smilacina racemosa Liliaceae	false Solomon's-seal (56,122)	fruit	88	76	2.3	0.6	20.7	1.5	0.5	-	-	-	122	-
Smilax herbacea Liliaceae	greenbrier/ carrion flower (56)	berry dry	-	30	8.3	4.0	-	6.4	3.2	-	-	-	-	-
Sorbus aucuparia Rosaceae	European mountain-ash (119,139,209,214, 254,207)	fruit	-	74	2.3	1.6	-	2.3	1.3	-	-	-	-	122
Sorbus decora Rosaceae	western mountain-ash (257)	fruit	-	-	-	-	-	-	-	-	-	-	-	-
Thlaspi arvense Brassicaceae	field pennycress (56)	pods	-	-	2.3	2.3	-	1.3	0.5	-	-	-	-	-
Vaccinium alaskaense Ericaceae	Alaska blueberry/ watery blueberry (322)	berry	66	82	0.9	0.6	16.2	2.8	0.9	0.02	<0.01	0.4	3.3	2
Vaccinium caespitosum Ericaceae	dwarf bilberry (305)	fruit	-	-	-	-	-	-	-	-	-	-	15.0	-
Vaccinium corymbosum Ericaceae	highbush blueberry (56)	fruit	-	90	0.9	0.7	-	1.2	0.3	-	-	-	-	-

Table 6B. Nutritional constituents of plants fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Shepherdia canadensis Elaeagnaceae	soapberry/ soopalallie (159,301,322)	fruit	16	21	0.5	-	8.0	0.3	1.4	0.5	0.2	-	-
Smilacina racemosa Liliaceae	false Solomon s-seal (56,122)	fruit	39	-	-	-	13.7	-	0.3	0.8	-	-	-
Smilax herbacea Liliaceae	greenbrier/ carrion flower (56)	berry dry	-	-	-	-	-	-	-	-	-	-	-
Sorbus aucuparia Rosaceae	European mountain-ash (119,139,207, 209,214,254)	fruit	78	71	-	386	42.4	0.1	0.4	1.5	3.5	<0.1	-
Sorbus decora Rosaceae	western mountain-ash (257)	fruit	-	-	-	-	-	0.2	1.3	2.7	2.4	<0.1	-
Thlaspi arvense Brassicaceae	field pennycress (56)	pods	-	-	-	-	-	-	-	-	-	-	-
Vaccinium alaskaense Ericaceae	Alaska blueberry/ watery blueberry (322)	berry	24	21	1.0	-	9.0	0.6	0.2	0.5	0.1	-	-
Vaccinium caespitosum Ericaceae	dwarf bilberry (305)	fruit	-	-	-	-	-	-	-	-	-	-	-
Vaccinium corymbosum Ericaceae	highbush blueberry (56)	fruit	-	-	-	-	-	-	-	-	-	-	-

Table 6A. Nutritional constituents of plants fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbo-hydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Vaccinium macrocarpon Ericaceae	large cranberry (3,33,73,78)	fruit	46	88	0.4	0.7	10.8	1.4	0.2	0.03	0.02	0.1	11.0	40
Vaccinium membranaceum Ericaceae	black blueberry/ black mountain/ huckleberry (322)	berry	54	86	0.6	0.5	13.1	2.0	0.1	-	-	-	6.6	1
Vaccinium myrtilloides Ericaceae	sour-top blueberry/low blueberry/velvet-leaved blueberry (300,325)	fruit	41	88	0.8	0.7	9.1	1.5	0.2	0.03	0.05	0.5	14.0	1
Vaccinium myrtillus Ericaceae	dwarf bilberry (119)	fruit	-	-	-	-	-	-	-	-	-	-	-	-
Vaccinium ovalifolium Ericaceae	oval-leaved blueberry/ grey blueberry (322)	berry	49	87	1.1	0.5	11.3	3.3	0.2	<0.01	<0.01	0.4	6.2	1
Vaccinium ovatum Ericaceae	evergreen huckleberry/ (122)	fruit	48	87	1.9	0.2	11.0	-	0.2	-	-	-	43.7	-
Vaccinium ovatum Ericaceae	evergreen huckleberry/ (122)	fruit dry	266	25	4.4	0.1	69.5	-	1.5	-	-	-	289	-

Table 6B. Nutritional constituents of plants: fruits.(per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Vaccinium macrocarpon Ericaceae	large cranberry (3,33,73,78)	fruit	14	10	2.0	82	5.0	0.1	0.1	0.5	0.2	-	-
Vaccinium membranaceum Ericaceae	Black cranberry/ black mountain huckleberry (322)	berry	14	17	0.4	-	8.0	0.1	0.1	0.2	2.5	-	-
Vaccinium myrtilloides Ericaceae	sourtop blueberry /low blueberry/ velvet-leaved blueberry (300,325)	fruit	13	14	0.3	90	9.5	0.1	0.3	0.2	0.3	<0.1	-
Vaccinium myrtillus Ericaceae	dwarf bilberry (119)	fruit	-	-	-	-	-	0.1	0.3	0.5	3.9	<0.1	-
Vaccinium ovalifolium Ericaceae	oval-leaved blueberry/grey blueberry (322)	berry	16	21	0.9	-	9.0	0.6	0.2	0.4	1.3	-	-
Vaccinium ovatum Ericaceae	evergreen huckleberry (122)	fruit	22	-	-	-	7.1	-	0.2	0.5	-	-	-
Vaccinium ovatum Ericaceae	evergreen huckleberry (122)	fruit dry	132	-	-	16	-	-	0.9	1.4	-	-	-

Table 6A. Nutritional constituents of plants: fruits. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Vaccinium parvifolium Ericaceae	red huckleberry (122,296,322)	fruit	50	85	0.8	0.5	12.0	3.9	0.1	0.01	0.03	0.3	15.7	8
Vaccinium uliginosum Ericaceae	bog whortleberry/ bog blueberry (206,322)	berry	45	88	0.7	0.6	10.6	33	0.2	-	-	-	-	-
Vaccinium vitis-idaea Ericaceae	red whortleberry/ cranberry (11,54,118,119, 206,267,301)	fruit	62	82	0.7	07	14.9	1.4	0.5	0.02	0.08	0.4	21.2	-
Vaccinium species Ericaceae	whortleberry (120)	fruit	-	75	-	-	-	-	-	-	0.03	-	-	-
Vaccinium species Ericaceae	blueberry (3,64,73,120,124)	fruit	56	85	0.7	04	14.3	1.3	0.2	0.04	0.05	0.4	13.0	10
Vaccinium species Ericaceae	huckleberry (93)	fruit/ canned	-	-	-	-	-	-	-	0.02	0.08	-	5.0	-
Vaccinium species Ericaceae	huckleberry (93)	fruit	-	-	-	-	-	-	-	0.03	0.12	-	12.0	-
Vaccinium species Ericaceae	huckleberry (93)	fruit	-	-	-	-	-	-	-	0.02	0.02	-	23.0	-
Viburnum edule Caprifoliaceae	highbush cranberry (124,322)	fruit	39	89	0.1	0.4	9.4	3.8	0.5	-	-	-	13.4	6

Table 6B. Nutritional constituents of plants: fruits.(per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Vaccinium parvifolium Ericaceae	red huckleberry (122,296,322)	fruit	22	16	0.8	-	7.0	0.4	0.2	0.3	4.5	-	-
Vaccinium uliginosum Ericaceae	bog whortleberry/ bog blueberry (206,322)	berry	19	13	-	-	8.0	0.2	0.3	0.2	2.7	-	-
Vaccinium vitis-idaea Ericaceae	red whortleberry/ cranberry (11,118,119,206, 267,301,545)	fruit	13	11	<0.1	98	6.6	0.1	6.1	0.2	2.9	<0.1	-
Vaccinium species Ericaceae	whortleberry (120)	fruit	-	-	-	-	-	-	-	-	-	-	-
Vaccinium species Ericaceae	blueberry (3,64,73,120, 124)	fruit	14	13	1.0	70	10.0	0.1	0.1	1.0	-	-	-
Vaccinium species Ericaceae	huckleberry (93)	fruit/ canned	-	-	-	-	-	-	-	-	-	-	-
Vaccinium species Ericaceae	huckleberry (93)	fruit	-	-	-	-	-	-	-	-	-	-	-
Vaccinium species Ericaceae	huckleberry (93)	fruit/ stored	-	-	-	-	-	-	-	-	-	-	-
Viburnum edule Caprifoliaceae	highbush cranberry (124,322)	fruit	24	23	0.6	-	11.0	0.1	0.1	0.3	0.1	-	-

Table 6A. Nutritional constituents of plants: fruits.(per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Viburnum lentago Caprifoliaceae	nannyberry (56,64)	fruit	-	54	2.3	4.7	38.0	3.8	1.1	-	-	-	-	-
Viburnum opulus Caprifliaceae	American bush cranberry (120)	fruit ripe	-	86	-	-	-	-	-	-	0.02	-	-	-
Viburnum opulus Caprifliaceae	American bush cranberry (120)	fruit unripe	-	89	-	-	-	-	-	-	0.08	-	-	-
Viburnum prunifolium Caprifoliaceae	blackhaw (64)	fruit	-	57	1.6	5.1	-	4.4	1.1	-	-	-	-	-
Vitis labrusca Vitaceae	fox grape (69,93,253)	fruit	-	-	-	-	-	-	-	-	-	-	296	16
Vitis vinifera Vitaceae	Zante currant (3)	fruit dry	283	19	4.1	0.3	74.1	1.6	2.4	0.16	0.14	1.6	5.0	7
Vitis species Vitaceae	Concord grape (3,73)	fruit	63	81	0.6	0.4	17.0	0.8	0.6	0.05	0.03	0.3	4.0	10

Table 6B. Nutritional constituents of plants: fruits.(per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Viburnum lentago Caprifoliaceae	nannyberry (56,64)	fruit	50	60	-	-	20.0	-	-	-	-	-	-
Viburnum opulus Caprifliaceae	American bush cranberry (120)	fruit ripe	--	-	-	-	-	-	-	--	-	-	-
Viburnum opulus Caprifliaceae	American bush cranberry (120)	fruit unripe	-	-	-	-	-	-	-	-	-	-	-
Viburnum prunifolium Caprifoliaceae	blackhaw (64)	fruit	20	60	-	-	30.0	-	-	-	-	-	-
Vitis labrusca Vitaceae	fox grape (69,93,253)	fruit	-	-	-	-	-	-	-	-	-	-	-
Vitis vinifera Vitaceae	Zante currant (3)	fruit dry	86	125	8.0	892	41.0	0.5	0.6	3.3	0.5	-	-
Vitis species Vitaceae	Concord grape (3,73)	fruit	16	12	3.0	191	5.0	<0.1	<0.1	0.4	0.7	-	-

Table 7A. Nutritional constituents of plants: other.(per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Morchella crassipes Helvellaceae	morel (40)	mushroom	-	90	2.4	0.8	4.9	-	1.9	-	-	-	-	-
Morchella esculenta Helvellaceae	common morel (40)	mushroom	-	90	2.7	0.3	5.2	-	1.8	-	-	-	-	-
Morchella hortensis Helvellaceae	morel (40)	mushroom	-	90	2.8	0.3	5.1	-	1.8	-	-	-	-	-
Pleurotus ostreatus	oyster mushroom (326)	mushroom	-	91	4.0	0.2	4.1	0.8	0.9	0.40	0.40	10.0	-	-
Tricholoma populinum Tricholomaceae	cottonwood mushroom (323)	mushroom	29	94	0.8	0.4	6.5	1.5	0.5	0.04	0.08	0.5	1.8	-
Tricholoma populinum Tricholomaceae	cottonwood mushroom (321)	mushroom peeled	-	94	0.8	0.6	4.2	-	0.5	0.04	0.08	0.5	2.0	-
Typha latifolia Typhaceae	common cattail (84)	stem peeled	-	-	-	-	-	-	-	-	0.13	-	-	21
Typha latifolia Typhaceae	common cattail (84)	flour	-	8	6.9	3.1	79.7	-	2.6	-	-	-	-	-

Table 7B. Nutritional constituents of plants: other. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Morchella crassipes Helvellaceae	morel (40)	mushroom	-	-	-	-	-	-	-	-	-	-	-
Morchella esculenta Helvellaceae	common morel (40)	mushroom	-	-	-	-	19.0	-	-	-	-	-	-
Morchella hortensis Helvellaceae	morel (40)	mushroom	-	-	-	-	-	-	-	-	-	-	-
Pleurotus ostreatus unknown	oyster mushroom (326)	mushroom	1.0	180	-	-	-	-	-	1.3	-	-	-
Tricholoma populinum Tricholomaceae	cottonwood mushroom (323)	mushroom	2.0	36	0.4	-	5.0	0.3	0.3	0.4	0.1	-	-
Tricholoma populinum Tricholomaceae	cottonwood mushroom (321)	mushroom peeled	1.8	36	0.4	-	4.8	0.3	0.3	0.4	0.1	<0.1	-
Typha latifolia Typhaceae	common cattail (84)	stem peeled	-	-	-	-	-	-	-	-	-	-	-
Typha latifolia Typhaceae	common cattail (84)	flour	-	-	-	-	-	-	-	-	-	-	-

Table 7A. Nutritional constituents of plants: other. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Food Energy kcal	Water g	Protein g	Fat g	Carbohydrate g	Crude Fiber g	Ash g	Thiamine mg	Riboflavin mg	Niacin mg	Vit.C mg	Vit.A RE
Typha species Typhaceae	cattail (45)	flour fibrous	-	7	5.7	3.7	83.8	-	2.4	-	-	-	-	-
Typha species Typhaceae	cattail (45)	flour defibred	-	8	7.5	2.8	80.3	-	2.7	-	-	-	-	-

Table 7B. Nutritional constituents of plants: other. (per 100g fresh weight)

Scientific name Family name	Common name (References)	Part Used	Calcium mg	Phosphorus mg	Sodium mg	Potassium mg	Magnesium mg	Copper mg	Zinc mg	Iron mg	Manganese mg	Molybdenum mg	Chloride mg
Typha species Typhaceae	Cattail (45)	flour fibrous	-	-	-	-	-	-	-	-	-	-	-
Typha species Typhaceae	Cattail (45)	flour defibred	-	-	-	-	-	-	-	-	-	-	-

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APPENDIX 1
Linguistic Affiliations and Locations of Canadian Indigenous Peoples

Appendix 1

Linguistic Affiliations of Canadian Indigenous Peoples based on Department of Indian Affairs and Northern Development (1970), and Assembly of First Nations (personal communication).

In the table below, the Indigenous language groups of each province and territory are listed together with their linguistic affiliations at the language family level.

Table A-1.

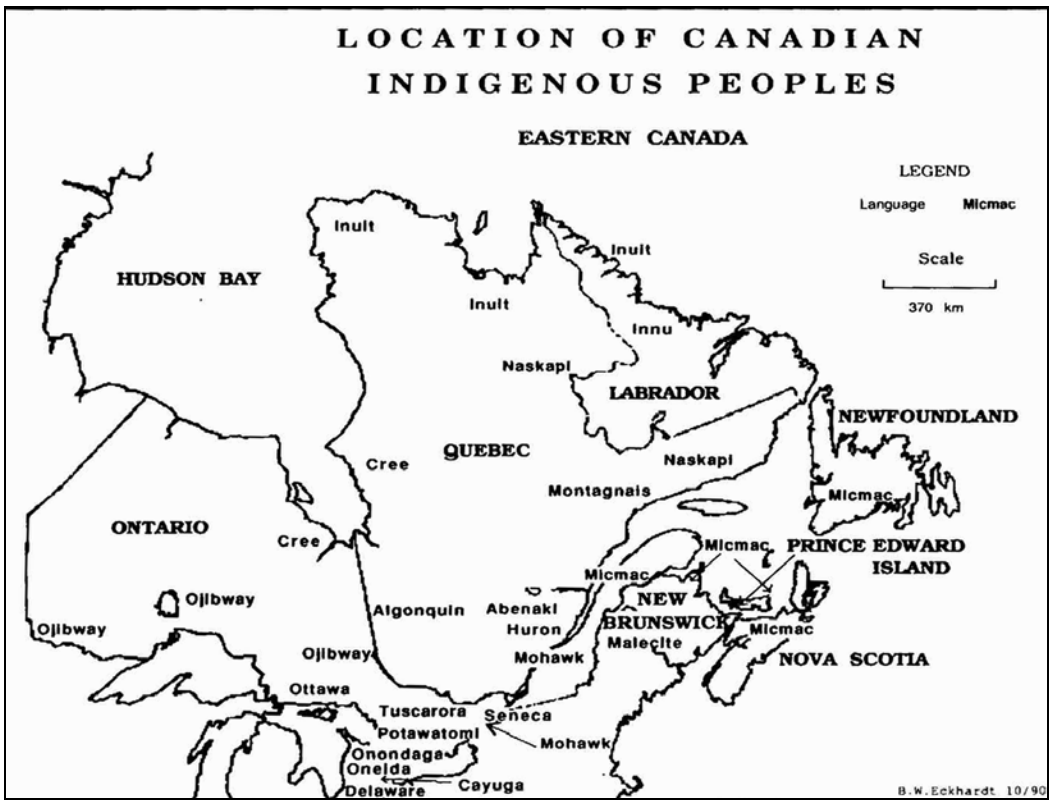
NEWFOUNDLAND AND LABRADOR			
(Communities)	2	Innu	Algonkian
	6	Inuit	Inuktitut
	14	Micmac	Algonkian
PRINCE EDWARD ISLAND			
	1	Micmac	Algonkian
NOVA SCOTIA			
	12	Micmac	Algonkian
NEW BRUNSWICK			
	6	Malecite	Algonkian
	9	Micmac	Algonkian
QUEBEC			
	2	Abenaki	Algonkian
	10	Algonquin	Algonkian
	12	Cree	Algonkian
	1	Huron	Iroquoian
	13	Inuit (communities)	Inuktitut
	1	Micmac	Algonkian
	2	Abenaki	Algonkian
	2	Mohawk (Iroquois)	Iroquoian
	7	Montagnais	Iroquoian
	1	Naskapi	Algonkian
	2	Ojibwa (Ojibway)	Algonkian
ONTARIO			
	1	Algonquin (Algonkin)	Algonkian
	1*	Cayuga (Iroquois)	Iroquoian

