MULTISAR

A multi-species conservation strategy for species at risk in the Grassland Natural Region of Alberta, 2020-2021 report

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MULTISAR: A Multi-Species Conservation Strategy for Species at Risk in the Grassland Natural Region of Alberta, 2020–2021 Report

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Executive Summary

MULTISAR (multiple species at risk) is a program focused on multi-species conservation at the landscape level that promotes stewardship through voluntary participation of landholders on both Crown and private lands. MULTISAR defines species at risk as those with a provincial general status of At Risk, May Be At Risk or Sensitive. The program is a collaborative effort among landholders, the Alberta Conservation Association, Alberta Environment and Parks, the Prairie Conservation Forum, Cows and Fish, Canadian Cattlemen's Association, Alberta Beef Producers, the Canadian Roundtable for Sustainable Beef and Environment and Climate Change Canada.

The habitat conservation program includes the development of detailed habitat conservation strategies (HCSs) and the more compact habitat management plans (HMPs) in the Milk River and South Saskatchewan watersheds of southern Alberta, as well as the species at risk conservation plans (SARC plans) that are delivered throughout the Grassland Natural Region.

In 2020–2021, a new HCS was developed on six ranches totaling approximately 32 362 acres, plus an additional 1120 acres that was new land added to an existing HCS. MULTISAR also completed four habitat management plans (HMPs) on 7645 acres of land within our priority areas. Several habitat enhancement projects were developed to improve the habitat of key wildlife species on HCS and HMP properties. These include the installation and implementation of artificial habitat structures, wildlife friendly fencing, portable and upland watering units, tree protection, riparian protection, shrub planting, weed control, and grazing management tools.

One SARC plan was developed for a landowner in the Parkland Natural Region of Alberta. The plan was requested after learning of MULTISAR from a presentation. No beneficial management plan assessments were delivered this year as no landholders were contacted or referred to MULTISAR.

Due to the limitations imposed by COVID-19 the education, outreach and awareness program was achieved primarily by MULTISAR staff giving online presentations and maintaining direct contact with landholders, wildlife and conservation groups, college students and government agencies. In-person events, such as the Southern Alberta Grazing School for Women and other presentations, were moved to an online format with over 600 people attending these events. Communication material produced included one issue of MULTISAR's *Grassland Gazette* newsletter. The *Grassland Gazette* was distributed to 532 contacts while 215 copies of MULTISAR's flagship booklet were also distributed. Social media continues to be a vector to share information related to MULTISAR. In 2020 MULTISAR posted 76 tweets, through Twitter, and 57 posts on Facebook to engage the public. In total, MULTISAR interacted with more than 1000 people through 244 contacts with individuals/groups including landholders, the general

public, academia, industry, media, government and non-governmental organizations and other sectors.

Under the research and monitoring program, MULTISAR continued implementing its monitoring and evaluation protocol to assess the directionality of habitat improvements and management changes and the effectiveness of its HCSs. Due to planning restraints from COVID-19, no MULTISAR HCS ranches were reassessed. Reassessments will continue in 2021-2022. Roughly 63 habitat enhancement projects on participating HCS ranches were monitored in 2020 to determine whether enhancements were achieving their objectives. Enhancements monitored include restoration sites, artificial nesting platforms, weed control, watering sites, tree protection, wildlife friendly fencing, and grazing management tools.

MULTISAR continues to compile wildlife observation and vegetation assessment data that it has been accumulating since its first HCS. In 2021, MULTISAR will also continue to focus on determining inferences between species at risk occurrences and habitat metrics.

MULTISAR will strive to promote beneficial management practices recommendations to improve and maximize habitat quality for species at risk.

Disclaimer

The views and opinions expressed in this report are those of the author and do not necessarily represent the policies or positions of Alberta Environment and Parks, the Alberta Fish and Wildlife Stewardship Branch, or the Alberta Government.

Introduction

Grasslands have evolved over thousands of years, yet over the last century we have managed to lose roughly 80% of the native grasslands in Canada (Bailey *et al.* 2010). It is, therefore, no surprise that grasslands are home to some of the most endangered and unique species in Canada. The MULTISAR program was established in 2002 to help maintain and improve habitat for these unique species by collaborating with landholders and increasing awareness of species at risk.

MULTISAR (multiple species at risk) is a program focused on multi-species conservation at the landscape level that promotes stewardship through voluntary participation of landholders on both Crown and private lands. MULTISAR defines species at risk as those with a provincial general status of *At Risk*, *May Be At Risk* or *Sensitive*. The program is a collaborative effort among landholders, the Alberta Conservation Association (ACA), Alberta Environment and Parks (AEP) and the Prairie Conservation Forum (PCF). The primary goals of MULTISAR are to implement collaborative strategies to manage multiple species on a defined working landscape and to assist with the implementation of these strategies. These are built as landholder-specific habitat conservation strategies (HCSs), leading to the implementation of habitat enhancement activities that benefit both the farm/ranch operation and wildlife. Through these HCS relationships, MULTISAR has implemented 263 habitat enhancement projects on ~535 254 acres of land.

MULTISAR consists of three primary components:

Wildlife and range assessments. These consist of habitat conservation strategies, which provide detailed wildlife and range assessment data, and habitat management plans (HMPs), which provide detailed wildlife assessment data with some habitat measurements. Both are developed with landholder participation and can be used as a tool for management of their land, and both are conducted within MULTISAR priority areas.

An education, outreach and awareness program. This program involves developing beneficial management practices (BMPs) for various species, publishing the annual *Grassland Gazette*, developing and delivering presentations for the public, and completing species at risk conservation (SARC) plans, which are a condensed form of HCSs and completed for landholders outside the priority landscape of the Milk River watershed and portions of the South Saskatchewan River watershed.

Research, monitoring and evaluation. This involves the monitoring of habitat enhancements every one to two years and evaluation of the detailed plans (HCSs) every five years to determine whether they are having the desired effect or are in need of adjustments.

The MULTISAR program is guided by the 2015–2020 business plan. The MULTISAR mission, vision and goals are as follows:

Mission: To develop and implement the MULTISAR process which directs conservation of multiple species (including species at risk) and their habitat within the Grassland Natural Region of Alberta.

Vision: Habitat for multiple species of wildlife, including species at risk, will be maintained or enhanced in the grasslands of Alberta through an integrated and collaborative process that contributes to the values of Albertans and the wellbeing and sustainability of the ranching community.

Program Area Goals:

Habitat Conservation Program:

Goal: Incorporating the values of all partners to deliver an integrated program that provides for the conservation of wildlife (species at risk) and their habitat.

Education, Outreach and Awareness:

Goal: To create awareness about the needs and habitat requirements of wildlife (focusing on species at risk) and the management practices that aid in their conservation and the sustainability of rangelands in the Grassland Natural Region.

Research and Monitoring Program:

Goal: To increase our knowledge of species at risk and their habitat using data collected though the MULTISAR process.

Education, Outreach and Awareness

The MULTISAR education, outreach and awareness program continued in a limited capacity in 2020-2021 as COVID-19 restrictions limited the ability to attend events. Education events that MULTISAR would normally engage in, such as field training events, in-person presentations to school, college, community and landholder groups, conferences, and attendance at events such as the Calgary Stampede, were all cancelled. Direct communication with landholders continued, as did communication with other organizations and government agencies. In some cases, on-line presentations took the place of in-person presentations.

Landholder Awareness

At Home on the Range, *Grassland Gazette* and Other Informational Publications

In total, 215 copies of MULTISAR's flagship booklet, *At Home on the Range: Living with Alberta's Prairie Species at Risk* (Saunders *et al.* 2016), were distributed to landholder cooperators, mailed out to county and municipal district offices, and provided to non-profit organizations for distribution. The 15th issue of MULTISAR's newsletter, the *Grassland Gazette*, was produced in December 2020 and sent to 532 MULTISAR contacts, including program-participating landholders. Approximately 336 MULTISAR fact sheets and species at risk information cards were mailed out.

