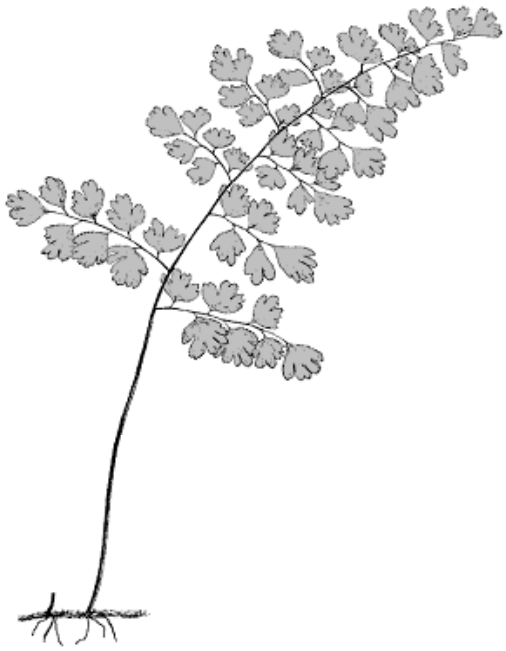
COSEWIC
Assessment and Update Status Report

on the

Southern Maidenhair Fern
Adiantum capillus-veneris

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

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COSEWIC 2000. COSEWIC assessment and update status report on the Southern Maidenhair Fern *Adiantum capillus-veneris* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 5 pp.

White, D.J., and G.W. Douglas 1998. Update COSEWIC status report on the Southern Maidenhair Fern *Adiantum capillus-veneris* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 1-5 pp.

Previous report:

Brunton, D.F. 1984. COSEWIC status report on the Southern Maidenhair Fern *Adiantum capillus-veneris* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 33 pp.

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Également disponible en français sous le titre Rapport du COSEPAC sur la situation de l'adiante cheveux-de-Vénus (*Adiantum capillus-veneris*) au Canada – Mise à jour

Cover illustration:
Southern Maidenhair Fern — Adapted from an illustration courtesy of the British Columbia Conservation Data Centre.

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COSEWIC
Assessment Summary

Assessment Summary – May 2000

Common name
Southern Maidenhair Fern

Scientific name
Adiantum capillus-veneris

Status
Endangered

Reason for designation
A fern known only from a single spring in south-eastern British Columbia where it is threatened by recreational activities and development.

Occurrence
British Columbia

Status history
Designated Endangered in April 1984. Status re-examined and confirmed in April 1998 and in May 2000. May 2000 assessment based on new quantitative criteria applied to information from the existing 1998 status report.

COSEWIC
Executive Summary

Southern Maidenhair Fern
Adiantum capillus-veneris

Description

Southern Maidenhair Fern (*Adiantum capillus-veneris*) is a delicate fern spreading by a thin branched rhizome covered with slender, small, brown scales. Leaves arise scattered along the rhizome and are lax or drooping. The central axis of the blade is continuous with the purplish-black leaf stalk. Blades are commonly twice compound, with each leaf consisting of a series of 5-12 alternate pinnae per side of the leaf, each pinna has a central axis and bears up to about 6 pinnules. Each of these smallest leaf segments (pinnules) is broadly rounded at the end and incised into rounded teeth; the base tapers to a small delicate leaflet stalk. These pinnules are reminiscent of miniature ginkgo leaves. The spore sacs (in fertile leaves) are clustered on the lower pinnule surface within crescent-shaped protective flaps of tissue (indusia).

Distribution

The fern is a common and widely distributed species, found throughout the warmer southern portion of the U.S. and Mexico; it also occurs in South America, South Africa, Australia and warmer parts of Eurasia. In Canada, it is found at only one site in southeastern British Columbia, the Fairmont Hot Springs, about 1000 km north of its main range.

Habitat

In Canada, it is found on lime-rich, wet, porous rock formed from the mineral deposits of a hot spring. The warm water of the hot spring also produces a mild microclimate that promotes the growth of the fern.

General biology

Southern Maidenhair Fern is a delicate fern that is normally found in seepage areas and on wet cliffs in tropical or warm temperate climates. It is able to subsist at the Canadian locality because of the suitable microclimatic and substrate conditions provided by the hot springs. Due to the lack of adequate flow of spring water, the fern has decreased in vigour and now no longer reproduces by spores that produce the

small plantlets that bear the sexual organs. Because of its delicate appearance, the fern is commonly grown as a greenhouse plant.

