

Stewards of Saskatchewan

2018 Report

Habitat Conservation for Species at Risk
Through Stewardship



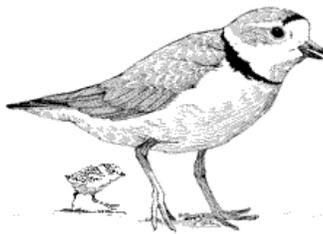
Operation
Burrowing Owl



Rare Plant
Rescue



Shrubs for
Shrikes



Plovers on
Shore



Stewards of
Saskatchewan

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Plovers on Shore, and Stewards of Saskatchewan banner program

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Habitat Stewardship for Species at Risk in Saskatchewan

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Nature Saskatchewan's

Operation Burrowing Owl, Rare Plant Rescue, Shrubs for Shrikes, Plovers on Shore, and Stewards of Saskatchewan banner program

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Executive Summary

Nature Saskatchewan's stewardship programs engage landowners in conserving habitat where species at risk occur. It is comprised of Operation Burrowing Owl, Rare Plant Rescue, Shrubs for Shrikes, Plovers on Shore, and at-risk species not captured by these programs coming under the Stewards of Saskatchewan banner program. These programs comprise the suite of Nature Saskatchewan programs that use target species at risk as conservation symbols to garner support for prairie biodiversity and habitat protection for all prairie species.

Target species at risk in 2018 included the endangered Burrowing Owl and Piping Plover, threatened Prairie Loggerhead Shrike and Sprague's Pipit, and all other species at risk not targeted by an existing program, such as the Northern Leopard Frog, Monarch, and Barn Swallow (see RPR target species below). Landowners with habitat supporting species at risk are invited to sign a voluntary stewardship agreement to explicitly conserve these areas, and to annually report the number of target species on their land and any changes to the habitat. The term of the agreement is indefinite and expires only upon request; participants are encouraged to remain in the program whether or not the target species return(s) to their land. Landowners can also participate in a stewardship program by completing a project to enhance habitat for a target species. Participants are also encouraged to adopt species-at-risk beneficial management practices through site-specific plans developed with program coordinators. The stewardship programs encourage conservation and enhancement of habitat by educating landowners, encouraging informed stewardship, and building relationships, all of which can be scaled into stronger forms of protection. There is no other project specifically targeting the conservation of habitat for species at risk across southern Saskatchewan through voluntary stewardship agreements.

The Rare Plant Rescue program focuses activities including stewardship, searches, monitoring, and education and awareness on six plant species protected in Saskatchewan both provincially and federally as threatened, endangered, or extirpated (Small White Lady's-slipper, Small-flowered Sand-verbena, Tiny Cryptantha, Western Spiderwort, Slender Mouse-ear-cress, and Smooth Goosefoot), three species federally designated as special concern (Buffalograss, Dwarf Woollyheads, and Hairy Prairie-clover), and seven provincially rare species (Beaked Annual Skeletonweed, Bur Ragweed, Prairie Dunewort, Powell's Saltbush, Prickly Milk-vetch, Small Lupine, and Upland Evening-primrose).

Operation Burrowing Owl (OBO), launched in 1987 in response to a 1986 intensive survey that revealed far fewer Burrowing Owls than anticipated and significant habitat loss in the owl's

core breeding area, focuses on conserving and enhancing grassland habitat for the endangered Burrowing Owl. In the 2018-19 field season, OBO visited 50 landowners on-site. There were 5 new landowners joining OBO, and 8 were lost due to having sold their land and/or they passed away, bringing the total to 351 participants. Together, these participants are conserving 62,057 hectares (153,347 acres) of prairie habitat at 1,197 sites. In 2018-19, 5 site-specific species-at-risk beneficial management practices plans were developed with OBO landowners. In the 2018 census of the Burrowing Owl at OBO sites, OBO participants reported 19 pairs of owls (corrected for non-reporting participants; 16 actual pairs reported by 20 participants), a 32% decrease from the 28 pairs reported in 2017 (corrected for non-reporting participants; 25 actual pairs reported by 30 participants). OBO has documented an overall population decline of 98.2% from 1988 to 2018. The average annual change was higher in the years 1988-1994 at 26.9% decline per year, than from 1994-2018 at 6.6% decline per year.

Rare Plant Rescue (RPR), launched in 2002, engages landowners in conserving habitat where rare plant species occur. In 2018-19, RPR visited 22 landowners on site and gained 5 new participants. Currently, 84 participants are conserving 58,047 hectares (10143,437 acres) of native prairie habitat for multiple plant and other species at risk. In 2018, staff searched 21 sites (quarter sections or portions of quarter sections) for rare plants and found the target species on 3 new sites. Monitoring was carried out on 5 sites and target rare plants were found on 3 of the 5 sites.

Shrubs for Shrikes (SFS), launched in 2003, focuses on conserving and enhancing grassland and shrub habitat for the threatened Prairie Loggerhead Shrike, whose population has declined more than 80% over the last few decades. In the 2018-19 field season, SFS visited 46 landowners on site. There were 16 new landowners joining SFS, and three were lost due to having sold their land and/or they passed away, bringing the total to 242 participants. Together, these participants are conserving 29,662 hectares (73,297 acres) of prairie habitat at 556 sites. In 2018, 8 site-specific species-at-risk beneficial management practices plans were developed with SFS landowners. In the 2018 census of the Loggerhead Shrike at SFS sites, 205 (of 228) SFS participants censused reported 90 nesting pairs at 83 sites.

Plovers on Shore (POS), initiated in 2008, focuses on conserving and enhancing shoreline habitat for the endangered Piping Plover. Piping Plover monitoring through International Piping Plover Breeding Censuses has occurred every five years since 1991, and facilitated the Piping Plover being the first species in Canada to have legally-designated critical habitat in Saskatchewan. In the 2018-19 field season, POS visited 17 landowners on site. Four new landowners joined POS, and 4 were lost due to having sold their land and/or they passed away, bringing the total to 63 participants. Together, these participants are conserving 225 km (140 mi) of shoreline habitat at 198 sites. In the 2018 census of Piping Plovers at POS sites, 53 (of 63) POS participants censused reported 6 pairs, 8 singles, and 8 young at 4 sites.

Stewards of Saskatchewan banner program (SOS), initiated in 2010, focuses on conserving and enhancing habitat for all other (non-targeted) prairie species at risk in Saskatchewan. SOS participants are conserving land that supports Sprague's Pipits, Bobolinks, Ferruginous Hawks, Barn Swallows, Common Nighthawks, Short-eared Owls, Northern Leopard Frogs, Tiger Salamanders, Horned Grebes, Long-billed Curlews, Chesnut-collared Longspurs, American Badgers, and Monarchs. In the 2018-19 field season, SOS visited 36 landowners on site. There were 12 new landowners joining SOS, and one was lost because they passed away, bringing the total to 132 participants. Together, these participants are conserving 28,569 hectares (70,595 acres) of prairie habitat at 492 sites. In the 2018 SOS census, 77 (of 123) participants responded to the

census: 48 participants reported approximately 403 pairs, 304 young, and 98 nests for Barn Swallows at 54 sites; 9 participants reported approximately 17 adults, 6 young, and 3 nests for Ferruginous Hawks at 10 sites; 3 participants reported approximately 3 Short-eared Owls at 3 sites; 28 participants reported approximately 31 American Badgers at 30 sites; 10 participants reported 10 male Sprague's Pipits at 10 sites; 8 participants reported a range of 1-5 Bobolinks at 10 sites; 15 participants reported a range of 1-5 Common Nighthawks at 13 sites and 2 participants reporting a range of 6-10 Common Nighthawks at 2 sites; 10 participants reported a range of 1-5 Northern Leopard Frogs at 4 sites, 6-10 at 3 sites, and and >10 Northern Leopard Frogs at 4 sites; 16 participants reported a range of 1-5 Tiger Salamanders at 16 sites; and 4 participants reported approximately 13 Monarchs at 4 sites.

Habitat Enhancement for the Burrowing Owl and Sprague's Pipit is accomplished through strategic cropland conversion to enlarge pastures and reduce fragmentation, and strategic (wildlife-friendly) fencing to improve pasture health. Fencing and alternate water source developments for livestock are also supported in order to preserve newly planted and native prairie areas. HE for the Loggerhead Shrike (2003-2009) was accomplished through converting cultivated land to pasture to enhance foraging opportunities. An additional benefit to the conversion of cropland back to pasture is that carbon, including greenhouse gases, is sequestered with the seeding of cropland to pasture. Piping Plover HE is accomplished through fencing and alternate water developments to keep livestock away from shorelines used by plovers. Preference will be given to projects near areas that currently have or recently had nesting owls, nesting pipits, nesting plovers or shoreline designated as critical Piping Plover habitat. All projects must be adjacent to or near existing grassland. A 12-year binding agreement is signed by NS and the landowner, requiring the landowner to maintain the enhanced habitat and to participate in the annual census of the target species to evaluate its use of the enhanced work. In 2018-19, two fencing projects for Burrowing Owls were undertaken.

All program participants in 2018 received a spring greeting and census card(s), a spring and winter events list, a Stewards of Saskatchewan annual newsletter/update, and our 2019 Species at Risk Calendar. New participants received information on relevant topics through a Conservation Toolbox folder of various materials including information on conservation easements, and if requested, a gate sign or certificate in recognition of their commitment to prairie habitat stewardship.

Three Conservation Awareness Day events were held in the communities of Arcola, Mankota, and Consul in appreciation of program participants, and attracted almost 100 landowners all together. Contact with rural and urban residents as well as further education and awareness was accomplished through staff attendance at 11 events, 6 news releases, 2 free advertisements, 12 published articles, and 7 public presentations.

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Most importantly, Nature Saskatchewan extends a warm thank you to all of the landowners participating in these programs. Without their support and interest, the implementation of this project would not be possible.

Thank you!

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1.0 INTRODUCTION

1.1 Operation Burrowing Owl, Rare Plant Rescue, Shrubs for Shrikes, Plovers on Shore and the Stewards of Saskatchewan banner program

Operation Burrowing Owl (OBO), Rare Plant Rescue (RPR), Shrubs for Shrikes (SFS), Plovers on Shore (POS) and the Stewards of Saskatchewan (SOS) banner program make up the suite of Nature Saskatchewan's Stewards of Saskatchewan voluntary habitat stewardship programs for species at risk (SAR). The SOS suite of programs are long-running, with OBO initiated in 1987, RPR in 2002, SFS in 2003, POS in 2008, and finally the SOS banner program in 2010. All five programs have similar goals – to work with rural landowners to raise awareness and conserve habitat for SAR.

The prairie region, as well as its biological diversity, is one of our most endangered landscapes. In 2001, only 21% of former grasslands in Saskatchewan remained as natural habitat, and in highly arable areas of the province, only 2% of natural grasslands remained (Hammermeister et al. 2001). That number has more recently been estimated to be even lower with approximately 13.7-15% of grassland remaining in Saskatchewan (Doke Sawatzky 2018). Active stewardship by landowners is integral to the conservation of this remaining prairie landscape, as 85% of southern Saskatchewan's native and tame grasslands are privately owned; and the cultivation of prairie, draining of wetlands, and removal of shelterbelts and shrubs (e.g., for agriculture and oil and gas development) are causing habitat degradation or loss in Saskatchewan. Further, 40% of the remaining native grasslands are under private ownership (Michalsky and Saunders 2009); however, SARA only applies to federally owned lands. Thus, the SOS programs aim to bridge the gap between where federal SAR habitat protection measures apply, and where a large amount of native prairie and SAR occur in the province.

Operation Burrowing Owl was launched in 1987 by Nature Saskatchewan (NS), Saskatchewan Wildlife Federation, World Wildlife Fund Canada, Wildlife Habitat Canada, and Saskatchewan Environment and Resource Management (now Saskatchewan Ministry of Environment) in response to a 1986 intensive survey that revealed far fewer Burrowing Owls than anticipated and significant habitat loss in the owl's core breeding area, the Regina Plain. There was an urgent need for a program directed at private landowners to raise awareness about the Burrowing Owl and to conserve its remaining habitat. Nature Saskatchewan assumed full responsibility for OBO in 1990 and has solely delivered OBO since that time. The OBO program is one of Canada's longest running stewardship programs.

Rare Plant Rescue was launched in 2002 to address the need to target protection of rare plants. The program engages landowners in conserving habitat for native plant species at risk. Rural landowners with habitat that supports plant SAR are informed of this natural heritage and invited to join the program to further conserve these areas. Rare Plant Rescue prevents inadvertent destruction of habitat by educating landowners, encouraging informed stewardship, and building relationships, all of which can lead to stronger forms of protection. Development and delivery of RPR is modeled after the OBO program, and is coordinated with the Native Plant Society of

Saskatchewan (NPSS), the Saskatchewan Conservation Data Centre (SK CDC), and the Canadian Wildlife Service (CWS).

Following the success of OBO and RPR, SFS was launched in 2003 to profile the Loggerhead Shrike as another conservation symbol for conserving wildlife habitat. There is considerable overlap in habitat use by shrikes and Burrowing Owls, as demonstrated by the numerous reports of shrikes by OBO participants. In 2002, the Loggerhead Shrike was included in OBO outreach after the Prairie Loggerhead Shrike Recovery Team approached NS to undertake stewardship activities for this species. Landowners responded favorably to undertaking stewardship activities for shrikes, leading to the launch of SFS as a separate program.

In early 2008, Critical Habitat for the Piping Plover was designated in Saskatchewan. The Piping Plover was the first species listed under the federal *Species at Risk Act* (SARA) for which Critical Habitat had been designated. Plovers on Shore was launched that spring in response to the unique opportunity to target habitat for stewardship. The Piping Plover population has been declining since the 1940s, and there have been intense recovery efforts and research over the years for this species. As a result of International Piping Plover Breeding Censuses, which have taken place every five years since 1991 with participation from all jurisdictions in North America that support Piping Plovers, essential insight into plover population trends, distribution, and movement was available to determine important Piping Plover habitat. Past census results show that Saskatchewan has supported more plovers than any other jurisdiction (Skeel 1991, Skeel et al. 1996, Dunlop 2001, Hjertaas 2006). Plovers on Shore focuses on working with landowners that have Piping Plover Critical Habitat, or confirmed Piping Plover breeding pairs, to increase awareness and conserve those shorelines and wetlands.

In 2010, a fifth program, the SOS banner program, was added to the program suite to conserve habitat for all other SAR, particularly the Sprague's Pipit. This threatened prairie bird relies on large tracts of native prairie, and has declined together with this disappearing landscape. Along with other bird SAR (e.g., Ferruginous Hawks, Bobolinks, Common Nighthawks, etc.), the SOS banner program targets a wide variety of species such as Monarchs, Tiger Salamanders, Northern Leopard Frogs, and American Badgers. Awareness is being raised, and habitat conservation encouraged among landowners whose land supports these and other animal SAR not already targeted by one of the other existing programs.

A landowner can join one or more of the stewardship programs in the following ways. Landowners with nesting Burrowing Owls, Loggerhead Shrikes, Piping Plovers, Sprague's Pipits, or other animal SAR in the year of contact with program staff are eligible to participate, and thereafter remain in the program(s) whether or not the target species returns in following years. This comprises the primary way in which OBO, SFS, POS, and SOS banner participants are gained. Landowners with land that is designated as Critical Habitat are also eligible to participate. A landowner can join RPR by having one of the target plant SAR (or a historical occurrence) on their land, or by having suitable habitat for a target species at the time of signing up for the program. Participants thereafter remain in the program for as long as the habitat is maintained.

Participants sign a voluntary agreement to conserve the species' habitat by not cultivating the land or nearby grassland (protecting rare plant habitat and nesting and foraging habitat for owls,

pipits, and other species), retaining shrubs and/or trees (shrike nesting habitat), conserving shorelines and wetlands (nesting and feeding habitat for plovers), and not unduly disturbing the target plant or animal. The voluntary agreement is indefinite and only expires upon request. Landowners can also complete a Habitat Enhancement (HE) project to benefit owls, pipits, or plovers, and thus, join the respective program; a 12-year binding agreement to maintain the enhanced habitat is signed.

In return for program participation, the landowner is recognized for their role in conservation and is provided with an OBO, RPR, SFS, POS, or SOS banner program gate sign (if desired) as well as suggestions and resources for maintaining the habitat they are conserving. Participants who no longer have the target species on their land are strongly encouraged to continue conserving grassland and riparian habitat to accommodate future recruitment to the area through dispersal or a potential population increase, and to benefit other grassland species.

A common newsletter was established in 2002 under the banner name of Stewards of Saskatchewan and includes articles relevant to all SOS programs as well as program updates. It is sent to all program participants, and creates a sense of community among participants. Through the annual SOS newsletter, update, and other printed materials, participants are kept informed about species at risk along with other conservation news and program activities. Participants also receive other benefits such as an annual SAR calendar, invitations to Conservation Appreciation Dinners, and have the opportunity to receive financial support for HE projects.

Since 2012, RPR participants with occurrences of federally-listed plant SAR are also given the option to participate in the NPSS's Rare Plants and Ranchers program. Upon completion of a landowner interview and site assessment by an agrologist from the NPSS, participants receive a free, personalized beneficial management plan for their property. The NPSS will provide logistical and financial support to help participants implement management changes suggested in these plans. The recommended management changes benefit both plant species at risk habitat and the landowner's operation (e.g., through invasive weed control).

Voluntary habitat stewardship, through a program that provides recognition and information, is an effective and cost-efficient means of habitat conservation. An evaluation of the initial effectiveness of the OBO program (from 1987-1994) demonstrated that enrollment in OBO had a significant impact on retention of grassland habitat, even during an era of accelerated habitat loss (Warnock and Skeel 2004). A comparison of 108 grassland sites on the Regina Plain enrolled in OBO in 1987, to 98 nearby randomly selected sites in grassland in 1987 (and not enrolled in OBO), revealed that the amount of grassland remaining in 1994 compared to 1987 was significantly higher on sites enrolled in OBO (66%) than at random sites (48%). This study strongly suggests that voluntary habitat stewardship, where no legally binding agreement is signed, can be a highly effective strategy to conserve habitat.

Through landowner contact, the SOS programs maintain and strengthen landowner commitment to conservation. Through ongoing awareness and education, they continue to dispel myths about SAR, promote a greater understanding of the factors causing the decline of target SAR, and

identify actions individuals can take to conserve habitat. Through promotion of these programs, additional habitat will be conserved for SAR in our province.

1.2 Program Goals in 2018

1.2.1 OBO, SFS, POS, and SOS banner Program Goals in 2018

The OBO, SFS, POS, and SOS banner programs have four main objectives:

1. **Habitat Stewardship** – To conserve prairie habitat for the endangered Burrowing Owl and Piping Plover, the threatened Loggerhead Shrike and Sprague’s Pipit, and other SAR through voluntary stewardship actions and agreements and informed land stewardship. These target species serve as conservation symbols to garner support for biodiversity and other native prairie species. Landowners are encouraged to adopt SAR Beneficial Management Practices (BMP) through site-specific plans developed with program staff. Conservation easements (CEs) are promoted as a tool to protect ecologically significant lands in perpetuity.
2. **Site Identification and Population Monitoring** – To identify the locations of Burrowing Owls, Loggerhead Shrikes, Piping Plovers, as well as other prairie SAR, and to monitor target species’ (Burrowing Owl, Loggerhead Shrike, Piping Plover, Barn Swallow, Ferruginous Hawk, Short-eared Owl, American Badger, Sprague's Pipit, Bobolink, Common Nighthawk, Northern Leopard Frog, Tiger Salamander, and Monarch) population numbers and distribution changes through an annual census at enrolled sites. Monitoring also provides an evaluation of the success of conservation actions in maintaining and increasing population numbers. Research studies to determine factors driving population declines of prairie species are supported.
3. **Education and Awareness** – To provide information and increase awareness among producers and rural and urban residents about the Burrowing Owl, Loggerhead Shrike, Piping Plover, Sprague’s Pipit, and other SAR; their natural history, habitat requirements and threats; other prairie species and their habitat needs; and the importance of conserving prairie habitat as well as species diversity.
4. **Habitat Enhancement** - To assist landowners with HE and restoration through seeding cropland to grassland using native seed in order to enlarge pastures and reduce fragmentation for Burrowing Owls, and through creating alternate water sources and installing wildlife-friendly fencing to improve habitat for Burrowing Owls or Sprague’s Pipers and to protect shorelines for Piping Plovers. These actions also improve habitat for other wildlife species and sequester carbon, including greenhouse gas emissions. Strategic fencing and water developments for livestock are also supported in order to preserve newly planted grasses in addition to existing native prairie, and/or shoreline.