Southern Alberta Grazing School for Women

The 17th annual Southern Alberta Grazing School for Women teamed up with the Alberta Range Stewardship Course to offer an on-line webinar series for producers. There were five webinars in total offered over the summer, and one webinar offered in the winter:

- July 16, 2020: Grazing Principles and Practices by Ross Adams (124 attendees)
- July 21, 2020: Riparian 101 and Riparian Health Assessments by Norine Ambrose (113 attendees)
- July 23, 2020: Range Health Assessments by Ross Adams and Donna Lawrence (94 attendees)
- July 28, 2020: Ranching Women by Lacey Gould (64 attendees)
- July 30, 2020: Mental Health in Agriculture by the Do More Agriculture Foundation (63 attendees)

- February 8, 2021: Mental Health in Agriculture: 7 Essential Strategies for Building Resiliency by Jeff Couillard (42 attendees)

All of these webinars can be found on the Prairie Conservation Forum website at www.albertapcf.org.

Presentations/Training to Landholder Groups

MULTISAR had numerous conversations and meetings with individual landholders and landholder groups (over 185) about topics such as species at risk, wildlife-friendly fencing, hawk poles, water management, native grass restoration, herbicides for invasive weeds, habitat assessments and the MULTISAR process. Twenty-six of those conversations were in-person meetings, with the remaining conversations done either through email or by phone.

Educational Presentations

When requested, MULTISAR gives presentations to various groups on topics such as the MULTISAR process, species at risk, range topics, habitat enhancements, etc. This year, there were no live presentations given due to COVID-19 restrictions; however, MULTISAR was still able to deliver five virtual presentations (Table 1).

Table 1. Summary of 2020–2021 educational presentations by MULTISAR.

Date	Presented to	Presentation	Attendance
November 2, 2020	Lethbridge College Students	Presentation about landholder relationships, MULTISAR, and species at risk	8 attendees
November 12, 2020	Partners in Flight	Presentation about native grass restoration and insect collection at Silver Sage Conservation Site	60 attendees
November 24, 2020	Environmental Farm Plan Agriculture Technicians	Presentation about MULTISAR, species at risk habitat enhancement projects, and landholder communications	40 attendees
November 27, 2020	British Columbia Institute of Agrologists	Presentation about MULTISAR/SHARP (Species Habitat Assessment and Ranching Partnership) projects	30 attendees

March 22, 2021	Lethbridge College course	Presentation about MULTISAR	63 attendees

Public Outreach

Website and Social Media

The MULTISAR website (www.multisar.ca) continues to be the key portal where information about the program, BMPs for species at risk, as well as related documents, news events and producer stories can be accessed. It continues to get direct feeds from both the MULTISAR Twitter and Facebook accounts, which provide current news. The number of original tweets and Facebook posts from this past year was 81 and 59, respectively.

Media and Other Publications

In addition to the MULTISAR newsletter, the *Grassland Gazette,* that was produced and sent to over 532 contacts, MULTISAR was involved with the production of the *Alberta Landholder's Guide to Wildlife Friendly Fencing* (Paige 2020). MULTISAR's work on the Silver Sage Conservation Site and with the greater sage-grouse *(Centrocercus urophasianus urophasianus)* was also featured in the Alberta Conservation Association's Fall/Winter 2020 Conservation Magazine (Downey and Johns 2020).

Contacts, Extension and Outreach

Through the course of any fiscal year, MULTISAR staff interact on a daily basis with landholders and other individuals, representative of a broad spectrum of sectors. Between April 1, 2020 and March 31, 2021, 244 contacts were made with over 1000 people. Table 2 shows a breakdown of the different individuals/groups that MULTISAR reached out to, as well as how many people were involved with MULTISAR in some way due to their interaction with these contacts.

Table 2. MULTISAR contacts for 2020–2021.

Contact Type	# Contacts	# People Reached
Landholder	165	230
Government	25	114
Landholder Group	23	29

NGO	11	70
Contractor	6	540
Company	5	48
Academic (individual researchers)	4	11
School	2	64
Individual (non-landholder)	1	1
Industry	1	1
Consultant	1	1
Total:	244	1109

Habitat Conservation Strategies

Conservation efforts to maintain and enhance wildlife habitat and rangelands for both species at risk and cattle production are the primary objectives of MULTISAR and habitat conservation strategies. The majority of the province's remaining native prairie is found in the Grassland Natural Region (GNR), where over 70% of Alberta's species at risk can be found. Most of these native habitats still exist thanks to livestock production. Efforts to maintain and enhance wildlife habitat for species at risk and rangeland sustainability can be achieved through a voluntary and collaborative approach with landholders and leaseholders. An HCS team works together to balance the needs for healthy rangelands and quality fish and wildlife habitats through grazing recommendations and habitat improvement projects. Each strategy is a result of detailed range, wildlife and riparian inventories and assessments, from which management goals and objectives can be made.

HCS Process

The foundation of an HCS is its team members. Landholders, as well as both government and non-government agencies, make up the team and include members from AEP, ACA, PCF and any other organizations that are stakeholders in the property.

Management objectives and strategies for the implementation of conservation efforts are developed by the entire MULTISAR HCS team and address wildlife, habitat, range, riparian and land management objectives identified for a particular land base. Management and habitat enhancement recommendations are based largely on the recovery and conservation management actions for species identified as a priority on the land and from MULTISAR's BMP document (Rangeland Conservation Service Ltd. 2016).

For a complete and detailed description of the entire HCS process, refer to MULTISAR's 2010–2011 progress report (Rumbolt *et al.* 2011). Information regarding the detailed survey methodologies used in HCSs can be found in MULTISAR's 2011–2012 progress report (MULTISAR 2012).

HCS Achievements for the Fiscal Year 2020-2021

To date, MULTISAR has completed 61 HCSs on 535 254 acres of land within the Milk River and South Saskatchewan River watersheds (Table 3). In 2020, MULTISAR completed HCSs for six new properties in southern Alberta, totaling 32 362 acres, as well as an additional 1120 acres of land that was recently added to a previous HCS property. Work on these properties included detailed wildlife, range, and riparian inventories.

Table 3. Habitat conservation strategy participant summary.

Year*	# Landholder Participants	Acres Surveyed
2004	1	62 050
2005	1	159
2006	2^	32 868
2007	3	85 712
2008	2	7680
2009	3	38 630
2010	5	4720
2011	5	17 878
2012	3	13 140
2013	1	7859
2014	2	43 250
2015	2	8553
2016	5	9837
2017	7	62 973
2018	5	56 184
2019	8	63 100
2020	6	32 362
Total	61	535 254+

*HCSs were counted in the year in which fieldwork was initiated; however, some surveys continued for more than one year.
^ In 2006, MULTISAR absorbed the Western Blue Flag Program (previously overseen by ACA) and its eight participating landholders. These properties did not have an HCS completed and therefore they are not included in this total.

+This number includes those smaller-sized properties originally assessed as an HCS but which are now a part of the HMP process.

To date, 23 HCSs, which have been implemented for at least five years, have been reassessed (Table 4). Furthermore, six HCSs have been reassessed for a second time. These reassessments entailed a resurvey of a subsample of the original range, riparian and wildlife inventories. More details on these reassessments can be found in the *Habitat Conservation Strategy Evaluation and Monitoring Program* section.

Table 4. Habitat conservation strategy reassessment summary.

