Photo: Davis Lock, Department of Agriculture

# Ogden's Pondweed

(*Potamogeton ogdenii*) in Ontario

## Ontario Recovery Strategy Series

Recovery strategy prepared under the *Endangered Species Act, 2007*

February 2010

*Natural. Valued. Protected.*

Ministry of Natural Resources

Ontario

# About the Ontario Recovery Strategy Series

This series presents the collection of recovery strategies that are prepared or adopted as advice to the Province of Ontario on the recommended approach to recover species at risk. The Province ensures the preparation of recovery strategies to meet its commitments to recover species at risk under the Endangered Species Act, 2007 (ESA, 2007) and the Accord for the Protection of Species at Risk in Canada.

### What is recovery?

Recovery of species at risk is the process by which the decline of an endangered, threatened, or extirpated species is arrested or reversed, and threats are removed or reduced to improve the likelihood of a species' persistence in the wild.

### What is a recovery strategy?

Under the ESA, 2007, a recovery strategy provides the best available scientific knowledge onwhat is required to achieve recovery of a species. A recovery strategy outlines the habitat needs and the threats to the survival and recovery of the species. It also makes recommendations on the objectives for protection and recovery, the approaches to achieve those objectives, and the area that should be considered in the development of a habitat regulation. Sections 11 to 15 of the ESA, 2007 outline the required content and timelines for developing recovery strategies published in this series.

Recovery strategies are required to be prepared for endangered and threatened species within one or two years respectively of the species being added to the Species at Risk in Ontario list. There is a transition period of five years (until June 30, 2013) to develop recovery strategies for those species listed as endangered or threatened in the schedules of the ESA, 2007. Recovery strategies are required to be prepared for extirpated species only if reintroduction is considered feasible.

### What's next?

Nine months after the completion of a recovery strategy a government response statement will be published which summarizes the actions that the Government of Ontario intends to take in response to the strategy. The implementation of recovery strategies depends on the continued cooperation and actions of government agencies, individuals, communities, land users, and conservationists.

### For more information

To learn more about species at risk recovery in Ontario, please visit the Ministry of Natural Resources Species at Risk webpage at: **www.ontario.ca/speciesatrisk**

## RECOMMENDED CITATION

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**Cover illustration:** Specimen of *Potamogeton ogdenii* from Davis Lock at the herbarium of the Department of Agriculture, Ottawa (DAO)


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## DECLARATION

The Ontario Ministry of Natural Resources has led the development of this recovery strategy for Ogden's Pondweed in accordance with the requirements of the *Endangered Species Act,* 2007 (ESA 2007). This recovery strategy has been prepared as advice to the Government of Ontario, other responsible jurisdictions and the many different constituencies that may be involved in recovering the species.

The recovery strategy does not necessarily represent the views of all of the individuals who provided advice or contributed to its preparation, or the official positions of the organizations with which the individuals are associated.

The goals, objectives and recovery approaches identified in the strategy are based on the best available knowledge and are subject to revision as new information becomes available. Implementation of this strategy is subject to appropriations, priorities and budgetary constraints of the participating jurisdictions and organizations.

Success in the recovery of this species depends on the commitment and cooperation of many different constituencies that will be involved in implementing the directions set out in this strategy.

## RESPONSIBLE JURISDICTIONS

Ontario Ministry of Natural Resources
Parks Canada Agency
Environment Canada, Canadian Wildlife Service - Ontario

## EXECUTIVE SUMMARY

Ogden's Pondweed (*Potamogeton ogdenii*) occurs in eastern Ontario, western Connecticut, eastern and central New York, central Vermont, and western Massachusetts. Ogden's Pondweed is considered critically imperiled globally and is designated as endangered in Massachusetts and New York. It is listed as endangered on the Species at Risk in Ontario (SARO) List under the province's *Endangered Species Act, 2007* and on Schedule 1 of the federal *Species at Risk Act*.

In Ontario, this species is known only from Hastings County (1873), Murphys Point Provincial Park (1974), and Davis Lock on the Rideau Canal (1987). The Hastings County record is not possible to locate because the specimen lacks locality data. Neither the Murphys Point nor the Davis Lock sites were re-confirmed during field work by the author in 2005 or 2006 but suitable habitat exists in the vicinity of both of these sites. The species is likely still present in Ontario.

