The Status of
Crowded Wormseed Mustard
(*Erysimum inconspicuum* (S. Watson) MacMill.
var *coarctatum* (Fernald) Rossbach)
in Newfoundland and Labrador

The Species Status Advisory Committee
REPORT NO. 7

April 12, 2006

ASSESSMENT

Assessment:	**Current designation:**
Endangered	None

Criteria met:

D1. Number of mature individuals <250

Reasons for designation:

Qualifies as "*endangered*" under the SSAC/COSEWIC criteria D1:

- Only 1 known population in the province
- Narrowly restricted to a very unstable habitat (30 m band at the upper edge of a friable cliff along ocean coast)
- Small population estimated at 100 mature individuals a decade ago (not surveyed since)
- Biennial or short lived perennial reliant on soil seed bank
- Cattle grazing and increased human use at the site could pose a threat
- Variety endemic to the Gulf of St. Lawrence region and rare throughout its range
- Rescue effect unlikely

This report was completed by Mr. Michael Burzynski, under contract to the SSAC.

Status Report

***Erysimum inconspicuum* (S. Watson) MacMill. var *coarctatum* (Fernald) Rossbach**

[=*Erysimum coarctatum* Fernald]

Synonymy from Meades *et al.* (2000)

Family: Brassicaceae

Population: Newfoundland

Life form: Herb

English common name: Tall, Shy, or Crowded wormseed mustard.

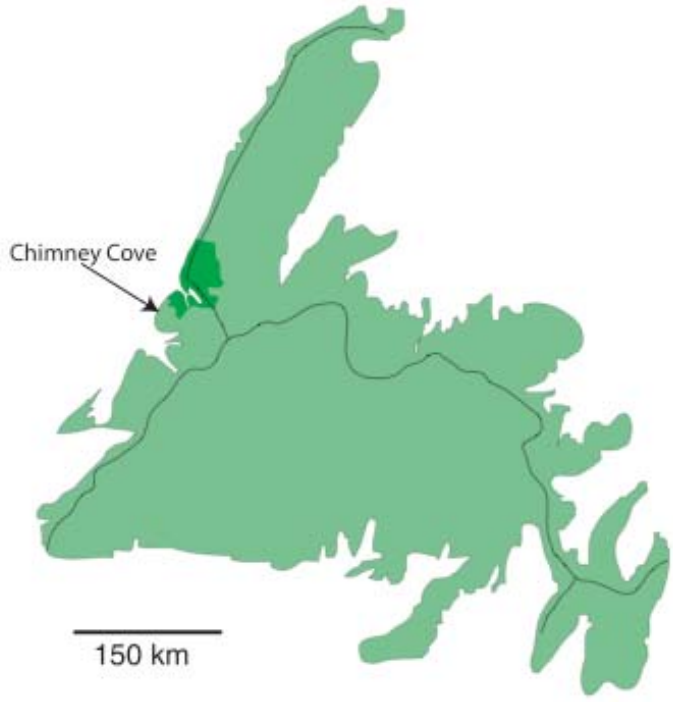
French common name: Vélar à petites fleurs, Vélar du golfe du Saint-Laurent.

Distribution

Global: *Erysimum inconspicuum* is a North American endemic, found from Yukon and Alaska to Newfoundland, and as far south as Kansas. Two varieties are recognized, *inconspicuum* found from Ontario to Yukon, and *coarctatum* around the Gulf of St. Lawrence.

National: Variety *coarctatum* is a Gulf of St. Lawrence endemic found in the Mingan Archipelago, Gaspé Peninsula, and Anticosti Island, with a single occurrence in western Newfoundland (Scoggan 1979).

Provincial: The sole population of *E. inconspicuum* var. *coarctatum* known for the province is on the Island of Newfoundland at Chimney Cove, at the mouth of the St. Gregory River, south of Gros Morne National Park (Bouchard *et al.,* 1991). First recorded in Newfoundland by A.C. Waghorne in 1896, re-located in 1995 by A. Marceau, M. Burzynski, and B. Bonnell.



