

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

Large Marble *insulanus* ssp. (*Euchloe ausonides insulanus*)

Global: G5T1 Provincial: SX, COSEWIC: XT, BC List: Red



Notes on *Euchloe ausonides insulanus*: A member of the family Pieridae (“White, Marble and Sulphur” butterflies). Pierid butterflies tend to be white, yellow or orange in coloration, often with black spots. As a group, “Marbles” derive their name from the greenish or olive coloured marbling found on the hind wings. Of the three subspecies of Large Marble in BC, *E.a. insulanus*, the only coastal form is now extirpated. The *insulanus* subspecies is also referred to as “Island” Large Marble. Much about the biology of this coastal subspecies is derived from the *E.a. mayi* subspecies and recently discovered US *E.a. insulanus* populations.

Description

Wingspan: 4.1-4.8 cm. Typical of Marble butterflies, the fore wings are white with black markings and the underside of the hind wings are marbled. The *E.a. insulanus* subspecies is larger and darker than the mainland *E.a. mayi* subspecies (generally found in the South and Central Interior of BC). The underside of the hind wings on Large Marble *insulanus* subspecies are more heavily marbled with olive-green than the other subspecies. The base of the wings is suffused with black scales and the marbling is emphasized with yellow veining. Females are slightly larger and have denser dark grey markings on the uppersides of the hind wings. The body and hind wings are covered with whitish-yellow hairs, giving the butterfly a fuzzy appearance. Antennae clubs (tips) are straight and grayish-white. Eggs are blue-green when laid, turning within a day, and eventually bright red. Prior to hatching, the eggs turn a drab yellowish-brown. Eggs are laid singly on the stems, leaves or flower heads of the larval host plant. Later instars change from greenish to grey-green with a dotted strip of yellow and blue spots running down the length of the body. The ventral area is darker grey-green than the dorsal area. Just before pupation the strip of dots changes to a distinct line of yellowish spots coupled with light or dark purple spots.

Diet

As a group, Marbles exploit plants in the family Brassicaceae (“mustard”), including species of rockcress. In the San Juan Islands adults of *E.a. insulanus* have been observed laying eggs on patches of introduced field mustard, tumble mustard and tall peppergrass. Adult nectar plants exploited by San Juan populations include chickweed and wild and introduced species in the buttercup, mustard and geranium family.

Look's Like?

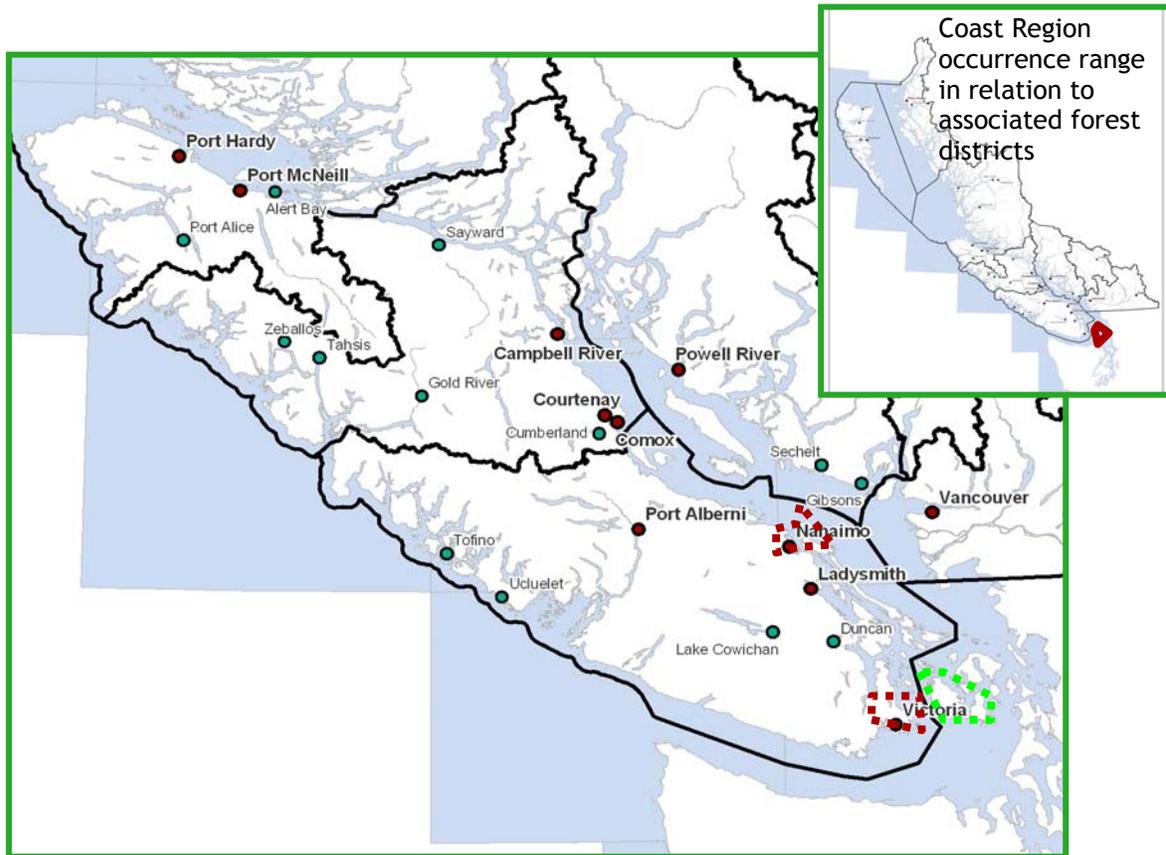
The *insulanus* subspecies of Large Marble is the only Marble known to occur on the Coast Region. However other species in the family, including Sara's Orangetip has similar marbling on the wing undersides and the orange tip is not always visible when the wings are closed. As well a number of “Whites” have wing and body colouration that could be confused with Marble butterflies, especially while in flight.



