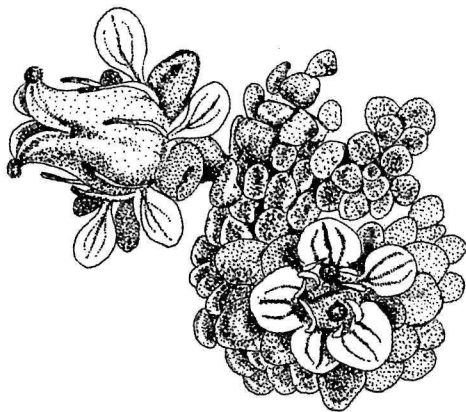


Alaska

Rare Plant Field Guide



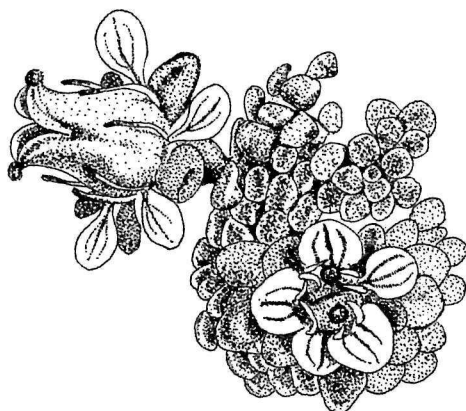
Alaska
Rare Plant Field Guide

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Alaska

Rare Plant Field Guide



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Introduction

INTRODUCTION

This guide is intended to assist federal and state personnel, and other interested parties, in the identification of Alaska's rare vascular plants. Preserving the diversity of our plant and animal life- our biodiversity- is a growing public concern and is recognized as a goal in the management of federal and state lands. Rare plants are a basic part of this biodiversity, important not only for their own value, but as indicators of unusual or rare communities and natural habitats. Areas with rare plants may be centers of high biodiversity, or they may be refugial areas where species survived the last ice age and the rare ones remain restricted today.

The passage of the Endangered Species Act (ESA) in 1973 spurred interest in the conservation of rare plants and led to the adoption of policies and regulations designed to ensure their survival. The success of these conservation efforts depends upon our knowledge of these plants and our ability to recognize them in the field. Most of Alaska is administered by federal and state agencies and much of it is still poorly known botanically. As development in remote areas continues there is an increasing need to conduct surveys for rare species and to define their distribution and status. Knowing about the presence of rare species ahead of time allows development projects to be planned so as to minimize disturbance to those populations and also reduces delays during the regulatory and environmental review process. This manual provides current information on the identification, distribution, and habitat of Alaska's rare vascular plant species.

It has been ten years since the publication of the last guide to Alaskan rare plants (Murray and Lipkin 1987) and the need for an updated version has become increasingly evident. Federal policies concerning rare plants have changed, and we have seen a great increase in our knowledge of the distribution, abundance, and basic biology of these species. New species have been discovered- some new to Alaska, and some entirely new to science. Species previously thought rare are now known to be more widespread and are no longer of serious conservation concern. Other taxa that were once designated as Candidates for listing as Threatened or Endangered species are no longer considered taxonomically valid and are now subsumed by other more common species. Information from intensive field work by biologists from universities, federal and state agencies, and consulting firms, as well as by interested amateurs, has greatly refined our ability to define the habitats of many rare species.

There have been several important changes in federal policy since the 1987 guide was published. Many of the species in that guide were listed by the U.S. Fish and Wildlife Service as Category 2 candidates. This category included taxa which may have warranted protection under the ESA but for

which we lacked adequate data to fully support formal proposals for listing. These taxa required additional field work to better define their distribution, abundance and stability. The Fish and Wildlife Service discontinued the designation of Category 2 species as candidates in 1996. It now relies on other information sources (including state lists of rare and endangered species, and state Natural Heritage Program databases, and The Nature Conservancy's Biological and Conservation Data System) to identify those species that may be imperiled or vulnerable. There remains one plant species listed as Endangered (*Polystichum aleuticum*), but there are no candidate plant species in Alaska at this time. Taxa in this guide that were Category 2 candidates when that designation was discontinued include: *Artemisia globularia* var. *lutea*, *Botrychium ascendens*, *Cryptantha shackletteana*, *Douglasia beringensis*, *Draba murrayi*, *Eriogonum flavum* var. *aquilinum*, *Mertensia drummondii*, *Oxytropis arctica* var. *barnebyana*, *Podistera yukonensis*, *Rumex krausei*, and *Smelowskia pyriformis*.

A second important change occurred in 1994 when, for the first time, the Forest Service adopted a list of Sensitive Plant Species for the Alaska Region. Several of these species are described in this guide and are listed in the "Alaska Rare Plant Species List" in the first section of this guide.

We have assumed the reader has a basic familiarity with the major plant groups and we have described the species as simply as possible. A glossary of technical terms is included. This guide is intended to supplement, not replace, the more comprehensive treatments of Alaska's flora such as Hultén (1968) or Welsh (1974) and will be of greatest use to those with at least some knowledge of botany. The first section of this guide contains a list of the rare plants, their federal status (if any), their ranking by the Alaska Natural Heritage Program and The Nature Conservancy (TNC), and the management status of the lands on which they are found. The various federal, international, and Heritage Program categories are defined under "Definitions and Codes", below. The remainder of the guide contains descriptions of the rare species arranged alphabetically. For each we have included a line drawing of diagnostic field characters, photographs (when available) of the plant and its habitat, and text distinguishing each species from similar ones with which it might be confused. Additional information can be found in the references cited, which are listed in abbreviated form under each species account. A full citation can be found in the References section.

Habitats are described when they are known, but our knowledge of some rare species is based solely on a few herbarium specimens, and ecological notes on specimen labels are brief and can be ambiguous. The distribution of each taxon is generalized in the text, and a map is included on which all Alaskan localities are included, although a single dot can represent one or several neighboring sites.

When the specific habitat can be described in detail, this knowledge can be used to predict where else the plant might be found. This allows us to narrow the field of view when searching for new records, but we cannot make the assumption that the plant, in all cases, will be found there. First, our perception of the precise environmental controls is likely to be imperfect, and we may mistakenly attribute significance to a particular habitat type. Second, plants do not occupy all the places that are suitable for them. Therefore, field checks are required to test our predictions. Nevertheless, even with the meager habitat and geographic data at hand, we can make educated guesses. The critical habitats are usually not in the common widespread types, but in more specialized settings, often different from the surrounding terrain. Many of the plants treated in this manual show affinities for dry bluffs, flood plains, river terraces, sand dunes, rocky slopes, outcrops, fellfields, and mountain summits. These settings are also the sources for ballast and fill required by construction projects, and in the Far North on ice-rich soils, the volumes used can be enormous. The implications should be obvious.

Rarity is a relative term and can be defined in many ways. Practical constraints of space compelled us to limit this guide to those taxa that are not only rare in Alaska but limited in their world-wide distribution as well. These include our narrowly endemic species, which may be known from only a few sites clustered in a small portion of the state, as well as some regional endemics that are also known from adjacent areas in Canada and Russia. Some of these regional endemics are more common in these adjacent areas, but in no case do they have a Global Rank higher than G3 (see Definitions and Codes). Most are ranked G1 or G2 (or T1 or T2) and are generally known from fewer than twenty locations. Those species ranked G3 are known from fewer than fifty locations world-wide and restricted in Alaska to fewer than twenty locations. The G3 criteria allowed us to include most of the species of federal concern. A number of the Forest Service species designated as Sensitive in Alaska were excluded because they were regional endemics that we felt to be secure worldwide.

It is our hope that this book will encourage botanical exploration leading to new information and new locations for these taxa. Some will prove to be more common, new species will be described and new records will be found for taxa not previously known from Alaska. We fully expect this guide to become outdated as additional areas are surveyed, and the three-ring binder format will allow for species to be added, deleted or revised.

The Alaska Natural Heritage Program (AKNHP) of the University of Alaska, Anchorage serves as a repository for information on rare species and communities in Alaska and maintains this information in their Biological Conservation Database. The Herbarium of the University of Alaska Museum is the principal botanical collection in the state and maintains permanent physical documentation and records on plant distributions and taxonomy. New locations for rare plants should be reported to either the Heritage Program or the Herbarium and collections should be archived at the Herbarium. All collections and reports should include detailed notes on location, habitat, and abundance.

Whereas specimens are required to document a new locality and are useful in support of research on our rare plants, do not make collections unless you are certain the removal of a few plants will not significantly reduce the population. If there is any question, do not collect but take a photographic record and make detailed notes. Be certain to describe the site so it can be relocated. Also be aware that permits are required for collecting in parks and other protected areas as well as on native corporation and other private lands.

ACKNOWLEDGEMENTS

This guide could not have been produced without the assistance and cooperation of many individuals and agencies. Information on particular taxa was provided by Alan Batten, William Cody, Mary Beth Cook, George Douglas, Mike Emers, Randy Meyers, Carolyn Parker, James Reveal, Carl Roland, Bonnie Smith, Mary Stensvold, and Stephen Talbot. Mapping and technical assistance were provided by Julie Michaelson and Julia Lenz of the Alaska Natural Heritage Program.

Funding for this guide was provided by the Endangered Species Office of the U.S. Fish and Wildlife Service, Anchorage, the Alaska Regional Office of the National Park Service, and the Alaska State Office of the Bureau of Land Management. Virginia Moran and Ann Rappoport of the U.S. Fish and Wildlife Service, Sue Mills of the National Park Service, and Deborah Blank of the Bureau of Land Management were instrumental in securing the funding for this project and in seeing it through its production. Assistance with design and layout was provided by Mona Spargo of the U. S. Forest Service.

Dominique Collet provided the illustrations that are new to this edition; most of the remaining illustrations are by Anne-Lillian Schell and were provided through the courtesy of the University of Alaska Museum. Additional illustrations were provided through the courtesy of Carolyn Crawford, the Alberta Conservation Data Center and John Maywood, the Canada Department of Agriculture and Marion Platek, and David H. Wagner.

Photographs were provided by R. Lipkin, I. Macdonald, D. Murray, J. Overholt, C. Parker, H. Roemer, C. Roland, S. Talbot, D. H. Wagner, and W. H. Wagner.

Illustration Credits:

D. Collet: *Beckwithia glacialis*, *Claytonia ogilviensis*, *Cochlearia sessilifolia*, *Draba aleutica*, *D. ogilviensis*, *Lesquerella calderi*, *Ligusticum calderi*, *Poa hartzii* ssp. *alaskana*, *Saxifraga aleutica*, *Smelowskia pyrifor-mis* (flowering plant by A. Schell). C.L. Crawford: *Douglasia beringensis*.

J. Maywood: *Draba kananaskis*.

M. Platek: *Salix reticulata* ssp. *glabellicarpa*, *Senecio moresbiensis* (detail by D. Collet).

A. Schell: *Artemisia senjavinensis*, *Draba murrayi*, *Erigeron muirii*, *Eriogonum flavum* var. *aquilinum*, *Erysimum asperum angustatum*, *Oxytropis arctica* var. *barnebyana*, *O. kobukensis*, *Podistera yukonensis*.

A. Schell with detail by D. Collet: *Artemisia aleutica*, *A. globularia* var. *lutea*, *Cryptantha shackletteana*, *Mertensia drummondii*, *Polystichum aleuticum* (*P. lonchitis* and *pinnae* by D. Collet), *Rumex krausei*.

D.H. Wagner: *Botrychium ascendens*.

DEFINITIONS AND CODES

FEDERAL STATUS

1. US Fish and Wildlife Service (Notice of Review 1996)
 - E Endangered: taxa formally listed as endangered (one plant species listed in Alaska).
 - T Threatened: taxa formally listed as threatened (no plant taxa listed in Alaska).
 - P Proposed E or T: taxa formally proposed for listing as endangered or threatened (no plant taxa proposed in Alaska).
 - C Candidate: taxa for which the Service has on file sufficient information on biological vulnerability and threat to support proposals to list as endangered or threatened (no Candidate plant taxa in Alaska).

Note: The US Fish and Wildlife Service has discontinued the designation of Category 2 candidates.

2. US Forest Service
 - S Sensitive: taxa identified by the Regional Forester for which population viability is a concern as evidenced by significant current or predicted downward trends in populations or habitat.

INTERNATIONAL STATUS

1. Arctic Environmental Protection Strategy (AEPS).
 - CAFF: taxa identified as rare by the Conservation of Arctic Flora and Fauna program. These are taxa whose main distribution is in the Arctic (as defined by Yurtsev 1994) and that are generally known from fewer than 20 locations world-wide (equivalent to a Heritage Program Global Rank of G1 - G2).

GLOBAL RANK (Global ranks are based on the world-wide status of a taxon and are assigned by The Nature Conservancy and an international network of Natural Heritage Programs and Conservation Data Centers.

- G1: Critically imperiled globally because of extreme rarity (5 or fewer occurrences, or very few remaining individuals), or because of some factor of its biology making it especially vulnerable to extinction. (Critically endangered throughout its range.)
- G2: Imperiled globally because of rarity (6 to 20 occurrences) or because of other factors demonstrably making it very vulnerable to extinction throughout its range. (Endangered throughout its range.)
- G3: Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (21 to 100 occurrences). (Threatened throughout its range.)
- G4: Widespread and apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
- G5: Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
- T#: Global rank of the described subspecies or variety.
- G#G#: Global rank of species uncertain, best described as a range between the two ranks.
- G#Q: Indicates some uncertainty about taxonomic status that might affect global rank.