Annotated Range Map

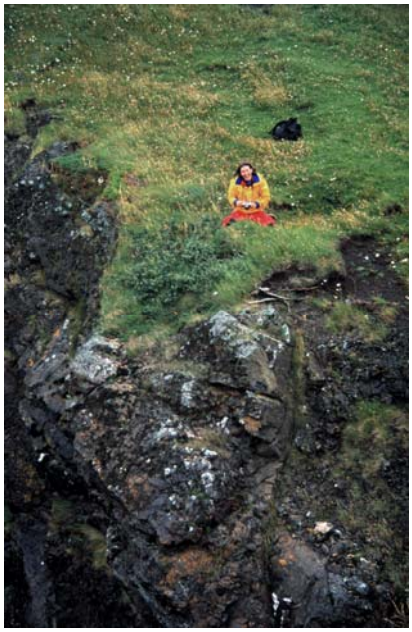
Figure 1. Map of Newfoundland showing Chimney Cove, the only known location for Erysimum inconspicuum *var.* coarctatum *in the province.*

Description and Habitat

Erysimum inconspicuum var*. coarctatum* is a herb in the mustard family. It differs from var. *inconspicuum* by having greener and more crowded leaves, multiple stems (often), and richer yellow flowers with petals greater than 1 cm long (Scoggan 1979). Variety *coarctatum* grows up to 75 cm high on the Island of Newfoundland (pers. obs.). The basal leaves are oblanceolate and entire or nearly so; stem leaves are narrowly lanceolate or oblanceolate, entire, and obtuse to acute. The racemes of small yellow flowers are crowded into a corymb-like summit. Siliques are broad, four-sided, and ash-coloured (Fernald 1993). Chimney Cove is on the western coast of the Island of Newfoundland at UTM coordinates NAD83 21U, northing 0410600, easting 5470100. Fernald (1993) describes the habitat of this plant as “Calcareous cliffs and gravels near Gulf of St. Lawrence, w. Nfld.: Mingan Ids., Anticosti I. and e. Gaspé Pen., Que.” He gives its flowering period as June to August. At Chimney Cove in 1995, the plants were in flower on July 3 and in fruit by August 5 (pers. obs.).

Figure 2. Erysimum inconspicuum *var.* coarctatum *specimens from the Gros Morne National Park herbarium.*


Figures 3 and 4. Headland at Chimney Cove.




Figures 5 and 6. Cliff top at Chimney Cove where Erysimum inconspicuum *var.* coarctatum *grows.*

Overview of Biology
E. inconspicuum var. *coarctatum* is a biennial or short-lived-perennial. None of the plants examined at Chimney Cove exhibited stems of previous years' flowers, and the short tap root and basal rosette of withered leaves seem to indicate a biennial lifestyle in which a rosette of leaves is formed in the first year (or years), then the plant flowers, sets seed, and dies. Long-term persistence of a colony of plants with this strategy is dependent upon the soil seed bank. Because of the dangerous location in which these plants were growing (on the grassy edge of a cliff and down its upper reaches), it was not possible to search thoroughly for first-year (immature) plants. All of the *Erysimum* seen in 1995 were in flower. During a later visit in 2000, no plants were seen at all, which may indicate that they wither quickly after setting seed. The soil on the cliff edge is thin, probably basic or neutral since it is derived from a calcium-rich basalt, and heavily vegetated by grasses, *Shepherdia canadensis*, *Ranunculus acris, Trifolium pratense, Leucanthemum vulgare, Campanula rotundifolia,* and *Picea glauca.*

Population Size
There were about 100 mature (flowering) plants at this site a decade ago, there has been no survey since.

Traditional and Local Ecological Knowledge
Not applicable

Trends
Unknown.

Threats and Limiting Factors
The greatest threat to *E. inconspicuum* var. *coarctatum* in Newfoundland is that it seems to be confined to a single site. The plants all grow along the upper edge of a 150 metre-high basalt cliff at the ocean's edge. The rock is friable and unstable, and a large part of the cliff has a serious overhang. The instability of the habitat is probably the reason that this plant has been able to survive, although with the entire known population growing in a 30 metre band along the edge of this cliff, a large rock failure could extirpate the plant. An open meadow adjoins the top of the cliff. Although this meadow is extremely steep, it is used by grazing cows, horses, and sheep that are summered at Chimney Cove by residents of Trout River and other coastal communities. The tracks and droppings of these animals are found right up to the edge of the cliff, and with some regularity animals fall off this headland as they reach for plants to eat. Grazing is probably a serious threat since there are so few of these plants, and since grazers could remove developing seed capsules several years in a row, and if this plant is biennial, that could have drastic consequences for the survival of *E. inconspicuum* on the Island. Several new cottages have been built by summer residents in the past decade, and increasing human use could also become a problem.

Existing Protection
The Chimney Cove site has no legislated protection. It is accessible by boat, but is far

from any road or permanent community.

Special Significance

Variety *coarctatum* of *Erysimum inconspicuum* is a Gulf of St. Lawrence endemic, and is found nowhere else in the world. The genus was once thought to have medicinal value, the name is derived from the Greek *eryomai* meaning "help" or "save" (Fernald 1993), and its officinal effect was believed to be associated with sight. The species was used by the Hopi in the American southwest as a tuberculosis cure. Alcohol extracts of *E. inconspicuum* fruits were found by Piatak *et al.* (1985) to have cytotoxic properties against the KB cell line and activity against P-388 lymphocytic leukemia.

