

Smile . . . You are on camera!



In February 2018, two cellular trail cameras were mounted above two known ferruginous hawk nests, located on artificial nesting platforms, to showcase the secret lives of these large raptors (<http://www.ab-conservation.com/wildlife-cameras/ferruginous-hawk/>). During the breeding season, each camera captured images at regularly scheduled times and transmitted them via cellular transmission to a remote computer email. From there, the images were analyzed and then posted to the website above for the public to enjoy. The images captured at each nest gave some insight into parental behaviours at the nest, diet, and development of the young birds.

The first breeding pair (Nest #1) arrived at their nest from the wintering grounds around March 14th, with the second pair (Nest #2) arriving approximately one week later. By late-March, both breeding pairs were observed on the cameras building and refurbishing their nests from the previous year. Each breeding pair added materials, such as grass litter, tumbleweeds, cow dung, sagebrush, bale tine, and sticks, to their respective nests prior to egg laying. By early to mid-April, each adult female laid their eggs and incubated them for approximately 30-34 days. The females even remained on their nests during abrupt and heavy snowfall. Occasionally, their male counterparts were observed sitting on the eggs at each nest. Nests #1 and #2 laid five and four eggs, respectively.



By mid-May, each nest became livelier as the eggs began to hatch. Unfortunately, each nest did have one unhatched egg in it. The adult females kept the young warm during chilly mornings, blowing wind, and rainfall, and provided shade for the young in the heat of the day. On the other hand, the adult males were constantly hunting and counted on to bring enough dead gophers, or sometimes mice, back to the nest. When the food was brought to the table, the mothers delicately fed each young in the nest. [Continued on next page.](#)



Smile . . . You are on camera! continued



By mid-June, the chicks' downy feathers were starting to be replaced with flight and other body feathers, and their appetites began to grow. Both sets of parents were showing up less on the nest each day, except during prey drop-offs. Freshly-killed gophers were now being consumed by the young with minimal parental assistance. While the young waited for their next meal, they were often sleeping, walking around on the nest, or stretching their wings. As each day passed, the young at each nest were becoming more active.



By July 20th, the young at Nest #1 were no longer observed on the camera and Nest #2 became vacant approximately 10 days later. At this stage of the nesting cycle, the young had fully developed flight feathers and were able to leave the nest (i.e. fledge) on their own. Although the MULTISAR team did not visit the hawk nests during the breeding season, it is likely that Nests #1 and #2 successfully raised four and three fledglings, respectively.

In conclusion, the cellular trail cameras were a cost-effective way to showcase the lives of these grassland specialists. Our observations confirmed that these two families consumed mostly gophers, which can serve as a valuable tool for naturally controlling local rodent populations. Furthermore, we saw that these raptors are very attentive parents and will endure the harsh elements to keep their eggs and young warm. In the future, we will likely set the cameras to take more daily photos to determine lay, hatch, and fledgling dates, and to better document adult male behaviour at the nest. Table 1 summarizes the observed events at each nest during the 2018 breeding season.

Table 1. Summary of observed nest events and their dates for each monitored nest in 2018.

Nest Site	Adults First Observed	First Egg Observed	Last Egg Observed	Total Number of Eggs	Hatched Young First Observed	Young Last Observed on Nest	Number of Fledglings
#1	March 14 th	April 5 th	April 17 th	5	May 16 th	July 20 th	4
#2	March 20 th	April 19 th	April 28 th	4	June 2 nd	August 1 st	3

