

**Best Practice:
Environmental
Stewardship
by a Private
Landowner**

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Introduction

Since the beginning of agriculture in Manitoba in the mid-eighteen hundreds, native prairie habitat in Manitoba has disappeared at an astonishing rate. The Mixed Grass Prairie Inventory Project found that only a small fraction of the original range of the mixed grass prairie and tall grass prairie habitat remains in good condition in Manitoba today (Environment Canada, 2002). As native prairie habitat disappears due to the expansion of farming practices and urban development, so do many of the prairie habitat species, including the small white lady's slipper.

Traditionally, the small white lady's slipper was found in the open tall grass prairies, on dry mesic hillsides, and in low calcareous prairies and calcareous fens. Today due to habitat restrictions, they can be found in prairie openings in wooded grasslands, in open sites with a southerly aspect and in calcareous sandy-loam soils (Environment Canada; Species at Risk, 2001).

This report will chronicle the best management practices of a Brandon area farm family towards the preservation of the small white lady's slipper upon their property. By preserving and maintaining the habitat of the small white lady's slipper now, they are hoping to ensure the continuation of this species for generations to come.

Plant description

The small white lady's slipper (*Cypripedium candidum*) is a perennial orchid measuring up to 36 cm in height. Growing singly or in groups, individual stems are sheathed by two to four narrow leaves. A distinctive modified petal in the shape of a small slipper that gives this plant its common name tops each stem. The flower is white, about 20.5 cm long, and is often spotted or streaked with purple. Two other petals, twisted, greenish-yellow tinged with brown or purple extend to either side of the slipper. Three sepals, one extending upwards above the slipper, and two fused sepals projecting downwards, are twisted and similar in colour to the two lateral petals (Punter, 1999).

Flowering of the small white lady's slipper generally begins in late May or early June. The blossoms do not last for more than a few weeks before fading (Environment Canada; Species at Risk, 2001).

Population and distribution

The small white lady's slipper is found in 15 states in the U.S.A., and in Manitoba and Ontario in Canada. In Manitoba, the populations are widespread, with aggregate populations in the Tolstoi-Gardenton area (in the Tall Grass Prairie Preserve), Brandon and St. Laurent areas. Single populations also occur in the Lake Francis, Woodlands, Brandon and Kleefeld areas (Environment Canada; Species at Risk, 2001).

The small white lady's slipper population that is the focus of this report is found in a section of field approximately 32 acres large. The soil is a poorly drained clay or clay-loam. The main concentration of plants is found in a patch spread over 11 acres, which flows over into the road allowance. This particular property was

homesteaded in 1879, and apart from the ditch along the road allowance, this piece of land has never been broken and is a natural prairie meadow. Through careful observation over time, the landowners have noticed that the untouched population in the field has allowed the white lady's slipper to repopulate the ditch. Over the last few years, the population has also been slowly expanding into the neighboring property, as well as over the road into the opposite ditch, where it had never been seen before (Brandon area landowners, 2002).

Endangered Status

COSEWIC is a committee of experts that assesses and designates which native species are in danger of disappearing in Canada. Currently, COSEWIC consists of 29 voting members. These members represent federal, territorial, and provincial government wildlife agencies, the National Biosystematics Partnership, and the chairperson(s) of Species Specialist Subcommittees drawn from the member agencies or from museums, universities, or other sources (Government of Canada, 2002).

The voting members of COSEWIC assign a status to a species after reviewing status reports. The status report contains the best available information regarding the species biology, population size, trends in population size, distribution in Canada, and habitat availability (Government of Canada, 2002).

COSEWIC assigned the **endangered** status to the small white lady's slipper in 1981. The endangered status reflects the imminent extirpation or extinction faced by the species. The status was unchanged following a review conducted in 1999 and 2000. The Manitoba Endangered Species Act placed it on the endangered species list in 1992 (E. Punter, 1999).

Threats to population

One of the main threats to the populations of the small white lady's slipper throughout the province is encroachment of woody vegetation (Environment Canada; Species at Risk, 2001). Before settlers arrived, the prairies were subject to periodic fires caused by lightning or set deliberately by native aboriginals. These fires were a major force in the shaping of the prairie ecosystem. Prairie vegetation evolved under the regular cycle of burning and regeneration. In the absence of fire or other intervention, vegetative succession leads to aspen parkland. Shade and competition for available resources make a site far less hospitable to the small white lady's slipper.