Kaytlyn Burrows, Emily Putz, and Rebecca Magnus were program coordinators with the responsibility to develop and deliver OBO, SFS, POS and the SOS banner programs. Michelle Lang and Jordan Rustad assisted for 12 weeks as Habitat Stewardship Assistants, contacting and visiting landowners, collecting information, and helping with workshops and events.

1.2.2 RPR Program Goals in 2018

The RPR program has four main objectives:

1. **Habitat Stewardship** – To conserve habitat for native plant SAR through voluntary stewardship actions and agreements, and informed private land management. Highest priority species include nine federally listed plant species at risk: the endangered Small-flowered Sand-verbena, threatened (possibly extirpated from Saskatchewan) Small White Lady’s-slipper, threatened Tiny Cryptantha, threatened Western Spiderwort, threatened Slender Mouse-ear-cress, threatened Smooth Goosefoot, special concern Hairy Prairie-clover, special concern Buffalograss, special concern Dwarf Woollyheads, as well as seven species of concern identified by the Saskatchewan Conservation Data Centre (SK CDC) - Bur Ragweed (S2), Prickly Milk-vetch (S2), Plains Grape-fern (S2), Upland Evening-primrose (S1), Small Lupine (S3), Beaked Annual Skeletonweed (S2), and Powell’s Saltbush (S1) (Appendix 1). There are a number of additional plant species ranked as extremely rare (S1) by the SK CDC that occur in ecoregions with the heaviest human activity (Aspen Parkland, Moist Mixed Grassland, Mixed Grassland, and Cypress Upland), and that are also of interest to RPR but not specifically targeted. Landowners are encouraged to participate in RPR and sign a voluntary stewardship agreement. Conservation easements are promoted as a tool to protect ecologically significant lands in perpetuity. The RPR stewards participating in the Rare Plants and Ranchers project are encouraged to improve their rare plant habitat through site-specific management plans and associated financial support.
2. **Site Identification** – To identify previously unknown locations of rare plants and rare plant habitat throughout southern Saskatchewan. Locations to search for rare plants are identified through information obtained from the SK CDC, Prairie and Northern Region CWS, NPSS surveyors, other agency collaboration, and media promotion.
3. **Population Monitoring** – To monitor rare plant population numbers and distribution changes, including gathering data on land management that may affect these populations. Monitoring occurs through on-site visits, conversations with participating landowners, reports from the public, and records from other conservation agencies. Monitoring also provides an evaluation of the success of conservation actions in maintaining and increasing population numbers.
4. **Education and Awareness** – To provide information to, and increase awareness among, producers and rural and urban residents about rare plant species, their natural history, habitat requirements, and threats; the status of native grasslands; and the importance of conserving native prairie habitat and biodiversity.

Emily Putz and Ashley Vass were the program coordinators responsible for developing and delivering RPR in 2018-19. Emily Putz was also the RPR assistant in the summer of 2018. Emily and Ashley conducted rare plant search and monitoring, visited landowners, collected data, and helped with workshops and events.

2.0 HABITAT STEWARDSHIP

2.1 Species at Risk Reports

2.1.1 Reporting of Burrowing Owls, Loggerhead Shrikes, Piping Plovers, Sprague's Pipits, and other species at risk.

Reporting of Burrowing Owls, Loggerhead Shrikes, Piping Plovers, Sprague's Pipits, and other species at risk (e.g., Northern Leopard Frogs and Monarchs) to staff is encouraged as reports of sightings are a means of increasing participants and contributing data to the Saskatchewan Conservation Data Centre (SK CDC). Reports of sightings also help to better understand distributions of these species in Saskatchewan, enabling outreach activities to be focused in target areas.

Reports of sightings are received via NS's toll-free Hoot Line (1-800-667-4668). Reporting is encouraged through advertising and articles in rural newspapers and various newsletters, and through a "Wanted" poster. Shrikes are also reported through the OBO annual census, and owl and shrike locations are provided by other agencies involved in work on these species. Whenever possible, reports of sightings are verified with the landowners at the location of the sightings. Although POS encourages reporting sightings of Piping Plovers, this cryptic bird is less likely to be noticed, as it occurs along shoreline locations, most of which are not often frequented by people. The Sprague's Pipit is also cryptic and not widely known, and therefore, not often reported.

Burrowing Owl Reports. There were 12 reports to the Hoot Line in 2018 to report 22 Burrowing Owl sightings, including 6 pairs, 6 singles, and 4 young. When asked what prompted the caller to report a Burrowing Owl sighting using the Hoot Line, the most common response was that they are with, or were referred by, a partner agency (Table 1).

Loggerhead Shrike Reports. There were 20 reports to the Hoot Line to report Loggerhead Shrike sightings including 16 pairs, 7 singles, and 12 young. When asked what prompted the caller to report a shrike sighting, the most common responses were that they had called before, saw an article or brochure, or participate in one of the stewardship programs (Table 1).

Piping Plover, Sprague's Pipit, and other Species at Risk Reports. There were 14 other Hoot Line reports including 4 Monarch reports, 3 calls each for Short-eared Owls and Ferruginous Hawks, and 1 report each for a Northern Leopard Frog, a Sprague's Pipit, Bobolinks, and Chestnut-collared Longspurs. There were no reports to the Hoot Line for Piping Plovers. The most common response to what prompted the caller to report the sighting was that they had called before (Table 1).

Table 1. Prompts for callers reporting Burrowing Owl; Loggerhead Shrike; and Piping Plover, Sprague’s Pipit, and other species at risk sightings.

Awareness of Hoot Line Through:	Number of Callers Reporting Owls	Number of Callers Reporting Shrikes	Number of Callers Reporting Plovers, Pipits, and Other Species
Newspaper ad/article/brochure/magnet	1	3	0
OBO/SFS/POS/SOS participant	1	3	2
Wanted posters	0	0	0
Partner Agency	5	0	0
Called before	1	12	10
Radio/Television	0	1	0
Nature Sask website/social media	2	0	0
NS member	0	1	0
Other/Unknown	2	0	2
TOTAL	12	20	14

Recommendations:

- In summer of 2019, contact OBO participants who reported shrikes on their land through their OBO census card, and verify sightings and land locations. Request these landowners watch for, and report sightings in the current year; offer to visit those reporting shrikes and invite them to join SFS.
- As above, for owl and shrike sightings provided by partner agencies.
- Place ads/articles in local newspapers and town and rural municipal offices asking landowners to report sightings to the Hoot Line.
- Maintain regular contact with Recovery Teams and current researchers in the field and with organizations working in target species’ areas (e.g., Water Security Agency (WSA), Moose Jaw River Watershed Stewards, SK CDC, and the Nature Conservancy of Canada (NCC)).

2.1.2 Reporting of Rare Plants to Rare Plant Rescue

Reporting of rare plant locations to RPR by the public is not common since the target species are not well known, nor are they easy to distinguish from similar related species. However, reporting is encouraged since once verified, new sightings are a means of increasing the number of RPR participants and contributing data to the SK CDC. Reporting of sightings is solicited through working with other agencies, as well as articles in various newsletters and rural newspapers.

Similar to other program target species, rare plants are usually reported to RPR in one of three ways. Plants can be reported by other conservation agencies, often surveying for rare plants in cooperation with Nature Saskatchewan. In addition, members of the NPSS, many of whom are amateur botanists, may report rare plant sightings to RPR or NPSS (which forwards sightings to RPR with the landowner's permission). Finally, the public can report rare plant sightings to NS's toll-free Hoot Line (1-800-667-4668).

A total of 27 public reports were made to Rare Plant Rescue in 2018: 24 were in response to a news release regarding the Small White Lady's-slipper but were reports for occurrences of other provincially rare lady-slipper orchids (Stemless, Yellow, Ram's-head, and Franklin's). The three remaining reports were for Yucca and Goosefoot species (one Smooth Goosefoot and one look-alike).

2.2 Voluntary Habitat Stewardship Agreements with Landowners

Participants in OBO, RPR, SFS, POS, and the SOS banner program sign a voluntary "handshake" agreement in which they agree to conserve the nesting areas and/or habitat for current or past records of owls, rare plants, shrikes, plovers, pipits, and/or other SAR by not cultivating the grasslands/shorelines or removing shrubs and/or trees, and to not alter the nest site or unduly disturb the species. The agreement is not legally-binding, making this commitment more attractive to the landowner (Appendix 2). Each agreement can include one or multiple sites. A site is all or a portion of a 160-acre quarter section (approximately 65 hectares) of land. The number of sites and acres enrolled can fluctuate from year to year, independently from the number of participants, based on current participants adding or removing sites.

There are five ways to participate in OBO, RPR, SFS, POS, and/or the SOS banner program:

1. *Targeted OBO, SFS, and SOS banner program Participants:* Targeted OBO, SFS, and SOS participants sign a voluntary agreement and own or manage land where there are one or more nesting pairs of Burrowing Owls or Loggerhead Shrikes, or other SAR, in the current year or recent past. These comprise the majority of participants, and are part of the OBO, SFS, and SOS annual census for the purpose of monitoring owl, shrike, and select other SAR population trends.
2. *Targeted POS Participants:* Targeted POS participants sign a voluntary agreement and own or manage land that is federally designated as Piping Plover Critical Habitat, has one or more nesting pairs of Piping Plovers in the year of contact with POS, or had reported nesting pairs from the 2016 International Piping Plover Breeding Census. A POS annual census monitors plover use at POS sites. Some important plover sites are monitored regularly by other agencies, and NS coordinates the Saskatchewan portion of the International Piping Plover Breeding Census which monitors all plover sites every five years, most recently in June 2016.
3. *Targeted RPR Participants:* Targeted RPR participants own or manage land in target areas of the province (within the known range of a plant SAR). These lands may or may not have rare plants, but must have habitat capable of supporting a rare plant species. This ensures that sites

that might support a rare species' seed bank, or might serve as future habitat, are not overlooked for protection.

4. *HE Participants*: HE participants sign a binding agreement to undertake an HE project for owls, pipits, or plovers. Ideal sites are areas adjacent to or nearby existing pasture. Ideal sites have a current or historical record of nesting owls in the past 5 years, within 3-5 km of the project site, are within designated Piping Plover Critical Habitat or have a verified breeding pair in the current year or recent past, or have a verified Sprague's Pipit breeding pair in the current year or recent past. Targeted participants that subsequently undertake a HE project are considered both targeted and HE participants.

5. *Non-targeted Participants*: Non-targeted participants own or manage grassland with or without a SAR in the year of contact, but no agreement is signed. These participants receive our bi-annual mail outs.

Land ownership or management can be private or public. Examples of public lands managed by participants include cemeteries, school grounds, golf courses, ball diamonds, race tracks, and Crown lands.

Operation Burrowing Owl

In 2018, 351 OBO participants were conserving approximately 62,057 hectares (153,347 acres) of habitat at 1,197 sites. This year, 5 new landowners joined the OBO program, conserving a total of 1,093 hectares (2,702 acres) at 18 sites.

Of the 351 OBO participants, 341 manage private land and are conserving approximately 44,490 hectares (109,936 acres) at 1,180 sites (99% of the total sites), and 10 manage public lands and are conserving approximately 17,568 hectares (43,411 acres) at 17 sites.

In 2018, 8 participants (27 sites) were removed from OBO; six due to having sold their land and/or they passed away, one participant withdrew due to old age, and one participant had cultivated his land and was no longer interested.

Shrubs for Shrikes

In 2018, 242 SFS participants were conserving 29,662 hectares (73,297 acres) of habitat at 556 sites. This year 16 new landowners joined the SFS program, conserving 779 hectares (1,926 acres) at 17 sites.

Of the 242 SFS participants, 215 manage private land and are conserving 29,157 hectares (72,048 acres) at 523 sites (94% of the total sites), and 27 manage public lands and are conserving 505 hectares (1,249 acres) at 33 sites. Public lands being conserved include seventeen cemeteries, three regional parks, two provincial parks, one town and one city park, an urban high school yard, public pasture land, and a museum. All SFS sites have a combination of shrubs and/or trees near open habitat.

In 2018, three participants (three sites) withdrew from SFS due to having sold their land or because they passed away.

Plovers on Shore

In 2018, 63 POS participants were conserving 225 km (140 miles) of shoreline habitat at 198 sites. This year, four new participants signed voluntary stewardship agreements and are conserving a total of 19 km (12 miles) of shoreline habitat at 23 new sites.

Of the 63 POS participants, 58 manage private land and are conserving 216 km (134 miles) of shoreline at 189 sites (95% of the total sites), and five manage public lands and are conserving 9 km (6 miles) at nine sites.

In 2018, four participants (five sites) were removed from POS due to having sold their land, passing away, being too elderly, or no longer being interested.

Stewards of Saskatchewan banner program

In 2018, 132 SOS banner program participants were conserving 28,569 hectares (70,595 acres) of habitat at 492 sites. This year, 12 landowners joined the SOS program, conserving 12,218 hectares (30,190 acres) at 191 sites. SOS participants are conserving land that supports a variety of SAR including Sprague's Pipits, Bobolinks, Ferruginous Hawks, Barn Swallows, Common Nighthawks, Short-eared Owls, Horned Grebes, Long-billed Curlews, American Badgers, Northern Leopard Frogs, Great Plains Toads, Tiger Salamanders, and Monarchs.

Of the 132 SOS participants, 125 manage private land and are conserving 27,184 hectares (67,174 acres) at 465 sites (95% of total sites), and seven participants are conserving 1,384 hectares (3,421 acres) at 27 public sites. Public sites consist of public pasture land, two provincial parks, a regional park, and a city park.

In 2018, one participant (one site) was removed from SOS due to having passed away.

Rare Plant Rescue

In 2018, 84 RPR participants were conserving 58,048 hectares (143,437 acres) of habitat at 976 sites. This year, five landowners signed voluntary agreements (two were previously categorized as verbal participants) and are conserving 13,939 hectares (34,445 acres) at 217 sites. Of the 84 participants, 17 are categorized as verbal participants, and 40 have land currently supporting a federally or provincially rare plant species.

RPR Stewards are currently conserving approximately 58,047 hectares (143,437 acres) of native prairie habitat for rare plants. Of this, approximately 18,044 hectares (44,585 acres) are privately owned lands, 4,738 hectares (11,710 acres) are public lands, 35,072 hectares (86,662 acres) are privately managed provincial Crown lands, and 194 hectares (480 acres) are privately managed federal lands.

No participants withdrew from RPR in 2018.

Recommendations:

- Contact OBO, SFS and POS participants who were not reached through the 2018 annual censuses to verify land ownership status and contact information.

- Contact RPR targeted participants who have not been reached in the last several years; encourage those who have a verbal agreement to sign a voluntary stewardship agreement.
- Determine the current owners/managers of lands which were previously part of the programs under landowners who have sold their land, or have passed away, and encourage the current owners/managers to join the applicable programs.

2.3 Communications with Landowners

2.3.1 Personal Visits with Landowners

Program staff contact landowners to arrange a visit on-site at their ranch/farm as this is an important way to engage landowners in stewardship actions. We introduce ourselves as a part of NS and tell them that we are calling concerning one of our stewardship programs. We describe this as a *land stewardship* program interested in conserving land for our target species. We ask if we may stop by for a visit and give them some information on the target species and our programs. Program staff also conduct cold call visits on occasion. Landowners are approached in a similar manner as a phone call.

As part of our program objectives, we do as many on-site visits with landholders as possible as this enhances the relationship between the participant and the program. During a visit, we discuss any survey findings, the program, how the landholder can be involved, any conservation concerns, and we provide landholders with stewardship information including a conservation toolbox (or updated materials). A visit form is completed for all potential and current program participants during visits (Appendix 3). Landowner visits also include site checks on enrolled land to ensure compliance and confirm presence of target species (with the landowner, if desired), whenever possible. For RPR, a visit is conducted either before or after a search of the appropriate habitat for the target plant species.

Communication with landowners also occurs during our Conservation Awareness Day events, as well as via phone calls for the annual program census (excluding RPR), and responding to general inquiries or species at risk sightings reported to the Hoot Line.

Operation Burrowing Owl

In 2018-19, we contacted or attempted to contact 83 landowners, resulting in 50 on-site visits with current or potential OBO participants:

- 8 potential OBO participant visits resulting in 5 new OBO participants
- 42 current OBO participant visits (5 potential and 2 current HE visits)

Rare Plant Rescue

In 2018-19, we contacted or attempted to contact 32 landowners, resulting in 22 on-site visits with current and potential RPR participants:

- 8 potential RPR participant visits resulting in 5 newly signed RPR participants (3 new and 2 previously verbal only)
- 14 current RPR participant visits

Shrubs for Shrikes

In 2018-19, we contacted or attempted to contact 61 landowners, resulting in 46 visits with current or potential SFS participants:

- 22 potential SFS participant visits resulting in 16 new SFS participants
- 24 current SFS participant visits

Plovers on Shore

In 2018-19, we contacted or attempted to contact 28 landowners, resulting in 17 on-site visits with potential or current POS participants:

- 12 potential POS participant visits resulting in 4 new POS participants
- 5 current POS participant visits (2 potential HE visits)

Stewards of Saskatchewan banner program

In 2018-19, we contacted or attempted to contact 42 landowners, resulting in 36 visits with potential or current SOS banner program participants:

- 19 potential SOS participant visits resulting in 12 new SOS participants
- 17 current SOS participant visit (3 potential HE visits)

Recommendations:

- Continue to strengthen the stewardship programs relationship with rural landowners through personal, on-site visits.
- Target OBO, SFS, and SOS landowner visits in areas where new owl, shrike, and other SAR reports come in each year, and where past initiatives have been few. Continue to target POS visits to landowners with breeding pairs as determined from the 2016 International Piping Plover Census.
- Continue to work with other conservation organizations to find landowners and managers that have already exhibited interest in conservation and who have land in areas where target species may be found. Contact the potential stewards whose interest in the programs are forwarded by a partner organization.
- Continue to communicate with potential landowners over time, since contact over several years appears to help gain participants.

- Remain in contact with landowners previously contacted by RPR who were receptive to searches, but did not sign an agreement. Experience has shown that some of these landowners will be receptive to signing an agreement in the second year of being contacted by RPR; therefore, a strong effort to sign these participants will be made.

2.3.2 Conservation Toolbox

The Conservation Toolbox is a collection of conservation options for interested landowners. This information is discussed with landowners during personal visits and provided to them in a folder to keep for reference at a later time. Items in the toolbox are also provided individually at venues other than landowner visits.

In 2018, toolboxes included the following items (Appendix 4):

- Voluntary Stewardship Agreement forms (for non-participants, see Appendix 2)
- All program brochures
- Information about the Burrowing Owl, Loggerhead Shrike, Piping Plover, Sprague's Pipit, Monarch, as well as other prairie species at risk and other wildlife
- *Rare Plants of Saskatchewan* pocket field guide (RPR only) (excluded from Appendix)
- Invasive Plant Species ID Guide produced by Saskatchewan Forage Council (RPR only) (excluded from Appendix)
- Fall 2018/Spring 2019 SOS update/newsletter (Appendix 5)
- 2019 SAR calendar (Appendix 5)
- Common Conservation Myths Answered fact sheet produced by NS
- Summarized Beneficial Management Practices fact sheet, based on the Beneficial Management Practices for Species at Risk fact sheet produced through NS
- A general Beneficial Management Practices Sheet for rare plants (RPR only)
- Leaving a Legacy Conservation Easement information sheet produced by NS
- Wildlife Friendly Fences information produced by WSA (previously Saskatchewan Watershed Authority) (French version on reverse)
- Rare Plants and Ranchers – A Stewardship Solution fact sheet (RPR only)
- Native Plant Society of Saskatchewan's (NPSS) brochure (RPR only)
- NS privacy policy (French version on reverse)
- NS organization brochure
- Business card of the Habitat Stewardship Coordinator (excluded from Appendix)

Recommendation:

- Each year assess and update the contents of the conservation toolbox as part of ongoing review and development of landowner visit protocols. Add or remove materials in order to provide our program participants with the best available information to help them make informed stewardship decisions.

