

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

Monarch (*Danaus plexippus*)

Global: G5 Provincial: S3B COSEWIC: SC BC List: Blue



Notes on *Danaus plexippus*: A member of the family Nymphalidae (“Brush-footed butterflies”), and more specifically a member of the subfamily Danainae (“Milkweed butterflies”). This species is perhaps best known for its north-south migrations in North America. Eastern populations of Monarch Butterfly travel from as far as eastern Canada to Mexico and back again over more than one season. BC populations travel from the Coast Region and the Southern Interior along the Pacific Coast to central and southern California to overwinter and breed, with their offspring returning the following year. Where this species occurs outside of North America (e.g. Australia) it is nicknamed the “Wanderer” butterfly.

Description

Wingspan: 8.6-12.4 cm. This large, distinctive butterfly flies with its wings held in a 'V' shape. Both sets of wings are various shades of orange and heavily veined in black or dark brown. Wing borders are black or dark brown with numerous white spots and a line of white dashes along the margin. The body is black or dark brown with white spots on the head and thorax. Males have a patch of black pheromone producing scales (“stigma”), on the uppersides of the hind wings (lacking in females). Colour and intensity of veining on the wings can vary between individuals or populations. Antennae clubs (tips) are hooked. Eggs are conical, with ridges down the side, and are green white or cream. Mature larvae are brightly coloured, with alternating stripes of yellow, black and white. The area behind the head and before the last set of legs possesses long black fleshy ‘horns’ (longer at the front). Pupae are distinguished by their cylindrical, bright green colour with gold spots.

Diet

The preferred larval host plant for Monarch are members of the genus *Asclepias*¹ (“milkweeds”). Eastern BC and Fraser Canyon populations, which tend to be more numerous, utilize showy milkweed, the only native milkweed species in BC. This plant is generally absent on the coast. Where Monarch occurs on the Coast Region, it is typically in association with locations where showy milkweed or ornamental varieties of milkweed have been planted. Adult butterflies exploit the nectar of milkweed flowers as well as a range of flowering ornamental plants and wildflowers.

Look's Like?

Viceroy Butterfly is an evolved Monarch mimic (and similarly toxic). However, it has been extirpated in BC since the early part of the last century (believed due to pesticide usage). The most commonly confused species is Painted Lady, a medium-sized to large orange-brown butterfly with black markings. Painted Lady also undertakes extensive migrations from southern BC and back from its overwintering sites in the southern US.