STATE RANK (State ranks are based on the status of the taxon within a particular state or province. The state ranks for taxa presented in this guide often differ from the ranks for the same taxa in other states or provinces.)

- S1: Critically imperiled in state because of extreme rarity (5 or fewer occurrences, or very few remaining individuals), or because of some factor of its biology making it especially vulnerable to extinction. (Critically endangered throughout in state.)
- S2: Imperiled in state because of rarity (6-20 occurrences), or because of other factors making it very vulnerable to extirpation from the state .
- S3: Rare or uncommon in the state (21-100 occurrences).
- SP: Occurring in nearby state or province; not yet reported in state, but probably will be encountered with further inventory.
- S#S#: State rank of species uncertain, best described as a range between the two ranks.

Plant List

Alaska

Rare Plant List

Scientific Name Common Name	Heritage Rank	Formal Status*	Agency Distribution*
<i>Artemisia aleutica</i> Aleutian wormwood	G1/S1	CAFF	FWS
<i>Artemisia globularia</i> var. <i>lutea</i>	G4T1/S1	CAFF	BLM,FWS,NPS,S?
<i>Artemisia senjavinensis</i> Bering Sea wormwood	G3/s2S3	CAFF	BLM,NPS,N, S?
<i>Beckwithia glacialis</i> ssp. <i>alaskensis</i> Alaskan Glacier buttercup	G2/S2	CAFF	S?
<i>Botrychium ascendens</i> Upswept moonwort	G3?/S1	S	FS,NPS
<i>Claytonia ogilviensis</i> Ogilvie Mountains springbeauty	G1/SP		
<i>Cochlearia sessilifolia</i> Sessile-leaved scurvy grass	G1G2Q/S1S2		FWS
<i>Cryptantha shackletteana</i> Shacklette's catseye	G1Q/S1		NPS,N,S?
<i>Douglasia beringensis</i> Bering Sea douglasia	G1/S1	CAFF	NPS,N,S?
<i>Draba aleutica</i> Aleutian whitlow-grass	G2G3/S2S3	CAFF	FWS,N
<i>Draba kananaskis</i> Kananaskis whitlow-grass	G1Q/S1	S	FS
<i>Draba murrayi</i> Murray's whitlow-grass	G2/S2		BLM,NPS,N,S?

Scientific Name Common Name	Heritage Rank	Formal Status*	Agency Distribution*
<i>Draba ogilviensis</i> Ogilvie Mountains whitlow-grass	G2/S1		NPS
<i>Erigeron muirii</i> Muir's fleabane	G2/S2	CAFF	BLM,FWS,NPS, N
<i>Eriogonum flavum</i> <i>var. aquilinum</i> Yukon wild-buckwheat	G4T2Q/S2		BLM,FWS,NPS,N, S?
<i>Erysimum asperum</i> <i>var. angustatum</i> Narrow-leaved prairie rocket	G5T2/S1S2		FWS,NPS,N,S?
<i>Lesquerella calderi</i> Calder's bladderpod	G2G3/S2S2		FWS,FS
<i>Ligusticum calderi</i> Calder's lovage	G3/S1	S	FWS,FS
<i>Mertensia drummondii</i> Drummond's bluebell	G2Q/S2	CAFF	BLM,N,S
<i>Oxytropis arctica</i> <i>var. barnebyana</i> Barneby's locoweed	G4T2/S2	CAFF	BLM,DOD,N
<i>Oxytropis kobukensis</i> Kobuk locoweed	G2/S2		NPS
<i>Poa hartzii</i> <i>var. alaskana</i>	G3G4T1/S1	CAFF	BLM,FWS,N, S
<i>Podistera yukonensis</i> Yukon podistera	G1G2/S1		BLM,NPS, N, S?

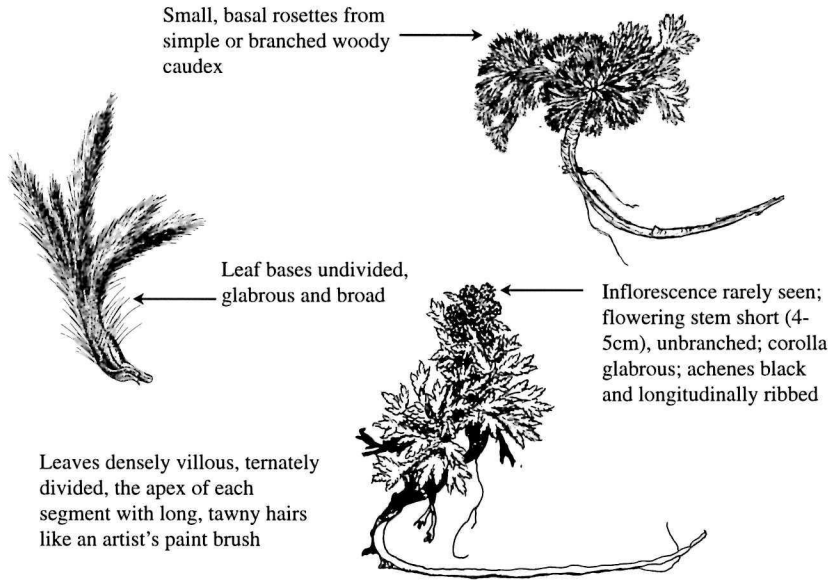
<i>Polystichum aleuticum</i> Aleutian shield-fern	G1/S1	E, CAFF	DOD,FWS
<i>Rumex krausei</i> Cape Krause sorrel	G2/S2	CAFF	BLM,S?
<i>Salix reticulata</i> <i>ssp glabellcarpa</i> Smooth-fruited netleaf willow	G5T2/S1	S	FS
<i>Saxifraga aleutica</i> Aleutian saxifrage	G2G3/S2S3	CAFF	DOD,FWS,N
<i>Senecio moresbiensis</i> Queen Charlotte butterweed	G3/S2	S	FS
<i>Smelowskia pyriformis</i> Pear-fruited smelowskia	G2S2		BLM,FWS,SP,S

* E = Listed as Endangered by US Fish & Wildlife Service, S = Designated as Sensitive in the Alaska Region by US Forest Service, CAFF = Designated as Rare by the Conservation of Arctic Flora and Fauna Program.

** BLM = Bureau of Land Management, DOD = Department of Defense, FWS = Fish and Wildlife Service, N = Native (regional or village corporation), FS = Forest Service, NPS = National Park Service, P = private, S = State or borough land, SP = State Park, S? = Lands selected by the State from the federal government but not yet conveyed.

Species Descriptions

Species Descriptions



Asteraceae (Compositae)

Distribution: Endemic to Kiska and Rat Islands of the western Aleutian Islands.

Habitat: Windswept, gravelly fellfields, from 700 to at least 1,200 ft. elevation, commonly associated with *Achillea borealis*, *Chrysosplenium wrightii*, *Diapensia lapponica*, *Lupinus nootkatensis*, *Saxifraga oppositifolia*, and *Sibbaldia procumbens*. The species occurs as scattered, white, often sterile rosettes on seemingly barren patches between heath vegetation.

Similar Species: Unlikely to be confused with any other species in the Aleutian Islands.

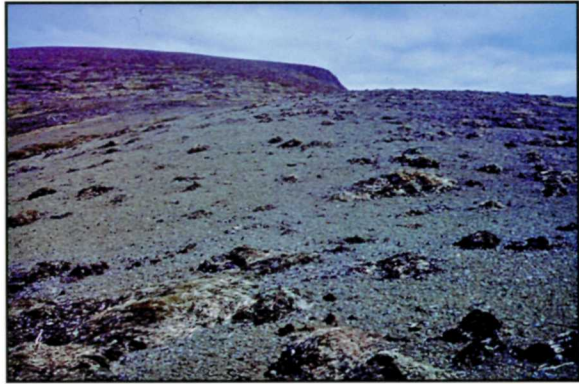
Notes: Only rarely seen in flower.

References: Hultén 1939, 1960, 1968; Murray and Lipkin 1987; Porsild 1944, Talbot 1997.



Closeup of Artemisa aleutica

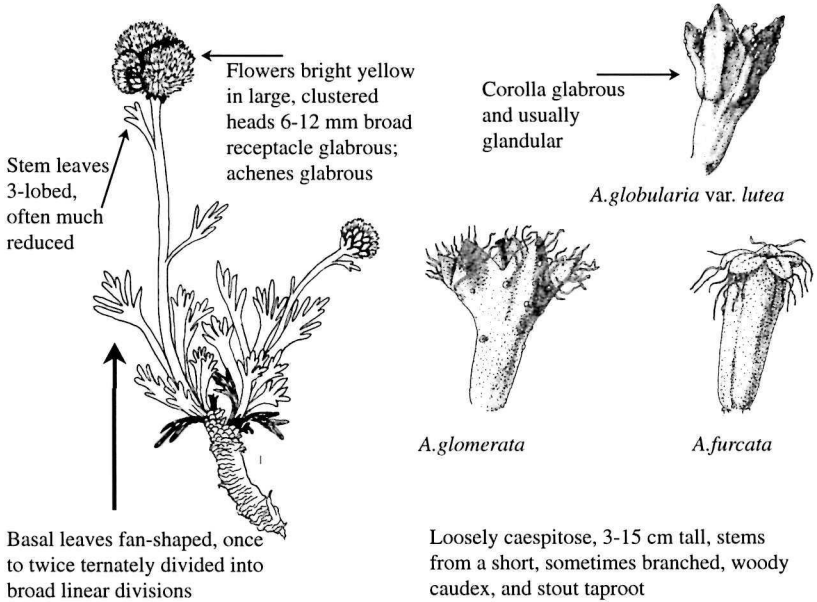
photo by S. Talbot



Artemisa aleutica habitat

photo by S. Talbot





Asteraceae (Compositae)

Distribution: Endemic to the western Seward Peninsula and to islands in the Bering Sea (St. Matthew, St. Lawrence and St. Paul).

Habitat: Moist, windswept, acidic tundra on gravelly or sandy sites; granitic fellfields; on mountain sides or hillsides, from 50 ft. to at least 500 ft. elevation. Reported from alpine mat and cushion *Salix*-herb fellfield, with *Salix reticulata* and *S. arctica*.

Similar Species: Var. *globularia* has heads of dark purplish-black flowers (rather than bright yellow). Both *A. glomerata* Ledeb. and *A. furcata* Bieb. have corollas that are pubescent with long straight hairs, (sometimes very sparsely so in *A. furcata*) and are usually lacking glands. *A. senjavinensis* forms dense tufts with compact rosettes of basal leaves that are densely pubescent with shiny white hairs (see separate description and photos). A similar and possibly vicariant taxon on Chukotka, *A. flava* Jurtz., differs in its leaf dissection and its dilated petioles.

Notes: Flowering in late June and July. This taxon is not known from Hall Island, contrary to Hultén (1968), but should be expected there.

References: Hultén 1968; Tolmatchev and Yurtsev 1960-1987; Murray and Lipkin 1987; Welsh 1974.

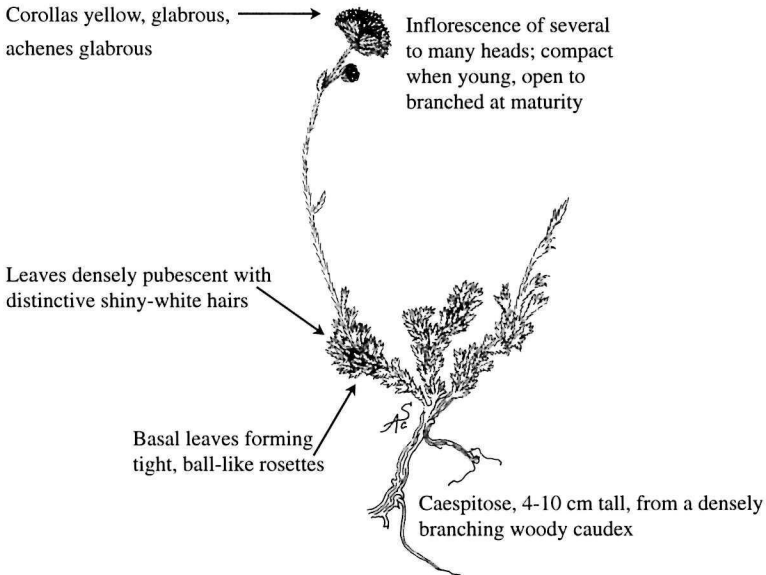


Closeup of Artemisia globularia var. lutea
photo by R.Lipkin



Artemisia globularia var. lutea habitat
photo by R.Lipkin





Asteraceae (Compositae)

Distribution: Endemic to the Seward Peninsula and to easternmost Chukotka in Russia.

Habitat: Found on calcareous sites, usually dry gravels, screes, and outcrops, from 75 - 2,300 ft. elevation. Less commonly found in more mesic herbaceous-shrub tundra.

Similar Species: *A. glomerata* Ledeb. differs in having pubescent corollas and a more open growth form. The basal leaves do not form compact, ball-like rosettes, and, though pubescent, lack the dense, distinctive shiny-white hairs of *A. senjavinensis*.

Notes: Flowering in June and July. Russian authors (Korobkov 1981 and in Tolmatchev and Yurtsev 1960-1987) apply this name to the Chukotkan populations only. They treat the Alaskan plants as a distinct species, *A. androsacea* Seem., having a more open growth form, although our experience has shown that there are plants in Alaska that are equally pulvinate to those from Chukotka. Dawe and Murray (1981) found two chromosome races on the Seward Peninsula ($2n=36, 54$) and suggested that they may be ecologically separated. Chukotkan plants are all $2n=54$. Further study is needed to determine if there are two taxa: a compact form confined to lowland settings (*A. senjavinensis*, $2n=54$) and a more open form from alpine settings (*A. androsacea*, $2n=36$).

