

# False Hop Sedge

## Ontario Government Response Statement



Photo: Michael J. Oldham

### Protecting and Recovering Species at Risk in Ontario

Species at risk recovery is a key part of protecting Ontario's biodiversity. *The Endangered Species Act, 2007* (ESA) is the Government of Ontario's legislative commitment to protecting and recovering species at risk and their habitats.

Under the ESA, the Ministry of Natural Resources and Forestry (the Ministry) must ensure that a recovery strategy is prepared for each species that is listed as endangered or threatened. A recovery strategy provides science-based advice to government on what is required to achieve recovery of a species.

Within nine months after a recovery strategy is prepared, the ESA requires the Ministry to publish a statement summarizing the government's intended actions and priorities in response to the recovery strategy. The response statement is the government's policy response to the scientific advice provided in the recovery strategy. In addition to the strategy, the government response statement considered (where available) input from Indigenous communities and organizations, stakeholders, other jurisdictions, and members of the public. It reflects the best available local and scientific knowledge, including Traditional Ecological Knowledge where it is shared by communities, as appropriate, and may be adapted if new information becomes available. In implementing the actions in the response statement, the ESA allows the Ministry to determine what is feasible, taking into account social and economic factors.

The Recovery Strategy for the False Hop Sedge (*Carex lupuliformis*) in Ontario was completed on June 15, 2017.

False Hop Sedge is an herbaceous perennial that grows in clumps and reaches heights between 50 and 130 cm. Its small, dry fruits have distinctive knobs at the angles formed by their edges, the key feature that marks the difference between False Hop Sedge and Hop Sedge. In Ontario, False Hop Sedge is found in small ponds, vernal pools, or marshes associated with wooded swamps.

## Protecting and Recovering False Hop Sedge

False Hop Sedge is listed as an endangered species under the ESA, which protects both the plant and its habitat. The ESA prohibits harm or harassment of the species and damage or destruction of its habitat without authorization. Such authorization would require that conditions established by the Ministry be met.

False Hop Sedge is native to eastern North America, and inhabits a range including Texas and Florida that extends north to Wisconsin, Iowa, New York, and southern points in Québec and Ontario. While the species is considered to be secure globally, it is a conservation concern in most of the Great Lakes and New England states and is historically rare in Canada. Populations in southwest Québec appear to be the most northerly, extending the species' range north of the Vermont and New York State borders. The total area occupied by False Hop Sedge in Canada is less than 0.01 km<sup>2</sup>, distributed across 14 extant populations. As of 2010, the populations in Canada hosted a total of 361 mature individuals. At that time, the number of extant individuals resulting from conservation translocation efforts was 219, which accounted for approximately 60% of the total Canadian population. Previous recovery efforts have been conducted to supplement existing populations at five sites in Ontario and two in Québec, and reintroductions have taken place in three formerly extirpated populations in Québec.

There are 7 extant populations of False Hop Sedge in Ontario, all of which are located in Middlesex and Elgin counties in the southwestern region of the province. Most populations are located on private property and municipal lands in the City of London and the municipality of West Elgin. Historical populations occurred at Galt and Amherstburg, but no individuals have been observed at either site since 1902 and 1985 respectively. The abundance of False Hop Sedge fluctuates from year to year, largely as a result of ecological changes which can trigger emergence from the seed bank and/or establishment of new individuals. As an example, one population fluctuated from 25-30 plants in 1992 to 1,075 plants in 2005, most likely as a function of canopy opening, and then returned to an abundance level of 29 plants in 2009. Despite ongoing monitoring, it remains difficult to make projections about the abundance in future years. A general population decline has been observed across all Ontario populations since 1993.

In Ontario, False Hop Sedge is found along the edges of isolated marshes and vernal pools within wooded swamps. Research suggests that the ecological niche occupied by False Hop Sedge in Ontario may be very narrow, as the species appears to decline if soil moisture is too low or too high. The marshes and swamps where the species is found experience

periodic flooding necessary to maintain soil moisture, but extended floods cause the plants to rot. High light exposure is also important to False Hop Sedge; the health of the species declines as woody vegetation grows denser and subsequently, canopy closure appears to be the cause of the extirpation of the Amherstburg population, as well as populations in Québec.

Significant knowledge gaps exist for False Hop Sedge demographics and biology, particularly surrounding population dynamics. The manner in which seeds are dispersed is not fully understood and, despite ongoing monitoring efforts, there is no discernable pattern in the fluctuation in abundance from year-to-year. Previous estimates were based on fruiting individuals alone, as vegetative individuals are almost impossible to identify. Annual monitoring of permanently marked individuals has been carried out in Québec to establish a more reliable population trend for False Hop Sedge. This method indicates a downward trend in Québec, which is consistent with the observed decline in Ontario populations – most of which have declined by 50% or more since 1993, with larger declines noted in some populations.

