
A Field Guide to Species at Risk in the Coast Forest Region of British Columbia



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Every attempt has been made to ensure accuracy of the information presented herein. Corrections may be directed to Kathy.Paige@gems4.gov.bc.ca.

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INTRODUCTION

British Columbia is a province rich in native species and plant communities. Some species and plant communities are naturally rare, have a restricted distribution or are associated with specific environmental conditions making them vulnerable to extinction. Others were once widespread or common but now occur over a much smaller area, owing to threats of various origins. The impact of human activities on ecosystems has accelerated the decline of their populations, or the deterioration of their habitats. Collectively these species and plant communities are *species at risk*.

Why this field guide?

Special management attention to species at risk depends largely on the ability of industry and the public to recognize these species and plant communities. The purpose of this field

guide is to provide foresters, biologists, naturalists and those interested in biodiversity conservation with a tool to help identify species at risk in the Ministry of Forest's Coast Forest Region (Fig. 1).

Who determines species at risk?

The status of species at risk is assigned to plant and animal species and plant communities by various international, national and provincial organizations.

In order to assess the degree of conservation risk of wildlife populations and habitats, The Nature Conservancy and the Natural Heritage Network jointly established *NatureServe* in July 1999 to rank species according to a standardized set of criteria.

NatureServe represents an international network of biological inventories in Canada, United States, Latin America and the Caribbean. These ranks are scientifically based, but have no legal implications.

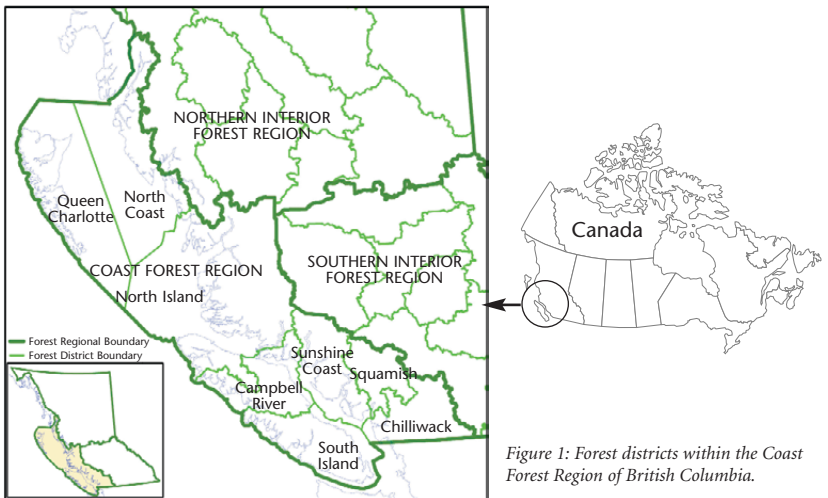


Figure 1: Forest districts within the Coast Forest Region of British Columbia.

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assigns a national status to species at risk in Canada. COSEWIC consists of representatives from federal, provincial, territorial and private agencies, First Nations and independent experts; it is given legal status under the *Species at Risk Act (SARA)*. In B.C., the **Conservation Data Centre (CDC)**, in the Ministry of Sustainable Resource Management, assigns the provincial rank, which is based solely on the status of the species within the province.

Species ranking

The NatureServe ranking of species, including plant communities, is based on factors such as rarity; the size, quality, conditions and viability of the populations; and actual or potential threats facing the species or its habitats. Each species or natural community type is assigned a global (G) rank on a scale of 1 (critically imperiled) to 5 (common); a national Canada-wide (N) rank; and a subnational (S) rank that reflects its provincial conservation status. The ranking process also includes *modifiers* (i.e., letters or marks that further define the reason behind the S, G or N ranking) (Appendix I).

For more information on NatureServe, its methods and ranks, visit the NatureServe web page <http://www.natureserve.org>

For information on ranking in B.C., visit <http://wlapwww.gov.bc.ca/wld/documents/ranking.pdf>.