Ogden's Pondweed is a submerged, annual aquatic plant that reproduces mainly by winter buds or turions. Fruits are also produced. The species grows in clear, shallow water of slow-moving streams, beaver ponds, and lakes. This water is generally highly-alkaline.

Potential threats to Ogden's Pondweed are habitat loss, eutrophication and competition from native and invasive plants. The low number of populations globally may be a limiting factor for the species.

The long-term recovery goal for Ogden's Pondweed is to ensure the persistence of the species in Ontario. Since Ogden's Pondweed has not been recorded in Ontario since 1987 (at Davis Lock), the short-term recovery goal must be to determine if and where the species still occurs in the province.

Recovery objectives are to:

1. Determine if and where Ogden's Pondweed occurs in Ontario.
2. If extant populations can be found, determine the population size, habitat parameters, population dynamics, and specific threats for those occurrences.
3. Ensure the protection of Ogden's Pondweed habitat where the species still occurs.
4. Consider the feasibility and appropriateness of re-introducing the species to suitable or former sites (if no longer extant) if sufficient habitat is present, threats to the species can be mitigated, and proven methods for re-introduction can be found.

In order to meet these objectives, a number of approaches to recovery have been suggested including protecting known populations and associated habitat by developing site-specific management strategies, monitoring extant sites and monitoring the effectiveness of any management actions undertaken.

Searches over several years may be required to confirm the presence or absence of the species at the Davis Lock and Murphy's Point sites. As a precautionary measure, it is recommended that the following areas be prescribed as habitat within a habitat regulation. The portion of Black Creek within Murphys Point Provincial Park, Hoggs Bay and the appropriate habitat within the associated bays and shallow water areas of adjacent Big Rideau Lake within the park. The regulation should also include the aquatic habitat downstream of Davis Lock. The specific boundaries of these areas should be determined on a site-specific level based on further study.

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# 1.0 BACKGROUND INFORMATION

## 1.1 Species Assessment and Classification

| |
|---|
| COMMON NAME: Ogden's Pondweed |
| SCIENTIFIC NAME: *Potamogeton ogdenii* |
| SARO List Classification: Endangered |
| SARO List History: Endangered (2009) |
| COSEWIC Assessment History: Endangered (2007) |
| SARA Schedule 1: Endangered (March 18, 2009) |
| CONSERVATION STATUS RANK:<br>GRANK: G1G2 NRANK: N1 SRANK: SH |

The glossary provides definitions for the abbreviations above.

## 1.2 Species Description and Biology

Species Description

Ogden's Pondweed (*Potamogeton ogdenii*) is a submerged aquatic plant with freely branching stems that are compressed-filiform (threadlike but flattened) and rigid. The leaves are green to greenish-brown, 5 to 7 centimetres long and 3 to 9 nerved (Hellquist and Hilton 1983). The leaf apex is cuspidate to aristate (sharp-pointed), 1.2 to 2.9 millimetres wide with 1 to 2 rows of lacunae (air cells) on each side of the leaf midrib. The leaf-like stipules (a sheath on the stem at base of leaf) are brown and slightly fibrous with a partially shredded tip. Fruits occur on stalks 10 to 30 millimetres long in terminal cylindric spikes 5 to 11 millimetres long with 2 to 4 whorls. Each orbicular fruit is dark green and 2.2 to 3 millimetres across. Winter buds (turions) can be produced terminally or laterally and are 37 to 92 millimetres long and 26 to 60 millimetres wide with ascending outer leaves (Hellquist and Hilton 1983). In many cases, the winter buds are undifferentiated leaves crowded together (Hellquist and Hilton 1983). Rhizomes are not produced (Hellquist and Hilton 1983).

Ogden's Pondweed is quite similar to several other species of pondweed with the following differences: Hill's Pondweed (*P. hillii*) has non-terminal flowering/fruiting spikes that are 6 to 14 millimitres long with only 1 or 2 whorls per spike; Strict-leaved Pondweed (*P. strictifolius*) has shorter leaves (2 to 6 centimetres) with 3 to 5 veins and stipules that are white and quite fibrous; Flat-stem Pondweed (*P. zosteriformis*) has leaves that are wider (2 to 5 millimetres) and longer (10 to 20 centimetres) with 15 to 25 nerves, and has flowering/fruiting spikes with 7 to 11 whorls per spike.

