Johnson's Hairstreak

Loranthomitoura johnsoni

Original prepared by R.J. Cannings

Species Information

Taxonomy

The Johnson's Hairstreak is in the order Lepidoptera and the family Lycaenidae. *Loranthomitoura* is variously included in the genus *Mitoura* (e.g., Ferris 1989) or, with *Mitoura*, in *Callophrys* (e.g., Scott 1986; Layberry et al. 1998). Guppy and Shepard (2001) consider *Loranthomitoura* a valid genus containing four Nearctic species, two of which occur in British Columbia. There are no recognized subspecies of *L. johnsoni* (Guppy and Shepard 2001); however, the wing pattern of British Columbia specimens is quite different from specimens from California (C.S. Guppy, pers. comm.).

Description

A small butterfly (wingspan of 25–30 mm); dorsal surface of wings is chocolate brown (male) or reddish brown (female), and underside is brown with a thin white post-median band (Layberry et al. 1998).

Distribution

Global

Found in a narrow band from southwest British Columbia to west-central California (Layberry et al. 1998).

British Columbia

Formerly known from southeastern Vancouver Island and the lower Fraser Valley upstream to Yale; now known only from a few sites in the Vancouver area (Stanley Park, Pacific Spirit Regional Park, Lynn Canyon Park) and the UBC Haney Research Forest.

Forest regions and districts

Coast: Chilliwack

Ecoprovinces and ecosections

COM: NAL (historic)

GED: FRL, GEL (historic)

Biogeoclimatic units

CWH: dm, xm1

Broad ecosystem units

CW

Elevation

0–625 m

Life History

Diet and foraging behaviour

Larvae feed on all parts of conifer mistletoe, especially dwarf mistletoe, *Arceuthobium* spp., on western hemlock (*Tsuga heterophylla*) (Guppy and Shepard 2001). Adults feed on flower nectar (Opler et al. 1995).

Reproduction

Adults fly from late May to early July; eggs are laid on mistletoe. Larvae develop rapidly to pupal stage, which overwinters (Opler et al. 1995; Guppy and Shepard 2001).

Site fidelity

Found repeatedly at same sites from year to year.

Home range

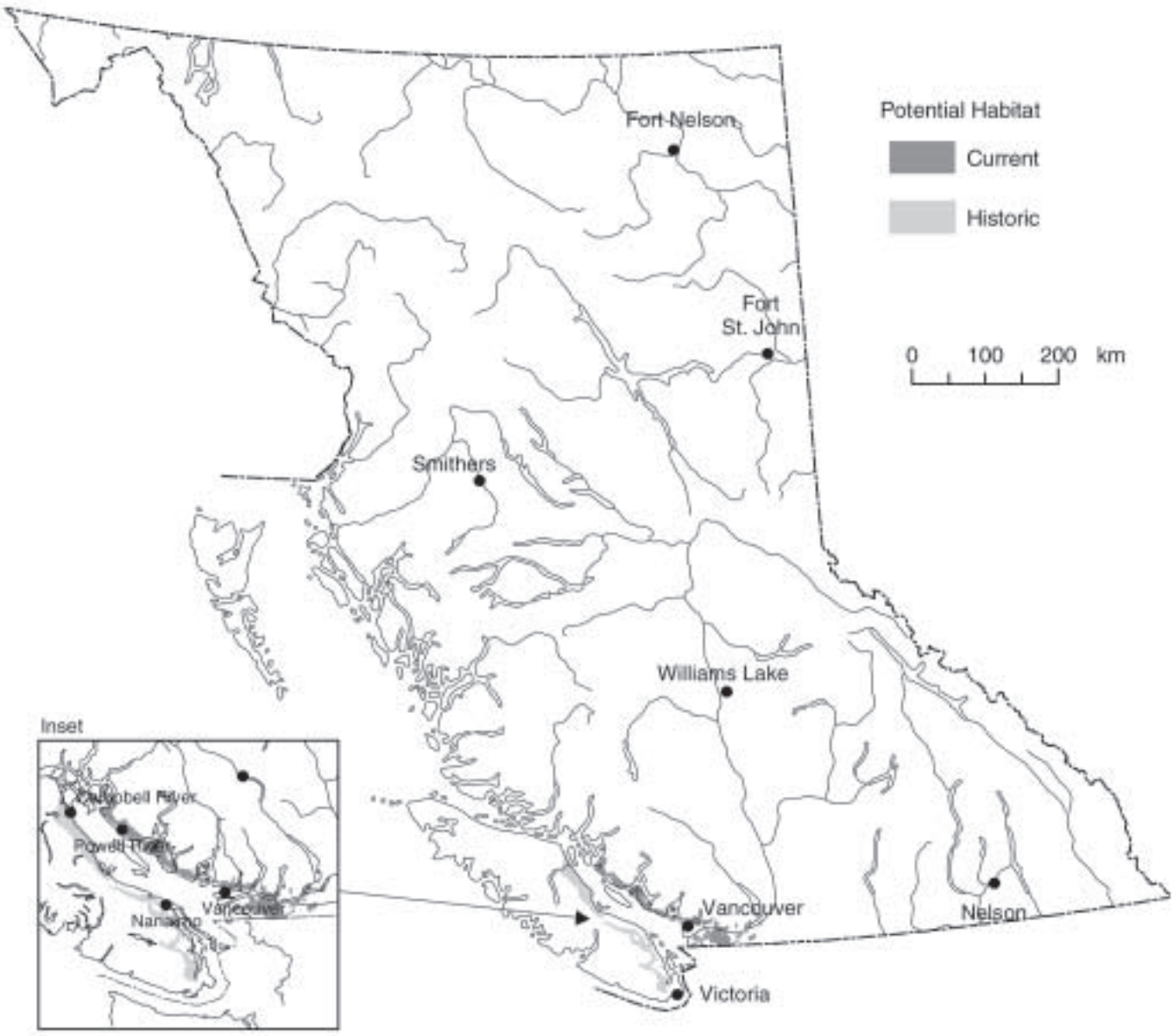
No data.