References: Dawe and Murray 1981; Hultén 1968; Korobkov 1981; Murray 1980; Welsh 1974.



Closeup of Artemisia senjavinensis
Photo by R. Lipkin



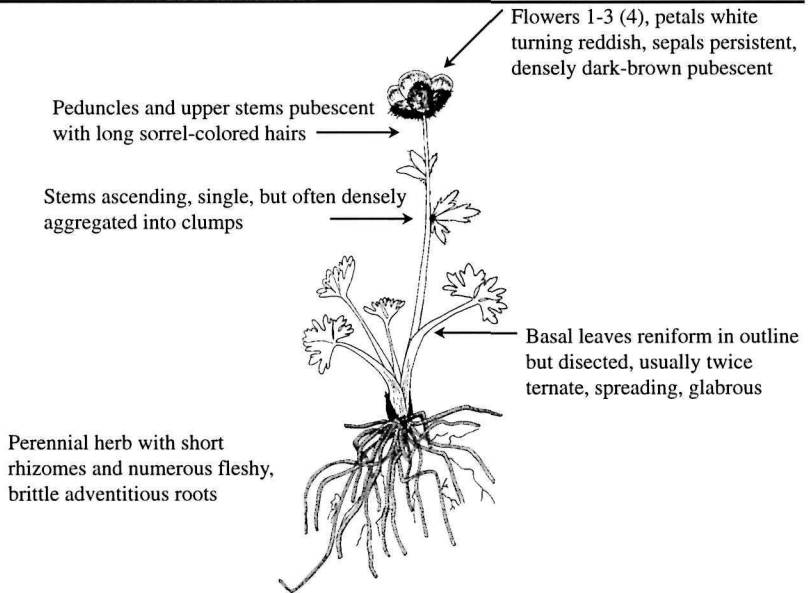
Artemisia senjavinensis habitat photo by R.Lipkin



Alaskan glacier buttercup

Beckwithia glacialis

(L.) A. & D. Löve ssp. *alaskensis* Jurtz., D. Murray and S. Kelso in ed.



Ranunculaceae

Distribution: Endemic to the Kigluaik Mountains of the Seward Peninsula.

Habitat: Sparsely vegetated high-alpine rubble slopes and screes from 900 - 3,000 ft. elevation. Found on steep non-carbonate slopes with shattered, platy, shale-like or schistose rock; commonly associated with *Papaver mconnellii* (= *P. denalii*), *Oxytropis bryophila*, *Minuartia arctica*, and *Carex microchaeta*.

Similar Species: Similar to *B. camissonis* (Slecht.) Tolm. (= *Ranunculus glacialis* ssp. *camissonis*) which is found in moist to wet tundra and disturbed seeps, and which usually has more slender and erect stems, solitary flowers, and basal leaves that are once ternate, upward-directed, and with narrower segments.

Notes: Flowering late June and July. Most American authors treat *Beckwithia* within the genus *Ranunculus*. If treated this way, *B. glacialis* ssp. *alaskensis* would become a subspecies of *R. glacialis* L.

References: Yurtsev, Murray, and Kelso, in prep.



Closeup of Beckwithia glacialis
photo by R.Lipkin

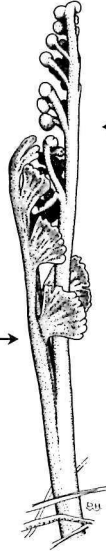


Beckwithia glacialis habitat
photo by R.Lipkin



Fronnd divided into dissimilar vegetative blade (trophophore) and spore-bearing segment (sporophore)

Vegetative blade 1.5-5.0 cm long; yellowish-green, once pinnately compound with 4-6 pairs of non-overlapping, upward-directed wedge-shaped, toothed leaflets; lower segments often bearing sporangia on their margins



Sporophore pinnately compound, attached to trophophore midway up leaf stalk, taller and narrower than vegetative blade

Perennial herb up to 20 cm tall

Ophioglossaceae

Habitat: Mesic meadows and sandy sites near sea level in Alaska, where it is associated with *Fragaria chiloensis*. In other parts of its range it is typically found in mesic montane meadows and associated with *Fragaria virginiana*.

Similar Species: *B. lunaria* has leaflets that are usually overlapping, mostly entire, lunate (at least a quarter-circle, often more than half a circle) rather than narrowly wedge shaped, and spreading rather than ascending. *B. minganense* has pinnae entire or only slightly toothed and spreading or only slightly ascending. Both of the above species lack sporangia on their basal pinnae.

Notes: *Botrychium ascendens* is now known from a number of widespread sites in western North America but is not common anywhere and almost all populations are small. It is only known from two locations in Alaska. *Botrychium* species can be very difficult to positively identify. Carefully spread and pressed fronds are required for useful specimens (collections can be limited to the above-ground portions of the plant).

References: Cody 1994, 1996; Lellinger 1992; Wagner 1996a, b; Wagner and Wagner 1986, 1993.

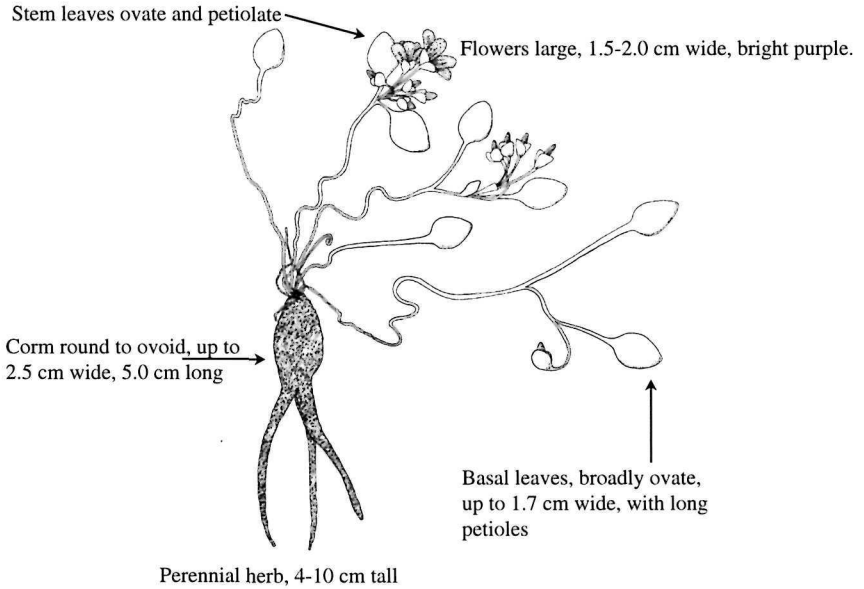


Closeup of Botrychium ascendens
photo by W. H. Wagner



Closeup of Botrychium ascendens
photo by D. H. Wagner





Portulacaceae

Distribution: Narrowly endemic to the Ogilvie Mountains, Yukon Territory. (One location within 0.5 mi of Alaska border.)

Habitat: Open mountain slopes and steep screes, from 4,500 - 5,300 ft. elevation.

Similar Species: *Claytonia tuberosa* has linear-elliptic, often sessile, stem leaves, and whitish pink flowers with a yellow base.

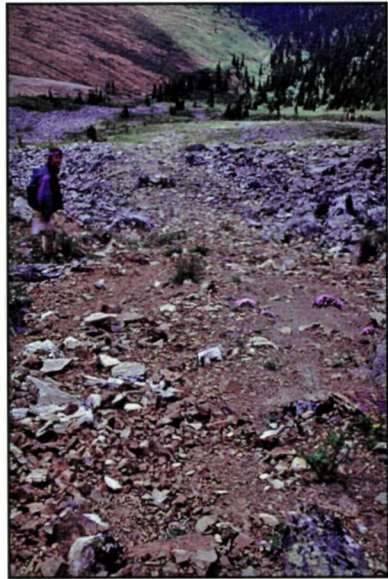
Notes: Flowering in June. *C. ogilviensis* is to be expected and should be looked for in the Ogilvie Mountains of Alaska. This species is very similar to *C. umbellata* S. Watson of Oregon, Nevada, and California.

References: Cody 1994, 1996; Douglas et al. 1981; McNeill 1972.



Closeup of Claytonia ogilviensis

photo by R.Lipkin



Claytonia ogilviensis habitat

photo by R.Lipkin

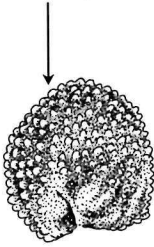


Sessile-leaved scurvy-grass

Cochlearia sessilifolia

Rollins

Seeds densely and evenly covered with white, waxy scalelike trichomes

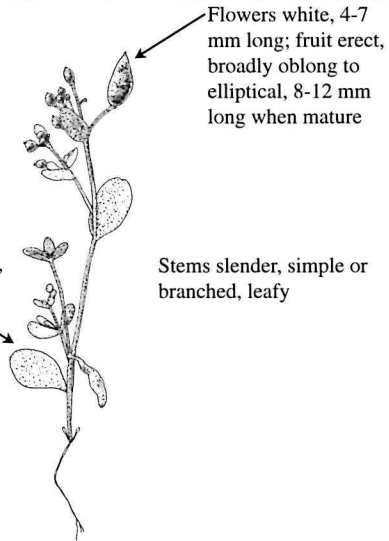


C. sessilifolia



C. officinalis

Leaves entire, sessile, oblong to spatulate, 5-20 mm long



Flowers white, 4-7 mm long; fruit erect, broadly oblong to elliptical, 8-12 mm long when mature

Stems slender, simple or branched, leafy

Annual herb up to 7 cm tall, lacking a basal rosette of leaves

Brassicaceae

Distribution: Endemic to Kodiak and Sitkalidak Islands in south coastal Alaska.

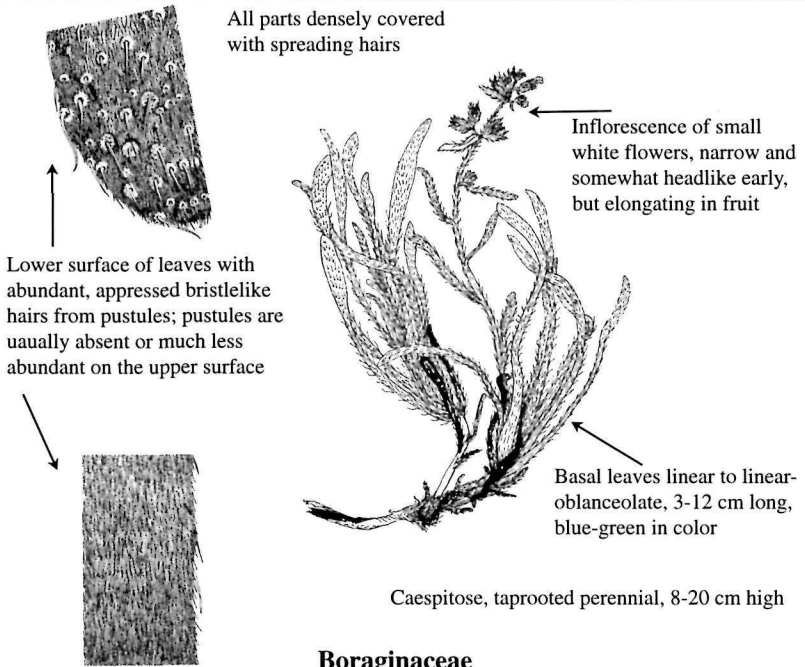
Habitat: Gravel bars in the intertidal zone; submersed at high tide.

Similar Species: Similar to (and possibly conspecific with) *C. officinalis* L. which has distinct rosettes of basal leaves, petiolate basal and lower stem leaves, smaller siliques (usually less than 8 mm long) and seeds with far less abundant (if any) trichomes.

Notes: There remains some question as to the appropriate rank at which to treat this taxon. Rollins (1993) maintains that the seed morphology, large fruits, annual habit and lack of basal rosettes amply distinguish it as a species from *C. officinalis*. Hultén (1941-50, 1968, 1973) and Welsh (1968, 1974) treat the taxon as a variety of *C. officinalis*.

References: Hultén 1941-50, 1968, 1973; Rollins 1941, 1993; Welsh 1968, 1974.



**Boraginaceae**

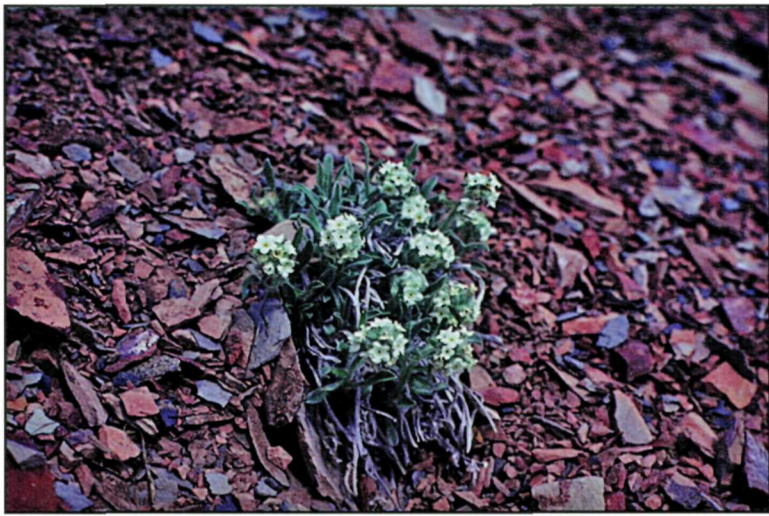
Distribution: Endemic to the upper Yukon River and the Nabesna River of Interior Alaska; possibly disjunct at one locality to eastern Chukotka (as *C. spiculifera*).