Species Biology

Ogden's Pondweed is an annual aquatic plant but fruits are only occasionally produced. Winter buds (turions) are uncommonly produced (Hellquist and Hilton 1983) but appear to be the most common method of reproduction (Hellquist and Mertinooke-Jongkind 2003). Although rhizomes are not produced, the plant can re-sprout from fragments (Hellquist and Hilton 1983). Ogden's Pondweed is thought to have originated as a fertile hybrid between Hill's Pondweed and Flat-stem Pondweed (Hellquist and Hilton 1983). Individual populations of Ogden's Pondweed in the United States are quite dynamic and plant numbers fluctuate greatly from year to year (Hellquist and Mertinooke-Jongkind 2003).

## 1.3 Distribution, Abundance and Population Trends

Ogden's Pondweed is a globally rare species that occurs in southern Ontario (3 historic sites), western Connecticut (2 current and 3 historic sites), eastern and central New York (3 current and 2 historic sites), central Vermont (2 current and 2 historic sites), and western Massachusetts (2 current sites). Globally, there are nine populations considered current plus ten historic populations.

In Canada, Ogden's Pondweed is found only in southeastern Ontario (Figure 1). The first collection was made in 1873 by John Macoun but due to the vague locality of "Hastings County" listed on the herbarium label, this site is plotted in the centre of the county on Figure 1 (site 3). Clearly, such a vague locality cannot be re-confirmed.

Only two other Ontario locations are known (both only from herbarium specimens): Murphys Point Provincial Park (1974; site 1) and Davis Lock on the Rideau Canal (1987; site 2). There are no additional Canadian records (C.B. Hellquist pers. comm. 2009, M.J. Oldham pers. comm. 2009). Nothing is known about abundance or population extent at any of the three Ontario sites. Despite specific searches undertaken by the author in 2005 and 2006 while preparing the COSEWIC status report on the species Ogden's Pondweed could not be found at either of the two more recent sites. Search effort details are found in COSEWIC (2007). A two day search for Ogden's Pondweed at Murphys Point Provincial Park in 2009 was also unsuccessful at locating the species (S. McIntosh pers comm. 2010).

Following NHIC (2009) definitions, all Ontario records are considered "historical" because it has been more than 20 years since they have been recorded despite some effort at re-confirming the species.

