



British Columbia's Coast Region Species and Ecological Communities of Conservation Concern

SOUTH COAST CONSERVATION PROGRAM

Protecting and Restoring at Risk species and Ecological Communities on BC's South Coast

SPECIES PROFILE: Johnson's Hairstreak (*Callophrys johnsoni*), Family Lycaenidae
Status Global: G3G4 Provincial: S1S2 SARA: N/A BC List: Red - Identified Wildlife

A member of the family Lycaenidae ("Gossamer Winged" butterflies), the second largest global family of butterflies. Johnson's Hairstreak is also referred to as "Mistletoe" Hairstreak or "Brown Mistletoe" Hairstreak, a reference to the larval dependence on subspecies of mistletoe. Larvae emit a sugary solution through a "honey gland" (dorsal nectary organ). Ants feed on the solution and in turn protect the caterpillar from predators.



Johnson's Hairstreak

Characteristics (things to look for)



Larva

Wingspan: 2.5-3.5 cm. Adult males and females are similar, with subtle colouration differences on the uppersides of both sets of wings. Males are chocolate-brown except for an orange-brown 'tail', females are more reddish or orange-brown except for brown on the wing margins and the area near the tail. Undersides of wings of both sexes are brown with a thin, jagged white line, bordered with black, running across both sets of wings on the inside edge. The hindwing has a small "tail" with a few black dots and bluish and orange scales. Males have larger eyes than females, which may assist in detecting mates. Larvae are green or yellowish-olive with red, green, yellow, or white markings and lighter raised chevrons that somewhat resemble "scutes" (bony protrusions or scales), that run down the dorsal area. Hibernating pupae are dark brown.

Looks like (Similar)

The more common Cedar Hairstreak, though much smaller, overlaps in distribution and is the most likely species to be confused with Johnson's Hairstreak. The ventral wing pattern of Cedar Hairstreak appears washed out compared to Johnson's Hairstreak and the ventral jagged white line, which runs midway along both sets of wings, is bordered with amber instead of black.



Cedar Hairstreak

Habitat

Johnson's Hairstreak occurs within dwarf mistletoe-infected forests (typically low elevation, structurally diverse, old growth/mature forests). Adults frequent forest openings, riparian areas and forest edges with abundant wildflowers. This species will utilize nectar food plants within clearcuts and artificial edge openings as long as they are within sufficient proximity to adjacent to forested habitats. Hemlock dwarf mistletoe is a perennial parasite, seeds are dispersed when the plant matures and flowers after 2-3 years. The naturally sticky seeds are spread through explosive ejection, showering nearby trees and taking 'root' where they hit branches and foliage. As the seed germinates and grows, the "infection" produces swelling and deformities in the trees branches ("witch's brooms"), or trunk. In BC, Johnson's Hairstreak larvae require hemlock dwarf mistletoe to complete their lifecycle. Infected trees and stands are typically cleared as part of stand management practices as they create hazard trees as well as reducing economic value of timber.

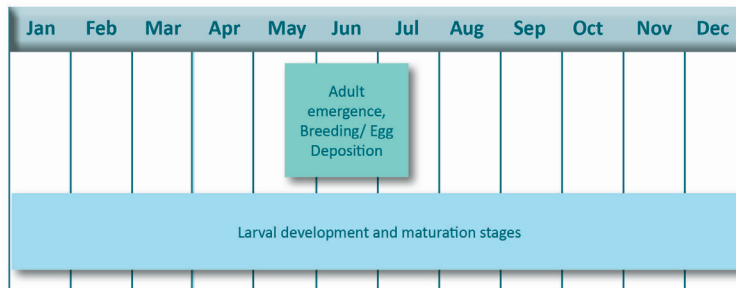


Diet

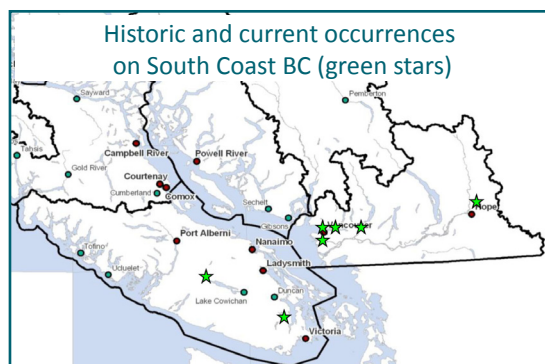
Larval food sources include all exposed plant parts of types of dwarf mistletoe, which in BC is typically hemlock dwarf mistletoe (*Arceuthobium ssp.*), associated with western hemlock and Douglas-fir stands. Adults exploit nectar on wildflowers growing in forest and riparian openings such as dull Oregon Grape, Goatsbeard, Salmonberry and Thimbleberry.

Life Cycle

One brood is produced per year. Adults fly from late May to early July. Larvae mature and pupate quickly after eggs hatch. This species overwinters as a pupa. Timing of adult emergence, larval maturation, and pupation/hibernation are affected by temperature and elevation and may vary by host plant growth periods.