Habitat: Steep, dry, unstable, south-facing, calcareous rubble slopes and at the margins of sparsely vegetated grasslands. From 825 - 2,200 ft. elevation (Yukon River); 4,000 - 4,500 ft. elevation (Nabesna River).

Similar Species: This is the only cryptantha native to Alaska and it is unlikely to be confused with any other species. Leaves of non-flowering plants of *Lesquerella arctica* (Wormskj.) S.Wats. are superficially similar but differ in their distinctive stellate pubescence. The closely related *C. spiculifera* (Piper) Payson (from Washington, Idaho, and Oregon) differs in having abundant pustulate hairs on both surfaces of the leaves.

Notes: Flowering late May to early June.

References: Batten et al. 1979; Cody 1996; Higgins 1969, 1971; Hultén 1968; Murray 1981c; Murray and Lipkin 1987; Parker 1995.



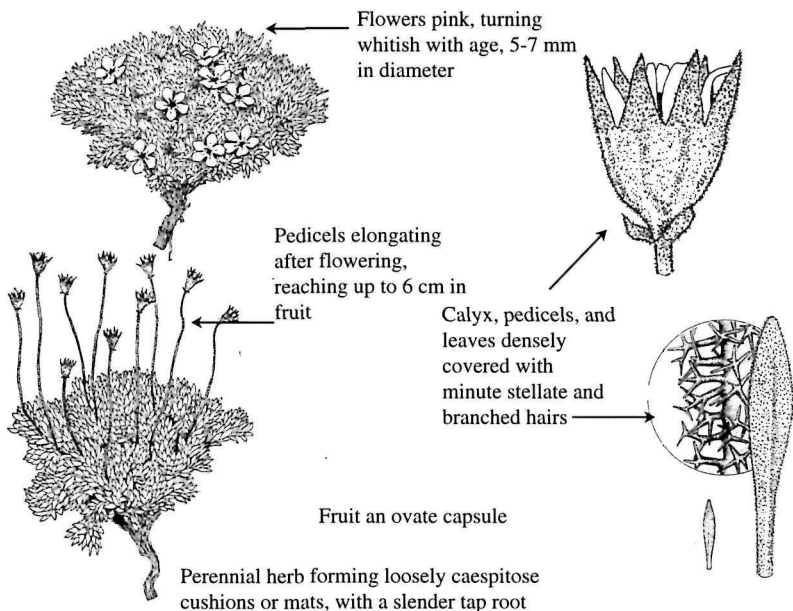
Closeup of Cryptantha shackletteana

photo by C. Parker



Bering Sea douglasia

Douglasia beringensis
S. Keslo, Jurtsev & D. F. Murray



Primulaceae

Distribution: Endemic to the north-central Seward Peninsula Nulato Hills, and the Kokrines Hills of western Alaska.

Habitat: Main summits, 1,000 - 1,800 ft. elevation, commonly associated with *Saxifraga reflexa*, *Draba palanderiana*, and *Poa glauca*. Often on limestone (Seward Peninsula).

Similar Species: Distinguished from other douglasias by the dense, stellate pubescence of its leaves and calyx. *D. arctica* Hook. and *D. ochotensis* (Willd.) Hultén have leaves that are glabrous above or with only simple marginal hairs; *D. gormanii* Constance has forked or branched hairs on the apex and margins of its leaves and a glabrous calyx. Superficially similar to *Silene acaulis* L., which has glabrous or ciliate leaves and a glabrous calyx.

Notes: Flowering mid-late June.

References: Kelso, Yurtsev, and Murray, 1994.



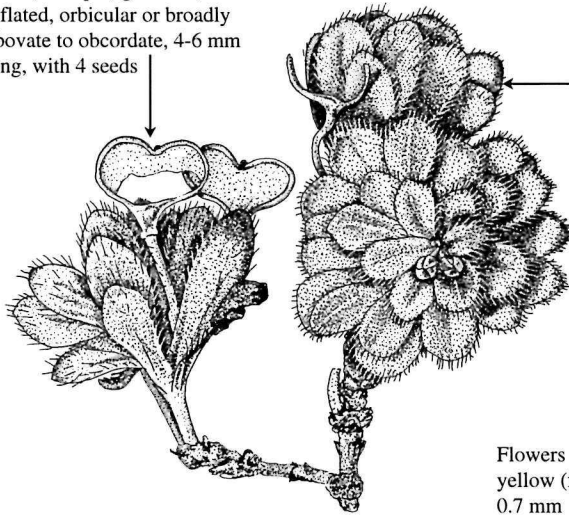
Closeup of Douglasia beringensis
photo by Rob Lipkin



Douglasia beringensis habitat photo by Rob Lipkin



Fruit (a silique) glabrous, inflated, orbicular or broadly obovate to obcordate, 4-6 mm long, with 4 seeds



Leaves all basal, imbricate, oblong to ovate or obovate, apices obtuse, margins ciliate with long hairs, nearly glabrous above or with some simple to branched hairs on the upper surface

Flowers pale yellow to greenish-yellow (four petaled), style 0.3-0.7 mm

Densely tufted, cushion forming perennial herb

Brassicaceae (Cruciferae)

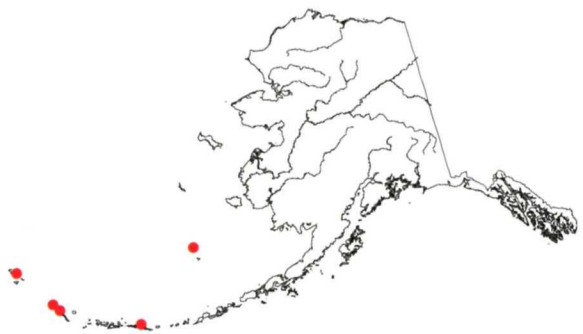
Distribution: Endemic to the Aleutian and Pribilof Islands in Alaska, and the adjacent Commander Islands in Russia.

Habitat: Gravely alpine sites and solifluction areas in the mountains. Associated species include *Cardamine bellidifolia*, *Chrysosplenium wrightii*, *Oxygraphis glacialis*, and *Saxifraga oppositifolia*.

Similar Species: Distinguished from other yellow flowered drabas by its very densely tufted, scapose habit; broadly obovate, nearly glabrous, ciliate leaves; and glabrous, inflated, orbicular to obcordate fruits.

Notes: Flowering in July. Reports of this species from eastern Chukotka, Russia (Hultén 1968) appear to be incorrect (Berkutenko 1978).

References: Berkutenko 1978, 1983, 1987; Hultén 1936, 1960, 1968; Kharkevich 1985-1992; Rollins 1993; Vasiliev 1957; Welsh 1974.



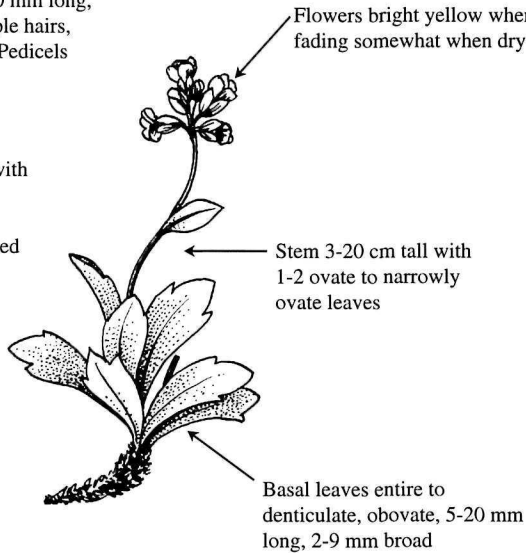
Kananaskis whitlow-grass

Draba kananaskis

Mulligan

Fruit narrowly ovate, 6-10 mm long, glabrous or with few simple hairs, styles 0.3 - 0.5 mm long. Pedicels shorter than fruits

Leaf surfaces pubescent with scattered, nearly sessile, mostly cruciform hairs; margins with simple, forked and stellate hairs



Loosely tufted, low, spreading perennial herb

Brassicaceae

Distribution: Southwest Alberta (Jasper National Park and Kananaskis Range) in Canada, and in Alaska from one location near Hope on the Kenai Peninsula.

Habitat: Rocky alpine slopes. In Alaska reported from rocky ledges and bare shale, approximately 3,700 ft. elevation. In Alberta it is reported to be restricted to high alpine limestone slopes with large blocky talus at 7,200 ft. elevation.

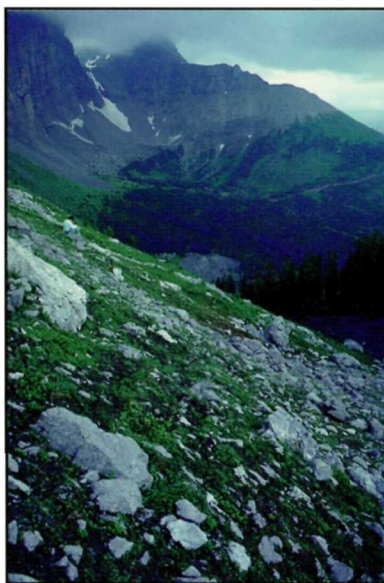
Similar Species: Most similar to *D. juvenilis* Komarov (= *D. longipes* Raup) which differs in having short stalked leaf hairs, white to cream colored flowers, and a more erect habit of growth.

Notes: There remains some question as to the validity of this species. Rollins (1993) treats it as a synonym within *D. longipes*, but provides no discussion. (Rollins includes yellow flowered forms within *D. longipes*, in contrast to Mulligan, 1976.) Given its apparent rarity, we include it here pending further taxonomic review.

References: Mulligan 1970, 1976; Rollins 1993; Smith 1991.

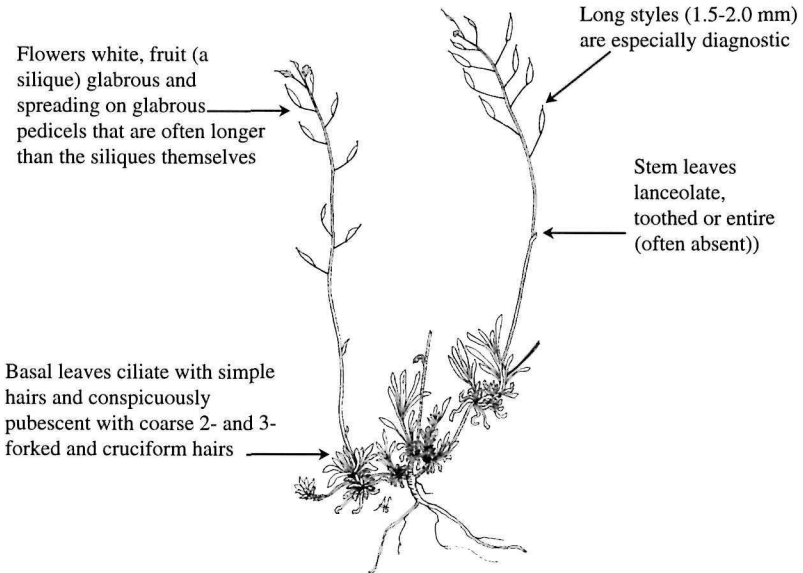


Closeup of Draba kanaanaskis
photo by Ian D. Macdonald



Draba kanaanaskis habitat (Alberta)
photo by Ian D. Macdonald





Taprooted perennial, with stems to 35 cm tall, often branched

Brassicaceae

Distribution: Endemic to the upper Yukon River region in Alaska and one site in the adjacent Yukon Territory near the International Boundary.

Habitat: Open woodlands following fire, sparsely vegetated rock outcrops and dry grasslands, 1,000 ft. - 2,000 ft. elevation. Usually, but not always, on steep, south-facing slopes. Apparently an early successional species of dry to mesic, calcareous sites.

Similar Species: The key below distinguishes *D. murrayi* from other white-flowered species of *Draba* which may occur in the same habitats in this region:

Basal leaves with forked and cruciform hairs on the lower surfaces:

Siliques glabrous, styles usually at least 1.5 mm *D. murrayi*

Siliques pubescent, styles shorter than 1.0 mm:

Hairs on the underside of the basal leaves mostly forked-*D. yukonensis*

Hairs on the underside of the basal leaves mostly cruciform-*D. borealis*

Basal leaves with stellate hairs on the lower surfaces:

Siliques pubescent with stellate hairs..... *D. cana* (*D. lanceolata*)

Siliques pubescent with simple and forked hairs..... *D. praealta*

Notes: Flowering late May to June, fruiting July and August.

References: Batten et al. 1979; Mulligan 1979; Murray and Lipkin 1987; Parker 1995.