13	Cree	Algonkian
2	Delaware	Algonkian
4*	Mohawk (Iroquois)	Iroquoian
88	Ojibwa (Ojibway)	Algonkian
1*	Oneida (Iroquois)	Iroquoian
1*	Onondaga (Iroquois)	Iroquoian
4**	Ottawa	Algonkian
2	Potawatomi	Algonkian
1*	Seneca (Iroquois)	Iroquoian
1*	Tuscarora (Iroquois)	Iroquoian
MANITOBA		
2	Chipewyan	Athapaskan
22	Cree	Algonkian
4	Dakota	Siouan
28	Ojibwa (Ojibway)	Algonkian
SASKATCHEWAN		
3	Assiniboin (Assiniboine)	Siouan
6	Chipewyan	Athapaskan
45	Cree	Algonkian
4	Dakota	Siouan
13	Ojibwa (Ojibway)	Algonkian
1	Sioux	Siouan
ALBERTA		
3	Beaver	Athapaskan
3	Blackfoot/Blood	Algonkian
5	Chipewyan	Athapaskan
28	Cree	Algonkian
5	Stoney (Dakota Assiniboin dialect)	Siouan
1	Sarcee	Athapakan
1	Slave	Athapaskan
BRITISH COLUMBIA		
2	Beaver	Athapaskan
	Bella Coola (see under Nuxalk)	
13	Carrier (including Wet'suwet'en)	Athapaskan
6	Chilcotin	Athapaskan
4	Comox	Salishan
3	Ditidaht (Nitinaht, also included in Nuu-chah-nulth)	Wakashan

7	Gitksan	Tsimshian
2	Haida	Haida
1	Haisla	Wakashan
36	Halkomelem (Stalo, Cowichan)	Salishan
2	Heiltsuk (including Owikeno)	Wakashan
13	Kwakwaka'wakw (Southern Kwakiutl)	Wakashan
4	Kootenay (Kutenai, Kootenai)	Kootenayan
10	Lillooet	Salishan
4	Nishga (Niska)	Tsimshian
12	Nuu-chah-nulth (Nootka, Westcoast)	Wakashan
1	Nuxalk (Bella Coola)	Salishan
1	Ojibwa (Ojibway)	Algonkian
6	Okanagan-Colville (Okanagan)	Salishan
1	Puntlatch (language considered extinct)	Salishan
15	Nlaka'pamux (Thompson, Ntlakyapamuk)	Salishan
1	Nuxalk (Bella Coola)	Salishan
2	Sekani	Athapaskan
1	Sechelt (Seechelt)	Salishan
18	Shuswap	Salishan
1	Slave	Athapaskan
2	Squamish	Salishan
9	Straits Salish (including Songish, Semiahmoo)	Salishan
	Thompson (see under Nlaka'pamux)	
4	Tahltan	Athapaskan
7	Tsimshian (Coast Tsimshian)	Tsimshian
	Wet'suwet'en (included under Carrier)	
	NORTHWEST TERRITORIES	
(Communities)		
58	Inuit	Inuktitut
6	Decho South Slavey	Athapaskan
3	Gwich'in (Kutchin)	Athapaskan
1	North Slave Dogrib	Athapaskan
2	Sahtú North Slavey	Athapaskan
3	South Slave Chipewyan	Athapaskan
1	Yellowknife B	Athapaskan
	YUKON TERRITORY	
1	Gwich'in (Kutchin)	Athapaskan
2	Han	Athapaskan
1	Kaska	Athapaskan
4	North Tutchone	Athapaskan

3	South Tutchone	Athapaskan
2	Tagish	Tlingit
1	Tlingit	Tlingit

*Member of Six Nations of the Grand River Band
**A11 bands partly Ojibwa (Ojibway)



Sources: Linguistic and cultural affiliations of Canadian Indian Bands, 1970; Indian and Inuit Communities: The National Atlas of Canada #15.1 5th ed., 1985; Indigenous Languages of Canada Languages Series, Commission of Official Languages, Ottawa; and personal communication, 1990.

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Sources: Linguistic and cultural affiliations of Canadian Indian Bands, 1970; Indian and Inuit Communities: The National Atlas of Canada #15.1 5th ed., 1985; Indigenous Languages of Canada Languages Series, Commission of Official Languages, Ottawa; and personal communication, 1990.

APPENDIX 2
Species by Common Name

Absinthe
Artemisia absinthium

Alaska carrot
Hedysarum alpinum

Alaska nagoonberry
Rubus stellatus

Alaskan blueberry
Vaccinium alaskaense

Alaskan onion grass
Melica subulata

Alfalfa
Medicago sativa

Alkali bulrush
Scirpus maritimus
Scirpus robustus

Alkanet
Anchusa officinalis

Alleghany birch
Betula alleghaniensis

Alleghany blackberry
Rubus allegheniensis

Alleghany shadblow
Amelanchier laevis

Alpine bearberry
Arctostaphylos alpina

Alpine bilberry
Vaccinium uliginosum

Alpine bistort
Polygonum viviparum

Alpine cress
Arabis alpina

Alpine knotweed
Polygonum alaskanum
Polygonum alpinum
Polygonum phytolaccaefolium

Alpine lewisia
Lewisia pygmaea

Alpine manzanita
Arctostaphylos alpina

Alpine prickly gooseberry
Ribes montigenum

Alpine spring-beauty
Claytonia acutifolia
Claytonia megarhiza

Alpine-wintergreen
Gaultheria humifusa

Aleut celery
Angelica lucida

Amaranth
Amaranthus hybridus
Amaranthus spinosus

American apple mint
Mentha gentilis

American beechnut
Fagus grandifolia

American bittersweet
Celastrus scandens

American brooklime
Veronica americana

American bush cranberry
Viburnum opulus
Viburnum trilobum

American cherry

Prunus serotina

Alpine dock
Rumex alpinus

Alpine hedysarum
Hedysarum alpinum

American chestnut
Castanea dentata

American elder
Sambucus canadensis

American elm
Ulmus americana

American fly honeysuckle
Lonicera canadensis

American ginseng
Panax quinquefolius

American glasswort
Salicornia pacifica
Salicornia virginica

American great bulrush
Scirpus acutus
Scirpus lacustris
Scirpus validus

American green alder
Alnus crispa

American hazelnut
Corylus americana

American hornbeam
Carpinus caroliniana

American milkvetch
Astragalus americanus

American plum
Prunus americana

American red raspberry
Rubus idaeus

American searocket
Cakile edentula

American slough grass
Beckmannia syzigachne

American wild gooseberry
Ribes cynosbati

Anemone
Anemone narcissiflora

Angelica
Angelica archangelica

Annual honesty
Lunaria annua

Annual sow-thistle
Sonchus oleraceus

Appalachian tea
Viburnum cassinoides

Apple mint
Mentha rotundifolia

Aquatic sedge
Carex aquatilis

Arbor vitae
Thuja occidentalis

Arctic coltsfoot
Petasites frigidus

Arctic dock
Rumex arcticus

Arctic greens
Salix reticulata

Arctic kidney lichen
Nephroma arcticum

Arctic net-veined willow
Salix reticulata

American speedwell
Veronica americana

American sycamore
Platanus occidentalis

American vetch
Vicia americana

American wild carrot
Daucus pusillus

Arrow-arum
Peltandra virginica

Arrow-grass
Triglochin maritima

Arrow-leaved balsamroot
Balsamorhiza sagittata

Arrow-leaved coltsfoot
Petasites sagittatus

Arrow-wood
Viburnum dentatum

Arum-leaved arrowhead
Sagittaria cuneata

Asparagus
Asparagus officinalis

Atlantic yam
Dioscorea villosa

Bakeapple
Rubus chamaemorus

Baldhip rose
Rosa gymnocarpa

Ball-head waterleaf
Hydrophyllum capitatum

Balsam fir
Abies balsamea

Balsam poplar
Populus balsamifera

Arctic raspberry
Rubus arcticus

Arctic willow
Salix arctica

Arkansas rose
Rosa arkansana

Arrowhead
Sagittaria latifolia

Basil-thyme
Satureja acinos

Basswood
Tilia americana

Bastard-toadflax
Comandra umbellata

Bayberry
Myrica pensylvanica

Beach asparagus
Salicornia pacifica
Salicornia virginica

Beach bindweed
Convolvulus soldanella

Beach knotweed
Polygonum paronychia

Beach lovage
Ligusticum hultenii
Ligusticum scothicum

Beach lupine
Lupinus littoralis

Beach pea
Lathyrus japonicus
Lathyrus maritimus

Beach strawberry
Fragaria chiloensis

Beachgrass
Ammophila breviligulata

Populus trichocarpa

Baltic rush
Juncus balticus

Barclay's willow
Salix barclayi

Bare-stem lomatium
Lomantium nudicaule

Barnyard grass
Echinochloa crusgalli

Bartram shadblow
Amelanchier bartramiana

Bent grass
Agrostis perennans

Bergamont mint
Mentha citrata

Bigleaf maple
Acer macrophyllum

Bilberry
Vaccinium myrtillus

Birch
Betula tortuosa

Birches
Betula spp.

Bird cherry
Oemleria cerasiformis
Osmaronia cerasiformis

Bird rape mustard
Brassica rapa

Biscuitroot
Lomatium cous
Lomatium macrocarpum

Bistort
Polygonum bistorta

Beachhead iris
Iris setosa

Beaked hazelnut
Corylus cornuta

Beaked sedge
Carex rostrata

Bear root
Hedysarum alpinum

Bearberry
Arctostaphylos uva-ursi

Bellwort
Uvularia perfoliata

Black crowberry
Empetrum nigrum

Black hawthorn
Crataegus douglasii

Black highbush blueberry
Vaccinium atrococcum

Black huckleberry
Gaylussacia baccata

Black maple
Acer nigrum

Black medic
Medicago lupulina

Black mountain huckleberry
Vaccinium membranaceum

Black mustard
Brassica nigra

Black oak
Quercus velutina

Black oxytrope
Oxytropis nigrescans

Black raspberry

Bitter winter-cress
Barbarea vulgaris

Bitternut hickory
Carya cordiformis

Bitterroot
Lewisia rediviva

Black ash
Fraxinus nigra

Black birch
Betula lenta

Black blueberry
Vaccinium membranaceum

Black cherry
Prunus serotina

Blackberry
Rubus allegheniensis
Rubus recurvicaulis
Rubus setosus
Rubus spp.

Blackcap
Rubus leucodermis

Blackhaw
Viburnum prunifolium

Bladder campion
Silene cucubalus
Silene vulgaris

Bladder-nut
Staphylea trifolia

Blazing star
Liatris punctata

Blessed thistle
Cnicus benedictus

Blue beech
Carpinus caroliniana

Rubus leucodermis
Rubus occidentalis

Black seaweed
Porphyra perforata

Black spruce
Picea mariana

Black thornberry
Crataegus douglasii

Black tree lichen
Bryoria fremontii

Black twinberry
Lonicera involucrata

Black walnut
Juglans nigra

Blue water speedwell
Veronica anagallis-aquatica

Blueleaf strawberry
Fragaria virginiana

Bluebead lily
Clintonia borealis

Blueberry
Vaccinium angustifolium

Blueberry
Vaccinium spp.

Bog birch
Betula pumila

Bog blueberry
Vaccinium uliginosum

Bog glandular birch
Betula glandulosa
Betula pumila

Bog rosemary
Andromeda glaucophylla

Carpinus spp.

Blue camas
Camassia leichtlinii
Camassia quamash

Blue currant
Ribes bracteosum

Blue elderberry
Sambucus cerulea
Sambucus glauca

Blue fenugreek
Trigonella caerulea

Blue fly honeysuckle
Lonicera villosa

Blue huckleberry
Vaccinium ovatum

Blue sailors
Cichorum intybus

Blue vervain
Verbena hastata

Bristly gooseberry
Ribes setosum

Bristly Nootka rose
Rosa nutkana

Bristly oxtongue
Picris echioides

Brittle prickly pear cactus
Opuntia fragilis

Broad-fruited bur-reed
Sparganium angustifolium

Broad leaf alfilaria
Erodium botrys

Broad leaf dock
Rumex obtusifolius

Broad-leaved maple

Bog whortleberry
Vaccinium uliginosum

Bog wintergreen
Pyrola asarifolia

Box elder
Acer negundo

Boysenberry
Rubus ursinus

Bracken fern
Pteridium aquilinum

Bracket fungi
Polyporus spp.
Laetiporus sulphureus
Polyporus sulfureus

Bramble rose
Rosa multiflora

Bridgeweed
Lycopus uniflorus

Buckwheat
Fagopyrum sagittatum

Buffalo currant
Ribes odoratum

Bulbous buttercup
Ranunculus bulbosus

Bull kelp
Nereocystis luetkeana

Bull thistle
Cirsium vulgare

Bullhead-lily
Nuphar variegatum

Bumblebee plant
Pedicularis lanata

Bur oak

Acer macrophyllum

Broad-leaved willowherb
Epilobium latifolium

Broad-leaved peppergrass
Lepidium latifolium

Broad-leaved plantain
Plantago major

Brook saxifrage
Saxifraga punctata

Broomcorn millet
Panicum miliaceum

Brown mustard
Brassica juncea

"Bubbly" kelp
Hedophyllum sessile

Buck's horn plantain
Plantago coronopus

Buckbean
Menyanthes trifoliata

Buckbush
Ceanothus sanguineus

Cabbage rose
Rosa centifolia

California tea
Psoralea physodes

Calypso
Calypso bulbosa

Canada balsam
Abies balsamea

Canada blackberry
Rubus canadensis

Canada bunchberry
Cornus canadensis

Quercus macrocarpa

Bur-clover
Medicago polymorpha
Medicago hispida

Bur-cucumber
Sicyos angulatus

Burdock
Arctium nemorosum

Burnet rose
Rosa spinosissima

Bush vetch
Vicia sepium

Buttercups
Ranunculus spp.

Butterfly weed
Asclepias tuberosa

Butternut
Juglans cinerea

Buttonwood
Platanus occidentalis

Cabbage
Brassica oleracea

Canary grass
Phalaris canariensis

Canby's lovage
Ligusticum canbyi

Canoe birch
Betula papyrifera

Caper spurge
Euphorbia lathyrus

Capitate lousewort
Pedicularis capitata

Careless weed
Amaranthus palmeri

Canada burnet
Sanguisorba canadensis

Canada garlic
Allium canadensis

Canada goosebery
Ribes oxyacanthoides

Canada lily
Lilium canadense

Canada mint
Mentha arvensis

Canada onion
Allium canadense

Canada plum
Prunus nigra

Canada thistle
Cirsium arvense

Canada violet
Viola canadensis

Canada wild rye grass
Elymus canadensis

Canadian mayflower
Maianthemum canadense

Canadian milkvetch
Astragalus canadense

Checker berry
Gaultheria procumbens

Cherry birch
Betula lenta

Chestnut oak
Quercus prinus

Chickpea

"Caribou" moss
Cladonia rangiferina
Cladonia rangiferina

Carrionflower
Smilax herbacea

Cascade bilberry
Vaccinium deliciosum

Cascara
Rhamnus purshiana

Catmint
Nepeta cataria

Catnip
Nepeta cataria

Cattail
Typha latifolia

Cattails
Typha spp.

Celery-leaved buttercup
Ranunculus sceleratus

Cetraria
Cetraria crispa
Cetraria cucullata

Chanterelle
Cantarellus cibarius

Cheat grass
Bromus tectorum

Cinquefoil
Potentilla anserina
Potentilla egedii
Potentilla pacifica

Cladophora
Cladophora rapestris

Climbing bittersweet
Celastrus scandens

Cicer arierinum

Chickweed
Stellaria media

Chicory
Cichorum intybus

Chilean tarweed
Madia sativa

Chinese lantern plant
Physalis alkekengi

Chinook licorice
Lupinus littoralis

Chinquapin oak
Quercus prinoides

Chocolate lily
Fritillaria lanceolata

Chocolate-tips
Lomatium dissectum

Choke cherry
Prunus demissa
Prunus virginiana

Chrysosplene
Chrysosplenium alternifolium

Chufa
Cyperus esculentus

Cinnamon fern
Osmunda cinnamomea

Cinnamon rose
Rosa cinnamomea

Common barnyard grass
Echinochloa crusgalli

Common bedstraw
Galium aparine

Cloudberry
Rubus chamaemorus

Club-moss
Lycopodium selago

Clusterlily
Brodiaea hyacinthina

Clustered tarweed
Madia glomerata

Clustered wild rose
Rosa pisocarpa

Coastal black gooseberry
Ribes divaricatum

Cocklebur
Xanthium pensylvanicum

Cockspur thorn
Crataegus crus-galli

Colt's-foot
Tussilago farfara

Columbia bitterroot
Lewisia columbiana

Columbia gromwell
Lithospermum ruderale

Columbia lewisia
Lewisia columbiana

Columbia lily
Lilium canadense
Lilium columbianum

Common barberry
Berberis vulgaris

Common cow-parsnip
Heracleum sphondylium

Common dandelion
Taraxacum officinale

Common blue mustard
Chorispora tenella

Common blue violet
Viola papilionacea

Common borage
Borago officinalis

Common burdock
Arctium minus

Common butterwort
Pinguicula vulgaris

Common camas
Camassia quamash

Common caraway
Carum carvi

Common carpet weed
Mollugo verticillata

Common cat's ear
Hypochaeris radicata

Common cattail
Typha latifolia

Common chevril
Anthriscus cerefolium

Common cleavers
Galium aparine

Common coltsfoot
Petasites palmatus

Common colt's-foot
Tussilago farfara

Common comfrey
Symphytum officinale

Common corn spurry
Spergula arvensis

Common mare's-tail

Common dayflower
Commelina communis

Common dill
Anethum graveolens

Common elder
Sambucus canadensis

Common fennel
Foeniculum vulgare

Common field poppy
Papaver rhoeas

Common flax
Linum usitatissimum

Common greenbrier
Smilax rotundifolia

Common hawthorn
Crataegus monogyna

Common heather
Calluna vulgaris

Common horehound
Marrubium vulgare

Common horseradish
Armoracia rusticana

Common horsetail
Equisetum arvense

Common juniper
Juniperus communis

Common knotweed
Polygonum aviculare

Common Labrador-tea
Ledum groenlandicum

Common mallow
Malva sylvestris

Common saskatoon

Hippuris vulgaris

Common milkweed
Asclepias syriaca

Common milkwort
Polygala vulgaris

Common millet
Panicum miliaceum

Common mint
Mentha arvensis

Common morel
Morchella esculenta

Common mouse-ear cress
Arabidopsis thaliana

Common mugwort
Artemisia vulgaris

Common oats
Avena sativa

Common orache
Atriplex patula

Common paper birch
Betula papyrifera

Common parsnip
Pastinaca sativa

Common pickerelweed
Pontederia cordata

Common reed
Phragmites australis
Phragmites communis

Common rue-herb of grace
Ruta graveolens

Common rush
Juncus effusus

Common salsify
Tragopogon porrifolius

Amelanchier alnifolia

Common sorrel
Rumex acetosa

Common sow-thistle
Sonchus oleraceus

Common spatterdock
Nuphar advena

Common spruce
Picea abies

Common starwort
Stellaria media

Common sunflower
Helianthus annuus

Common tansy
Tanacetum vulgare

Common tumble mustard
Sisymbrium officinale

Common unicorn plant
Proboscidea louisianica

Common waterberry
Ilex verticillata

Common watercress
Rorippa nasturtium-aquaticum
Nasturtium officinale

Common western pipsissewa
Chimaphila umbellata

Concord grape
Vitis spp.