Species listing

As of January 2003, the CDC had identified over 1500 animals, plants and plant communities as being at risk in B.C. The CDC separates species into three lists according to conservation risk:

- **Red List** – species legally designated as *endangered* or *threatened* under the *B.C. Wildlife Act*, and species with S ranks of 1, 2, 1-2, 1-3, H or X (Appendix I).
- **Blue List** – species not immediately threatened, but of concern because of characteristics that make them particularly sensitive to human activities or natural events. Species with S ranks of 2-3, 3, or 3-4 (animals only) (Appendix I).
- **Yellow List** – all species not included on the Red or Blue lists. Species with S ranks of 4, 5, 4-5, or 3-4 (plants only).

From 1999 to 2003, a Technical Advisory Committee of the B.C. Identified Wildlife Management Strategy assessed and ranked species at risk on the basis of their relative conservation risk (by combining global and provincial ranks), and relative risk (by assessing habitat protection mechanisms and main threats causing a species or plant community to be at risk). This resulted in the selection of *Identified Wildlife* requiring special planning and management attention under the *Forest and Range Practices Act of British Columbia*.

Selection of species at risk for this guide

This field guide includes Identified Wildlife and species that are ranked endangered or threatened by

COSEWIC as of January 2002. The selection of Identified Wildlife and COSEWIC species meets the requirements of today's forestry certification programs.

GUIDE CONTENTS

This guide consists of seven sections: 1) invertebrates, 2) fish, 3) amphibians and reptiles, 4) birds, 5) mammals, 6) mosses, lichens and vascular plants, and 7) plant communities. The following information for each species or plant community is provided:

- English name: the popular name that is generally used for a particular animal¹ or plant².
- Scientific name: the scientific name of a species consists of two words; the genus (capitalized) and the species (lower case). If a species is divided into subspecies, a third word indicating the subspecies is added. For example, the scientific name of the northern saw-whet owl is *Aegolius* (genus) *acadicus* (species) *brooksi* (subspecies).
- Description: defining characteristics, photographs, drawings and comparative information about similar species and communities. In the case of

animals, field signs (e.g., tracks, scats, burrows, nests) are also described. Plant communities are identified through a combination of site characteristics and common plant species.

Features may vary slightly within each species. Scientific names of similar species are provided in Appendix VI.

- Distribution: information about the location of species and plant communities.

Forest districts: distribution according to the Ministry of Forests administrative units (Fig. 1).

Biogeoclimatic units (Appendix II): units based on geographically related ecosystems defined by local climatic regimes and the vegetation found on a particular site. Many species at risk described in this book are associated with Garry Oak ecosystems, which are described in Appendix III.

1 The nomenclature used in this book diverges from the British Columbia Resources Inventory Standards Committee (RISC), which gives a single common name to each species and does not refer to specific subspecies or populations. For example, while this field guide refers to "Vancouver Island" Common Water Shrew, RISC refers only to Common Water Shrew.

2 Plant species names follow nomenclature used in Douglas et al.'s (1998 to 2002) *Illustrated Flora of British Columbia*.

-
- Habitat information: places where the species may be encountered. Structural stages, coarse woody debris decay classes and wildlife tree classes are described in Appendix IV.
 - Status: the global, national and provincial status of each species and plant community is provided in Appendix V.
 - Annual Schedule: a graph representing approximate times for important life history stages.

HOW TO USE THIS BOOK

1. Become familiar with each species or plant community. Consult the first pages of each section for general features of the group of species and plant communities. The Glossary may provide additional information.
2. It is best to identify a species by sight. However, because species at risk are rare and not often observed, focus on recognizing field signs as listed in each account.
3. Revisit the area where you encountered the species, and search for signs such as tracks or feathers that may confirm identification.
4. Reading field signs (nests, tracks, droppings, claw marks, trails) is not easy. For example, some birds may use the old nests of other species. If there is evidence of an old nest being reused, one must see eggs, nestlings or birds to be sure of the resident. Tracks register differently in crusty snow, deep soft snow, mud or dust. On a sunny winter day, a track may become enlarged or distorted. Individual variations may add to the difficulty of identifying a species. When investigating the presence of a species at risk, it is vital to gather as much supporting data as possible. Follow the trail of the animal to establish the track pattern, and look for tracks or droppings. Use a retractable tape to take measurements, and a flashlight and magnifying glass to facilitate close-up examinations.
5. Where possible, photograph a species, habitat, plant community or sign. Colour photography is especially useful in substantiating records. Photographs allow you to compare findings with reference materials.

