

AN INVASIVE SPECIES STRATEGY FOR SOUTHEASTERN ONTARIO'S PROVINCIAL PARKS

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Abstract

Provincial parks are beginning to implement control measures as invasive plants continue to spread through and thrive in southeastern Ontario. The information available on appropriate control techniques is scattered through websites, published papers, and in the files of experienced restorationists. Two things are certain in the area of invasive species control: the use of inappropriate methods can easily exacerbate the problem, and control is much more likely to succeed before populations become well established. In recognition of the need for a coordinated, well-informed approach to invasive species control, the South Eastern Zone (SEZ) of Ontario Parks has prepared a preliminary invasive species strategy. This strategy summarizes the known extent of invasive species in our parks, collates the best available information on control methods, and details appropriate strategies for mitigation. We hope to continue collaborating with others working in this field to learn from their expertise and experience and to share our results.

Introduction

Invasive plant management in the provincial parks system has not been systematically addressed, and yet exotic invasive plants are spreading throughout parks in southern Ontario. Invasive species can be a threat to biodiversity, and in a number of parks, may be threatening both sensitive species and communities.

Ontario Parks has recently developed a strategy intended to provide a general outline of the threats associated with terrestrial invasive species on a landscape scale, and to identify some of the threats specific to South Eastern Zone (SEZ) parks. The development of this strategy is especially timely, as control and monitoring of invasive plants is presently occurring in a number of parks with no policy or direction to allow for coordinated management. Invasive plant management is in its infancy, and direction and communication are necessary to advance our understanding of invasive species issues in provincial parks.

Definitions

The focus of our strategy at this point is invasive exotic terrestrial plants. For the purpose of this paper, the term 'exotic' refers to a species that is growing outside of its historical range, and 'invasive' refers to a species that spreads to negatively affect native flora and fauna and/or ecosystem structure and function. About 130 of the 700 exotic plant species

found in Ontario are currently considered to be invasive (Urban Forest Associates, 2000).

The Problem of Invasives in Parks

Parks in the SEZ are located in the highly fragmented and disturbed landscape of southern Ontario, making them vulnerable to invasion by exotic plants. Many parks are particularly susceptible to these species for several reasons:

- parks often have repeat disturbances and a large invasive plant seed source present in concentrated areas due to the high number visitors from different geographical areas;
- parks have concentrated areas of disturbance, such as campgrounds and day use areas, in close proximity to relatively undisturbed areas;
- natural areas are often relatively small and isolated, resulting in a high level of edge habitat; and,
- park visitors using the trail networks may inadvertently carry the seeds found in high use areas into undisturbed areas of parks.

Invasive plants may degrade life science values in many parks; however, because invasive plants have not been systematically monitored within parks, this effect has not been quantified. For example, purple loosestrife (*Lythrum salicaria*) has been present in the pannes (also known as swale or shoreline fen habitat) at Sandbanks Provincial Park for a number of years. Control efforts by park staff have effectively limited the spread of purple loosestrife in this unique community, but the potential or current effects of this species on the hydrology or species diversity in the pannes is unknown.

Natural Heritage Education (NHE) may also be compromised by invasive species. For example, garlic mustard (*Alliania petiolata*) is found in an area that is used for spring wildflower walks by the NHE staff at Sandbanks. If garlic mustard forms a large monoculture at this site as it has elsewhere, it will suppress native vegetation, including the spring wildflowers.

Finally, many visitors are attracted to parks and protected areas largely because of their undeveloped natural environments and the high quality recreational activities associated with these areas. Invasive species may cause a loss of these aesthetic and biodiversity values in parks. For example, it has been noted that native avian species may experience higher mortalities when nesting in exotic shrub species, and this may lead to a decline in avian diversity in parks invaded by European buckthorn (*Rhamnus cathantica*) and other non-native shrubs (Whelan and Dilger, 1992).

An Invasive Species Strategy

Management guidelines and issues are detailed in the strategy and include information on park policy, management approach, control techniques, and monitoring. Many experts in the field of invasive species management were contacted to provide the most current

information on control methods. The information provided in the strategy will evolve as new information becomes available.

