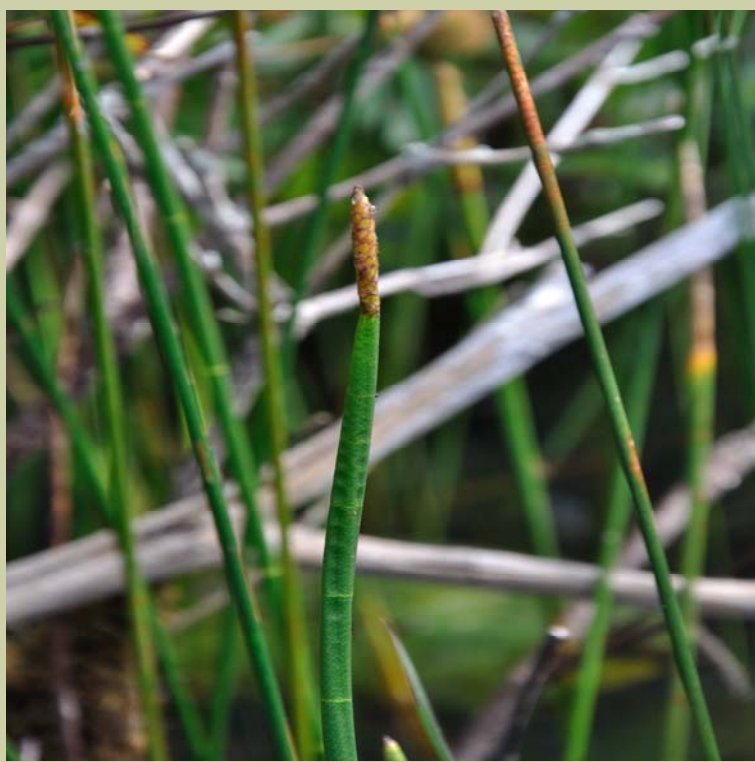


Action Plan for the Horsetail Spike-rush (*Eleocharis equisetoides*) in Canada

Horsetail Spike-rush



2011



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Recommended citation:

Environment Canada. 2011. Action Plan for the Horsetail Spike-rush (*Eleocharis equisetoides*) in Canada. *Species at Risk Act* Action Plan Series. Environment Canada, Ottawa.
iii + 7 pp.

For copies of the action plan, or for additional information on species at risk, including COSEWIC Status Reports, residence descriptions, recovery strategies, and other related recovery documents, please visit the Species at Risk Public Registry (www.sararegistry.gc.ca).

Cover illustration: Environment Canada, Canadian Wildlife Service – Ontario

Également disponible en français sous le titre
« Plan d'action pour l'éleocharide fausse-prêle (*Eleocharis equisetoides*) au Canada »

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ISBN 978-1-100-18171-4

Catalogue no. [En3-4/99-2011E-PDF](#)

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PREFACE

The federal, provincial, and territorial government signatories under the Accord for the Protection of Species at Risk (1996) agreed to establish complementary legislation and programs that provide for effective protection of species at risk throughout Canada. Under the *Species at Risk Act* (S.C. 2002, c.29) (SARA), the federal competent ministers are responsible for the preparation of recovery strategies and action plans for listed Extirpated, Endangered, and Threatened species and are required to report on progress within five years.

The Minister of the Environment is the competent minister for the recovery of the Horsetail Spike-rush and has prepared this action plan to implement the recovery strategy, as per section 49 of SARA. It has been prepared in cooperation with the Ontario Ministry of Natural Resources.

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 and actions set out in this action plan and will not be achieved by Environment Canada, or any other jurisdiction alone. All Canadians are invited to join in supporting and implementing this action plan for the benefit of the Horsetail Spike-rush and Canadian society as a whole.

Implementation of this action plan is subject to appropriations, priorities, and budgetary constraints of the participating jurisdictions and organizations.

ACKNOWLEDGMENTS

Thanks are extended to Greg Grabas (Environment Canada, Canadian Wildlife Service – Ontario) for preparing the first draft of the action plan for the Horsetail Spike-rush. Thanks are also extended to the following individuals for providing technical expertise and/or commenting on earlier drafts of the action plan: Angela McConnell, Barbara Slezak, Madeline Austen, Lesley Dunn, Nancy Patterson, Graham Bryan, Krista Holmes, Rachel deCatanzaro, Kari Van Allen, Manon Dubé, Marie-José Ribeyron and Jeff Robinson (Environment Canada, Canadian Wildlife Service), and Kristine Blakey, Laura Bjorgan, Rhonda Donley, Leanne Jennings, Chris Risley and Eric Snyder (Ontario Ministry of Natural Resources).