REPORTING OBSERVATIONS

After confirming the presence of a species at risk, record the following information:

- general description of the habitat, noting any special features; include dominant plants, moisture (inundated, mesic, xeric, etc.); in the case of plants and plant communities, estimate abundance and landscape context
- elevation in metres
- slope gradient (%) and aspect (degrees)
- biogeoclimatic zone, subzone and variant
- location on an air photo, map or GPS reading

Obtain a specimen, if applicable, for verification by the CDC. See Douglas et al. (2002) and the following instructions for collecting and labelling plant specimens for submission to the CDC. Remember to not collect from parks. A permit is generally required for animal collections (e.g., tissue or hair samples). See Proulx (1999) and Powell and Proulx (2003) for more information on trapping technology, and animal capture and handling.

Plant collections

While collection of a plant specimen is usually required to positively identify the species, common sense should prevail when a rare plant species population is encountered. Where limited individual plants are encountered, do not collect a

specimen; rather, record the precise site location and submit it to the CDC. Subsequent field visits by an expert botanist can confirm identification.

In the field – if there are numerous individual plants and the population appears stable, collect 1-2 full plant specimens to press and submit to the CDC. Collect the entire plant, including the root system. Minimize bending or folding of the specimen where possible. Place the specimen in a plastic bag and remove as much air as possible from the bag, being careful not to damage or compress any plant structures. If the specimen cannot be pressed the day it is collected, refrigerate it for a period not exceeding five days.

At home – a typical plant press consists of two pieces of plywood, cardboard, newspaper sheets and rope. Place the specimen on one side of the newspaper sheet and fold the other side over it. Place the newspaper between two cardboard sheets and onto a sheet of plywood. When all specimens have been prepared this way, place the remaining plywood sheet on top of the cardboard stack and squeeze the press together using rope. Specimens pressed in this manner usually require 5-10 days to dry. It is important to label each specimen with the plant name, location, date, collector's name, flower colour and description of the plant habitat.

Animal collections

It is generally not required to collect animals for identification. However, for some species, there is no reliable field technique to distinguish species at risk from common ones (e.g., bat species). In these cases, tissue or hair samples may be collected for DNA analysis. A species expert should be consulted. Permits may be required. Contact regional Ministry of Water, Land and Air Protection offices for contacts or more information.

Report observations to CDC

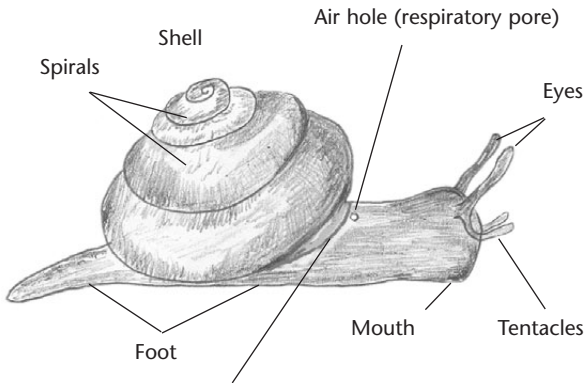
Report observations to the CDC using Field Observation Forms available at: <http://srmwww.gov.bc.ca/cdc/contribute.htm>.

Copies of these forms should also be faxed to the regional office of the Ministry of Water, Land and Air Protection and to forestry company supervisors in charge of species at risk issues.

