

COSEWIC
Assessment and Update Status Report

on the

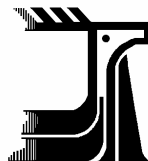
Tuberous Indian-plantain
Arnoglossum plantagineum

in Canada



SPECIAL CONCERN
2002

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:

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COSEWIC 2002. COSEWIC assessment and update status report on the tuberous Indian-plantain *Arnoglossum plantagineum* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 11 pp.

White, D.J. 2002. Update COSEWIC status report on the tuberous Indian-plantain *Arnoglossum plantagineum* in Canada, in COSEWIC assessment and update status report on the tuberous Indian-plantain *Arnoglossum plantagineum* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 1-11 pp.

Previous Report:

Keddy, C. 1988. COSEWIC status report on the Indian-plantain *Cacalia plantaginea* in Canada. Committee on the Status of Endangered Wildlife in Canada. 28 pp.

Production note:

The 1999 update report was never finalized. The 1999 update report has been revised and technical summary added. Formerly listed by COSEWIC as Indian plantain *Cacalia plantaginea*.

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Tuberous Indian-plantain — Photograph courtesy of Texas Vascular Plant Image Library, Texas A&M University.

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COSEWIC Assessment Summary

Assessment Summary – May 2002

Common name

Tuberous Indian-plantain

Scientific name

Arnoglossum plantagineum

Status

Special Concern

Reason for designation

Limited occurrences present within 5 shoreline areas of Lake Huron subject to recreational development and use but with some populations in protected areas.

Occurrence

Ontario

Status history

Designated Special Concern in April 1988. Status re-examined and confirmed in April 1999 and in May 2002. Last assessment based on an existing update status report.



COSEWIC
Executive Summary

Tuberous Indian-plantain
Arnoglossum plantagineum

Species information

Tuberous Indian-plantain is a perennial member of the aster family. It has long-stalked, mainly basal, leaves that resemble those of common plantain. The central flowering stalk can reach to 1.8 m and bears a flat-topped flower cluster of 30-100 white flower heads. Plants flower in June in Ontario with seed dispersal occurring from July to August.

Distribution

Tuberous Indian-plantain occurs in the United States from Ohio and Michigan south to Texas and Alabama. In Canada the species is found only in southern Ontario.

Habitat

Plants prefer open sunny areas in wet, calcareous meadows or shoreline fens.

Biology

Little specific information is available on the biology of this perennial species. The plant reproduces only by seeds.

Population sizes and trends

The species is found at about 13 localities consisting of shoreline fens and riparian meadows. The Ontario population consists of at least 5000 flowering plants and many times this number of vegetative rosettes.

Limiting factors and threats

The main threats to this species are from cottage development and maintenance activities such as mowing of shoreline habitats and impacts of recreational activities.

Special significance of the species

No special attributes have been identified for this species.

Existing protection or other status designations

The species occurs in a number of parks, nature reserves and conservation areas where it has some degree of protection. Most sites, however, are on private land.

Summary of status report

Tuberous Indian-plantain is presently known from about 13 localities from shoreline fens along Lake Huron, from riparian meadows along the Maitland and Ausable Rivers and from an inland site in Simcoe County. Perhaps due to a better growing season in 1998 and additional search efforts by other naturalists, more plants are presently known than were recorded a decade previously. About 5000 flowering plants have been counted with several times that number of vegetative rosettes also being present. Threats to the species' wetland habitats continue due to their occurrence in areas of cottage development.



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

Update
COSEWIC Status Report
on the
Tuberous Indian-plantain
Arnoglossum plantagineum
in Canada

David J. White¹

2002

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SPECIES INFORMATION

Name and classification

Scientific name: *Arnoglossum plantagineum* Raf.
Synonym: *Cacalia plantaginea* (Raf.) Shinnars
Common name: tuberous Indian-plantain
Family: Asteraceae (aster family)
Major plant group: dicot flowering plant

Description

Tuberous Indian-plantain is a perennial member of the aster family. It has long-stalked, mainly basal, leaves that resemble those of common plantain. The central flowering stalk can reach to 1.8 m and bears a flat-topped flower cluster (Figure 1) of 30-100 white flower heads. Plants flower in June in Ontario with seed dispersal occurring from July to August (Keddy 1988).



Figure 1. Close-up view of several flower heads of tuberous Indian-plantain (courtesy Texas Vascular Plant Image Library, Texas A&M University).