Dispersal and movements

No data.

Johnson's Hairstreak

(Loranthomitoura johnsoni)



Note: This map represents a broad view of the distribution of potential habitat used by this species. The map is based on several ecosystem classifications (Ecoregion, Biogeoclimatic and Broad Ecosystem Inventory) as well as current knowledge of the species' habitat preferences. This species may or may not occur in all areas indicated.

Habitat

Structural stage

6: mature forest
7: old forest

Important habitats and habitat features

Old-growth western hemlock forest with some infestation of western dwarf mistletoe is critical (Opler et al. 1995; Guppy and Kondla 2000).

Conservation and Management

Status

The Johnson's Hairstreak is on the provincial *Red List* in British Columbia. Its status in Canada has not been determined (COSEWIC 2002).

Summary of ABI status in BC and adjacent jurisdictions (NatureServe Explorer 2002)

BC	OR	CA	WA	Canada	Global
S1S2	S2?	S3S4	S3?	N1N2	G2G3

Note: California has an incorrect and conflicting rank with the global rank. State ranks can not be more secure than the global rank.

Trends

Population trends

Population size at known sites is difficult to determine, but disappearance from historical sites on Vancouver Island and near Yale indicates a serious range contraction (Guppy and Kondla 2000). Considered very local and rare throughout its range (Opler et al. 1995; Layberry et al. 1998). Opler et al. (coordinators, 1995) considered it "threatened throughout its range" (<100 occurrences worldwide).

Habitat trends

Loss of old and mature forest from low elevation coastal areas has reduced the amount of habitat available to this species over the last century.

Threats

Population threats

The impacts of spraying *Bacillus thurengiensis kurstaki* (Btk) to control the introduced gypsy moth are not known. If spraying has a detrimental effect on this species, it could be substantial because all of the known extant populations in British Columbia are in the Greater Vancouver area where concern about gypsy moths (*Lymantria dispar*) has been high in the last decade (Guppy and Kondla 2000). However, the Btk-susceptible stage of this butterfly (the caterpillar) is not likely to be present until 2 months (early June) after the normal spray application "window" (early April), and therefore may not be affected.

Habitat threats

In forest harvest areas, removal of western hemlock (*T. heterophylla*) infected with western dwarf mistletoe (*Arceuthobium* spp.) constitutes another threat, since the mistletoe is the only food plant of this butterfly. However, dwarf mistletoe is widespread and common in western hemlock stands throughout the range of this butterfly so some other habitat factor may also be critical for Johnson's Hairstreak. Opler et al. (coordinators, 1995) mention loss of old-growth forest throughout the species' range as a concern, although the reasons for this apparent dependence are unclear. Forest openings with flowering plants are needed for adult nectar sources; this may be a critical limiting factor in younger forests (C.S. Guppy, pers. comm.). Mistletoe eradication and control programs are also likely to reduce the amount of suitable habitat (Guppy and Shepard 2001).

Legal Protection and Habitat Conservation

Butterflies are not protected under the provincial *Wildlife Act*. They are protected from collection in national and provincial parks.

Small populations are found in Stanley Park, Pacific Spirit Regional Park, and Lynn Canyon Park, as well as in the UBC Haney Research Forest. Despite this

apparent habitat protection, the former three populations have all been sprayed by Btk as part of gypsy moth control programs during the 1990s. It is unknown what impact, if any, the spray programs had on these populations. Removal of mistletoe infested hemlock is also currently proposed for Lynn Canyon Park as part of park management.

Identified Wildlife Provisions

Wildlife habitat area

Goal

Maintain breeding habitat and larval forage species to prevent local extirpations.

Feature

Establish WHAs at known locations.

Size

Typically between 15 and 25 ha but size will ultimately depend on size of habitat patch.

Design

The WHA should be large enough to provide adequate breeding habitat (mature or old western hemlock with dwarf mistletoe and with openings for flowering plants) for the Johnson's Hairstreak population as well as ensure that the stand itself is windfirm and limit the exposure of surrounding new forest to mistletoe seed dispersal where this may be of concern. Incorporate nectar sources into WHA.

General wildlife measures

Goals

1. Retain western hemlock trees infected with dwarf mistletoe.
2. Prevent direct mortality.
3. Ensure stand is windfirm.

Measures

Access

- Do not construct roads unless there is no other practicable option.

Harvesting and silviculture

- Do not harvest. If approved, use partial harvesting methods to maintain representation of existing stand structure with no more than 50% basal area removal. Retain western hemlock with western dwarf mistletoe.

Pesticides

- Do not use pesticides.

Additional Management Considerations

Retention of suitable habitat is desirable, even where populations of Johnson's Hairstreak are presently unknown, to maintain some of the populations that are unknown due to lack of inventory and to provide opportunities for establishment of new populations.

Although retention of western hemlock infested by mistletoe is at odds with most forest health strategies, there may be situations in which patches of infested hemlock could be retained as wildlife tree retention areas or within riparian reserve zones where the riparian management zone is managed for non-host species.

Information Needs

1. Inventory of Johnson's Hairstreak in previously unsurveyed mistletoe-impacted hemlock stands in southwestern British Columbia north to Bella Coola.
2. Ecological needs (i.e., is Johnson's Hairstreak old-growth dependent?).
3. Long-term effects of Btk applied under current British Columbia gypsy moth program methodology. Are the caterpillars of this butterfly at risk?

Cross References

Spotted Owl

References Cited

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Personal Communications

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