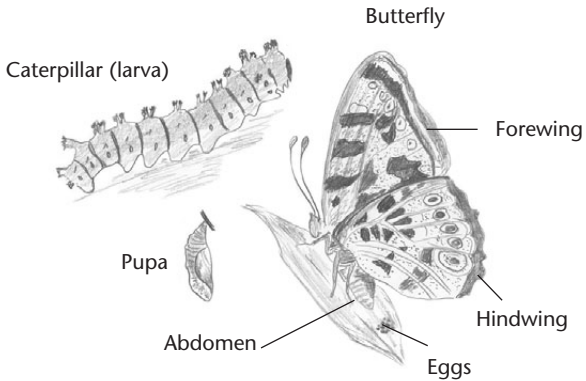
Invertebrates

English Name	Scientific Name	Forest District	Biogeoclimatic Unit
Oregon forestsnail	<i>Allogona townsendiana</i>	Chilliwack South Island	CDFmm CWH
Puget Oregonian snail	<i>Cryptomastix devia</i>	Chilliwack South Island	CDFmm CWH
Quatsino cave amphipod	<i>Stygobromus quatsinensis</i>	Campbell River North Coast South Island	CWH
Taylor's checkerspot	<i>Euphydryas editha taylori</i>	South Island	CDFmm
Island large marble	<i>Euchloe ausonides insulanus</i>	South Island	CDFmm
Dun skipper	<i>Euphyes vestris</i>	South Island Sunshine Coast Chilliwack	CDFmm CWHxm1
Johnson's hairstreak	<i>Loranthomitoura johnsoni</i>	Chilliwack	CWH: dm, xm1
Island blue	<i>Plebeius saepiolus insulanus</i>	South Island	CDFmm

CHARACTERISTICS OF INVERTEBRATES



Thickened lip of shell where tooth-like projection occurs



OREGON FORESTSNAIL

Allogona townsendiana

Description

The Oregon forestsnail has a large, round pale brown to pale yellow shell with 5-6 whorls and a diameter of 28-35 mm. The whorls have irregular, fine pale lines and spirals. When viewed from below, the white and thickened lip of the adult shell is evident.

Similar species: This species is unlikely to be confused with other land snails within western B.C. (there is another species of *Allogona* in eastern B.C.). The Puget Oregonian is almost the same size, but unlike the Oregon forestsnail, adults have a tooth-like projection in the aperture of the shell. The Puget Oregonian probably no longer exists in the province. The northwest hesperian is smaller (shell diameter <16 mm) and the shell is usually covered with short hairs, which are noticeable when the shell is held up to light. Other large snails within the range of the Oregon forestsnail include the native Pacific sideband, and the introduced grovesnail and brown garden snail. With the exception of the Puget Oregonian, the shells of these species do not have a white, thickened lip.

Distribution

The Oregon forestsnail is native to western North America. In B.C. this snail is restricted to a very small area on southern Vancouver Island and



Oregon forestsnail

K. Ovaska

the coastal lowlands in the lower Fraser Valley.

Habitat

The species inhabits low-elevation mixedwood and deciduous forests and riparian areas with a rich and highly productive understory. Microsites where the snail is found include a deep, rich mull-type litter layer, extensive coarse woody debris, cool shade, dense herbaceous vegetation, and most importantly, a continually moist environment. It seeks out sheltered environments during the cold periods of winter and the drought periods of summer. The snail is associated with bigleaf maple, cottonwoods, willow, western redcedar and stinging nettle. The snail is hermaphroditic and lays eggs in the spring. It selects soft and moist soil sites and digs a shallow depression before laying multiple eggs. This snail may be long-lived and probably does not reach sexual maturity for several years.

Elevation: <250 m

Structural stages: 7

PUGET OREGONIAN SNAIL

Cryptomastix devia

Description

The Puget Oregonian snail has a large, round pale yellow to brown shell with a diameter of 18-26 mm and 5-6 whorls. The broadly expanded, flared and thickened lip of the shell is a characteristic feature of adult shells. This lip is pale in comparison to the rest of the shell and has a distinct white tooth-like structure within the aperture. The snail has a light brown body, which is sometimes offset by a lilac colouration.

Similar species: The Oregon forestsnail, pygmy Oregonian and northwest hesperian snails also have an expanded, flared and thickened lip of the shell. However, both the pygmy Oregonian and northwest hesperian are covered with spiral rows of small hairs that can be readily seen when held in the light, and both species are smaller (<10 mm and 16 mm in diameter, respectively). The northwest hesperian and Oregon forestsnail lack the tooth-like structure within the shell aperture. The Oregon forestsnail is typically larger (28-35 mm in diameter). In addition, two large introduced landsnails occur within the potential range of the Puget Oregonian snail in B.C.: the grovesnail and brown garden snail. Both lack the thickened, flared upper lip and apertural tooth of adult Puget Oregonian snails.

Distribution

The Puget Oregonian snail is native to western North America, occurring at the northernmost extent of its range in Canada. Old records suggest it



B. Leonard

Puget Oregonian snail

occurred on southern Vancouver Island and possibly in the lower Fraser Valley, but a lack of recent records suggests it has been extirpated from this region.