Range



Found in low elevation <625 m. This species occurs through western Oregon, Washington State and north into the southwest portion of the Coast Region in BC. Historically the species ranged from southeast Vancouver Island (Shawnigan Lake, Nitinat Lake) and the South Coast (Fraser Lowlands to Spuzzum in the Fraser Canyon). Recent occurrences have been limited to a handful of locations on the South Coast (Stanley Park, Pacific Spirit Regional Park, Lynn Canyon Park on the North Shore of Burrard Inlet and the University of B.C.'s Haney Research Forest in Maple Ridge). This species may be more widely distributed in forested habitats where the larval host plant (hemlock dwarf mistletoe), which typically infect western hemlock, occurs.

Threats

- Vulnerable to extirpation from removal of trees and stands infected with the preferred larval host plant through silviculture or hazard management practices. Preferred habitat over its range has been severely reduced over the last century.
- Difficult to detect because the larval host plant occurs in the forest canopy and is difficult to inventory. As well adult butterflies are typically found in very small numbers and may be hard to detect within forested communities.
- Impacts to all life stages as well as host plant communities from pesticide applications for silviculture management and insect pest control (i.e. gypsy moth).
- Possible increase of severe wildfire events, and changes in forest health and species composition as a result of climate change.
- Displacement of preferred nectar food plants due to invasion by shrubs and grasses following timber harvesting or development.

Conservation/ Management

Apply conservation and management objectives as set out in the "Accounts and Measures for Managing Identified Wildlife – Accounts V. Johnson's Hairstreak Butterfly *Loranthomitora johnsoni*." Integrate complementary measures for conservation identified by the Xerces Society's Factsheet on Johnson's Hairstreak and "Sentinels on the Wing: The Status and Conservation of Butterflies in Canada." The Province of BC (former Ministry of Forests), and more recently the USDA Forest Service, provide extensive resources for integrated management approaches for dwarf mistletoe - the larval host plant for this butterfly species. Inventory and assessment methods should follow RISC Standards #40 "Inventory Methods for Terrestrial Arthropods". "Survey Protocol for Johnson's Hairstreak Butterfly (*Callophrys johnsoni*) in Washington and Oregon (v1.2) provides more recent survey and inventory guidance for this species. Online survey and identification resources also include the Butterflies and Moths of North America, the Royal BC Museum's "Living Landscapes: Pend-d'Oreille Butterfly Survey" as well as other Provincial butterfly collection and reconnaissance inventory methods.

This species is Identified Wildlife under the Provincial Forest and Range Practices Act and may be subject to protections and prohibitions under the BC Wildlife Act. Habitat for this species may also be governed under provincial and federal regulations including the Fish Protection Act and Federal Fisheries Act as well as Regional and local municipal bylaws.

Sources

BC Conservation Data Centre. 2015. [Internet] Species Summary: *Callophrys johnsoni*. B.C. Minist. of Environment. - B.C. Conservation Data Centre. 2015. [Internet] [Updated March 31 2013]. Conservation Status Report: *Callophrys johnsoni*. B.C. MoE. - BC Ministry of Forests. 1995. [Internet] Dwarf Mistletoe Management Guidebook. - BC Ministry of Water, Land and Air Protection. 2004. [Internet] Accounts and Measures for Managing Identified Wildlife. Version 2004. Biodiversity Branch, Identified Wildlife Management Strategy, Victoria, BC. - Davis, Raymond et al. 2011. [Internet] Survey Protocol for Johnson's Hairstreak Butterfly (*Callophrys johnsoni*) in Washington and Oregon (v1.2). Interagency Special Status/Sensitive Species Program (ISSSP), Oregon/Washington Bureau of Land Management and Region 6 (R6,) Forest Service. - Davis, Raymond. 2010. Johnson's Hairstreak Surveys in Oregon and Washington. Interagency Special Status/Sensitive Species Program (ISSSP), Oregon/Washington Bureau of Land Management and Region 6 (R6,) Forest Service. - E-Fauna. 2010. [Internet] Electronic Atlas of the Wildlife of British Columbia. *Callophrys johnsoni* - Guppy, C.S., and J.H. Shepard. 2001. Butterflies of British Columbia. UBC Press in collaboration with Royal B.C. Mus. 414 pp. - Guppy, Crispin. 2010 & 2011. [Personal communication]. - Hall, P.W. 2009. [Internet] Sentinels on the Wing: The Status and Conservation of Butterflies in Canada. NatureServe Canada. Ottawa, Ontario 68 pp. - Kerr, J. T. 2001. [Internet] Butterfly species richness patterns in Canada: energy, heterogeneity, and the potential consequences of climate change. Conservation Ecology 5(1): 10. - Muir, John A.; Hennon, Paul E. 2007. [Internet] A synthesis of the literature on the biology, ecology, and management of western hemlock dwarf mistletoe. Gen.Tech. Rep. PNW-GTR-718. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 142 pp. - Nichol, Sarie, 2002. [Internet] Baker River Project Terrestrial Working Group Analysis Species. Johnson's Hairstreak Butterfly (*Loranthomitora johnsoni*). Unpublished Work, Puget Sound Energy, Inc. - Royal BC Museum. 2010. [Internet] Living Landscapes: Pend-d'Oreille Butterfly Survey. - Xerces Society. 2015. [Internet] Factsheet Johnson's Hairstreak *Callophrys johnsoni*

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Every effort has been made to ensure content accuracy. Comments or corrections should be directed to the South Coast Conservation Program: info@sccp.ca. Content updated March 2015.

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