2.3.3 Stewards of Saskatchewan Newsletter

The SOS newsletter, compiled and printed in the fall, has kept program participants and others informed about activities and opportunities within the programs, and also provide information about prairie species and initiatives. The Fall 2018/Spring 2019 edition was mailed out in early December 2018 to all landowners participating in one or more of the stewardship programs. The mail-out included a winter greeting, newsletter outlining the latest program news and successes from our 2018 field season, a winter/spring events list, and our 2019 SAR calendar (Appendix 5).

2.3.4 Conservation Awareness Day Events

Conservation Awareness Day (CAD) events are directed towards our program participants, but other rural landowners and interested individuals are welcomed. These events provide an opportunity for our staff to visit and further develop working relationships with rural landowners, strengthen the relationship with participating stewards, and to recognize the stewards' efforts for conservation. Staff are able to communicate with landowners in an interactive format, while providing information on various conservation topics.

In 2018-19, staff hosted three CAD events (Table 2) in Arcola, SK on February 26, 2019, Consul, SK on March 12, 2019, and Mankota, SK on March 13, 2019. The locations were chosen based on proximity to, and number of stewards involved in, the stewardship programs, conservation issues facing the area, and locations of past CAD events. CAD events are promoted by personal invitations via mail-outs and phone calls to participating and potential program stewards. Select CAD events are occasionally promoted through NS social media/website and external advertisements.

The 2018-19 CAD events featured numerous presentations on topics including NS and the habitat stewardship programs; beneficial management practices for Burrowing Owls, Loggerhead Shrikes, and Piping Plovers; and common conservation myths. Partnering agencies and also delivered presentations, including Prairie Conservation Action Plan, South of the Divide Conservation Action Program Inc., Multiple Species at Risk (MULTISAR) Alberta Conservation Association, Grasslands National Park, WSA, Old Wives Watershed Association, NCC, and the Saskatchewan Burrowing Owl Interpretive Centre (SBOIC) with a live Burrowing Owl. Participants were able to meet an educational Burrowing Owl from SBOIC. The owl is an excellent tool for spreading awareness, and is especially popular with the children that attend the events. We also engaged the children who attended by setting up an activity table, complete with plush, puppet, and interactive SAR toys, temporary tattoos, crayons, markers, and SAR colouring books.



Figure 1. SOS staff presenting to landowners at the Arcola CAD.

Table 2. Attendance at Conservation Awareness Day events from 2003 to 2019.

Year	Location	Day	Date	Attendees
2003	Weyburn	Tuesday	June 24	6
2003	Assiniboia	Wednesday	June 25	7
2004	Bengough	Friday	August 27	11
2005	Assiniboia	Tuesday	August 16	11
2005	Outlook	Wednesday	August 17	21
2005	Cabri	Thursday	August 18	11
2006	Leader	Tuesday	July 25	11
2006	Bengough	Wednesday	July 26	13
2006	Midale	Thursday	July 27	14
2007	Elrose	Tuesday	June 19	12
2007	Milestone	Tuesday	October 2	22
2008	Moose Jaw	Tuesday	February 12	23
2008	Gull Lake	Wednesday	March 19	11
2008	Rockglen	Tuesday	October 21	18
2009	Dundurn	Tuesday	March 3	12
2009	Moose Jaw	Tuesday	July 7	52

2009	Khedive	Tuesday	July 14	30
2009	Spring Valley	Wednesday	July 15	34
2009	Claydon	Tuesday	November 7	46
2010	Shamrock	Wednesday	July 21	25
2010	Central Butte	Wednesday	November 3	21
2010	Claydon	Wednesday	November 10	24
2011	Avonlea	Tuesday	June 28	21
2011	Outlook	Thursday	October 27	20
2011	Claydon	Wednesday	November 30	31
2012	Cabri	Tuesday	July 17	17
2013	Wood Mountain Regional Park	Thursday	July 18	23
2013	Milestone	Thursday	November 28	32
2014	Eastend	Thursday	July 17	40
2014	Elbow	Thursday	December 4	18
2015	Val Marie	Thursday	February 26	40
2015	Hazenmore	Thursday	July 16	50
2015	Moose Jaw	Wednesday	December 2	30
2016	Willow Bunch	Thursday	July 21	30
2016	Frontier	Thursday	December 1	35
2017	Shaunavon	Thursday	February 23	40
2017	Regina	Thursday	July 20	125
2017	Glentworth	Wednesday	November 29	57
2018	Maple Creek	Thursday	February 22	47
2019	Arcola	Tuesday	February 26	60
2019	Consul	Tuesday	March 12	22
2019	Mankota	Wednesday	March 13	14

Recommendations:

- Continue to deliver CAD events in program target areas and partner with other conservation agencies. Include program presentations and other informational sessions of interest to landowners in the area, an educational Burrowing Owl, and provide a meal.
- Have the meal catered by a local, non-profit community group where possible.
- Continue to incorporate information or activities geared towards children or youth at future CAD events to help spread awareness about species at risk and conservation to younger generations as well.

2.3.5 Mail-Outs

In 2018-19, two mail-outs were sent to all program participants, and three invitation mail-outs were sent to selected landowners (Appendix 5).

- Spring Update and Census – All program participants were mailed a spring greeting including program updates, a summer/fall events list, 2018 grain bag recycling information, and the annual census card(s) (excluding RPR) in May 2018 (Appendix 5). This mail-out notified participants of program news and upcoming events that may be of interest to them, and provided OBO, SFS, POS, and SOS participants with the mail-in census card(s) to report owls, shrikes, plovers, and other SAR on their land.
- SOS Winter Greeting – All program participants were mailed a winter greeting letter, the SOS Fall 2018/Spring 2019 newsletter, a winter/spring events list, and the 2019 SAR calendar in December 2018. The newsletter keeps participants informed of SOS program and partner agency activities, and other relevant information, and the SAR Calendar features a Saskatchewan SAR each month, providing ID and natural history information as well as providing dates for when to watch out for SOS program target SAR.
- CAD Invitations – Three mail-outs were sent to selected landowners inviting them to attend the CAD events. Invitations were sent to landowners who lived within a reasonable travelling distance (within ~100 km) of the host community, and included potential and current participants in the programs, landowners visited in 2018-19, and partner agencies. The invitation outlined the agenda for the evening, including a free locally catered dinner.

2.4 Species-At-Risk Beneficial Management Practices Plans

To maintain and improve habitat for SAR, there are beneficial management practices (BMPs) that can be recommended to landowners that manage important prairie habitats in Saskatchewan. In 2008-09, NS developed the first site-specific management plans to help landowners decide which actions are appropriate for their operations to meet their management goals, and also to provide benefits to Burrowing Owls and Loggerhead Shrikes. In 2009-10, an expanded template for the SAR BMP plans was developed based on fact sheets drafted by a multi-agency project headed by Environment Canada. Templates were updated in 2016 (Appendix 6) following a survey with program participants and new plans for the BUOW, LOSH, PIPL, and SPPI were distributed in 2017. A limited number of plans (8 LOSH and 6 BUOW) were distributed in 2018-19 as SOS staff are currently working with partners (e.g. Canadian Wildlife Service and PCAP) to further update the templates to incorporate multi-SAR effects and recent species information.

A BMP checklist specific to habitat needs of BUOW, LOSH, PIPL, and SPPI, and how these might fit into the management of the landowner's operation, is discussed with the landowner during face-to-face visits. In addition, a few changes in practices as appropriate are suggested to the landowner with the goal to provide more suitable habitat for the species at risk and other wildlife. Landowners were implementing the majority of recommended BMPs for their land.

Recommendations:

- Finalize the updated templates and continue to distribute SAR BMP plans to program participants.

2.5 Rare Plants and Ranchers Program

In 2012, the NPSS launched the Rare Plants and Ranchers program. Rare Plants and Ranchers was created to build upon the RPR program, by working with its base of stewards and the rare plant habitat they are conserving. Participants in this program receive site-specific beneficial management plans for plant species at risk (SAR), developed by a Professional Agrologist using an ecosystem-based, multi-species approach. This program will improve plant species at risk habitat, and build upon the search and monitoring activities of RPR by updating known occurrence data and contributing new occurrence data.

Participation is free, and open to RPR current and potential participants who have one or more of the following federally listed plant species at risk on their land:

- Buffalograss (*Bouteloua dactyloides*)
- Dwarf Woolly-heads (*Psilocarphus brevissimus* var. *brevissimus*)
- Hairy Prairie-clover (*Dalea villosa* var. *villosa*)
- Slender Mouse-ear-cress (*Transberingia bursifolia* ssp. *virgata*)
- Small-flowered Sand-verbena (*Tripterocalyx micranthus*)
- Smooth Goosefoot (*Chenopodium subglabrum*)
- Tiny Cryptantha (*Cryptantha minima*)
- Western Spiderwort (*Tradescantia occidentalis* var. *occidentalis*)

New Rare Plants and Ranchers participants are recruited by the RPR coordinator from existing RPR participants; alternatively, eligible landowners can contact the coordinator and sign a voluntary stewardship agreement to join RPR and enter the program. To increase the program's reach, any interested landowners with federally-listed plant species on their land can also participate in the program, even if they have not signed a voluntary stewardship agreement with RPR.

In the summer or fall, the NPSS visits landowners to conduct an interview (Appendix 7) to determine current and historical factors (e.g., grazing and fire regimes, invasive species and other threats, etc.) to give context to the current state of the land and its species at risk. The NPSS then conducts a site assessment to determine the condition of the land parcel that has rare plants present. The site assessment protocol includes range and/or riparian health assessments, photo plots, population assessments of invasive species and species at risk, and takes into consideration any other factors relevant to the current condition of the land. The following winter, the NPSS synthesizes the information gathered at the interview and site assessment into a site-specific, comprehensive, beneficial management plan for plant species at risk.

The program has been well-received: five RPR landowners participated in this program in 2012,

six participated in 2013, and 6 participated in 2014. While we continue to encourage eligible current and new participants to join after RPR's hiatus, no new stewards joined in 2017, though activities continued to take place with existing participants. In 2018, two new stewards joined Rare Plants and Ranchers. Management plans for the 2012 participants were distributed in summer 2013, and subsequent years were delivered likewise. Management plans are adapted from Species at Risk Conservation Plans developed by the Alberta-based organizations MULTISAR and Operation Grassland Community (OGC) for landowners in Alberta's Grassland Natural Region. Suggestions in the management plans follow Prairie Plant Species at Risk Recovery Team recommendations, are based on best practices, and use a holistic approach, balancing the needs of the landowner's operation with the needs of rare plants and plant habitat.

Once landowners receive their management plan and if they decide to implement any suggested changes, the NPSS and RPR will provide on-going logistical support. NPSS secures funding to help landowners implement certain management changes on a cost-sharing basis. Interested stewards are cost prioritized and higher priority cases are given preference.

RPR conducts monitoring of rare plant populations on the participant's land twice over the course of their participation in Rare Plants and Ranchers. The rare plant population is first monitored before the participant receives their management plan, or before they adopt any management recommendations. After participants have received their management plans and recommendations have been implemented, ongoing monitoring by NPSS (site assessment) and RPR (rare plant monitoring) will reassess the land and determine any effects of recommendations on species at risk and habitat. This is an adaptive management process, meaning that, as necessary, management practices would be adjusted accordingly.

There are many benefits we anticipate to arise from this project. Landowners benefit by receiving a customized, comprehensive management plan for species at risk, free of charge. The NPSS also provides access to match funding and ongoing logistical support as landowners implement suggestions. Plant species at risk and their habitat will benefit as threats are reduced or eliminated, and beneficial behaviors are adopted or increased. Additional species at risk habitat may also be legally secured as information and logistical support on securing a conservation easement (CE) will be provided to participants. RPR participants all receive information on CEs when they join RPR, however, participation in the Rare Plants and Ranchers program is another valuable opportunity to discuss conservation options with landowners. Information on Rare Plants and Ranchers is also on the Rare Plant Rescue webpage to provide further information to individuals who may be interested in participating in the program. A Rare Plants and Ranchers fact sheet is also added to all RPR toolboxes to ensure that participants are aware of this initiative.

Recommendations:

- Maintain contact with the Rare Plants and Ranchers participants from previous years and with NPSS to keep track of if and when any management recommendations are implemented.

- Engage new landowners for the 2019 field season by calling current eligible RPR participants, and continuing to advertise the Rare Plants and Ranchers program through the SOS newsletter, Blue Jay, Native Plant News, Nature Saskatchewan website, and other outlets.

2.6 Stewardship Recognition

2.6.1 Gate Signs and Certificates

It is important to recognize good stewardship by landowners of our natural heritage so that landowners will be aware that their efforts are appreciated, and will be further encouraged. One of the principle ways that stewardship program participants are recognized is through the opportunity to receive a gate sign (Figure 2). Participants who decide not to request a gate sign are recognized through a certificate (Appendix 8). Some participants prefer to receive neither.

In 2018-19, 32 gate signs were provided to program participants: 3 OBO, 3 RPR, 13 SFS, 2 POS, and 11 SOS. Majority of gate signs were provided to new participants, however, some existing participants requested a new sign due to deterioration or damage to the old sign. Three certificates were provided to program participants: 2 OBO and 1 SFS.

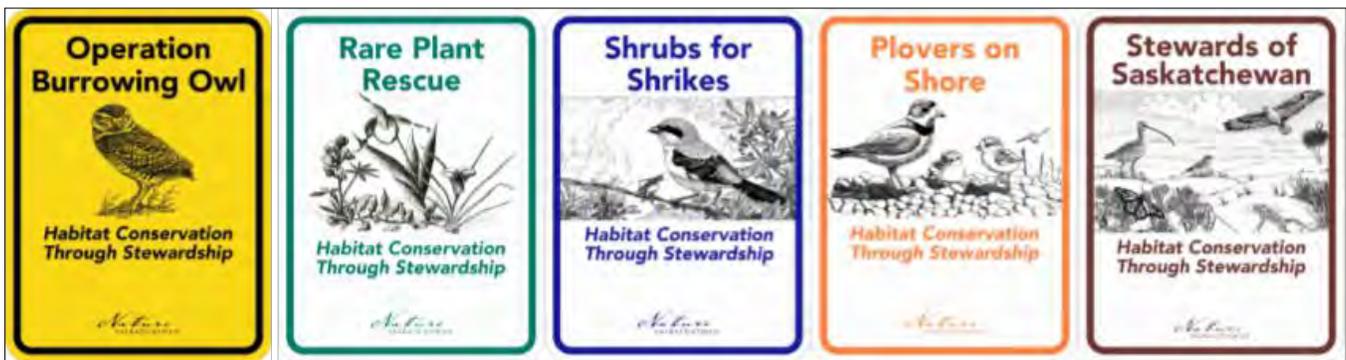


Figure 2. Operation Burrowing Owl, Rare Plant Rescue, Shrubs for Shrikes, Plovers on Shore, and Stewards of Saskatchewan banner program gate signs.

2.6.2 Graduated Rewards Program

In 2010-11, a Graduated Rewards Program was introduced to recognize program participants for their continued dedication to the conservation of SAR habitat. Rewards were provided to all program participants who had been a part of OBO, RPR, SFS or POS for five, ten, fifteen or twenty years. Copies of the *Kaufman Field Guide to Birds of North America* by Kenn Kaufman were provided to those landowners who have participated in an SOS program for five and ten years, a Burrowing Owl print by artist Holly Wallace was sent to those who had been involved in programming for fifteen years, and a set of binoculars was given to those who have been

participants for twenty years. The graduated rewards program was continued into 2011-12 but, due to funding limitations, was cancelled the following year and has been discontinued for the foreseeable future.

Recommendation:

- Re-instate the graduated rewards program if funding can be secured in the future.

2.7 Conservation Easements

NS promotes the protection of native habitat through CEs, a program in Saskatchewan enabled through *The Conservation Easements Act 1996*. Program participants and members of NS have been identified as people who may be interested in undertaking an easement because of their demonstrated commitment to conservation. A CE enables a private landowner to legally conserve native habitat or habitat of ecological importance in perpetuity while continuing to own and manage the land. When a landowner signs a CE agreement with a qualified conservation organization, the landowner agrees to restrict the type and amount of land use on the property to conserve its natural features. The CE is registered on the land title and transfers to any new owners. Initially, all CEs in Saskatchewan were donated by the landowner, with the possibility of receiving a tax receipt for the change in value of the land due to the easement. However, in order to encourage more easements, currently and since the early 2000s, most are paid easements with the landowner receiving a payment related to the change in value of the land.

NS actively undertook securement of CEs from 1998-2005, during which time nine CE agreements were signed with seven landowners, conserving a total of 2,035 acres. Since 2006, landowners that express interest to NS in a CE are referred for more information and the negotiation process to one of the agencies more active in securing easements, and the landowner is given the option to have NS as the easement holder if a CE agreement is signed. The latter is done only if the landowner requests communications with NS.

CEs were promoted to landowners through information provided in the SOS Conservation Toolbox (Appendix 4). Although NS receives a small number of calls from those possibly interested in CEs, most people likely directly contact agencies that negotiate CEs. A number of participants have signed easements with conservation agencies; these stewards were provided information about easements through our programs which may have influenced their decisions. In 2018-19, 71 landowners responded yes when asked if they would like more information on CEs during the annual census. SOS staff send these landowners a document provided by NCC that contains more information on CEs and NCC's contact information.

Recommendations:

- Meet with NCC in May 2019 for a staff training session on CEs.

- Actively promote easements on landowner visits, and refer interested landowners to NCC and other qualified agencies for further information and the negotiation process. Keep in contact with referred landowners.
- Ask landowners on the annual census card if they already have a CE or are interested in receiving information about CEs.

3.0 POPULATION MONITORING, SITE IDENTIFICATION, AND RESEARCH

OBO has been monitoring the Burrowing Owl population at OBO sites through an annual census since the inception of the program in 1987. This activity forms the basis for stewardship with landowners, and also provides data that can be used in continual assessment of the status of the species. The annual census provides valuable information on population changes and on nesting distribution throughout southern Saskatchewan, and involved a large number of landowners from its onset due to a successful initial recruitment of participants. The first SFS annual census at SFS sites occurred in 2004, following the initiation of the SFS program in 2003, and was modeled on the OBO census. Recruitment of landowners into SFS has been slower than recruitment of OBO participants; once a larger sample of SFS participants is established, it may be possible to evaluate population changes. The first annual census of Piping Plovers at POS sites was conducted in 2010. The first annual census of Stewards of Saskatchewan banner program participants was conducted in 2017.

In addition to population and distribution information, the annual censuses provide a means to evaluate the success of conservation actions in maintaining and in increasing the Burrowing Owl, Loggerhead Shrike, Piping Plover, and other species at risk at enrolled sites.

Distinct from the other programs, Rare Plant Rescue conducts searches for previously unknown occurrences of plant species at risk, and also monitors known populations on privately owned or privately managed land. These activities (particularly searches) form the basis for stewardship with landowners, but also provide data that can be used in continual assessment of the status of the species. From 2008 to 2012 and in 2017, RPR had a separate search team of staff who primarily focused on conducting searches for new rare plant occurrences. The other RPR team conducted population monitoring on lands already participating in the RPR program (in addition to some searching). This two-team approach allowed RPR to search new lands, contact potential landowner participants, as well as monitor known populations. Field activities are carried out during the growing season, from the first week of June to the end of August. Certain species are targeted during different times of the growing season, depending on when they are most detectable, related to flowering and fruiting times (Henderson 2009; Table 3).