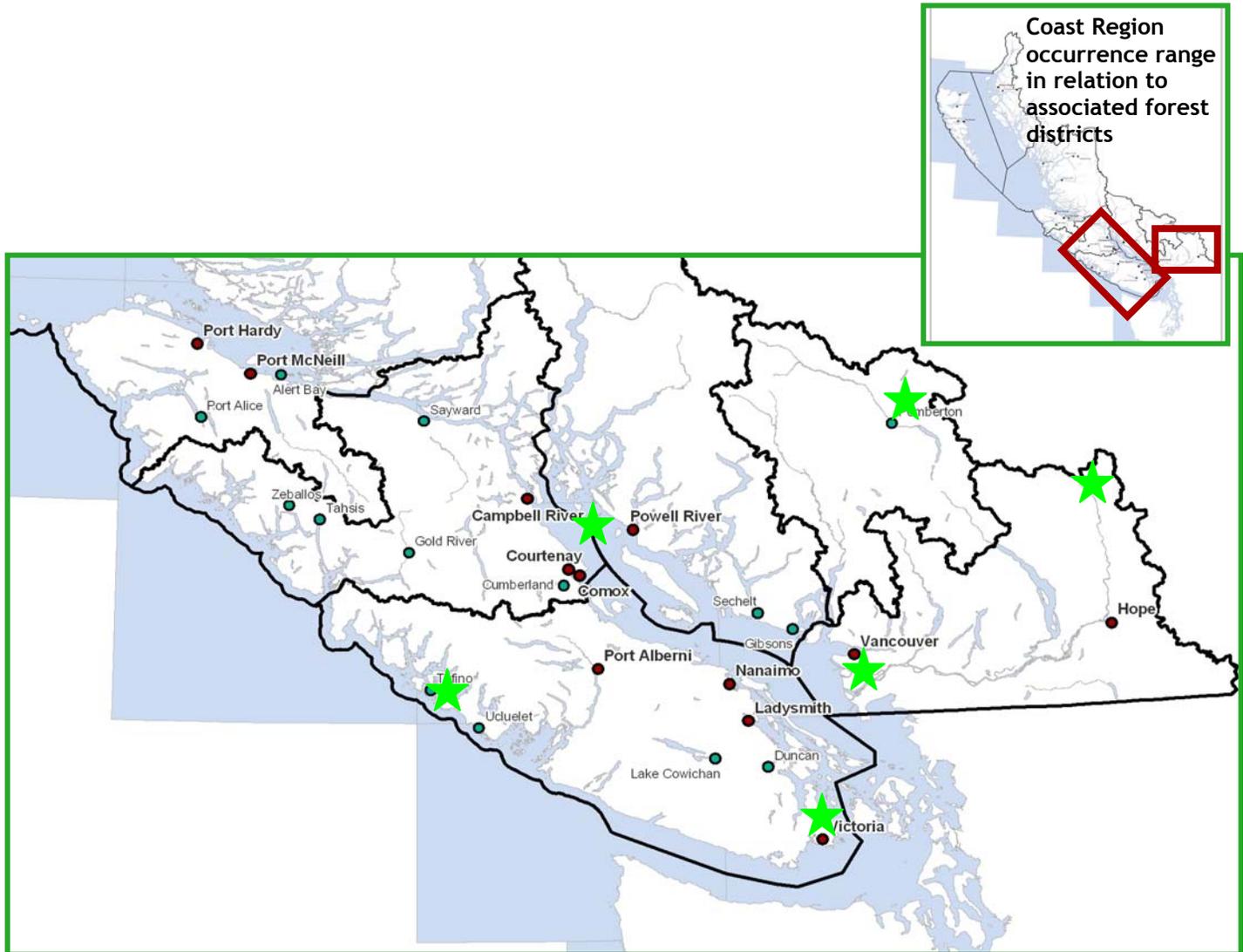


Painted Lady

¹ Most milkweeds contain toxic cardiac glycosides which build up in the bodies of larvae and subsequently adults. The chemicals are distasteful and induce vomiting in birds and other vertebrate predators. Monarchs literally leave a bad taste in the mouth. Individuals that utilize milkweeds lacking these toxins are actually palatable. Predators that experience the toxic forms likely associate the bright colours of the larvae and adults with the experience and learn to avoid consuming them in the future.

Distribution

While the western population of Monarch Butterfly utilizes the Pacific Northwest as part of its migratory flyway to overwintering sites in California, the species is more of an incidental occurrence on BC's Coast Region. A small number of individuals are documented periodically on the South Coast of BC (Fraser Lowlands, north to Pemberton) and east to the Lillooet area (where adults and larvae occur in larger numbers). Individuals have also been documented from Vancouver Island. Occurrence and distribution can be tied to wind and weather patterns. Migrating Monarchs are often blown off-course as was likely the case for an occurrence in Tofino. Availability of larval food plants (native and ornamental species of milkweed), often planted as ornamentals in coastal gardens also contributes to the disjunct nature of occurrences on the Coast Region.

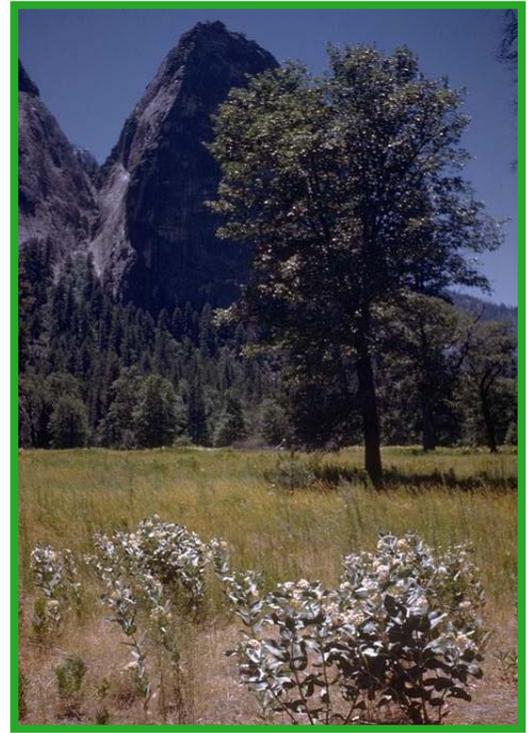


Monarch (*Danaus plexippus*), known occurrences (green stars), for the Coast Region.

Habitat Preferences Typical habitat is open areas and grasslands, including meadows, wetlands, old-field and roadside areas. However adults will exploit landscaped areas and gardens.

Critical Features On the Coast Region the species is limited to sites where larval host plants occur (whether native or ornamental varieties).

Though small numbers of Monarch breed on the coast, natural habitat is dryer grassland areas where the native showy milkweed a larval host plant (lower right), is more common.



Seasonal Life Cycle

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
				US bred offspring return as adults and breed. Offspring mature, pupate emerge and head south to US to breed.							
Adults overwinter in US, breed									Adults overwinter in US, breed		

At least one brood is produced per year in BC, maturation from egg to adult takes ~20-45 days. Emergent adults head south to California overwintering sites in the late summer and fall. Breeding and egg deposition occurs along the way. Offspring return the following spring. *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 of this species on the Coast Region are geographically limited and subject to loss or suppression of natural or historic maintenance regimes (e.g. fire). Along with potential changes from climate change, these changes may increase loss of habitat where larval host plants may naturally occur.
- ◆ Habitat loss, encroachment and fragmentation (within BC and along US migratory pathways and overwintering sites), may contribute to reduction in preferred adult and larval food plant availability and contribute to local extirpation events.
- ◆ Impacts to all life stages as well as host plant communities from land management practices (e.g. mowing or pesticide application) and backcountry outdoor recreation activities (e.g. ATV use, trampling). In particular broadcast spraying for insect pests (e.g. use of Btk), or control of invasive weeds on croplands or rangelands may have significant impacts for non target species and their food plants within application areas.
- ◆ Competition and extirpation impacts to larval host plant species as well as changes to host plant communities from introduced plant species.
- ◆ Monarch are susceptible to a parasitic protozoan (*Ophryocystis elektroscirrha*), which may be an additional limiting factor effecting dispersal and migratory capabilities.
- ◆ In western Canada, development of wind energy sites sighted in migratory pathways is being reviewed for potential impacts.