Year of HCS Reassessment	MULTISAR Participant	Size of Property (acres)
2011	1	62 050
2012	1	28 797
2013	3	49 012
2014	3	44 777
2015	4	10 111
2016	6	67 801
2017	2	43 068
2018	6	62 151
2019	3	52 375
2020	0	0
Total	23*	420 142

*This number excludes the most recent reassessment for MP_1 in 2016; MP_4 in 2017; MP_7, MP_8 and MP_9 in 2018; and MP_6 in 2019.

Wildlife

To date, approximately 85 112 wildlife observations have been submitted to the Fish and Wildlife Management Information System (FWMIS) since 2004, including 4922 in 2020. Sixty-one different species at risk were recorded on HCS properties in 2020. Table 5 summarizes the species at risk observed on all HCS properties assessed (or reassessed) during the 2020 field season.

Table 5. Species at risk recorded on HCS properties during the 2020 field season.

Species	General Status[1]	Legislative Status	# of Observations	Feature	Significance
Birds					
Alder flycatcher (*Empidonax alnorum*)	Sensitive	none	23		
American kestrel (*Falco sparverius*)	Sensitive	none	11	1 nest	
Baird's sparrow (*Ammodramus bairdii*)	Sensitive	Special Concern[2]	33		
Bald eagle (*Haliaeetus leucocephalus*)	Sensitive	none	4		
Baltimore oriole (*Icterus galbula*)	Sensitive	none	32		
Bank swallow (*Riparia riparia*)	Sensitive	Threatened[2]	15		
Barn swallow (*Hirundo rustica*)	Sensitive	Threatened[2]	19		
Black tern (*Chlidonias niger*)	Sensitive	none	17		
Black-backed woodpecker (*Picoides arcticus*)	Sensitive	none	1		
Bobolink (*Dolichonyx oryzivorus*)	Sensitive	Threatened[2]	20		
Brewer's sparrow (*Spizella breweri*)	Sensitive	none	34		
Broad-winged hawk (*Buteo platypterus*)	Sensitive	none	2		

Brown creeper (*Certhia americana*)	Sensitive	none	7		
Chestnut-collared longspur (*Calcarius ornatus*)	Sensitive	Threatened[2]	34		
Clark's nutcracker (*Nucifraga columbiana*)	Sensitive	none	26		
Common nighthawk (*Chordeiles minor*)	Sensitive	Threatened[2]	2		
Common yellowthroat (*Geothlypis trichas*)	Sensitive	none	18		
Eastern kingbird (*Tyrannus tyrannus*)	Sensitive	none	105		
Eastern phoebe (*Sayornis phoebe*)	Sensitive	none	2		
Ferruginous hawk (*Buteo regalis*)	At Risk	Endangered[3] Threatened[2]	13	1 nest	
Golden eagle (*Aquila chrysaetos*)	Sensitive	none	11	1 nest	
Grasshopper sparrow (*Ammodramus savannarum*)	Sensitive	none	8		
Great blue heron (*Ardea herodias*)	Sensitive	none	6		
Horned grebe (*Podiceps auritus*)	Sensitive	none	3		
Least flycatcher (*Empidonax minimus*)	Sensitive	none	95		
Loggerhead shrike (*Lanius ludovicianus*)	Sensitive	Threatened[2]	4	2 nests	

Long-billed curlew (*Numenius americanus*)	Sensitive	Special Concern[2]	33		
Thick-billed longspur (*Rhynchophanes mccownii*)	May Be At Risk	Threatened[2]	2		
Osprey (*Pandion haliaetus*)	Sensitive	none	1		
Pied-billed grebe (*Podilymbus podiceps*)	Sensitive	none	6		
Prairie falcon (*Falco mexicanus*)	Sensitive	Special Concern[3]	1		
Rusty blackbird (*Euphagus carolinus*)	Sensitive	Special Concern[2]	1		
Sandhill crane (*Grus canadensis*)	Sensitive	none	21	1 nest	
Sharp-tailed grouse (*Tympanuchus phasianellus*)	Sensitive	none	261	23 leks	
Sora (*Porzana carolina*)	Sensitive	none	29		
Sprague's pipit (*Anthus spragueii*)	Sensitive	Threatened[2]	25		
Trumpeter swan (*Cygnus buccinator*)	Sensitive	Threatened[3]	4	1 nest	
Upland sandpiper (*Bartramia longicauda*)	Sensitive	none	3		
Western tanager (*Piranga ludoviciana*)	Sensitive	none	3		
Western wood-pewee (*Contopus sordidulus*)	Sensitive	none	97		

Herpetofauna					
Boreal toad (*Anaxyrus boreas*)	Sensitive	Special Concern[2]	18		
Bullsnake (*Pituophis catenifer sayi*)	Sensitive	none	1		1 snake shed
Canadian toad (*Anaxyrus hemiophrys*)	May Be At Risk	none	1		
Columbia spotted frog *(Rana luteiventris*)	Sensitive	none	36		
Great Plains toad (*Anaxyrus cognatus*)	Sensitive	Special Concern[2]	1	1 breeding site	
Northern leopard frog (*Lithobates pipiens*)	At Risk	Threatened[3] Special Concern[2]	31	2 breeding Sites	
Plains garter snake (*Thamnophis radix*)	Sensitive	none	3		
Plains spadefoot (*Spea bombifrons*)	May Be At Risk	none	13	1 breeding Site	
Prairie rattlesnake (*Crotalus viridis*)	Sensitive	Special Concern[2]	9	2 hibernacula	1 snake shed
Red-sided garter snake (*Thamnophis sirtalis*)	Sensitive	none	1		
Wandering garter snake (*Thamnophis elegans*)	Sensitive	none	10		
Western tiger salamander (*Ambystoma mavortium*)	Secure	Special Concern2	25	1 breeding site	

Mammals					
Badger (*Taxidea taxus*)	Sensitive	Special Concern[2]	5	8 burrows	
Grizzly bear (*Ursus arctos*)	At Risk	Threatened[3] Special Concern[2]	3		1 observation of scat
Hoary bat (*Lasiurus cinereus*)	Sensitive	none	5		Recorded acoustically
Little brown myotis (*Myotis lucifugus*)	May Be At Risk	Endangered[2]	14	2 roost sites	Recorded acoustically
Long-tailed weasel (*Mustela frenata*)	May Be At Risk	none	7		
Pronghorn (*Antilocapra americana*)	Sensitive	none	276		
Red bat (*Lasiurus borealis*)	Sensitive	none	4		Recorded acoustically
Silver-haired bat (*Lasionycteris noctivagans*)	Sensitive	none	9		Recorded acoustically
Western small-footed myotis (*Myotis ciliolabrum*)	Sensitive	Special Concern[3]	3		Recorded acoustically

[1]General status in Alberta (AEP 2015), [2]legislative status under Canada's *Species at Risk Act* (Government of Canada [GOC] 2020), [3]legislative status under Alberta's *Wildlife Act* (Government of Alberta [GOA] 2017) or designation as *Special Concern* by the Minister.

Range

The HCS properties assessed across southern Alberta in 2020 displayed a wide range of diversity in the plant communities and range health found. MULTISAR conducted 327 detailed range transects (vegetation inventories) and an additional 115 range health assessments, 36 tame pasture assessments, 88 forest health assessments, and 300 visual reconnaissance plots

during the 2020 field season (Table 6). During these inventories, 10 species of rare plants and one rare plant community were observed on the properties, as listed in Table 6.

Table 6. Summary of range work completed on HCS properties during the 2020 field season.

