

BC's Coast Region: Species & Ecosystems of Conservation Concern

Indra Swallowtail (*Papilio indra*)

Global: G3G4, Provincial: S1S2, COSEWIC: N/A, BC List: Red Identified Wildlife



Notes on *Papilio indra*: A member of the family Papilionidae (“Swallowtails”), which occupy every continent except Antarctica. The family name is derived from the characteristic ‘tails’ on the hind wings, reminiscent of the tail feathers of Swallow species. Larvae possess a unique organ, located behind the head (“osmeterium”), which emerges when larvae are threatened and secretes a strong-smelling liquid containing alkaloids (“terpenes”).

Description

Wingspan: 6.2 - 7.2 cm. A small, distinct swallowtail species, predominantly black with short, almost non-existent “tails” on the hind wings. Two horizontal bands of yellow coloured scales run across the lower portion of the fore wing and hind wing. The lower band of yellow scales forms part of the wing edging. The hind wings have scales of iridescent blue with a single black, yellow to orange-haloed eyespot on the lower inside edge. The antennae clubs (tips) are hooked and a yellow line runs dorsally from behind the eye along the thorax to the top of the fore wing. Eggs are laid on the leaves of the larval host plants. On plants with large flat leaves, the eggs are laid on the top or occasionally just under the leaf edge. Both the top and bottom of small leaves are used. Eggs are smooth and hemispherical, and are cream, yellow, yellow green, or green when laid. The egg colour darkens, and a red ring develops around the top before hatching. Early instars (developmental phases of larvae between molts), are black with a white saddle, resembling bird droppings. Mature instars become velvety black, with a pale transverse stripe across each body segment. A single yellow spot occurs above each grey foot laterally on each body segment, and a smaller yellow spot occurs on each side of the back.

Diet

Indra swallowtail larvae are known to only feed on members of the parsley family. In the US, approximately 21 host plants (all perennials), have been identified, including members of the *Lomatium* genus. However specific host plants from this family have not yet been specified for BC though are likely similar (e.g. Brandegees’ desert-parsley), to those in Washington State.

Look's Like?

