

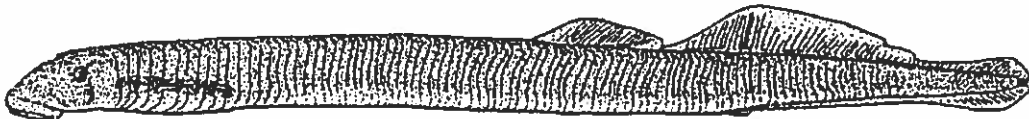
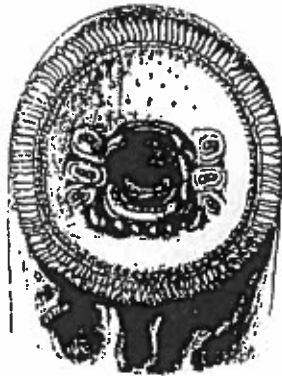
May 16/03
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**COSEWIC
Assessment Status Report**

on the

Morrison Creek Lamprey
Lampetra richardsoni

in Canada



**ENDANGERED
2000**

COSEWIC
COMMITTEE ON THE STATUS OF
ENDANGERED WILDLIFE
IN CANADA



COSEPAC
COMITÉ SUR LA SITUATION DES
ESPÈCES EN PÉRIL
AU CANADA

COSEWIC status reports are working documents used in assigning the status of wildlife species suspected of being at risk. This report may be cited as follows:

Please note: Persons wishing to cite data in the report should refer to the report (and cite the author(s)); persons wishing to cite the COSEWIC status will refer to the assessment (and cite COSEWIC). A production note will be provided if additional information on the status report history is required.

COSEWIC ^{in press} COSEWIC assessment and update status report on the Morrison Creek lamprey *Lampetra richardsoni* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 14 pp.

update

Beamish, R.J., J.H. Youson and L.A. Chapman. 1999. COSEWIC status report on the Morrison Creek lamprey *Lampetra richardsoni* in Canada, in COSEWIC assessment and update status report on the Morrison Creek lamprey *Lampetra richardsoni* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 1-14 pp.

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Également disponible en français sous le titre Rapport du COSEPAC sur la situation de la lamproie du ruisseau Morrison (*Lampetra richardsoni*) au Canada

Cover illustration:

Morrison Creek lamprey — Male Morrison Creek lamprey, *Lampetra richardsoni*. Photograph provided by R.J. Beamish, DFO, Pacific Biological Station, Nanaimo, BC.

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COSEWIC
Assessment Summary

Assessment Summary – May 2000

Common name

Morrison Creek Lamprey

Scientific name

Lampetra richardsoni

Status

Endangered

Reason for designation

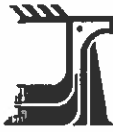
Endemic to British Columbia, this single, small population is susceptible to habitat loss from urban development and highway construction.

Occurrence

British Columbia

Status history

Designated Threatened in April 1999. Status re-examined and uplisted to Endangered in May 2000. May 2000 assessment was based on new quantitative criteria applied to information from the existing 1999 status report.



COSEWIC
Executive Summary

Morrison Creek Lamprey
Lampetra richardsoni

Polyachnomya

Lampreys (Petromyzonidae) are a successful group of vertebrates that have survived for close to 350 million years and have had a conservative evolution. The reason for their evolutionary success is not known but may be attributed to their ability to change among the three adult life history types; anadromous and parasitic, nonanadromous and parasitic, and, nonanadromous and non-parasitic. Direct evidence for this possibility comes from a rare population of *Lampetra richardsoni* that is presently known only from Vancouver Island, Canada. This population produces a potentially parasitic and a non-parasitic adult life history type each year, both of which are nonanadromous. The parasitic form is an undescribed variety of *Lampetra richardsoni*, the Morrison Creek variety. Although the Morrison Creek variety could be considered a new species on the basis of morphology and life history type, the genetic similarity which exists between the two forms indicates that the variety is probably not a new species but rather a unique morph of a single population, representing an intermediate step in the evolution of *Lampetra richardsoni* from an anadromous parasitic ancestor.

Distribution

This polymorphic population of *Lampetra richardsoni* has only been found in the Morrison Creek watershed, located on Vancouver Island, British Columbia, Canada.

Protection

There are currently no protection provisions for the Morrison Creek western brook lamprey.

Population Numbers, Sizes and Trends

There are no reliable population estimates of *Lampetra richardsoni* in Morrison Creek. Data suggest that the Morrison Creek variety was relatively stable during the initial studies which ran from 1978 to 1984, but that their numbers have declined in recent years.

Habitat

The Morrison Creek area is characteristic of interlinking wetlands, with meadows, thick brush, beaver dams and open beaver ponds. The stream bed is dominated by compressed till with limited patches of small gravels and an abundance of stream debris which provide habitat diversity. The specific habitat features required to support a polymorphic population of lamprey are not known.

General Biology

The biology of the Morrison Creek variety is not fully understood. Aside from an extended post-metamorphic period and the ability to be parasitic, its biology is very similar to that of typical *Lampetra richardsoni*. Typical *Lampetra richardsoni* remain in fresh water throughout their entire life cycle and begin to reproduce in May and June, spawning only once. After hatching, the young quickly burrow into the soft bottom sediments where they spend an unknown time (possibly three to seven years) as filter feeding ammocoetes before metamorphosing into juveniles.

The population of *Lampetra richardsoni* in Morrison Creek begins metamorphosis in July or August and two adult forms appear in the spring of the following year: a spawning variety, typical *Lampetra richardsoni*, and a parasitic variety which is not completely mature and could delay another year before spawning. No distinction can be made, however, between the two morphs of the population when they are ammocoetes.

The unusual biology of the Morrison Creek variety appears to represent a key phase of lamprey evolution. The inability to osmoregulate in salt water, the feeding habit in the laboratory, the precocious development in males, and the delayed organ development indicate that the variety is intermediate between a parasitic and non-parasitic form.

Special Significance

The existence of a lamprey population in Canada that produces two distinct life history types has only been described from Morrison Creek. This rare population represents an important transition in the evolution of adult life history types in lampreys and may be the key to understanding why lampreys have developmental timing may explain both the success of lampreys and the presence of two adult life history types among lampreys as a group.

Limiting Factors

The survival of the Morrison Creek *Lampetra richardsoni* complex depends on the protection of the entire lamprey population and its habitat. There has been concern that rapid development in the area has overwhelmed the ability to protect sensitive habitat. Residential development has encroached on the mainstem of the creek and has

resulted in an alteration of the riparian vegetation which poses a definite threat to fish habitat. A recent concern is the short-term and long-term effects of highway construction on fish habitat in Morrison creek, significant loss of fish numbers in a presumably small population, combined with a considerable loss of habitat may prevent the survival of this rare species complex.



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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