Cooley's hedge-nettle
Stachys cooleyae

Coriander
Coriandrum sativum

Corn lily
Clintonia borealis

Costmary
Chrysanthemum balsamita

Cotton burdock
Arctium tomentosum

Cottonwood
Populus balsamifera
Populus trichocarpa

Cottonwood mushroom
Tricholoma populinum

Couchgrass
Agropyron repens

Cow lily
Nuphar advena

Cow-parsnip
Heracleum lanatum

Cowslip
Primula veris

Cowslip primrose
Primula veris

Coyote mint
Monardella odoratissima

Crabapples
Pyrus spp.
Malus spp.

Crackerberry
Cornus canadensis

Cranberry
Vaccinium macrocarpus
Vaccinium vitis-idaea

Creamy vetchling
Lathyrus ochroleucus

Creeping bellflower
Campanula rapanculoides

Creeping buttercup

Creeping snowberry
Gaultheria hispidula

Creeping spearwort
Ranunculus reptans

Creeping thyme
Thymus serpyllum

Creeping willow
Salix arctophila

Cress
Rorippa amphibia

Crow garlic
Allium vineale

Crowfoot violet
Viola pedatifida

Cuckoo bittercress
Cardamine pratensis

Cucumberroot twisted-stalk
Streptopus amplexifolius

Cultivated apple
Pyrus malus

Curled thistle
Carduus crispus

Curlewberry
Empetrum nigrum

Curly dock
Rumex crispus

Custard apple
Asimina triloba

Cut toothwort
Dentaria laciniata

Cutleaf blackberry
Rubus laciniatus

Cut-leaved cranesbill

Ranunculus repens

Creeping Oregon-grape
Berberis repens

Cut-leaved nightshade
Solanum triflorum

Cyperus
Cyperus esculentus

Damson plum
Prunus domestica

Day lily
Hemerocallis fulva
Hemerocallis lilioasphodelus

Day lilies
Hemerocallis spp.

Dayflower
Commelina spp.

Deer fern
Blechnum spicant

Deerberry
Vaccinium stamineum

Deltoid balsamroot
Balsamorhiza deltoidea

Desert lily
Calochortus macrocarpus

Desert parsley
Lomatium ambiguum
Lomatium macrocarpum

Devil's walkingstick
Aralia spinosa

Devilsapron
Macrocystis integrifolia
Macrocystis pyrifera

Dewberry
Rubus acaulis
Rubus arcticus
Geranium dissectum

Docks
Rumex spp.

Dog rose
Rosa canina

Dotted smartweed
Polygonum punctatum

Douglas-fir
Pseudotsuga menziesii
Pseudotsuga taxifolia

Douglas' knotweed
Polygonum douglasii

Downy arrow-wood
Viburnum rafinesquianum

Downy brome
Bromus tectorum

Downy hawthorn
Crataegus mollis

Downy shadblow
Amelanchier arborea

Downy swamp blueberry
Vaccinium atrococcum

Dragon root
Arisaema spp.

Dragon sagewort
Artemisia dracunculus

Drooping brome grass
Bromus tectorum

Drummond's thistle
Cirsium drummondii

Duck acorn
Nelumbo lutea

Rubus enslenii
Rubus recurvicaulis

Diamond-leaved willow
Salix phylicifolia
Salix pulchra

Dune wild rye grass
Elymus mollis

Dwarf bilberry
Vaccinium caespitosum
Vaccinium myrtillus

Dwarf bog bunchberry
Cornus suecica

Dwarf bramble
Rubus lasiococcus

Dwarf chestnut oak
Quercus prinoides

Dwarf dogwood
Cornus canadensis

Dwarf elder
Sambucus ebulus

Dwarf fireweed
Epilobium latifolium

Dwarf ginseng
Panax trifolius

Dwarf huckleberry
Gaylussacia dumosa

Dwarf mallow
Malva neglecta

Dwarf mountain blueberry
Vaccinium caespitosum

Dwarf nagoonberry
Rubus arcticus

Dwarf raspberry
Rubus acaulis

Dull Oregon grape
Berberis nervosa

Dulse
Palmaria palmata
Rhodymenia palmata

Dyer's greenwood
Genista tinctoria

Early blue violet
Viola adunca
Viola palmata

Early morel
Verpa bohemica

Early winter-cress
Barbarea verna

Eastern Arctic kelp
Pterygophora spp.

Eastern camas
Camassia scilloides

Eastern hemlock
Tsuga canadensis

Eastern skunk cabbage
Symplocarpos foetidus

Edible thistle
Cirsium edule

Edible valerian
Valeriana edulis

Eel-grass
Zostera marina

Elder
Sambucus spp.

Elecampane
Inula helenium

Engelmann spruce
Picea engelmannii

Rubus arcticus
Rubus paracaulis
Rubus pubescens

Dwarf red blackberry
Rubus pubescens

Dwarf sumac
Rhus copallina

Dwarf wildrose
Rosa gymnocarpa

European bird cherry
Prunus padus

European black currant
Ribes nigrum

European black poplar
Populus nigra

European brooklime
Veronica beccabunga

European cornsalad
Valerianella locusta

European elder
Sambucus nigra

European gooseberry
Ribes grossularia

European hops
Humulus lupulus

European mountain-ash
Sorbus aucuparia

European red currant
Ribes sylvestre

European searocket
Cakile maritima

Evergreen blackberry
Rubus laciniatus

Evergreen huckleberry

English daisy
Bellis perennis

English hawthorn
Crataegus monogyna

English oak
Quercus robur

European ash
Fraxinus excelsior

False indigo
Baptisia tinctoria

False lady slipper
Calypso bulbosa

False mermaid
Floerkea proserpinacoides

False shagbark hickory
Carya ovalis

False Solomon's-seal
Smilacina racemosa

False spikenard
Smilacina racemosa

Felty-leaved willow
Salix alaxensis

Fendler's waterleaf
Hydrophyllum fendleri

Fennel-leaved lomatium
Lomatium foeniculaceum

Fern-leaved lomatium
Lomatium dissectum

Fernald's shadbush
Amelanchier fernaldii

Fiddlehead fern
Matteuccia struthiopteris

Field bindweed

Vaccinium ovatum

Fairybells
Disporum lanuginosum

Fairy slipper
Calypso bulbosa

False azalea
Menziesia ferruginea

False climbing buckwheat
Polygonum scandens

False flax
Camelina sativa

Field mushroom
Agaricus campestris

Field mustard
Brassica rapa

Field pennycress
Thlaspi arvense

Field peppergrass
Lepidium campestre

Field sandbur
Cenchrus longispinus

Field thistle
Cirsium discolor

Fine-leaved lomatium
Lomatium utriculatum

Fireweed
Epilobium angustifolium
Erechtites hieracifolia

Floating heart
Nymphoides cordata

Floating-leaved pondweed
Potamogeton natans

Flodman's thistle
Cirsium flodmanii

Convolvulus arvensis

Field dock
Rumex pseudo-alpinus

Field garlic
Allium vineale

Field horsetail
Equisetum arvense

Field mint
Mentha arvensis

Fragile prickly-pear cactus
Opuntia fragilis

Fragrant water-lily
Nymphaea odorata

Freemont's goosefoot
Chenopodium fremontii

Frosted hawthorn
Crataegus pruinosa

Galinsoga
Galinsoga ciliata

Gallberry
Ilex glabra

Garden cress
Lepidium sativum

Garden orache
Atriplex hortensis

Garden plum
Prunus domestica

Garden radish
Raphanus sativum

Garden rhubarb
Rheum rhaponticum

Flowering rush
Butomus umbellatus

Fool's onion
Brodiaea hyacinthina

Four-leaved mare's-tail
Hippuris tetraphylla

Fowl mannagrass
Glyceria striata

Fox grape
Vitis labrusca

Foxtail barley
Hordeum jubatum

Foxtail millet
Setaria italica

Geyer's lomatium
Lomatium geyeri

Geyer's onion
Allium geyeri

Giant horsetail
Equisetum telmateia

Giant hyssop
Agastache foeniculum

Giant kelp
Macrocystis integrifolia
Macrocystis pyrifera

Giant knotweed
Polygonum sachalinense

Giant puffball
Calvatia gigantea
Lycoperdon giganteum

Giant ragweed
Ambrosia trifida

Giant sunflower

Garden rocket
Eruca sativa

Garland crabapple
Pyrus coronaria

Garlic
Allium spp.

Garlic mustard
Alliaria officinalis

Garry oak
Quercus garryana

Gaspe shadbush
Amelanchier gaspensis

Germander speedwell
Veronica chamaedrys

Good King Henry
Chenopodium bonus-henricus

Goosefoot
Chenopodium album
Chenopodium spp.

Goosegrass
Eleusine indica

Goosetongue
Plantago decipiens
Plantago macrocarpa
Plantago maritima

Grand fir
Abies spp.

Grape-leaved coltsfoot
Petasites vitifolius

Grayberry
Ribes bracteosum

Great camas
Camassia leichtlinii

Helianthus giganteus

Giant vetch
Vicia gigantea

Giant wild rye grass
Elymus cinereus
Elymus piperi

Glacier lily
Erythronium grandiflorum

Goat's beard
Tragopogon pratensis

Golden currant
R*ibes aureum*
Ribes odoratum

Golden saxifrage
Chrysosplenium americanum
Chrysosplenium alternifolium

Goldmoss stonecrop
Sedum acre

Greenbrier
Smilax herbacea
Smilax tamnoides

Grey blueberry
Vaccinium ovalifolium

Groundplum milkvetch
Astragalus crassicarpus

Ground-bean
Amphicarpa bracteata
Falcata bracteata
Falcata comosa
Glycine comosa

Ground-cherry
Physalis spp.

Ground-cone
Boschniakia hookeri
Boschniakia rossica

Great viscid bulrush
Scirpus acutus
Scirpus lacustris
Scirpus validus

Great water dock
Rumex orbiculatus

Greater burdock
Arctium lappa

Greater plantain
Plantago major

Green European glasswort
Salicornia europaea

Green foxtail
Setaria viridis

Green milkweed
Asclepias viridiflora

Hard maple
Acer saccharum

Harvest brodiaea
Brodiaea coronaria

Hawkweeds
Hieracium spp.

Hawthorn
Crataegus brainerdii
Crataegus dilatata
Crataegus flabellata
Crataegus spp.

Hazelnuts
Corylus spp.

Hedge bindweed
Calystegia sepium
Convolvulus sepium

Hedge mustard

Sisymbrium altissimum

Ground-ivy
Glechoma hederacea

Groundnut
Apios americana

Grouseberry
Vaccinium scoparium

Gummy gooseberry
Ribes lobbii

Hackberry
Celtis occidentalis

Hairy crabgrass
Digitaria sanguinalis

Hairy lousewort
Pedicularis hirsuta

Hairy vetch
Vicia hirsuta

Hairy-fruited parsley
Lomatium foeniculaceum

Harbinger-of-spring
Erigenia bulbosa

Himalayan blackberry
Rubus procerus

Hobblebush
Viburnum alnifolium

Hog-peanut
Amphicarpa bracteata
Falcata bracteata
Falcata comosa
Glycine comosa

Hollyhock
Althaea rosea

Honey locust
Gleditsia triacanthos

Honeywort
Cynanchum nigrum
Sisymbrium altissimum

Hemlock-parsley
Conioselinum chinense
Conioselium pacificum

Hemp
Cannabis sativa

Henbit dead-nettle
Lamium amplexicaule

Herb bennet
Geum urbanum

Hickories
Carya spp.

High bush cranberry
Viburnum edule

High mallow
Malva sylvestris

High serviceberry
Amelanchier arborea

Highbush blueberry
Vaccinium corymbosum

Hudson's Bay tea
Ledum groenlandicum
Ledum palustre

Huron shadbush
Amelanchier huronensis

Husk-tomato
Physalis spp.

Hyssop
Hyssopus officinalis

Iceland poppy
Papaver nudicaule

Idaho black gooseberry
Ribes irriguum

Cryptotaenia canadensis

Hooker's fairybells
Disporum hookeri

Hooker's onion
Allium acuminatum

Hooker's thistle
Cirsium hookerianum

Hop tree
Ptelea trifoliata

Horned dandelion
Taraxacum ceratophorum

Horse mint
Mentha longifolia

Horsebrier
Smilax rotundifolia

Horsetails
Equisetum spp.

Hound's tongue
Cynoglossum officinale

Huckleberry
Gaylussacia baccata
Vaccinium spp.

Hudson Bay currant
Ribes hudsonianum

“Indian rhubarb”
Heracleum lanatum
Rumex occidentalis

Indian rice
Fritillaria camschalcensis

Indian rice grass
Oryzopsis hymenoides

Indian salad
Hydrophyllum virginicum
Lactuca saligna

Indian breadroot
Psoralea esculenta

“Indian carrot”
Carum gairdneri
Lomatium macrocarpum
Perideridia gairdneri

“Indian celery”
Heracleum lanatum
Lomatium nudicaule

Indian consumption plant
Lomatium nudicaule

Indian corn
Zea mays

Indian cucumberroot
Medeola virginiana

Indian milkvetch
Astragalus aboriginum

Indian millet
Panicum miliaceum

Indian mustard
Brassica juncea

Indian paintbrush
Castilleja miniata

Indian potato
Apios americana

June berry
Amelanchier arborea
Amelanchier bartramiana

Juneberry shadbush
Amelanchier lucida
Amelanchier mucronata

June plum
Oemleria cerasiformis
Osmaronia cerasiformis

Juniper
Juniperus spp.

Indian turnip
Arisaema spp.

Indian-pipe
Monotropa uniflora

Indian-plum
Oemleria cerasiformis
Osmaronia cerasiformis

Inkberry
Ilex glabra

Jack-by-the-hedge
Alliaria officinalis

Jack-in-the-pulpit
Arisaema spp.

Japanese barberry
Berberis thunbergii

Japanese butterbur
Petasites japonicus

Japanese knotweed
Polygonum cuspidatum

Japanese rose
Rosa multiflora

Jelly fungus
Tremellodon sp.

Jerusalem artichoke
Helianthus tuberosus

"John's-cabbage"
Hydrophyllum virginicum

Lady's thumb smartweed
Polygonum persicaria

Lambsquarters
Chenopodium album
Chenopodium berlanderi
Chenopodium bushianum
Chenopodium macrocalycium
Juniperus virginiana

Kamchatka lily
Fritillaria camschatcensis

Kelp
Alaria esculenta
Alaria marginata
Alaria pylaii
Costaria costata
Laminaria groenlandica
Laminaria spp.
Lessoniopsis littoralis

Kelp flag
Macrocystis integrifolia
Macrocystis pyrifera

Kentucky coffee tree
Gymnocladus dioica

Kinnikinnick
Arctostaphylos uva-ursi
Cornus amomum

Kneeling angelica
Angelica genuflexa

Knotweeds
Polygonum spp.

Ladies' bedstraw
Galium verum

Lady fern
Athyrium filix-femina

Laver seaweed
Porphyra pseudolanceolata
Porphyra torta

Leafy thistle
Cirsium foliosum

Leather-leaf
Chamaedaphne calyculata

Lance-leaved stonecrop
Sedum lanceolatum

Langsdorf's lousewort
Pedicularis langsdorfii

Lapland rhododendron
Rhododendron lapponicum

Large cranberry
Oxycoccus macrocarpon
Vaccinium macrocarpon

Large flowered triteleia
Brodiaea douglasii

Large seeded false flax
Camelina sativa

Large toothwort
Dentaria maxima

Large white ground cherry
Chamaesaracha grandiflora

Large-fruited cranberry
Oxycoccus macrocarpus
Vaccinium macrocarpon

Large-fruited lomatium
Lomatium macrocarpum

Large-leaved aster
Aster macrophyllus

Large-toothed aspen
Populus grandidentata

Larkspur violet
Viola pedatifida

Laver
Porphyra abbottiae
Porphyra perforata

Locoweed
Oxytropis maydelliana

Lodgepole pine
Pinus contorta

Leichtlin's camas
Camassia leichtlinii

Lemon balm
Melissa officinalis

Lemon wood
Artemisia abrotanum

Lemonade tree
Rhus typhina

Lesser burdock
Arctium minus

Licorice
Glycyrrhiza lepidota

Licorice fern
Polypodium glycyrrhiza
Polypodium vulgare

Lichens
Sticta amplissima

Lily
Lilium bulbiferum

Lingonberry
Vaccinium vitis-idaea

Loganberry
Rubus ursinus

Little chickweed
Cerastium semidecandrum

Live-forever
Sedum purpureum

Liverberry
Streptopus amplexifolius

Magnolia water lily
Nymphaea tuberosa

Mahaleb cherry
Prunus mahaleb

Loesel's tumble mustard
Sisymbrium loeselii

Long bladder kelp
Macrocystis integrifolia
Macrocysris pyrifera

Long-spined hawthorn
Crataegus succulenta

Long-leaved dock
Rumex longifolius

Louisiana broom-rape
Orobanche ludoviciana

Lovage
Levisticum officinale

Love-in-a-mist
Nigella damascena

Low blueberry
Vaccinium myrtilloides
Vaccinium vacillans

Low bush cranberry
Vaccinium vitis-idaea

Low Oregon-grape
Berberis nervosa

Low Prairie rose
Rosa arkansana

Low shadbush
Amelanchier humilis

Low sweet blueberry
Vaccinium angustifolium

Lyall's mariposa lily
Calochortus lyallii

Lyre-leaved rockcress
Arabis lyrata

Matrimony vine
Lycium halimifolium

Maize
Zea mays

Mallows
Malva spp.