Closeup of Draba murrayi

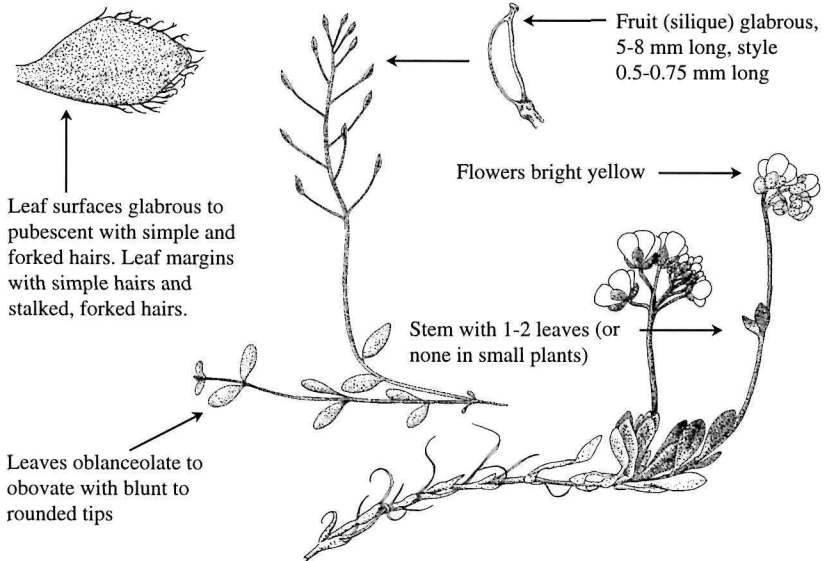
photo by C.Parker



Draba murrayi habitat

photo by C. Parker





Stoloniferous, trailing, mat-forming, perennial, with long, slender, leafy branches

Brassicaceae

Distribution: Endemic to the Ogilvie Mountains of Alaska and the Yukon Territory, and west to the Mackenzie Mountains of the westernmost Northwest Territories.

Habitat: Moist, forb-moss meadows in alpine areas, typically on limestone substrate, from 3,500 - 4,600 ft. elevation (Canadian locations range from 2,500 - 6,500 ft. elevation). Associated species include *Festuca altaica*, *Poa porsildii*, *P. arctica*, *Salix reticulata*, *S. arctica*, *Anemone narcissiflora*, and *Artemisia arctica*.

Similar Species: *Draba juvenilis* Komarov (= *D. longipes* Raup) which differs by its white, cream, or pale yellow flowers and leaves with cruciform and multi-forked hairs.

Notes: Flowering June to August. First thought by A.E. Porsild (1964, 1967) to be the same as *D. sibirica* (Pall.) Thell. of Russia and Greenland, a species distinguished by sessile forked (malpighian) hairs, which are not found on *D. ogilviensis*.

References: Cody, 1996; Hultén 1966; Mulligan 1976; Parker 1997; Porsild 1964, 1967; Porsild and Cody 1980; Rollins 1993.



Closeup of Draba ogilviensis

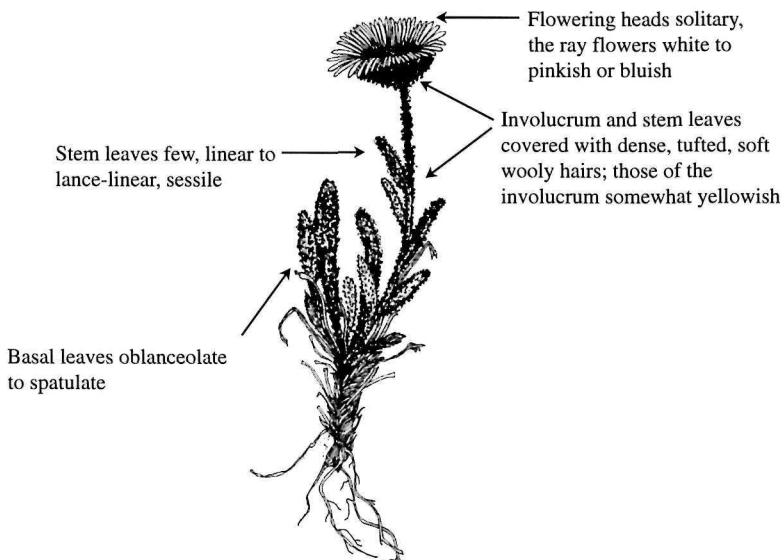
photo by C. Parker



Draba ogilviensis habitat

photo by C. Parker





Perennial, taprooted herb, 5 - 10 cm tall, with a simple or branched caudex

Asteraceae (Compositae)

Distribution: An endemic species of arctic Alaska, including Cape Thompson, Anaktuvuk Pass, Sagwon uplands, Toolik Lake, Canning River, and Kongakut River.

Habitat: Dry, south-facing fellfields, bluffs, terraces, alluvial fans, gravels and rock outcrops, from 950 ft. - 3,000 ft. elevation. Usually in sparsely vegetated communities, often in *Dryas octopetala*, prostrate-shrub, forb tundra.

Similar Species: *E. grandiflorus* Hook. has leaves that are pubescent with long white hairs, rather than the very distinctive tangled, woolly hairs of *E. muirii*, and its involucre pubescence is white rather than yellowish. *E. caespitosus* Nutt. has an involucre that is pubescent with short stiff hairs. *E. hyperboreus* Greene has linear (rather than lanceolate) upper stem leaves and purple-black cross-walls in its involucre hairs.

Notes: Reports from Wrangel Island, Russia and from Herschel Island, Canada are apparently in error.

References: Hultén 1967, 1968; Murray 1980, Walker et al. 1987, 1989; Welsh 1974; Wiggins and Thomas 1962.



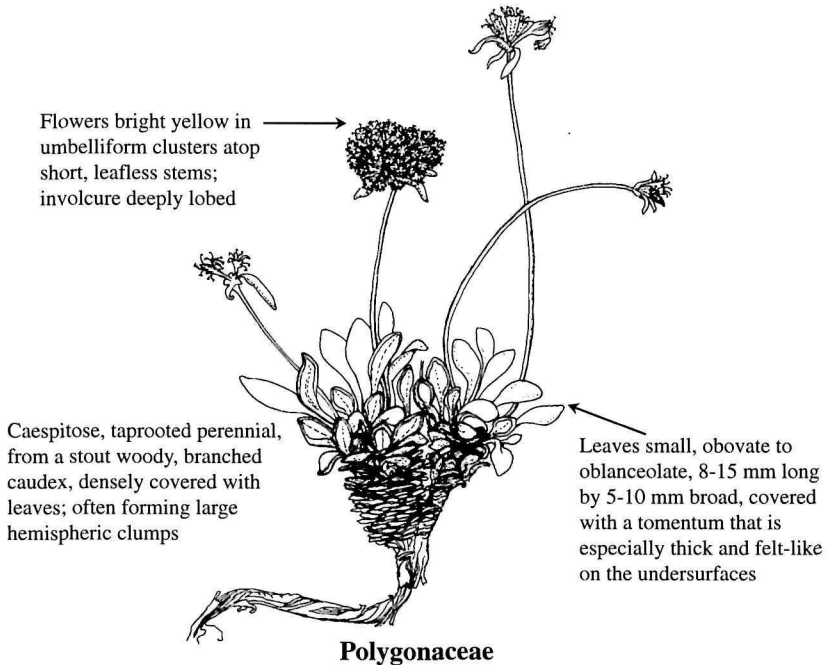
Closeup of Erigeron muirii habitat photo by David Murray



Erigeron muirii habitat

photo by R.Lipkin





Distribution: Restricted to the upper Yukon and Porcupine Rivers in Alaska and Aishihik Lake in the southwest Yukon Territory.

Habitat: Steep, dry, south-facing, rubble slopes, outcrops, and at the margins of sparsely vegetated grasslands, 650 ft. - 1,500 ft. elevation (3,000 ft. at Aishihik Lake).

Similar Species: This is the only *Eriogonum* native to Alaska and it is unlikely to be confused with any other species here. *Bupleurum americanum* Coult. & Rose (a member of the Apiaceae or Parsley family) also has an umbel of bright yellow flowers and is locally common on some of the same slopes as Yukon buckwheat, but differs in having few basal leaves, many stem leaves, and leaves that are both linear and hairless. Var. *aquilinum* is most closely related to var. *flavum* of Idaho, Montana, and Wyoming, from which it differs by its deeply lobed involucre. *E. jamesii* Benth. var. *xanthum* (Small) Reveal from the southern Rocky Mountains also differs in its involucre, as well as in having a greenish tinge to its tomentum versus a blackish tinge in *E. flavum*.

Notes: Flowering late May to early June.

References: Batten et al. 1979; Cody 1994, 1996; Hultén 1967, 1968; Murray 1981b; Murray and Lipkin 1987; Parker 1995; Welsh 1974.



Closeup of Eriogonum flavum
photo by C. Parker



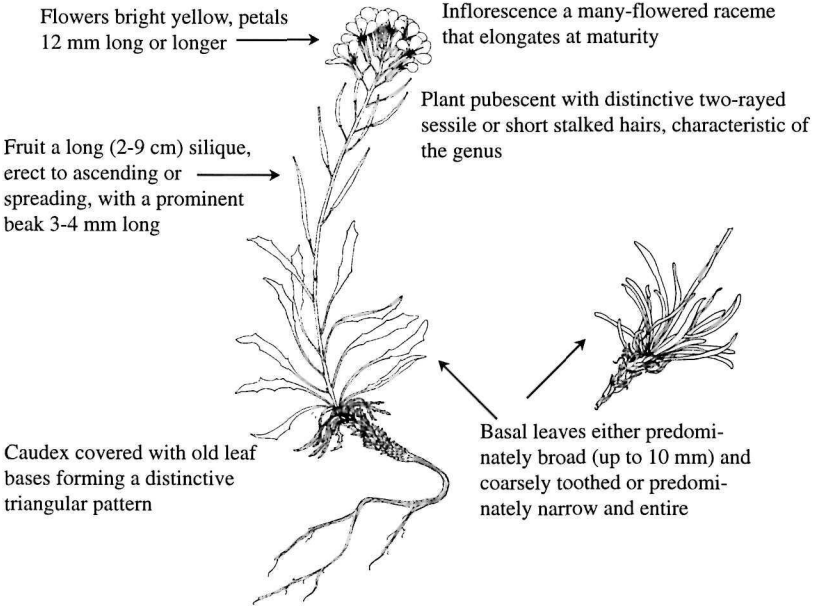
Eriogonum flavum habitat

photo by C. Parker



Narrow-leaved prairie rocket

Erysimum asperum
var. *angustatum* (Rydb.) Boivin



Perennial herb, up to 45 cm tall, with a very long taproot, and stout caudex

Brassicaceae

Distribution: Restricted to the region of the upper Yukon and Porcupine Rivers in Alaska. Also found in the southeastern Yukon Territory near Dawson and Kluane Lake.

Habitat: Steep, dry, south-facing rubble slopes, outcrops and dry grasslands, from 800 - 3,400 ft. elevation. Usually found in sparsely vegetated sites.

Similar Species: *E. inconspicuum* (S.Wats.) MacMill. has shorter petals (8-12 mm long) and fruits with a shorter beak (0.3-1.0 mm long). *E. cheiranthoides* L. has much smaller flowers (petals 4-5 mm long) and predominantly three-forked hairs on its stem, leaves, and fruits.

Notes: Flowering June through July, fruiting July and August. Many authors elevate this taxon to the rank of species, as *E. angustatum* Rydb.

References: Batten et al. 1979; Cody 1996; Harris 1993; Hultén 1968; Murray 1980; Murray and Lipkin 1987; Rollins 1993; Welsh 1974.



Erysimum asperum
photo by R.Lipkin



Erysimum asperum habitat

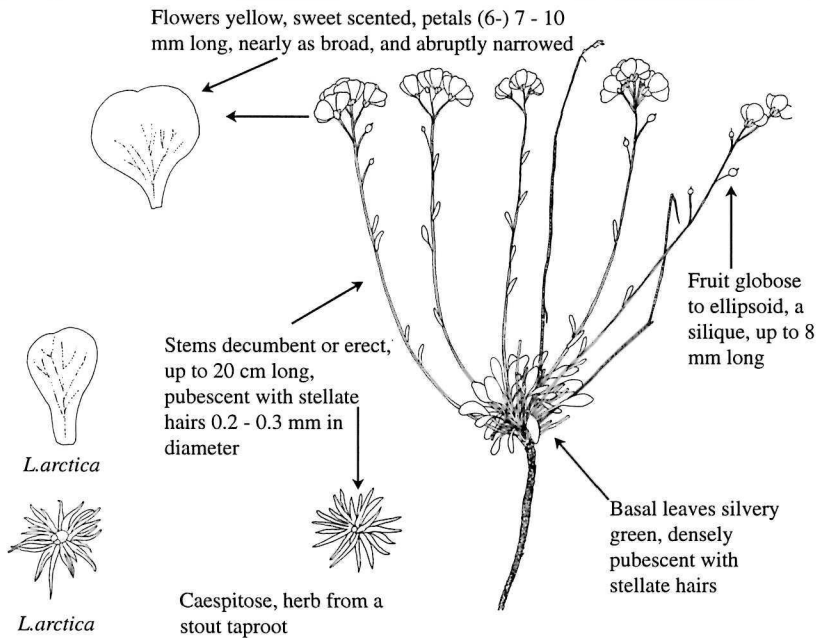
photo by R.Lipkin



Calder's bladderpod

Lesquerella calderi

Mulligan & Porsild



Brassicaceae

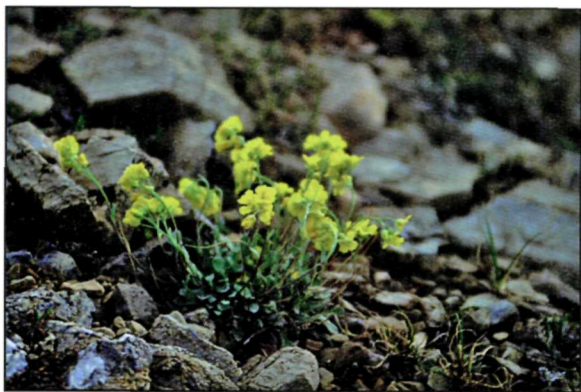
Distribution: Endemic to the Ogilvie Mountains of Alaska and the Yukon Territory and to the Richardson Mountains of the Yukon and Northwest Territories.