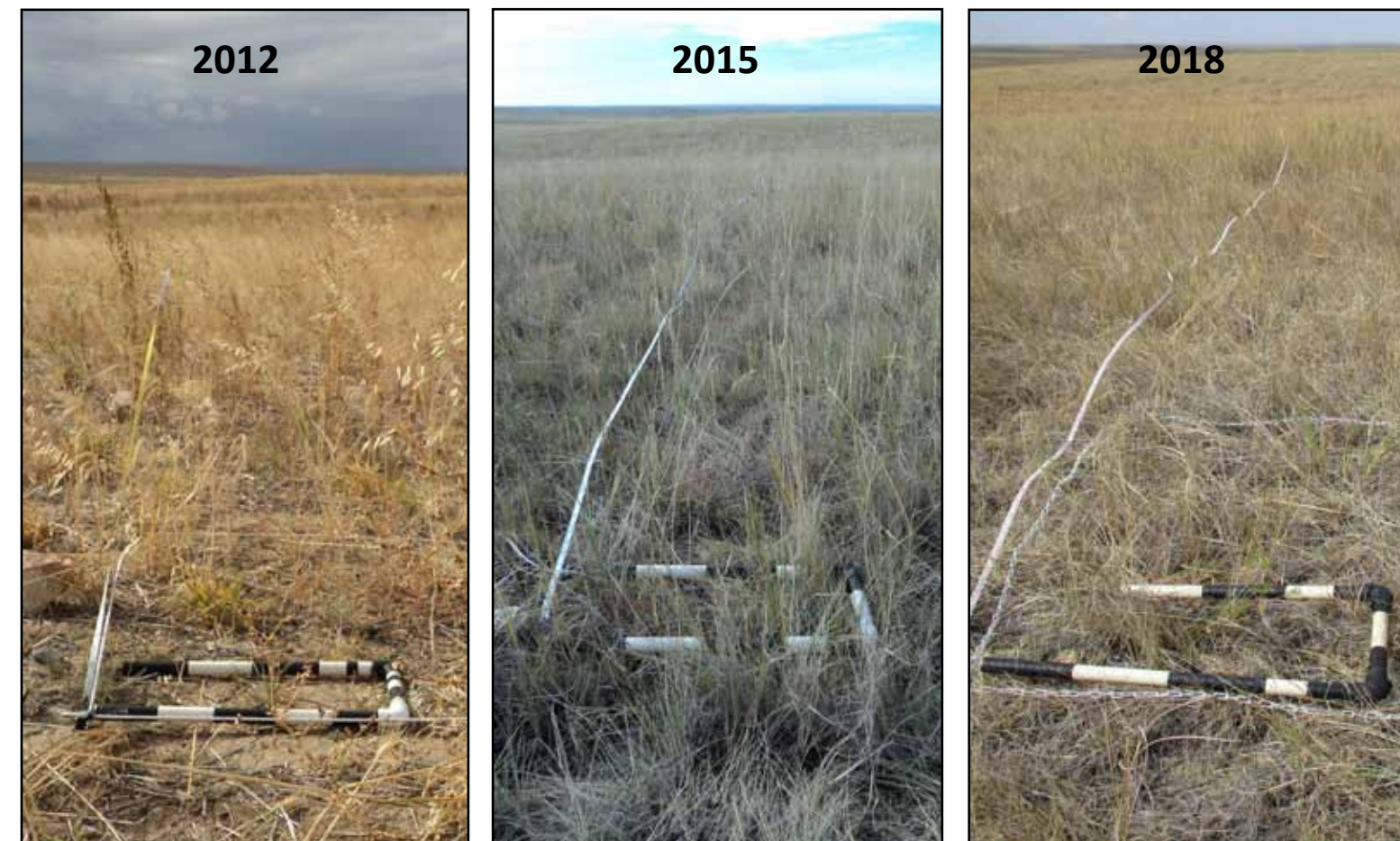
We would like to thank those landowners that came out to their hawk platforms to hold the ladder and pass tools up and down for the climber. The warm lunches that followed were always amazing, and their cooperation and support of this hawk camera project was greatly appreciated.

Silver Sage Conservation Site

The Silver Sage Conservation Site is a 2,418 acre property owned by Alberta Conservation Association and Alberta Fish and Game Association (AFGA). The site is also jointly managed with support from the Pheasants Forever Calgary and Chinook Chapters and has a MULTISAR Habitat Conservation Strategy completed. Alberta Environment and Parks has also been an active supporter and advisor to the project. Activities implemented through the MULTISAR project include native grass restoration projects, shrub planting, off site watering, and wildlife friendly fencing.