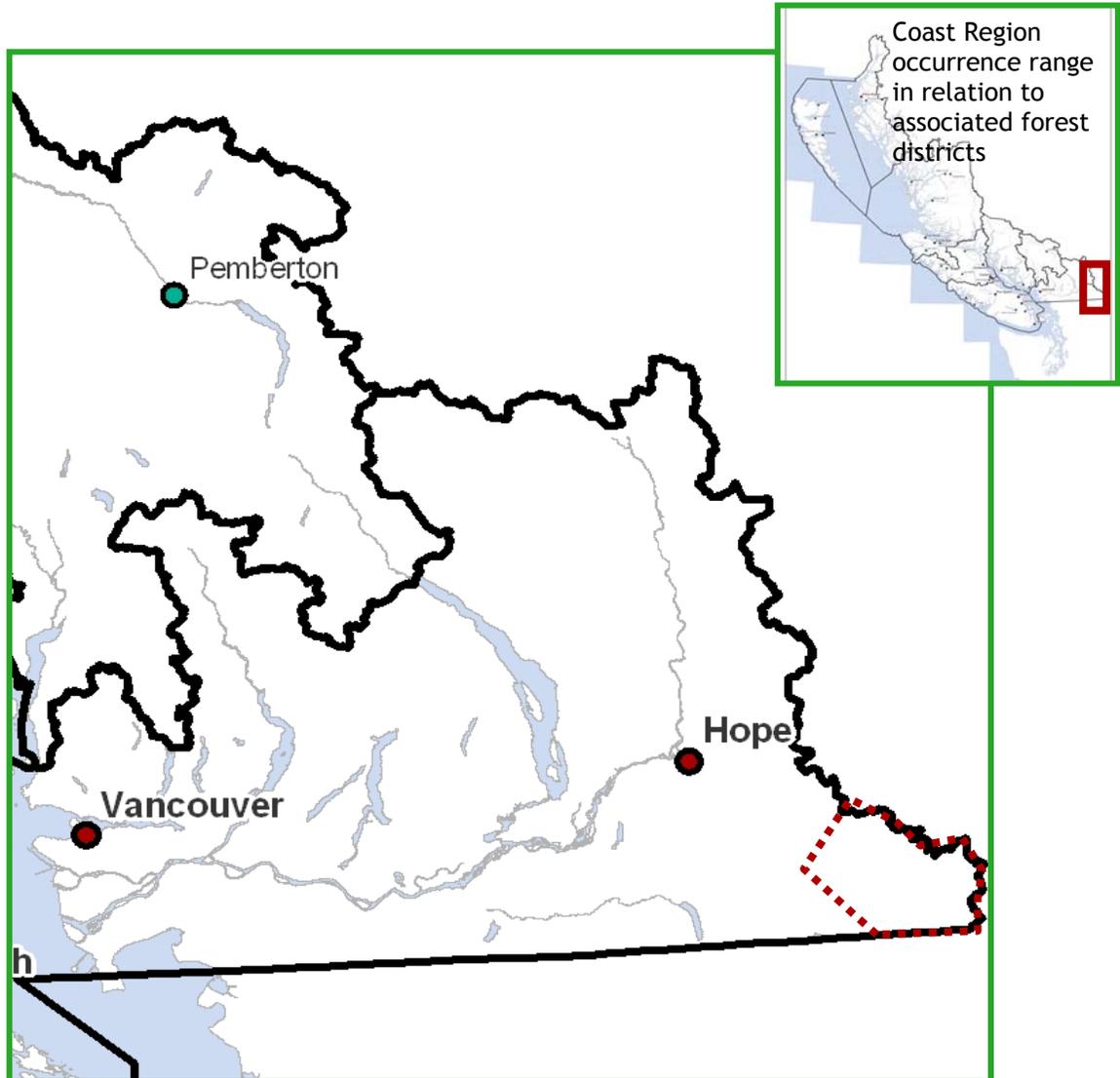
This dark, almost tailless swallowtail is not easily confused with others of its genus in BC, which are less likely to be found at sub-alpine and alpine elevations. However small, dark Anise Swallowtail males could be confused with Indra swallowtail. As well Indra Swallowtail pupae are similar in shape to those of Anise, but are much smoother.



Anise Swallowtail

Distribution

Indra swallowtail ranges from Baja California north along the Cascades into the extreme southwest of the South Coast portion of the Coast Region, east to South Dakota and south to New Mexico. At present distribution on the Coast Region has only been documented from the Lightning Lakes, Gibson and Allison Pass areas in Manning Provincial Park as well as an occurrence just to the southeast in the Skagit Valley.

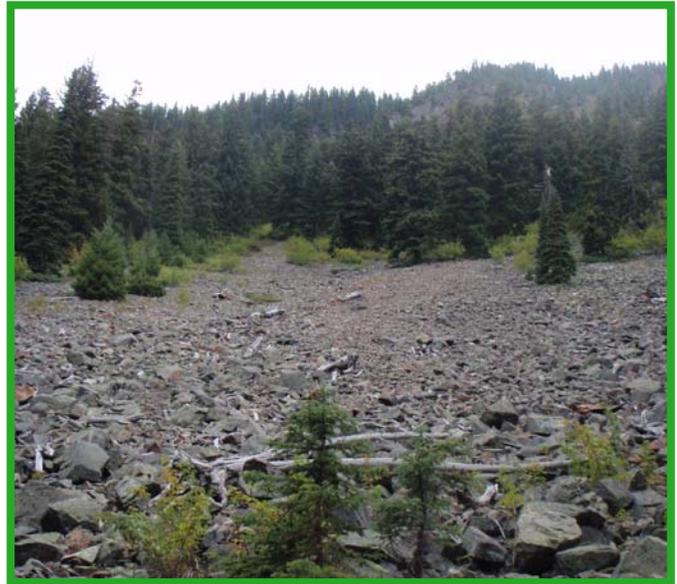


Indra Swallowtail (*Papilio indra*), known occurrence range for the Coast Region.

