

COSEWIC
Assessment and Update Status Report

on the

Island Marble
Euchloe ausonides insulanus

in Canada



EXTIRPATED
2000

COSEWIC
Committee on the Status
of Endangered Wildlife
in Canada



COSEPAC
Comité sur la situation
des espèces en péril
au Canada

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COSEWIC. 2000. COSEWIC assessment and update status report on the Island Marble *Euchloe ausonides insulanus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. iv + 7 pp.

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Également disponible en français sous le titre Évaluation et Rapport de situation du COSEPAC sur le marbré insulaire (*Euchloe ausonides insulanus*) au Canada – Mise à jour.

Cover illustration/photo:
Island Marble – ©James Miskelly.

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Catalogue No. CW69-14/130-2000E-PDF
ISBN 978-1-100-16453-3



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COSEWIC Assessment Summary

Assessment summary – May 2000

Common name

Island Marble

Scientific name

Euchloe ausonides insulanus

Status

Extirpated

Reason for designation

This butterfly was formerly found on two islands off the west coast, but disappeared from both sites by 1910 because of loss of the larval host plant. It has not been seen in Canada since that time.

Occurrence

British Columbia

Status history

Extirpated by 1910. Designated Extirpated in April 1999. Status re-examined and confirmed in May 2000. Last assessment based on an existing status report.



COSEWIC Executive Summary

Island Marble *Euchloe ausonides insulanus*

The Island Marble, an undescribed subspecies¹ of the Large Marble, *Euchloe ausonides*, was thought to be a Canadian endemic that was historically found on Gabriola Island and Vancouver Island from Nanaimo in the north southward along the eastern edge of Vancouver Island to Beacon Hill Park, Victoria. It was recorded only at lower elevations. Nothing was ever recorded about its larval foodplants. Elsewhere in the species' range, the larvae of other subspecies feed on wild crucifers of the genus *Arabis* which occur on Vancouver Island and are also a larval food source for the related species, Sara's Orangetip, *Anthocharis sara* (Lucas, 1852). Sara's Orangetip has a much wider altitudinal range on Vancouver Island than the Island Marble and is still found on steep hillsides.

Because the Island Marble disappeared from known localities before 1910, it is unlikely that the spread of introduced weed species and post-World War I growth of the human population were factors in its extirpation. The most likely cause for its loss is the elimination of the larval foodplant by grazing sheep and/or cattle prior to, or during, World War I in the low, flat habitat occupied by the Island Marble.

¹ This subspecies was later described and named *E.a. insulanus* by C.S. Guppy and J.H. Shepard. 2001. *Butterflies of British Columbia*, Victoria, BC, Royal British Columbia Museum, 414 pp.



COSEWIC MANDATE

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) determines the national status of wild species, subspecies, varieties, and nationally significant populations that are considered to be at risk in Canada. Designations are made on all native species for the following taxonomic groups: mammals, birds, reptiles, amphibians, fish, lepidopterans, molluscs, vascular plants, lichens, and mosses.

COSEWIC MEMBERSHIP

COSEWIC comprises representatives from each provincial and territorial government wildlife agency, four federal agencies (Canadian Wildlife Service, Parks Canada Agency, Department of Fisheries and Oceans, and the Federal Biosystematic Partnership), three nonjurisdictional members and the co-chairs of the species specialist groups. The committee meets to consider status reports on candidate species.

DEFINITIONS

Species	Any indigenous species, subspecies, variety, or geographically defined population of wild fauna and flora.
Extinct (X)	A species that no longer exists.
Extirpated (XT)	A species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A species facing imminent extirpation or extinction.
Threatened (T)	A species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)*	A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events.
Not at Risk (NAR)**	A species that has been evaluated and found to be not at risk.
Data Deficient (DD)***	A species for which there is insufficient scientific information to support status designation.

* Formerly described as "Vulnerable" from 1990 to 1999, or "Rare" prior to 1990.