Restoration Details and Highlights:

Nearly two-thirds (1,300 acres) of the lands that make up the Silver Sage Conservation Site were in active agronomic crop production at the time of their purchases, and as these were some of the only cropped parcels in the local area, they were deemed of high value to return to permanent native cover. This included the planting of over 13,500 native shrub, forb, and grass plugs. Approximately 2.4 km of fence was removed and 5.6 km of fence converted to wildlife-friendly specifications. Most of this work was done with the help of local producers and contractors, who were hired for the re-seeding and fence installation. Lastly, a proposed design has been made to improve the existing temporary wetland on the property, but construction has not yet been completed. Four grazing leases on lands that were once cropland have been given to neighboring ranchers and one local producer has the haying rights on the property. The site also provides open access for hunting and other recreational activities.

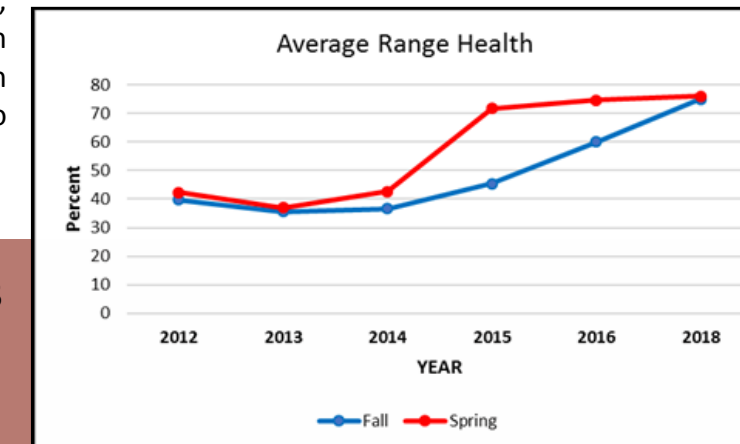


Example of one site showing the progression of restoration efforts over the past six years. Note the reduction of bare ground and accumulation of litter in 2015 and 2018 vs 2012.

Wildlife Trends:

During the baseline HCS, 69 wildlife species were recorded on Silver Sage Conservation Site. Thirteen of the species observed were species at risk. A reassessment of the property was completed in 2016 and included 37 of the 133 original sites surveyed to allow comparison of wildlife occurring on the ranch since the reference surveys. Sixty-one species were identified, with 20 being species at risk. Eighty-four percent (84%) of all survey locations contained at least one species at risk.

Over the five years between inventories, changes in the bird community took place. In the first couple of growing seasons after the parcels were reseeded, species such as horned larks, chestnut-collared longspurs and McCown's longspurs, all of which prefer grassland with reduced structure and more bare ground, were the dominant grassland bird species. Then, as the seeded grassland plants increased in density and cover and litter amounts grew, these species were replaced by other bird species, such as Sprague's pipits, Baird's sparrows, Savannah sparrows, and grasshopper sparrows. This shift in bird communities is not unexpected given the transition in habitat from relatively open habitat (i.e. mostly cropland) to established native grasslands with increased range health.



Project timeline for native grass reseeds

2011

- Completed detailed range and wildlife inventory.
- Planted 520 native shrubs.
- Initiated fall reseeded on 480 acres by broadcasting native grass species.

2012

- Initiated spring reseeded on 480 acres by broadcasting native grass species.
- Began crested wheatgrass conversion to native prairie trial plot with Alberta Agriculture.
- Planted 200 silver sagebrush plugs and broadcast silver sagebrush seed.

2013

- Installed 800m of wildlife friendly fence.
- Planted 2,900 native forb and shrub plugs (silver sagebrush, wild vetch).

2014

- Spring reseed of 160 acres and fall reseed of 90 acres.
- Planted 3,800 native forb and shrub plugs (silver sagebrush, golden bean, wild vetch).

2015

- Planted 2,000 needle-and-thread grass plugs.

2016

- Spring reseed on 90 acres by broadcasting native grass species.
- Installed new fence lines with reflectors and perch deterrents.
- Hand-seeded wild-harvested silver sagebrush and needle-and-thread grass.
- Conducted Silver Sage HCS reassessment to monitor changes in wildlife and range health.

2017

- Reseeded 160 acres in the spring by broadcasting native grass species.
- Planted 2,000 needle and thread grass and 200 silver sagebrush shrub plugs.

2018

- Direct-seeded 90 acres with native grass and forb seed and 160 acres with wheatgrass that were seeded in 2017.
- Planted 2,000 needle and thread plugs.