Manchu cherry
Prunus tomentosa

Manchu tuber-gourd
Thladiantha dubia

Mandrake
Podophyllum peltatum

Manitoba maple
Acer negundo

Many-spined prickly-pear
Opuntia polyacantha

Maple-leaved viburnum
Viburnum acerifolium

Marijuana
Cannabis sativa

Marsh cress
Rorippa islandica

Marshelder
Iva annua

Marshmallow
Althaea officinalis

Marsh saxifgrage
Saxifraga pensylvanica

Marsh thistle
Cirsium palustre

Marsh vetchling
Lathyrus palustris

Marsh yellow cress
Rorippa islandica

Moss campion
Silene acaulis

Mayapple
Podophyllum peltatum

Mayflower
Epigaea repens

Meadow-beauty
Rhexia virginica

Meadow-rue
Thalictrum spp.

Medic-downy shadblow
Amelanchier canadensis

Melons
Cucurbita spp.

Mexican campion
Silphium laciniatum

Mexican tea
Chenopodium ambrosioides

Milkweed
Asclepias amplexicaulis

Milk-thistle
Silybun marianum

Millet grass
Milium effusum

Miner's lettuce
Claytonia perfoliata
Montia perfoliata

Mint
Mentha spp.

Mission bells
Fritillaria camschatcensis

Morel
Morchella crassipes
Morchella hortensis
Morchella spp.

Mountain-sorrel
Oxyria digyna

Mooseberry
Viburnum edule

Moosewood
Acer pensylvanicum

Mossy-cup oak
Quercus macrocarpa

Mountain alder
Alnus crispa

Mountain avens
Dryas spp.

Mountain bistort
Polygonum bistorta

Mountain cranberry
Vaccinium vitis-idaea

Mountain dandelion
Agoseris glauca

Mountain hemlock
Tsuga mertensiana

Mountain holly
Nemopanthus mucronata

Mountain teaberry
Gaultheria ovatifolia

Mountain-ash
Sorbus americana
Sorbus sambucifolia

Mountain-mint
Pycnanthemum incanum
Pycnanthemum pilosum
Pycnanthemum tenuifolium
Pycnanthemum verticillatum
Pycnanthemum virginianum

Mountain rock-cress
Arabis alpina

New Jersey tea
Ceanothus americanus

Mousenut
Eriophorum angustifolium

Mugwort
Artemisia spp.

Mulberries
Morus spp.

Mule's-ear
Wyethia amplexicaulis

Murlins
Alaria esculenta

Musk mallow
Malva moschata

Musk thistle
Carduus nutans

Mustards
Brassica spp.

Nagoonberry
Rubus acaulis
Rubus arcticus

Nannyberry
Viburnum lentago

Narrow-leaved cattail
Typha angustifolia

Narrow-leaved goosefoot
Chenopodium leptophyllum

Narrow-leaved lomatium
Lomatium triternatum

Narrow-leaved meadowsweet
Spiraea alba

Narrow-leaved puccoon
Lithospermum angustifolium

Narrow-leaved vetch
Vicia sativa

Navy beans
Phaseolus vulgaris

Newfoundland bilberry
Vaccinium nubigenum

Nipplewort
Lapsana communis

Nodding microseris
Microseris nutans

Nodding onion
Allium cernuum

Nodding saxifrage
Saxifraga cernua

Nootka lupine
Lupinus nootkatensis

Nootka rose
Rosa nutkana

Nori
Porphyra spp.

Northern black currant
Ribes hudsonianum

Northern bog violet
Viola cucullata
Viola nephrophylla

Northern comandra
Geocaulon lividum

Northern dewberry
Rubus flagellaris

Northern hedysarum
Hedysarum boreale

Northern hound's tongue
Cynoglossum boreale

Northern iris
Iris setosa

Northern Labrador-tea
Ledum palustre

Northern mannagrass
Glyceria borealis

Northern pin oak
Quercus ellipsoidalis
Northern sage
Artemisia spp.
Onoclea struthiopteris

Northern water-horehound
Lycopus uniflorus

Norway maple
Acer platanoides

Nuttall's onion
Allium nuttallii

Nuttall's prairie yellow violet
Viola nuttallii

Oaks
Quercus spp.
Okowyot
Salix reticulata
Old man's whiskers
Geum triflorum

Olympic onion
Allium crenulatum

Onion
Allium spp.

Onion grass
Allium vineale
Melica bulbosa
Opium poppy
Papaver somniferum

Orange honeysuckle
Lonicera ciliosa

Oregon hollygrape
Berberis aquifolium

Oregon wintergreen
Gaultheria ovatifolia

Oriental meadow goat's-beard
Tragopogon pratensis

Pale comandra
Comandra umbellata

Orpine
Sedum telephium
Ostrich fern
Matteuccia struthiopteris

Oswego tea
Monarda didyma

Oval-leaved blueberry
Vaccinium ovalifolium

Oval-leaved bog cranberry
Oxycoccus ovalifolius
'Vaccinium oxycoccus'

Ox-eye daisy
Chrysanthemum leucanthemum
Leucanthemum vulgare
Oxtongue
Picris hieracioides
Oyster mushroom
Pleurotus ostreatus
Pleurotus sapidus

Pacific anemone
Anemone multifida

Pacific blackberry
Rubus ursinus

Pacific coast strawberry
Fragaria chiloensis
Pacific crabapple
Malus fusca
Pyrus fusca

Pacific madrone
Arbutus menziesii

Pacific oenanthe
Oenanthe sarmentosa

Pacific silver fir
Abies spp.

Peppergrass
Lepidium spp.

Pale smartweed
Polygonum lapathifolium

Pallas buttercup
Ranunculus pallasii

Palmate coltsfoot
Petasites palmatus

Palmate violet
Viola palmata

Pansy violet
Viola pedata

Parry's wallflower
Parrya nudicaulis

Partridge-berry
Mitchella repens
Vaccinium vitis-idaea

Pawpaw
Asimina triloba

Peach
Prunus persica

Peach-leaved bellflower
Campanula persicifolia

Pear
Pyrus communis

Pear hawthorn
Crataegus calpodendron

Pennsylvania raspberry
Rubus pensilvanicus

Pennsylvania bittercress
Cardamine pensylvanica

Pennsylvania smartweed
Polygonum pensytvanicum

Pennyroyal
Hedeoma pulegioides

Pepper root
Dentaria diphylla

Pepperidge
Nyssa sylvatica

Peppermint
Mentha piperita

Piggy-back plant
Tolmeia menziesii

Pignut hickory
Carya glabra

Pigweed
Amaranthus palmeri
Atriplex glabriuscula
Chenopodium album
Chenopodium spp.

Pilewort
Ranunculus ficaria

Pin cherry
Prunus emarginata
Prunus pensylvanica

Pincushion cactus
Coryphantha vivipara
Mamillaria vivipara

Pines
Pinus spp.

Pine mushroom
Armillaria ponderosa
Tricholoma magnivelare

Pineappleweed
Matricaria matricarioides

Pink Easter lily
Erythronium revolutum

Pink fawn lily
Erythronium revolutum

Pink mallow
Malva alcea

Pink-flowered onion
Allium stellatum

Pitcher's thistle
Cirsium pitcheri

Plains cymopterus
Cymopteris acaulis

Plains prickly-pear cactus
Opuntia polyacantha

Plane tree
Platanus occidentalis

Plum-leaf crabapple
Pyrus prunifolia

Plumboy
Rubus pubescens

Plumeless thistle
Carduus acanthoides

Pokeweed
Phytolacca americana

Polypody fern
Polypodium glycyrrhiza
Polypodium vulgare

Ponderosa pine
Pinus ponderosa

Poque
Boschniakia hookeri

Potato bean
Apios americana

Prairie bulrush
Scirpus maritimus

Prairie onion
Allium stellatum
Allium textile

Prairie peppergrass
Lepidium densiflorum

Prairie smoke
Geum trifolium

Prairie turnip
Psoralea esculenta

Prairie wild rose
Rosa arkansana

Prairie-clover
Petalostemon candidum
Dalea candida

Prickly-ash
Aralia spinosa

Prickly gooseberry
Ribes cynosbati

Prickly lettuce
Lactuca scariola

Prickly-pear cactus
Opuntia compressa

Prickly rose
Rosa acicularis

Prickly sow-thistle
Sonchus asper

Prince's pine
Chimaphila maculata
Chimaphila umbellata

Prostrate pigweed
Amaranthus graecizans

Pudding-grass
Hedeoma pulegioides

Puffed shield lichen
Parmelia physodes

Pumpkins
Cucurbita spp.

Punctate hawthorn
Crataegus punctata

Prairie rose
Rosa setigera

Purple dead-nettle
Lamium purpureum

Purple flowering raspberry
Rubus odoratus

Purple mountain saxifrage
Saxifraga oppositifolia

Pursh's sea-blite
Suaeda maritima

Purslane
Portulaca oleracea

Pussytoes
Antennaria rosea

Quackgrass
Agropyron repens

Quaking aspen
Populus tremuloides

Quick weed
Galinsoga ciliata

Rambling rose
Rosa rugosa

Ramp
Allium tricoccum

Rape
Brassica napus

Raspberries
Rubus spp.

Rattleweed
Baptisia tinctoria

Red alder
Alnus rubra

Red alga
Palmaria palmata
Rhodymenia palmata

Purple angelica
Angelica atropurpurea

Red and black chokeberry
Pyrus arbutifolia

Red ash
Fraxinus pennsylvanica

Red clover
Trifolium pratense

Red currant
Ribes diacanthum

Red elder berry
Sambucus pubens
Sambucus racemosa

Red elm
Ulmus rubra

Red hawthorn
Crataegus mollis
Crataegus rotundifolia

Red huckleberry
Vaccinium parvifolium

Red laver
Porphyra spp.

Red maids
Calandrinia caulescens

Red manzanita
Arctostaphylos alpina ssp. *rubra*

Red maple
Acer rubrum

Red mulberry
Morus rubra

Red oak
Quercus borealis
Quercus rubra

Red orache
Atriplex rosea

Red alpine bearberry
Arctostaphylos alpina ssp. *rubra*

Red star thistle
Centaurea calcitrapa

Red stem alfilaria
Erodium cicutarium

Red stemmed ceanothus
Ceanothus sanguineus

Red swamp currant
Ribes triste

Red twinberry
Lonicera utahensis

Red whortleberry
Vaccinium parvifolium
Vaccinium vitis-idaea

"Red willow"
Cornus occidentalis
Cornus sericea
Cornus stolonifera

Red-flowering currant
Ribes sanguineum

Red-osier dogwood
Cornus occidentalis
Cornus sericea
Cornus stolonifera

Red-seeded dandelion
Taraxacum laerigatum

Red-stemmed dogwood
Cornus stolonifera
Cornus occidentalis
Cornus sericea

Redroot pigweed
Amaranthus retroflexus

Reed grass
Phragmites australis
Phragmites communis

Red spruce
Picea rubens

Riceroot fritillary
Fritillaria camschatcensis

Riceroot lily
Fritillaria camschatcensis

Richardson's willow
Salix richardsonii

Richweed
Pilea pumila

River beauty
Epilobium latifolium

River willow
Salix alaxensis

Riverbank grape
Vitis riparia

Roadside peppergrass
Lepidium ruderale

Rock cranberry
Vaccinium vitis-idaea

Rock elm
Ulmus thomasii

Rock maple
Acer saccharum

Rock tripe
Actinogyra spp.
Umbilicaria spp.

Rockweed
Fucus spp.

Rocky mountain bee-plant
Cleome serrulata

Rocky mountain maple
Acer glabrum

Roeback berry

"Reindeer" moss
Cladonia rangiferina

Ribwort plantain
Plantago lanceolata

Roseroot
Rhodiola rosea
Sedum roseum

Rough cocklebur
Xanthium strumarium

Rough fruited fairybells
Disporum trachycarpum

Rough pennyroyal
Hedeoma hispida

Rough perennial sow-thistle
Sonchus arvensis

Rough water-horehpund
Lycopus asper

Rough-leaved goosefoot
Chenopodium pumilio

Round-leaved alumroot
Heuchera cylindrica

Roundstem bulrush
Scirpus acutus
Scirpus lacustris
Scirpus validus

Rowan
Sorbus aucuparia

Rue-anemone
Anemonella thalictroides

Rugel's plantain
Plantago rugelii

Rugose rose
Rosa rugosa

Rum cherry
Prunus serotina

Rubus saxatilis

Rosehip
Rosa nutkana

Russet buffaloberry
Shepherdia canadensis

Russian olive
Elaeagnus angustifolia

Russian thistle
Salsola kali

Sagebush mariposa lily
Calochortus macrocarpus

Sagewort wormwood
Artemisia campestris

Sago pondweed
Potamogeton pectinarus

Salad burnet
Sanguisorba minor

Salad greens
Saxifraga punctata

Salal
Gauhheria shallon

Salmon berry
Rubus spectabilis

Saltbush
Atriplex spp.

Salt marsh starwort
Stellaria humifusa

Salt sage
Atriplex nuttallii

Salvia
Salvia verticillata

Sand cherry
Prunus pumila

Running raspberry
Rubus pubescens

Rushlike skeleton plant
Lygodesmia juncea

Sassafras
Sassafras albidum

Scootberry
Streptopus amplexifolius

Scotch broom
Cytisus scoparius

Scotch cottom-thistle
Onopordum acanthium

Scotch lovage
Ligusticum scothicum

Scottish thistle
Cirsium vulgare

Scolder's surf-grass
Phyllospadix scouleri

Scrub birch
Betula glandulosa

Scurvy grass
Cochlearia officinalis

Sea buckthorn
Hippophae rhamnoides

Sea coast angelica
Angelica lucida

Sea ivy
Macrocystis integrifolia
Macrocystis pyrifera

Sea lettuce
Ulva lactuca

Sea lyme-grass
Elymus arenarius

Sea-chickweed
Arenaria peploides

Sand dropseed
Sporobolus cryptandrus

Sandbar willow
Salix exigua

Seabeach-sandwort
Arenaria peploides
Honckenya peploides

Seaside plantain
Plantago macrocarpa
Plantago maritima

Seaweed
Porphyra spp.

Self-heal
Prunella vulgaris

Sensitive fern
Onoclea sensibilis

Serviceberry
Amelanchier alnifolia
Amelanchier humilis
Amelanchier wiegandii

Shadbush
Amelanchier sanguinea
Amelanchier wiegandii

Shagbark hickory
Carya ovalis
Carya ovata

Shaggy vetch
Vicia villosa

Sheep sorrel
Rumex acetosella

Shelf fungus
Ganoderma applanatum

Shepherd's purse
Capsella bursa-pastoris

Shepherd's needle
Scandix pecten-veneris

Sea-grass
Phyllospadix scouleri
Phyllospadix torreyi

Sea-milkwort
Glaux maritima

Sea-side arrow-grass
Triglochin maritima

Short-styled thistle
Cirsium brevistylum

Showy aster
Aster conspicuus

Showy milkweed
Asclepias speciosa

Shrubby cinquefoil
Potentilla fruticosa

Shrubby penstemon
Penstemon fruticosus

Siberian crabapple
Pyrus baccata

Siberian iris
Iris sibirica

Siberian spring-beauty
Claytonia sibirica

Silky aster
Aster sericeus

Silky dogwood
Comus amomum

Silver buffaloberry
Shepherdia argentea

Silver maple
Acer saccharinum

Silverberry
Elateagnus commutata
Elaeagnus spp.

Shining club-moss
Lycopodium lucidulum

Shining sumac
Rhus copallina

Short beaked false dandelion
Agoseris glauca

Sitka spruce
Picea sitchensis

Skunk currant
Ribes glandulosum

Skunkbush
Rhus aromatica

Slim leaf onion
Allium amplectens

"Slippery top"
Hygrophorus sp.

Sloe plum
Prunus spinosa

Small bellwort
Uvularia sessilifolia

Small cranberry
Oxycoccus quadripetalus
"Vaccinium oxycoccus"

Small flowered galinsoga
Galinsoga parviflora

Small-fruited bog cranberry
Oxycoccus microcarpus
"Vaccinium oxycoccus"

Small mallow
Malva pusilla

Small mallow
Malva rotundifolia

Small twisted-stalk
Streptopus streptopoides

Silverweed
Potentilla anserina
Potentilla egedii
Potentilla pacifica

Simple-stemmed twisted-stalk
Streptopus roseus

Sitka burnet
Sanguisorba canadensis

Sitka mountain-ash
Sorbus sitchensis

Smith's fairybells
Disporum smithii

Smokeweed bistort
Polygonum bistortoides

Smooth aster
Aster laevis

Smooth crabgrass
Digitaria ischaemum

Smooth gooseberry
Ribes oxyacanthoides

Smooth Juneberry
Amelanchier laevis

Smooth rose
Rosa blanda

Smooth sumac
Rhus glabra

Smooth sweet cicely
Osmorhiza longistylis

Snowberry
Symphoricarpos albus

Snowbrush
Ceanothus velutinus

Snow cinquefoil
Potentilla nivea

Snow dewberry

Small yellow ground-cherry
Physalis pubescens

Smallblue aster
Aster simplex

Small-flowered buirush
Scirpus microcarpus

Small-flowered mallow
Malva parviflora

Soopolallie
Shepherdia canadensis

Sourdock
Rumex arcticus

Sourgum
Nyssa sylvatica

Sour-top blueberry
Vaccinium myrtilloides

Spear thistle
Cirsium vulgare

Spearmint
Mentha spicata

Speckled mountain alder
Alnus rugosa

Speedwell
Veronica officinalis

Spicebush
Lindera benzoin

Spicewood
Lindera benzoin

Spiderflower
Cleome serrulata

Spiderwort
Tradescantia virginiana

Spiked saxifrage

Rubus nivalis

Snowbush ceanothus
Ceanothus velutinus

Soapberry
Shepherdia canadensis

Soapweed
Yucca glauca

Soft rush
Juncus effusus

Solomon's-seal
Polygonatum biflorum
Polygonatum pubescens

Spiraea
Spiraea tomentosa

Spiraeas
Spiraea spp.