Table 3. Flowering and fruiting times of RPR target species (Henderson, 2009).

Species (Latin)	Species (Common)	Flowering Time	Fruiting Time	Time of Highest Detectability
<i>Bouteloua dactyloides</i>	Buffalograss	Late June - July	July - Sept.	Late Aug. - early Sept.
<i>Chenopodium subglabrum</i>	Smooth Goosefoot	Late June - July	July - Aug.	July
<i>Cryptantha minima</i>	Tiny Cryptantha	June - July	July - Sept.	June - Aug.
<i>Cypripedium candidum</i>	Small White Lady's-slipper	May - June	--	May
<i>Dalea villosa</i> var. <i>villosa</i>	Hairy Prairie-clover	July - Aug.	Aug. - Sept.	Late July
<i>Psilocarphus brevissimus</i>	Dwarf Woolly-heads	June	June	June
<i>Tradescantia occidentalis</i>	Western Spiderwort	Late June - July	July	Late June - early July

<i>Transberingia bursifolia</i>	Slender Mouse-ear- cress	Late May - June	May-June	Late May - early June
<i>Tripterocalyx micranthus</i>	Small-flowered Sand- verbena	June - Aug.	July - Aug.	June - Aug.
<i>Ambrosia acanthicarpa</i>	Bur Ragweed	Aug. - Oct.	--	Aug.
<i>Astragalus kentrophyta</i> var. <i>kentrophyta</i>	Prickly Milk-vetch	June - July	Aug. - Sept.	June
<i>Atriplex powellii</i>	Powell's Saltbrush	June - July	--	--
<i>Botrychium campestre</i>	Prairie Dunewort	May - June	n/a	May - June
<i>Neoholmgrenia andina</i>	Upland Evening- primrose	June - July	--	June-July
<i>Lupinus pusillus</i> ssp. <i>pusillus</i>	Small Lupine	June (July)	--	June
<i>Shinnersoseris rostrata</i>	Beaked Annual Skeletonweed	Aug. (July - Sept.)	--	July-August

3.1 Information Gathering

The OBO, SFS, POS, and SOS banner program censuses are conducted in cooperation with program participants. All landowners participating as of May 31st of each year are mailed a census card in June for each site enrolled in one of the programs, and are asked to return the card to NS or otherwise provide the information. As an alternative to mailing back the census card, participants can phone in the information to the toll-free Hoot Line, submit it online, or reply by email. Participants who do not respond by July 15th are contacted for their census information by staff and volunteers.

In 2018, a total of 1,878 census cards were mailed out to OBO, SFS, POS, and SOS banner program participants. The 30th OBO annual census was conducted at 1,029 OBO sites; the 15th annual SFS census was conducted at 367 SFS sites; the 8th annual POS census was conducted at 180 sites; and the 2nd annual SOS banner program census was conducted at 302 sites. Due to timing constraints, the annual census cards were mailed out a week earlier than usual, on May 24th.

The OBO census card asked for the number of owls located on each OBO site, any changes in land use that may have occurred, presence of badgers or gophers on the site, as well as if the landowner had seen any Loggerhead Shrikes on their land (Appendix 5). This latter information has been collected (since 2002) to assist in recruiting SFS participants and in targeting delivery of the SFS program.

The SFS census card asked for the number of shrikes located on each SFS site, nest site location (shelterbelt, hedge, coniferous tree, deciduous tree, shrub patch), the type of habitat surrounding the nest (native grass, mixed grass, tame grass, or cultivated), and the land use surrounding the nest habitat (occupied farmyard, abandoned farmyard, cemetery, roadside, golf course, ball diamond/fairground, or other) (Appendix 5).

The POS census card asked for the number of plovers located at each site, beach habitat size, name of the water body, if there was water present, the type of surrounding habitat (native, tame,

or cultivated), if the pasture is being grazed, and if the beach width is greater than 30 feet (Appendix 5).

The SOS banner program census card asked for the number of adults/chicks/nests observed for the Barn Swallow and Ferruginous Hawk, the number of adults observed for the Short-eared Owl and American Badger, the number of males seen or heard for Sprague's Pipit and Bobolink, the number of individuals seen or heard for Common Nighthawk, Northern Leopard Frog and Tiger Salamander, and the number of Monarch butterflies and/or caterpillars observed at each site. It also asks the type of habitat (native, tame, mixed, cultivated, occupied yard site, and/or abandoned yard site). Consultations with Recovery Team Leads, provincial biologists, and researchers helped define appropriate questions to include for each species that would allow data to be acquired from a general audience while still providing meaningful information for each species (Appendix 5).

The RPR program uses a different approach to track plant species at risk locations and numbers (see section 3.9 and 3.10).

3.2 Data Management and Use

In early 2012, a contractor was hired to create a web-based SOS database to house all information from the SOS programs. The database structure was completed in December 2012 and query formation was completed in early 2014, however, significant gaps remained. Funding was secured to hire a Database Technician in 2015 and again in 2017-18 to make the online database usable and functional. With technical assistance from an expert volunteer, the decision was made to create a new SOS database, as the 2014 version was insufficient for the purposes of housing all the SOS program data combined. This new database will address glitches that existed with the individual program databases, and eliminate duplication between the SOS programs (e.g., if a landowner is a participant in more than one program, then his or her information would have been stored in multiple databases). The new database will house information for all program contacts; including participants and other interested landowners, SAR locations, visits and materials distributed, and communications. It will also house information pertinent to the RPR program but not necessary for the OBO, SFS, POS, and SOS programs, such as search and monitoring information for rare plant species. All information will be standardized, making it easily accessible and allowing quick summaries to be generated. This will facilitate future planning and reporting. Much of the structure and programming was completed by the volunteer and more recently a candidate computer programmer has been selected to help with final completion of the database once enough funding can be secured to complete the work entirely.

Nature Saskatchewan works with the SKCDC on projects of common interest, and shares species information with the SKCDC. With landowners' permission, legal land locations of all recorded species at risk are provided to the SKCDC for their database along with new sites of rare plants; however, landowner contact and other information are kept confidential. RPR also notifies the SKCDC of historic records in their database that have been checked and what was found.

Information on the presence or non-presence of plant species, the location of the plants, population numbers, and site conditions are shared.

The primary role of the SKCDC is to inventory, research, and document the province's biological diversity in order to provide information on Saskatchewan's rare plants, animals, and natural communities. Information housed at the SKCDC is available to selected users, including to environmental developers who require the information to follow regulations and guidelines. Each year, the SKCDC receives numerous requests from industry concerning development projects such as oil and gas exploration and pipeline construction. For each request, the company is provided with a list of known occurrences and the status of rare plants and/or animals in the specified quarter section, township and range. If more specific information is needed on Burrowing Owl, target rare plants, Loggerhead Shrike, Piping Plover, and/or other SAR occurrences (e.g., year last reported), the company can contact NS directly.

This information is critical to reducing disturbance to many SAR because developers are expected to follow activity guidelines that have been established by Saskatchewan's Ministry of Environment for many listed species, including the Burrowing Owl, Loggerhead Shrike, and Piping Plover.

Recommendations:

- Once completed, enter new information into the central database, and continue to provide land locations of SAR to the SKCDC.

3.3 Operation Burrowing Owl Annual Census

3.3.1 Landowner Response

In June, 358 landowners were mailed the OBO census package. Of the 358 landowners mailed census cards, two did not provide census information because one passed away and one sold their land. Of the remaining 356 active participants, 22 are HE participants that receive census cards but are not included in population monitoring tallies until they have nesting owls on their HE site at some point; 15 reported an absence of owls and 7 did not respond to the census. Therefore, these 22 participants were not included in the following 90% response rate breakdown (based on 334 participants): 23% (75) returned their census card via mail, 2% (7) responded through the Hoot Line, 2% (5) responded with email, 6% (20) were visited by OBO staff, 1% (3) responded through the online census form, and 56% (186) were successfully reached by phone by staff and volunteers (Table 4). Approximately 10% (32) of the 334 participants provided no response in 2018 because they could not be reached by phone or visit after numerous attempts, or their number had become disconnected or reassigned.

Table 4. Response by Operation Burrowing Owl participants to the annual census: 1992-2018.

Year	Response to Census						Total Response	No. of OBO Participants Censused
	Mailed in Card	Hoot Line	Phone calls: Staff & Volunteers	Landowner visits	Email	Online Form		
1992	n/a	4%	95%			n/a	99%	489
1993	60%	3%	36%			n/a	99%	499
1994	55%	2%	30%			n/a	87%	501
1995	52%	2%	27%			n/a	82%	480
1996	34%	3%	7%			n/a	46%	485
1997	58%	2%	39%	4%		n/a	100%	485
1998	20%	3%	72%	4%		n/a	100%	460
1999	21%	4%	66%	5%	<1%	n/a	100%	475
2000	19%	3%	76%	0	<1%	n/a	96%	459
2001	23%	2%	63%	9%	<1%	n/a	97%	460
2002	20%	2%	72%	0	0	n/a	95%	450
2003	22%	3%	66%	0	1%	n/a	90%	460
2004	27%	3%	66%	<1%	<1%	n/a	98%	440
2005	21%	2%	69%	5%	0	n/a	97%	445
2006	27%	1%	64%	1%	1%	n/a	94%	448
2007	26%	2%	63%	3%	1%	n/a	95%	441
2008	34%	3%	61%	1%	<1%	n/a	93%	432
2009	23%	2%	62%	4%	<1%	n/a	92%	432
2010	23%	1%	61%	4%	1%	n/a	90%	431
2011	26%	6%	56%	2%	<1%	n/a	90%	414
2012	30%	4%	49%	6%	<1%	n/a	90%	404
2013	22%	4%	70%	4%	0	n/a	90%	399
2014	29%	1%	56%	3%	0	1%	90%	341
2015	23%	3%	60%	6%	0	<1%	92%	334
2016	25%	2%	59%	5%	0	1%	92%	329
2017	25%	2%	57%	6%	0	1%	91%	332
2018	23%	2%	56%	6%	2%	1%	90%	334

The rate of active reporting (i.e., without a follow-up phone call from OBO staff) between participants who had owls and those that did not have owls has been examined since 1997 in order to determine the validity of extrapolating owl numbers for non-reporting OBO participants (Table 5). In the years 1997-2002 and 2006-10, there was no statistical difference ($P>0.05$) in reporting behaviour between OBO participants with owls and those without owls (Skeel et al. 2001, OBO unpubl. data). It is unknown why there is a statistical difference in 2003-2005; however, it appears that the presence or absence of owls is not a motivating factor for reporting census data to OBO in most years.

Table 5. Response by Operation Burrowing Owl (OBO) participants with and without Burrowing Owls to the annual census card: 1997-2010 (χ^2 -test; bold indicates a significant difference). Those who did not respond to the census card received a follow-up phone call

Year	Status	Sample Size (n)	Responded to census card (%)	χ^2	P
1997	With pairs	60	51	0.730	>0.1
	Without pairs	422	60		
1998	With pairs	78	23	0.021	>0.1
	Without pairs	382	24		
1999	With pairs	45	27	0.510	>0.1
	Without pairs	412	22		
2000	With pairs	37	35	0.563	>0.1
	Without pairs	413	29		
2001	With pairs	29	34	1.373	>0.1
	Without pairs	418	25		
2002	With pairs	46	35	0.134	>0.1
	Without pairs	353	32		
2003	With pairs	44	45	5.085	<0.025
	Without pairs	375	26		
2004	With pairs	52	52	7.200	<0.01
	Without pairs	380	28		
2005	With pairs	59	39	5.400	<0.025
	Without pairs	386	21		
2006	With pairs	59	31	0.438	>0.1
	Without pairs	389	26		
2007	With pairs	45	18	0.857	>0.1
	Without pairs	396	24		
2008	With pairs	41	32	0.016	>0.1
	Without pairs	391	31		
2009	With pairs	42	14	2.63	>0.1
	Without pairs	379	24		
2010	With pairs	43	16	1.600	>0.1
	Without pairs	371	24		

Beginning in 2011, a two-way chi-square test was performed on each year's census data to determine if there was a relationship between the number of actively reporting participants, and the presence or absence of owl pairs; the null hypothesis assumes no relationship between the two variables (i.e., participants with owls on their land are no more likely to actively respond to the census than those without owls). The following contingency table (Table 6) was prepared for analysis of 2018 data; the sample size (n = 302) represents the total number of responses obtained (including active responses and inactive responses (e.g., requiring follow-up calls by staff)). OBO participants were considered to be actively responding if they returned their census card via mail, phoned in their results to the HOOT Line, or through the online census form.

Table 6. Active and inactive OBO census reports among OBO participants who had Burrowing Owl pairs on their land, and those that did not have pairs.

Year	Owl Status	Active Responses	Inactive Responses	Total Responses	χ^2
2011	With Pairs	17	17	34	3.827
	Without Pairs	112	225	337	
	Total	129	242	371	
2012	With Pairs	20	14	34	2.756
	Without Pairs	145	185	330	
	Total	165	199	364	
2013	With Pairs	8	7	15	3.605
	Without Pairs	85	258	343	
	Total	93	265	358	
2014	With Pairs	12	9	21	2.782
	Without Pairs	111	176	287	
	Total	123	185	308	
2015	With Pairs	5	19	24	0.8668
	Without Pairs	85	200	285	
	Total	90	219	309	
2016	With Pairs	6	17	23	0.2353
	Without Pairs	86	192	278	
	Total	92	209	301	
2017	With Pairs	7	23	30	0.9673
	Without Pairs	87	184	271	
	Total	94	207	301	
2018	With Pairs	6	8	14	1.831
	Without Pairs	76	212	288	
	Total	82	220	302	

The results of the two-way chi-square test were not significant ($\chi^2 = 1.831$, $P > 0.10$); therefore, the presence or absence of owls was not associated with the rate of active reporting by OBO participants, which is consistent with previous years' reports.

3.3.2 Results and Population Trend

A total of 16 pairs, 16 singles, and 21 young were reported by 20 OBO participants (at 26 sites) through the OBO annual census. All reported owls were on privately-owned land. When the number of reported owl pairs is corrected for non-reporting OBO participants, the number of pairs in 2018 at OBO sites is estimated to be 19 pairs. The number of pairs is corrected for non-reporting participants in order to improve the accuracy of comparing year-to-year results and of determining the population trend. Corrected pairs are determined by the following equation:

$$\text{\# of owl pairs reported} / \text{\# of landowners that responded to the census} = \text{estimated \# of owl pairs} / \text{total \# of landowners participating}$$

The less than 100% of participants responding in most years are corrected for by assuming (and calculating) that participants without owls report with equal frequency as participants with owls. In most years, 90-100% of participants have reported and the correction is relatively small.

The number of participants has remained relatively steady over the years (after the initial sign-up years), with some new landowners joining the program and others leaving the program each year. However, the estimated Burrowing Owl population at OBO sites has declined 98.2% from 1988-2018 (Table 7, Figure 3). The average annual percent change was higher in the years 1988-1994 with a decline of 26.9% per year, than from 1994-2018 with an average decline of 6.6% per year. Although the overall trend remains a slowly declining population, the years 1996, 1998, 2002-2004, 2008-2009, 2014, and 2016 saw an increase from the previous year.

Table 7. Burrowing Owl Pairs reported from 1987-2018 by OBO participants; OBO HE participants with non-expired contracts (i.e., not older than 12 years) are noted. Estimated pairs are corrected for non-reporting OBO participants.

Year	No. of OBO Participants Censused (# HE Participants)*	No. of Census Participants Reporting	% of Census Participants Reporting	Reported Pairs	Estimated Pairs	Change in Estimated Pairs
1987	293	293	100	685	n/a	n/a
1988	352	232	66	681	1032	n/a
1989	370	214	60	628	1085	+5%
1990	426	298	70	518	741	-32%
1991	499	496	99	647	651	-12%
1992	489	484	99	585	591	-9%
1993	489	473	97	369	381	-36%
1994	501	414	83	134	162	-57%
1995	480	394	82	130	158	-2%
1996	485	224	46	85	184	+16%
1997	485	485	100	88	88	-52%
1998	460	460	100	141	141	+60%

1999	475	456	96	79	82	-42%
2000	459 (6)	452	98	54	55	-33%
2001	460 (13)	446	97	51	53	-4%
2002	455 (19)	430	95	66	70	+32%
2003	460 (28)	414	90	75	83	+19%
2004	440 (29)	431	98	96	98	+18%
2005	445 (36)	432	97	74	76	-22%
2006	448 (40)	421	94	64	68	-11%
2007	441 (43)	419	95	61	64	-6%
2008	432 (44)	401	93	73	79	+23%
2009	432 (41)	397	92	79	82	+4%
2010	431 (48)	373	90	52	58	-29%
2011	414 (48)	371	90	41	45	-22%
2012	399 (48)	364	90	35	39	-13%
2013	399 (48)	358	90	21	23	-41%
2014	363 (41)	327	90	30	33	+43%
2015	355 (41)	327	92	24	26	-21%
2016	352 (41)	320	92	25	29	+12%
2017	354 (32)	319	91	25	28	-3%
2018	356 (23)	317	90	16	19	-32%

* Number of OBO participants censused includes both the targeted participants and HE participants. HE participants are included in the OBO annual census mail out to monitor whether the enhanced land attracts owls, but are excluded from the population monitoring aspect of the census until they have nesting owls.

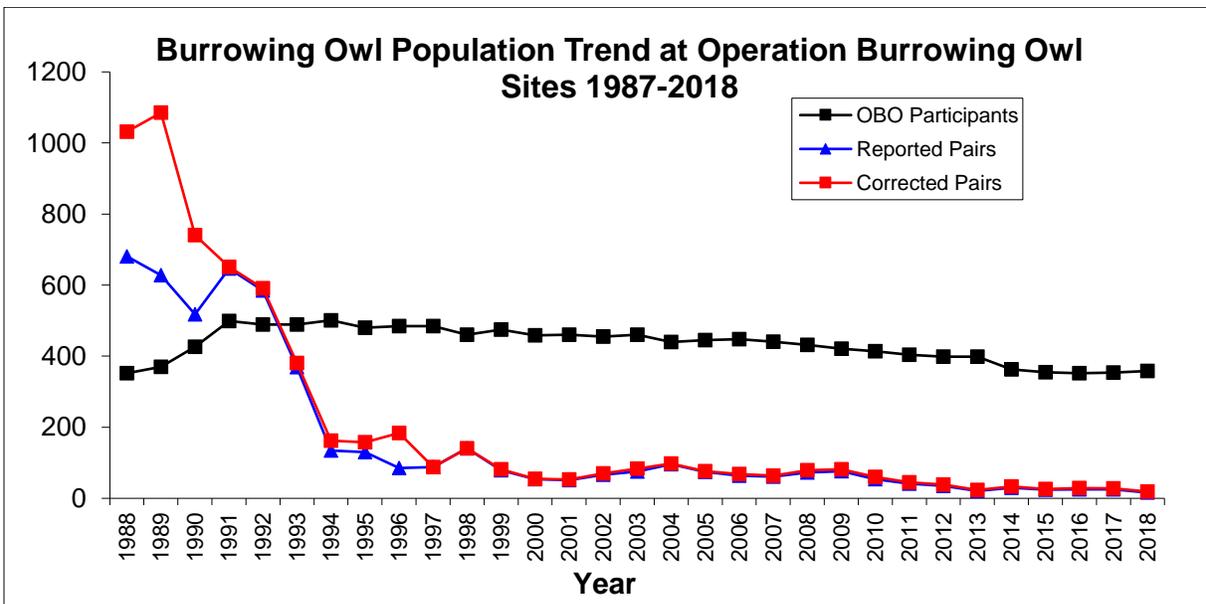


Figure 3. Burrowing Owl population trend from 1988-2018 as determined from Operation Burrowing Owl censuses.

Burrowing Owl colony size and the number of larger colonies have decreased significantly since the OBO census began in 1987, and likely had been declining for some time previously. Burrowing Owl locations are rarely referred to as colonies any more. In addition, the number of OBO sites that support owls also has decreased greatly, and more so than would be expected simply due to movements to other areas. New OBO participants (with owls) joining the program each year and movements of owls into OBO sites would be expected to balance, to an unknown degree, the movements of owls from OBO sites to other areas.

