

GILLETT'S CHECKERSPOT

Euphydryas gillettii

Original prepared by R.J. Cannings

Species Information

Taxonomy

Gillett's Checkerspot is in the order Lepidoptera and the family Nymphalidae. Five species of *Euphydryas* occur in Canada, four of these in British Columbia. No subspecies of *E. gillettii* are recognized (Layberry et al. 1998).

Description

Gillett's Checkerspot adults are the most distinctive of the four *Euphydryas* species found in British Columbia. Wingspan 36–45 mm. Upperside of wings is black with a band of large orange-red spots and smaller white spots. Broad orange-red band close to the margin of each wing separates this species from other *Euphydryas* species. Underside of wings similar to upperside as is typical for the genus. Mature larva is spiny and dingy yellow with a lemon-yellow dorsal stripe and white lateral stripes. Dorsal spines are yellow, lateral spines are black (Layberry et al. 1998).

Distribution

Global

Found only in the Rocky Mountains of Canada and the northern United States, from Nordegg, Alberta, south to Wyoming and Idaho (Layberry et al. 1998).

British Columbia

Known from southeastern British Columbia: Procter Lake, MacGillivray, and Flathead (Layberry et al. 1998; N.G. Kondla, pers. comm.).

Forest region and district

Southern Interior: Rocky Mountain

Ecoprovinces and ecosections

SIM: COC, ELV, FLV

Biogeoclimatic units

MS: dk

Broad ecosystem units

SD, SE, WR

Elevation

1200–2100 m

Life History

Diet and foraging behaviour

Adults obtain nectar from yellow composite flowers (Asteraceae) (Bird et al. 1995). Larvae usually feed upon black twinberry (*Lonicera involucrata*), but other plants are occasionally used in spring after hibernation (Layberry et al. 1998).