Conservation & Management Objectives

- ◆ Apply conservation and management objectives for this species as set out in the “COSEWIC assessment and status report on the Monarch *Danaus plexippus* in Canada”. Investigate potential complimentary objectives identified in “Sentinels on the Wing: The Status and Conservation of Butterflies in Canada.”
- ◆ 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 methods² should be investigated.

² Contact the provincial invertebrate specialist in Victoria.

Specific activities should include:

- ◆ Conduct outreach to raise awareness of this species and how to identify it to improve distribution knowledge. A targeted inventory is needed to determine if undiscovered populations exist elsewhere within the Coast Region.
- ◆ Where suitable habitat occurs (in the US and Canada), work with land managers and land owners to ensure development, rangeland practices or recreational activities do not impact or decrease availability of host plants for larvae or nectar sources and overwintering areas for adults.
- ◆ Encourage landowners and land use authorities to dedicate conservation covenants and cultivation/vegetation management easements to protect host plant associations. Work to recover populations into areas previously occupied or feasible for colonization.
- ◆ Improve understanding of larval host plant dependencies and ways in which host plants and their communities can be enhanced.
- ◆ Increase awareness about the value that host plant associations provide to other species including other important pollinators such as bees.
- ◆ Effective long-term control and reduction in competition from invasive or aggressively spreading vascular plants (e.g. invasive shrubs and grasses), must form part of strategies to protect and recover populations. Disturbance to native rare plant species and communities must be minimized during control activities.
- ◆ Work to reduce the need for industrial and cosmetic pesticide use that may be impacting non-target species through instituting integrated pest management programs.
- ◆ Consider implementation of controlled burning (where feasible) or other historic maintenance regimes that may have sustained host plant communities and their associations.

This species is listed under the Federal Species at Risk Act (SARA) 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.

Content for this Factsheet has been derived from the following sources

- B.C. Conservation Data Centre. 2010. [Internet] [Updated July 31 2008]. Species Summary: *Danaus plexippus*. B.C. MoE.
- Butterflies and Moths of North America. 2010. [Internet] Monarch *Danaus plexippus*.
- COSEWIC. 2010. [Internet] COSEWIC assessment and status report on the Monarch *Danaus plexippus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
- E-Fauna. 2010. [Internet] Electronic Atlas of the Wildlife of British Columbia. Monarch *Danaus plexippus*
- Guppy, C.S., and J.H. Shepard. 2001. Butterflies of British Columbia. UBC Press in collaboration with Royal B.C. Mus. 414pp.
- 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 p.
- Heron, Jennifer. 2004. [Internet] A Summary of Terrestrial and Freshwater Invertebrate Conservation in British Columbia. Proceedings of the Species at Risk 2004 Pathways to Recovery Conference. Victoria, B.C.
- Kerr, J. T. 2001. Butterfly species richness patterns in Canada: energy, heterogeneity, and the potential consequences of climate change. *Conservation Ecology* 5(1): 10.
- Kondla, Norbert G. et al. 1999. [Internet] Butterflies of Conservation Interest in Alberta, British Columbia, and Yukon. Proceedings of a Conference on the Biology and Management of Species and Habitats at Risk, Kamloops, B.C. Volume One. B.C. Ministry of Environment, Lands and Parks, Victoria, B.C. and University College of the Cariboo, Kamloops, B.C. 490pp.
- Pearson, Mike. 2009. [Personal comm.] Pearson Ecological
- Polster, D. et al. 2006. [Internet] Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia. Prepared for the BC Ministry of Environment. Victoria (BC).
- Royal BC Museum. 2010. [Internet] Living Landscapes: Pend-d Oreille Butterfly Survey.

Prepared by: Pamela Zevit of Adamah Consultants with Crispin Guppy for the South Coast Conservation Program (SCCP) in partnership with: International Forest Products (Interfor), Capacity Forestry (CapFor) and the BC Ministry of Environment (BC MoE), E-Flora and E-Fauna the Electronic Atlas of the Flora and Fauna of BC, Species at Risk & Local Government: A Primer for BC. Funding for this factsheet was made possible through the Sustainable Forestry Initiative (SFI): <http://www.sfi-program.org/>

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.

Image Credits: Monarch male: Derek Ramsey Wikipedia, Monarch Larva: Derek Ramsey Wikipedia, Painted Lady: Derek Ramsey Wikipedia, Habitat: USDA Forest Service. Only images sourced from "creative commons" sources (e.g. Wikipedia, Flickr, U.S. Government) can be used without permission and for non-commercial purposes only. All other images have been contributed for use by the SCCP and its partners/funders only.