Property	Acres	Sites Assessed*	# of Plant Communities Assessed	Rare Plants
MP_6	1134	16 detailed transects 24 range health assessments 9 visual reconnaissance plots	19	None
MP_57	3832	22 detailed transects 9 range health assessments 17 tame pasture assessments 94 visual reconnaissance plots	53	Velvety goldenrod (*Solidago mollis*) Cock's-comb cryptantha (*Cryptantha celosiodes*)
MP_59	1967	21 detailed transects 10 range health assessments 5 tame pasture assessments 70 visual reconnaissance plots	44	Velvety goldenrod

MP_60	4312	49 detailed transects 8 range health assessments 27 forest health assessments 21 visual reconnaissance plots	42	Striped coralroot (*Corallorhiza striata*) Spotted coralroot (*Corallorhiza maculata*) Blue camas (*Camassia quamash*) Mariposa lily (*Calochortus apiculatus*) Lance-leaved paintbrush (*Castilleja occidentalis*) Hooker's Townsend-daisy (*Townsendia hookeri*)
MP_61	5286	67 detailed transects 5 range health assessments 2 tame pasture assessments 5 forest health assessments 9 visual reconnaissance plots	41	Limber pine (*Pinus flexilis*) Stiff yellow paintbrush (*Castilleja lutescens*)

MP_62	1241 assessed in 2020; remaining 2889 will be assessed in 2021	15 detailed transects 4 range health assessments 8 forest health assessments 4 visual reconnaissance plots	17 total 1 rare plant community: limber pine – Douglas fir (*Pseudotsuga menziesii*) / juniper (*Juniperus horizontalis*) / common bearberry (*Arctostaphylos uva-ursi*)	Limber pine
MP_66	6924	137 detailed transects 55 range health assessments 12 tame pasture assessments 48 forest health assessments 93 visual reconnaissance plots	93	Limber pine

Riparian

The Alberta Riparian Habitat Management Society—Cows and Fish completed nine riparian health assessments in the South Saskatchewan River watershed, as part of its partnership with MULTISAR. In addition, 28 riparian health assessments were completed within the South Saskatchewan River watershed and 31 riparian health assessments were completed within the Milk River watershed by contractors. MULTISAR also completed eight riparian health assessments in the South Saskatchewan watershed and two riparian health assessments in the Milk River watershed resulting in 78 total riparian health inventories.

Wildlife and Range Health Inferences

Compiling the data gathered from the wildlife, range and riparian health assessments on each property allows MULTISAR to make inferences regarding the range and riparian health of a site and the corresponding wildlife and habitat features observed. Using this information, management plans were created for each property, incorporating BMPs for each management unit that promote sustainable ranching and habitat for species at risk.

Implementation of HCS Habitat Enhancements

MULTISAR completed 44 new habitat enhancements within the Milk River and South Saskatchewan watersheds in 2020 and early 2021. Habitat enhancement projects included: the construction of two artificial habitat structures; installation of wildlife-friendly fencing at three new sites on two separate properties; the purchase of five portable watering units; installation of 15 upland watering sites; five tree protection enhancements; two riparian protection enhancements; one riparian shrub planting; four weed control initiatives; and seven enhancements to improve grazing management.

Artificial habitat structures included the installation of a hawk pole to assist with the recovery of the *Endangered* ferruginous hawk and to help control Richardson's ground squirrels (*Urocitellus richardsonii*) and the construction of a bat condo to provide a safe roosting location for little brown myotis away from human-occupied buildings. In total, 4 km of new wildlife-friendly fencing was installed to improve pronghorn movement and cattle distribution, as well as prevent cattle from accessing riparian areas. Reflectors were placed on the top two wires of wildlife-friendly fences to reduce injuries/fatalities to wildlife, such as greater sage-grouse. Portable watering units were used to provide cattle with clean, accessible water sources and exclude them from dugouts, wetlands, and creeks that provide important habitat for amphibian species like the northern leopard frog. Upland watering sites also reduced livestock pressure around riparian areas and improved grazing distribution throughout the uplands. Upland watering sites included conventional water troughs, tire troughs, solar pumps, the recommissioning of seven dugouts, and the installation of a pipeline to supply flow to two upland watering sites. Tree protection panels were implemented to protect two trees containing ferruginous hawk nests from livestock use and a wildlife-friendly fence was installed around a treed dugout to protect existing hawk nests from further livestock disturbance. Tree protection was also used to limit beaver damage on mature cottonwood trees at two separate sites along a creek. One riparian protection enhancement included the purchase of six portable windbreaks so that an overwintering and calving site for livestock could be moved out of a creek valley and into the surrounding uplands. The other riparian protection enhancement included the purchase of temporary fencing material to exclude cattle from a creek's riparian area. In collaboration with a landholder situated on the

west side of the Porcupine Hills, shrubs were planted along a creek to stabilize the banks and create wildlife habitat. The riparian area was rehabilitated by planting over 2000 shrubs along a tributary that flows into the Oldman River which supports westslope cutthroat trout (*Oncorhynchus clarkii lewisi*) and bull trout (*Salvelinus confluentus*). Herbicide was provided to four landowners to aid in controlling noxious weeds, including leafy spurge (*Euphorbia esula*) and Canada thistle (*Cirsium arvense*). Lastly, grazing management tools consisted of portable electric fencing units, wind breaks, and a cattle oiler. These units/structures were used to exclude cattle from sensitive areas, such as dugouts, coulees, and wetlands to improve habitat for amphibians, gamebirds, and waterfowl and promote grazing in areas that cattle tend to avoid.

In total, 263 on-the-ground enhancement projects have been completed by MULTISAR HCS participants since 2005 (Figure 1).

Habitat enhancement projects continue to be monitored through MULTISAR's monitoring and evaluation protocol to ensure that the enhancements are having the desired positive effect on specific habitats and wildlife. The *Habitat Conservation Strategy Evaluation and Monitoring Program* section provides more detail on MULTISAR's monitoring and evaluation process and the positive results that are being seen on the landscape as a result of these enhancement projects.