EXECUTIVE SUMMARY

Horsetail Spike-rush (*Eleocharis equisetoides*) is an aquatic plant in the sedge family that is found primarily within the U.S. Atlantic and Gulf coastal plains and is known from a single location in Canada, where it likely represents a single clonal individual occupying less than 10 m² of pond shoreline. Little is understood about the specific biological requirements of this species, which grows in organic substrate in a pond between forested dunes at Long Point National Wildlife Area (NWA) in southwestern Ontario. Horsetail Spike-rush was listed as Endangered on Schedule 1 of the *Species at Risk Act* in June 2003.

This action plan follows from the *Recovery Strategy for the Horsetail Spike-rush (Eleocharis equisetoides) in Canada* (Environment Canada 2006). The recovery goal (population and distribution objectives) established in the recovery strategy is to maintain the single known occurrence of Horsetail Spike-rush in Canada, at or near its recorded areal extent of 5–10 m². The Action Plan for the Horsetail Spike-rush (*Eleocharis equisetoides*) addresses recovery objectives number one, two, and five (Environment Canada 2006). Seed viability techniques (recovery objective number three) and genetic diversity research (recovery objective number six) are currently not considered to be essential to attain the population and distribution objectives. Should the situation change, these recovery objectives may be addressed in a separate action plan. Recovery objective number four is considered to have been addressed, as critical habitat was identified in the recovery strategy. The protection of that critical habitat is described in section 2.3 of this action plan. The content of the current action plan is applicable to the Canadian distribution of the species.

The critical habitat for this species was identified to the extent possible in the recovery strategy and this action plan does not identify additional critical habitat. No critical habitat remains unprotected at this time. As a result, no protection measures are proposed in this action plan.

This action plan includes specific prioritized actions for recovery of the species, and provides performance indicators for achieving the recovery goal. An implementation schedule provides timelines for implementation of these actions and identifies the agency responsible for overseeing the work.

Because this species is found only in the Long Point NWA, costs of implementing the plan are largely the responsibility of Environment Canada. Many of the proposed activities will be integrated in the operational management of the NWA and will have minimal new costs. Costs could increase if restoration projects become necessary.

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1. SYNOPSIS OF THE RECOVERY STRATEGY

For full details, see the associated recovery strategy.

1.1 Associated Recovery Strategy

Environment Canada. 2006. Recovery Strategy for the Horsetail Spike-rush (*Eleocharis equisetoides*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. 17pp.

1.2 COSEWIC¹ Species Assessment Information

Date of Assessment: November 2000

Common Name: Horsetail Spike-rush

Scientific Name: *Eleocharis equisetoides*

COSEWIC¹ Status: Endangered

Reason for Designation: A perennial herb found at one site where it likely represents a single clonal individual occupying less than 10 square metres of pond shoreline.

Canadian Occurrence: Ontario

COSEWIC Status history: Designated Endangered in November 2000. Assessment based on a new status report.

1.3 Species Description

Horsetail Spike-rush is an aquatic, clonally-reproducing² perennial plant in the sedge family (Cyperaceae), characterized by unbranched, green aerial stems (culms³) 50–100 cm in height and 3–5 mm in diameter (Sutherland 2000), narrow, papery scales (instead of leaf blades) at the base of the culm, and a terminal spikelet of 15–40 mm in length that contains the fruits.

¹ COSEWIC – Committee on the Status of Endangered Wildlife in Canada.

² Horsetail Spike-rush reproduces clonally through underground rhizomes (vegetative propagation).

³ Culm is the stem of grasses, sedges, and associated plant species.

1.4 Population and Distribution

Horsetail Spike-rush is primarily a species of the southern U.S. Atlantic and Gulf coastal plains, also occurring locally at the northern extent of its range along the southern Great Lakes. In Canada, Horsetail Spike-rush is known from a single occurrence at Long Point National Wildlife Area (NWA) in southwestern Ontario (Reznicek and Catling 1989; Sutherland 2000) which represents less than 1% of the species' global population (Sutherland 2000). The number of culms and areal extent of the population of this plant fluctuate somewhat between surveys (culms: 12-151; area: 1-10m²), and long-term trends within this population are unknown owing to an absence of data from early accounts (Sutherland 2000; Oldham 2004).

1.5 Threats

Six potential threats to the species and its habitat have been identified; however, to date none of these have been demonstrated as having a negative impact on the species in Canada. Potential threats to the species in Canada include: invasion of habitat by European Common Reed (*Phragmites australis* ssp. *australis*), susceptibility to stochastic impacts, herbivory, water level elevation or stabilization, loss of genetic diversity and climate change.

1.6 Goal and Objectives for the Horsetail Spike-rush

1.6.1 Goal

The recovery goal is to maintain the single known occurrence of Horsetail Spike-rush at or near its recorded areal extent of 5–10 m² (Environment Canada 2006). This goal is considered to be the population and distribution objective for this species.