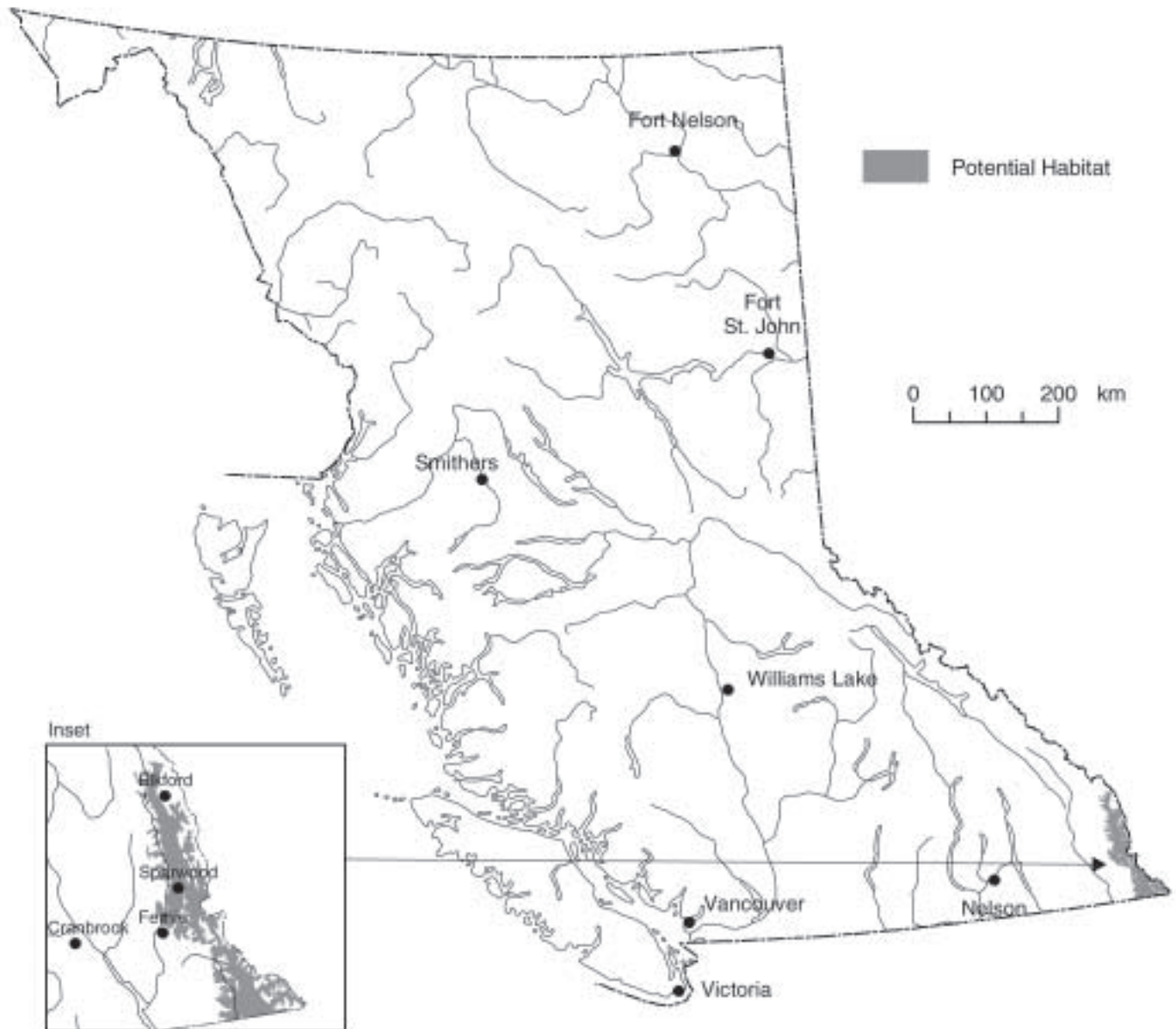
Reproduction

Gillett's Checkerspot often occurs near streams in forested habitats. Adults (butterflies) may be found in mid-summer (mid-June to early August; most records in late June and July) and produce one brood per year (Williams et al. 1984). Females lay their eggs on black twinberry whenever possible, but will occasionally use other plants, such as snowberry (*Symphoricarpos* spp.) and valerians (*Valeriana* spp.) (Williams et al. 1984; Bird et al. 1995). Larvae overwinter in third or fourth instar, developing the following spring to fifth instar which then pupates and emerges as adult in June (Williams et al. 1984).

Site fidelity and home range

Unknown. C.S. Guppy (pers. comm.) suggests that the home range is likely small (<1 km) and site fidelity high for most individuals.

Gillett's Checkerspot (*Euphydryas gillettii*)



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.

Movements and dispersal

Adults of some *Euphydryas* species are weak fliers living in small, highly localized colonies. It is not believed this is the case in British Columbia (N.G. Kondla, pers. comm.; C.S. Guppy, pers. comm.)

Habitat

Structural stage

2: herb

3: shrub/herb

Important habitats and habitat features

Usually, the most critical element in the habitat requirements of any butterfly species is the presence and abundance of its larval food plant. Gillett's Checkerspot requires black twinberry for egg-laying and larval development though it will also use other *Lonicera* species, snowberry, lousewort (*Pedicularis*), and valerian (Williams et al. 1984; Williams 1988; Bird et al. 1995). Williams et al. (1984) characterize ideal habitat in the American Rockies as Engelmann spruce woodland along streams with abundant shrub cover, primarily black twinberry. However, Williams (1988) found that many sites occupied by Gillett's Checkerspots have been disturbed, commonly by fire, and lodgepole pine can be the leading tree species at these sites. Females search for sunlit twinberries on which to lay eggs, so areas with high willow cover or other shading canopy are less desirable (Williams 1988). Fire-opened sites gradually proceed to closed forest, and populations at these sites disappear (Williams 1988, 1995).

Williams (1988) emphasized that all occupied sites he examined ($n = 29$) were wet, most with small streams and others without streams but marshy. He also found a relationship between the presence of large colonies and the abundance of nectar sources, primarily composite flowers in the genera *Aster*, *Senecio*, and *Agoseris*.

Conservation and Management

Status

The Gillett's Checkerspot is on the provincial *Blue 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	AB	ID	MT	Canada	Global
S2S3	S2	S?	S3	N2	G2G3

Trends

Population trends

Gillett's Checkerspots are normally found in small, discrete colonies that are relatively stable from year to year (Williams et al. 1984; Williams 1995). Gillett's Checkerspot is known from at least 10 sites, all in the extreme southeastern corner of the province. There may be more sites and the total population is estimated to be 3000 or more individuals (Guppy and Kondla 2000). Williams (1995, p. 183) states that "this species forms metapopulations in which local extinctions and recolonizations occur infrequently."

Habitat trends

Unknown.

Threats

Population threats

This species has a relatively restricted distribution, which increases the risk of extirpation.