As a species with very specific ecological needs, False Hop Sedge faces its biggest threat in changes to habitat and ecological dynamics. This may include alteration of the water regime, canopy closure, or invasive plant species, which often occur together. Most extant populations are in close proximity to agricultural and urban development drains, which may have an impact on site hydrology. In addition, lack of exposure to sunlight can be made worse by the presence of invasive species such as Reed Canary Grass (*Phalaris arundinacea*) and Common Buckthorn (*Rhamnus cathartica*). The extent to which False Hop Sedge is impacted by these invasive species is unknown, but they are often found in close proximity to the sedge and are a direct competitor for sunlight.

Residential development has historically been a threat to the species but is not a high level of concern for the extant populations that remain in Ontario. Trampling, cattle grazing, garbage dumping, and parasites (e.g., parasitic fly, alien aphid (*Ceruaphis eriophori*), sawflies), are considered to be minor threats to the species as well.

A limited number of extant populations with low abundance distributed within a restricted geographical region poses a significant challenge for the long-term persistence of the species. In addition, small populations are more vulnerable to catastrophic events, such as droughts or floods. While False Hop Sedge has a tendency to re-establish after such events, the increased frequency and intensity of floods as a result of climate change poses an

increased risk to the species. Inventories conducted in 2005 indicated that False Hop Sedge was capable of sustaining its population. However, there has been an observed decline across all Ontario populations since that time – in 2010, more than half of the individuals across Canada were the product of conservation translocation efforts. As the persistence of populations along the Richelieu River in Québec can largely be attributed to reintroduction and translocation efforts, it would be beneficial to conduct preliminary feasibility studies to determine whether extant populations in Ontario would benefit from renewed conservation translocation efforts.

### **Government's Recovery Goal**

**The government's goal for the recovery of False Hop Sedge is to maintain the Ontario distribution of the species and support the persistence of self-sustaining populations. The government supports investigating the feasibility of augmenting existing populations.**

### **Actions**

Protecting and recovering species at risk is a shared responsibility. No single agency or organization has the knowledge, authority or financial resources to protect and recover all of Ontario's species at risk. Successful recovery requires inter-governmental co-operation and the involvement of many individuals, organizations and communities. In developing the government response statement, the Ministry considered what actions are feasible for the government to lead directly and what actions are feasible for the government to support its conservation partners to undertake.

### **Government-led Actions**

To help protect and recover False Hop Sedge, the government will directly undertake the following actions:

- Continue to implement the *Ontario Invasive Species Strategic Plan* to address the invasive species (e.g., Reed Canary Grass, Common Buckthorn) that threaten False Hop Sedge.
- Educate other agencies and authorities involved in planning and environmental assessment processes on the protection requirements under the ESA.
- Encourage the submission of False Hop Sedge data to the Ministry's central repository at the Natural Heritage Information Centre.
- Undertake communications and outreach to increase public awareness of species at risk in Ontario.
- Continue to protect False Hop Sedge and its habitat through the ESA.

- Support conservation, agency, municipal and industry partners, and Indigenous communities and organizations to undertake activities to protect and recover False Hop Sedge. Support will be provided where appropriate through funding, agreements, permits (including conditions) and/or advisory services.
- Encourage collaboration, and establish and communicate annual priority actions for government support in order to reduce duplication of efforts.

### Government-supported Actions

The government endorses the following actions as being necessary for the protection and recovery of False Hop Sedge. Actions identified as “high” will be given priority consideration for funding under the ESA. Where reasonable, the government will also consider the priority assigned to these actions when reviewing and issuing authorizations under the ESA. Other organizations are encouraged to consider these priorities when developing projects or mitigation plans related to species at risk. The government will focus its support on these high-priority actions over the next five years.

#### Focus Area: Research

**Objective:** Increase knowledge of the population dynamics and biology of False Hop Sedge.

Relatively little is known about the specific biological requirements of False Hop Sedge, especially related to habitat requirements. Additionally, further information related to the population dynamics of the species is needed to inform our understanding of how populations respond to changes in their environment. Conservation translocations have previously been conducted with varying degrees of success. Further studies are necessary to investigate the feasibility of appropriately scoped, potential augmentation efforts.

#### Actions:

1. **(High)** Conduct research to determine specific site conditions optimal for the health and sustainability of False Hop Sedge, including amount of canopy openness and soil moisture.
2. **(High)** Study the species’ population dynamics and structure, including:
  - the viability of seeds in the soil and factors that influence germination;
  - rates of maturation and seed production;
  - the method of seed dispersal and how it influences the structure of False Hop Sedge populations (e.g., interactions between populations, demographics);

- genetic aspects that may limit the species (e.g., inbreeding); and,
  - conduct a population viability analysis to determine the minimum viable population of False Hop Sedge.
3. Study the species' ability to adapt to ecological conditions (e.g., availability of light, frequency and length of flooding events).
  4. Investigate the feasibility of augmenting existing populations that are at risk of extirpation, where sufficient suitable habitat is available for the species.