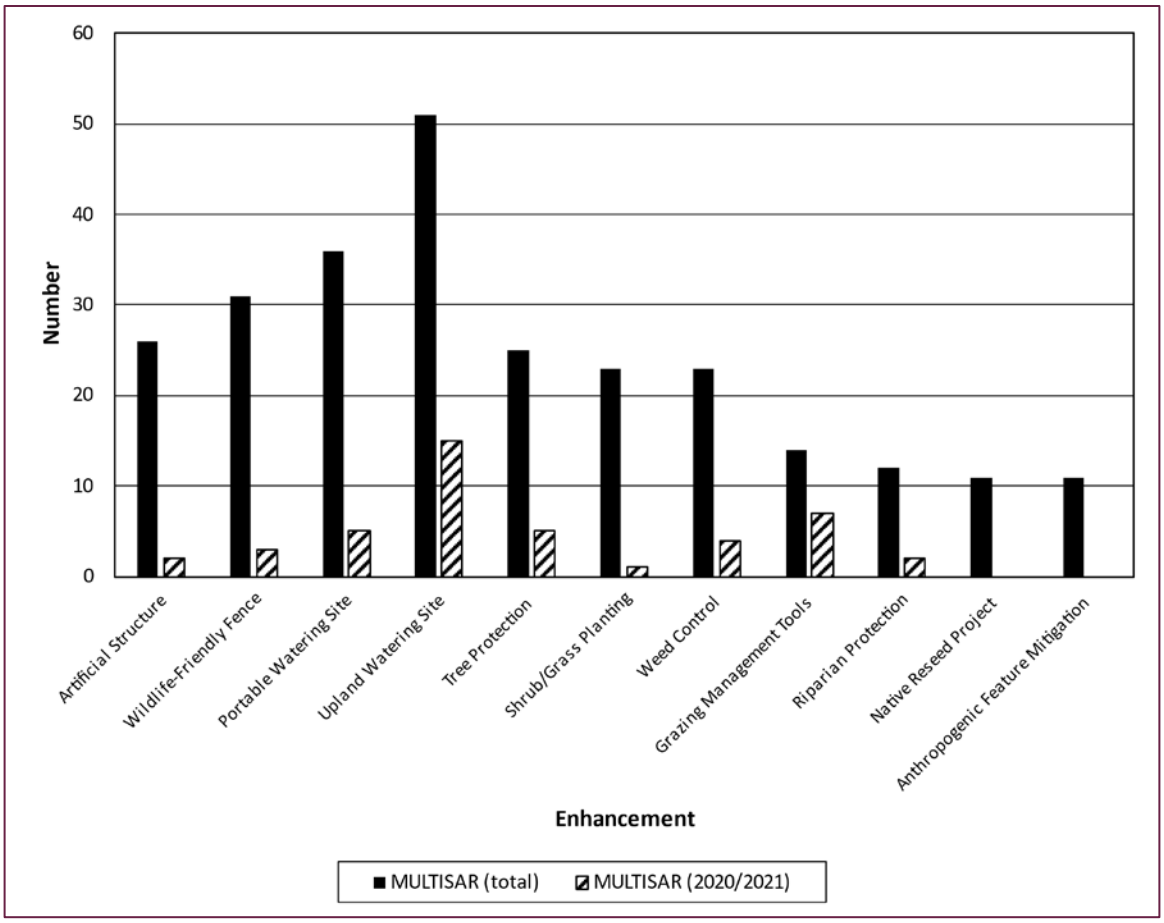

Figure 1. Habitat enhancement projects completed by category, by MULTISAR since 2005.

HCS Summary

Over the last 19 years, MULTISAR has become increasingly more recognized and its HCS work has grown tremendously throughout the South Saskatchewan and Milk River watersheds. MULTISAR has developed plans for approximately 535 254 acres of land, of which a large portion is interconnected, allowing for landscape planning as well as with single property initiatives. MULTISAR will continue to make efforts to increase the land base worked on within priority areas and seek to “connect” additional properties adjacent to participating HCS landholders. MULTISAR has provided and will continue to provide open communication, information and awareness, and team-based wildlife habitat planning, and will continue to build long-term relationships with landholders, government, NGOs and industry.

Habitat Management Plans

In 2018–2019, MULTISAR created another extension program to further influence rangeland management and benefit prairie wildlife habitats. Habitat management plans (HMPs) were introduced in 2018 as an extension of the HCSs, to focus solely on proposed habitat improvements at a given ranch and to continue collecting some wildlife and habitat data. Like SARC plans, HMPs are a more condensed version of an HCS applied at the ranch level but involving detailed wildlife surveys and simplified wildlife habitat assessments to document species at risk and habitat indicators, respectively. HMPs were implemented on new MULTISAR properties less than 4000 acres in size, and on HCS properties that are already on their second or greater reassessment. These plans will be delivered throughout the Milk River and South Saskatchewan watersheds.

HMP Process

Detailed wildlife inventories, including multi-species point count surveys, were completed following protocols outlined in Rumbolt *et al.* (2011). At each multi-species point count survey location occurring in a grassland area, three Robel pole measurement and litter weight estimates were taken following protocols by Robel *et al.* (1970) and Willoughby (2007) respectively. Three Robel pole measurements were also taken for multi-species point count survey locations occurring in forested areas, as well as three forest LFH[1] estimates (poke test measurements) and one plant community structure assessment as outlined by Adams *et al.* (2016). These measurements were collected to gain some insight regarding wildlife habitat for a particular land base.

Similar to the HCS process, HMP teams develop management objectives and strategies for the implementation of new habitat enhancement projects and the monitoring of ongoing habitat enhancements based on current wildlife, range and riparian data. Management and habitat enhancement recommendations for new HMP properties are based largely on the recovery and conservation management actions for species identified as a priority on the land base and from MULTISAR's BMP document (Rangeland Conservation Service Ltd. 2016).

[1] Plant residue on forested sites is the collective organic layers of litter, fermenting and humidified residues above the mineral soil called LFH (Adams *et al.* 2016).

HMP Achievements for the Fiscal Year 2020–2021

To date, MULTISAR has completed seven HMPs on 13 104 acres of land within the Milk River and South Saskatchewan watersheds (Table 7). In 2020, MULTISAR completed HMPs for four properties, which included detailed wildlife and simplified range health techniques.

Table 7. Habitat management plan participant summary.

Year	MULTISAR Participant	Acres Surveyed
2018	MP_8*	3479
2018	MP_47	1170
2019	MP_55	810
2020	MP_58	960
	MP_63	3280
	MP_64	1495
	MP_65	1910
Total	7	13 104

*This HCS property was incorporated into the HMP process, which entailed a resurvey of a subsample of the original riparian and wildlife inventories, and the collection of new range data at point count survey locations.

Wildlife

To date, approximately 1967 wildlife observations collected on HMP properties have been submitted to FWMIS. Thirty-five different species at risk were recorded on HMP properties in 2020. Table 8 summarizes the species at risk observed on all HMP properties assessed (or reassessed) during the 2020 field season.

Table 8. Species at risk recorded on HMP properties during the 2020 field season.

Species	General Status[1]	Legislative Status	# of Observations	Feature	Significance
Birds					

American white pelican (*Pelecanus erythrorhynchos*)	Sensitive	N/A	3		
Baird's sparrow	Sensitive	Special Concern[2]	30		
Bald eagle	Sensitive	N/A	2		
Baltimore oriole	Sensitive	N/A	9		
Bank swallow	Sensitive	Threatened[2]	9		
Barn swallow	Sensitive	Threatened[2]	5		
Chestnut-collared longspur	At Risk	Threatened[2]	1		
Clark's nutcracker	Sensitive	N/A	30		
Common nighthawk	Sensitive	Threatened[2]	7		
Common yellowthroat	Sensitive	N/A	16		
Eastern kingbird	Sensitive	N/A	41		
Ferruginous hawk	At Risk	Threatened[2] Endangered[3]	1		
Golden eagle	Sensitive	N/A	5		
Grasshopper sparrow	Sensitive	N/A	12		
Great blue heron	Sensitive	N/A	3		

Lark bunting (*Calamospiza melanocorys*)	Sensitive	Threatened[2]	1		
Least flycatcher	Sensitive	N/A	12		
Loggerhead shrike	Sensitive	Threatened[2] Special Concern[3]	2		
Long-billed curlew	Sensitive	Special Concern[2,3]	7		
Sharp-tailed Grouse	Sensitive	N/A	48		
Sprague's pipit	Sensitive	Threatened[2] Special Concern[3]	56		
Thick-billed longspur	May Be At Risk	Threatened[2]	1		
Upland sandpiper	Sensitive	N/A	2		
Western tanager	Sensitive	N/A	3		
Western wood-pewee	Sensitive	N/A	6		
Herpetofauna					
Bullsnake	Sensitive	N/A	8		
Northern leopard frog	At Risk	Special Concern[2] Threatened[3]	17		
Wandering garter snake	Sensitive	N/A	4		

Western tiger salamander	Secure	Special Concern[2]	1		
Mammals					
Eastern red bat	Sensitive	N/A	3		Recorded Acoustically
Hoary bat	Sensitive	N/A	4		Recorded acoustically
Little brown myotis	May Be At Risk	Endangered[2]	4		Recorded acoustically
Pronghorn	Sensitive	N/A	3		
Silver-haired bat	Sensitive	N/A	7		Recorded acoustically
Western small-footed bat	Sensitive	Special Concern[3]	2		Recorded acoustically

[1]General status in Alberta (AEP 2015), [2]legislative status under Canada's *Species at Risk Act* (GOC 2020), [3]legislative status under *Alberta's Wildlife Act* (Government of Alberta [GOA] 2017) or designation as a *Special Concern* by the Minister.