Habitat threats

The main threats to this species' habitat are forest practices and heavy livestock grazing. Both activities may damage or destroy certain sites or individuals (e.g., through incidental cattle ingestion of highly concentrated egg clusters or trampling of black twinberry) that are critical to the species' survival in a local area. As this species occurs in highly localized

populations restricted to the preferred larval food plant (black twinberry), changes to local habitat that affect black twinberry (e.g., canopy closure) will also impact the butterfly.

Legal Protection and Habitat Conservation

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

Several sites occur within Elk Lakes Provincial Park (Guppy and Kondla 2000) and they may occur in Akamina Kishinena Provincial Park.

Results based code riparian guidelines may also protect the species to some extent, although Gillett's Checkerspot is more often associated with very small streams that receive less protection than the larger, fish-bearing streams. Range use plans may also be used to address the habitat requirements of this species when mitigation measures are incorporated.

Identified Wildlife Provisions

Wildlife habitat area

Goal

Maintain breeding and larval foraging habitat to prevent local extirpations.

Feature

Establish WHAs at known breeding sites that are characterized by moist, open habitats with ample black twinberry.

Size

Typically between 5 and 10 ha but size will ultimately depend on the extent of suitable habitat.

Design

The WHA should encompass the perimeter of the colony plus 100 m.

General wildlife measures

Goals

1. Maintain an open forest habitat with ample growth of black twinberry for larval development.
2. Maintain scattered trees and composite flowers (nectar sources).

Measures

Access

- Do not construct roads.

Harvesting and silviculture

- Design harvest and silviculture treatments to maintain open moist forest; avoid treatments and prescriptions that will result in closed canopy.
- Harvest in winter with an adequate snowpack to minimize damage to twinberry shrubs.

Pesticides

- Do not use pesticides.

Range

- Set desired plant community to include black twinberry and larval food plants.
- Control livestock grazing (e.g., timing, distribution, and level of use) to prevent degradation or trampling of black twinberry. Where there is no other practicable option, fencing may be required to control livestock use. Consult MWLAP for fencing arrangements.
- Do not place livestock attractants within WHA.

Recreation

- Do not construct recreational trails unless this can be accomplished without reducing the cover of black twinberry.

Additional Management Considerations

Use non-herbicide weed control methods adjacent to WHA and retain larval food plants and nectar sources. Where herbicide-based control is necessary, measures such as hand wick application or spot treatments should be taken to protect non-target species (including black twinberry).

Maintain riparian corridors with intact shrubbery and open forest to aid the dispersal of checkerspots between the localized breeding sites.

Information Needs

1. Inventory black twinberry sites for presence of Gillett's Checkerspot.
2. Distribution and abundance studies of known populations.

Cross References

Grizzly Bear

References Cited

- Bird, C.D., G.J. Hilchie, N.G. Kondla, E.M. Pike, and F.A.H. Sperling. 1995. Alberta butterflies. Prov. Mus. Alberta, Edmonton, Alta. 347 p.
- Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2002. Canadian Species at Risk. www.speciesatrisk.gc.ca
- Guppy, C.S. and N.G. Kondla. 2000. Status of butterflies and skippers of British Columbia for the National Accord for the Protection of Species at Risk. B.C. Min. Environ., Lands and Parks, Conserv. Data Cent., Victoria, B.C. Unpubl. rep.

Layberry, R.A., P.W. Hall, and J.D. Lafontaine. 1998. The butterflies of Canada. Univ. Toronto Press, Toronto, Ont. 280 p.

NatureServe Explorer. 2002. An online encyclopaedia of life. Version 1.6. NatureServe. Arlington, VA. Available at <http://www.natureserve.org/explorer/>

Williams, E.H. 1988. Habitat and range of *Euphydryas gillettii* (Nymphalidae). J. Lep. Soc. 42:37–45.

_____. 1995. Fire-burned habitat and reintroductions of the butterfly *Euphydryas gillettii* (Nymphalidae). J. Lep. Soc. 1995:183–191.

Williams, E.H., C.E. Holdren, and P.R. Ehrlich. 1984. The life history and ecology of *Euphydryas gillettii* Barnes (Nymphalidae). J. Lep. Soc. 38:1–12.

Personal Communications

- Guppy, C.S. 2001. Min. Water, Land and Air Protection, Quesnel, B.C.
- Kondla, N.G. 2001. Min. Water, Land and Air Protection, Castlegar, B.C.