The proportion of sites no longer supporting owls, and the number of sites with single owls and colonies of various sizes, demonstrate both the decline in sites with owls and the decline in colony sizes (Table 8). From 1987-2018, the number of sites supporting larger colonies of nesting owls has decreased overall. Whereas in the 5-year period of 1987-1991, owl pairs nesting singly averaged 47%, in the most recent 5-year period this has increased to an average of 79% of pairs nesting singly. Since 1993, the majority of occupied sites have had only one nesting pair, with a small proportion of sites supporting 2-3 pairs and a very small number of colonies of 4 or more pairs in some years. In 2002-2004 when the number of owls reported increased, the number of larger colonies reported also increased. Earlier research found that sites occupied by one pair were more likely to become unoccupied the following year than sites with two or more pairs (Hjertaas and Wilson 1990). This suggests the owl population is not progressing towards recovery under current conditions.

Table 8. Percent of Operation Burrowing Owl sites that no longer support Burrowing Owls; and changes in owl colony sizes from 1987 to 2018.

Year	No. of OBO Sites	% of sites with 0 Pairs	Percent of Sites that Support Colonies with the Following Number of Pairs:						
			1	2	3	4	5	6-10	11+
1987	418	-	61	21	7	4	3	3	-
1988	378	19	46	28	14	4	3	5	0
1989	383	31	38	21	19	6	6	7	3
1990	343	41	43	25	12	6	6	6	2
1991	496	46	45	17	20	6	4	6	2
1992	488	53	48	22	9	9	5	5	2
1993	509	71	57	20	10	7	3	3	-
1994	422	80	60	30	5	5	-	-	-
1995	440	83	63	31	6	-	-	-	-
1996	223	77	66	17	13	-	-	4	-
1997	598	89	72	18	-	10	-	-	-
1998	599	86	48	28	14	7	-	3	-
1999	610	92	65	26	9	-	-	-	-
2000	605	94	77	15	5	-	3	-	-
2001	603	95	65	22	13	-	-	-	-
2002	601	91	72	24	-	2	-	2	-

2003	607	92	62	25	3	4	3	3	-
2004	586	88	69	18	9	-	2	2	-
2005	589	91	81	11	6	1	1	-	-
2006	588	90	86	7	5	2	-	-	-
2007	592	91	80	12	6	-	2	-	-
2008	585	93	72	16	6	4	-	2	-
2009	557	89	75	13	8	2	-	2	-
2010	550	93	83	10	5	2	-	-	-
2011	564	94	69	31	-	-	-	-	-
2012	574	94	87	10	3	-	-	-	-
2013	564	97	83	17	-	-	-	-	-
2014	460	95	83	9	4	-	-	-	-
2015	457	96	74	26	-	-	-	-	-
2016	448	96	59	35	6	-	-	-	-
2017	453	96	84	16	-	-	-	-	-
2018	983	97	93	7	-	-	-	-	-

The large increase in 2018 for OBO sites was due to an error in the database that has been recently corrected. A computer programmer has been contracted to correct issues that have been identified.

3.3.3 Discussion and Publications

The 2018 annual census results of 19 estimated pairs represents a 32% decrease from the 2017 results of 28 estimated pairs. The average annual percent change since 1994 is lower at 6.6% decline per year, and was higher at 26.9% decline per year prior to 1994. Of the 30 years, nine saw an increase in owl pairs from the previous year: 1996, 1998, 2002-2004 (when there was an encouraging increase of 88% in actual reported pairs over three years), 2008-2009, 2014, and 2016. In general, the owl population had dramatically declined by 1994, and since 1999 the population may have stabilized at a very low level of its former size, but has not been able to recover to historic (pre-1994) levels.

The 3.8% increase in pairs at OBO sites from 2008-2009 (corrected for non-reporting participants) is more than the increase reported from a research study on the Regina Plain, a smaller area within the overall area covered by the OBO program. The Regina Plain study reported the population remained stable with neither an increase nor a decrease from 2008-2009 (R. Poulin, pers. comm.).

When a population is in decline, limiting factors need to be addressed in order to halt, and to reverse, the trend. Limiting factors contributing to the Burrowing Owl population decline include low productivity (survival of eggs and young), habitat loss and fragmentation on breeding and wintering grounds (due to human activities), and other factors such as collision with vehicles, pesticides, and mortality on migration and in wintering areas. Individually, each

factor may have a small impact, but cumulatively the effect is dramatic, as demonstrated by the 98.2% decline in the owl population on OBO participants' land from 1988 to 2018.

Publications Resulting from Operation Burrowing Owl

1. Magnus, R., and Ranalli, M. 2016. Conservation of Wildlife and Natural Areas in Southern Saskatchewan, Canada, through Nature Saskatchewan's Stewardship Programs. In *Proceedings of the 10th International Rangeland Congress*. TCU Place, Saskatoon, SK.
2. Magnus, R., Burrows, K., and Fortney, A. 2016. Habitat Enhancement for Burrowing Owls: A Summary of 15 Years of Work. In *Proceedings of the 11th Prairie Conservation and Endangered Species Conference*. Saskatoon Inn, Saskatoon, SK.
3. Magnus, R., and Weekes, L. 2014. Operation Burrowing Owl, Shrubs for Shrikes, and Plovers on Shore: Habitat Conservation Through Landowner Stewardship in Saskatchewan. In *Proceedings of the 10th Prairie Conservation and Endangered Species Conference*. Alberta Prairie Conservation Forum, Lethbridge, AB.
4. Gaudet, C., Kotylak, A. and M.A. Skeel. 2011. Operation Burrowing Owl and Shrubs for Shrikes: Habitat Conservation Through Landowner Stewardship in Saskatchewan. In *Proceedings of the 9th Prairie Conservation and Endangered Species Conference*. University of Manitoba, Winnipeg, MB.
5. Kotylak, A. and M.A. Skeel. 2009. Are Burrowing Owls Using Enhanced Habitat? *Blue Jay* 67(2): 231-234.
6. Kotylak, A., Dohms, K. Warnock, R., and M.A. Skeel. 2008. Operation Burrowing Owl: Conserving Grassland Habitat in Saskatchewan. In *Proceedings of the 8th Prairie Conservation and Endangered Species Conference* (p. 293-299). Canadian Plains Research Center, Regina, SK.
7. Skeel, M.A., and R.G. Warnock. 2005. Conserving habitat through voluntary stewardship: Does it work? *Blue Jay* 63(2): 66-70.
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11. Skeel, M.A., J. Keith, and C.S. Palaschuk. 2001. A population decline reported by Operation Burrowing Owl in Saskatchewan. *Raptor Research Foundation*. 35(4):371-377.
12. Hjertaas, D.G. 1997. Operation Burrowing Owl in Saskatchewan. The Burrowing Owl: its biology and management: including the proceedings of the 1st International Symposium; 1992 November 13-17; Bellevue, WA. In: *Raptor Research Foundation* 9:112-1

3.3.4 Saskatchewan Burrowing Owl Research

Operation Burrowing Owl and OBO landowners have cooperated with Burrowing Owl research on the Regina Plain since 1990. Over 30 OBO landowners have assisted biologists by permitting access on to their land; identifying nest locations; consenting to the installation of nest boxes; and permitting studies to be conducted on their properties. Studies involved a variety of activities including the supplemental feeding of owls during brood rearing, banding of Burrowing Owl adults and young, and fitting juvenile owls with radio collars equipped with light-sensors to determine migration routes and wintering areas, and to identify foraging habitat.

In previous years, the National Burrowing Owl Recovery Team led by the Canadian Wildlife Service of Environment Canada (now Environment and Climate Change Canada), held meetings annually to discuss Burrowing Owl research and conservation work throughout western Canada. At these meetings, Nature Saskatchewan received information on Saskatchewan Burrowing Owl research, and reported on OBO activities and census numbers. No meeting was held in 2018.

Climate change is predicted to increase extreme weather events (e.g., rainfall), creating greater variability, thus, potentially having a negative impact on reproductive success of many birds in North America. According to datasets of over 900 Burrowing Owl nesting attempts from 2003-2010, 32% of nest failures were due to burrow flooding. When looking at supplemental feeding experiments in 1992, 1993, and 1996, the owlets that received supplemental feeding survived at a higher rate when exposed to heavy precipitation events compared to unfed owlets. These results suggest food limitation and not exposure to be the limiting factor associated with climate change.

With the landowners' consent, OBO continues to forward Burrowing Owl sightings reported to the Hoot Line and during census on to the Recovery Team biologists.

Recommendation:

- Contact all researchers (with the RSM, CWS, University of Alberta and any others) at the start of the 2019 season in April. Ensure that they have the OBO brochure to leave with any landowners that have nesting Burrowing Owls who are not part of OBO. Encourage researchers to forward these landowners' contact information to OBO, with landowner permission.

3.4 Shrubs for Shrikes Annual Census

3.4.1 Landowner Response and Results

In June, 228 landowners were mailed the SFS census package. Of the 228 landowners censused, 90% (205) provided a response: 28% (58) of respondents returned their census cards via mail, 1% (1) phoned the Hoot line, 1% (1) of participants used the online form submission and 8% (17) responded by email, 3% (6) of responses were obtained during a visit by staff during the summer, 1% (1) relied to the OBO census, and 59% (121) were contacted by SFS by phone (Table 9). Approximately 10% (23) of participants provided no response in 2018 because they could not be reached by phone or email after numerous attempts.

Table 9. Response by Shrubs for Shrikes participants to the annual census.

Year	Response to Census				Total Response (%)	No. of Reported Pairs	No. of Sites with Pairs	No. of SFS Participants censused
	Mailed in Card	Hoot Line	Called by SFS	Electronically				
2004	2	0	2	0	100	6	4	4
2005	4	0	10	0	100	7	4	14
2006	11	0	15	0	96	13	11	26
2007	20	0	17	2	100	19	23	39
2008	21	2	18	0	87	20	28	47
2009	20	0	25	0	86	28	38	58
2010	23	0	36	1	86	21	38	70
2011	26	8	40	3	94	27	25	82
2012	32	4	53	2	92	25	24	100
2013	28	5	76	0	90	46	27	121
2014	54	8	27	6	94	100	62	128
2015	47	6	68	0	92	70	59	144
2016	42	7	84	1	90	96	76	156
2017	54	13	82	7	90	111	83	196
2018	58	1	121	17	90	90	83	228

All census participants have signed a SFS voluntary habitat stewardship agreement. The 205 responding participants in the 2018 census reported a total of 90 shrike pairs at 83 sites. No LOSH singles were reported before June 1st and single birds spotted after June 1st were assumed to be part of a pair and were counted as a pair so that the number of shrikes was not grossly underestimated, as recommended by the Loggerhead Shrike Recovery Team lead (A. Didiuk pers. comm.).

It is not possible to determine a precise count of shrikes except where both birds of a mated pair were apparent. In addition, the number of pairs may be underestimated as shrikes lack sexual

dimorphism (males and females look the same) and thus, reports of two or more singles may include a nesting pair or a family of adults and young.

Shrike sightings from the OBO census are used to recruit new SFS participants. A total of 31 OBO participants reported Loggerhead Shrike sightings in 2018. An OBO participant reporting a pair of shrikes is approached to join the SFS program to help in shrike conservation and population monitoring.

Recommendations:

- In early spring, contact individuals who reported Loggerhead Shrikes on non-SFS sites in the previous year, determine the landowners of the sites, and contact them about the SFS program and to watch for and report any shrikes that spring or summer.
- Until July 15 of the same year, contact OBO landowners reporting shrikes on their census cards; offer to visit to verify shrike sightings and invite those with nesting shrikes or shrike families to join SFS. For OBO landowners not reached by July 15, contact them the following spring and request them to watch for and report any shrikes.
- Continue to focus on maintaining and increasing the number of SFS participants and establish a population trend analysis in the next year.

3.4.2 Publications

Publications Resulting from Shrubs for Shrikes

1. Magnus, R., and Ranalli, M. 2016. Conservation of Wildlife and Natural Areas in Southern Saskatchewan, Canada, through Nature Saskatchewan's Stewardship Programs. In *Proceedings of the 10th International Rangeland Congress*. TCU Place, Saskatoon, SK.
2. Magnus, R., and Weekes, L. 2014. Operation Burrowing Owl, Shrubs for Shrikes, and Plovers on Shore: Habitat Conservation Through Landowner Stewardship in Saskatchewan. In *Proceedings of the 10th Prairie Conservation and Endangered Species Conference*. Alberta Prairie Conservation Forum, Lethbridge, AB.
3. Gaudet, C., Kotylak, A. and M.A. Skeel. 2011. Operation Burrowing Owl and Shrubs for Shrikes: Habitat Conservation Through Landowner Stewardship in Saskatchewan. In *Proceedings of the 9th Prairie Conservation and Endangered Species Conference*. University of Manitoba, Winnipeg, MB.
4. Yaskowich, M. 2008. Prey Impaled By Loggerhead Shrikes. *Blue Jay* 66 (1): 53-55.

3.5 Plovers on Shore Annual Census

3.5.1 Landowner Response and Results

In June, 63 landowners were mailed the POS census package. Of the 63 participants, 84% (53) provided a response: 2% (1) of respondents returned their census cards via mail, 13% (7) responded electronically by email, 2% (1) phoned the Hoot line, 2% (1) were visited by staff during the summer, and 81% (43) were contacted by POS by phone. Approximately 16% (10) of participants provided no response in 2018 because they could not be reached by phone or email after numerous attempts. Of the participants responding to the census, 4 participants reported 6 pairs, 8 singles, and 8 young at 4 sites.

The International Piping Plover Breeding Census is conducted every five years (since 1991) in all jurisdictions across North America that support plovers. Due to this census, the plover population is being well monitored in Saskatchewan and elsewhere on a long-term basis. Piping Plovers move around in response to changing water levels and thus, to get an accurate population estimate, it is important to monitor all sites across its breeding range within a short window of time. Distribution and sites important to plovers are also determined. Because of their movement, annual monitoring of only some sites does not provide an accurate population trend.

Although an annual census at POS sites does not provide accurate population trend information, this census may have value in determining how often particular sites are used and also in keeping participants engaged. How often and accurately POS participants are able to check shoreline habitat at their sites for plovers will determine the success of an annual census.

To improve Piping Plover survey methods in an attempt to increase presence/absence data, and improve the accuracy of data from POS sites, a questionnaire was sent to all POS participants in December 2016. The questionnaire asked participants three, two-part questions: 1) regarding whether or not they return their annual census card(s) and if not, why?; 2) whether or not they were aware they could submit their data online and whether that is preferable; and 3) with permission and advanced notice, would participants prefer to have staff survey their shoreline for them, and additional questions regarding accessibility. The questionnaire received a 20% (11 out of 54) response rate and the majority (73%) of respondents indicated that they would prefer staff to survey their shoreline. In 2017 and 2018, staff continued to conduct the POS census as usual. If funding and time permit in the future, staff will conduct surveys on participants' shorelines to improve the accuracy of POS census data.

Recommendations:

- If funding and time permits, determine the feasibility of staff to survey participants' shoreline for those who indicated that would be preferable in the POS census questionnaire.
- Continue to focus on increasing the number of POS participants in the next few years in order to help determine how often particular sites are used by Piping Plovers.

3.5.2 Publications

Publications Resulting from Plovers on Shore

1. Magnus, R., and Ranalli, M. 2016. Conservation of Wildlife and Natural Areas in Southern Saskatchewan, Canada, through Nature Saskatchewan's Stewardship Programs. In *Proceedings of the 10th International Rangeland Congress*. TCU Place, Saskatoon, SK.
2. Magnus, R. and Weekes, L. 2014. Operation Burrowing Owl, Shrubs for Shrikes, and Plovers on Shore: Habitat Conservation Through Landowner Stewardship in Saskatchewan. In *Proceedings of the 10th Prairie Conservation and Endangered Species Conference*. Alberta Prairie Conservation Forum, Lethbridge, AB.

3.6 Stewards of Saskatchewan Banner Program Annual Census

3.6.1 Landowner Response and Results

In June, 123 landowners were mailed the SOS census package. These landowners have at least one of the ten species with the highest frequency of occurrence among all SOS banner participants. Of the 123 participants, 70% (77) provided a response: 34% (26) of respondents returned their census cards via mail, 4% (3) phoned the Hoot line, 12% (9) emailed responses, 47% (36) were phoned by staff, and 4% (3) were visited by staff during the summer. Of the participants responding to the census: 48 participants reported approximately 403 pairs, 304 young, and 98 nests for Barn Swallows at 54 sites; 9 participants reported approximately 17 adults, 6 young, and 3 nests for Ferruginous Hawks at 10 sites; 3 participants reported approximately 3 Short-eared Owls at 3 sites; 28 participants reported approximately 31 American Badgers at 30 sites; 10 participants reported 10 male Sprague's Pipits at 10 sites; 9 participants reported a range of 1-5 Bobolinks at 10 sites; 15 participants reported a range of 1-5 Common Nighthawks at 13 sites as well as 2 participants reported a range of 6-10 Common Nighthawks at 2 sites; 10 participants reported a range of 1-5 Northern Leopard Frogs at 4 , 6-10 at 3 sites, and >10 Northern Leopard Frogs at 4 sites; 16 participants reported a range of 1-5 Tiger Salamanders at 16 sites; and 4 participants reported approximately 13 Monarchs at 4 sites.

3.6.2 Publications

Publications Resulting from Stewards of Saskatchewan Banner Program

1. Magnus, R., and Ranalli, M. 2016. Conservation of Wildlife and Natural Areas in Southern Saskatchewan, Canada, through Nature Saskatchewan's Stewardship Programs. In *Proceedings of the 10th International Rangeland Congress*. TCU Place, Saskatoon, SK.

Recommendations:

- Continue to distribute the SOS banner participant census with the Spring Mailout.

3.7 RPR Land Management Survey

In 2008, RPR piloted a land-management survey that was improved in 2009 and 2010. This survey was developed in place of an annual landowner population census (which is difficult for reasons discussed below), because annual landowner input is very important to the monitoring of rare plant habitat, and thus, indirectly to population persistence.

Since its inception in 2002, Rare Plant Rescue has strived to develop a landowner-driven census similar to that conducted by the other stewardship programs. The census used by these programs engages participants to track the presence and absence of the target species at enrolled sites, as well as changes in population size and site quality. There are numerous obstacles that make this type of census impractical for RPR.

In most circumstances it is not feasible for landowners to locate and monitor rare plant populations occurring on their land. Population monitoring requires basic plant identification skills, and although one can be taught to identify rare plants, the time and inclination to learn, as well as access to resource materials, are required. Although the degree of skill required to correctly identify and survey plant populations might limit some landowners, the main barrier to landowner involvement is that the time required to monitor plant populations exceeds the amount that most landowners are able to devote.

In addition, plants exhibit vastly different life cycles than do mammals and birds. In many instances, part or all of a population of rare plant species may be hidden as seeds or underground parts for years at a time. Given this fact, a decline in number or even the complete absence of visible individuals for many years, may not necessarily indicate a serious change in the population.

For the above reasons, rather than relying on landowner observations, RPR began conducting population monitoring in 2008.

The RPR land-management survey was first developed in 2008 to gather information about land-use, site, and season conditions for lands having habitat capable of supporting a rare plant species. Goals of the survey include stimulating annual, active landowner participation (especially in years when a visit cannot be made), and the gathering of local, site-specific information for each individual growing season. The distribution of many rare plant species is poorly understood, and this information together with data collected during population monitoring will help develop the knowledge base of rare plant biology and distribution.

No landowner surveys were mailed out in 2012 or 2013, as the RPR Coordinator decided to re-work the survey to improve the value of the data collected and hopefully increase response rates. In 2014, it was decided that instead of a mail-out survey format, information on site and land management would be collected during visits with current RPR participants. This will not allow data to be collected annually for each participant, but will hopefully result in honest answers and detailed data that can be used in conjunction with long-term monitoring. Additionally, asking questions about land management, etc. during one-on-one visits allows landowners to voice their concerns or ask questions, and provides staff with an opportunity to address these concerns, provide additional resources or information, etc. Information will continue to be collected in this way for the upcoming field season.