Range

The HMP properties assessed in southern Alberta in 2020 displayed a wide range of diversity in plant communities and habitat attributes (litter weight, forest LFH thickness [poke test measurements], standing biomass [Robel pole measurements], forest plant community structure [layer assessment]). Three Robel pole readings were made at each HMP survey location, which translated into a total of 225 Robel pole readings during the 2020 field season (Table 9). Three litter weight estimates were also made at each HMP survey location occurring in grassland areas, resulting in a total of 204 litter weight estimates in 2020. For survey locations occurring in forested areas, three LFH thickness measurements and one plant community structure assessment were completed, translating into a total of 21 LFH estimates and seven layer assessments during the 2020 field season. During these inventories, two species of rare plants were observed on the properties, as listed in Table 9.

Table 9. Summary of range work completed on HMP properties during the 2020 field season.

Property	Acres	# of Robel Pole Readings	# of Litter Weight Estimates	# of Forest LFH Estimates	# of Forest Layer Assessments	Rare Plants
MP_58	960	90	69	21	7	Limber pine Whitebark pine (*Pinus albicaulis*)
MP_63	3280	39	39	N/A	N/A	None
MP_64	1495	57	57	N/A	N/A	None
MP_65	1910	39	39	N/A	N/A	None

Riparian

A total of five riparian health assessments were completed for HMP properties in 2020. All five riparian health assessments were completed within the South Saskatchewan watershed by MULTISAR personnel.

Wildlife and Range Health Inferences

Compiling the data gathered from the wildlife, range and riparian health assessments on each property allows MULTISAR to make inferences regarding the range, forest, and riparian health of a site and the corresponding wildlife and habitat features observed. Using this information, management plans were created for each property, incorporating BMPs for each management unit that promote sustainable ranching and habitat for species at risk.

Implementation of HMP Habitat Enhancements

MULTISAR completed seven new habitat enhancements for HMP properties within the South Saskatchewan watershed in 2020 and early 2021. These habitat enhancements included: the purchase of a portable watering unit, wind fencing panels for two properties, temporary fencing material for riparian protection, tree protection panels, a portable cattle oiler to entice cattle away from a dugout and improve shoreline condition, as well as the installation of an upland watering system, which included one solar powered pump and two troughs, to improve water distribution and range health of two separate pastures.

Habitat enhancement projects continue to be monitored through MULTISAR's monitoring and evaluation protocol to ensure that the enhancements are having the desired positive effect on specific habitats and wildlife. The *Habitat Conservation Strategy Evaluation and Monitoring Program* section provides more detail on MULTISAR's monitoring and evaluation process and the positive results that are being seen on the landscape as a result of these enhancement projects.

HMP Summary

Over the last 19 years, MULTISAR has become increasingly recognized and its HCS work has grown tremendously throughout the South Saskatchewan and Milk River watersheds. MULTISAR has developed HMPs for approximately 13 104 acres of land. These condensed assessments allow biologists to engage with more landholders sooner than would be possible if only HCSs were available, as only a limited number of detailed HCSs can be completed in a year. HMPs are a viable alternative that still allow for wildlife assessments and basic habitat surveys (litter weight, Robel pole, forest LFH, and forest layer assessment measurements) coupled with funding for enhancements. MULTISAR has provided and will continue to provide open communication, information and awareness, and team-based wildlife habitat planning, and will continue to build long-term relationships with landholders, government, NGOs and industry.

Species at Risk Conservation Plans

SARC plans were introduced in 2007 as an extension of the HCS program. They are a more condensed version of HCSs applied at the ranch level and delivered throughout the entire GNR and the adjacent Rocky Mountain Natural Region and Parkland Natural Region (PNR). In 2020–2021, MULTISAR continued the use of this extension program to influence rangeland management and benefit prairie wildlife habitats.

Over the years, MULTISAR staff have been approached by several landholders who wanted to complete specific habitat improvements on their properties (e.g., installation of hawk nesting poles, water developments), but were not interested in having their entire property assessed through a traditional SARC plan. They were focused on one aspect of their operation or one species or group of species and wanted species-specific or habitat-specific management tools to use on their properties. For this reason, MULTISAR developed BMP-specific assessments in 2012–2013 that focused solely on proposed habitat improvements or on the habitat requirement of species of interest.

SARC Plan/BMP Assessment Process

MULTISAR's SARC plan process is divided into six steps: 1) identification of priority lands, 2) landholder contact, 3) preliminary background research, 4) on-site habitat assessment, 5) SARC plan development and delivery, and 6) follow up. For a complete account of the SARC plan process, please refer to the 2010–2011 MULTISAR progress report (Rumbolt *et al.* 2011).

BMP assessments follow the same process as the SARC plans, except for step one. These assessments are normally completed in response to a landholder's request as opposed to the active solicitation involved with SARC plans.

Achievements

Since the inception of the SARC plan program in 2007, 83 assessments have been completed throughout the GNR and PNR, covering a total area of 156 294 acres. One SARC assessment on 39.8 acres was conducted in 2020 near Cochrane, Alberta, in the Foothills Parkland Natural Subregion. The landowner requested an assessment of the property upon learning about MULTISAR during a public presentation.

This was the eighth year in which BMP-specific assessments were to be completed. Since beginning these assessments in 2012, MULTISAR has completed 22 BMP assessments for a total of 58 152 acres. No BMP assessments were completed in 2020-2021, as no requests from

landowners or referrals were made. Several habitat improvements have been developed as demonstration sites on SARC plan co-operator properties throughout the years and are periodically monitored to ensure that they are achieving their objectives. Habitat improvements include nesting platforms erected for ferruginous hawks, several wetland and riparian fencing projects, shelterbelt fencing and portable watering unit development.

Discussion

SARC plans were initially popular with landholders when they were introduced in 2007. This was due to the fact that the first “wave” of SARC plans was completed for people who were somewhat aware of the MULTISAR program and/or familiar with the MULTISAR staff. These established relationships led to many willing participants in the SARC plan program.

As a result of reduced funding, MULTISAR lost its Education and Outreach Coordinator in 2010. This position was key to promoting SARC plans and aided in ultimately engaging participants in the program. The following few years saw the number of SARC plans slowly begin to taper off despite various attempts at garnering interest in the program (presentations, mail-outs, etc.). Figure 2 summarizes the number of participating SARC plan landholders/properties per year over the 14 years of the program.