DISTRIBUTION

Global range

Tuberous Indian-plantain occurs in the United States from Ohio and Michigan south to Texas and Alabama (Figure 2).

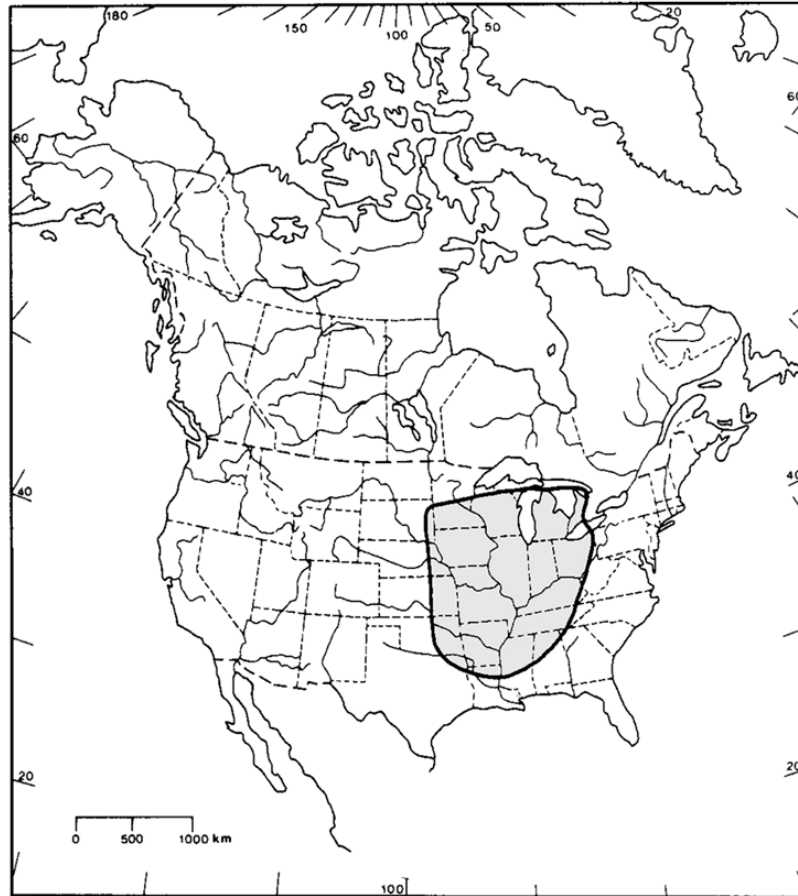


Figure 2. North American distribution of tuberous Indian-plantain based on White and Maher 1983 in Argus et al. 1982-1987.

Canadian range

The species' only Canadian occurrence is in southern Ontario (Figure 3).

HABITAT

Habitat requirements

Tuberous Indian-plantain prefers open sunny areas in wet, calcareous meadows or shoreline fens (Keddy, 1988).

Protection/ownership

Although several sites occur in parks and other protected areas, most occur on private land, most of which is highly desirable for development.