Habitat

The Puget Oregonian snail inhabits older forests in low- to mid-elevations and is considered a mature forest specialist. Mixedwood forests with a multi-layered understory and a continuous moisture supply are important habitat features. High canopy closure ensures that the forest floor remains moist. Structural associations include bigleaf maple-dominated stands with sword fern understory and an extensive epiphyte component, decaying hardwood logs and other coarse woody debris, deep litter layer and extensive fungal or mycorrhizal associations as potential food sources. This species is hermaphroditic but probably exhibits cross-fertilization. Little is known of its reproductive biology. The snails may lay eggs in sheltered locations, such as under or within coarse woody debris. The snails may be slow growing and like other landsnails may not reach maturity for several years. The Puget Oregonian snail is likely a fungivore-herbivore.

Structural stages: 7

QUATSINO CAVE AMPHIPOD

Stygobromus quatsinensis

Description

The Quatsino cave amphipod is a minute, translucent cave crustacean that lives exclusively in the darkness of the freshwater that trickles through the cave formations of coastal B.C.

Length: 5-7 mm

Distribution

Restricted to Vancouver Island.

Habitat

Known from karst formations, springs and subterranean systems. Karst formations are a result of water percolating through carbonate bedrock (limestone, marble or dolomite) over thousands of years, creating underground cave and stream networks.

Habitats with karst formations typically have carbonate bedrock, heavy rainfall, steep topography, a diverse epiphytic component and dense vegetation. The amphipod's habitat is located below second growth, mature and old growth forests. Canopy species composition: typically western hemlock, western redcedar, amabilis fir, Sitka spruce and yellow-cedar. Understory with dense epiphytic component. The amphipod disperses through freshwater that flows through the subterranean fissures, cracks and crevices of karst formations.

Elevations: 100-800 m



Quatsino cave amphipod

M. Nyhof



The Quatsino cave amphipod feeds on organic matter. Note cave formations with shallow mud-bottom, gravel and cobbles, detritus and organic materials.

P. Griffiths



J. Marc

ISLAND LARGE MARBLE

Euchloe ausonides insulanus

Description

Adults: A white and greyish-black butterfly with a marbled texture on the underside of the hindwings and black markings at the tips of the forewings. The veins on the hindwings are emphasized as yellowish lines, giving the species a marbled appearance. The sexes are similar but the females have darker yellowish marbling on the hindwings. The body is covered with whitish-yellow hairs, giving it a fuzzy appearance. **Wingspan:** 4.1-4.8 cm

Eggs: Eggs are at first blue-green, then turn orange within a day, and eventually bright red. Prior to hatching, the eggs turn a drab yellowish-brown. Eggs (only one brood per year) are laid singly on the stems, leaves or flowerheads of the larval foodplant, and caterpillars feed on these until forming pupae sometime in June or July.

Caterpillars: When first hatched, the caterpillars have an overall orange-yellow coloured body and a black head. The caterpillars go through a series of moults and change from greenish to grey-green with a dotted strip of yellow and blue spots running



Adult Island large marble

J. Miskelly



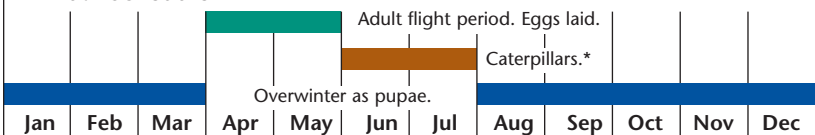
Island large marble caterpillar

J. Miskelly

lengthwise down the body. The ventral half of the body is a darker grey-green colour than the upper dorsal half. Just before pupation this strip of dots changes to a distinct line of yellowish spots coupled with light or dark purple spots. Island large marbles overwinter as pupae.

Similar species: No other marble-type butterflies within its range.

Annual Schedule



* uncertain dates

Distribution

Found in Garry oak and associated ecosystems (Appendix III).

Habitat

Historical populations of the Island large marble occurred in open meadows and woodlands within the Garry oak and associated ecosystems. The availability of caterpillar and nectar foodplants in these ecosystems partially determines the species' distribution. Historically, caterpillars likely fed upon rockcress and other plants in the mustard family. In the San Juan Islands (U.S.A.), adults have been observed laying eggs on patches of introduced European weeds: field mustard and tumble mustard. These plant species have a greater drought resistance than native mustard species.