Population size and trends

The fern was relatively abundant around the hot springs over 50 years ago. By 1996 only 16 sterile leaves remained in one small patch.

Limiting factors and threats

The main limiting factor for this fern appears to be the lack of adequate hot spring water needed to maintain the warm microclimate and continued development of the wet mineralized rocky substrate needed by the fern.

Existing protection

No formal protection exists. It is a red-listed species in the province of British Columbia.

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.

Environment Canada | Environnement Canada

Canadian Wildlife Service | Service canadien de la faune

Canada

The Canadian Wildlife Service, Environment Canada, provides full administrative and financial support to the COSEWIC Secretariat.

Update
COSEWIC Status Report

on the

Southern Maidenhair Fern
Adiantum capillus-veneris

in Canada

David J. White[1]
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1998

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INTRODUCTION

Adiantum capillus-veneris L. was designated as endangered in 1984 due to its decline at the only known Canadian station at the Fairmont Hot Springs in southeastern British Columbia (Brunton, 1984). Southern Maidenhair Fern is a tropical-subtropical species whose North American distribution is mainly in the southern United States. To survive at the disjunct British Columbia site—that is over 1000 km north of the main range of the species—the fern requires a humid, calcareous habitat that is warm year-round (Brunton, 1984). Suitable conditions occur at the Fairmont Hot Springs where warm, lime-rich, spring water flows over tufa—a rock that is mostly calcium carbonate precipitate (Brunton, 1984).

DISTRIBUTION

Southern Maidenhair Fern occurs in the United States from central California across to Virginia and south to Florida and Mexico (Brunton, 1984). There is a small, disjunct population in South Dakota at a hot spring. The fern also occurs in South America and Eurasia. Its only Canadian occurrence is in southeastern British Columbia (Figure 1).

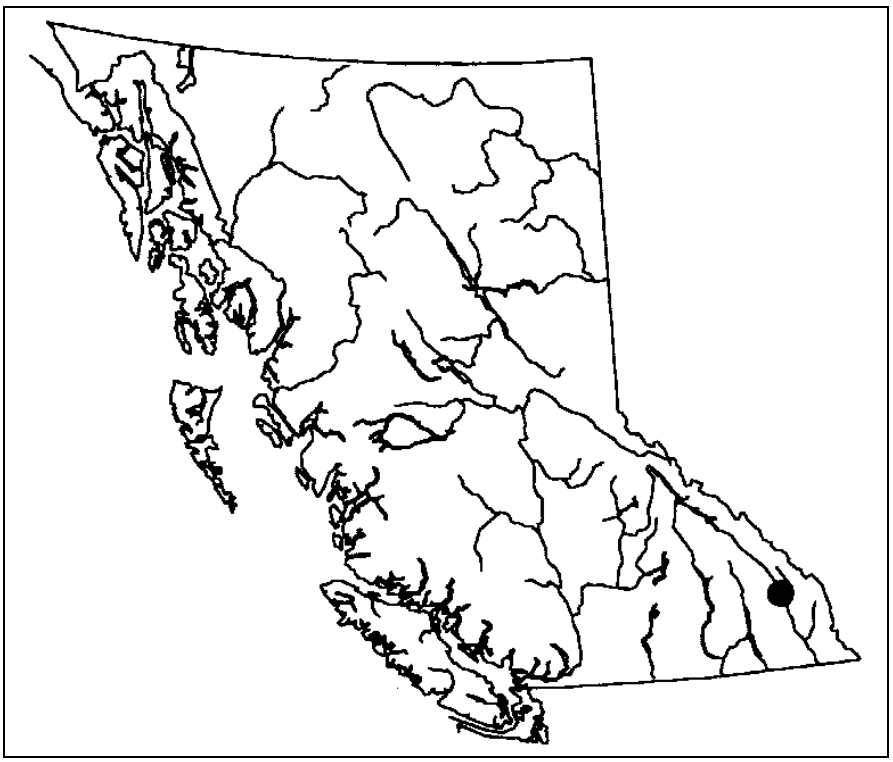

Figure 1. Distribution of Southern Maidenhair Fern in British Columbia.