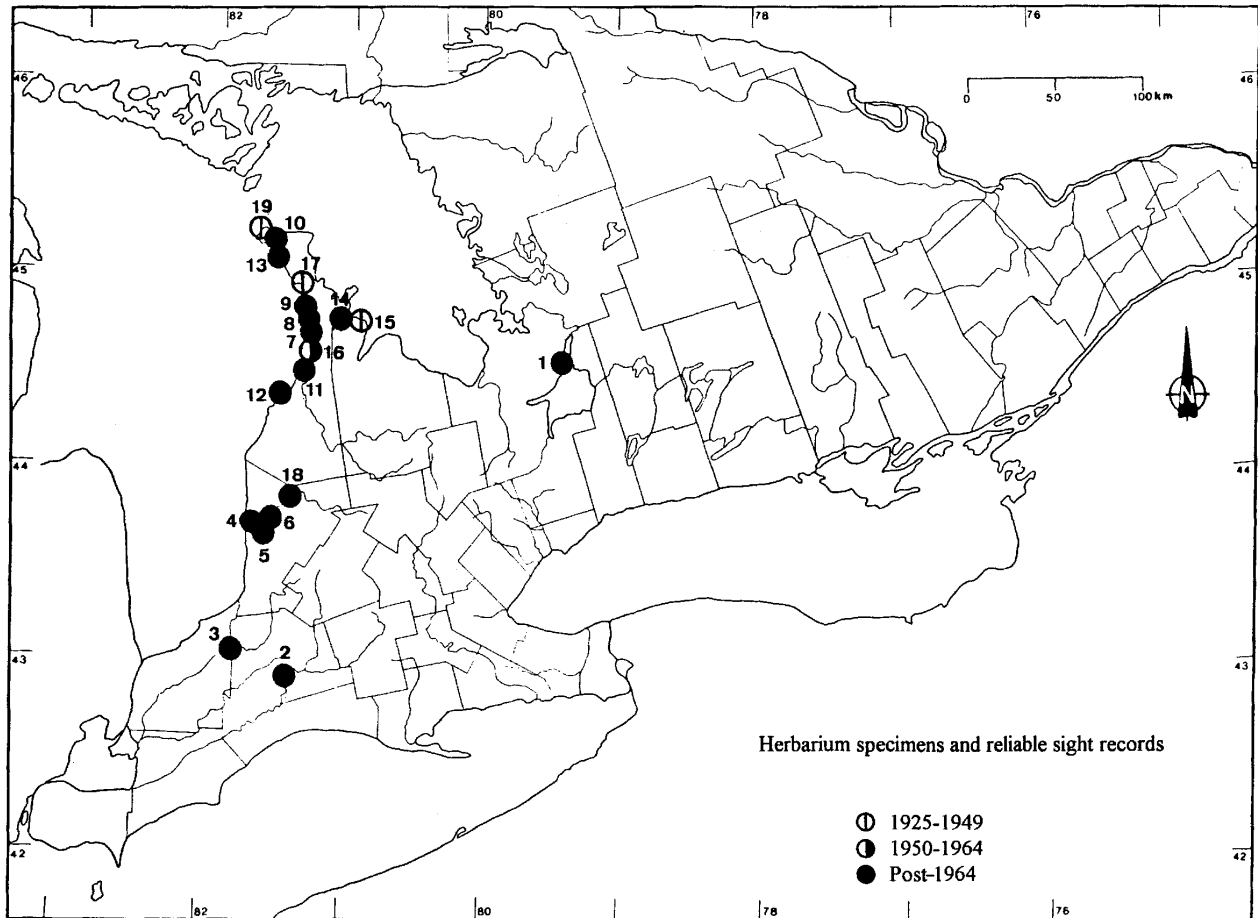


Figure 3. Canadian (Ontario) distribution of tuberous Indian-plantain.

The tuberous Indian-plantain site in MacGregor Point Provincial Park is owned and managed by the Ontario Ministry of Natural Resources. The Dorcas Bay sites occur partly in Bruce Peninsula National Park (owned and managed by Parks Canada) and partly in the Dorcas Bay Nature Reserve (owned by the Federation of Ontario Naturalists). One of the Oliphant sites occurs in the Oliphant Fen Nature Reserve (owned by the Owen Sound and Saugeen Field Naturalist Clubs). The Dyers Bay site occurs in Bruce Peninsula National Park (owned and managed by Parks Canada). One of the Ausable River sites occurs in the Rock Glen Conservation Area. One of the Maitland River sites occurs in the Falls Reserve Conservation Area. Much of the Red Bay site occurs in the Petrel Point Nature Reserve (owned by the Federation of Ontario Naturalists). The Southampton site is owned and managed by the Town of Southampton. Most sites, however, occur on private property.

BIOLOGY

Tuberous Indian-plantain prefers shoreline fens and meadows of Lake Huron. This habitat is in great demand for cottages and retirement homes. Although the best areas for tuberous Indian-plantain are generally too wet for housing, these wet sites are often developed as lawns or are mown to improve shoreline access for swimming and boating.

These perennial plants reproduce only by seed.

POPULATION SIZES AND TRENDS

Tuberous Indian-plantain occurs in five areas: the shoreline fens of Lake Huron along the west side of the Bruce Peninsula, several riverine meadows of the Maitland and Ausable rivers close to Lake Huron, a newly discovered population on the Thames River, and a single isolated record near Lake Simcoe. Counts made by Keddy (1988) and by the present author in 1998 are of flowering/fruitlet plants unless otherwise noted. Counts made by others are generally of flowering and non-flowering plants combined. Since there may be a dozen or more vegetative plants in a population for every flowering plant (pers. obs., 1998), comparisons must be made carefully.