1.6.2 Recovery Objectives

The recovery objectives from Environment Canada 2006 are:

1. Annually monitor the number of culms and suspected threats (*Phragmites* spread, water levels, herbivory) in order to assess trends and severity of threats over five years.
2. Investigate European Common Reed removal methods, and, if necessary, control or remove European Common Reed in an adaptive management framework.
3. Investigate seed viability and archiving techniques, and, if considered feasible, collect and preserve Horsetail Spike-rush seeds. Investigate the feasibility of rhizome harvesting, and implement as appropriate.
4. Complete critical habitat mapping, and ensure its protection.
5. Investigate and verify any reported new locations of Horsetail Spike-rush in Canada.
6. Determine the tolerance of Horsetail Spike-rush to water level fluctuation, the minimum viable population and viability of the extant site, and the extent to which loss of genetic diversity poses a threat to the species.

1.7 Critical Habitat addressed in the Recovery Strategy

Critical Habitat for this species was identified within the recovery strategy and is not being modified in this action plan. It was identified as the inland pond where Horsetail Spike-rush grows in sandy organic muck along the south-facing shoreline. The pond lies between two stabilized dune ridges near the tip of Long Point NWA. The shoreline community is dominated by Common Buttonbush (*Cephalanthus occidentalis*) and Red-osier Dogwood (*Cornus sericea*), with other observed species including water bulrush (*Schoenoplectus subterminalis*), Small's Spike-rush (*Eleocharis smallii*), Grass-leaved Pondweed (*Potamogeton gramineus*), Long-leaved Pondweed (*Potamogeton nodosus*), Common Coontail (*Ceratophyllum demersum*), Slender Naiad (*Najas flexilis*), Bullhead Pond-lily (*Nuphar lutea*), Northern Wild Rice (*Zizania palustris*), and Slender Sedge (*Carex tenera*).

2. RECOVERY ACTIONS

2.1 Scope of the Action Plan

This action plan addresses recovery objectives number one, two, and five from the recovery strategy (Environment Canada 2006). Seed viability techniques (recovery objective number three) and genetic diversity research (recovery objective number six) are currently not considered to be essential to attain the population and distribution objectives. Should the situation change, these recovery objectives may be addressed in a separate action plan. Recovery objective number four is considered to have been addressed, as critical habitat was identified in the recovery strategy. The protection of that critical habitat is described in section 2.3 of this action plan. The content of the current action plan is applicable to the Canadian distribution of the species.

2.2 Critical Habitat

Critical habitat and activities likely to destroy critical habitat are identified in the recovery strategy (Environment Canada 2006).

2.3 Critical Habitat Protection

No critical habitat remains unprotected at this time. On January 20 2007, a description of the critical habitat for Long Point NWA was published in the *Canada Gazette*. The prohibitions under SARA (Section 58) applied to this site after a period of 90 days following the publication in the *Canada Gazette*. As a result, no additional protection measures are proposed in this action plan.

2.4 Measures to be taken and Implementation Schedule

Environment Canada will endeavor to support implementation of this plan given available resources and varying species at risk conservation priorities.

Table 1. Measures to be taken and Implementation Schedule

Action	Priority	Threats or concerns addressed	Responsibility ^{4,5}	Timeline
Monitoring and Assessment				
Action 1: Develop and implement a monitoring methodology to determine trends in the number of culms and fruiting culms, including, if possible, a description of the perceived effects of stochasticity, herbivory and water level.	High	Stochastic impacts, herbivory, water level impacts	EC	2012 and ongoing
Action 2: Develop and implement a method to monitor the extent and dynamics of European Common Reed encroachment.	Medium	European Common Reed invasion	EC	2012
Action 3: Confirm new discoveries of Horsetail Spike-rush if reported.	As needed	Stochastic impacts, limited distribution	OMNR	Ongoing
Habitat Management				
Action 4: Incorporate Horsetail Spike-rush needs in Long Point NWA Management Plan.	High	All potential threats	EC	2013
Action 5: Develop and implement strategies to address potential threats to the population, such as water level elevation or stabilization, which can be caused by North American Beaver (<i>Castor canadensis</i>), and/or herbivory by White-tailed Deer (<i>Odocoileus virginianus</i>), Muskrats (<i>Ondatra zibethicus</i>) or other species. This action will be undertaken if a threat is determined to be negatively impacting the extant population such that extirpation of the population is unavoidable without intervention.	High	Water level impacts, White-tailed Deer herbivory	EC	As required/if necessary
Action 6: If European Common Reed is determined to be a threat to the extant population, incorporate management activities consistent with the Long Point NWA Management Plan.	Medium	European Common Reed invasion	EC	As required/if necessary

⁴ Identification of government agencies and non-governmental organizations as the responsible agency does not commit that agency or organization to implementing the listed action. Implementing actions will be contingent upon each organization's or agency's priorities and budgetary constraints.