Spotted touch-me-not
Impatiens biflora
Impatiens capensis

Spreading stonecrop
Sedum divergens

Spring-beauty
Claytonia caroliniana
Claytonia lanceolata
Claytonia tuberosa
Claytonia virginica

Spring cress
Cardamine bulbosa

Spring sunflower
Balsamorhiza sagittata

Springbank clover
Trifolium fimbriatum
Trifolium wormskioldii

Squashes
Cucurbita spp.

Squashbush

Saxifraga spicata

Spikenard
Aralia racemosa

Spinach dock
Rumex patientia

Spiny wood fern
Dryopteris assimilis
Dryopteris austriaca
Dryopteris carthusiana
Dryopteris dilatata
Dryopteris expansa
Dryopteris spinulosa

Staghorn sumac
Rhus typhina

Star-flowered false Solomon's-seal
Smilacina stellata

Stemless raspberry
Rubus acaulis
Rubus arcticus

Sticky cinquefoil
Potentilla glandulosa

Sticky currant
Ribes viscosissimum

Sticky geranium
Geranium erianthum
Geranium viscosissimum

Sticky gooseberry
Ribes lobbii

Stinging nettle
Urtica dioica

Stink currant
Ribes bracteosum

Stinkweed
Thlaspi arvense

Stonecrop

Viburnum dentatum

Squaw currant
Ribes cereum

Squaw huckleberry
Vaccinium stamineum

Squaw-root
Carum gairdneri
Perideridia gairdneri

Squaw-vine
Mitchella repens

St. George's mushroom
Tricholoma gambosum

St. Vincents rock stonecrop
Sedum rupestre

Subalpine yarrow
Achillea millefolium

Sudeten lousewort
Pedicularis sudetica

Sugar maple
Acer saccharum

Summer cypress
Kochia scoparia

Summer grape
Vitis aestivalis

Summer savory
Satureja hortensis

Sumpweed
Iva annua

Sunberry
Ribes bracteosum

Surah
Salix phylicifolia
Salix pulchra

Swamp blackberry
Rubus hispidus

Sedum divergens
Sedum oreganum

Strand wheat
Elymus arenarius

Strawberry blite goosefoot
Chenopodium capitatum

Strawberry-raspberry
Rubus illecebrosus

Strawberry spinach
Chenopodium capitatum

Striped maple
Acer pensylvanicum

Subalpine fir
Abies spp.

"Swamp parsnip"
Sium suave

Swamp rose
Rosa palustris
Rosa pisocarpa

Swamp sugar pear
Amelanchier intermedia

Swamp thistle
Cirsium muticum

Swamp white oak
Quercus bicolor

Swedish bunchberry
Cornus suecica

Sweet birch
Betula lenta

Sweet briar
Rosa eglanteria

Sweet cherry
Prunus avium

Sweet cicely
Osmorhiza chilensis

Swamp black currant
Ribes lacustre

Swamp gooseberry
Ribes lacustre

Swamp hedge-nettle
Stachys palustris

Swamp hickory
Carya cordiformis

Swamp lantern
Lysichitom americanus

Swamp laurel
Kalmia polifolia

Swamp milkweed
Asclepias incarnata

Sweet vernal grass
Anthoxanthum odoratum

Sweet vetch
Hedysarum alpinum

Sweet violet
Viola odorata

Sweet-scented bedstraw
Galium triflorum

Sword fern
Polystichum munitum

Sword-leaved rush
Juncus ensifolius

Tall cottongrass
Eriophorum angustifolium

Tall huckleberry
Vaccinium ovalifolium

Tall mannagrass
Glyceria borealis

Osmorhiza claytonii
Osmorhiza depauperata

Sweet coltsfoot
Petasites frigidus

Sweet elder
Sambucus canadensis

Sweet fern
Comptonia peregrina

Sweet flag
Acorus calamus

Sweet gale
Myrica gale

Sweet locust
Gleditsia triacanthos

Sweet pepperbush
Clethra alnifolia

Tea-leaved willow
Salix phylicifolia
Salix pulchra

Thicket hawthorn
Crataegus coccinea
Crataegus intricaia

Thimbleberry
Rubus occidentalis
Rubus odoratus
Rubus parviflorus

Thistle
Cirsium pumilum
Cirsium spp.

Thorny buffaloberry
Shepherdia argentea

Three-leaved Solomon's-seal
Smilacina trifolia

Three-spot mariposa lily
Calochortus apiculatus

Thrift

Tall Oregon grape
Berberis aquifolium
Mahonia aquifolium

Tall peppergrass
Lepidium virginicum

Tall tumble mustard
Sisymbrium altissimum

Tall yellow lettuce
Lactuca canadensis

Tarragon
Artemisia dracunculus

Tartary buckwheat
Fagopyrum tartaricum

Tea rose
Rosa odorata

Teaberry
Gaultheria procumbens

Trailing wild blackberry
Rubus ursinus

Trailing wild raspberry
Rubus pedatus

Trapper's tea
Ledum glandulosum

Tree lichen
Alectoria spp.
Sticta amplissima
Usnea spp.

Tree onion
Allium canadense

Trembling aspen
Populus tremuloides

Tuberous vetchling
Lathyrus tuberosus

Tuberous water lily
Nymphaea tuberosa

Armeria maritima

Tiger lily
Lilium canadense
Lilium columbianum
Lilium tigrinum

Timber milkvetch
Astragalus miser
Astragalus serotinus

Tinker's-weed
Triosteum perfoliatum

Tobacco-root
Valeriana edulis

Tomatillo
Physalis ixocarpa

Torrey's surf-grass
Phyllospadix torreyi

Trailing black currant
Ribes laxiflorum

Utah honeysuckle
Lonicera utahensis

Velvet-leaved blueberry
Vaccinium myrtillides

Vermont blackberry
Rubus vermontanus

Violet
Viola spp.

Virginia creeper
Parthenocissus quinquefolia

Virginia ground-cherry
Physalis virginiana

Virginia rose
Rosa virginiana

Virginia waterleaf
Hydrophyllum virginicum

Wafer ash

Ptelea trifoliata

Tule
Scirpus acutus
Scirpus lacustris
Scirpus validus

Tulip tree
Liriodendron tulipifera

Tumble pigweed
Amaranthus albus

Twinflower honeysuckle
Lonicera involucrata

Two-leaved false Solomon's-seal
Maianthemum dilatatum

Two-leaved pepperroot
Dentaria diphulla

Umbrella-plant
Eriogonum umbellatum

Upright yellow oxalis
Oxalis stricta

Water pennywort
Hydrocotyle umbellata
Hydrocotyle verticillata

Water plantain
Alisma plantago-aquatica

Water speedwell
Veronica catenata

Water-parsnip
Sium suave

Watermelonberry
Streptopus amplexifolius

Waternut
Nelumbo lutea

Watershield
Brasenia schreberi

Watery blueberry
Vaccinium alaskaense

Wake robin
Trillium grandiflorum

Wall lettuce
Lactuca muralis

Wapato
Sagittaria latifolia

Water avens
Geum rivale

Water chinquapin
Nelumbo lutea

Waterleaf
Hydrophyllum appendiculatum
Hydrophyllum canadense

Water lily
Nuphar advena

Water parsley
Oenanthe sarmentosa

Western sea-blite
Suaeda occidentalis

Western skunk cabbage
Lysichitom americanus

Western sweet cicely
Osmorhiza occidentalis

Western tansy mustard
Descurainia pinnata

Western trumpet honeysuckle
Lonicera ciliosa

Western wild ginger
Asarum caudatum

White ash
Fraxinus americana

White-bark pine
Pinus albicaulis

Watson's gooseberry
Ribes watsonianum

Wavy-leaved thistle
Cirsium undulatum

Waxberry
Symphoricarpos albus

Western dock
Rumex occidentalis

Western hemlock
Tsuga heterophylla

Western larch
Larix occidentalis

Western mannagrass
Glyceria occidentalis

Western mountain-ash
Sorbus scopulina

Western mugwort
Artemisia ludoviciana

Western red-cedar
Thuja plicata

White pine
Pinus strobus

White poplar
Populus alba

White rhododendron
Rhododendron albiflorum

White spruce
Picea glauca

White stem alfilaria
Erodium moschatum

White thistle
Cirsium hookerianum

White triteleia
Brodiaea hyacinthina

"White camas"
Lomatium canbyi

White cedar
Thuja occidentalis

White clover
Trifolium repens

White dead-nettle
Lamium album

White fir
Abies concolor

White mountain avens
Dryas octopetala

White mulberry
Morus alba

White mustard
Brassica hirta

White oak
Quercus alba

Wild buckwheat
Polygonum convolvulus

Wild calla
Calla palustris

Wild caraway
Carum gairdneri
Perideridia gairdneri

"Wild carrot"
Perideridia gairdneri
Conioselinum chinense
Conioselium pacificum
Daucus carota
Lomatium macrocarpum

Wild celery
Angelica lucida

White-grained mountain rice grass
Oryzopsis asperifolia

White-stemmed blazing star
Mentzelia albicaulis

Whorled mallow
Malva verticillata

Whorled milkweed
Asclepias verticillata

Whortleberries
Vaccinium spp.

Wild angelica
Angelica sylvestris

Wild basil savory
Satureja vulgaris

Wild bergamot
Monarda fistulosa

Wild black currant
Ribes americanum

Wild black gooseberry
Ribes divaricatum

Wild blue currant
Ribes laxiflorum

Wild dewberries
Rubus spp.

Wild filbert
Corylus cornuta

Wild flax
Linum perenne

Wild garlic
Allium tricoccum

Wild ginger
Asarum canadense
Oenanthe sarmentosa
Ligusticum scothicum

Wild chamomile
Matricaria matricarioides

Wild cherry
Prunus spp.

Wild chives
Allium schoenoprasum

Wild columbine
Aquilegia canadensis

Wild coffee
Triosteum aurantiacum
Triosteum perfoliatum

Wild crabapple
Mains fusca
Pyrus coronaria
Pyrus fusca

Wild cucumber
Streptopus amplexifolius

Wild dandelion
Taraxacum ambigens
Taraxacum dumetorum
Taraxacum hyparcticum
Taraxacum lacerum
Taraxacum latilobum
Taraxacum laurentianum
Taraxacum phymatocarpum

Wild onion
Allium textile

Wild pea
Lupinus perennis

Wild plum
Prunus americana
Prunus spp.

Wild potato
Anemonella thalictroides

Wild radish
Raphanus raphanistrum

Wild grape
Vitis riparia

Wild harvil
Cryptotaenia canadensis

Wild hyacinth
Camassia scilloides

Wild leek
Allium tricoccum

Wild lettuce
Lactuca canadensis

Wild licorice
Glycyrrhiza lepidota

Wild lily-of-the-valley
Maianthemum canadense
Maianthemum dilatatum

Wild lupine
Lupinus perennis

Wild marjoram
Origanum vulgare

Wild mustard
Brassica kaber
Sinapsis arvensis

Wild oat
Avena fatua
Avena spp.

Wild yam
Dioscorea villosa

Wild-pear
Amelanchier sanguinea

Wild-pear serviceberry
Amelanchier stolonifera

Wild-rice
Zizania aquatica
Zizania palustris

Willow

Wild raisin
Viburnum cassinoides

Wild raspberry
Rubus idaeus
Rubus strigosis

Wild red currant
Ribes triste

"Wild rhubarb"
Polygonum alaskanum
Polygonum alpinum
Polygonum phytolaccaefolium

Wild rose
Rosa nitida
Rosa rousseauiorum
Rosa williamsii
Rosa spp.

Wild sarsaparilla
Aralia nudicaulis

Wild strawberry
Fragaria bracteata
Fragaria vesca
Fragaria virginiana
Fragaria spp.

Wild sweet-potato vine
Ipomoea pandurata

Wild thyme
Thymus arcticus

Wood germander
Teucrium scorodonia

Wood lily
Lilium philadelphicum

Wood-rot fungus
Inonotus obliquus
Poria obliqua

Wood-sorrel
Oxalis corniculata
Oxalis dillenii
Oxalis montana

Salix spp.

Willowherb
Epilobium angustifolium

Wineberry
Rubus phoenicolasius

Winter-cress
Barbarea spp.

Winter pennyroyal
Hydrocotyle americana

Winterfat
Eurotia lanata

Wintergreen
Gaultheria procumbens
Pyrola virens

Wire-grass
Eleusine indica

Witch-hazel
Hamamelis virginiana

Witherod
Viburnum cassinoides

Woad
Isatis tinctoria

Wolf willow
Elaeagnus commutata

Wood betony
Pedicularis canadensis
Pedicularis lanceolata

Yellow cut-leaved mignonette
Reseda lutea

Yellow dogtooth violet
Erythronium grandiflorum

Yellow evening primrose
Oenothera biennis

Yellow foxtail
Setaria lutescens

Oxalis stricta
Oxalis spp.

Woodland angelica
Angelica sylvestris

Woodland strawberry
Fragaria bracteata
Fragaria vesca

Wood's rose
Rosa woodsii

Woolly lousewort
Pedicularis lanata

Wormwood
Artemisia absinthium
Artemisia gnaphalodes
Artemisia spp.

Yampah
Carum gairdneri
Perideridia gairdneri

Yarrow
Achillea millefolium

Yellow adder's tongue
Erythronium americanum

Yellow arum
Lysichitom americanus

Yellow avalanche lily
Erythronium grandiflorum

Yellow birch
Betula lutea

Yellow pond-lily
Nuphar advena
Nuphar polysepalum
Nuphar variegatum

Yellow salsify
Tragopogon dubius

Yellow sand-verbena
Abronia latifolia

Yellow gromwell
Lithospermum incisum

Yellow ground-cherry
Physalis heterophylla

Yellow iris
Iris pseudacorus

Yellow lotus
Nelumbo lutea

Yellow mariposa
Calochortus luteus

Yellow marsh-marigold
Caltha palustris

Yellow nut grass
Cyperus esculentus

Yellow oxalis
Oxalis corniculata

Yellow oxytrope
Oxytropis maydelliana

Yellow sweet-clover
Melilotus officinalis

Yellow water-lily
Nuphar variegatum

Yellow wood violet
Viola glabella

Yellowbell fritillary
Frititllaria pudica

Yerba buena
Satureja douglasii

Yews
Taxus spp.

Youth-on-age
Tolmeia menziesii

Yucca
Yucca glauca

APPENDIX 3
Species by Botanical Name

Abies balsamea
Balsam fir
Canada balsam

Abies concolor
White fir

Abies spp.
Grand fir
Subalpine fir
Pacific silver fir

Abronia latifolia
Yellow sand-verbena

Acer glabrum
Rocky mountain maple

Acer macrophyllum
Bigleaf maple
Broad-leaved maple

Acer negundo
Manitoba maple
Box elder

Acer nigrum
Black maple

Acer pensylvanicum
Moosewood
Striped maple

Acer platanoides
Norway maple

Acer rubrum
Red maple

Acer saccharinum
Silver maple

Acer saccharum
Sugar maple
Rock maple
Hard maple

Actinogyra spp.
Rock tripe

Agaricus campestris
Field mushroom

Agastache foeniculum
Giant hyssop

Agoseris glauca
Mountain dandelion
Short beaked false dandelion

Agropyron repens
Quackgrass
Couchgrass

Agrostis perennans
Bent grass

Alaria esculenta
Kelp
Murlins

Alaria marginata
Kelp

Alaria pylaii
Kelp

Alectoria spp.
Tree lichen

Alisma plantago-aquatica
Water plantain

Alliaria officinalis
Garlic mustard
Jack-by-the-hedge

Allium acuminatum
Hooker's onion

Allium amplectens
Slim leaf onion

Achillea millefolium
Yarrow
Subalpine yarrow
Acorus calamus
Sweet flag
Allium crenulatum
Olympic onion
Allium geyeri
Geyer's onion
Allium nuttallii
Nuttall's onion

Allium schoenoprasum
Wild chives
Allium stellatum
Pprairie onion
Pink-flowered onion

Allium textile
Wild onion

Allium tricoccum
Wild leek
Ramp
Wild garlic

Allium vineale
Onion grass
Field garlic
Crow garlic

Allium spp.
Garlic
Onion

Alnus crispa
Mountain alder
American green alder
Alnus rubra
Red alder
Alnus rugosa
Speckled mountain alder

Althaea officinalis
Marsh mallow

Althaea rosea
Hollyhock

Allium canadense
Canada garlic
Canada onion
Tree onion
Allium cernuum
Nodding onion
Amaranthus graecizans
Prostrate pigweed
Amaranthus hybridus
Amaranth
Amaranthus palmeri
Pigweed
Careless weed
Amaranthus retroflexus
Redroot pigweed
Amaranthus spinosus
Amaranth

Ambrosia trifida
Giant ragweed

Amelanchier alnifolia
Common saskatoon
Serviceberry

Amelanchier arborea
High serviceberry
June berry
Downy shadblow

Amelanchier bartramiana
Juneberry
Bartram shadblow

Amelanchier canadensis
Medic-downy shadblow

Amelanchier fernaldii
Fernald's shadbush
Amelanchier gaspensis
Gaspe shadbush
Amelanchier humilis
Serviceberry
Low shadbush

Amelanchier huronensis
Huron shadbush

Amelanchier intermedia
Swamp sugar pear

Amaranthus albus
Tumble pigweed

Amelanchier lucida
Juneberry shadbusb

Amelanchier mucronata
Juneberry shadbush

Amelanchier sanguinea
Shadbush
Wild-pear

Amelanchier stolonifera
Wild-pear serviceberry

Amelanchier wiegandii
Serviceberry
Sbadbrush

Ammophila breviligulata
Beachgrass

Amphicarpa bracteata
Hog-peanut
Ground-bean

Anchusa officinalis
Alkanet

Andromeda glaucophylla
Bog rosemary

Anemone multifida
Pacific anemone
Anemone narcissiflora
Anemone
Anemonella thalictroides
Rue-anemone
Wild potato

Anethum graveolens
Common dill

Angelica archangelica
Angelica
Angelica atropurpurea
Purple angelica
Angelica genuflexa

Amelanchier laevis
Smooth Juneberry
Alleghany shadblow
Angelica lucida
Sea coast angelica
Wild celery
Aleut celery