RPR stewards that participate in the Rare Plants and Ranchers program are interviewed by the Native Plant Society of Saskatchewan's Professional Agrologist to obtain information on the site, site history, land management, etc. This information is in turn provided to Rare Plant Rescue, and could be used in conjunction with on-going occurrence monitoring, and/or could be used as a reference when asking questions during visits with RPR participants.

Recommendations:

- Send out a landowner questionnaire (similar to the one sent out in 2013) periodically (e.g., every 3-5 years), so that SOS programs are continually evaluated, and the reception of new SOS initiatives can be gauged and the initiatives can be modified accordingly.

3.8 Selecting RPR Search Sites

RPR selects sites to search for target plant species at risk using the following strategies:

- Checking historic records as provided by the Saskatchewan Conservation Data Centre (SKCDC).
- Using suggestions from Environment and Climate Change Canada of sites that have a high probability of supporting plant species at risk.
- Using reports from other agencies such as the Native Plant Society of Saskatchewan and the Nature Conservancy of Canada.
- Acting on reports from the public.
- Searching areas adjacent to historic or known sites with similar or suitable habitat.
- Checking sites that have had new occurrences reported to the SKCDC in the past few years from consulting agencies.

Search sites are prioritized each season, primarily due to time and budget constraints. Privately owned lands are the priority for RPR searches and monitoring, followed by privately managed lands and public lands. RPR does not conduct search or monitoring activities on federal lands (e.g., federal community pastures, national wildlife areas and national parks). Priority of lands to search is also based on the target species. Sites (generally categorized by quarter section) are considered “new” if they have not been previously searched by RPR.

For the majority of search sites, RPR initiates contact with the landowner/manager, often through cold calls. Many people are unaware of historic records of plant species at risk on their land, and/or unaware they have habitat that could support a rare plant species. Receptiveness to RPR cold calls varies, and occasionally landowners withhold permission for RPR to access their lands. RPR does not conduct searches or monitoring without permission to do so from the landowner, therefore, although some sites may be a high priority for RPR activities, they may not be searched in the year of the request. Permission is requested one to several weeks before searches or a visit is to occur.

Recommendations:

- Continue working with Environment and Climate Change Canada to coordinate activities, and for suggestions of high priority sites to visit for occupancy searches.
- Verify sites reported to RPR to have, or potentially have rare plants.
- Verify new sites reported to have rare plants to the SKCDC in the past few years.

3.9 RPR Occupancy Search and Population Monitoring Methods

Rare Plant Rescue implemented its search and monitoring program (developed in 2007) in 2008, and has continued with it through 2018, with the exception of a hiatus in program activities in 2015 and 2016 due to a lack of funding. Protocols follow standardized methodologies for searching for, and monitoring plant species at risk, so that data collected can add to the scientific knowledge base of each species and its distribution. The RPR occupancy search protocols and population monitoring methods follow the guidelines laid out by D.C. Henderson of Environment Canada (2009; Appendix 9). RPR continues to work with Environment and Climate Change Canada and to use these protocols as they are updated so that RPR methods are based on the most up-to-date information. Although RPR does not conduct general floristic surveys to look for any rare plants on a given parcel of land, RPR methods are consistent with the general guidelines of the Standardized Methodology for Surveys of Rare Plants (Bizecki Robson 1999).

All data collected in the field are recorded on data sheets (Appendix 10) with a GPS, and are later entered into spreadsheets and the RPR database. RPR records the locations of rare plant species using a GPS, and captures photos of the site, plants, and habitat. Notes are also made on occurrence location and distance to reference points to facilitate locating the site and plants during future visits. Specific information on the size of the populations (determined most accurately through monitoring, but also estimated during search activities) is recorded in the RPR database.

3.10 RPR Site Searches and Population Monitoring

In 2018, Rare Plant Rescue conducted occupancy searches and/or monitoring in the following landscape areas:

- Bindloss Plain, Gull Lake Plain, Kipling Plain, Maple Creek Plain, Oak Lake Plain, Old Man on His Back Plateau, Oyen Upland, Schuler Plain, St. Lazare Plain, and Wood Mointain Plateau.

Search and monitoring activities focused on the following species, with other rare plant species found incidentally during these activities:

- Slender Mouse-ear-cress
- Smooth Goosefoot
- Tiny Cryptantha
- Hairy Prairie-clover
- Dwarf Woolly-heads
- Small White Lady's-slipper

While RPR staff have always been observant to the potential presence of other target species, in past years each search had only a single target species. In 2011, RPR initiated searches for pairs of target species at the same time (i.e., Western Spiderwort and Smooth Goosefoot, Tiny Cryptantha and Smooth Goosefoot, and Hairy Prairie-clover and Smooth Goosefoot), as recommended by the Prairie Plant Species at Risk Recovery Team chair. In addition, Small-flowered Sand-verbena was searched for as a target species if suitable habitat was encountered during Tiny Cryptantha and Smooth Goosefoot surveys. In 2014 and 2017, Smooth Goosefoot and Small-flowered Sand-verbena were searched for together in suitable habitat.

Occupancy searches in 2018 focused on Dwarf Woolly-heads, Slender Mouse-ear-cress, Small White Lady's-slipper (in a joint effort with the SK CDC), Smoot Goosefoot, and Tiny Cryptantha. A total of 21 sites (quarter sections or portions of quarter sections having suitable habitat) were searched (Table 10). All of these sites had not been previously searched by RPR and were considered new sites, with the exception of four sites searched for Small White Lady's-slipper. Six of the searched sites, targeting Small White Lady's-slipper, were not completed, therefore, a total of 15 sites were completely searched in 2018. The occupancy searches yielded three new sites with target species (Table 10).

Table 10. Details of Rare Plant Rescue occupancy searches for target species in 2018.

Target Landscape Area	Target Species	Total # of Sites Searched	# Sites Where Target Species was Found
Bindloss Plain	Tiny Cryptantha	1	0
Gull Lake Plain	Smooth Goosefoot	3	2
Kipling Plain	Small White Lady's-slipper	5 incomplete	0
Oak Lake Plain	Small White Lady's-slipper	3	0
Old Man on His Back Plateau	Dwarf Woolly-heads	4	1
Old Man on His Back Plateau	Tiny Cryptantha	1	0
Oyen Upland	Slender Mouse-ear-cress	1	0
St. Lazare Plain	Small White Lady's-slipper	1 incomplete	0
Wood Mountain Plateau	Slender Mouse-ear-cress	2	0
TOTAL		21 (15 completed)	3

An RPR occurrence (which approximates a Source Feature in NatureServe [J. Keith, SKCDC pers. comm 2011]) includes one or more plants of a single species that share a point or polygon

in space. For perennials (e.g., Hairy Prairie-clover), a distance of 30 m is used to separate one occurrence from another, unless there is a significant change in habitat between individuals that are less than 30 m and greater than 10 m apart (e.g., shrub patch, ridge, etc.). Buffalograss is a perennial that is an exception to this guideline. The edges of a Buffalograss clone are typically well-defined and a distance of 5 m is more suitable to separate occurrences. RPR currently uses a distance of greater than 30 m to separate occurrences of annuals and biennials (e.g., Slender Mouse-ear-ress) consistent with current protocols used by the Canadian Wildlife Service (C. Neufeld, pers. comm. 2014). In 2017, RPR staff found new occurrences (i.e., occurrences not previously known to RPR, and usually not known to the Saskatchewan Conservation Data Centre or the Canadian Wildlife Service) of Small-flowered Sand-verbena, Smooth Goosefoot, Beaked Annual Skeletonweed, Buffalograss, Small Lupine, and Hairy Prairie-clover during searches and monitoring, or incidentally (Table 11.)

Table 11. New occurrences of plant species at risk found by Rare Plant Rescue in 2018.

Target Landscape Area	Species	# of Sites Having New Occurrences	# of New Occurrences on Those Sites	Notes
Old Man on His Back Plateau	Dwarf Woolly-heads	2	2	Occurrences were found during polygon searches for this species on suitable habitat.
Gull Lake Plain	Smooth Goosefoot	2	11	All occurrences were found during polygon searches for this species on suitable habitat.
	Small Lupine	1	3	Occurrences were found incidentally during polygon searches for Smooth Goosefoot.
	Beaked Annual Skeletonweed	2	3	

Population monitoring in 2018 was conducted for Dwarf Woolly-heads, Smooth Goosefoot, and Hairy Prairie-clover (Table 12). We monitored 13 previously-known occurrences on 5 sites. All sites had been previously reported to have rare plants and target rare plants were found on 3 of the 5 sites. For all occurrences where plants were present, monitoring consisted of plant counts and

delineation of the occurrences. We also took photos of the occurrences, documented the phenology of the plants (e.g., flowering, senescing, etc.), and assessed the health of the plants (e.g., good, poor, etc.).

Table 12. Details of Rare Plant Rescue population monitoring in 2018 (on 13 occurrences).

Landscape Area of Site	Target Species	Target Species Located? (Yes/No)	Notes
Maple Creek Plain	Smooth Goosefoot	Yes	Occurrence location was found. Plants were present. Plants were counted and the area of the occurrence was delineated.
Old Man on His Back Plateau	Dwarf Woolly-heads	Yes	Occurrence locations (2) were found. Plants were absent from one occurrence. Plants were counted and the area of the occurrence was delineated.
Schuler Plain	Smooth Goosefoot	No	Occurrence locations (2) were found. Plants were absent from all occurrences.
Regina Plain	Hairy Prairie-clover	Yes	Occurrence locations (8) were found. Plants were present at all occurrences. Plants were counted at all occurrences and the area of each occurrence was delineated (where appropriate).

Search and monitoring effort is the number of hours spent on field activities for each species. These data allow the effort to be quantified for all RPR surveys. A summary of effort is found in Table 13. Note that the hours shown do not constitute cumulative field hours, since, for example, more than one plant can be targeted during the same search.

Table 13. RPR Search and monitoring effort for each target species in 2018.

Target Species	Search Effort (person-hours)	Monitoring Effort (person-hours)
Dwarf Woolly-heads	55	8
Hairy Prairie-clover	0	12
Slender Mouse-ear-cress	78	0
Smooth Goosefoot	57	6
Tiny Cryptantha	42	0
Small White Lady's-slipper	99	0

Recommendations:

- Continue searching and monitoring activities in 2019. Train SOS summer assistants on search and monitoring techniques. When possible send the students out as a team for two-person transect searches, and whenever possible have the RPR coordinator and assistant conduct monitoring on sites nearby for safety and logistical reasons. Use skilled volunteers where possible when monitoring and ensure no work is conducted alone in remote locations.
- Work with Environment and Climate Change Canada, the Saskatchewan Conservation Data Centre, and other partner agencies to select priority sites to search, and follow up on species sightings that were previously reported to RPR.
- Continue to work on the Slender Mouse-ear-cress, Small-flowered Sand-verbena, Tiny Cryptantha, Dwarf Woollyheads, Buffalograss, Western Spiderwort, Hairy Prairie-clover and Smooth Goosefoot projects in consultation with Environment and Climate Change Canada and as appropriate for conditions.
- Collaborate with the South of the Divide project to ensure RPR activities are not overlapping or redundant with theirs.

4.0 AWARENESS AND EDUCATION

4.1 Online Promotion

Since late 2000, the stewardship programs have been promoted through NS's website. In 2009, RPR received additional coverage through Google Album Archive, a free photo sharing website. The programs are also promoted through NS's Facebook, Twitter, YouTube, and Instagram accounts.

4.1.1 Nature Saskatchewan Website

The stewardship program webpages contain information on the benefits of being a steward participant, information on the target species, resource information such as a digital copy of NS's publications *At Home on the Range: Living with Saskatchewan's Prairie Species at Risk* and *A Pocket Guide to the Rare Plants of Southern Saskatchewan*, the current SOS Newsletter, the contact information to report a SAR sighting, a link to our RPR online photo album, a description of our Conservation Awareness Days (CADs), and a link to the previous year's final program report. A list of our current funders can be found by clicking on 'Who We Are' then selecting the 'Nature Saskatchewan Supporters' page (<http://www.naturesask.ca/who-we-are/nature-saskatchewan-supporters>).

From April 1, 2018 to March 31, 2019, NS's Stewardship webpage (<http://www.naturesask.ca/what-we-do/stewards-of-saskatchewan>) was viewed 526 times. The OBO page was viewed 793 times, RPR 209 times, SFS 220 times, POS 223 times, and the SOS banner program page was viewed 137 times. NS summer staff published several blog posts documenting their work and experiences throughout the summer months (<http://www.naturesask.ca/useful-resources/news>). The blog was viewed 386 times.

4.1.2. Google Album Archive

All photos in RPR's public gallery are stored through Google Album Archive and are available for public viewing. A link to RPR's public gallery can be found on the RPR webpage under 'What are our rarest plants?' (<http://www.naturesask.ca/what-we-do/stewards-of-saskatchewan/rare-plant-rescue-new>).

4.1.3. Social Media

Programs are promoted through NS's social media accounts, including Facebook (since November 2008), Twitter (since January 2010), YouTube (since March 2013), and Instagram (since March 2014). Facebook and Twitter are monitored regularly and updated 3-5 times per week with posts about NS and the stewardship programs and events, as well as events by other local organizations and affiliates. As of March 31, 2019, NS's Facebook page (<https://www.facebook.com/NatureSask>) had 2,874 likes, the NS Twitter feed (<https://twitter.com/NatureSask>) had 2,637 followers, the NS YouTube Channel (<https://www.youtube.com/channel/UCDYIv80ATfpeExkqvScuJ7g>) had 34 subscribers and

1,932 views, and the NS Instagram account (<https://instagram.com/naturesaskatchewan/>) had 531 followers.

4.2 Promotion through the Media and Agencies

The stewardship programs were promoted through a number of media formats, including newsletter and newspaper articles, news releases, radio interviews, and advertisements.

4.2.1 Hoot Line and Other Advertisements

Nature Saskatchewan advertises a toll-free Hoot Line number (1-800-667-4668) for the reporting of SAR to program staff. This has been a valuable tool for receiving sightings of Burrowing Owls, Loggerhead Shrikes, and other species at risk (e.g., Northern Leopard Frogs and Monarchs), and consequent recruitment of new participants into the stewardship programs (Appendix 11).

Two free advertisements were as follows:

- One ad for OBO merchandise was placed in NS's *Blue Jay* (circ. ~800, 16 local societies and affiliates, and the general public) in the Summer 2018 edition.
- One multi-species Wanted ad was placed in NS's *Blue Jay* (circ. ~800, 16 local societies and affiliates, and the general public) in the Fall 2018 edition.

4.2.2 Articles

One article on the Burrowing Owl and OBO were published in newsletters and newspapers (Appendix 11):

- “Owl’ The News on OBO” – published in NS's *Blue Jay* (Winter 2019; circ. ~800 members, 16 local societies and affiliates, and the general public); and also published in the *Stewards of Saskatchewan* newsletter (Winter 2019; circ. ~900 program participants).

One article on rare plants and RPR were published in newsletters and newspapers (Appendix 11):

- “Shedding Light on Rare Plant Rescue” – published NS's *Blue Jay* (Winter 2019; circ. ~800 members, 16 local societies and affiliates, and the general public); and also published in the *Stewards of Saskatchewan* newsletter (Winter 2019; circ. ~900 program participants)

One article on the Loggerhead Shrike and SFS were published in newsletters and newspapers (Appendix 11):

- “Shake n’ Break: a Deeper Understanding of the Butcher Bird Kill” – published in NS's *Blue Jay* (Winter 2019; circ. ~800 members, 16 local societies and affiliates, and the general public);

and also published in the *Stewards of Saskatchewan* newsletter (Winter 2019; circ. ~900 program participants)

One article on the Piping Plover and POS was published in newsletters and newspapers (Appendix 11):

- “POS Celebrates 10 years of Conserving Shoreline” – published in NS’s *Blue Jay* (Winter 2019; circ. ~800 members, 16 local societies and affiliates, and the general public); and also published in the *Stewards of Saskatchewan* newsletter (Winter 2019; circ. ~900 program participants)

One article on the SOS banner program and other SAR were published in newsletters and newspapers (Appendix 11):

- “A Big Woo-Whoop for Whooping Cranes” – published in NS’s *Blue Jay* (Winter 2019; circ. ~800 members, 16 local societies and affiliates, and the general public); and also published in the *Stewards of Saskatchewan* newsletter (Winter 2019; circ. ~900 program participants)

Seven article on general information about all of the stewardship programs were published in newsletters and newspapers (Appendix 11):

- “Stewards of Saskatchewan Staff Update” - published in NS’s *Blue Jay* (Summer 2018; circ. ~800 members, 16 local societies and affiliates, and the general public).
- Six “Voices From the Field”, Stewards of Saskatchewan Summer Student Blog posts – published on May 11th, June 4th, July 3rd, July 20th, July 31st, and September 4th, 2018 on the NS website (386 page views).

4.2.3 News Releases and Interviews

Six news releases about SAR and the stewardship programs were each sent to ~90 south and central Saskatchewan media outlets during the summer of 2018 (Appendix 11):

- “The Hunt Continues for an Elusive Rare Orchid” (May 15th, 2018) – aimed to let urban and rural residents know about efforts to locate Small White Lady’s Slipper.
 - Resulted in one radio interview with Saskatoon Media Group (CJWW/98COOL FM/92.9 The Bull) on May 18th, 2018
 - Resulted in three written articles: “Hunt Begins for Province’s Most Elusive Plant – published online on *WestCentralOnline* on May 16th, 2018; “Hunting for Rare Flowers” – published online on *Prince Albert Daily Herald* on May 24th, 2018; “In Search of the Small White Lady’s Slipper” – published online on *CJWW* and on *98COOL* on May 28th, 2018.
- “Welcome back Burrowing Owls!” (May 28th, 2018) – aimed to let urban and rural residents know that the Burrowing Owls are active during the summer months, to keep watch for them, and to report any sightings. Information about their biology was also included.

- Resulted in two written articles: “Burrowing Owls are back from Mexican Vacation” – published online on *The Battleford News-Optimist* on June 5th, 2018; “Bison ranch keeps tabs on health of species at risk” – Published in *The Western Producer* on June 7th, 2018.
- “WATCH OUT! School’s out for the summer ... and so are Piping Plovers!” (June 25th, 2018) - aimed to let urban and rural residents know that Piping Plovers are nesting and how to identify a nest. Information about their biology was also included.
 - Resulted in one written article: “Step Carefully, There May be a Piping Plover” – published online on *600 CJWW*, *98 Cool FM*, and *92.9 The Bull* on July 5th, 2018.
- “Butcher Bird Babies Are Now Practicing Their Impaling Skills” (July 9th, 2018) – aimed to let urban and rural residents know that Loggerhead Shrike young are learning to hunt and feed on their own. Information about their biology was also included.
 - Resulted in three written articles: “Butcherbird Babies are out now practicing their impaling skills” – published online on *The Battleford News-Optimist* on July 15th, 2018; “Threatened Loggerhead Shrike Birds starting to make a comeback” – published in *The Leader Post* on July 16th, 2018; “Threatened Loggerhead Shrike bird numbers holding steady in Regina” – published in *The Leader post* on *The Leader Post online* on July 16th, 2018.
- “Monarch Butterflies Emerging Now!” (August 9th, 2018) – aimed to let urban and rural residents know about the Monarch Butterfly life cycle and migration, and to report sightings.
- “Young Burrowing Owls are learning the tricks of the trade!” (August 20th, 2018) - aimed to let urban and rural residents know that young inexperienced Burrowing Owls are learning to fly and hunt and to warn motorists to watch out for young on the road. Information about their biology was also included.
 - Resulted in one written article: “Watch for Young Owls on the Highway” published online on *Discover Moose Jaw Online* on August 24th, 2018.

Aside from interviews and articles directly resulting from news releases, one interview was conducted on *The Prairie Naturalist* podcast and radio show discussing the SOS programs on May 31st, 2018.