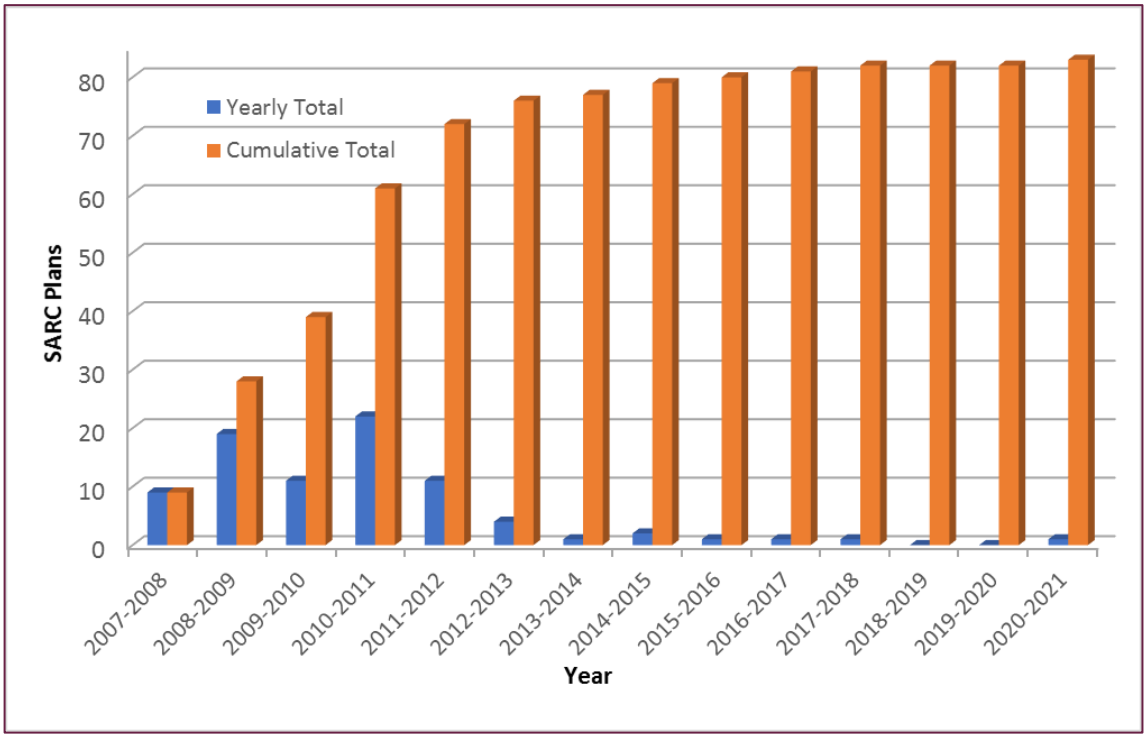

Figure 2. Number of SARC plans completed since program inception.

In 2013, an evaluation of the SARC plan program was completed. The results of this evaluation indicated that landholders who actively sought out MULTISAR and requested a SARC plan were interested in the information MULTISAR provided and in making management changes to benefit wildlife habitat. Conversely, landholders who were first approached by MULTISAR were often not as interested in the information provided and were not as likely to engage in implementing management changes that would benefit species at risk. Therefore, it was decided that SARC plans would target those landholders who approached (or were referred to) MULTISAR and requested a plan. This scenario gives MULTISAR the best “bang for its buck”, as time and resources can be focused on properties and landholders where implementation of plans is most likely.

The SARC plan that was completed this past year was for a landholder who contacted MULTISAR upon hearing about the program and services that MULTISAR provides. This initial contact or knowledge of the program is typically from interactions of MULTISAR staff with landholders or other conservation organizations during various conferences, training days, tradeshows, and other public outreach events.

SARC Plan Summary

Species at Risk Conservation plans are ever evolving and are still seen as an important way for MULTISAR to reach out to a large number of landholders throughout the GNR and PNR and increase awareness of species at risk BMPs. Without an Education and Outreach Coordinator, MULTISAR will continue to provide SARC plans and BMP assessments on a responsive basis and promote them at various landholder events.

Habitat Conservation Strategy Evaluation and Monitoring Program

The year 2020–2021 marks the eleventh year of MULTISAR's evaluation and monitoring program. The process of our evaluation and monitoring program occurs on two levels: reassessment of properties that have had an HCS for a minimum of five years and secondly, monitoring of enhancement success on our properties with an HCS. The following sections will provide a summary of MULTISAR's evaluation and monitoring accomplishments for 2020–2021.

Evaluation of the HCS component of the MULTISAR Program

HCS Reassessments

An evaluation of each HCS completed for MULTISAR is scheduled to occur five years after its initiation. The focus of this assessment is to measure the effectiveness of the HCS plans and recommendations in influencing habitat management decisions, improving/maintaining habitat for species at risk, and refining the landholders' perceptions of species at risk and their associated habitats. In 2020–2021, due to the restrictions caused by the COVID-19 pandemic, all planned reassessments of properties were postponed. MULTISAR will resume reassessing properties in the spring of 2021 and will revisit MULTISAR Participant (MP)_16, MP_28, MP_29, MP_30, and MP_31.

New HCS Participants

In 2020–2021, the MULTISAR program initiated HCSs with six new participants and four new HMP participants. New participants are presented with a short questionnaire. This questionnaire provides background information on the participant as well as information on their values towards wildlife and natural habitats. The questionnaire consists of a combination of yes/no and open-ended questions with an opportunity to answer with multiple responses and opinions (Appendix A).

Since 2017, 27 new MULTISAR program participant questionnaire results have been compiled. Sixty-seven percent of the ranches have been managed by the same family for a minimum of 25 years, with several families having 3 or 4 generations working the same land. Prior to working with the MULTISAR program, only nine participants had knowledge of MULTISAR's work with species at risk and their habitat. All participants said their property was important for species at risk, with the exception of one rancher who was unsure if any species at risk would be found on

their land. Surprisingly, 81% of the participants said species at risk did not hinder their operation but were a benefit to some extent. When asked what interests them the most about the MULTISAR program, respondents said they wanted advice with land management (17/27), wanted increased knowledge of range management (13/27), wanted increased knowledge of wildlife and wildlife habitat management (9/27), and were interested in how the MULTISAR program balances species at risk management and landholder interests (10/27).

Monitoring Habitat Enhancements on HCS Participant Properties

Enhancement activities are monitored periodically to determine whether project goals and objectives are being accomplished which can help aid in the evaluation process (Margoluis and Salafsky 1998). For habitat enhancements to be effective, clearly defined measures of success are needed to develop and practice the skill of adaptive management (Salafsky *et al.* 2002). Problems identified and corrective actions applied during monitoring can help direct future enhancements and/or monitoring protocols. Determining the success of an enhancement can be a complex question where the habitat manipulation (enhancement) can cause a range of effects, and some observed changes may not be linked to the manipulation (Fletcher *et al.* 2007), which reinforces our conscientiousness with being adaptive.

Approximately 63 recommended enhancements, implemented on several different HCS properties, were monitored in 2020–2021. The following is a summary of the key findings.

Restoration Projects

Conversion of cropland back to native grasses can benefit a suite of native wildlife species. The MULTISAR program has done several types of restoration projects over the years. For detailed objectives and desired measures of success for our restoration projects see Downey *et al.* (2011; Section 5.3.1). Native restoration takes many years to accomplish; therefore, continuing to monitor these areas will be necessary to determine trends for these sites. In 2020–2021 a total of seven restoration sites on two MULTISAR participant properties had wildlife monitoring surveys completed: two restoration sites on MP_7 and five on MP_18.

MP_7 RP_01 has seen a gradual shift in fewer generalist songbird species such as horned lark (*Eremophila alpestri*) and savannah sparrow (*Passerculus sandwichensis*) and more consistent occurrences of obligate species such as Sprague's pipit and Baird's sparrow (Figure 3). Robel pole measurements were taken at each point count to help measure habitat cover and their results ranged from 2 cm – 12 cm.

MP_07 RP_02 has seen more sporadic occurrences of Sprague's pipit, but in 2020–2021, the highest number of Baird's sparrow were recorded since monitoring began in 2012 (Figure 4). Savannah sparrows and western meadowlarks (*Sturnella neglecta*) were consistently observed. Horned larks and vesper sparrows (*Pooecetes gramineus*) were not recorded at point counts on RP_02 in 2020–2021. Robel pole measurement at point counts ranged from 2 cm – 10 cm.