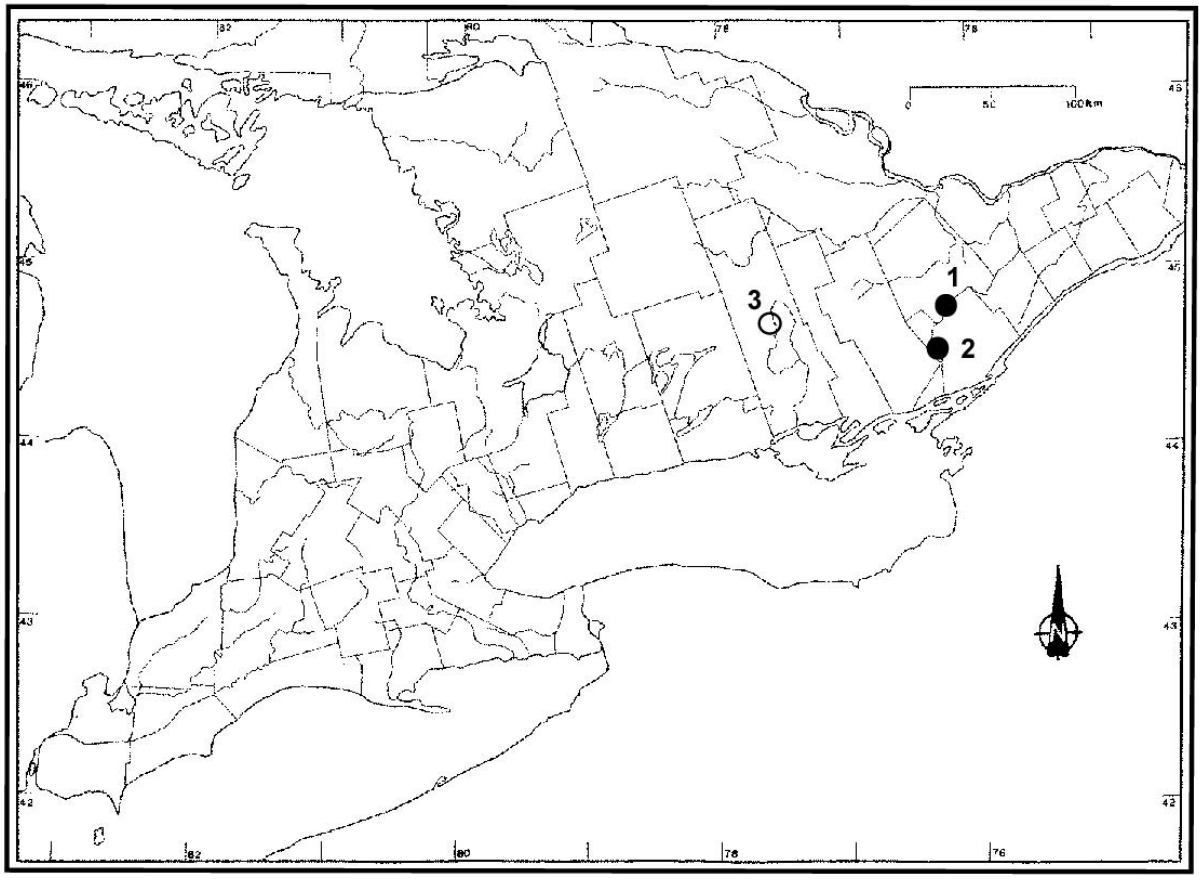


Figure 1. Distribution of Ogden's Pondweed in Ontario. The open circle is an 1873 record that is plotted in central Hastings County due to vague locality data. The closed circles represent sites confirmed in 1974 and 1987.

## 1.4 Habitat Needs

In the United States, Ogden's Pondweed is found in clear, slow-moving streams, beaver ponds, and lakes (Hellquist and Mertinooke-Jongkind 2003). Crow and Hellquist (2000) and Hellquist and Hilton (1983) report the habitat as "alkaline waters". Hellquist and Mertinooke-Jongkind (2003) describe the habitat in the United States as "ponds and lakes with high alkalinity". Since the two more recent Ontario sites are associated with marble bedrock, the water is probably hard (alkaline) there as well.

Ogden's Pondweed is often associated with Flat-stem Pondweed and is occasionally associated with Hill's Pondweed in the United States (Hellquist and Mertinooke-Jongkind 2003). Other associates at United States populations include Strict-leaved Pondweed, Illinois Pondweed (*Potamogeton illinoensis*), Leafy Pondweed (*Potamogeton foliosus*), and Comb-like Pondweed (*Stuckenia pectinata*).

Although the species was not found by the author at the Davis Lock site in 2005, the quiet bays at the site supported a diverse community of pondweeds including: Strict-leaved Pondweed, Robbin's Pondweed (*Potamogeton robbinsii*), and Flat-stem Pondweed. The habitat recorded on the 1987 Davis Lock specimen label (at the Department of Agriculture herbarium) is that the species occurs "In 7-10 feet of water".

The 1974 record of Ogden's Pondweed from Murphys Point Provincial Park is from one of a series of beaver ponds along a small creek with limited flow. In August of 2005, beavers were gone from most of the length of the creek and only a small, central watercourse remained. The only pondweed habitat consisted of shallow, scattered pools along the creek bed. Small populations of five other pondweed species were found in the creek: Leafy Pondweed, Illinois Pondweed, Floating Pondweed (*Potamogeton natans*), Grass-leaved Pondweed (*Potamogeton gramineus*), and Emersed Pondweed (*Potamogeton epihydrus*). The habitat given on the Murphys Point specimen label (at the University of Toronto herbarium) is "Shallow waters of Black Creek, 1 m[etre] upstream from beaver dam".

It is unlikely that the global rarity of Ogden's Pondweed is caused by a requirement for a very specific and highly restricted habitat. More likely, it is rare because of some factor or combination of factors relating to its biology.