The adult nectar sources for this species are unknown. Rockcress occurs throughout southern Vancouver Island and the Gulf Islands, and is widely distributed on the coast. It grows in habitat that includes rock slopes and native grasslands, notably areas with gravel soils, beaches, bluffs, disturbed sites and meadows. The plant is either biennial or a short-lived perennial. One or two erect stems grow from a basal rosette and reach heights up to 100 cm. Leaves (12 cm long) with purplish undersides grow alternately along the stem. The small white flowers bloom from May through July.

Structural stages: 1, 2, 3

Distribution

This species is known from populations at scattered locations throughout the lower mainland, southern Vancouver Island and the lower Fraser Valley. It has not been seen on Vancouver Island for several years yet could still exist within patches of unsurveyed habitat in the Malahat region north to Duncan and in other unsurveyed habitats. On the mainland, populations exist at Powell River, Boston Bar, Lillooet and points in-between within the lower Fraser Valley.

Habitat

The dun skipper is found in Garry oak and associated ecosystems (Appendix III). Records are from open moist to dry meadows, open deciduous woods and areas adjacent to swamps and streams; disturbed sites including roadsides, ditches, railway lines and powerline right-of-ways; and areas where spring floods occur, natural hotspots, seeps and streambanks. The conditions necessary for the larval foodplant will partially determine the habitat preferences for the species. The dun skipper may utilize sedges as food plants, although specific studies need to be completed to confirm the foodplant preferences.

Structural stages: 1, 2, 3

JOHNSON'S HAIRSTREAK

Loranthomitoura johnsoni

Description

Adults: Upper wing surfaces of males are dark rusty brown and the females are a more orange-brown. The under wing surfaces (both sexes) are grey-brown and darker toward the outer wing margins. A distinct thin white line runs parallel to the outer wing margins on the wing undersides.

Wingspan: 2.5-3 cm

Caterpillars: Greyish-blue with lighter bumps down the dorsal edges.

Pupae: dark brown, smooth and round.

Similar species: Thicket hairstreak has grey-blue colouration on the wing uppersides, which is different from the Johnson's hairstreak.

Distribution

Historic records of Johnson's hairstreak are from the lower Fraser Valley and southeastern Vancouver Island. Recent records are from the Lower Mainland region including Stanley Park, Spirit Regional Park, Lynn Canyon Park and the University of B.C. Haney Research Forest. This species may occur within unsurveyed habitats but has been difficult to study due to its arboreal preferences.



C.S. Guppy

Johnson's hairstreak



L. Ulsh

Thicket hairstreak

Habitat

The Johnson's hairstreak occurs within mistletoe-infected old-growth forests. Adults frequent forest openings, riparian areas and forest edges with abundant wildflowers. Caterpillar food sources include all plant parts of the exposed mistletoe

Annual Schedule



* uncertain dates

parasite masses, especially dwarf mistletoe on western hemlock.

Adults get nectar on wildflowers growing in forest and riparian openings.

Elevations: 0-625 m

Structural stages: 6, 7



J.M. Moore

Mistletoe-infected old-growth forest.

ISLAND BLUE

Plebeius saepiolus insulanus

Description

Adults: The wing uppersides of the female are dark brown with a bluish metallic sheen and the hindwing margins have a row of black spots with orange caps. The undersides are pale tan to dark grey. The male has metallic blue wing uppersides and a row of dark spots on the hindwing margins. The undersides are bluish toward the base of the wings and gradually turn silver-grey toward the margins. Both wings have two rows of black spots. The hindwing has orange caps on the second row of spots that are directed toward a partial third row of spots. One spot along this row is distinctly larger. Both sexes have a distinct black bar in the forewing.

Wingspan: 21-28 mm

Caterpillars: Reddish-brown or green.

Similar species: The western spring azure is a widespread similar species. The wing undersides have a row of distinct black spots toward the outer margins. These spots are smaller and not as distinct in the Island blue. The silvery blue and the Boisduval's blue are also similar. The silvery blue underwings have distinct black spots,



Island blue male

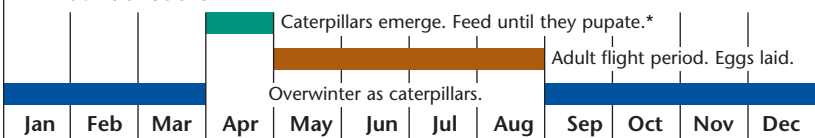


Island blue female

outlined by a white ring, located toward the outer wing margins. The underwings of the Boisduval's blue have black spots on the forewings, but unlike the Island blue, do not have black spots on the hindwings.