Habitat: Dry, sparsely vegetated limestone outcrops and rubble slopes, from 1,900 - 5,000 ft. elevation. Associated species include *Dryas octopetala*, *Phlox alaskensis* (= *Phlox sibirica* auct.), *Carex glacialis*, and *C. rupestris*.

Similar Species: Very similar to the more widespread *Lesquerella arctica* (Wormsk. ex Hornem.) S. Wats. which differs in having petals that are longer than broad, more gradually narrowed below the middle, and usually less than 7 mm long. *L. arctica* also differs in having stem hairs that are larger, usually 0.35 - 0.5 mm in diameter.

Notes: Flowering June to July. *L. arctica* has a chromosome number of $2n = 60$ and was likely derived by polyploidy from *L. calderi* ($2n = 20$).

References: Cody 1994, 1996; Douglas et al. 1981; Hultén 1973; Mulligan and Porsild 1969; Porsild and Cody 1980; Rollins and Shaw 1973; Rollins 1993.



Closeup of Lesquerella calderi

photo by R.Lipkin



Lesquerella calderi habitat

photo by R.Lipkin



Calder's lovage

Ligusticum calderi
Mathias & Constance

Fruit oblong-ovoid, 5-7mm long, 3 mm broad, with winged ribs

Flowers in umbellate inflorescence, white or pinkish

Basal leaves glabrous, triangular-ovate in outline, 5-20 cm long, ternate and pinnate, the leaflets lobed to pinnatisect

Stem leaves few, similar to basal leaves, but often reduced or lacking

Petioles abruptly dilated into scarious sheath

Stems glabrous, 20-50 cm tall with fibrous root crown at base

Tap rooted perennial herb

Apiaceae

Distribution: Known principally from the Queen Charlotte Islands and northern Vancouver Island in British Columbia. In Alaska it is known from three widely separated locations on Kodiak Island, Dall Island and southern Prince of Wales Island.

Habitat: Limestone; wet to moist sites in the alpine and subalpine, often in rocky habitats; 1,900 to 2,100 ft. elevation. In Canada it is known from near sea level (rarely) to 3,400 ft. elevation.

Similar Species: Very similar in habit and general appearance to *Conioselinum pacificum* (S. Wats.) Coult. & Rose (= *Conioselinum chinense* sensu Hultén), a plant of sea-shores and lower elevations, which lacks the distinctive fibrous root crown of *L. calderi*.

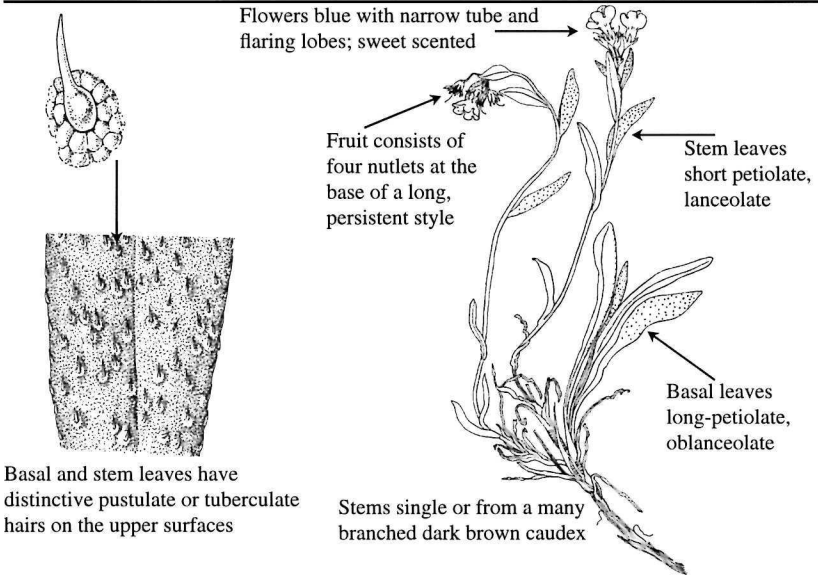
Notes: One of several Queen Charlotte endemic species now known from South Coastal Alaska, including *Salix reticulata* ssp. *glabellcarpa* and *Senecio moresbiensis*.

References: Calder and Taylor 1968, Douglas et al. 1989, Hultén 1973, Mathias and Constance 1959, Ogilvie 1989, Straley et al. 1985.



Drummond's bluebell

Mertensia drummondii
(Lehm.) G. Don



Perennial herb; erect or trailing, sometimes forming clumps up to 50 cm wide

Boraginaceae

Distribution: Known from the Meade and Kogosukruk rivers in northern Alaska and in the western Canadian Arctic from southern Victoria Island and several sites on the mainland near Dolphin and Union Strait.

Habitat: Sparsely vegetated, active sand dunes and blowouts near rivers, 45 ft. to 250 ft. elevation. Also on sandy banks near the coast in Canada; not a seashore species. The Alaskan sites are well back from or above the active floodplain. Commonly associated species include: *Bromus pumpellianus*, *Carex obtusata*, *Festuca rubra*, *Leymus mollis*, *Dryas integrifolia*, *Eritrichium chammissonis*, and *Salix brachycarpa*.

Similar Species: Unlikely to be confused with any other Alaskan bluebell, it is similar in several respects to *M. lanceolata* (Pursh) Candolle and *M. viridis* A. Nelson of the Rocky Mountains. *M. maritima* (L.) S. F. Gray (found on seashores) has hairless leaves (sometimes with small pustules or blister-like growths). Small non-flowering individuals can be confused with *Rumex graminifolius* Lamb. (which differs in its glabrous, often hastate, leaves) or *Plantago canescens* Adams (which has leaves with non-tuberculate hairs).

Notes: Flowering in July; in fruit by late July to August.

References: Cody et al. 1992; Hultén 1968; Komarkova and Webber 1980; Lipkin 1995; McJannet et al. 1995; Murray 1981a; Murray and Lipkin 1987; Williams 1940.



Closeup of Mertensia drummondii photo by Jo Overholt



Mertensia drummondii habitat photo by Jo Overholt

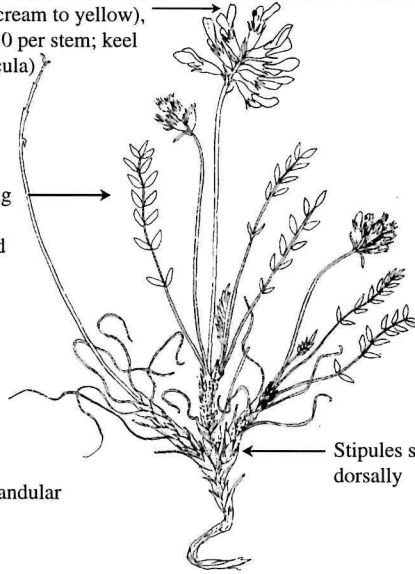


Barneby's locoweed *Oxytropis arctica* R. Br. var. *barnebyana*

Welsh

Flowers white (drying cream to yellow),
18-22 mm long, (3) 5-10 per stem; keel
with a purple spot (macula)

Leaves 5-15 cm long
with 9-15 pinnate
leaflets, not whorled



Stipules straw colored, pilose
dorsally

Entire plant is non-glandular

Perennial herb to 8-30 cm tall, erect, from a branched caudex, often forming large clumps

Fabaceae

Distribution: Endemic to northwestern Alaska, near Kotzebue.

Habitat: Dry to mesic dryas-herb tundra and herbaceous shrub tundra on gravels of beach ridges, river terraces, and streambeds from sea level to at least 2,000 ft. elevation. Also found on rock outcrops and in open woodland and willow scrub in the subalpine. This species also colonizes roadside gravels at Kotzebue.

Similar Species: Most closely related to *O. koyukukensis* A. E. Porsild, which differs in having blue rather than white to cream colored flowers. *O. maydelliana* Trautv. has shiny chestnut-brown old leaf bases and distinctly yellow (not cream) colored flowers. *O. jordalii* A. E. Porsild is a smaller plant (often less than 15 cm tall) with smaller, white to cream colored flowers sometimes tinged blue, often in an elongate inflorescence, and with shorter leaves bearing fewer leaflets. *O. campestris varians* (Rydb.) Schum. (= *O. campestris* ssp. *gracilis* sensu Hultén has yellow flowers in a more or less elongate inflorescence, rarely forming a compact ball-like inflorescence.

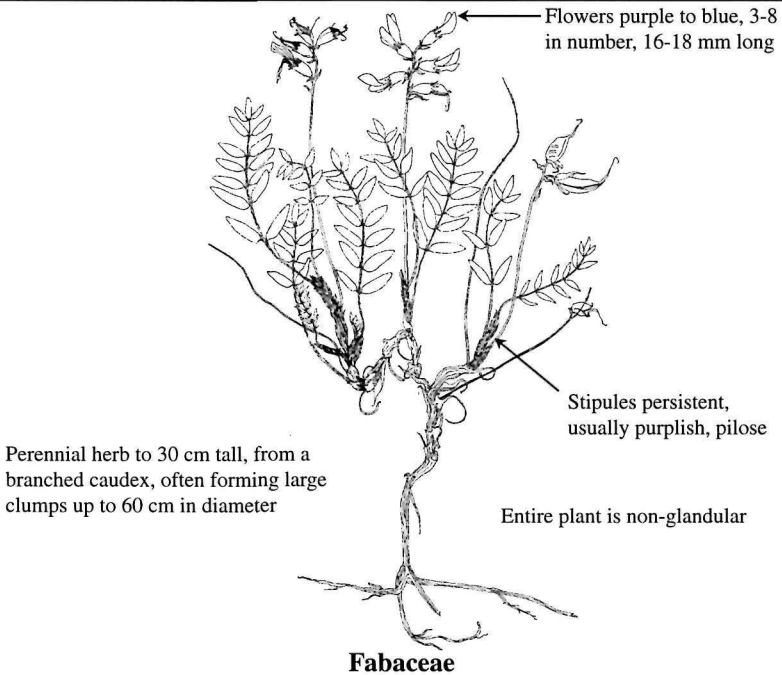
Notes: Flowering late June - July. More work is needed to clarify the relationship of this taxon to low growing, white flowered oxytropes from the Kuparuk River area. Yurtsev treats var. *barnebyana* as a subspecies of the Eurasian *O. sordida*.

References: Lipkin 1985b; Moran and Meyers 1996; Murray and Lipkin 1987, 1974, 1991; Tolmatchev and Yurtsev 1960-1987; Welsh 1968, 1991.



Closeup of Oxytropis arctica
photo by R. Lipkin





Distribution: Narrowly endemic to a small stretch of the middle Kobuk River.

Habitat: Sparsely vegetated sand on active dunes, in dune slacks and on sheltered dune slopes. Also in *Dryas* heaths and white spruce woodlands on stabilized sand bordering active dune fields. Rarely on alluvial sand and never on actively flooded sandbars.

Similar Species: The only erect, non-glandular, purple flowered oxytrope along the middle Kobuk River. *O. koyukukensis* A. E. Porsild (found elsewhere in northern Alaska) differs in its more capitate inflorescence with more (10-14) and larger (up to 20 mm long) flowers and in lacking the distinctive purplish stipules of *O. kobukensis*. Superficially similar to *Hedysarum* spp.

Notes: Flowering late June-July.

References: Hultén 1968; Lipkin 1985a; Welsh 1967, 1991.



Oxytropis kobukensis
photo by R. Lipkin

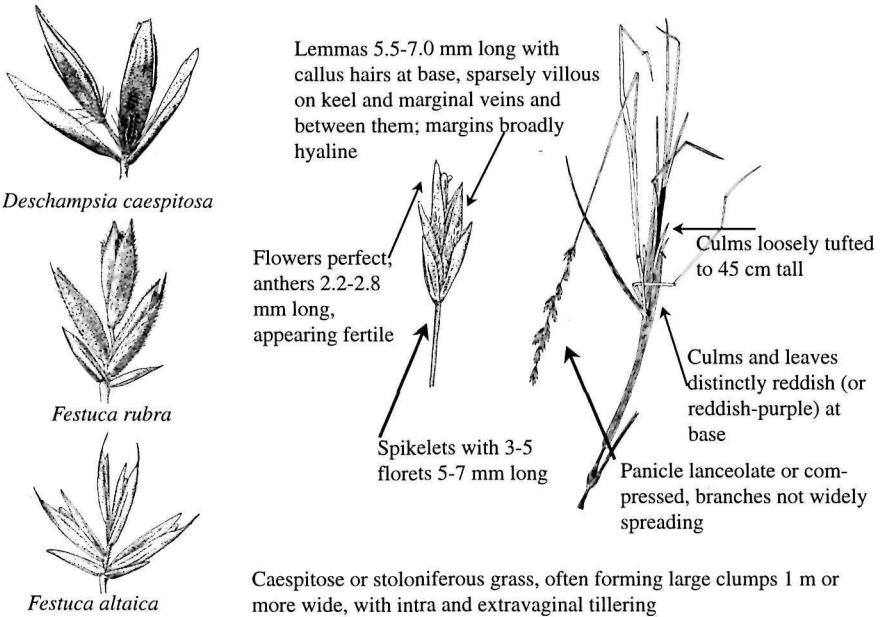


Oxytropis kobukensis habitat photo by R. Lipkin



Poa hartzii R. Br. ssp. *alaskana*

R. J. Soreng



Poaceae

Distribution: This bluegrass is endemic to arctic Alaska where it is known from the Meade River and from the eastern Brooks Range near Lake Peters.