## 1.5 Threats to Survival and Recovery

Due to the lack of known current Ontario populations, the threats discussed below are considered only *plausible* threats based mainly on research from the United States (Hellquist and Mertinooke-Jongkind 2003, COSEWIC 2007). A proper threat assessment would be required if and when Ontario populations are discovered.

Potential threats to Ogden's Pondweed include habitat loss (such as shoreline development or loss of beaver ponds), competition from invasive plants (such as Eurasian Water-milfoil (*Myriophyllum spicatum*)), and eutrophication.

Shoreline development, such as aquatic plant removal, dock installation, or channel dredging, could eliminate Ogden's Pondweed from a site.

Although beaver ponds are ephemeral by nature, if a rare species, such as Ogden's Pondweed, does not spread easily, a population in a pond could be eliminated from an area when the pond was drained, either due to beaver abandonment or by dam removal by landowners.

Invasive species, such as European Frog's-bit (*Hydrocharis morsus-ranae*) and Eurasian Water-milfoil, grow very thickly where they occur and this can block available light for associated native species. Thick growths of invasive species can also outcompete native species, such as Ogden's Pondweed, for available nutrients, as reported in the United States (Hellquist and Mertinooke-Jongkind 2003).

Specific searches for Ogden's Pondweed were undertaken by the author in 2005 and 2006 while preparing the COSEWIC status report on the species (COSEWIC 2007). At Davis Lock in 2005, there was little noticeable impact by invasive plants on the diverse aquatic communities in the quiet bays where Ogden's Pondweed is assumed to have been found in 1987.

There was also little evidence of impacts from invasive plants in Black Creek at Murphys Point in 2005. Eurasian Water-milfoil was noted in 2006 as common in bays of Big Rideau Lake and the Rideau Canal adjacent to and within Murphys Point Provincial Park, but there were also extensive areas with good native aquatic plant diversity and only a limited presence of the Water-milfoil.

Another invasive aquatic that is very common in eastern Ontario is European Frog's-bit. This species was not seen in the vicinity of Davis Lock and was rare along Black Creek and in Hoggs Bay in Murphys Point Provincial Park in 2005 and 2006.

Competition from other more common native pondweeds could also be a threat to Ogden's Pondweed if the other native species are more vigorous in their growth.

Additionally, eutrophication is considered a major threat to the species in the United States (Hellquist and Mertinooke-Jongkind 2003) because the excess nutrients from runoff lead to algal blooms and an increase in competition from non-native species. There is ample evidence of algal blooms and dense populations of invasive species, such as Eurasian Water-milfoil, in parts of the Rideau Canal system.

Although not a threat *per se*, Ogden's Pondweed is also at risk across its range due to its low number of populations which can leave the species vulnerable to stochastic events, such as beaver pond loss or shoreline disturbance. Hellquist and Mertinooke-Jongkind (2003) report a global population of only nine extant sites. Low numbers of populations can also hamper recovery efforts by limiting potential sources of seeds or plants for reintroductions.

One complication to recovery efforts is the difficulty of recognizing Ogden's Pondweed in the field due to its close similarity to several other common species of pondweed. This leaves the species vulnerable to inadvertent population loss if the species isn't recognized during an environmental impact study prior to shoreline development or aquatic plant management.

## 1.6 Knowledge Gaps

What is known about Ogden's Pondweed in Ontario is based solely on herbarium labels on three old specimens. The labels contain no information on population size and little to no data on habitat. The specimens were only identified as Ogden's Pondweed based

on lab study many years after the collections were made. Nobody has ever seen and recognized Ogden’s Pondweed in the field in Ontario.

Significant knowledge gaps of the species in Ontario include:

1. current distribution
2. population size and dynamics
3. species biology and reproduction
4. detailed habitat needs in Ontario
5. site-specific threats
6. the feasibility of reintroduction
7. reintroduction techniques

# 2.0 RECOVERY

## 2.1 Recovery Goal

The long-term recovery goal for Ogden's Pondweed is to ensure the persistence of the species in Ontario. Since Ogden's Pondweed has not been recorded in Ontario since 1987 (at Davis Lock), the short-term recovery goal must be to determine if and where the species still occurs in the province.