Range Health Trends:

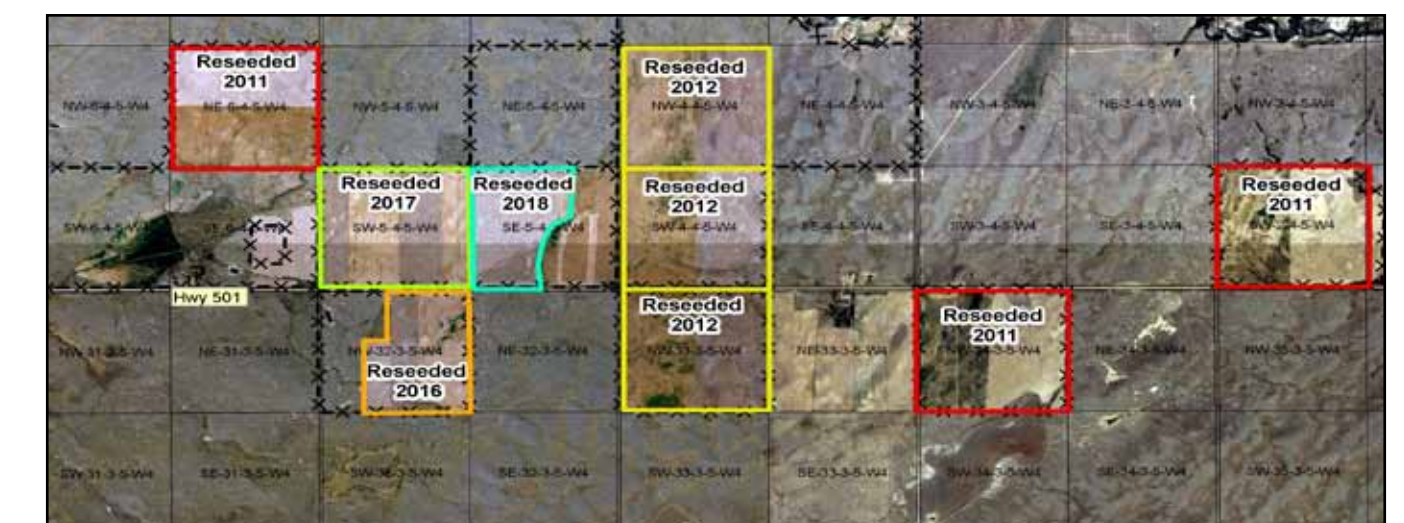
During the baseline HCS, 90 vascular plant species were recorded on Silver Sage Conservation Site. A reassessment of the property was completed in 2016 and included 17 of the original 26 sites resurveyed. With the purchase of the new lands and additional assessments/reassessments in 2016, the number of vascular plants increased to 233, including six rare plant species and one rare riparian plant community.

Restoration efforts on the property were initiated in the fall of 2011 and continued into the spring of 2012. The seed mix included northern and western wheat grass, June grass, blue grama grass, and needle and thread grass, and was broadcast at a rate of 9 lbs/ac. Sites seeded in the fall did not have as good a 'take' as the sites seeded the following spring. This is likely a result of mild winter conditions in 2011/2012, allowing some early germination of the seeded species followed by subsequent winter kill. While there were invasive species issues on all reseeded sites, abundance of annual species and noxious species such as Canada thistle and downy brome were highest on the fall-seeded parcels. However, broadleaf herbicide applications and spot spraying eliminated most invasive species cover.

Over the five years between inventories, range health increased across most sites. Initially, reseeded sites underwent a slight decline in range health following seeding before progressing in health. This brief decline is related to litter amounts. As the sites were seeded into standing crop stubble, this crop residue served the role of litter on the sites. However, the decomposition of the crop residue occurred faster than it was replaced by establishing grasses, resulting in reduced litter scores for those couple of years. By 2016, however, 91% of the reassessed sites scored in the 'high healthy' and 'healthy' categories compared to 2010 and 2011, when only 82% of the same sites scored in these two health categories. Also, while the fall reseeds seemed to have less success initially then the spring reseeds, after six years all sites received the same health scores and have relatively the same species composition and cover. The 2011/2012 reseeded sites seem to have plateaued in terms of expression of the seed mix and some of the restoration efforts on these sites moving forward will be focused on increasing native forb and shrub cover, as well as the abundance of needle and thread grass.