** Formerly described as "Not In Any Category", or "No Designation Required."

*** Formerly described as "Indeterminate" from 1994 to 1999 or "ISIBD" (insufficient scientific information on which to base a designation) prior to 1994.

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was created in 1977 as a result of a recommendation at the Federal-Provincial Wildlife Conference held in 1976. It arose from the need for a single, official, scientifically sound, national listing of wildlife species at risk. In 1978, COSEWIC designated its first species and produced its first list of Canadian species at risk. Species designated at meetings of the full committee are added to the list.



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**Update
COSEWIC Status Report**

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in Canada

Jon Ho Shepard

2000

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DISTRIBUTION

The species *Euchloe ausonides* as a whole is found from Alaska south to California and Colorado and east in the USA in short grass prairie. In Canada, it occurs from British Columbia east to northern Ontario and is widespread but localized and generally occurs in open forested areas (Layberry *et al.* 1998).

The subspecies known as the Island Marble has a very small, disjunct distribution and is the subject of this report. This subspecies' historic distribution was thought to have been restricted to Canada. It was confined to the Greater Victoria area, Wellington (now Nanaimo) and Gabriola Island (see Appendix), and included four sites. The earliest record is of an 1860's specimen labelled Vancouver, most likely a reference to Vancouver Island.

The restricted range of this subspecies is isolated from the rest of the species' range. The species apparently never occurred in the Puget Trough of Washington State or the Willamette Valley of Oregon. However, in May 1998, a small population was located on San Juan Island,² Washington. In British Columbia, Washington and northwest Oregon, there are no other records west of the Cascade Mountains (Hinchliff, 1994; 1996; Layberry *et al.*, 1998; Guppy and Shepard, in press). The interior subspecies occurs in drier habitats in British Columbia, Washington and northwest Oregon east of the Coast Range and Cascade Mountains.

PROTECTION AND STATUS

The Island Marble likely no longer occurs in Canada. It was last seen on Gabriola Island in 1908, but was not recognized as endangered prior to its disappearance. There are several islands close to Gabriola Island where there is a slight chance that the subspecies may still occur.

Currently there are no laws in British Columbia to directly protect endangered or threatened species even if they are recognized. The only possible laws that would apply are the *Ecological Reserves Act* to protect breeding habitat and the Forest Practices Code, whose implementation is dependent on local managers. It does not specify that insect species are to be protected. Present TNC ranking for the Island Marble is G5TXQ, NX, SX, indicating that, although the Large Marble as a species is considered to be secure, the Island Marble subspecies is considered extirpated.

² San Juan was revisited from May 21 to 25, 2002, and 10-20 individuals were reported at one site on the island. Searches of additional sites on San Juan Island as well as of Lopez Island and Shaw Island did not locate the butterfly. There may be a slight chance that the butterfly occurs at other sites in the San Juan Archipelago.

POPULATION SIZE AND TREND

Only fourteen specimens of the Island Marble, dating from the 1860s to 1908, are known in museum collections. All represent captures of single specimens. An indication that only single specimens were ever seen is the specimen collected by J. Fletcher, a Canadian federal entomologist, and housed in the Smithsonian Collection. It seems unlikely that Fletcher would have given a unique specimen to the Smithsonian but if so, any retained duplicates have been lost. Therefore it seems that this subspecies was never very common on Vancouver Island, the best-documented area for butterflies in Canada, except for the Ottawa area. The Island Marble is now considered extirpated.

HABITAT REQUIREMENTS

There are no published accounts of the habitat of the Island Marble and, from locality labels on museum specimens, it can only be assumed that the butterfly inhabited open grassland in Garry Oak woodland and the lower southern slopes with open habitat. The San Juan Island population in Washington occurs in similar habitat.

GENERAL BIOLOGY

Taxonomic status

In Canada, several subspecies of *E. ausonides* are recognized by some lepidopterists, but most are not very distinctive (Layberry *et al.* 1998). Consequently, Layberry *et al.* (1998) recognize only three subspecies. *Euchloe a. mayi* (F. and R. Chermock, 1940) (Guppy and Shepard, in press) occupies most of the range of the species in Canada. *Euchloe a. ogilvia* (Back, 1990) is found in the northern Yukon and adjacent Alaska. The undescribed¹ Island Marble (recognized by its larger size, more extensive green marbling on the underside of the hind wings, and very dusky colouration of females (Layberry *et al.* 1998)) is known to have existed only on Vancouver and Gabriola islands.