Angelica sylvestris
Woodland angelica
Wild angelica

Antennaria rosea
Pussytoes

Anthoxanthum odoratum
Sweet vernal grass

Anthriscus cerefolium
Common chevril

Apios americana
Groundnut
Indian potato
Potato bean

Aquilegia canadensis
Wild columbine

Arabidopsis thaliana
Common mouse-ear cress

Arabis alpina
Mountain rock-cress
Alpine cress
Arabis lyrata
Lyre-leaved rock-cress
Aralia nudicaulis
Wild sarsaparilla

Aralia racemosa
Spikenard

Aralia spinosa
Prickly-ash
Devil's walkingstick
Arbutus menziesii
Pacific madrone
Arctium lappa

Kneeling angelica

Arctium minus
Lesser burdock
Common burdock

Arctium nemorosum
Burdock

Arctium tomentosum
Cotton burdock

Arctostaphylos alpina
Alpine bearberries
Alpine manzanita

Arctostaphylos alpina ssp. rubra
Red alpine bearberry
Red manzanita

Arctostaphylos uva-ursi
Kinnikinnick
Bearberry

Arenaria peploides
Sea-chickweed
Seabeach-sandwort

Arisaema spp.
Jack-in-the-pulpit
Dragon root
Indian turnip

Armeria maritima
Thrift

Armillaria ponderosa
Pine mushroom

Armoracia rusticana
Common horseradish

Artemisia abrotanum
Lemon wood

Artemisia absinthium
Wormwood
Absinthe

Artemisia campestris
Sagewort wormwood

Artemisia dracunculus
Tarragon
Dragon sagewort

Aster macrophyllus
Large-leaved aster

Aster sericeus
Greater burdock

Artemisia gnaphalodes
Wormwood

Artemisia ludoviciana
Western mugwort

Artemisia vulgaris
Common mugwort

Artemisia spp.
Wormwood
Mugwort

Asarum canadense
Wild ginger

Asarum caudatum
Western wild ginger

Asclepias amplexicaulis
Milkweed

Asclepias incarnata
Swamp milkweed

Asclepias speciosa
Showy milkweed

Asclepias syriaca
Common milkweed

Asclepias tuberosa
Butterfly weed

Asclepias verticillata
Whorled milkweed

Asclepias viridiflora
Green milkweed

Asimina triloba
Pawpaw
Custard apple

Asparagus officinalis
Asparagus

Aster conspicuous
Showy aster

Aster laevis
Smooth aster

Avena spp.
Wild oats

Balsamorhiza deltoidea

Silky aster
Aster simplex
Smallblue aster

Astragalus aboriginum
Indian milkvetch

Astragalus americanus
American milkvetch

Astragalus canadense
Canadian milkvetch

Astragalus crassicarpus
Groundplum milkvetch

Astragalus miser
Timber milkvetch

Astragalus serotinus
Timber-milkvetch

Athyrium filix-femina
Lady fern

Atriplex glabriuscula
Pigweed
Atriplex hortensis
Garden orache

Atriplex nuttallii
Salt sage

Atriplex patula
Common orache

Atriplex rosea
Red orache

Atriplex spp.
Saltbush

Avena fatua
Wild oats

Avena sativa
Common oats
Betula lenta
Black birch

Deltoid balsamroot
Balsamorhiza sagittata
Arrow-leaved balsamroot
Spring sunflower

Baptisia tinctoria
False indigo
Rattleweed

Barbarea verna
Early winter-cress

Barbarea vulgaris
Bitter winter-cress

Barbarea spp.
Winter-cress

Beckmannia syzigachne
American slough grass

Bellis perennis
English daisy

Berberis aquifolium
Tall Oregon grape
Oregon hollygrape
Berberis nervosa
Low Oregon grape
Dull Oregon-grape

Berberis repens
Creeping Oregon-grape

Berberis thunbergii
Japanese barberry

Berberis vulgaris
Common barberry

Betula alleghaniensis
Alleghany birch

Betula glandulosa
Scrub birch
Bog glandular birch

Brassica nigra
Black mustard

Cherry birch
Sweet birch

Betula lutea
Yellow birch

Betula papyrifera
Common paper birch
Canoe birch

Betula pumila
Bog birch

Betula tortuosa
Birch

Betula spp.
Birches

Blechnum spicant
Deer fern
Blitum capitatum
Strawberry blite goosefoot
Strawberry spinach

Borago officinalis
Common borage

Boschniakia hookeri
Poque
Ground-cone
Boschniakia rossica
Ground-cone
Brasenia schreberi
Watershield
Brassica hirta
White mustard
Brassica juncea
Indian mustard
Brown mustard

Brassica kaber
Wild mustard
Brassica napus
Rape
Calochortus apiculatus
Three-spot mariposa lily
Calochortus luteus
Yellow mariposa
Calochortus lyallii

Brassica oleracea
Cabbage

Brassica rapa
Bird rape mustard
Field mustard

Brassica spp.
Mustard

Brodiaea coronaria
Harvest brodiaea

Brodiaea douglasii
Large flowered triteleia

Brodiaea hyacinthina
Cluster lily
White triteleia
Fool's onion
Bromus tectorum
Drooping brome grass
Downy brome
Cheat grass

Bryoria fremontii
Black tree lichen

Butomus umbellatus
Flowering rush
Cakile edentula
American searocket
Cakile maritime
European searocket
Calandrinia caulescens
Red maids
Calla palustris
Wild calla

Calluna vulgaris
Common heather

Cantarellus cibarius
Chanterelle
Capsella bursa-pastoris
Shepherd's purse
Cardamine bulbosa

Lyall's mariposa lily
Calochortus macrocarpus
Sagebush mariposa lily
Desert lily

Caltha palustris
Yellow marsh-marigold

Calvatia gigantea
Giant puffball

Calypso bulbosa
Calypso
False ladyslipper
Fairy slipper
Camassia leichtlinii
Great camas
Leichtlin's camas
Blue camas

Camassia quamash
Common camas
Blue camas

Camassia scilloides
Eastern camas
Wild hyacinth
Camelina sativa
False flax
Large seeded false flax

Campanula persicifolia
Peach-leaved bellflower
Campanula rapanculoides
Creeping bellflower

Cannabis sativa
Hemp
Marijuana
Carya ovalis
False shagbark hickory
Carya ovata
Shagbark hickory

Carya spp.
Hickories

Castanea dentata
American chestnut

Spring cress
Cardamine pensylvanica
Pennsylvania bittercress

Cardamine pratensis
Cuckoo bittercress

Carduus acanthoides
Plumeless thistle

Carduus crispus
Curled thistle

Carduus nutans
Musk thistle
Carex aquatilis
Aquatic sedge

Carex rostrata
Beaked sedge

Carpinus caroliniana
American hornbeam
Blue beech

Carpinus spp.
Blue Beech
Carum carvi
Common caraway

Carya cordiformis
Bitter-nut hickory
Swamp hickory
Carya glabra
Pignut hickory
Pignut

Chamaesaracha grandiflora
Large white ground-cherry
Chenopodium album
Lambsquarters
Pigweed
Goosefoot

Chenopodium ambrosioides
Mexican tea

Chenopodium berlandieri

Castilleja miniata
Indian paintbrush

Ceanothus americanus
New Jersey tea

Ceanothus sanguineus
Buckbush
Red stemmed ceanothus

Ceanothus velutinus
Snowbrush
Snowbush ceanothus

Celastrus scandens
American bittersweet
Climbing bittersweet

Celtis occidentalis
Hackberry

Cenchrus longispinus
Field sandbur

Centaurea calcitrapa
Red star thistle

Cerastium semidecandrum
Little chickweed

Cetraria crispa
Cetraria

Cetraria cucullata
Cetraria

Chamaedaphne calyculata
Leather-leaf

Chrysanthemum leucanthemum
Ox-eye daisy

Chrysosplenium alternifolium
Golden saxifrage
Chrysosplene

Chrysosplenium americanum
Golden saxifrage

Cicer arietinum
Chickpea

Cichorum intybus
Lambsquarters

Chenopodium bonus-henricus
Good King Henry

Chenopodium bushianum
Lambsquarters

Chenopodium capitatum
Strawberry blite goosefoot
Strawberry spinach

Chenopodium fremontii
Freemont's goosefoot

Chenopodium leptophyllum
Narrow-leaved goosefoot

Chenopodium macrocalycium
Lambsquarters

Chenopodium pumilio
Rough-leaved goosefoot

Chenopodium spp.
Goosefoot
Pigweed

Chimaphila maculata
Prince's pine

Chimaphila umbellata
Prince's pine
Common western pipsissews

Chorispora tenella
Common blue mustard

Chrysanthemum balsamita
Costmary

Cirsium pumilum
Thistle

Cirsium undulatum
Wavy-leaved thistle

Cirsium vulgare
Scottish thistle
Bull thistle
Spear thistle

Cirsium spp.
Thistles

Chicory
Blue sailors

Cirsium arvense
Canada thistle

Cirsium brevistylum
Short-styled thistle

Cirsium discolor
Field thistle

Cirsium drummondii
Drummond's thistle

Cirsium edule
Edible thistle

Cirsium flodmanii
Flodman's thistle

Cirsium foliosum
Leafy thistle

Cirsium hookerianum
Hooker's thistle
White thistle

Cirsium muticum
Swamp thistle

Cirsium palustre
Marsh thistle

Cirsium pitcheri
Pithcer's thistle

Clethra alnifolia
Sweet pepperbush

Clintonia borealis
Corn lily
Bluebead lily

Cnicus benedictus
Blessed thistle

Cochlearia officinalis
Scurvygrass

Comandra umbellata
Bastard-toadflax
Pale comandra

Commelina communis

Cladina rangiferina
"Caribou" moss

Cladonia rangiferina
"Reindeer" moss
"Caribou" moss

Cladophora rapestris
Cladophora

Claytonia acutifolia
Alpine spring-beauty

Claytonia caroliniana
Spring-beauty

Claytonia lanceolata
Spring-beauty

Claytonia megarhiza
Alpine spring-beauty

Claytonia perfoliata
Miner's lettuce

Claytonia sibirica
Siberian spring-beauty

Claytonia tuberosa
Spring-beauty

Claytonia virginica
Spring-beauty

Cleome serrulata
Spiderflower
Rocky mountain bee-plant

Cornus occidentalis
Red-osier dogwood
Red stemmed dogwood
"Red willow"

Cornus sericea
Red-osier dogwood
Red stemmed dogwood
'Red willow"

Cornus stolonifera
Red-osier dogwood
Red-stemmed dogwood
"Red willow"

Cornus suecica
Dwarf bog bunchberry
Swedish bunchberry

Common dayflower

Commelina spp.
Dayflower

Comptonia peregrina
Sweet-fern
Conioselinum chinense
Hemlock-parsley
"Wild carrot"

Conioselinum pacificum
Hemlock-parsley
"Wild carrot"

Convolvulus arvensis
Field bindweed

Convolvulus sepium
Hedge bindweed

Convolvulus soldanella
Beach bindweed

Coriandrum sativum
Coriander

Cornus amomum
Silky dogwood
Kinnikinnik
Cornus canadensis
Canada bunchberry
Crackerberry
Dwarf dogwood
Crataegus douglasii
Black hawthorn
Black thornberry

Crataegus flabellata
Hawthorn

Crataegus intricata
Thicket hawthorn

Crataegus mollis
Red hawthorn
Downy hawthorn
Crataegus monogyna
English hawthorn
Common hawthorn

Corylus americana
American hazelnut

Corylus cornuta
Beaked hazelnut
Wild filbert
Corylus spp.
Hazelnuts

Coryphantha vivipara
Pincushion cactus

Costaria costata
Kelp

Crataegus brainerdii
Hawthorn

Crataegus calpodendron
Pear hawthorn

Crataegus coccinea
Thicket hawthorn

Crataegus crus-galli
Cockspur thorn

Crataegus dilatata
Hawthorn

Cyperus esculentus
Chufa
Yellow nut grass
Cyperus

Cytisus scoparius
Scotch broom

Daucus carota
Wild carrot

Daucus pusillus
American wild carrot
Dentaria diphylla
Pepperroot
Two-leaved pepperrot

Crataegus pruinosa
Frosted hawthorn
Crataegus punctata
Punctate hawthorn
Crataegus rotundifolia
Red hawthorn
Crataegus succulenta
Long-spined hawthorn
Crataegus spp.
Hawthorns
Cryptotaenia canadensis
Honeywort
Wild harvil
Cucurbita spp.
Squashes
Pumpkins
Melons

Cymopteris acaulis
Plains cymopterus

Cynoglossum boreale
Northern hound's tongue

Cynoglossum officinale
Hound's tongue

Dryas spp.
Mountain avens
Dryopteris assimilis
Spiny wood fern

Dryopteris austriaca
Spiny wood fern

Dryopteris carthusiana
Spiny wood fern

Dryopteris dilatata
Spiny wood fern

Dryopteris expansa
Spiny wood fern

Dryopteris spinulosa
Spiny wood fern

Echinochloa crusgalli
Common barnyard grass

Dentaria laciniata
Cut toothwort
Dentaria maxima
Large toothwort
Descurainia pinnata
Western tansy mustard
Digitaria ischaemum
Smooth crabgrass
Digitaria sanguinalis
Hairy crabgrass
Dioscorea villosa
Wild yam
Atlantic yam
Disporum hookeri
Hooker's fairybells

Disporum lanuginosum
Fairybells

Disporum smithii
Smith's fairybells

Disporum trachycarpum
Rough fruited fairybells

Dryas octopetala
White mountain avens
Elymus piperi
Giant wild rye grass
Empetrum nigrum
Black crowberry
Curlewberry

Epigaea repens
Mayflower

Epilobium angustifolium
Fireweed
Willowherb

Epilobium latifolium
River beauty
Dwarf fireweed
Broad-leaved willowherb

Equisetum arvense
Common horsetail
Field horsetail

Barnyard grass

Elaeagnus angustifolia
Russian olive

Elaeagnus commutata
Silverberry
Wolf willow

Elaeagnus spp.
Silverberry

Eleusine indica
Goosegrass
Wire-grass

Elymus arenarius
Sea lyme-grass
Strand-wheat

Elymus canadensis
Canada wild rye grass

Elymus cinereus
Giant wild rye grass

Elymus mollis
Dune wild rye grass

Eruca sativa
Garden rocket

Erythronium americanum
Yellow adder's tongue

Erythronium grandiflorum
Yellow avalanche lily
Glacier lily
Yellow dogtooth lily

Erythronium revolutum
Pink fawn lily
Pink Easter lily

Euphorbia lathyrus
Caper spurge

Eurotia lanata
Winterfat

Fagopyrum sagittatum
Buckwheat

Equisetum telmateia
Giant horsetail

Equisetum spp.
Horsetails

Erechtites hieracifolia
Fireweed

Erigenia bulbosa
Harbinger-of-spring

Eriogonum umbellatum
Umbrella-plant

Eriophorum angustifolium
Tall cottongrass
"Mousenut"

Erodium botrys
Broad leaf alfilaria

Erodium cicutarium
Red stem alfilaria

Erodium moschatum
White stem alfilaria

Fragaria virginiana
Blueleaf strawberry
Wild strawberry

Fragaria spp.
Wild strawberry

Fraxinus americana
White ash

Fraxinus excelsior
European ash

Fraxinus nigra
Black ash

Fraxinus pennsylvanica
Red ash

Fraxinus quadrangulata

Fritillaria camschatcensis
Riceroot lily
Riceroot fritillary

Fagopyrum tarlaricum
Tartary buckwheat

Fagus grandifolia
American beechnut

Falcata bracteata
Hog-peanut
Ground-bean
Falcata comosa
Hog-peanut
Ground-bean

Floerkea proserpinacoides
False mermaid
Foeniculum vulgare
Common fennel
Fragaria bracteata
Woodland strawberry
Wild strawberry
Fragaria chiloensis
Pacific coast strawberry
Beach strawberry

Fragaria vesca
Woodland strawberry
Wild strawberry

Gaultheria hispidula
Creeping snowberry
Gaultheria humifusa
Alpine wintergreen

Gaultheria ovatifolia
Oregon wintergreen
Mountain teaberry

Gaultheria procumbens
Wintergreen
Teaberry
Checkerberry

Gaultheria shallon
Salal

Gaylussacia baccata
Black huckleberry
Huckleberry

Gaylussacia dumosa
Mission bells
Indian rice
Kamchatka lily

Fritillaria lanceolata
Chocolate lily

Fritillaria pudica
Yellowbell fritillary
Fucus spp.
Rockweed

Galinsoga ciliata
Galinsoga
Quick weed
Galinsoga parviflora
Small flowered galinsoga
Galium aparine
Common bedstraw
Common cleavers
Galium triflorum
Sweet-scented bedstraw

Galium verum
Ladies' bedstraw

Ganoderma applanatum
Shelf fungus
Glechoma hederacea
Ground-ivy
Gleditsia triacanthos
Honey locust
Sweet locust

Glyceria borealis
Tall mannagrass
Northern mannagrass

Glyceria occidentalis
Western manna grass

Glyceria striata
Fowl manna grass

Glycine comosa
Hog-peanut
Ground-bean

Glycyrrhiza lepidota
Wild licorice

Dwarf huckleberry

Genista tinctoria
Dyer's greenwood

Geocaulon lividum
Northern comandra

Geranium dissectum
Cut-leaved cranesbill

Geranium erianthum
Sticky geranium

Geranium viscosissimum
Sticky geranium

Geum rivale
Water avens

Geum triflorum
Prairie smoke
Old man's whiskers

Geum urbanum
Herb bennet

Glaux maritima
Sea-milkwort

Helianthus giganteus
Giant sunflower

Helianthus tuberosus
Jerusalem artichoke

Hemerocallis fulva
Day lily

Hemerocallis lilioasphodelus
Day lily

Hemerocallis spp.
Day lilies

Heracleum lanatum
Cow-parsnip
Indian celery"
Indian rhubarb"