Habitat: Sparsely vegetated, riparian sands and gravels of the active floodplain, especially point bar deposits, 5 - 50 ft. elevation (3,300 ft. in Brooks Range). Commonly associated species include *Artemisia borealis*, *Festuca rubra*, *Leymus mollis*, and *Rumex graminifolius*.

Similar Species: This is the only subspecies of *P. hartzii* known to occur in Alaska. *Poa glauca* Vahl lacks the distinctive reddish bases and has shorter anthers (1.8 - 2.2 mm). Other species of *Poa* found on sandy areas in this region occur singly or as more or less widely spaced tillers, not as large clumps, and lack the distinctive reddish leaf and culm bases. Species of *Deschampsia* and *Festuca*, especially *Festuca altaica* Trin. are found in similar habitats and can be similar in appearance but have awned or awn-pointed lemmas. Subspecies *hartzii* of Canada has early abortive anthers less than 1.5 mm long.

Notes: Flowering in July.

References: Soreng 1991.



Closeup of Poa hartzii
photo by R.Lipkin



Poa hartzii habitat

photo by Jo Overholt

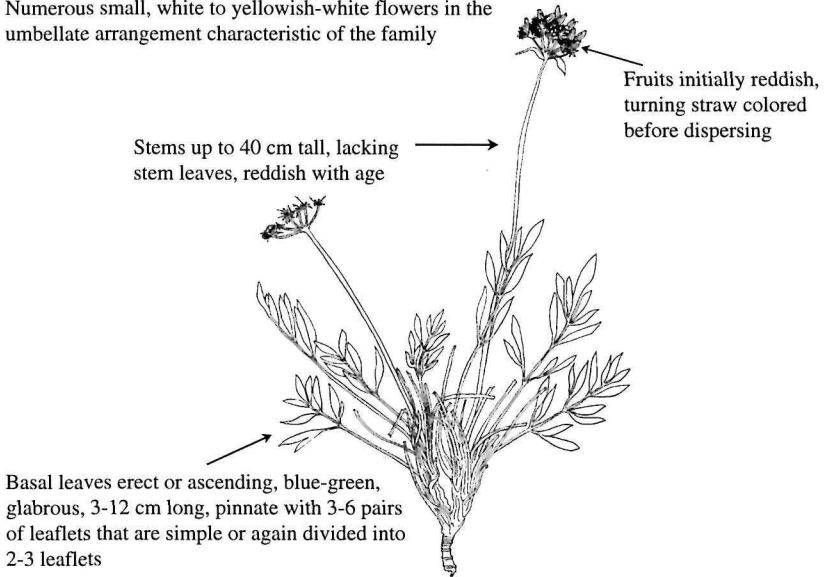


Yukon podistera

Podistera yukonensis

Mathias & Constance

Numerous small, white to yellowish-white flowers in the umbellate arrangement characteristic of the family



Tufted perennial herb with a branched caudex from a stout elongate taproot

Apiaceae

Distribution: Endemic to the upper Yukon River region between McQuesten, Yukon Territory, and Circle, Alaska.

Habitat: Dry, mostly south-facing, rubble slopes, rock ledges, and grasslands, from 1,000 - 4,000 ft. elevation (7,500 ft. in Canada).

Similar Species: Unlikely to be confused with any other species in Alaska. *P. macounii* (Coul. & Rose) Mathias & Const. (= *Ligusticum mutellinoides* ssp. *alpinum* (Ledeb.) Thell.) differs in its smaller size and deeply divided (rather than entire) leaflets. *Bupleurum americanum* Coul. & Rose has entire leaves and yellow flowers.

Notes: Flowering June.

References: Batten et al 1979; Cody 1994, 1996; Hultén 1968; Mathias and Constance 1959; Murray and Lipkin 1987; Parker 1995.



Closeup of Podistera yukonensis

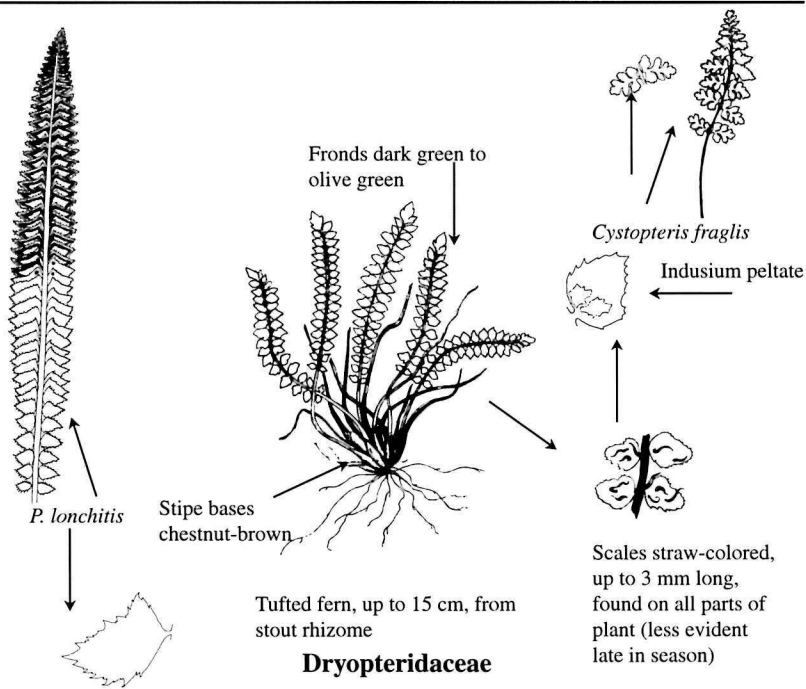
photo by R. Lipkin



Podistera yukonensis habitat

photo by R.Lipkin





Distribution: Endemic to Adak and Atka Islands of the central Aleutian Islands. It has not been seen on Atka since its original collection in 1932.

Habitat: Cliffs and rock outcrops on east facing volcanic slopes, 1,200 ft. to 1,725 ft. elevation. Found in protected gullies, grottos, and on ledges, commonly associated with *Carex macrochaeta*, *Salix rotundifolia*, *Anemone narcissiflora*, and *Arnica unalaschensis*.

Similar Species: *P. lonchitis* (L.) Roth is taller (up to 60 cm) and coarser, with coriaceous leaves and strongly spiny pinnae. Sterile or immature fronds of *Cystopteris fragilis* (L.) Bernh. lack the scales and chestnut-brown stipe bases and have pinnae that are more dissected and lacking bristle-tipped teeth. *Woodsia alpina* (Bolton) S. F. Gray (not found in the Aleutian Islands) has stipes jointed near the base, lacks the chestnut-brown stipe bases and bristle-tipped pinnae teeth, but has an indusium of hair-like segments. Very closely related to the east Asian *P. lachenense* (Hook.) Bedd. whose nearest location, however, is in northern Japan (Hokkaido).

References: Christensen 1936, 1938; Hultén 1968; Lipkin 1985c; Murray and Lipkin 1987; Smith 1985, 1987, 1988; Talbot et al. 1995a, b.



Closeup of Polystichum aleuticum photo by R. Lipkin

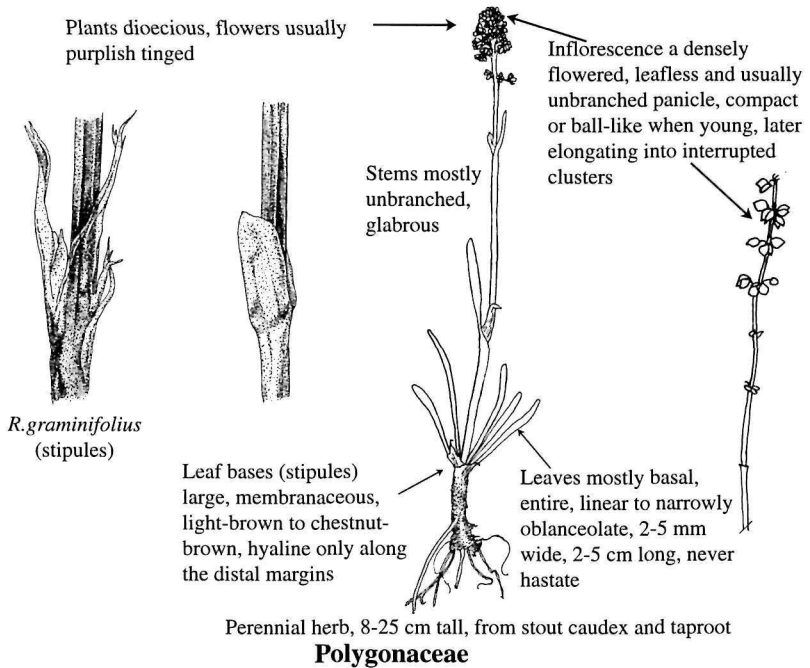


Polystichum aleuticum habitat photo by R. Lipkin



Cape Krause sorrel

Rumex krausei
Jurtz. & Petrovsky



Distribution: Endemic to northwestern Alaska (western Seward Peninsula, capes Dyer and Thompson, and the Squirrel River) and easternmost Chukotka in Russia.

Habitat: Moist to wet gravels and solifluction soil, from 60 - 1,000 ft. elevation. Usually on calcareous gravels, silty sands, or argillaceous soils, often in frost disturbed or solifluction areas with dryas stripe or terrace communities. Also in moist to wet sedge-herb meadows and sedge-dryas tundra on gravel river terraces and bluffs. Sites may appear dry but are almost always at least seasonally saturated.

Similar Species: *R. graminifolius* Lamb. differs from both *R. krausei* and *R. beringensis* in having persistent, white-hyaline leaf bases that typically become tattered into narrow segments, and in usually having at least some hastate leaves. The closely related *R. beringensis* Jurtz & Petrovsky differs in having a much more branched inflorescence with flowers never forming ball-like clusters.

Notes: Flowering in late June and July.

References: Kharkeveich and Kachura 1981; Lipkin 1993; Murray and Lipkin 1987; Yurtsev et al. 1973.



Closeup of Rumex krausei
photo by R. Lipkin



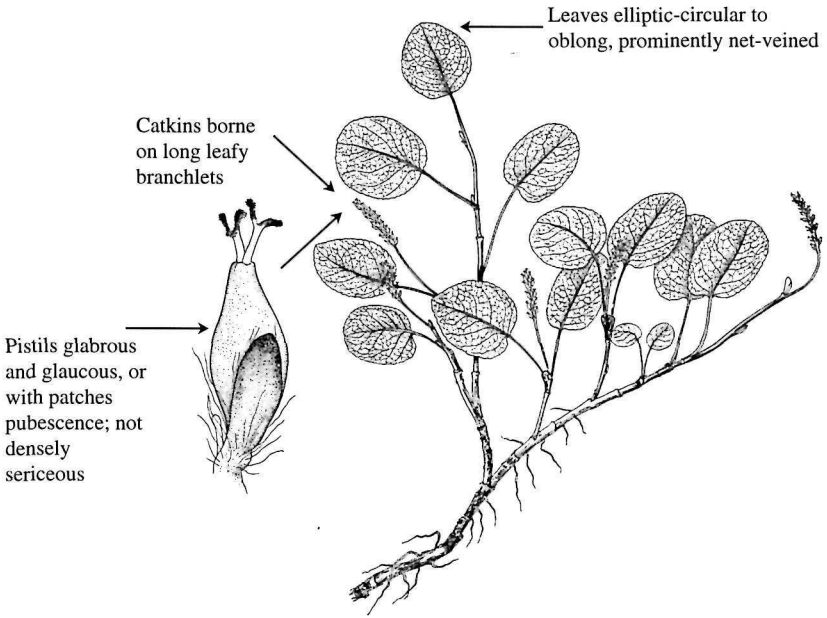
Rumex krausei habitat

photo by R. Lipkin



Smooth-fruited netleaf willow

Salix reticulata
L. ssp. glabelllicarpa Argus



Leaves elliptic-circular to oblong, prominently net-veined

Catkins borne on long leafy branchlets

Pistils glabrous and glaucous, or with patches pubescence; not densely sericeous

Dwarf, trailing, shrub

Salicaceae

Distribution: Endemic to the Queen Charlotte Islands in Canada and one location in Alaska near Juneau.

Habitat: Alpine tundra, in wet depressions, alder thickets, mossy ravines, cliffs and rock ledges from 2,000 ft. to at least 3,000 ft. elevation.

Similar Species: *S. reticulata* ssp. *reticulata* differs in having distinctly pubescent pistils and stipes.

Notes: One of several Queen Charlotte endemic species now known from Southeast Alaska, including *Senecio moresbiensis*, and *Ligusticum calderi*.