Keddy (1988) reported a single plant south of Orillia near Lake Simcoe (Site 1 on map, Fig. 3). This plant was seen as recently as 1993 or 1994 by the landowner H. Cattley when the single plant produced two flowering stems (H. Cattley, pers. com., 1998).

In 1993, Mike Oldham found a new population of over 100 tuberous Indian-plantain, presumably both flowering and non-flowering plants, along the Thames River (Site 2 on map, Fig. 3). This is the first known occurrence of the species on the Thames River and is about 40 km southeast of the Ausable River sites.

Three subpopulations (all within one kilometre of each other), consisting of one, three, and 18 flowering plants, are listed in Keddy (1988) for the Ausable River near Arkona (Site 3 on map, Fig. 3). The author searched the area with the subpopulation of 18 on 27 July 1998 and found two flowering plants. Oldham (1998) lists four additional records in essentially the same area that were last seen in 1984 and 1985. Two of these populations each contained up to one hundred flowering and non-flowering plants. The author found a new site nearby on 27 July 1998 in the Rock Glen Conservation Area with one flowering and 24 non-flowering plants. Clearly, tuberous Indian-plantain still occurs in this area; however, there is not enough information to tell if the population size has changed since 1988.

There are several records from the banks of the Maitland River within 20 km of Lake Huron. Keddy (1988) confirmed only one record in this area: 59 flowering plants at Benmiller (Site 4 on map, Fig. 3). The author searched this area on 26 July 1998 and

found about 50 flowering plants. Oldham (1998) lists a 1987 record of “scattered plants” from north of Holmesville (Site 5 on map, Fig. 3). The author searched this area on 26 July 1998 but saw no flowering tuberous Indian-plantain. The plants may have been eliminated in this area by expanded lawns or by heavy cattle grazing to the river’s edge. Since the meadow vegetation in this area is very thick in other places, the tuberous Indian-plantain could have been missed if it wasn’t in flower/fruit. Oldham (1998) lists another 1987 record from north of Clinton (Site 6 on map, Fig. 3) but without abundance information. The author searched this area on 26 July 1998 but saw no flowering tuberous Indian-plantain. The meadow vegetation in this area is dominated by very dense stands of Reed Canary Grass (*Phalaris arundinacea*) and the plant could have been missed if it wasn’t in flower/fruit. Oldham (1998) lists three additional records from the banks of the Maitland River (Site 4 on map, Fig. 3): one kilometre southwest of Benmiller in the Falls Reserve Conservation Area, seen in 1995 and recorded as “rare and local”; two kilometres and three kilometres east-southeast of Goderich, both seen in 1993 with no abundance information. Thus, tuberous Indian-plantain is still extant along the Maitland River and is known from several sites not reported on in Keddy (1988).

The principal range of tuberous Indian-plantain in Ontario is along the west side of the Bruce Peninsula. Keddy (1988) lists six main areas, some with several subpopulations. Fieldwork by the present author in 1998 shows that the area supports thousands of flowering/fruited tuberous Indian-plantain.

At Chief’s Point Bay (Site 7 on map, Fig. 3), Keddy (1988) lists “9 colonies of 1-100”. The author visited these sites 16 July 1998 and counted the nine colonies as four subpopulations because of their close proximity. The number of flowering plants of tuberous Indian-plantain was as follows (Keddy’s 1988 numbers are in parentheses): (138) 420, (100) 75, (20) 124, (100’s) 300+.

At Oliphant South (Site 7 on map, Fig. 3), Keddy (1988) lists “scattered plants” at three locations. The author visited these sites 16 July 1998 and counted five colonies of: 170, 66, 126, 340, and 35 flowering plants.

At Oliphant North (Site 7 on map, Fig. 3), Keddy (1988) lists four sites with: 60, 20, and “a few scattered plants” at two sites. The author visited these sites 16 July 1998 and counted the four colonies as: 200+, 90, 1500+, and 60 flowering plants respectively. The 1500+ colony occurs in the Oliphant Fen Nature Reserve that is owned by the Owen Sound and Saugeen Field Naturalist Clubs.

Keddy (1988) counted “hundreds” of tuberous Indian-plantain at Red Bay (Site 8 on map, Fig. 3). Oldham (1998) lists this site as “Howdenvale Bay - Petrel Point”. The author visited this site 16 July 1998 and counted 1400 flowering plants. Much of this colony occurs in the Petrel Point Nature Reserve, which is owned by the Federation of Ontario Naturalists.