## 2.2 Protection and Recovery Objectives

Table 1. Protection and recovery objectives

| No. | Protection or Recovery Objective |
|---|---|
| 1 | Determine if and where Ogden's Pondweed occurs in Ontario. |
| 2 | If extant populations can be found, determine the population size, habitat parameters, population dynamics, and specific threats for those occurrences. |
| 3 | Ensure the protection of Ogden's Pondweed habitat where the species still occurs. |
| 4 | Consider the feasibility and appropriateness of re-introducing the species to suitable or former sites (if no longer extant) if sufficient habitat is present, if threats to the species can be mitigated, and if proven methods for re-introduction can be found. |

## 2.3 Approaches to Recovery

Table 2. Specific approaches to recovery for Ogden's Pondweed in Ontario

| Relative Priority | Relative Timeframe | Recovery Theme | Approach to Recovery | Threats or Knowledge Gaps Addressed |
|---|---|---|---|---|
| **1.** Determine if and where Ogden's Pondweed occurs in Ontario | | | | |
| Critical | Ongoing | Inventory | **1.1** Conduct surveys to determine the presence of Ogden's Pondweed<br>– Conduct a comprehensive search of suitable habitat in the areas of the two most recently found sites (Murphys Point and Davis Lock) to determine if the species is present<br>– Search suitable habitat in close proximity to Murphy's Point and Davis Lock sites to determine if the species occurs in close proximity to historic sites<br>– Search for Ogden's Pondweed where Hill's Pondweed (one of Ogden's presumed parents) occurs, such as on Manitoulin Island and the Bruce Peninsula (as suggested in Hellquist and Mertinooke-Jongkind (2003) and by C.B. Hellquist (pers. comm. 2009)<br>– If found, document sites and submit data to the Natural Heritage Information Centre | • Present distribution |
| **2.** If extant populations can be found, determine the population size, habitat parameters, population dynamics, and specific threats for those occurrences | | | | |
| Critical | Ongoing | Research | **2.1** Research the population size, habitat parameters, population dynamics, and specific threats to evaluate the long-term viability of the populations | • All threats, population size and dynamics, species biology, detailed habitat needs |

| Relative Priority | Relative Timeframe | Recovery Theme | Approach to Recovery | Threats or Knowledge Gaps Addressed |
|---|---|---|---|---|
| Critical | Ongoing | Inventory, Monitoring, and Assessment | **2.2** Develop and implement a monitoring program to assess population dynamics, threats, and habitat condition | • All threats, population size and dynamics, detailed habitat needs |
| **3.** Ensure the protection of Ogden's Pondweed habitat where the species still occurs | | | | |
| Critical | Short-term | Protection | **3.1** Develop a habitat regulation under ESA 2007 to help control human activity within the species habitat | • Habitat loss |
| Critical | Ongoing | Protection | **3.2** Review any development proposals for land or shallow water areas adjacent to known sites to ensure the development will have no negative impact on the aquatic communities | • Habitat loss |
| Critical | Ongoing | Management | **3.3** Ensure that provincial park and federal canal management plans will not negatively impact the sites | • Habitat loss |
| Necessary | Ongoing | Management | **3.4** If the species is found at any of the historic sites, develop a site-specific management plan (based on the best available information for the species) that will:<br>– Maintain habitat quality<br>– Monitor population dynamics<br>– Reduce invasive species that are present<br>– Determine if eutrophication is impacting the species<br>– Address any newly-found threats to the species<br>– Monitor the effectiveness of management actions | • All threats, population size and dynamics |

| Relative Priority | Relative Timeframe | Recovery Theme | Approach to Recovery | Threats or Knowledge Gaps Addressed |
|---|---|---|---|---|
| Critical | Ongoing | Communications | **3.5** Provide information on the species characteristics and distribution to stakeholders, such as Ontario Parks and Parks Canada, to increase awareness of the pondweed and prevent accidental loss of populations | • Habitat loss |
| **4.** Consider the feasibility and appropriateness of re-introducing the species to suitable or former sites (if no longer extant) if sufficient habitat is present, if threats to the species can be mitigated, and if proven methods for re-introduction can be found | | | | |
| Potentially beneficial | Ongoing | Management | **4.1** Assess the feasibility of re-introduction at each of the two post-1970 sites or other suitable sites<br>– Consider site ownership, habitat condition and extent, threats, re-introduction methods, locating a viable source of plants or seeds, costs, monitoring, etc. | • All threats |