Alien invasive weeds, such as leafy spurge (*Euphorbia esula*) may also threaten populations of the small white lady's slipper (Environment Canada; Species at Risk, 2001). Leafy spurge is an introduced weed, and as a result, it has no natural predators in North America. Its strong growth habits give it a competitive edge over many of the native prairie plants, which fare poorly in the competition for nutrients, space, and sunlight.

Another major threat to the small white lady's slipper comes from human activity. Areas not protected in parks or managed areas may fall victim to conversion of land to cropland or development. Collectors also pose a problem when they

remove plants for transplanting into their own gardens, or collect specimens for herbariums (Environment Canada; Species at Risk, 2001). The small white lady's slipper does not transplant well as it has evolved an obligatory mycorrhizal association that is necessary for the survival of the plant (Critical Wildlife Habitat Program, date unknown). Specific fungus in the soil attaches to the root of the lady's slipper allowing it to gather additional water and nutrients. In a garden monoculture, this association is absent, and the fungus is easily destroyed when the plant is dug up. Transplanted lady's slippers will most likely die within a few years.

Limited genetic diversity due to isolated populations may also prove to be a problem for the long-term survival of the small white lady's slipper (Environment Canada; Species at Risk, 2001). Lack of diversity can result in plants that are weaker, leaving them much more susceptible to disease or other environmental factors.

Other factors influencing population survival include hybridization of the white lady's slipper with the yellow lady's slipper (*Cypripedium parviflorum*), as well as cool temperatures or late frosts during the flowering time that can kill flowers and will work to prevent seed set (Punter, 1999).

Management of the Brandon site

The management techniques used by the Brandon area landowners to maintain the site are simple yet effective. The site is burned approximately once every five years to mimic the prairie fires that historically swept through the area. This works to prevent encroachment by shrubs and trees as well as to remove thatch. The fires are generally set in April, ensuring that the lady's slippers, which have not yet emerged, are not damaged. With the removal of overshadowing brush, the area is opened up to sunlight, allowing the soil to warm up earlier in the spring, benefiting the lady's slipper emergence.

Leafy spurge, a perennial noxious weed, is a problem throughout the area where it infests the ditches and much of the rangeland. The current landowner related how his father, and he himself, had spent many hours walking over the more inaccessible areas of the property attempting to kill the leafy spurge using herbicide in a backpack sprayer. This was difficult, time consuming work, and was not effective in eliminating the spurge.

A little over ten years ago, the landowners received approximately 200 black dot leafy spurge flea beetles (*Aphthona nigricutis*) for release on their property. A form of biological control imported from Europe, leafy spurge flea beetle larvae feed on the roots of leafy spurge. This weakens the spurge plant, making it more susceptible to disease, herbicide, grazing and other forms of control. Biological control is an attractive means of controlling leafy spurge in these ecologically sensitive sites, as it is host specific. There is no danger of the *Aphthona* beetles preying upon or affecting other plant species.

The landowners have seen a remarkable decrease in the density of leafy spurge since the beetles have established, and they now only spray to contain the spurge on many parts of the property.

The leafy spurge has been kept under control in the lady's slipper site where it is limited to a few small patches in the pasture, too small for a population of *Aphthona* to survive upon. The rural municipality had sprayed the ditches for weed and shrub control for approximately 30 years before the current landowners suggested they assume responsibility for this particular stretch of road. The spurge within the site and along the ditch is carefully spot-sprayed with a combination of 2,4-D and Banvel, applied with a backpack sprayer. Interestingly, the landowners have noticed that the plant diversity in the ditches that were subject to spraying is higher than the diversity in the meadow that has not.

The rural municipality does however mow the ditches in July or August, after the small white lady's slipper plants have completed setting seed, and died back. Although this is done to keep the road allowances clear of shrubs, it also works to prevent woody vegetation from shading the site.

This site is also subject to light grazing and haying in July without any detrimental effects as the lady's slipper plants have naturally died back by this time. Light rotational grazing is considered beneficial as it opens up the site to light by keeping the herbaceous and woody plant growth down. The landowners try to restrict the amount of grazing allowed on this section so that it is mostly used as a backup pasture in years when forage for their cattle is more sparse.