At Pike Bay (Site 9 on map, Fig. 3), Keddy (1988) reported 20 flowering plants. The author visited this site 16 July 1998 and counted 120 flowering plants.

Keddy (1988) found Dorcas Bay (Site 10 on map, Fig. 3) to have “six sites with 10-110+ plants”. The author visited this area 24 July 1998 and due to the proximity of the subpopulations, counted the sites as one colony with 506 flowering plants. This colony occurs partly in Bruce Peninsula National Park, which is owned and managed by Parks Canada, and partly in the Dorcas Bay Nature Reserve, which is owned by the Federation of Ontario Naturalists. The author found two additional colonies nearby: the first colony was one kilometre south of Dorcas Bay with 14 flowering plants; the second was three kilometres south of Dorcas Bay and had 106 flowering plants.

There is a 1948 record of tuberous Indian-plantain from “Southampton, floodplain of Saugeen River” (Site 11 on map, Fig. 3) that Keddy (1988) was unable to relocate. Muriel Andraea (pers. com., 1998) found about 12 flowering tuberous Indian-plantain at this location on 10 July 1998. The plants were on an elevated river terrace in a public park owned by the Town of Southampton where the plants are at considerable risk from mowing (M. Andraea, pers. com., 1998). There was another colony at the south end of Southampton at a stream outlet to Lake Huron; however, this small population was eliminated in about 1970 by shoreline development (M. Andraea and J. Heagy, pers. com., 1998).

Oldham (1998) reports several populations (totalling about 35-40 plants) in the Sucker Creek area that were found by J. Johnson in 1984. This station occurs between Red Bay (Site 8 on map, Fig. 3) and Pike Bay (Site 9 on map, Fig. 3) but was not reported by Keddy (1988). The author looked briefly at this area on 16 July 1998 but saw no flowering tuberous Indian-plantain.

Oldham (1998) reports a 1988 collection (without abundance information) from MacGregor Point Provincial Park (Site 12 on map, Fig. 3). The author searched this area on 22 July 1998 but saw no tuberous Indian-plantain. The habitat appeared suitable and vegetative plants could have been missed.

Tuberous Indian-plantain was found in 1982 at Corisande Bay (Site 13 on map, Fig. 3) by J. Johnson (Oldham, 1998) but no abundance information was given and the record was not listed in Keddy (1988). The author searched this area on 24 July 1998 but found no tuberous Indian-plantain. Since it is a large area that was not thoroughly explored, the species could have been missed. The plant was also found nearby in 1982 at Johnson Harbour-Pine Tree Point (Oldham, 1998).

Tuberous Indian-plantain is reported (without date) from the Cameron Lake fen (near Site 10 on map, Fig. 3) in Cypress Lake Provincial Park, now part of Bruce Peninsula National Park (Oldham, 1998). The author searched this area without success on 24 July 1998 but the locality information is vague and the site searched may have been incorrect. Another location (also near Site 10 on map, Fig. 3) is reported by Oldham (1998) from Bruce Peninsula National Park west of Dyers Bay and found in 1994. No abundance information is listed in Oldham (1998).

There are several historic sites not seen since before the 1988 status report was written: Colpoy Bay, not seen since 1969 (Site 14 on map, Fig. 3); Big Bay, not seen since 1935 (Site 15 on map, Fig. 3); Sauble Beach, not seen since 1951 (Site 16 on map, Fig. 3); Stokes Bay, not seen since 1935 (Site 17 on map, Fig. 3); Wingham, not seen since 1968 (Site 18 on map, Fig. 3); and Tobermory, not seen since 1929 (Site 19 on map, Fig. 3).

LIMITING FACTORS AND THREATS

Keddy (1988) considered mowing, drainage, and trampling to be the main threats to the species in Ontario. Little has changed since 1988. Sites along the Maitland and Ausable Rivers are at risk from trampling by anglers and fossil hunters. The main populations along the Bruce Peninsula shoreline are at risk from residential development, lawn creation and mowing, and ATV use.

SPECIAL SIGNIFICANCE OF THE SPECIES

The attractive flowers held aloft on tall stems add colour to wetlands. Some species of this genus are offered for sale by nurseries in the USA for use in wet prairies.