Reseeding has continued on the remaining Silver Sage cultivated lands in the last three years. Learning from initial restoration efforts, silver sagebrush, purple prairie clover, and wild vetch seed have all been added to the seed mixes, as these species have shown resistance to early season broadleaf herbicide treatments. The placement of seed for costly species such as silver sagebrush and needle and thread grass has become more strategic by hand broadcasting onto microsites (small knolls and swales). This has been more successful in establishing those species sooner.

As of 2018, all previously cultivated lands on the property have been reseeded and are under various stages of restoration. Grazing is now occurring on the oldest reseeded sites with stocking rates at about two-thirds of the surrounding native prairies. This will increase as the sites continue to progress towards a more diverse and healthy ecosystem.



Species Profile: Small-flowered Sand-verbena

Description: Small-flowered sand-verbena (*Tripterocalyx micranthus*) is a low-lying, annual forb that is part of the four o'clock (*Nyctaginaceae*) family. The leaves grow in opposite pairs, and the flowers are very small, tubular in shape, white to green in colour and grow in a clustered umbel. The seed-like fruits, sometimes mistaken as the flowers themselves, are found within a pinkish case with veiny wings. The winged fruits are easily dispersed by wind and water and, although annual, can stay dormant for several years until favorable conditions exist¹. Although similar in appearance to sand verbena, the more common sand dock (*Rumex venosus*) has alternate leaves and a more erect growth form².



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Status: Small-flowered sand-verbena is currently listed as *Threatened* under Alberta's Wildlife Act. The Species at Risk Act (SARA) also recognizes the threat to this species and has it listed as *Endangered* under Schedule 1, meaning it is officially recognized as at risk and receives federal protection. Small, localized populations and the lack of suitable habitat are limiting factors for the survival of this species³.

Habitat: As indicated by its name, sand-verbena prefers sandy, open soils with topography ranging from level ground to the slopes and ridge tops of semi active to active dunes². Within Canada, sand-verbena populations are limited to the Mixed and Dry Mixed Grass natural subregions of Alberta and Saskatchewan. They are found across a wider range in the United States⁴.



Threats: The loss and degradation of habitat continues to be the main concern for sand-verbena populations in Canada. The lack of grazing and alteration to fire regimes has led to dune stabilization which creates less than ideal habitat for this rare plant. Other contributing factors threatening local sand verbena populations include; cultivation, oil and gas activity, sand/gravel extraction, military activities, overgrazing, invasive species, and urban development⁴.

Beneficial Management Practices: Rangeland management practices for sand-verbena in Canada are currently implemented on a case by case basis since the land tenure, history, and ecology of the localized populations across Alberta and Saskatchewan have a high degree of variance. There are still, however, general recommendations to improve sand-verbena habitat, which includes integrated pest management, conservation of native prairie, and continuous creation and updates to specialized management plans for

each location of the species³. Light and monitored grazing around sand dune habitat may also improve habitat for sand verbena by inhibiting the revegetation of sand dunes and exposing more sand. Environment Canada, the Government of Alberta, and partners are collaborating to create and improve best management practices for the species through detailed recovery plans^{3,4}.

1 Kershaw, L., J. Gould, D. Johnson, and J. Lancaster. 2001. Rare Vascular Plants of Alberta. Univ. Alberta Press, Edmonton, Alberta and Nat. Resour. Can., Can. For. Serv., North. For. Cent., Edmonton, Alberta. 72 pp.

2 Tannas, K. 2004. Common Plants of the Western Rangelands: Forbs, Volume 3. Alberta Agriculture, Food and Rural Development, Edmonton, Alberta. 505 pp.

3 Alberta Small-flowered Sand-verbena Recovery Team. 2012. Small-flowered Sand-verbena Recovery Plan 2012-2017. Alberta Environment and Sustainable Resource Development, Alberta Species at Risk Recovery Plan No. 24. Edmonton, AB. 27 pp.

4 Environment Canada. 2012. Recovery Strategy for the Small-flowered Sand-verbena (*Tripterocalyx micranthus*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. v + 47 pp.



This project was undertaken with the financial support of the Government of Canada.
Ce projet a été réalisé avec l'appui financier du gouvernement du Canada.



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