Another important measure taken by this family in protecting the population of the small white lady's slipper is in the limiting of knowledge of the presence and location of the plants. Unfortunately from past experience, they have come to realize the threat from collectors who wish to dig up specimens for themselves. As mentioned previously, these plants do not transplant well so not only is the site unnecessarily disturbed, but the uprooted plants will most likely perish quickly.

The long-term preservation of the site is currently under discussion, as the family will be signing a conservation agreement with Manitoba Conservation and the Manitoba Habitat Heritage Corporation. A conservation agreement is a written agreement between a landowner and the holder(s) that will protect a natural resource for a specified term (Manitoba Government, 1997). This conservation agreement will ensure that the white lady's slipper habitat will be protected against development and disturbance while enabling the continued use of the land by the landowner. Even if the property is eventually sold, the new landowner must abide by the original terms of the agreement, as the conservation agreement will be a condition of the sale. The local government must also be involved in a conservation agreement, so that its representatives cannot inadvertently or intentionally harm or develop the protected area.

Comparison of Management Techniques

The largest site in Manitoba containing the small white lady's slipper is in the Tall Grass Prairie Preserve in the Tolstoi-Gardenton region. The Critical Wildlife Habitat Program began securing lands for the prairie preserve in 1989. The Critical Wildlife Program owns most of the land, while other parcels of land are leased from private landowners, or have been donated by the R.M. of Stuartburn for wildlife purposes. The preserve currently includes over 2000 hectares of tall-grass prairie (Critical Wildlife Habitat Program, date unknown). Management of the tall-grass prairie uses techniques that try to mimic the wildfires and grazing by wild animals that historically shaped the grasslands.

Prescribed burning under carefully controlled conditions is carried out approximately once every three years to remove the thatch and woody vegetation. Exotic or woody species are further controlled using bio-control, hand clearing, or girdling of trees or shrubs. Light rotational grazing is also performed to clear away dead vegetation, and woody species encroaching upon the site. Grazing is also imitated by mowing and haying, timed to encourage the numbers of native grass species (Critical Wildlife Habitat Program, date unknown).

Techniques used to manage the tall-grass prairie preserve and the Brandon area property are essentially the same. Both are based on trying to recreate the conditions prior to the European settlement of the prairies. The management techniques have proven effective in both sites.

Challenges

One of the main points brought up in the course of the interview dealt with compensation for all landowners whose properties contain species at risk. It is general knowledge that most small family farms are struggling to survive. It is also generally felt that for many landowners, if it came to the decision of whether to put private land into production or to preserve it in its natural state, the decision would most likely favour production. During the interview, it was mentioned that a management fee paid directly to property owners would not only provide incentive to maintain the land, but may also encourage better land management by other producers leading to an expansion in native prairie populations. It would also aid struggling rural farm families, placing the money where it would do the most good.

This concern, as well as others, prompted the family to write to the federal Minister of the Environment with regard to the proposed Species at Risk legislation outline. They stated that they were encouraged by the proposal, but they did have some concerns regarding the compensation of landowners. If the proposal goes through as is, compensation will be paid to landowners based solely on what economic activity is being displaced. It is this family's opinion that species be viewed as equally valuable, irrelevant of where they are located. They also suggest that a system of management fees be implemented. This system would see most of the money paid directly to landowners, ensuring the species at risk are properly cared for rather than being spent in the bureaucracy to oversee them.

It was also felt that money be redirected from environmental agencies which monitor sites and be allocated to the landowners to accomplish the task. The landowners would be more qualified to do the work as they are in close proximity, and could monitor their sites on a continuous basis, submitting standard reports as needed. There would also be a greater efficiency, as employees of environmental agencies would not have to drive in from Brandon or Winnipeg to visit the sites.

Conclusion

All too often, the idea of preserving native prairie habitat is lost in the difficult process of trying to make a living by farming. This particular farm family must be commended as they have evolved their farming practices to work around the lady's slipper habitat. They are fully aware of the nature of the small white lady's slipper and the delicate balance of the site. These landowners have spent decades of work as well as money to carefully preserve this area. They have made well-informed decisions, and these are reflected in the thriving population of the small white lady's slipper on their property.

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