Recommendations:

- Target the South of the Divide and surrounding area (e.g., Val Marie, Frontier, Climax, Consul, and Maple Creek) to increase awareness of the stewardship programs and the toll-free number for SAR sightings in 2019.
- Target areas from the 2016 International Piping Plover Breeding Census, including Bengough and Assiniboia in the Missouri Coteau, as well as areas outside the Missouri Coteau (e.g., Eagle Creek and Battle River watersheds), to increase awareness of the Piping Plover, POS and the toll-free number to report Piping Plover sightings in 2019.

4.3 Promotion through Events

4.3.1 Events and Workshops

Program staff attend various events to raise awareness among agricultural producers as well as both rural and urban residents. These venues provide an important opportunity to showcase and talk about the programs and their goals. The CAD events are delivered by our stewardship program staff, usually together with other conservation agencies.

In 2018-19, program staff attended eleven events throughout southern and central Saskatchewan with our NS and SOS floor displays, and educational materials (Table 14). Three of these were CAD events. Program staff presented at events and were available to answer questions and discuss the stewardship programs as well as wildlife needs with landowners and town residents. The NS and SOS display was staffed at NS's Spring and Fall Meets. Educational materials made available to interested persons included stewardship program information, as well as other NS materials and some relevant brochures and print materials from other agencies.

Table 14. Events and workshops attended by program staff in 2018-19.

Date	Event	Location	Approximate Attendance
June 8 th – 10 th , 2018	NS Spring Meet	Coronach	80 people
August 8 th , 2018	Kids Nature Craft	Buffalo Pound Provincial Park	7 people
September 14 th – 16 th , 2018	NS Fall Meet	Swift Current	65 people
October 3 rd , 2018	Saskatchewan Science Centre Ignite Festival	Regina	150 students
November 19 th – 23 rd , 2018	Canadian Western Agribition	Regina	9,500 students and families
December 3 rd – 5 th , 2018	Transboundary Grassland Workshop	Lethbridge	100 professionals

February 4 th , 2019	University of Regina Career Fair	Regina	95 students
February 19 th – 21 st , 2019	Prairie Conservation and Endangered Species Conference	Winnipeg	350 professionals, researchers, government, ENGO's, etc.
February 26 th , 2019	CAD	Arcola	60 people
March 12 th , 2019	CAD	Consul	22 people
March 13 th , 2019	CAD	Mankota	14 people

Recommendation:

- Continue to attend relevant events and workshops as these provide valuable opportunities to gain knowledge, make contacts, and to speak with landowners.

4.3.2 Presentations

Nature Saskatchewan regularly receives requests to provide a presentation on one or more of its landowner stewardship programs or natural history topics. Seven presentations were delivered to urban and rural residents by staff on the stewardship programs or related topics, including hints on what people can do to benefit species at risk (Table 15).

Table 15. Presentations delivered by stewardship program staff in 2018-19.

Date	Presentation Topic(s)	Presentation Length	Venue	Attendance
September 6 th , 2018	Stewards of Saskatchewan	Poster Presentation	The Wildlife Society Conservation Expo	80 people
September 28 th , 2018	Nature Saskatchewan & the Stewards of Saskatchewan	50 minutes	University of Regina – Conservation Biology Class	30 students
November 19 th – 23 rd , 2018	Pitch for Pipits and Plovers	30 minutes x 20	Western Canadian Agribition – Regina	690 students
February 21 st , 2019	Stewards of Saskatchewan: A Look at Over 30 Years of Habitat Conservation for Grassland Species at Risk	20 minutes	Prairie Conservation and Endangered Species Conference	40 people
February 26 th , 2019	Stewards of Saskatchewan	15 minutes	CAD – Arcola	60 people
March 12 th , 2019	Stewards of Saskatchewan	15 minutes	CAD – Consul	22 people
March 13 th , 2019	Stewards of Saskatchewan	15 minutes	CAD – Mankota	14 people

4.4 Promotion through Educational Materials

Educational outreach materials including informational brochures, booklets, magnets, and posters are a cost-effective form of initial contact with landowners to spark an interest in SAR and their conservation. The five stewardship programs use many forms of communication to increase awareness about the Burrowing Owl, Loggerhead Shrike, Piping Plover, Saskatchewan rare plants, other prairie SAR and our voluntary stewardship programs. Brochures, booklets, and magnets provide valuable information and are distributed to urban and rural residents through Conservation Toolboxes during on-site visits with landowners, to landowners who call our toll-free Hoot Line to report owl, shrike, plover, and other SAR sightings, and at events and workshops.

4.4.1 Species at Risk Calendar

The 2019 SAR calendar (Appendix 5) showcased the following SARA listed species: Piping Plover, Hairy Prairie Clover, Monarch, American Badger, Snapping Turtle, Western Spiderwort, Loggerhead Shrike, Sprague's Pipit, Small-flowered Sand-verbena, Common Nighthawk, Red Knot, and Burrowing Owl.

There were 900 calendars printed on 50% recycled Forest Stewardship Council paper. Majority of the calendars were distributed to program participants, partner agencies and funders. The remaining calendars were available for purchase through the NS online store.

4.4.2 Fact Sheets

- **Leaving a Legacy: Conservation Easements** – Program staff promote CEs as a means of SAR habitat protection to many rural landowners (e.g., during on-site visits and as a part of our annual census). One way that staff do this is through the distribution of NS's CE information sheet. This information sheet briefly summarizes the state of Saskatchewan's native landscapes, describes what a CE is, the benefits of granting a CE, who qualifies for an easement, and what kinds of properties are of interest to the NCC (the main conservation easement holder to which staff refer landowners). The *Leaving a Legacy: Conservation Easements* sheet was distributed to landowners visited by staff (in the Conservation Toolbox) and at events. (Appendix 4).
- **Common Conservation Myths Answered** – This fact sheet describes the six most common conservation myths and addresses them with facts. This fact sheet is well laid out, easy to read, and helpful when talking with a landowner who expresses some of these myths. The fact sheet was distributed in Conservation Toolboxes and at events and workshops. (Appendix 4).
- **Beneficial Management Practices for Species at Risk** – This fact sheet outlines seven BMPs for each of the Burrowing Owl, the Loggerhead Shrike, and the Piping Plover that can be done on agricultural land that benefits these SAR. A RPR specific BMP factsheet

was developed for plant species at risk that outlines five BMPs to benefit plant species at risk. These fact sheet were distributed in Conservation Toolboxes and at events and workshops (Appendix 4).

4.4.3 Operation Burrowing Owl Materials

Brochures and Booklets

The OBO and Owls of the Prairie brochure was included in the Conservation Toolboxes and distributed at events (Table 16). The OBO brochure provides an overview of the program, including the goals, general information about Burrowing Owls, the importance of landowners in conservation, photographs, and the benefits of being a participant (Appendix 4). The Owls of the Prairies Brochure provides additional information on the Burrowing Owl and other prairie owl species (Appendix 4).

The Burrowing Owl Booklet, *Burrowing Owls in Saskatchewan*, is a 12-page booklet that incorporates current research, conservation, and population information to create an attractive fact booklet on Burrowing Owls (Appendix 4). The booklet is included in the Conservation Toolboxes and distributed at events (Table 16).

Magnet

A magnet featuring the OBO logo and toll-free Hoot Line is distributed annually (Table 16) to promote OBO, and encourage urban and rural residents, including agricultural producers, to report Burrowing Owl sightings. (Figure 4).



Figure 3. Operation Burrowing Owl magnet.

Table 16. Educational outreach materials distributed by Operation Burrowing Owl.

Educational Outreach Material	Number Distributed in 2018-19	Total Number Distributed
Operation Burrowing Owl brochure	129	5,115
Owls of the Prairies brochure	119	552
Burrowing Owl booklet	161	2,707
Operation Burrowing Owl magnet	15	5,335
Toolboxes for potential OBO participants	8	275

4.4.4 Rare Plant Rescue Materials

Brochures and Booklets

The RPR brochure serves to give interested people an overview of the program and benefits to landowners. It was included in the Conservation Toolboxes and distributed at events (Table 17).

Rare Plant Rescue produces *A Pocket Guide to the Rare Plants of Southern Saskatchewan* (Figure 5), featuring 14 of RPR’s target plant species and including information on distribution, habitat, identification, and threats. The purpose of this guide is to increase awareness about Saskatchewan’s rarest plant species among rural residents and landowners.

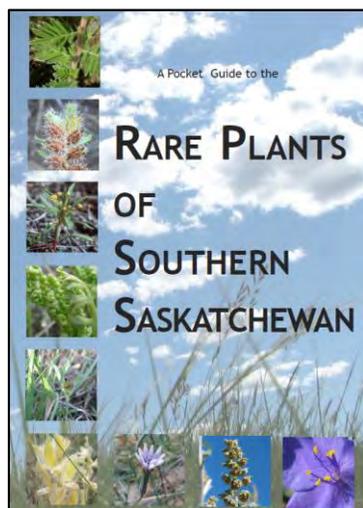


Figure 4. Cover page of *A Pocket Guide to the Rare Plants of Southern Saskatchewan*.

Table 17. Educational outreach materials distributed by Rare Plant Rescue.

Educational Outreach Material	Number Distributed in 2018-19	Total Number Distributed
Rare Plant Rescue brochure	100	4,454
Pocket Guide for Rare Plants of Southern Saskatchewan	19	4,621

4.4.5 Shrubs for Shrikes Materials

Brochures

The SFS brochure and Loggerhead Shrike species profile brochure were included in the Conservation Toolboxes and distributed at events (Table 18). The SFS brochure outlines the goals of SFS, general information about Loggerhead Shrikes, the importance of landowners in conservation, and the benefits of being a participant (Appendix 4). The Loggerhead Shrike species profile brochure outlines shrike biology, habitat, food, causes of its decline and how Saskatchewan residents can help (Appendix 4).

Magnet

Modelled on the OBO magnet, a SFS magnet (Figure 6) featuring the SFS logo and our toll-free Hoot Line is distributed annually (Table 18) to promote SFS, and encourage urban and rural residents, including agricultural producers, to report Loggerhead Shrike sightings by calling our toll-free Hoot Line.



Figure 5. Shrubs for Shrikes magnet.

Table 18. Educational outreach materials distributed by Shrubs for Shrikes.

Educational Outreach Material	Number Distributed in 2018-19	Total Number Distributed
Loggerhead Shrike brochure	95	4,459
Shrubs for Shrikes brochure	95	4,692
Shrubs for Shrikes magnet	11	3,030
Toolboxes for potential SFS participants	22	602

4.4.6 Plovers on Shore Materials

Brochures

The POS brochure and a Piping Plover species profile brochure were included in the Conservation Toolboxes and distributed at events (Table 19). The POS brochure outlines the goals of POS, general information about the Piping Plover, the importance of landowners in conservation, and the benefits of being a participant (Appendix 4). The species profile brochure outlines plover biology, habitat, distribution, causes of its decline and how Saskatchewan residents can help (Appendix 4).

Magnet

Modeled on the OBO and SFS magnets, the POS magnet (Figure 7) features a Piping Plover sketch and our toll-free Hoot Line. The POS magnet is distributed annually (Table 19) to promote POS, and encourage urban and rural residents, including agricultural producers, to report Piping Plover sightings by calling our toll-free Hoot Line.

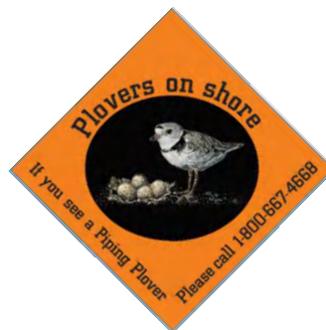


Figure 6. Plovers on Shore magnet.

Table 19. Educational outreach materials distributed by Plovers on Shore.

Educational Outreach Material	Number Distributed in 2018-19	Total Number Distributed
Piping Plover brochure	191	2,577
Plovers on Shore brochure	86	2,261
Plovers on Shore magnet	0	910
Toolboxes for potential POS participants	12	191

4.4.7 Stewards of Saskatchewan Banner Program Materials

Brochures

The SOS banner program, Sprague’s Pipit, and Ferruginous Hawk species profile brochures were included in the Conservation Toolboxes and distributed at events (Table 20). The SOS banner program brochure outlines the goals of the program, information on selected species at risk, the importance of landowners in conservation, and the benefits of being a participant (Appendix 4). The Sprague’s Pipit and Ferruginous Hawk species profile brochures outline their biology, habitat, causes of its decline, and how Saskatchewan residents can help (Appendix 4).

Magnet

Modelled after the existing program magnets, the SOS banner program magnet (Figure 8) features a sketch of a Northern Leopard Frog and our toll-free Hoot Line. The SOS magnet is distributed annually (Table 20) to promote SOS, and encourage urban and rural residents, including agricultural producers, to report species at risk sightings by calling our toll-free Hoot Line.

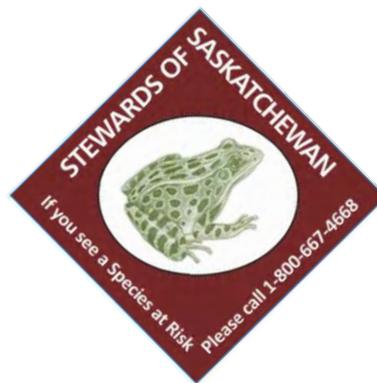


Figure 7. Stewards of Saskatchewan magnet.

Multiple Species at Risk “Wanted” Poster

The multi –SAR poster features descriptions, including status, distinguishing features, and habitat, along with full colour images of the Loggerhead Shrike, Burrowing Owl, Monarch, Piping Plover, and Northern Leopard Frog (Figure 9).



Figure 8. Multiple Species at Risk “Wanted” Poster.

Monarch Factsheet

The Monarch Factsheet describes the Monarch life cycle along with photos and outlines their migration along with a map (Appendix 4). The factsheet was included in the Conservation Toolboxes and distributed at events (Table 20).

Table 20. Stewards of Saskatchewan banner program educational outreach materials.

Educational Outreach Material	Number Distributed in 2018-19	Total Number Distributed
SOS banner program brochure	55	1,194
Sprague’s Pipit brochure	92	1,024
SOS banner program magnet	55	171
Monarch Factsheet	87	122
Ferruginous Hawk brochure	81	81
Toolboxes for potential SOS participants	19	210

4.4.8 Species at Risk Colouring Book

The Species at Risk colouring book (Figure 10) is targeted at children aged five to ten, and is intended to increase awareness about Saskatchewan's species at risk in a fun and interactive way. It will also provide a way for staff to engage children at events, presentations, and during landowner visits. Additionally, matching games and colour photographs of the species drawn were included in the colouring book.

In 2018-19, no colouring books were distributed.



Figure 9. Cover and sample page of Nature's Colours: Saskatchewan's Species at Risk.

4.5 Educational Programming

NS participated in delivering the Prairie Conservation Action Plan's "Pitch for Pipits and Plovers" game show at Agribition from November 19 - 23, 2018, to 690 students. This game show is an interactive learning tool where students learn about their role in helping to keep native and riparian areas healthy, the important and positive role that ranchers and farmers can have in providing habitat for species at risk, and that healthy grasslands and clean water are important for livestock, wildlife, people, and the land.

Recommendations:

- Continue to distribute program brochures on all landowner visits as well as at events and presentations given.
- If funding permits in 2019-20, print additional copies of the SOS colouring book. These were very popular with children, and are useful in increasing awareness about SAR among children and youth who are not the target audience for other educational materials (e.g., brochures).
- Pursue similar partnerships in the future to increase awareness of all the stewardship programs and provide learning opportunities for students across Saskatchewan

5.0 HABITAT ENHANCEMENT

5.1 How It Works

NS works with rural landowners to deliver a supplemental habitat enhancement (HE) program that was initiated in 2000. The goal of the HE program is to increase and improve wildlife habitat, focusing on habitat for SAR. During its first nine years, the program focused on seeding cultivated land to permanent cover (pasture) to increase nesting and foraging habitat for the Burrowing Owl, and beginning in 2003, also foraging habitat for the Loggerhead Shrike. In 2009, significant changes were made to the program; in particular, native seed mixes were required to be used in all seeding projects. In previous years, tame species were allowed, with the exclusion of highly invasive species, and tame species were primarily the seeding species of choice by landowners. The change in our program to seed only native species was required by the Government of Canada's Habitat Stewardship Program for Species at Risk (a major funder of the Stewards of Saskatchewan programs with the exception of 2012-13, 2014-16). The other significant change in 2009 was the inclusion of the Piping Plover in our HE program to protect nesting and foraging areas. In 2010, changes to the program included no longer undertaking HE projects for the Loggerhead Shrike, as there was no clear evidence this improves its productivity or survival; and undertaking projects that aim to improve habitat quality to increase productivity of the Sprague's Pipit.

Habitat Enhancement for the Burrowing Owl and Sprague's Pipit is accomplished through strategic cropland conversion to enlarge pastures and reduce fragmentation, and strategic wildlife-friendly fencing to improve pasture health. Fencing and alternate water source developments for livestock are also supported in order to preserve newly planted and native prairie areas. HE for the Loggerhead Shrike (2003-2009) was accomplished through converting cultivated land to pasture to enhance foraging opportunities. An additional benefit to the conversion of cropland back to pasture is that carbon, including greenhouse gases, is sequestered with the seeding of cropland to pasture. Piping Plover HE is accomplished through fencing and alternate water developments to keep livestock away from shorelines used by plovers. Preference will be given to projects near areas that currently have or recently had nesting owls, nesting pipits, nesting plovers or shoreline designated as critical Piping Plover habitat. All projects must be adjacent to or near existing grassland.

If they are not already, HE participants automatically become participants in the relevant stewardship program (based on the species targeted by their project) and are included in the program's annual census mail out. As the majority of projects to date have been for Burrowing Owls (and it is more challenging for stewards to definitively locate pipits and plovers), additional HE census data are only collected for owls. By including HE participants in the OBO annual census mail out, we are able to monitor whether the enhanced land itself is used by owls. These participants are excluded from the population monitoring aspect of the census until they have nesting owls on their land.

For approved projects, NS provides funding to landowners on a 50:50 cost share basis, and the landowner formally agrees to maintain the project enhancement activities. A 12-year binding agreement (Appendix 12) is signed by NS and the landowner, requiring the landowner to maintain the enhanced habitat and to participate in the annual census of the target species to evaluate its use of the enhanced work. This agreement enrolls the landowner in OBO, POS, or the SOS banner program, depending on whether it is an owl, plover, or pipit project, respectively.

The HE program is promoted through our annual newsletter, during landowner visits, at display booths, in the *Blue Jay*, through advertisements, and by word of mouth.

To qualify for HE funding, ideal project sites are:

- For the Burrowing Owl: preferably areas adjacent to existing pasture within 3-5 km of Burrowing Owl nests active in the past 5 years, confirmed by NS staff, a Conservation Officer/agency, or a research biologist.
- For the Piping Plover: preferably areas adjacent to pasture, designated as critical habitat, or with nesting plovers in the current year or recent past, confirmed by NS staff, a Conservation Officer/agency, or a research biologist.
- For the Sprague's Pipit: preferably areas adjacent to pasture with nesting pipits nearby in the current year or recent past, confirmed by NS staff, a Conservation Officer/agency, or a research biologist.

Seeding projects

Seeding projects are 50:50 cost share between the landowner and Nature Saskatchewan, where payment to the landowner is calculated as 50% of the total receipts. **Projects must use a 100% native grass seed mixture of at least two species.** The typical level of assistance for seed cost is half of \$100/acre; if the cost of the seed blend is below the maximum, only 50% of the actual seed cost is paid. Seeding must be done within 18 months of seed purchase, and if the mix is not sown within 18 months the landowner is to provide the reasoning and when it will occur. The typical level of assistance for labour and the rental of proper seeding equipment for native blends is half of \$35/acre; if the cost of seeding is below the maximum, only 50% of the actual labour and equipment cost is paid. For glyphosate-based herbicide applications, the typical level of assistance is half of \$22/acre for up to two applications; if the cost of herbicide and application is below the maximum, only 50% of the actual cost will be paid. Higher costs will also be considered with prior discussion and approval by NS.