Habitat Preferences In BC the preferred habitat and potential larval host food plants for this species are typically found in sub-alpine and alpine communities including high elevation meadows, forests, talus slopes and rock outcroppings.

Critical Features Rocky outcroppings are used by adult males to detect females and for courtship displays. In the US, *Indra* females showed a preference for depositing eggs on the sides of larval host plants closest to rock clusters or outcroppings.

This species is associated with higher elevation habitats and conditions that support their preferred larval host plants which are in the carrot family (e.g. *Lomatium* species).



Seasonal Life Cycle

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					Adult emergence, Breeding / Egg Deposition						
Larval development and maturation stages											

One brood is laid each year. Larval stage is ~18 days after hatching in mid summer (June-July) after which pupation occurs. Pupation is quite long (11 months). Adult flight and breeding takes place after emergence the following summer. *Timing of adult emergence, larval maturation, and pupation/hibernation are affected by temperature and elevation and may vary by host plant growth periods.

Threats

- ◆ The preferred ecological associations and larval host plant communities of this species are geographically limited and sensitive to disturbance activities.
- ◆ Impacts to all life stages as well as host plant communities from land management practices (e.g. pesticide applications from silviculture management), and outdoor recreation activities (e.g. backcountry ATV use).
- ◆ Competition and extirpation impacts to larval host plant species as well as changes to host plant communities from introduced plant species as well as impacts from climate change are an identified threat to sensitive sub-alpine and alpine communities and may become more pronounced over time.

Conservation & Management Objectives

- ◆ Apply conservation and management objectives for this species as set out in the provincial “Conservation Status Report” for this species. This species is also associated with forest communities and is a good candidate for provincial “Identified Wildlife” status under the Forest and Range Practices Act. Investigate potential complimentary objectives identified in “Sentinels on the Wing: The Status and Conservation of Butterflies in Canada” “Wildlife Guidelines for Backcountry Tourism/Commercial Recreation in British Columbia”
- ◆ Inventory and assessment methods should at a minimum follow those set out in the RISC Standards #40 “Inventory Methods for Terrestrial Arthropods.” More recent collection and identification resources such as those found online through the Butterflies and Moths of North America or the Royal BC Museum’s “Living Landscapes: Pend-d Oreille Butterfly Survey” as well as other Provincial butterfly collection and reconnaissance inventory methods¹ should be investigated.

¹ Contact the provincial invertebrate specialist in Victoria.

Specific activities should include:

- ◆ Dedicated inventory efforts are needed to fill gaps on the biology of this species and its existing and potential distribution in BC.
- ◆ Improve understanding of larval host plant dependencies and ways in which host plants and their communities can be enhanced.
- ◆ Further research is needed to assess the potential impacts to this species and its ecological associations from invasive species, wildfire and climate change.
- ◆ Conduct outreach to raise awareness of this species and how to identify it to improve distribution knowledge.
- ◆ Where suitable habitat occurs, work with land managers and land owners to ensure development or recreational activities do not impact or decrease availability of host plants for larvae and nectar sources for adults.
- ◆ Encourage landowners and land use authorities to dedicate conservation covenants and cultivation/vegetation management easements to protect host plant associations.
- ◆ Increase awareness about the value that host plant associations provide to other species including other important pollinators such as bees.
- ◆ Work to reduce the need for broadcast and cosmetic pesticide use that may be impacting non-target species through instituting integrated pest management programs.

This species habitat 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.

Content for this Factsheet has been derived from the following sources

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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 2011.

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