The following goals and objectives for invasive species management in the SEZ are adapted from *A Strategic Plan for Managing Invasive Plants in Southern Ontario* (Havinga *et al.*, 2000). These goals and objectives are intended to support the direction of the Ontario Invasive Plants Working Group, as well as the protection mandate of the provincial parks system.

Goals

- to maintain healthy ecosystems within the South Eastern Zone of Ontario Parks;
- to reduce the ecological impact of invasive plants through effective management techniques; and,
- to advance the knowledge about invasive plants through support of research and monitoring efforts.

Objectives

- prevent further introductions of invasive plants where possible;
- determine the most effective management tools for indirect and direct control of invasive plants;
- develop implementation plans for managing priority species at regional and local scales;
- actively seek partnerships that support invasive species research and management;
- develop an early warning system of tracking new invasive species populations
- incorporate invasive species education into Natural Heritage Education;
- develop/revise park policy for invasive plant management in cooperation with Policy and Research Section of Ontario Parks; and,
- promote partnerships with other government agencies and non-profit organizations.

Strategy Framework

There are four key components to implementing the strategy: initial monitoring of invasive species populations; setting priorities for control; determining appropriate control measures; and, monitoring the effectiveness of control. The decision key in Figure 1 is a prototype for providing park staff with direction for setting priorities and undertaking control measures. The intent is to undertake ecologically sound management activities while maximizing the use of limited time and funds.

Invasive Exotics in SEZ Parks

While developing the strategy, Ontario Parks staff also surveyed 14 high-use parks in the SEZ during the 2002 field season to determine the extent of invasive species distributions and to prioritize control needs by park. The majority of plants inventoried are considered critical threats to native species diversity in similar ecosystems, and further research will need to be carried out to determine the possible threats in parks through habitat analysis and monitoring.

Figure 1. Prototype decision key for setting invasive exotic species control priorities.

1.	Is it a high priority species for control? (based on ranking by Invasive Plant Working Group and/or site-specific needs)	
	• NO.....	don't control
	• YES.....	2
2.	How big is the population?	
	• MED – LARGE.....	3
	• SMALL.....	4
3.	Where is the population?	
	• in a repeatedly disturbed area (e.g., campground).....	don't control unless can accompany with restoration – monitor for spread to natural areas
	• in a natural or sensitive area.....	4
4.	Is the population spreading or likely to?	
	• DON'T KNOW.....	monitor before implementing control
	• YES.....	5
5.	Is control likely to succeed?	
	• NO.....	don't control - determine if other measures are more appropriate
	• MAYBE.....	6
6.	Are you able to restore site with natural species, or are natural species still present & likely to fill in gaps created by removal if necessary?	
	• NO.....	don't control – do more planning
	• YES.....	7
7.	Have you reviewed all resources available to determine the best options for control?	
	• NO.....	stop & research more first
	• YES.....	proceed with control, ensuring activities & observations are fully documented

The top priority invasive plants in the SEZ, based on distribution and known ability to dominate, include garlic mustard (*Aliaria petiolata*), non-native buckthorns (*Rhamnus spp.*), dog-strangling vine (*Vincetoxicum spp.*), and purple loosestrife (*Lythrum salicaria*). The majority of invasive plants surveyed were found in disturbed areas, but some were also seen in low numbers in natural, intact forest stands. Other species of concern were identified in some specialized habitats. For example, cypress spurge (*Euphorbia cyparissias*) is limited in most parks where it is present, but is dominant on the globally rare limestone meadow (alvar) communities of Burnt Lands Alvar Nature Reserve.

Future Direction

The SEZ has much to learn about the extent and threat of invasive exotic species in its parks. The strategy provides recommendations for staff training, implementing control, inventory and monitoring, as well as a list of research needs. Our main research needs include inventories of various habitats, studies of community dynamics in areas where invasive species are thought to compete with native vegetation, and empirical tests of the

efficacy of various control methods. We hope to continue to communicate with other researchers in this field and to make use of the most recent findings in this area.

References

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