Sara's Orangetip

Distribution

The *insulanus* subspecies of Large Marble has always had a very restricted range in North America. In Canada it was historically limited to ~5 disjunct populations on Southeast Vancouver Island from Greater Victoria (Langford, Beacon Hill Park and James Bay), Nanaimo and Gabriola Island. Small populations also existed on the San Juan Islands in Washington State. The last recorded specimen in BC was from Gabriola Island in 1908. It was presumed extinct across its range (including the US), until 1997 when two populations were discovered on the San Juan Islands. Since 2005 further populations have been discovered on the US Lopez Islands, adjacent to the San Juan's.



Large Marble (*Euchloe ausonides insulanus*), historic occurrence range (red-dotted lines), for the Coast Region. Present US locations - green-dotted line.

Habitat Preferences

Historically, BC populations of *E.a.insulanus* occurred in disturbed sites, marine variant meadows and open areas in association with Garry Oak woodlands. On the San Juan's the subspecies is associated with shallow rock slopes and native grasslands, notably areas with gravel soils, dunes, beaches and bluffs.



The *insulanus* subspecies of Large Marble is extirpated in BC. Recent populations were discovered on the US San Juan and Lopez Islands south of Vancouver Island.

Critical Features

Moderately disturbed areas appear to support higher densities of the native and introduced weedy mustards used as larval host plants. Based on US populations, moderately large habitat patches (i.e. 50-100 ha), or patches with good connectivity and proximity may be a long-term requirement for recovery. As with the *taylori* subspecies of Edith's Checkerspot, loss of larval host plants due to drought can result in high larval mortality.

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. Large Marble larvae overwinter as pupae.											

In BC Large Marble have only one brood per year. Adult flight is May-June.

*Timing of adult emergence, larval maturation, and pupation/hibernation are affected by temperature and elevation and may vary by host plant growth periods.

Threats

- ◆ Loss of larval host plants due to livestock grazing is believed to have been the cause of the extirpation of the *insulanus* subspecies of Large Marble in BC. The preferred ecological associations (e.g. Garry oak woodlands and maritime meadows), throughout the subspecies historic range remains geographically limited and fragmented. Furthermore these systems have been subject to loss or suppression of natural or historic maintenance regimes (e.g. fire). Along with potential changes from climate change, these factors may increase loss of Garry oak communities and associated meadow habitats from succession to shrub thicket and forest.
- ◆ Competition and extirpation impacts to larval host plant species as well as changes to host plant communities from introduced plant species.
- ◆ Habitat loss, encroachment and fragmentation from urban development and agricultural (i.e. livestock grazing), can further exacerbate reduction in larval host plant availability.
- ◆ Impacts to all life stages as well as host plant communities from land management practices (e.g. pesticide application). In particular broadcast spraying for insect pests (e.g. use of Btk), or for noxious weed control may have significant impacts for non target invertebrate species and their food plants within application areas.

Conservation & Management Objectives

- ◆ Apply conservation and management objectives set out in the "Recovery Strategy for Multi-species at Risk in Maritime Meadows Associated with Garry Oak Ecosystems in Canada." Investigate potential complimentary conservation approaches found in the "Status of Five Butterflies and Skippers in British Columbia" and "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 methods¹ should be investigated.

¹ Contact the provincial invertebrate specialist in Victoria.

Specific activities should include:

- ◆ Conduct outreach to raise awareness of this species. A targeted inventory is needed to determine if undiscovered populations have re-colonized sites within the Coast Region.
- ◆ Where suitable habitat occurs, work with land managers and land owners to ensure land use 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. Work to recover populations into areas previously occupied or feasible for colonization. The larval food plants preferred by the subspecies still occur throughout southern Vancouver Island and the Gulf Islands, and the subspecies will utilize introduced Brassicaceae species.
- ◆ 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 vascular plants (e.g. invasive shrubs such as Scotch broom and grasses), is required. Disturbance to native rare plant species and communities must be minimized during control activities.
- ◆ Work to reduce the need for broadcast 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.

Though extirpated in Canada, this subspecies is the object of federal recovery planning. Habitat of this subspecies may be subject to protections and prohibitions under the BC Wildlife Act. Habitat for this subspecies 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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