Fencing and water development projects

Fencing and water development projects are a 50:50 cost share of materials as well as time and equipment provided by the landowner. The typical level of assistance for the construction of 1 mile of 2 strand high tensile electric fence is half of \$2,400; if the cost of the fence is below the maximum, only 50% of the cost is paid. The typical level of assistance for the construction of 1 mile of 4 wire (double strand barb, bottom and top wire smooth) fence is half of \$3,800; if the cost

of the fence is below the maximum, only 50% of the cost is paid. The typical level of assistance for the development of a livestock watering site is half of \$3,500; if the cost of the watering site is below the maximum, only 50% of the cost is paid. Higher costs will be considered with prior discussion and approval by NS. The Government of Saskatchewan's publication on fencing cost estimates will be used as a guide in determining current fencing costs. All fencing projects are required to be wildlife-friendly, i.e., the bottom and top wires are smooth, with the highest wire **40-42 inches** or less off the ground, the lowest wire **18 inches** or more off the ground, and the top two wires no less than **12 inches** apart. As fences can be barriers to migration as well as inhibit access to food, water and shelter, wildlife-friendly fencing ensures ungulates are able to jump over or crawl under the fence with ease.

An example of a landowner's timeline for seeding projects:

Year 1

- Applies to NS for funding; provides objectives, history (herbicide and crop), and soil type (soil test for pH, salinity, nutrient level).
- Meets with a Professional Agrologist assigned to this project by Nature Saskatchewan (on-site) and a Nature Saskatchewan staff member (when possible) to initiate project planning.
- If necessary, begins weed control using a glyphosate-based herbicide approved by the Professional Agrologist to achieve a weed-free seedbed.
- With assistance from the Professional Agrologist, determines appropriate seed mixes, and orders and pays for seed; seed certificate must be submitted to NS.

Year 2

- Rents appropriate seeding equipment (broadcast seeding is not allowed); provides proof to NS that appropriate seeding methods have been used (e.g., with photos or confirmation by the Professional Agrologist).
- If necessary, applies pre-seed herbicide; must be a glyphosate-based herbicide approved by the Professional Agrologist.
- Seeds project area.
- Provides post-seeding weed control, primarily through mowing; this needs to be done before the weeds flower.
- If necessary, spot sprays and mows for additional weed control.
- Submits receipts for seed, labour and equipment costs to Nature Saskatchewan.

Year 3

- Spot reseeds, if needed.
- Provides weed control through mowing (as in Year 2).

Staff will do site visits to seeding projects at various stages to discuss the project with the landowner. Once seeding has been completed, receipts have been received by NS, and NS has confirmed the completion of seeding with a site check and/or photos; reimbursements will be paid.

5.2 Habitat Enhancement Projects

In 2018-19, two fencing projects for BUOW were undertaken.

From 2000-2018, Nature Saskatchewan funded 137 HE projects resulting in 15,367 acres of cropland seeded back to grassland (of which, 5 were native seeding projects resulting in 388 acres seeded), 67.08 miles of strategic fence installed, and 17 watering sites established (Tables 21 and 22).

Table 21. Summary of habitat enhancement (HE) projects targeting the Burrowing Owl (BUOW), Loggerhead Shrike (LOSH), Piping Plover (PIPL), and Sprague’s Pipit (SPPI) from 2000 to 2018.

Year	Number of HE Projects Targeting These Species				Total Number of HE Projects	Number of Acres Seeded	Length of Fence Installed (miles)	Number of Alternate Water Sources Developed
	BUOW (OBO)	LOSH (SFS)	PIPL (POS)	SPPI (SOS)				
2000	13	-	-	-	13	1875	-	-
2001	12	-	-	-	12	1430	9.5	2 sites
2002	8	1	-	-	9	1305	6.0	2 sites
2003	13	-	-	-	13	2388	5.75	1 site
2004	10	-	-	-	10	1410	9.0	-
2005	14	1	-	-	14*	1825	5.75	-
2006	13	1	-	-	14	1690	5.25	1 site
2007	15	3	-	-	18	1731	7.33	1 site
2008	15	5	-	-	18**	1585	4.5	5 sites
2009	1	-	-	-	1	0	2	-
2010	2	-	-	1	3	43	4	-
2011	1	-	-	1	2	40	1.75	-
2012	1	-	-	-	1	-	1.5	1 site
2013	-	-	-	-	-	-	-	-
2014	-	-	-	-	-	-	-	-
2015	1	-	-	-	1	45	-	-
2016	-	-	-	-	-	-	-	-
2017	3	-	2	1	6	-	1.75	4 sites
2018	2	-	-	-	2	-	3.0	-
Total	124	11	2	3	137	15,367	67.08	17 sites

* One project for both Burrowing Owls and Loggerhead Shrikes.

** Two projects for both Burrowing Owls and Loggerhead Shrikes.

Table 22. Habitat enhancement project details from 2000 to 2018. All projects are Burrowing Owl projects unless otherwise indicated (by a species code).

Year	Landscape Area	Number of Acres Seeded	Fence Installed (miles)	Alternate Water Sources Developed
2018	Bad Hills	-	1	-
	Bad Hills	-	2	-
2018 Totals		0	3	0
2017	Rosetown Plain (SPPI)	-	1	-
	Regina Plain	-	-	1
	Eyebrow Plain (PIPL)	-	0.75	-
	Swift Current Plateau	-	-	1
	Lake Alma Upland	-	-	1
	Lake Alma Upland (PIPL)	-	-	1
2017 Totals		0	1.75	4
2016	-	-	-	-
2016 Totals		0	0	0
2015	Swift Current Plateau	45	-	-
2015 Totals		45	0	0
2014	-	-	-	-
2014 Totals		0	0	0
2013	-	-	-	-
2013 Totals		0	0	0
2012	Chaplin Plain	-	1.5	1
2012 Totals		0	1.5	1
2011	Wood River Plain	40	-	-
	Wood Mountain Plateau (SPPI)	-	1.75	-
2011 Totals		40	1.75	0
2010	Chaplin Plain	43	-	-
	Rosetown Plain	-	2	-
	Rosetown Plain (SPPI)	-	2	-
2010 Totals		43	4	0
2009	Wood River Plain	-	2	-
2009 Totals		0	2	0
2008	Climax Plain (LOSH & BUOW)	240	-	-
	Climax Plain (LOSH & BUOW)	140	-	-
	Coteau Lakes Upland	110	-	-
	Dirt Hills	110	-	-
	Elstow Plain (LOSH)	90	1	-
	Elstow Plain (LOSH)	40	-	1
	Elstow Plain (LOSH)	-	1	1
	Eston Plain (LOSH & BUOW)	60	-	-

	Wood River Plain	320	-	-
	Wood River Plain	-	0.5	-
	Regina Plain (LOSH & BUOW)	45	-	-
	Strasbourg Plain	-	-	2
	Swift Current Plateau	80	-	-
	Wood Mountain Plateau	180	-	-
	Wood River Plain	80	1	1
	Wood River Plain	50	-	-
	Wood River Plain	40	-	-
	Wood River Plain	-	1	-
	2008 Totals	1,585	4.5	5
2007	Coteau Lakes Upland	240	-	-
	Elstow Plain	150	1	-
	Elstow Plain	-	1	-
	Elstow Plain (LOSH)	200	-	-
	Elstow Plain (LOSH)	166	-	-
	Eston Plain	80	-	-
	Indian Head Plain	70	0.5	-
	Wood River Plain	120	-	-
	Wood River Plain	80	-	-
	Wood River Plain	-	1.5	-
	Wood River Plain	-	0.83	1
	Wood River Plain	160	-	-
	Regina Plain	30	-	-
	Swift Current Plateau (LOSH)	130	-	-
	Wood River Plain	100	2	-
	Wood River Plain	110	0.5	-
Wood River Plain	40	-	-	
Wood River Plain	55	-	-	
	2007 Totals	1,731	7.33	1
2006	Coteau Lakes Upland	160	-	-
	Elstow Plain (LOSH)	80	-	-
	Regina Plain	80	1.75	-
	Regina Plain	80	-	-
	Regina Plain	230	-	-
	Regina Plain	160	-	-
	Regina Plain	160	-	-
	Regina Plain	165	0.75	-
	Regina Plain	100	-	-
	Wood River Plain	0	0.5	-
	Wood River Plain	40	-	-
	Wood River Plain	160	-	-
	Wood River Plain	75	2.25	1
Wood River Plain	200	-	-	
	2006 Totals	1,690	5.25	1
2005	Beechy Hills	30	1.25	-
	Beechy Hills	15	1.25	-
	Regina Plain	300	-	-
	Regina Plain	160	-	-

	Regina Plain	200	-	-
	Regina Plain	90	-	-
	Wood Mountain Plateau	150	-	-
	Wood River Plain	80	1.0	-
	Wood River Plain	240	-	-
	Wood River Plain	70	-	-
	Wood River Plain	150	-	-
	Wood River Plain	200	-	-
	Wood River Plain	50	0.25	-
	Goose Lake Plain (LOSH & BUOW)	90	2.0	-
	2005 Totals	1,825	5.75	0
2004	Beechy Hills	50	2.5	-
	Chaplin Plain	80	-	-
	Chaplin Plain	190	-	-
	Coteau Lakes Upland	80	0.5	-
	Maple Creek Plain	80	-	-
	Regina Plain	0	2.0	-
	Wild Horse Plain	100	-	-
	Wood River Plain	380	-	-
	Wood River Plain	50	-	-
	Wood River Plain	400	4.0	
	2004 Totals	1,410	9.0	0
2003	Arm River Plain	220	-	-
	Coteau Lakes Upland	160	2.0	-
	Eyebrow Plain	120	1.0	-
	Eyebrow Plain	200	-	-
	Lloydminster Plain	260	-	-
	Regina Plain	65	-	-
	Regina Plain	200	-	-
	Regina Plain	640	-	-
	Strasbourg Plain	158	-	-
	Trossachs Plain	140	0.5	1
	Wild Horse Plain	100	-	-
	Wood River Plain	55	1.5	-
	Wood River Plain	70	0.75	-
	2003 Totals	2,388	5.75	1
2002	Arm River Plain	0	1.0	-
	Coteau Lakes Upland	235	1.0	-
	Coteau Lakes Upland	100	1.0	-
	Coteau Lakes Upland (LOSH)	160	2.0	1
	Lake Alma Upland	280	-	-
	Regina Plain	0	0	1
	Regina Plain	200	-	-
	Schuler Plain	170	-	-
	Strasbourg Plain	160	1.0	-
	2002 Totals	1,305	6.0	2

2001	Arm River Plain	160	-	-
	Arm River Plain	95	1.0	-
	Coteau Lakes Upland	80	2.5	-
	Coteau Lakes Upland	0	1.5	-
	Griffin Plain	100	-	-
	Regina Plain	200	-	-
	Regina Plain	75	1.0	-
	Regina Plain	200	-	-
	Regina Plain	200	1.5	2
	Rosetown Plain	0	2	-
	Trossachs Plain	120	-	-
	Wood Mountain Plateau	200	-	-
2001 Totals		1,430	9.5	2
2000	Arm River Plain	110	-	-
	Climax Plain	480	-	-
	Gainsborough Plain	50	-	-
	Lake Alma Upland	250	-	-
	Moose Mountain Upland	90	-	-
	Regina Plain	100	-	-
	Regina Plain	55	-	-
	Regina Plain	285	-	-
	Regina Plain	160	-	-
	Rosetown Plain	55	-	-
	Schuler Plain	60	-	-
	Swift Current Plateau	80	-	-
Trossachs Plain	100	-	-	
2000 Totals		1,875	0	0

5.3 Burrowing Owl Returns to Habitat Enhancement Project Sites

HE sites first saw owls on the seeded portion in 2007 with 1 nesting pair and 1 single on 2 HE projects. In 2018, OBO HE participants reported 3 pairs, 2 singles, and 4 young Burrowing Owls nesting on 5 HE sites (Table 23).

Table 23. Number of Burrowing Owls located on habitat enhancement (HE) sites in the years following project completion. A HE site is the quarter section(s) where a habitat enhancement project occurred. As of 2018, the number of owls on all types of HE sites (e.g., seeding, fencing, and water developments) were included.

Year	Landscape Area	# of Nesting Pairs on HE site	# of Single Owls on HE site	Year Seeded	Habitat Enhancement Site ID
2004	Rosetown Plain	1	0	2000	15
	Regina Plain	9	3	2001	30
	Wood River Plain	1	0	2003	52
	Wood River Plain	1	2	2003	59
	Total	12	5		4 Sites
2005	Regina Plain	4	0	2000	16
	Regina Plain	3	0	2000	17
	Dirt Hills	1	0	2001	26
	Arm River Plain	1	0	2003	57
	Total	9	0		4 Sites
2006	Regina Plain	1	0	2000	15
	Regina Plain	1	0	2001	23
	Regina Plain	2	0	2001	30
	Total	4	0		3 Sites
2007	Regina Plain	3	1	2000	17
	Regina Plain	3	1	2000	16
	Regina Plain	0	1	2000	2
	Regina Plain	1	1	2001	30
	Regina Plain	2	0	2005	97
	Wood River Plain	1	0	2006	111
	Total	10	4		6 Sites/2 HE project
2008	Regina Plain	2	0	2000	16
	Regina Plain	2	0	2000	2
	Regina Plain	0	1	2001	23
	Regina Plain	2	0	2001	17
	Regina Plain	4	0	2001	30
	Wood River Plain	6	0	2005	90
	Regina Plain	1	0	2005	98
	Eston Plain	1	0	2007	124
	Total	17	1		8 sites/3 HE project
	Regina Plain	3	0	2000	17
	Regina Plain	3	0	2000	2
	Regina Plain	7	0	2001	30
	Regina Plain	0	1	2001	27

2009	Swift Current Plateau	1	0	2004	80
	Wood River Plain	1	0	2005	90
	Wood River Plain	1	0	2007	126
	Climax Plain	1	0	2008	153
	Eston Plain	1	0	2008	167
	Total	17	1		9 Sites/4 HE project
2010	Regina Plain	2	0	2000	2
	Dirt Hills	1	0	2001	26
	Regina Plain	4	0	2001	30
	Wood River Plain	3	0	2005	87
	Regina Plain	2	1	2007	125
	Eston Plain	1	0	2008	168
	Wood River Plain	2	0	2008	138
	Total	15	1		7 Sites/3 HE project
2011	Regina Plain	1	0	2000	17
	Rosetown Plain	1	0	2001	26
	Wood River Plain	2	0	2004	68
	Wood River Plain	1	0	2005	90
	Trossachs Plain	1	0	2005	91
	Regina Plain	1	0	2005	98
	Wood River Plain	1	0	2006	118
	Regina Plain	2	0	2007	125
	Total	10	0		8 Sites/2 HE project
2012	Arm River Plain	0	1	2003	58
	Wood River Plain	3	0	2005	103
	Wood River Plain	0	0	2005	87
	Goose Lake Plain	1	0	2005	92
	Regina Plain	0	1	2005	98
	Regina Plain	0	0	2005	91
	Wood Mountain Plateau	2	0	2008	160
	Wood River Plain	1	0	2008	156
	Coteau Lake Upland	0	1	2008	141
	Dirt Hills	0	1	2008	144
	Total	7	4		10 sites/2 HE project
2013	Rosetown Plain	1	0	2000	15
	Wood River Plain	2	0	2001	20
	Wood River Plain	1	0	2008	169
	Eston Plain	0	4	2009	167

	Total	4	4		4 sites/2 HE project
2014	Trossachs Plain	1	0	2002	44
	Eyebrow Plain	1	0	2003	66
	Wood River Plain	0	1	2006	110
	Wood River Plain	1	0	2006	118
	Regina Plain	1	2	2007	125
	Eston Plain	0	2	2009	167
	Total	4	5		6 sites/3 HE project
2015	Regina Plain	0	1	2000	N/A
	Wood River Plain	0	4	2001	20
	Wood River Plain	1	0	2005	94
	Elstow Plain	1	0	2005	92
	Wood River Plain	1	0	2009	169
	Eston Plain	2	0	2009	167
	Eyebrow Plain	1	3	2003	66
	Total	6	8		7 sites/2 HE project
2016	Eyebrow Plain	0	1	2003	66
	Wood River Plain	1	0	2004	69
	Trossachs Plain	0	1	2006	116
	Eston Plain	1	0	2009	167
	Total	2	2		4 sites/2 HE project
2017	Wood River Plain	1	0	2005	94
	Eston Plain	1	1	2009	167
	Total	2	1		2 sites/2 HE project
Year	Landscape Area	# of Nesting Pairs on HE site	# of Single Owls on HE site	Year Enhanced	Habitat Enhancement Site ID
2018	Wood River Plain	0	1	2005	51
	Eston Plain	1	0	2009	89
	Trossachs Plain	0	1	2001	20
	Swift Plateau Current	1	0	2017	N/A
	Eyebrow Plain	1	0	2003	40
	Total	3	2		5 sites/ 2 HE projects

Recommendations:

- Staff will continue to work with landowners on HE for eligible projects to benefit the Burrowing Owl, Piping Plover, and Sprague's Pipit. Coordinate with other individuals (e.g., native grassland restoration experts) and agencies for funding opportunities.
- When talking with landowners that manage Piping Plover critical habitat, determine sites that may need a HE project to protect shorelines and wetlands.
- Work with partner agencies to organize the next Native Prairie Restoration and Reclamation workshop in February, 2020.

6.0 LITERATURE CITED

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7.0 FINANCIAL STATEMENT

April 1, 2018 to March 31, 2019

Contributor	Cash	In-kind	Total
Environment Climate Change Canada – Habitat Stewardship Program	103,416	0	103,416
SK Ministry of Environment – Fish and Wildlife Development Fund	100,000	0	100,000
US Fish and Wildlife – Neotropical Migratory Bird Conservation Act	52,127	0	52,127
The Mosaic Company	30,000	0	30,000
South of the Divide Conservation Action Program	20,409	0	20,409
R. Howard Webster Foundation	15,000	0	15,000
Mitacs	10,000	0	10,000
Native Plant Society of Saskatchewan	3,083	4,504	7,587
Enbridge	3,000	0	3,000
Elsa Wild Animal Appeal of Canada	2,000	0	2,000
SaskTel	1,000	0	1,000
Canada-Saskatchewan Job Grant	3,338	0	3,338
South Saskatchewan Community Foundation	300	0	300
Nature Saskatchewan (including deferred revenue from 2017-18)	15,806	17,998	33,804
Donations	2,365	0	2,365
Merchandise sales (e.g., t-shirts)	1,122	0	1,122
Prairie Conservation Action Plan	0	2,457	2,457
Landowners/Volunteers	0	27,692	27,692
SK Ministry of Environment – Conservation Data Centre	0	14,000	14,000
Nature Conservancy of Canada	0	2,501	2,501
SaskPower - Shand Greenhouse	0	2,300	2,300
Saskatchewan Burrowing Owl Interpretive Center	0	2,050	2,050
Royal Saskatchewan Museum – Burrowing Owl Researchers	0	1,440	1,440
Moose Jaw River Watershed Stewards Inc.	0	1,350	1,350
Old Wives Watershed Association	0	1,050	1,050
TOTAL	\$362,966	\$77,342	\$440,308
Expenditures	Cash	In-kind	Total
Human Resources	227,018	60,911	287,929
Travel and Accommodation	15,637	0	15,637
Equipment, Materials and Supplies	5,920	2,300	8,220
Other (conferences, training, promotion, etc.)	6,738	7,157	13,895
Communication, Printing, Production, and Distribution	23,386	6,974	30,360
Vehicle Rental and Operation	13,556	0	13,556
Overhead	34,754	0	34,754
TOTAL	\$327,009	\$77,342	\$404,351
BALANCE (Revenue - Expenditures)*	\$35,957	\$0	\$35,957

**The balance (\$35,957) will be carried over to the 2019-2020 fiscal year*