
Challenges to Protecting Species At Risk in Provincial Parks and Protected Areas in Ontario

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Abstract

*Provincial parks are key landscapes for protecting populations of species at risk and their habitats, as provincial parks are often selected for their outstanding and representative natural features, and the foremost principle of the Ontario Parks mandate is protection. Additionally, park managers are able to control the amount and type of development that takes place within park boundaries. Nonetheless, Species at Risk (SAR) within provincial parks are not guaranteed recovery, or even long-term persistence. Factors beyond the control of park managers and ecologists – isolated populations and small population sizes, illegal activities, conflicting ecological processes, and other challenges – may threaten the long-term health and survival of SAR populations. American ginseng (*Panax quinquefolius*) and several rare orchid species in southeastern Ontario provide good examples of some of these challenges. Ontario Parks staff has been monitoring these species for several years and are now trying to develop solutions within the limits of their jurisdiction in order to ensure the protection of these SAR populations.*

Keywords: *species and habitats at risk, Ontario Parks, Ginseng, rare orchid species, monitoring and research.*

Introduction

The public generally believes that natural features within protected areas, like species at risk (SAR), are immune to the threats found outside park boundaries. The perception that provincial parks, as protected areas, act as havens for SAR populations and therefore require little financial support for conservation work has even been expressed within the Ontario Ministry of Natural Resources (MNR).

Is it safe to assume parks provide effective protection of SAR populations? Recent studies in the south eastern administrative zone (SEZ) of Ontario Parks (OP) demonstrate that this assumption needs to be examined on a case-by-case basis and management efforts modified accordingly. A quick search of the conservation literature reveals a wealth of analyses of biodiversity protection and representation in protected area systems world-wide (e.g., Khan *et al.*, 1997; Rivard *et al.*, 2000; Sarakinos *et al.*, 2001; Tabarelli *et al.*, 2005). However, few studies focus on the protection of individual SAR populations within parks.

One may argue that rare species naturally appear and disappear in ecosystems and that intervention to maintain SAR in parks is not always appropriate (Nudds, this volume). However, some SAR populations in parks represent the “best bet” for a species’ perpetuation due to their size or security. This is especially important for species that were formerly more common in Ontario but have declined as a result of human activity, such as Eastern ratsnake (*Elaphe obsoleta*), cerulean warbler (*Dendroica cerulea*), and red-shouldered hawk (*Buteo lineatus*). Additionally, the role of rare species in ecosystem functioning is not yet well understood (Lyons *et al.*, 2005).

This paper provides background on recent approaches to SAR protection in provincial parks. It examines threats facing SAR in protected areas and the associated challenges facing park managers. Two case studies demonstrate how the SEZ has addressed some of these challenges.

It is timely to examine the role of protected areas in SAR conservation. Ontario’s Provincial Parks Act (PPA) is currently under review and the updated act is intended to provide more protection of ecological integrity, of which SAR form a component. Similarly, Ontario’s *Endangered Species Act* (ESA) will be reviewed in the near future. Legislation is a key tool for the protection and recovery of SAR. Provisions and regulations in these acts should be based on sound knowledge of threats to, and management needs of, SAR in order to effectively protect them.

During the past five years, OP staff have used the increased funding and staff time available through the province’s Species At Risk Program and other initiatives for detailed SAR studies. Within the SEZ, there are known populations of at least 25 SAR, several of which can be considered significant. Priority species in the SEZ are those that have significant populations within parks, those that are found in particularly sensitive areas, or those that have well-developed monitoring programs. Two of these species are

American ginseng (*Panax quinquefolius*) and small white lady's-slipper (*Cypripedium candidum*).

Challenges

As OP staff members have increased their understanding of SAR populations in parks, the threats that the species face and the challenges that managers face in trying to protect them have become more clear.

One of the greatest challenges to SAR protection in parks is in balancing the corporate protection objectives with recreation and tourism objectives – objectives that are currently being revisited in the legislative review. Provincial parks are areas that are set aside both to protect Ontario's significant natural areas and to provide opportunities for the public to enjoy these outstanding features. This dualism is a familiar struggle for several agencies, including Parks Canada (Parks Canada Agency, 2000). Studies in protected areas in many jurisdictions have clearly shown direct and indirect impacts of tourism on SAR and other sensitive natural features in a variety of ecosystems (Zammit, 1998; Kelly and Larson, 1999; Kelly *et al.*, 2003).