Biology

Little is published on the biology of the species. Tietz (1972) and Bridges (1988) listed eight references published prior to 1927, all with brief descriptions of the larva and recording *Arabis* spp. as larval foodplants. Shields *et al.* (1970) recorded *Arabis* sp. and *Descurainia californica* (Gray) as foodplants. Opler (1975) described the larva and summarized the known larval foodplants of the Large Marble. He documented that the Large Marble can utilize introduced weedy crucifers (e.g., *Brassica* spp.) as well as the native *Arabis* spp. Shapiro (1977) recorded *Lepidium densiflorum* (Schrad.), an annual weedy crucifer, as a foodplant for the Beringian subspecies, *E. a. ogilvia*.

LIMITING FACTORS

Elsewhere in North America, *Euchloe ausonides* requires specific larval foodplants in the family Cruciferae, especially the genus *Arabis*. On Vancouver Island, *Arabis* is associated with beaches, cliffs, open areas and disturbed sites. *Arabis hirsuta*, which occurs on the island and south through the Puget Trough and Willamette Valley, was the presumed larval foodplant of the Island Marble. Other Cruciferae on which *Euchloe ausonides* larvae have been reared in North America are represented on Vancouver Island only by various introduced weed species, none of which could have been the original larval foodplant. It is not known if these introduced larval host plants were present prior to the loss of the Island Marble.

SPECIAL SIGNIFICANCE

All the larval requirements of the Island Marble are met by the Garry Oak habitat, a threatened habitat in Canada.

RECOMMENDATIONS

If the San Juan Island, Washington population proves to be of sufficient size, it could be used to re-establish the Island Marble in British Columbia. Since we now have a better idea of habitat from the one Washington population, suitable habitats on three islands between Victoria and San Juan Island (Sidney Island, James Island and D'Arcy Island) can be surveyed on the off chance that the Island Marble still exists in Canada. These islands can also be examined to find the best habitat for possible future re-introduction.

ACKNOWLEDGEMENTS

This report benefited from a critical review of the draft by several lepidopterists who provided useful comments and suggestions. T. Aniskowicz coordinated the preparation of this report and its peer review by the Lepidopterans and Molluscs Subcommittee of COSEWIC, edited the final version and included some additional information. Funding to write the report was provided by COSEWIC, Environment Canada, Ottawa.

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APPENDIX

Records of known museum specimens of the Island Marble from British Columbia

Locality	Collection date	Collector	Museum	# of Males	# of Females
Beacon Hill Park	28 May 1899	E.A(nderson)	RBCM	1	0
Beacon Hill Park	17 May 1898	E.A(nderson)	RBCM	0	1
Gabriola I., S	30 May 1898	B.R. Elliott	JHS	1	0
James Bay	17 May 1898	E.A(nderson)	RBCM	1	0
Langford	27 May 1898	E.A(nderson)	RBCM	0	1
Victoria	25 April 1885		CNC	1	0
Victoria	11 May, 1904		CNC	1	0
Victoria	26 May 1882		CNC	0	1
Vancouver	(59.7)	Dr. Lyle	BMNH	1	0
Victoria	24 May 1905	J. Fletcher	USNM	0	1
Victoria	28 May 1887		USNM	1	0
(Victoria)			UBC	0	1
(Victoria)			UBC	1	0
W(ellington)	3 June 1904	G.W. Taylor	CNC	0	1

CNC = Canadian National Insect Collection, Agriculture Canada, Ottawa

JHS = private collection of Jon H. Shepard;

RBCM = Royal BC Museum, Victoria

UBC = Spencer Entomology Collection, Department of Zoology, University of British Columbia, Vancouver