Rank and Status of *Erysimum inconspicuum* var*. coarctatum* (NatureServe 2005)

Jurisdiction	**Status**
Global	G5T2
Rounded Global Status	T2 Imperiled
National Status (Canada)	N2
Status/COSEWIC	Not rated
Newfoundland	S1
Labrador	Not known from Labrador
Québec	S2
New Brunswick	S1*

*Hinds (2000) noted that the single N.B. collection at St. Leonard in the northwest of the province is referable to var. *coarctatum*.. However, the Atlantic Canada Conservation Data Centre assigns this to var. *inconspicuum*. Similarly, a specimen from Springhill mentioned by Zinck (1998) as the single N.S. collection of *E. inconspicuum*, is listed as var. *inconspicuum*, an exotic, by the ACCDC.

Sources of Information and List of References

Bouchard, A., S. Hay, L. Brouillet, M. Jean, and I. Saucier. 1991. *The Rare Vascular Plants of the Island of Newfoundland*, Syllogeus No. 65. Can. Museum of Nature, Ottawa.165 pp.

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Hinds, Harold R. 2000. *Flora of New Brunswick, second edition*. Biology Department, University of New Brunswick. 695 pp.

Meades, Susan J., Stuart G. Hay, and Luc Brouillet. 2000. *Annotated checklist of the vascular plants of Newfoundland and Labrador*. Memorial University Botanical Garden, St. John's, NL. 237 pp.

NatureServe. 2005. *NatureServe Explorer: An online encyclopedia of life* [web application]. Version 4.6. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: November 30, 2005).

Piatak. D.M., P.F. Tang, and P.D. Sorensen. 1985. *Constituents of* Erysimum inconspicuum*. Two sulfur-containing lactone compounds*. J. Nat. Prod. 48(3):424-428.

Scoggan, H.J. 1979. *The flora of Canada* (4 volumes). National Museum of Natural Science, Ottawa. 1711 pp.

Zinck, Marian. 1998. *Roland's Flora of Nova Scotia* (2 volumes). Nova Scotia Museum. 1296 pp.

All photographs were taken by Michael Burzynski.

Collections Examined

GMNP, Gros Morne National Park Herbarium, 2 specimens; live plants at Chimney Cove.

Technical Summary for *Erysimum inconspicuum* var*. coarctatum* (S1)

Distribution and Population Information	**Criteria Assessment**
Extent of occurrence (EO)(km^2)	<0.01 (i.e., < 1 ha)
Area of occupancy (AO) (km^2)	<0.01
Number of extant locations (in NL)	1
Trend in # of locations, EO, AO	Unknown
Habitat trend	Unstable, possibly declining
Trend in area, extent, or quality of habitat	Unknown
Generation time	Two years minimum
Number of mature individuals	Approximately 100
Total population trend	Unknown
Is the total population severely fragmented?	The entire Newfoundland population is in one field edge at the top of a cliff. It is disjunct from other populations on the Mainland by at least 250 km
Rescue Effect (immigration from an outside source)	
Does the species (variety) exist elsewhere?	Yes, in coastal Québec.
Status of the outside population(s)?	S2 in Québec.
Is immigration known or possible?	Unlikely because of the distance
Would immigrants be adapted to survive here?	Probably
Is there sufficient habitat for immigrants here?	Probably

Appendix A.

Population Information for *Erysimum inconspicuum* var. *coarctatum*

Recently verified occurrences (verified within the last 25 years)

- Plants relocated at Chimney Cove in early July 1995 by Anne Marceau, Michael Burzynski, and Brian Bonnell.
- Site revisited by Anne Marceau and Michael Burzynski with André Bouchard, Stuart Hay, Luc Brouillet, and Sue Meades in August 1995.
- Site revisited by Anne Marceau and Michael Burzynski in August 2000. *Erysimum* not seen.

Recent search effort (areas searched within the last 25 years with estimate of effort)

At Chimney Cove:

- 0.12 days by 3 people
- 1.0 days by 6 people
- 0.06 days by 2 people

Historical occurrences (not verified in the last 25 years)

- Plants discovered at Chimney Cove by A.C. Waghorne in 1895.

Potential sites unexplored (explain reason for potential)

- Green Gardens area of Gros Morne National Park, portions of the coast south of Chimney Cove and into the Bay of Islands. Potential exists because of the existence of coastal outcrops of basalt and limestone. The *Erysimum* is growing on basalt at Chimney Cove.