## 2.4 Area for Consideration in Developing a Habitat Regulation

*Under the ESA 2007, a recovery strategy must include a recommendation to the Minister of Natural Resources on the area that should be considered in developing a habitat regulation. A habitat regulation is a legal instrument that prescribes an area that will be protected as the habitat of the species. The recommendation provided below by the recovery team will be one of many sources considered by the Minister when developing the habitat regulation for this species.*

There are three records of Ogden's Pondweed in Ontario. The historic record from "Hastings County" (as the locality is listed on the herbarium label) is too vague and too old (1873) to be considered in developing a habitat regulation for the species. The two more recent records are both associated with the central portion of the Rideau Canal. The Davis Lock site is directly on the canal route. The Murphys Point Provincial Park site is near the mouth of Black Creek which empties into Hoggs Bay of Big Rideau Lake (part of the Rideau Canal).

Ogden's Pondweed has not been re-confirmed at either recent site since the initial records despite searches by the author in 2005 and 2006. Nonetheless, it should not be assumed that the species has disappeared from either site. Small populations could be easily missed, considering how difficult it is to recognize the pondweed in the field due to its similarity to several other commonly associated species of pondweed (see Section 1.4). Numbers of plants at sites in the United States tend to fluctuate widely from year to year (Hellquist and Mertinooke-Jongkind 2003). Thus, searches over several years may be required to confirm the presence or absence of the species at the historic Ontario sites.

As a precautionary measure, to protect the two areas where the species was most recently collected, the following areas should be prescribed as habitat within a habitat regulation. The portion of Black Creek within Murphys Point Provincial Park, Hoggs Bay and the appropriate habitat within the associated bays and shallow water areas of adjacent Big Rideau Lake within the park. Since the park includes several kilometres of shoreline up and downstream from the Hoggs Bay exit of Black Creek, it is not considered necessary at this stage to include additional aquatic areas outside the park within the habitat regulation. The regulation should also include the aquatic habitat downstream of Davis Lock. The specific boundaries of these areas should be determined on a site-specific level based on further study.

If Ogden's Pondweed is found elsewhere in the province, the area around the new site(s) should also be prescribed as habitat within a regulation for the species.

## GLOSSARY

Committee on the Status of Endangered Wildlife in Canada (COSEWIC): The committee responsible for assessing and classifying species at risk in Canada.

Committee on the Status of Species at Risk in Ontario (COSSARO): The committee established under section 3 of the *Endangered Species Act, 2007* that is responsible for assessing and classifying species at risk in Ontario.

Conservation status rank: A rank assigned to a species or ecological community that primarily conveys the degree of rarity of the species or community at the global (G), national (N) or subnational (S) level. These ranks, termed G-rank, N-rank and S-rank, are not legal designations. The conservation status of a species or ecosystem is designated by a number from 1 to 5, preceded by the letter G, N or S reflecting the appropriate geographic scale of the assessment. The numbers mean the following:

1 = critically imperiled
2 = imperiled
3 = vulnerable
4 = apparently secure
5 = secure

SH = Historical, not recorded in the province in over 20 years despite some effort to relocate occurrences.

*Endangered Species Act, 2007* (ESA 2007): The provincial legislation that provides protection to species at risk in Ontario.

Eutrophication: the process by which lakes, rivers, or wetlands become enriched with excess nutrients (usually from human activity) which tends to cause excessive algal and other plant growth. This often benefits alien species at the expense of native flora and fauna.

*Species at Risk Act* (SARA): The federal legislation that provides protection to species at risk in Canada. This act establishes Schedule 1 as the legal list of wildlife species at risk to which the SARA provisions apply. Schedules 2 and 3 contain lists of species that at the time the act came into force needed to be reassessed. After species on Schedule 2 and 3 are reassessed and found to be at risk, they undergo the SARA listing process to be included in Schedule 1.

Species at Risk in Ontario (SARO) List: The regulation made under section 7 of the *Endangered Species Act, 2007* that provides the official status classification of species at risk in Ontario. This list was first published in 2004 as a policy and became a regulation in 2008.

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