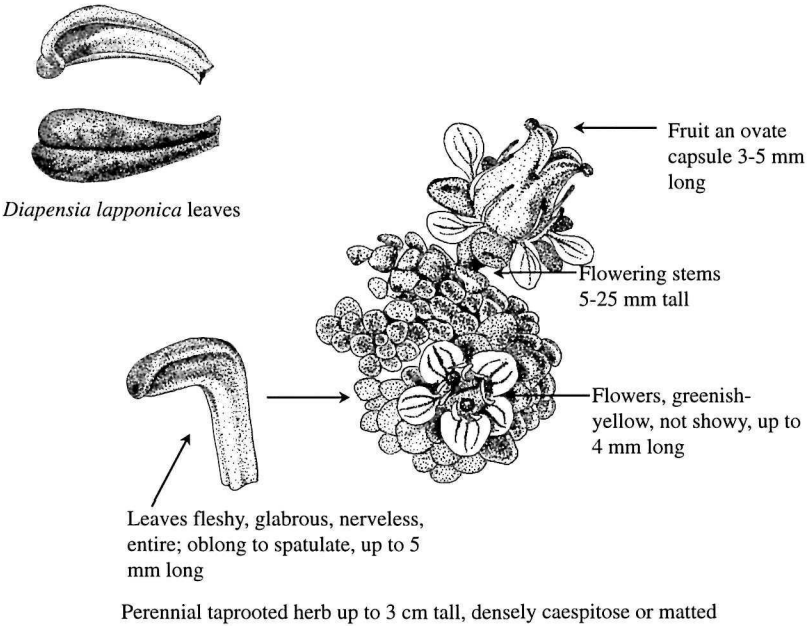
References: Argus 1965, 1973; Calder and Taylor 1968; Douglas 1991; Douglas et al. 1991; Straley et al. 1985.



Closeup of Salix reticulata

photo by H. Roemer





Saxifragaceae

Distribution: Endemic to the central and western Aleutian Islands.

Habitat: Windswept, ridges and summits, in fine and coarse screes to at least 2,000 ft. elevation. Found in prostrate shrub-herbaceous tundra.

Similar Species: Unlikely to be confused with any other saxifrage species in the Aleutian Islands. *Saxifraga serpyllifolia* Pursh is much more loosely tufted, with distinctly yellow flowers on elongated stems and more narrowly spatulate leaves. *Diapensia lapponica* L. can have a similar growth form, but its leaves are distinctly one-nerved and it has large white flowers.

Notes: One of a series of distinctive Aleutian endemic species whose closest relatives are in the Himalaya.

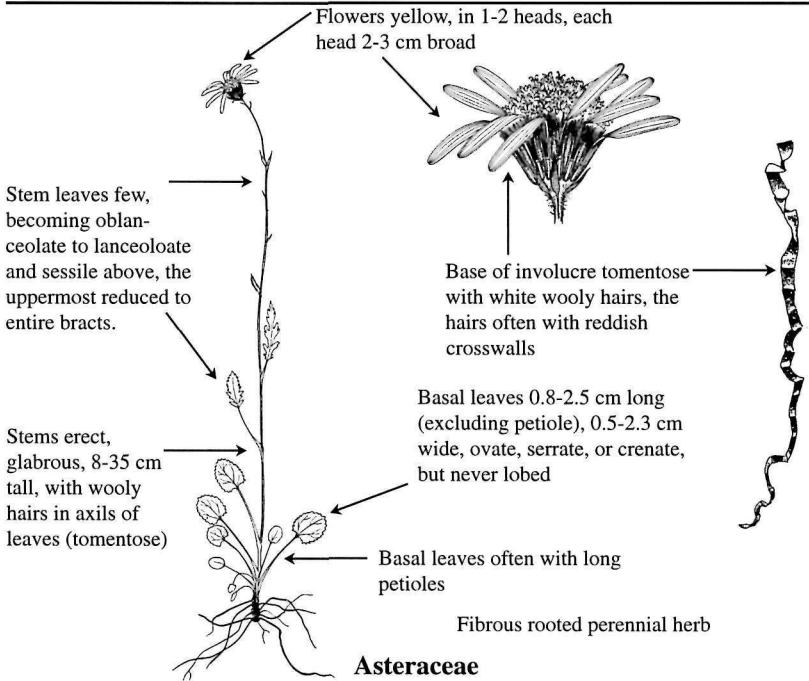
References: Hultén 1936, 1960, 1968; Murray 1980, Welsh 1974.



Queen Charlotte butterweed

Senecio morebiensis

(Calder & Taylor) Douglas & Ruyle-Douglas



Distribution: Known principally from the Queen Charlotte Islands and northern Vancouver Island in British Columbia. In Alaska it is known from Coronation, Heceta, and Dall islands and southern Prince of Wales Island.

Habitat: Alpine and subalpine areas with open, rocky, or boggy slopes, grassy talus slopes, or rocky heaths, from 700 to 2,500 ft. elevation, usually on limestone substrate. Reported from near sea level in Canada.

Similar Species: Quite distinct from any other butterweed within its range. *Senecio cymbalaria* Pursh (= *S. resedifolius* Less.) *S. cymbalarioides* Buek are similar in habit and general appearance, but lack wooly hairs at the base of their involucre and leaf axils and have basal leaves that are sometimes lobed, not merely crenate or dentate.

Notes: One of several Queen Charlotte endemic species now known from South Coastal Alaska, including *Salix reticulata* ssp. *glabellcarpa* and *Ligusticum calderi*, this taxon was originally treated as a subspecies of *S. cymbalarioides* Buek by Calder and Taylor.

References: Barkley T. M. 1978; Calder and Taylor 1965, 1968; Douglas 1982; Douglas et al. 1989; Hultén 1973; Ogilvie 1989; Straley et al. 1985.



Closeup of Senecio moresbiensis
photo by H. Roemer



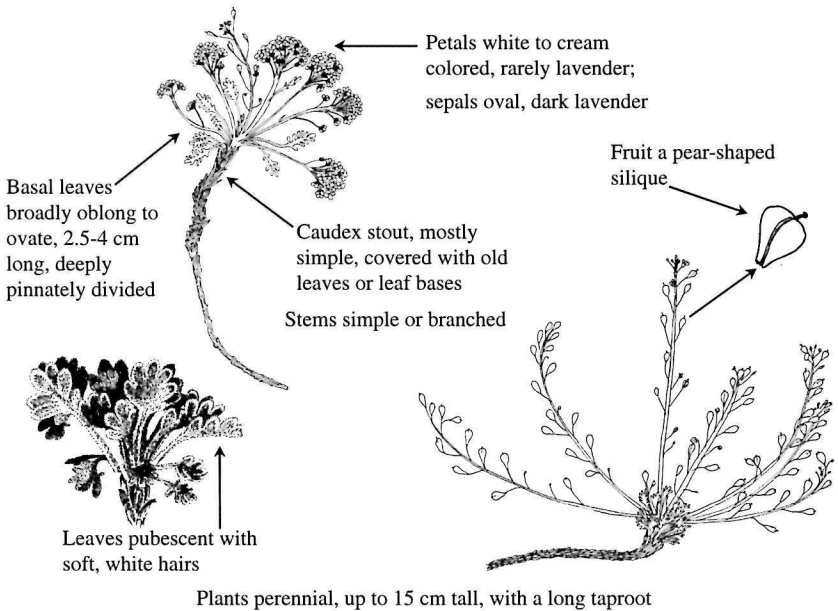
Senecio moresbiensis habitat
photo by H. Roemer



Pear-fruited smelowskia

Smelowskia pyriformis

Drury & Rollins



Brassicaceae

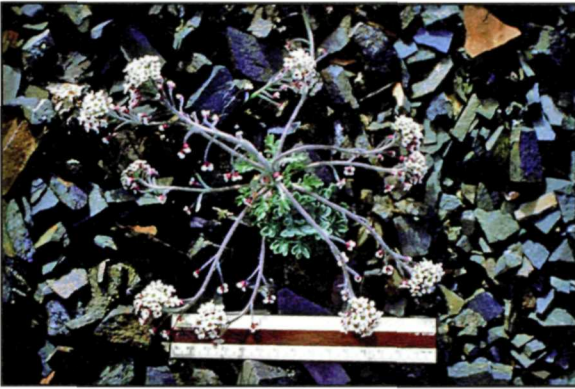
Distribution: Restricted to sites near Post Lake and Farewell Mountain in the western Alaska Range, and several sites in the southernmost Kuskokwim Mountains.

Habitat: Steep, sparsely vegetated, unstable alpine screes from 2,000 - 5,500 ft. elevation. Reportedly found on both calcareous and non-calcareous sites. Commonly associated with *Papaver mcconnellii* (= *P. denalii*), *Saxifraga oppositifolia*, *Epilobium latifolium*, *Arnica griscomii* ssp. *frigida*, *Aconitum delphinifolium*, and *Minuartia arctica*.

Similar Species: Clearly distinguished from all other Alaskan smelowskias by its pear-shaped fruits, stout, mostly simple caudex, and basal leaves that are deeply and pinnately lobed. *S. borealis* (Greene) Drury & Rollins has ovate to oblong fruits and basal leaves that are shallowly 3-5 lobed. *S. calycina* (Stephan) C. A. Mey has a slender, mostly branched caudex, basal leaves that are simple to pinnately lobed and branches that are erect in fruit (rather than decumbent or prostrate). Also similar to *S. ovalis* M. E. Jones of the Pacific Northwest.

Notes: Flowering June to mid-July; fruiting July to August.

References: Drury and Rollins 1952; Hultén 1968; Murray 1981d; Murray and Lipkin 1987; Parker 1994; Rollins 1993; Welsh 1974.



Closeup of Smelowskia pyriformis photo by C. Parker



Smelowskia pyriformis habitat photo by C.Parker



Glossary

GLOSSARY

Achene - small, dry, indehiscent, single-seeded fruit.

Adventitious - developing in an unusual position, such as roots originating along the stem.

Anthesis - time of flowering when flowers are fully expanded.

Axil - angle between the stem and any leaf that arises from it.

Bract - small (reduced) leaves.

Caespitose - growing in tufts or clumps.

Calyx, calyces (*pl.*) - first (outer) whorl of floral parts, i.e. the sepals.

Capitate - aggregated into a compact cluster.

Caudex - stem, referring here particularly to the basal portions at ground level.

Ciliate - fringed with long, simple hairs.

Clasping-auriculate - condition in which projections (auricles) from the base of leaves partially surround (clasp) the stem.

Corm - short, solid, thickened, vertical underground stem.

Corolla - second (inner) whorl of floral parts, i.e. the petals.

Cruciform - cross-shaped.

Decumbent - lying on the ground, but with the apex ascending, erect.

Disjunct - geographically separated from the main range of the taxon.

Edaphic - relating to conditions of the soil.

Entire - without indentations of any kind, often referring to the margin of a leaf or a petal.

Fronde - the leaf of a fern.

Glabrous - without hairs.

Glandular - with secreting organs (glands), which can be stalked (on the summits of hairs) or sessile.

Hyaline - translucent, even transparent.

Hypogynous - with flower parts (sepals, petals, stamens) attached to the receptacle below the pistil.

Imbricate - overlapping like shingles on a roof.

Indusium, indusia (*pl.*) - elaboration of the fern frond surface that covers or contains the sori (sporangia).

Inflorescence - a flower cluster or the specific arrangement of the flowers.

Involucre, involucrem - one or more whorls of small leaves or bracts (phyllaries in the Compositae) close beneath a flower or flower cluster.

Lanceolate - lance-shaped; longer than broad, wide at the base and tapering to a narrow apex.

Leaflet - leaf-like division of a single compound leaf.

Ligulate - tongue-shaped, referring here to the extended corolla of composite ray flowers.

Linear - long and narrow, the sides parallel or nearly so.

Linear-lanceolate - a form intermediate between linear and lanceolate.

Lunate - crescent shaped.

Obcordate - inversely heart-shaped; attached at the narrower end and notched at the apex.

Oblanceolate - the reverse of lanceolate; the structure is broadest at the apex and tapers to the base.

Obovate - the reverse of ovate; broader at the apex than at the base.

Ovate - oval, egg-shaped in outline. (Term used for plane surfaces.)

Ovoid - egg-shaped. (Term used for solid objects).

Pedicel - stalk of a single flower.

Peduncle - stalk of a cluster of flowers or of a single flower when it alone is the entire inflorescence.

Peltate - shield-shaped.

Petiolate - having a stalk (petiole), referring to the attachment of leaves.

Phyllary - bract in the involucre of the composite flower.

Pinna, pinnae (*pl.*) - used here for the primary division of a compound fern frond.

Pinnate - with leaflets or pinnae arranged on either side of a common axis.

Pinnately lobed - with lobes separated by deep indentations and having therefore the appearance of a pinnately compound leaf.

Pistil - structural unit of stigma, style, and ovary.

Prickle - small, sharp-pointed outgrowth of plant surface.

Pubescent - covered with short, soft hairs.

Pustulate - having raised areas like blisters.

Reniform - kidney shaped

Rhizome - underground stem.

Rosette - cluster of leaves from a crown or center.

Sessile - not stalked or petiolate.

Setose - covered with bristles.

Silique - dry, dehiscent fruit (pod) characteristic of the Brassicaceae (mustards).

Sorus, sori (*pl.*) - cluster of sporangia in ferns.

Sporangium, sporangia (*pl.*) - spore-bearing structure.

Stellate - star-shaped.

Stipe - referring here to the stalk of the fern frond.

Style - thin, often attenuated portion of the pistil occurring between the stigma and ovary, which in mustards remains as a short projection at the tip of the silique and is diagnostic in *Draba*.

Terete - cylindric, therefore round in cross-section, and often tapering at both ends.

Ternate - in threes; ternately divided in the division of a leaf, for example, means divided into three segments or more, but following a pattern of threes or multiples thereof.

Tomentum (*n.*), **tomentose** (*adj.*) - mat of soft, wool-like hairs.

Trichome - a hairlike outgrowth of the epidermis.

Tube - referring here to the corolla tube, the united portion of a corolla in which the petals are fused to one another.

Tuberculate - with wart-like thickenings or knobby projections.

Umbel (*n.*) **umbellate** (*adj.*) - flat-topped inflorescence in which pedicels and peduncles arise from a common point.

Villous - with long, soft, shaggy hairs, not matted.

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