EXISTING PROTECTION OR OTHER STATUS

The species is presently ranked as an S3 (vulnerable) species in Ontario and nationally as an N3 (as of 22 Mar. 1989) by NatureServe (2002). It is presently not protected under specific legislation in Canada.

SUMMARY OF STATUS REPORT

When the status of vulnerable was assigned by COSEWIC in 1988 (Keddy 1988), tuberous Indian-plantain, *Arnoglossum plantagineum* Raf. (then known under the name Indian-plantain, *Cacalia plantaginea* (Raf.) Shinnars), was known from four areas: the shoreline fens of Lake Huron along the west side of the Bruce Peninsula, several riverine meadows of the Maitland and Ausable Rivers close to Lake Huron, and a single isolated record near Lake Simcoe. Little has changed since 1988. Additional fieldwork by several people has located new populations, and counts by the author in 1998 have yielded higher numbers of flowering plants for many sites. Some of the apparent increase in plant numbers may be due to weather conditions in 1998 being more favourable for tuberous Indian-plantain to flower than was the case in 1988. Cottage development and lawn mowing are an ongoing threat along the Lake Huron shoreline.

TECHNICAL SUMMARY

Arnoglossum plantagineum

Tuberous Indian-plantain

Arnoglosse plantain

Occurrence: Ontario

Extent and Area information	
• extent of occurrence (EO)(km ²)	>1000
• specify trend (decline, stable, increasing, unknown)	stable
• are there extreme fluctuations in EO (> 1 order of magnitude)?	no
• area of occupancy (AO) (km ²)	perhaps <20
• specify trend (decline, stable, increasing, unknown)	possibly slight decline in area
• are there extreme fluctuations in AO (> 1 order magnitude)?	no
• number of extant locations	about 13 recent; 6 historic and 1 recent loss [NHIC has 14 recent and 9 historic or extirpated in its database]
• specify trend in # locations (decline, stable, increasing, unknown)	trend unclear
• are there extreme fluctuations in # locations (>1 order of magnitude)?	no
• habitat trend: specify declining, stable, increasing or unknown trend in area, extent or quality of habitat	possibly slight decline in habitat availability
Population information	
• generation time (average age of parents in the population) (indicate years, months, days, etc.)	unknown
• number of mature individuals (capable of reproduction) in the Canadian population (or, specify a range of plausible values)	roughly 5000 flowering and perhaps several times this number including vegetative shoots
• total population trend: specify declining, stable, increasing or unknown trend in number of mature individuals	no trend evident but 1998 survey may have been more thorough with more plants counted
• if decline, % decline over the last/next 10 years or 3 generations, whichever is greater (or specify if for shorter time period)	
• are there extreme fluctuations in number of mature individuals (> 1 order of magnitude)?	no
• is the total population severely fragmented (most individuals found within small and relatively isolated (geographically or otherwise) populations between which there is little exchange, i.e., ≤ 1 successful migrant / year)?	No, but localities are clumped in several areas of suitable habitat
• list each population and the number of mature individuals in each	see text
• specify trend in number of populations (decline, stable, increasing, unknown)	stable (only 1 recent loss but also 6-9 historic losses]
• are there extreme fluctuations in number of populations (>1 order of magnitude)?	no
Threats - primarily from cottage property development and recreational use of habitats	
Rescue Effect (immigration from an outside source)	
• does species exist elsewhere (in Canada or outside)?	USA
• status of the outside population(s)?	widespread in east central USA
• is immigration known or possible?	not likely
• would immigrants be adapted to survive here?	yes
• is there sufficient habitat for immigrants here?	yes
Quantitative Analysis	

ACKNOWLEDGEMENTS

Mike Oldham, Botanist, Natural Heritage Information Centre, Peterborough, provided background reports and a listing of known orchid records with details of recent confirmations. Muriel Andraea and Jean Heagy, both of London, provided details of tuberous Indian-plantain from the Southampton area. Helen Cattley of Orillia provided information on the Simcoe County site. Katy White, Lanark, helped with fieldwork in the Dorcas Bay and Cypress Lake areas. Funding provided by the Canadian Wildlife Service, Environment Canada.

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THE AUTHOR

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, including the Atlas of the Rare Vascular Plants of Ontario. 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 three species and authored or co-authored update status reports on ten other species.

AUTHORITIES CONSULTED

Data on localities were provided by Mike Oldham from the Natural Heritage Information Centre, Peterborough, ON.