Heracleum sphondylium
Common cow-parsnip

Heuchera cylindrica
Round-leaved alumroot

Hieracium spp.
Hawkweeds

Hippophae rhamnoides
Sea buckthorn

Hippuris tetraphylla
Licorice

Gymnocladus dioica
Kentucky coffee tree

Hamamelis virginiana
Witch-hazel

Hedeoma hispida
Rough pennyroyal

Hedeoma pulegioides
Pennyroyal
Pudding-grass

Hedophyllum sessile
"Bubbly" kelp

Hedysarum alpinum
Sweet vetch
Alpine hedysarum
Beer root
Alaska carrot

Hedysarum boreale
Northern hedysarum

Helianthus annuus
Common sunflower

Hydrophyllum appendiculatum
Water-leaf

Hydrophyllum canadense
Water-leaf

Hydrophyllum capitatum
Ball-head water-leaf

Hydrophyllum fendleri
Fendler's water-leaf

Hydrophyllum virginicum
Virginia waterleaf
Indian salad
"John's-cabbage"

Hygrophorus sp.
"Slippery-top"

Hypochaeris radicata
Common cat's ear

Hyssopus officinalis
Hyssop

Ilex glabra
Inkberry
Gallberry

Ilex verticillata
Common waterberry

Four-leaved mare's-tail

Hippuris vulgaris
Common mare's-tail

Hordeum jubatum
Foxtail barley

Humulus lupulus
European hops

Hydrocotyle americana
Winter pennyroyal

Hydrocotyle umbellata
Water pennywort

Hydrocotyle verticillata
Water pennywort

Iris sibirica
Siberian iris

Isatis tinctoria
Woad

Iva annua
Marsh elder
Sumpweed

Juglans cinerea
Butternut

Juglans nigra
Black walnut

Juncus balticus
Baltic rush

Juncus effusus
Common rush
Soft rush

Juncus ensifolius
Sword-leaved rush

Juniperus communis
Common juniper

Juniperus virginiana

Impatiens biflora
Spotted touch-me-not

Impatiens capensis
Spotted touch-me-not

Inonotus obliquus
Wood-rot fungus

Inula helenium
Elecampane

Ipomoea pandurata
Wild sweet-potato vine

Iris pseudacorus
Yellow iris

Iris setosa
Northern iris
Beachhead iris

Laetiporus sulphureus
Bracket fungi

Laminaria groenlandica
Kelp

Laminaria spp.
Kelp

Lamium album
White dead-nettle

Lamium amplexicaule
Henbit dead-nettle

Lamium purpureum
Purple dead-nettle

Lapsana communis
Nipplewort

Larix occidentalis
Western larch

Lathyrus japonicus
Beach pea

Lathyrus maritimus
Beach pea

Juniper

Juniperus spp.
Junipers

Kalmia polifolia
Swamp laurel

Kochia scoparia
Summer cypress

Lactuca canadensis
Tall yellow lettuce
Wild lettuce

Lactuca muralis
Wall lettuce

Lactuca saligna
Indian salad

Lactuca scariola
Prickly lettuce

Lepidium latifolium
Broad-leaved peppergrass

Lepidium ruderale
Roadside peppergrass

Lepidium sativum
Garden cress

Lepidium virginicum
Tall peppergrass

Lepidium spp.
Peppergrass

Lessoniopsis littoralis
Kelp

Leucanthemum vulgare
Ox-eye daisy

Levisticum officinale
Lovage

Lewisia Columbiana
Columbia bitterroot
Columbia lewisia

Lewisia pygmaea
Alpine lewisia

Lathyrus ochroleucus
Creamy vetchling

Lathyrus palustris
Marsh vetchling

Lathyrus tuberosus
Tuberous vetchling

Ledum glandulosum
Trapper's tea

Ledum groenlandicum
Common Labrador-tea

Ledum palustre
Northern Labrador-tea
Hudson's Bay tea

Lepidium campestre
Field peppergrass

Lepidium densiflorum
Prairie peppergrass

Lilium canadense
Tiger lily
Columbia lily
Canada lily

Lilium philadelphicum
Wood lily

Lilium tigrinum
Tiger lily

Lindera benzoin
Spicebush
Spicewood

Linum perenne
Wild flax

Linum usitatissimum
Common flax

Liriodendron tulipifera
Tulip tree

Lithospermum angustifolium
Narrow-leaved puccoon

Lithospermum incisum
Yellow gromwell

Lewisia rediviva
Bitterroot

Liatris punctata
Blazing star

Ligusticum canbyi
Canby's lovage

Ligusticum hultenii
Beach lovage
Wild celery
Scotch lovage

Ligusticum scothicum
Beach lovage
Wild celery
Scotch lovage

Lilium bulbiferum
Lily

Lomatium macrocarpum
Desert parsley
Biscuit-root
"Wild carrot"
Indian carrot*
Large-fruited lomatium

Lomatium nudicaule
"Indian celery"
Bare-stem lomatium
Indian consumption plant

Lomatium triternatum
Narrow-leaved lomatium

Lomatium utriculatum
Spring gold
Fine-leaved lomatium

Lonicera canadensis
American fly honeysuckle

Lonicera ciliosa
Orange honeysuckle
Western trumpet honeysuckle

Lonicera involucrata
Black twinberry
Twinflower honeysuckle

Lonicera utahensis

Lithospermum ruderale
Columbia gromwell

Lomatium ambiguum
Desert parsley

Lomatium canbyi
"White camas"

Lomatium cous
Biscuitroot

Lomatium dissectum
Chocolate-tips
Fern-leaved lomatium

Lomatium foeniculaceum
Hairy-fruited parsley
Fennel-leaved lomatium

Lomatium geyeri
Geyer's lomatium

Lycoperdon giganteum
Giant puffball

Lycopodium lucidulum
Shining club-moss

Lycopodium selago
Club-moss

Lycopus asper
Rough water-horehound

Lycopus uniflorus
Northern water horehound
Bridgeweed

Lygodesmia juncea
Rushlike skeleton plant

Lysichiton americanus
Western skunk-cabbage
Swamp lantern
Yellow arum

Macrocystis integrifolia
Giant kelp
Kelp flag
Sea ivy
Devilsapron
Long bladder kelp

Red twinberry
Utah honeysuckle

Lonicera villosa
Blue fly honeysuckle

Lunaria annua
Annual honesty

Lupinus littoralis
Chinook licorice

Lupinus nootkatensis
Nootka lupine
Lupinus perennis
Wild lupine
Wild pea
Lycium halimifolium
Matrimony vine
Maianthemum dilatatum
Wild lily-of-the-valley
Two-leaved false Solomon's-seal

Malus spp.
Crabapple

Malva alcea
Pink mallow

Malva moschata
Musk mallow

Malva neglecta
Dwarf mallow

Malva parviflora
Small-flowered mallow

Malva pusilla
Small mallow

Malva rotundifolia
Small mallow

Malva sylvestris
Common mallow
High mallow
Malva verticillata
Whorled mallow

Macrocystis pyrifera
Giant kelp
Kelp flag
Sea ivy

Madia glomerata
Clustered tarweed

Madia sativa
Chilean tarweed

Mahonia aquifolium
Tall Oregon-grape
Oregon hollygrape
Maianthemum canadense
Wild lily-of-the-valley
Canadian mayflower

Medicago hispida
Bur-clover

Medicago lupulina
Black medic

Medicago polymorpha
Bur-clover

Medicago sativa
Alfalfa

Melica bulbosa
Onion grass

Melica subulata
Alaskan onion grass

Melilotus officinalis
Yellow sweet-clover

Melissa officinalis
Lemon balm

Mentha arvensis
Field mint
Canada mint
Common mint
Mentha citrata
Bergamont mint

Malva spp.
Mallows
Mamillaria vivipara
Pincushion cactus
Marrubium vulgare
Common horehound
Matricaria matricarioides
Pineappleweed
Wild chamomile

Matteuccia struthiopteris
Ostrich fern
Fiddlehead fern

Medeola virginiana
Indian cucumberroot

Menyanthes trifoliata
Buckbean
Menziesia ferruginea
False azalea
Microseris nutans
Nodding microseris
Milium effusum
Millet grass
Mitchella repens
Partridge-berry
Squaw-vine

Mollugo verticillata
Common carpet weed

Monarda didyma
Oswego tea

Monarda fistulosa
Wild bergamot
Monardella odoratissima
Coyote mint
Monotropa uniflora
Indian-pipe
Monita perfoliata
Miner's lettuce
Monita sibirica
Siberian spring-beauty

Morchella crassipes
Morel
Morchella esculenta
Common morel

Mentha gentilis
American apple mint
Mentha longifolia
Horse mint
Mentha piperita
Peppermint
Mentha rotundifolia
Apple mint

Mentha spicata
Spearmint

Mentha spp.
Mint

Mentzelia albicaulis
White-stemmed blazing star
Morus spp.
Mulberries
Myrica gale
Sweet gale
Myrica pensylvanica
Bayberry
Nasturtium officinale
Common watercress
Nelumbo lutea
Yellow lotus
Waternut
Duck acorn
Water chinquapin

Nemopanthus mucronata
Mountain holly

Nepeta cataria
Catnip
Catmint
Nephroma arcticum
Arctic kidney lichen
Nereocystis luetkeana
Bull Kelp
Nigella damascena
Love-in-a-mist
Nuphar advena
Yellow pond-lily
Common spatterdock
Water lily
Cow lily
Nuphar polysepalum
Yellow pond-lily

Morchella hortensis
Morel

Morchella spp.
Morels

Morus alba
White mulberry
Morus rubra
Red mulberry
Nymphaea tuberosa
Tuberous water lily
Magnolia water lily

Nymphoides cordata
Floating heart

Nyssa sylvatica
Sourgum
Pepperidge

Oemleria cerasiformis
Indian plum
Bird cherry
June plum

Oenanthe sarmentosa
Water-parsley
Wild celery
Pacific oenanthe
Oenothera biennis
Yellow evening primrose
Onoclea sensibilis
Sensitive fern
Onopordum acanthium
Scotch cotton-thistle

Opuntia compressa
Prickly-pear cactus

Opuntia fragilis
Fragile prickly-pear cactus
Brittle prickly-pear cactus
Opuntia polyacantha
Many-spined prickly-pear
Plains prickly-pear cactus
Origanum vulgare
Wild marjoram
Orobanche ludoviciana
Louisiana broom-rape

Nuphar variegatum
Yellow pond-lily
Yellow water-lily
Bullhead-lily

Nymphaea odorata
Fragrant water-lily

Oryzopsis hymenoides
Indian rice grass

Osmaronia cerasiformis
Indian-plum
Bird cherry
Juneplum
Osoberry

Osmorhiza chilensis
Sweet cicely

Osmorhiza claytonii
Sweet cicely

Osmorhiza depauperata
Sweet cicely

Osmorhiza longistylis
Smooth sweet cicely
Osmorhiza occidentalis
Western sweet cicely
Osmunda cinnamomea
Cinnamon fern
Oxalis corniculata
Wood-sorrel
Yellow oxalis

Oxalis dillenii
Wood-sorrel

Oxalis montana
Wood-sorrel
Oxalis stricta
Wood-sorrel
Upright yellow oxalis
Oxalis spp.
Wood-sorrel
Oxycoccus macrocarpus
Large-fruited cranberry

Oryzopsis. asperifolia
White-grained mountain rice grass
Oxycoccus microcarpus
Small-fruited bog cranberry
Oxycoccus ovalifolius
Oval-leaved bog cranberry
Oxycoccus quadripetalus
Small cranberry
Oxyria digyna
Mountain-sorrel
Oxytropis maydelliana
Yellow oxytrope

Oxytropis nigrescans
Black oxytrope

Palmaria palmata
Dulse
Red algae
Panax quinquefolius
American ginseng
Panax trifolius
Dwarf ginseng
Panicum miliaceum
Broomcorn millet
Common millet
Indian millet

Papaver nudicaule
Iceland poppy

Papaver rhoeas
Common field poppy

Papaver somniferum
Opium poppy

Parmelia physodes
Puffed shield lichen
Parrya nudicaulis
Parry's wallflower
Parthenocissus quinquefolia
Virginia creeper

Petasites sagittatus
Arrow-leaved coltsfoot
Petasites vitifolius
Grape-leaved coltsfoot
Phalaris canariensis
Canary grass

Pastinaca sativa
Common parsnip
Pedicularis canadensis
Wood betony
Pedicularis capitata
Capitate lousewort
Pedicularis hirsuta
Hairy lousewort
Pedicularis lanata
Woolly lousewort
Bumblebee plantr

Pedicularis lanceolata
Wood betony

Pedicularis langsdorfii
Langsdorf's lousewort
Pedicularis sudetica
Sudeten lousewort
Peltandra virginica
Arrow-arum
Penstemon fruticosus
Shrubby penstemon

Perideridia gairdneri
Yampah
Wild caraway
Squaw-root
"Wild carrot"
Indian carrot*

Petalostemon candidum
Prairie-clover

Petasites frigidus
Arctic coltsfoot
Sweet coltsfoot
Petasites japonicus
Japanese butterbur
Petasites palmatus
Palmate coltsfoot
Common coltsfoot
Picea engelmannii
Engelmann spruce
Picea glauca
White spruce
Picea mariana
Black spruce

Phaseolus vulgaris
Navy beans
Phragmites australis
Reed grass
Common reed

Phragmites communis
Common reed
Reed grass

Phyllospadix scouleri
Scolder's surf-grass
Sea-grass
Phyllospadix torreyi
Torrey's surf-grass
Sea-grass

Physalis alkekengi
Chinese lantern plant

Physalis heterophylla
Yellow ground-cherry

Physalis ixocarpa
Tomatillo

Physalis pubescens
Small yellow ground-cherry

Physalis virginiana
Virginia ground-cherry

Physalis spp.
Ground-cherry
Husk-tomato

Phytolacca americana
Pokeweed

Picea abies
Common spruce

Picea rubens
Red spruce
Picea sitchensis
Sitka spruce

Picea spp.
Spruce

Picris echioides
Bristly oxtongue

Picris hieracioides
Oxtongue
Pilea pumila
Richweed

Pinguicula vulgaris
Common butterwort

Pinus albicaulis
White-bark pine

Pinus contorta
Lodgepole pine

Pinus ponderosa
Ponderosa pine

Pinus strobes
White pine

Pinus spp.
Pines

Plantago coronopus
Buck's horn plantain

Plantago decipiens
Goosetongue

Plantago lanceolata
Ribwort plantain
Plantago macrocarpa
Seaside plantain
Goosetongue

Plantago major
Greater plantain
Broad-leaved plantain

Polygonum bistortoides
Smokeweed bistort

Polygonum convolvulus
Wild buckwheat

Polygonum cuspidatum

Plantago maritima
Seaside plantain
Goosetongue
Plantago rugelii
Rugel's plantain
Platanus occidentalis
Plane tree
Buttonwood
American sycamore

Pleurotus ostreatus
Oyster mushroom

Pleurotus sapidus
Oyster mushroom

Podophyllum peltatum
Mayapple
Mandrake

Polygala vulgaris
Common milkwort

Polygonatum biflorum
Solomon's-seal

Polygonatum pubescens
Solomon's-seal

Polygonum alaskanum
Alpine knotweed
"Wild rhubarb"
Polygonum alpinum
Alpine knotweed
"Wild rhubarb"

Polygonum aviculare
Common knotweed

Polygonum bistorta
Mountain bistort
Bistort

Polyporus sulfureus
Bracket fungi
Polystichum munitum
Sword fern

Pontederia cordata
Japanese knotweed

Polygonum douglasii
Douglas' knotweed
Polygonum lapathifolium
Pale smartweed
Polygonum paronychia
Beach knotweed

Polygonum pensylvanicum
Pennsylvania smartweed

Polygonum persicaria
Lady's thumb smartweed

Polygonum phytolaccaefolium
Alpine knotweed
"Wild rhubarb"

Polygonum punctatum
Dotted smartweed

Polygonum sachalinense
Giant knotweed

Polygonum scandens
False climbing buckwheat

Polygonum viviparum
Alpine bistort

Polygonum spp.
Knotweeds
Polypodium glycyrrhiza
Licorice fern

Polypodium petaltum

Polypodium vulgare
Licorice fern

Polyporus spp.
Bracket fungi
Porphyra torta
Laver seaweed
Porphyra spp.
Red laver
Seaweed
Nori

Common pickerelweed

Populus alba
White poplar

Populus balsamifera
Cottonwood
Balsam poplar

Populus deltoides
Cottonwood

Populus grandidentata
Large-toothed aspen

Populus nigra
European black poplar

Populus tremuloides
Trembling aspen
Quaking aspen

Populus trichocarpa
Cottonwood
Balsam poplar

Populus spp.
Cottonwood
Aspen

Poria obliqua
Wood-rot fungus

Porphyra abbottiae
Laver

Porphyra perforata
Laver
Black seaweed

Porphyra pseudolanceolata
Laver seaweed

Prunus americana
Wild plum
American plum

Prunus avium
Sweet cherry

Prunus demissa
Choke cherry

Portulaca oleracea
Purslane

Potamogeton nutans
Floating-leaved pondweed

Potamogeton pectinatus
Sago pondweed

Potentilla anserina
Silverweed
Cinquefoil

Potentilla egedii
Silverweed
Cinquefoil

Potentilla fruticosa
Shrubby cinquefoil

Potentilla glandulosa
Sticky cinquefoil

Potentilla nivea
Snow cinquefoil

Potentilla pacifica
Silverweed
Cinquefoil

Primula veris
Cowslip primrose
Cowslip

Proboscidea louisianica
Common unicorn plant

Prunella vulgaris
Self-heal

Prunus spp.
Wild cherries and plums

Pseudotsuga menziesii
Douglas-fir

Pseudotsuga taxifolia
Douglas-fir

Prunus domestica
Garden plum
Damson plum

Prunus emarginata
Pin cherry

Prunus mahaleb
Mahaleb cherry
Prunus nigra
Canada plum
Prunus padus
European bird cherry
Prunus pensylvanica
Pin cherry
Prunus persica
Peach
Prunus pumila
Sand cherry

Prunus serotina
Rum chery
American cherry
Black cherry

Prunus spinosa
Sloe plum

Prunus tomentosa
Manchu cherry

Prunus virginiana
Chokecherry

Pyrus baccata
Siberian crabapple
Pyrus communis
Pear
Pyrus coronaria
Wild crabapple
Garland crabapple

Pyrus fusca
Pacific crabapple

Pyrus malus
Cultivated apple

Psoralea esculenta
Prairie turnip
Indian breadroot

Psoralea physodes
California tea

Ptelea trifoliata
Hop tree
Wafer ash
Pteridium aquilinum
Bracken fern
Pterygophora spp.
Eastern Arctic kelp
Pycnanthemum incanum
Mountain-mint
Pycnanthemum pilosum
Mountain-mint