PROTECTION

Since the designation of Southern Maidenhair Fern as an endangered species, no steps are known to have been taken to enhance the species' chances of survival in Canada. The fern occurs on private property owned by the Fairmont Hot Springs resort.

POPULATION SIZE AND TREND

Southern Maidenhair Fern has been known at the Fairmont Hot Springs since 1888. As late as the 1940s the fern was noted as abundant around the resort at several sites (Brunton, 1984). Further resort development has caused the elimination of the species at all but one site and this remaining colony continues to decline. In 1974, the colony covered 3 m of rock ledge, but by 1982 the colony only occupied 0.4 m of ledge and consisted of 68 sterile fronds (Brunton, 1984). In 1996, only 16 sterile fronds remained on about four plants (G. Douglas, pers. obs., 1996) and the site's status is extremely precarious.

HABITAT

In British Columbia, Southern Maidenhair Fern is a long-range disjunct from the species' main range in the southern United States. In order to survive more than 1000 km north of its main range, the fern requires a steady supply of hot spring water to provide a warm and very humid year-round climate (Brunton, 1984). The plant's substrate is lime-rich, porous rock—such as the tufa deposits that are found at the Fairmont Hot Springs (Brunton, 1984).

BIOLOGY

Southern Maidenhair Fern is a very attractive plant (several forms are cultivated as greenhouse ornamentals) that could be desirable to would-be gardeners (Brunton, 1984). Since the colony is now so small, any plant removal could be catastrophic.

LIMITING FACTORS

Adiantum capillus-veneris occurs in Canada only because of the presence of hot spring water that ameliorates the local microclimate. Without the hot water, the fern simply cannot survive at this latitude. Fern habitat loss has been due primarily to the redirecting of hot spring water by the owners of the Fairmont Hot Springs resort to the developed bathing pools. In 1982, the last known colony was surviving due to a leak in the pipe that transports hot water from the source to the resort pools (Brunton, 1984).

Due to the plant's high profile as a very rare fern, the site has been visited by many naturalists and fern enthusiasts. This could put the plant at some risk from inadvertent site damage.

EVALUATION AND STATUS RECOMMENDATION

When the status designation of endangered was assigned in 1984, Southern Maidenhair Fern was known from only one colony of about 68 sterile fronds. By 1996, it was still only known at the one site and the colony had declined to only 16 sterile fronds. Thus, there is no reason to change the designation of endangered status for Southern Maidenhair Fern.

ACKNOWLEDGEMENTS

Beth Rogers, British Columbia Conservation Data Centre, provided a listing of known Southern Maidenhair Fern specimens and records. Funding provided by the Canadian Wildlife Service, Environment Canada.

LITERATURE CITED

Brunton, D. 1984. Status report on the Southern Maidenhair Fern (*Adiantum capillus-veneris*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Canadian Wildlife Service, Ottawa. Unpublished report. 27 pp.

THE AUTHORS

David J. White has a B.Sc. in biology and has been conducting natural area inventories and evaluating the status and significance of rare plants for more than 25 years. He began doing field surveys in 1972 for the International Biological Program. From 1973 to 1983, David was employed by the Canadian Museum of Nature as a research technician. During that period he co-authored a number of publications on rare plants. From 1984 to the present, David has worked as a self-employed life science consultant. He has completed projects ranging from natural area inventories and evaluations to reports on invasive species. David has previously written COSEWIC status reports on Ginseng (*Panax quinquefolius*), Golden-seal (*Hydrastis canadensis*), and Branched Bartonia (*Bartonia paniculata*).

George W. Douglas has a Ph.D. in Plant Ecology and has worked with rare plants for over 15 years. He was senior author of The Rare Plants of the Yukon (1981) and co-authored The Rare Plants of British Columbia (1985). George was also chief editor of the manual, The Vascular Plants of British Columbia (1989-1994). In 1991, George joined the British Columbia Conservation Data Centre, Ministry of Environment as the senior program botanist. Since then, he has been responsible for the documentation and tracking of the rare native vascular plants, bryophytes and lichens of the province. George has written or co-written 15 COSEWIC status reports during this period.