⁵ EC = Environment Canada, OMNR = Ontario Ministry of Natural Resources.

3. MEASURING PROGRESS

The performance indicators presented below provide a way to define and measure progress toward achieving the goal for this species.

Every 5 years, success of activities related to Horsetail Spike-rush recovery will be measured against the following performance indicators:

- Continued persistence of the single known occurrence of Horsetail Spike-rush at Long Point NWA.
- Maintenance of an areal extent of 5-10m².

4. SOCIO-ECONOMIC EVALUATION

The species is found only in the Long Point NWA and costs of implementing the plan are largely the responsibility of Environment Canada. Many of the proposed activities will be integrated in the operational management of the NWA and will have minimal new costs. Costs could increase if restoration projects become necessary.

The Long Point NWA is subject to the *Wildlife Area Regulations* made pursuant to the *Canadian Wildlife Act*. These regulations include access and land use prohibitions. The action plan does not have any implications for land use outside the NWA and, as such, will not have indirect socio-economic effects on the public.

Many of the benefits derived are non-market commodities which are difficult to quantify. Wildlife, in all its forms, has value in and of itself, and is valued by Canadians for aesthetic, cultural, spiritual, recreational, educational, historical, economic, medical, ecological, and scientific reasons. The conservation of wildlife at risk is an important component of the Government of Canada's commitment to conserving biological diversity. Biodiversity is important to Ontario's and Canada's current and future economy and natural wealth. A self-sustaining healthy ecosystem with its various elements in place, including species at risk, contributes positively to landowner and public livelihoods.

5. ASSOCIATED PLANS

The *Canada Wildlife Act* and associated *Wildlife Area Regulations* provide the legislative mandate that authorizes the management of NWA for the purposes of wildlife conservation, research and interpretation. As a result, the Long Point NWA Management Plan was produced (McKeating 1983) and will be updated in the future.

Long Point is within Norfolk County. Section 6.4.4 the Norfolk County Official Plan (The Corporation of Norfolk County 2006) indicates that Long Point shall be protected in its natural state and emphasizes that no development shall be permitted on the Long Point sand spit.

6. REFERENCES

- Environment Canada. 2006. Recovery Strategy for the Horsetail Spike-rush (*Eleocharis equisetoides*) in Canada [Proposed]. *Species at Risk Act Recovery Strategy Series*. Environment Canada, Ottawa. v + 17 pp.
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- Oldham, M.J. 2004. Unpublished field notes. Ontario Ministry of Natural Resources.
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- Sutherland, D.A. 2000. COSEWIC status report on horsetail spike-rush (*Eleocharis equisetoides*) in Canada. Committee on the Status of Endangered Wildlife in Canada, Ottawa, Ontario. iv + 12 pp.
- The Corporation of Norfolk County. 2006. Norfolk County Official Plan. The Corporation of Norfolk County. May 2006. 224 pp. + maps

APPENDIX A: EFFECTS ON THE ENVIRONMENT AND OTHER SPECIES

A strategic environmental assessment (SEA) is conducted on all SARA recovery planning documents, in accordance with the *Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals*. The purpose of a SEA is to incorporate environmental considerations into the development of public policies, plans, and program proposals to support environmentally sound decision-making.

Recovery planning is intended to benefit species at risk and biodiversity in general. However, it is recognized that strategies may also inadvertently lead to environmental effects beyond the intended benefits. The planning process based on national guidelines directly incorporates consideration of all environmental effects, with a particular focus on possible impacts upon non-target species or habitats. The results of the SEA are incorporated directly into the strategy itself, but are also summarized below in this statement.

With the exception of the possible management actions, there are no foreseeable and discernable negative effects on other species associated with this action plan. Management actions described in Table 1, if required, will be targeted at other species, particularly nuisance species (i.e. European Common Reed, White-tailed Deer and/or North American Beaver) that could imperil the extant population of Horsetail Spike-rush. The effect of nuisance species management on non-target species cannot be determined until the methods of management, if necessary, are specified (e.g., control methods, location, and timing).

Non-target species associated with nuisance species may be indirectly affected by management activities targeting nuisance species. It is expected that these effects, if any, would be to the long-term benefit of the non-target species and to the betterment of the ecosystem. For example, the control of invasive European Common Reed within Horsetail Spike-rush and adjacent habitat may benefit other species at risk, such as Bent Spike-rush (*Eleocharis geniculata*) and King Rail (*Rallus elegans*).

Finally, this action plan requires monitoring, assessments and possibly management tasks at the Horsetail Spike-rush locale. The presence of workers at the assessment sites is expected to have incidental and temporary effects on species in the vicinity of the Horsetail Spike-rush population.