Pycnanthemum tenuifolium
Mountain-mint

Pycnanthemum verticillatum
Mountain-mint

Pycnanthemum virginianum
Mountain mint

Pyrola asarifolia
Bog wintergreen

Pyrola virens
Wintergreen

Pyrus arbutifolia
Red and black chokeberry
Quercus rubra
Red oak
Quercus velutina
Black oak
Quercus spp.
Oaks

Ranunculus bulbosus
Bulbous buttercup

Ranunculus ficaria
Pilewort

Pyrus prunifolia
Plum-leaf crabapple

Pyrus spp.
Crabapples

Quercus alba
White oak

Quercus bicolor
Swamp white oak

Quercus borealis
Red oak

Quercus ellipsoidalis
Northern pin oak

Quercus garryana
Garry oak

Quercus macrocarpa
Bur oak
Mossy-cup oak

Quercus prinoides
Dwarf chestnut oak
Chinquapin oak
Quercus prinus
Chestnut oak
Quercus robur
English oak
Rhodiola rosea
Roseroot
Rhododendron albiflorum
White Rhododendron
Rhododendron lapponicum
Lapland rhododenderon

Rhus aromatica
Skunkbush

Rhus copallina
Dwarf sumac
Shining sumac

Rhus glabra
Smooth sumac

Ranunculus pallasii
Pallas buttercup

Ranunculus repens
Creeping buttercup

Ranunculus reptans
Creeping spearwort

Ranunculus sceleratus
Celery-leaved buttercup

Ranunculus spp.
Buttercups

Raphanus raphanistrum
Wild radish

Raphanus sativum
Garden radish

Reseda lutea
Yellow cut-leaved mignonette

Rhamnus purshiana
Cascava

Rheum rhaponticum
Garden rhubarb
Rhexia virginica
Meadow-beauty

Ribes grossularia
European gooseberry
Ribes howellii
Currant
Ribes hudsonianum
Northern black currant
Hudson Bay currant

Ribes irriguum
Idaho black gooseberry

Ribes lacustre
Swamp gooseberry
Swamp black currant

Ribes laxiflorum

Rhus typhina
Staghorn sumac
Lemonade tree

Ribes americanum
Wild black currant

Ribes aureum
Golden currant

Ribes bracteosum
Grayberry
Sun berry
Bluecurrant
Stink currant
Ribes cereum
Squaw currant

Ribes cynosbati
Prickly gooseberry
American wild gooseberry
Ribes diacanthum
Red currant
Ribes divaricatum
Coastal black gooseberry
Ribes glandulosum
Skunk currant
Ribes triste
Wild red currant
Red swamp currant

Ribes viscosissimum
Sticky currant
Ribes watsonianum
Watson's gooseberry
Rorippa amphibia
Cress
Rorippa islandica
Marsh cress
Marsh yellow cress
Rosa acicularis
Prickly rose
Rosa arkansana
Arkansas rose
Prairie wild rose
Low prairie rose

Rosa blanda
Smooth rose
Trailing black currant
Wild blue currant

Ribes lobbii
Sticky gooseberry
Gummy gooseberry

Ribes montigenum
Alpine prickly gooseberry

Ribes nigrum
European black currant

Ribes odoratum
Buffalo currant
Golden currant
Ribes oxyacanthoides
Canada gooseberry
Smooth gooseberry

Ribes sanguineum
Red-flowering currant
Ribes setosum
Bristly gooseberry
Ribes sylvestre
European red currant

Rosa nitida
Wild rose

Rosa nutkana
Nootka rose
Bristly Nootka rose
Rosa odorata
Tea rose
Rosa palustris
Swamp rose
Rosa pisocarpa
Swamp rose
Clustered wild rose
Rosa rousseauiorum
Wild rose
Rosa rugosa
Rambling rose
Rugose rose

Rosa setigera
Prairie rose

Rosa canina
Dog rose

Rosa Carolina
Carolina rose

Rosa centifolia
Cabbage rose

Rosa cinnamomea
Cinnamon rose

Rosa eglanteria
Sweet briar

Rosa gymnocarpa
Dwarf wild rose
Baldhip rose

Rosa multiflora
Japanese rose
Bramble rose

Rubus arcticus
Arctic raspberry
Dwarf raspberry
Dwarf nagoonberry

Rubus canadensis
Canada blackberry

Rubus chamaemorus
Cloudberry
Bakeapple

Rubus enslenii
Dewberry

Rubus flagellaris
Northern dewberry

Rubus hispidus
Swamp blackberry

Rubus idaeus
Wild raspberry
American red raspberry

Rubus illecebrosus
Strawberry-raspberry

Rubus laciniatus
Evergreen blackberry

Rosa spinosissima
Burnet rose

Rosa virginiana
Virginia rose

Rosa williamsii
Wild rose

Rosa woodsii
Wood's rose

Rosa spp.
Wild roses

Rubus acaulis
Dwarf raspberry
Dewberry
Stemless raspberry
Nagoon berry

Rubus allegheniensis
Blackberry
Allegheny blackberry

Rubus paracaulis
Dwarf raspberry

Rubus parviflorus
Thimbleberry

Rubus pedatus
Trailing wild raspberry

Rubus pensilvanicus
Pennsylvania blackberry

Rubus phoenicolasius
Wineberry

Rubus procerus
Himalayan blackberry

Rubus pubescens
Dwarf raspberry
Dwarf fed blackberry
Running raspberry
Plumboy

Rubus recurvicaulis
Blackberry
Dewberry

Rubus saxatilis
Roeback berry

Cutleaf blackberry

Rubus lasiococcus
Dwarf bramble

Rubus leucodermis
Blackcap
Black raspberry

Rubus nivalis
Snow dewberry

Rubus occidentalis
Black raspberry
Thimbleberry

Rubus odoratus
Purple-flowering raspberry
Thimbleberry

Rubus vermontanus
Vermont blackberry

Rubus sp.
Blackberry

Rubus spp.
Raspberries

Rubus spp.
Wild dewberries

Rumex acetosa
Common sorrel

Rumex acetosella
Sheep sorrel

Rumex alpinus
Alpine dock

Rumex arcticus
Sourdock
Arctic dock

Rumex crispus
Curly dock

Rumex longifolius
Long-leaved dock

Rumex obtusifolius
Broad leaf dock

Rumex occidentalis
Western dock
"Indian rhubarb"

Rubus setosus
Blackberry

Rubus spectabilis
Salmon berry

Rubus stellatus
Alaska nagoonberry

Rubus strigosis
Wild raspberry

Rubus ursinus
Trailing wild blackberry
Pacific blackberry

Ruta graveolens
Common rue-herb of grace

Sagittaria cuneata
Arum-leaved arrowhead

Sagittaria latifolia
Arrowhead
Wapato

Salicornia europaea
Green European glasswort

Salicornia pacifica
American glasswort
Beach asparagus

Salicornia virginica
American glasswort
Beach asparagus

Salix alaxensis
River willow
Felty-leaved willow

Salix arctica
Arctic willow

Salix arctophila
Creeping willow

Salix barclayi
Barclay's willow

Salix exigua
Sandbar willow

Salix phylicifolia

Rumex orbiculatus
Great water dock

Rumex patientia
Spinach dock

Rumex pseudo-alpinus
Field dock

Rumex-spp.
Docks
Salix richardsonii
Richardson's willow
Salix spp.
Willows
Salsola kali
Russian thistle
Salvia verticillata
Salvia
Sambucus canadensis
American elder
Common elder
Sweet elder

Sambucus cerulea
Blue elderberry

Sambucus ebulus
Dwarf elder

Sambucus glauca
Blue elderberry

Sambucus nigra
European elder

Sambucus pubens
Red elderberry

Sambucus racemosa
Red elderberry
Sambucus spp.
Elderberries

Sanguisorba canadensis
Canada burnet
Sitka burnet
Sanguisorba minor
Salad burnet
Sassafras albidum
Sassafras
Tea-leaved willow

Salix pulchra
Diamond-leaved willow
Tea-leaved willow
Surah

Salix reticulata
Arctic net-veined willow
Arctic greens
Okowyot
Satureja douglasii
Yerba buena
Satureja hortensis
Summer savory
Satureja vulgaris
Wild basil savory
Saxifraga cernua
Nodding saxifrage
Saxifraga oppositifolia
Purple mountain saxifrage

Saxifraga pensylvanica
Marsh saxifrage

Saxifraga punctata
Brook saxifrage
Salad greens

Saxifraga spicata
Spiked saxifrage

Scandix pecten-veneris
Shepherd's needle

Scirpus lacustris
Tule
Roundstem tule
Roundstem bulrush
Great viscid bulrush
American great bulrush
Scirpus maritimus
Prairie bulrush
Alkali bulrush

Scirpus microcarpus
Small-flowered bulrush
Scirpus robustus
Alkali bulrush
Sedum acre
Goldmoss stonecrop

Satureja acinos
Basil-thyme
Sedum divergens
Stonecrop
Spreading stonecrop

Sedum lanceolatum
Lance-leaved stonecrop

Sedum oreganum
Stonecrop
Sedum purpureum
Live-forever
Sedum roseum
Roseroot
Sedum rupestre
St. Vincent's rock stonecrop

Sedum telephium
Orpine

Setaria italica
Foxtail millet

Setaria lutescens
Yellow foxtail
Setaria viridis
Green foxtail
Shepherdia argentea
Silver buffaloberry
Thorny buffaloberry
Shepherdia canadensis
Soapberry
Russet buffaloberry
Soopolallie

Sicyos angulatus
Bur-cucumber

Silene acaulis
Moss campion

Silene cucubalus
Bladder campion

Silene vulgaris
Bladder campion

Silphium laciniatum
Mexican campion

Silybum marianum
Milk-thistle

Sinapsis arvensis
Wild mustard

Sisymbrium altissimum
Hedge mustard
Tall tumble mustard
Sisymbrium loeselii
Loesel's tumble mustard
Sisymbrium officinale
Common tumble mustard
Sium suave
Water-parsnip
"Swamp parsnip"

Smilacina racemosa
False Solomon's-seal
False spikenard

Smilacina stellata
Star-flowered false
Solomon's-seal
Smilacina trifolia
Three-leaved Solomon's-seal
Smilax herbacea
Greenbrier
Carrionflower
Smilax rotundifolia
Horsebrier
Common greenbrier

Smilax tamnoides
Greenbrier

Solanum triflorum
Cut-leaved nightshade

Sonchus arvensis
Rough perennial sow-thistle

Sonchus asper
Prickly sow-thistle

Sonchus oleraceus
Common sow-thistle
Annual sow-thistle

Sorbus americana
Mountain-ash

Sorbus aucuparia
European mountain-ash
Rowan

Sorbus decora
Western mountain-ash

Sorbus sambucifolia
Mountain-ash

Sorbus scopulina
Western mountain-ash

Sorbus sitchensis
Sitka mountain-ash

Sparganium angustifolium
Broad-fruited bur-reed

Spergula arvensis
Common corn spurry

Spiraea alba
Narrow-leaved meadowsweet

Spiraea tomentosa
Spiraea

Spiraea spp.
Spiraeas

Sporobolus cryptandrus
Sand dropseed

Stachys cooleyae
Cooley's hedge-nettle

Stachys palustris
Swamp hedge-nettle

Staphylea trifolia
Bladder-nut

Stellaria humifusa
Salt marsh starwort

Stellaria media
Chickweed
Common starwort

Sticta amplissima
Tree lichen

Streptopus amplexifolius
Cucumberroot twisted-stalk
Wild cucumber
Liverberry
Watermelonberry
Scootberry

Streptopus roseus
Simple-stemmed twisted-stalk

Streptopus streptopoides
Small twisted-stalk

Suaeda maritima
Pursh's sea-blite

Suaeda occidentalis
Western sea-blite

Symphoricarpos albus
Waxberry
Snowberry

Symphytum officinale
Common comfrey

Symplocarpos foetidus
Eastern skunk cabbage

Tanacetum vulgare
Common tansy

Taraxacum ambigens
Wild dandelion

Taraxacum ceratophorum
Horned dandelion

Taraxacum dumetorum
Wild dandelion

Taraxacum hyparcticum
Wild dandelion

Taraxacum lacerum
Wild dandelion

Taraxacum laevigatum
Red-seeded dandelion

Taraxacum latilobum
Wild dandelion

Taraxacum laurentianum
Wild dandelion

Taraxacum officinale
Common dandelion

Taraxacum phymatocarpum
Wild dandelion

Taxus spp.
Yews

Teucrium scorodonia
Wood germander

Thalictrum spp.
Meadow-rues

Thladiantha dubia
Manchu tuber-gourd

Thlaspi arvense
Field pennycress
Stinkweed

Thuja occidentalis
Arbor vitae
White-cedar

Thuja plicata
Western red-cedar

Thymus arcticus
Wild thyme

Thymus serpyllum
Creeping thyme

Tilia americana
Basswood

Tolmeia menziesii
Piggy-back plant
Youth on age

Tradescantia virginiana
Spiderwort

Tragopogon dubius
Yellow salsify

Tragopogon porrifolius
Common salsify

Tussilago farfara
Colt's-foot
Common colt's-foot

Typha angustifolia
Narrow-leaved cattail

Tragopogon pratensis
Goat's beard
Oriental meadow goat's-beard

Tremellodon sp.
Jelly fungus

Tricholoma gambosum
St. George's mushroom

Tricholoma magnivelare
Pine mushroom

Tricholoma populinum
Cottonwood mushroom

Trifolium fimbriatum
Springbank clover

Trifolium pratense
Red clover

Trifolium repens
White clover

Trifolium wormskioldii
Springbank clover

Triglochin maritima
Arrow-grass
Sea-side arrow-grass

Trigonella caerulea
Blue fenugreek

Trillium grandiflorum
Wake robin

Triosteum aurantiacum
Wild coffee

Triosteum perfoliatum
Wild coffee
Tinker's-weed

Tsuga canadensis
Eastern hemlock

Tsuga heterophylla
Western hemlock

Tsuga mertensiana
Mountain hemlock

Vaccinium caespitosum
Dwarf bilberry
Dwarf mountain blueberry

Vaccinium corymbosum
Highbush blueberry

Typha latifolia
Common cattail
Cattail

Typha spp.
Cattails

Ulmus americana
American elm
Ulmus rubra
Red elm

Ulmus thomasii
Rock elm

Ulva lactuca
Sea lettuce
Umbilicaria spp.
Rock tripe
Urtica dioica
Slim american stinging nettle

Usnea spp.
Tree lichen

Uvularia perfoliata
Bellwort
Uvularia sessilifolia
Small bellwort

Vaccinium alaskaense
Alaska blueberry
Watery blueberry

Vaccinium angustifolium
Low sweet blueberry
Blueberry

Vaccinium atrococcum
Black highbush blueberry
Downy swamp blueberry

Vaccinium uliginosum
Bog blueberry
Bog whortleberry
Alpine bilberry

Vaccinium vacillans
Low blueberry

Vaccinium deliciosum
Cascade bilberry

Vaccinium macrocarpon
Large-fruited cranberry

Vaccinium membranaceum
Black mountain huckleberry
Black blueberry
Vaccinium myrtilloides
Sour-top blueberry
Velvet-leaved blueberry
Low blueberry

Vaccinium myrtillus
Dwarf bilberry
Bilberry
Vaccinium nubigenum
Newfoundland bilberry
Vaccinium ovalifolium
Oval-leaved blueberry
Grey blueberry
Tall huckleberry

Vaccinium ovatum
Evergreen huckleberry
Blue huckleberry
“Vaccinium oxycoccus"
Small-fruited bog cranberry
Oval-leaved bog cranberry
Small cranberry

Vaccinium parvifolium
Red huckleberry
Red whortleberry

Vaccinium scoparium
Grouseberry

Vaccinium stamineum
Deerberry
Squaw huckleberry
Veronica officinalis
Speedwell

Verpa bohemica
Early morel

Viburnum acerifolium
Maple-leaved viburnum

Vaccinium vitis-idaea
Mountain cranberry
Rock cranberry
Red whortleberry
Cranberry
Lingonberry
Lowbush cranberry
Partridge berry
Rock cranberry

Vaccinium spp.
Blueberries

Vaccinium spp.
Huckleberries

Vaccinium spp.
Whortleberries

Valeriana edulis
Edible valerian
Tobacco-root

Valerianella locusta
European cornsalad

Verbena hastata
Blue vervain

Veronica americana
American speedwell
American brooklime

Veronica anagallis-aquatica
Blue water speedwell

Veronica beccabunga
European brooklime

Veronica catenata
Water speedwell

Veronica chamaedrys
Germander speedwell

Vicia villosa
Shaggy vetch

Viola adunca
Early blue violet

Viola canadensis
Canada violet

Viburnum alnifolium
Hobblebush

Viburnum cassinoides
Withered
Appalachian tea
Wild raisin

Viburnum dentatum
Arrow-wood

Viburnum edule
Highbush cranberry
Squash bush
Mooseberry

Viburnum lentago
Nannyberry

Viburnum opulus
American bush cranberry

Viburnum prunifolium
Blackhaw

Viburnum rafinesquianum
Downy arrow-wood

Viburnum trilobum
American bush cranberry

Vicia americana
American vetch

Vicia gigantea
Giant vetch

Vicia hirsuta
Hairy vetch

Vicia sativa
Narrow-leaved vetch

Vicia sepium
Bush vetch

Vitis aestivalis
Summer grape

Vitis labrusca
Fox grape

Vitis riparia
Riverbank grape
Wild grape

Viola cucullata
Northern bog violet

Viola glabella
Yellow wood violet

Viola nephrophylla
Northern bog violet
Viola nuttallii
Nuttall's prairie yellow violet

Viola odorata
Sweet violet

Viola palmata
Early blue violet
Palmate violet

Viola papilionacea
Common blue violet

Viola pedata
Pansy violet

Viola pedatifida
Crowfoot violet
Larkspur violet

Viola spp.
Violets

Vitis spp.
Concord grape

Wyethia amplexicaulis
Mule's-ears

Xanthium pensylvanicum
Cocklebur
Xanthium strumarium
Rough cocklebur

Yucca glauca
Yucca
Soapweed

Zea mays
Maize
Indian corn

Zizania aquatica
Wild-rice

Zizania palustris
Wild-rice

Zostera marina
Eel-grass