This butterfly has not been recorded since 1979 and thus little is known about it. One generation is produced

Annual Schedule



* uncertain dates

each year and records indicate the flight period is between early May and mid-August, and sometimes later in the season for higher elevations.

Distribution

The Island blue is native to B.C. The only global records for this species are on eastern Vancouver Island, from Victoria north to Saratoga Beach near Campbell River.

Habitat

This species is known to inhabit open areas, meadows and associated Garry oak grasslands from lowland sites to subalpine areas. The Island blue caterpillar feeds on native clovers, which are widespread and often occupy disturbed sites where there is continuous moisture for growth. Numerous clover species have been introduced to Vancouver Island ecosystems, and the mainland subspecies is known to readily use these clovers as foodplants. It is unknown why the Vancouver Island subspecies does not utilize introduced clovers.

Structural stages: 1, 2, 3



Silvery blue

C.S. Guppy



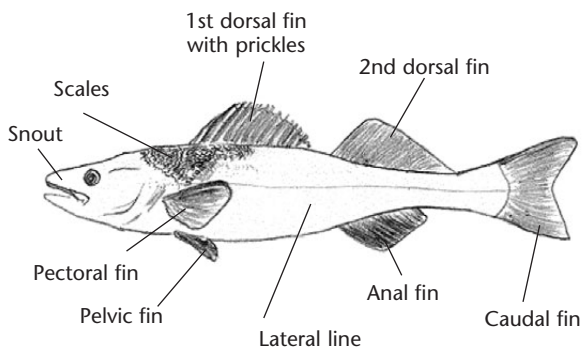
Boisduval's blue

C.S. Guppy

Fish

English Name	Scientific Name	Forest District	Biogeoclimatic Unit
Western Brook lamprey	<i>Lampetra richardsoni</i>	Campbell River	CWH
Cowichan Lake lamprey	<i>Lampetra macrostoma</i>	South Island	CWH
Bull trout	<i>Salvelinus confluentus</i>	Chilliwack North Coast Sunshine Coast Squamish	CWH, ICH, IDF, ESSF, MH
Nooksack dace	<i>Rhinichthys</i> sp.	Chilliwack	CWH
Salish sucker	<i>Catostomus</i> sp.	Chilliwack	CWH
Cultus pygmy sculpin	<i>Cottus</i> sp.	Chilliwack	CWH
Limnetic and benthic sticklebacks	<i>Gasterosteus</i> spp.	Sunshine Coast	CWHxm

CHARACTERISTICS OF FISH



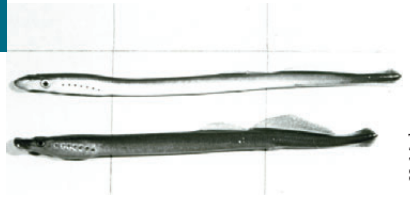
WESTERN BROOK LAMPREY

Lampetra richardsoni

Description

The Western Brook lamprey (Morrison Creek population) has both a parasitic and a non-parasitic form. Both forms remain in fresh water throughout their entire life cycle. After hatching, the young quickly burrow into the substrate for three to seven years, before metamorphosing into juveniles. The parasitic form becomes distinguishable in the spring of the year following metamorphosis, when it develops countershading with a silver upper body and a white lower body. It has teeth and is almost mature, but without sexual external characteristics such as a shorter tail and larger fins. It does not completely mature until the following year. The non-parasitic form shows advanced signs of sexual maturation and is ready to reproduce after metamorphosis. It spawns and then dies.

Length: 100-150 mm



Western Brook lamprey

H. McDermott

Distribution

Restricted to the Morrison Creek watershed on Vancouver Island.

Habitat

The Morrison Creek area is characteristic of interlinking wetlands with meadows, thick brush, beaver dams and open water ponds. The streambed is dominated by compressed till with limited patches of small gravel and an abundance of stream debris, which provide habitat diversity.