**Focus Area: Inventory and Monitoring**

**Objective:** Increase knowledge of the distribution, abundance and habitat conditions of False Hop Sedge in Ontario.

A challenge in surveying for False Hop Sedge is that the number of mature individuals may characteristically fluctuate at each site between survey years. Implementing standard, repeatable methods and looking at different methods to monitor population sizes (e.g., permanently marking plants) will help to increase the data available and improve monitoring effectiveness. There is some uncertainty as to whether False Hop Sedge has become completely extirpated from the Amherstburg population. Confirming the presence/absence of the species at this site will help determine where recovery efforts should be focused. Implementing a long-term monitoring program will track whether current population levels of the species in the province are being sufficiently maintained. In addition, monitoring data will enable analysis of population dynamics and detection of changes in population size and habitat quality.

**Actions:**

5. **(High)** Develop and implement a standard monitoring protocol for collection of data in Ontario, including:
  - monitoring population size and extent, including the number of naturally occurring and previously transplanted individuals, and monitoring the seed bank;
  - monitoring productivity and plant health; and,
  - monitoring canopy openness, soil moisture, and any additional threats to the species (e.g., parasite presence).
6. Develop and implement a standard presence/absence survey protocol to survey:
  - additional areas identified as having suitable habitat and the potential for additional populations; and,
  - sites where the species historically occurred and there is the potential for plants to remain (e.g., Amherstburg).



**Focus Area: Management and Awareness**

**Objective:** Reduce threats to False Hop Sedge and its habitat, and increase local awareness of the species, its habitat requirements, and ways to minimize threats to the species.

False Hop Sedge continues to be threatened by hydrological changes and invasive plants that encroach on remaining habitat. There are a variety of habitat management approaches which may reduce or reverse the impact of these threats. Implementing and adapting these methods to increase their effectiveness will support the continued persistence of suitable habitat. Habitat improvement may also enable increases in breeding population size through facilitating emergence of False Hop Sedge plants from the seed bank, as was observed in one population in 2005.

A number of populations are located in areas where mortality through trampling of the plants is a threat because of public access or landowner activities (e.g., recreational activities, animal grazing, clearing of underbrush and tree harvesting). Increased awareness is the first step to support land owners and land managers in reducing the threats to False Hop Sedge. By increasing local awareness, individuals will become more knowledgeable about the types of activities that may inadvertently impact the species and how modifying these activities can help to protect False Hop Sedge.

**Actions:**

7. Develop, implement and evaluate the effectiveness of habitat management techniques to maintain or improve the quality of habitat available for False Hop Sedge. Plans may include practices such as:
  - removal of invasive plants (e.g., Reed Canary Grass and Common Buckthorn), woody vegetation and other plants that directly compete with False Hop Sedge at existing sites; and,
  - canopy thinning, as appropriate, and if evaluated to be beneficial for the species.
8. Implement approaches to avoid or reduce the impacts of recreational activities on False Hop Sedge and its habitat, including:
  - redirecting recreational activities away from the species;
  - erecting physical barriers, while ensuring that the barriers will not lead to the establishment of woody vegetation; and,
  - installing signage to alert people to the presence of the species.

9. Promote awareness among landowners, land managers, and land users about False Hop Sedge, including information on:
  - how to identify the species;
  - the species' habitat requirements;
  - protection afforded to the species and its habitat under the ESA; and,
  - actions that can be taken to reduce threats to the species and its habitat.

## Implementing Actions

Financial support for the implementation of actions may be available through the Species at Risk Stewardship Program. Conservation partners are encouraged to discuss project proposals related to the actions in this response statement with the Ministry. The Ministry can also advise if any authorizations under the ESA or other legislation may be required to undertake the project.

Implementation of the actions may be subject to changing priorities across the multitude of species at risk, available resources and the capacity of partners to undertake recovery activities. Where appropriate, the implementation of actions for multiple species will be co-ordinated across government response statements.

## Reviewing Progress

The ESA requires the Ministry to conduct a review of progress towards protecting and recovering a species not later than five years from the publication of this response statement. The review will help identify if adjustments are needed to achieve the protection and recovery of False Hop Sedge.



## Acknowledgement

We would like to thank all those who participated in the development of the Recovery Strategy for the False Hop Sedge (*Carex lupuliformis*) in Ontario for their dedication to protecting and recovering species at risk.

### **For additional information:**

Visit the species at risk website at [ontario.ca/speciesatrisk](http://ontario.ca/speciesatrisk)

Contact your MNRF district office

Contact the Natural Resources Information Centre

1-800-667-1940

TTY 1-866-686-6072

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