Ecosystem processes, the effects of which park managers often have little control over, can also play a role in the decline of SAR populations in protected areas. Landscape-level factors, such as incompatible lands uses in surrounding areas (e.g., Rivard *et al.*, 2000) or isolation of small SAR populations in parks (e.g., Wade, 1998) have been well-documented. The case studies below present more site-specific ecosystem processes.

Case Studies

Small white lady's-slipper (SWLS) and American ginseng are endangered plants that face different conservation issues. These species provide good examples as they have been well-studied within parks and discrete viable populations of each are fully protected within park boundaries. Species that move beyond park boundaries face an entirely different suite of threats.

Small White Lady's-Slipper (*Cypripedium candidum*)

This attractive orchid was one of the first species to be regulated under Ontario's *Endangered Species Act* in the 1970s. This species is now restricted in Canada to four locations in Ontario and 14 in Manitoba (Brownell, 1999).

Several of the orchid's traits make it susceptible to decline: narrow micro-habitat requirements; wide fluctuations in flowering and fruiting success;

hybridization with other lady's-slipper orchids; and few pollinators. It is also threatened by habitat loss and collection (Brownell, 1999).

A small protected wetland in the SEZ has the only population location east of Lake Erie. This site contains more than 600 plants, about half of which flowered in 2003. Nonetheless, this population is vulnerable to decline or extirpation through demographic or environmental stochasticity due to its extreme isolation – the entire colony is found within a 6 ha area.

Although this site is afforded the highest level of protection available to provincial parks – nature reserve status – this population is also vulnerable to impacts from tourism and environmental change.

As a property of the Crown, this nature reserve is public land. It is on Ontario road maps and at least one website identifies the nature reserve by name as a SWLS site. The naturalist community in Ontario is aware of the orchid's presence at this site and there is a long history of naturalist tours to the reserve to view the orchids during peak flowering season. Unfortunately, the plants are extremely susceptible to trampling as a result of their accessibility. They are interspersed through small puddles, sphagnum hummocks, and graminoid clumps and are difficult to see, especially when not in flower. Although most naturalists are normally conscientious, SEZ staff have recently observed inadvertent damage to plants by people entering the site and walking through the colony.

Ontario Parks is examining options for limiting access to the site without alienating the naturalist community. Building a dialogue with naturalist groups has been difficult. Despite extensive internet research and visiting the site during the peak flowering, SEZ staff have not been able to track down all of the groups and individuals that visit the site in order to engage them in education. One orchid group reacted very negatively when they were not granted permission to visit the site, despite the clear explanation of the threats to the orchids that was provided.

The south eastern administrative zone intends to improve protection of this site through education and enforcement by hiring a park steward who will monitor the site throughout the flowering period and who will build a rapport with the local community.

This population is also vulnerable to environmental change. Natural succession observed through aerial photography of the wetland – specifically the infilling of shrubby vegetation – is expected to change the microhabitat conditions of the orchids. Incoming sunlight affects flowering success

(Brownell, 1999); therefore, an increase in shade may cause an eventual decline in the population. Experimental data collected in 2005 on flowering plant abundance and surrounding shrubby vegetation will quantify this effect and serve as a baseline for future monitoring. However, the succession in this wetland is a natural process and decisions regarding possible active habitat management will require careful consideration of the conservation value of such actions.

Other rare orchids in the SEZ, like purple twayblade (*Liparis liliifolia*) and Eastern prairie fringed-orchid (*Platanthera leucophaea*), also show impacts of ecological factors, such as deer browse and habitat change due to beaver activity.

American Ginseng (*Panax quinquefolius*)

Ginseng has a wider distribution than small white lady's-slipper (SWLS), with populations through Ontario, Quebec, and the northeastern states, but it is seriously threatened by harvest and habitat change. This long-lived perennial forest herb also has very specific habitat requirements, and it takes several years to reach reproductive maturity (Anderson *et al.*, 1993).

Along with its biological limitations, wild ginseng is very commercially valuable and has been harvested extensively for the past 300 years. Although it was never common, it was more abundant and likely had more natural population structures prior to its exploitation (Charron and Gagnon, 1991).

South eastern administrative zone parks protect 12 populations of over 50 ginseng plants, seven of which are over the theoretical minimum viable population size of about 170 (Nantel *et al.*, 1996). One of these populations was once considered to be one of the largest in the province. Like the SWLS, these populations are not immune to the threats faced by populations on private lands.

The legislation protecting ginseng at the federal and provincial levels is complicated. Currently, the only applicable form of protection for the plant in provincial parks is under the *Provincial Parks Act* (PPA), which generally prohibits the destruction of any natural object within a park. Ginseng in parks is technically protected through the "safety net" provision of the new federal *Species At Risk Act* but the mechanisms of this provision's application have yet to be resolved. Although ginseng is listed as endangered by the Committee on the Status of Species At Risk in Ontario, it has not been

regulated under the Ontario ESA yet because to do so would require the release of specific location information, placing populations at greater risk of harvest.

Regulation under the ESA may not help park managers protect ginseng from harvest within parks for two main reasons. Ginseng generally grows in remote areas, and few enforcement staff members are available in the late summer and fall when harvesters are most active. If park wardens do encounter a ginseng harvester in a park, the only legislative tool they are entitled to use in such a situation is the PPA, which, as written, is not powerful enough to deter harvesters.

Ontario Parks research staff have been working closely with park enforcement staff to understand the tools that exist to protect ginseng from harvest in parks and to ensure that those tools are used consistently. OP has initiated communication with the MNR's provincial enforcement team to allow both sections to work together efficiently. SEZ staff also ensures that all location information remains extremely confidential to avoid tipping off would-be harvesters.

Although habitat loss – a serious threat for ginseng on private and Crown lands – is usually not a factor in provincial parks, habitat and environmental changes within parks are threatening ginseng populations. Even populations that do not show signs of harvest have declined in the past five years as a result of the effect of increasing deer browse and unfavourable climatic conditions.

Ontario Parks staff has been monitoring park populations since 1999 (Brdar, 2003). In 2001, deer exclosures were established in an otherwise healthy ginseng population. While these exclosures provide protection to only a few plants, they do allow the intensity of deer browse damage to be quantified. These data may be used in the future to justify changes in deer management regimes in the area, something that has already been done in other protected areas.

After just three years these exclosures demonstrate an impact of deer on ginseng. Older reproductive plants have disappeared from areas outside the exclosures, while they continue to thrive inside the exclosures, where they also attain greater heights and set more seed. It has been suggested that plants under pressure from deer browse become “stunted” (A. Nault pers. comm.) – it is possible that deer are selectively eating larger, mature plants, which then die or decrease in size or reproductive effort. Other herbaceous plants, like bloodroot (*Sanguinaria canadensis*), wild ginger (*Asarum canadense*),

and sarsaparilla (*Aralia nudicaulis*) show similar dramatic differences inside and outside exclosures.

Nature also seems to be working against ginseng through unusually hot, dry summer climates. All protected populations have been showing low seed set since 2002 (Brdar, 2003). Anecdotal observations indicate that the cool, wet summer of 2004 did not improve the rate of seed set. This factor compounds the already naturally low germination success of this species. South eastern administrative zone staff have been involved in collecting and planting stratified and partially stratified seeds. Preliminary results suggest that this activity can improve recruitment: at one high quality site, 64% of 580 stratified seeds emerged the year after planting. Fifty-six percent (208) of these emerged seedlings persisted two years later, which is much higher than natural rates of recruitment (A. Nault, pers. comm).

Summary and Recommendations

As recent studies of small white lady's-slipper and American ginseng demonstrate, parks are important for protecting large viable populations of SAR. However, these populations still face threats that cannot always be mitigated. SWLS is threatened by recreational pressures and ecological change. Ginseng is at risk in parks due to both limited enforcement ability and environmental change.

To ensure that Ontario Parks continues to meet its protection mandate and that important populations of SAR persist, the factors that threaten these populations – especially human use and environmental change – need to be quantified. Once these threats are understood, strategic management actions can be implemented in a way that maximizes limited funding and staff time available for SAR conservation and recovery activities. New legislation and policies should address the unique threats to SAR present within parks.

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