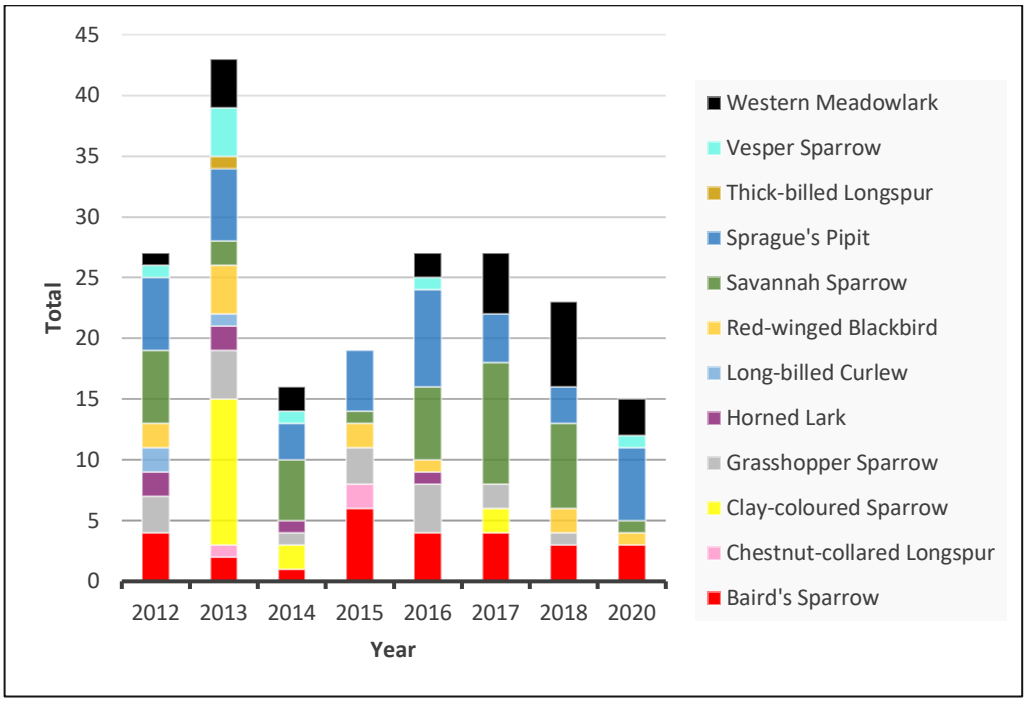

Figure 3. Abundance of specific grassland bird species in reseeded field RP_01 for MP_07 from 2012 to 2020.

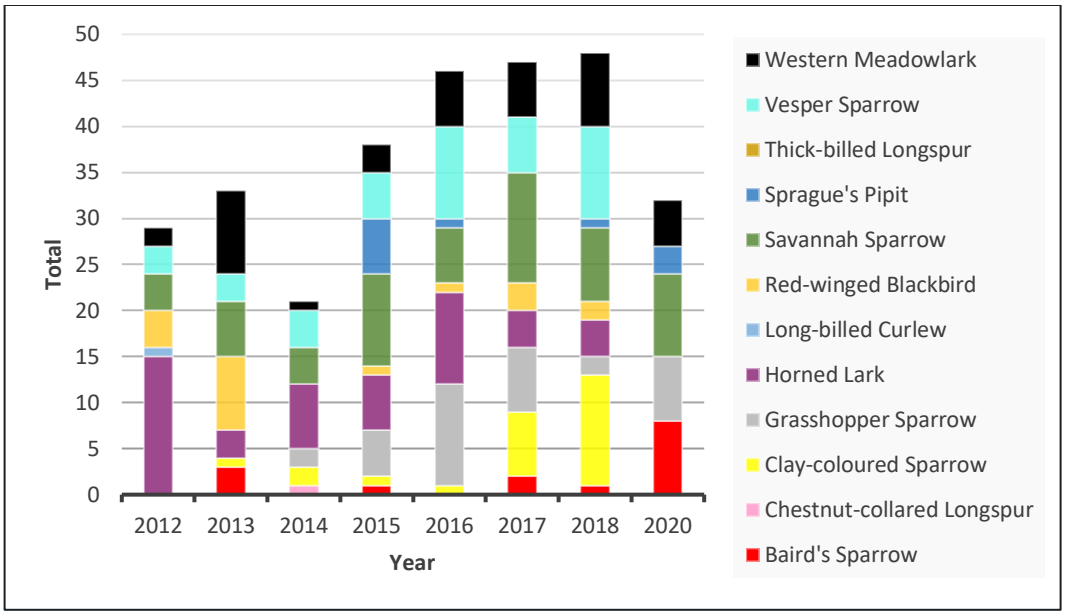

Figure 4. Abundance of specific grassland bird species in reseeded field RP_02 for MP_07 from 2012 to 2020.

Reseeding on MP_18 has occurred over several years from 2011 to 2018. These reseeding projects on MP_18 are broken down into four sites for the purpose of this report. MP_18 RP_01, RP_02, RP_03, and RP_04/5 were reseeded in the fall of 2011, spring 2012, 2016, and 2017/2018 respectively. Wildlife surveys were completed at roughly 40 point counts. Figures 5 to 8 show the changes in abundance over time for some of the grassland bird species at the different reseeded projects.

Overall, 15 species were recorded on MP_18 RP_01 and 19 on RP_02 in 2020. Notable species include grasshopper sparrow, Baird's sparrow, and Sprague's pipit. For RP_01, pipits and Baird's sparrows were first recorded in this reseed in 2016 and have been observed every year since. Baird's sparrows were first recorded in 2013 and Sprague's pipit in 2015 for RP_02. Chestnut-collared longspurs have been absent from RP_01 since 2013 and have only been recorded sporadically on RP_02. Baird's sparrows have been present on RP_03 for the last two years and were recorded for the first time on RP_04/5 in 2020. Horned larks have drastically decreased in numbers over the years for both RP_01 and RP_02. The highest abundance of horned larks in 2020 on any of the reseeded areas for MP_18 was on RP_04/5.

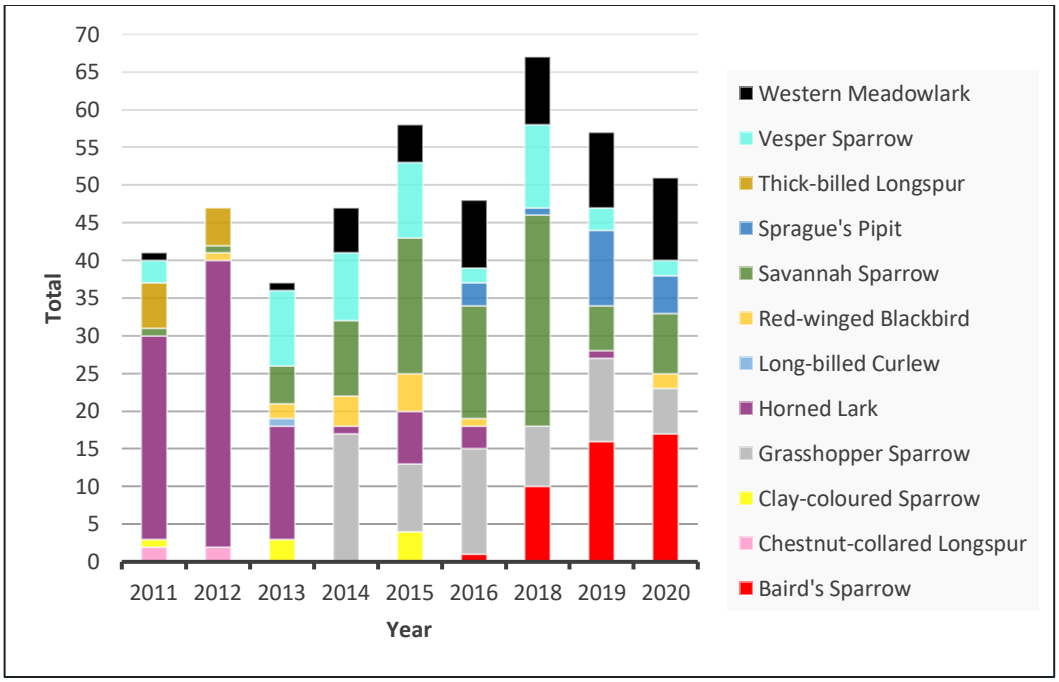

Figure 5. Abundance of specific grassland bird species on reseeded fields for MP_18 RP_01.

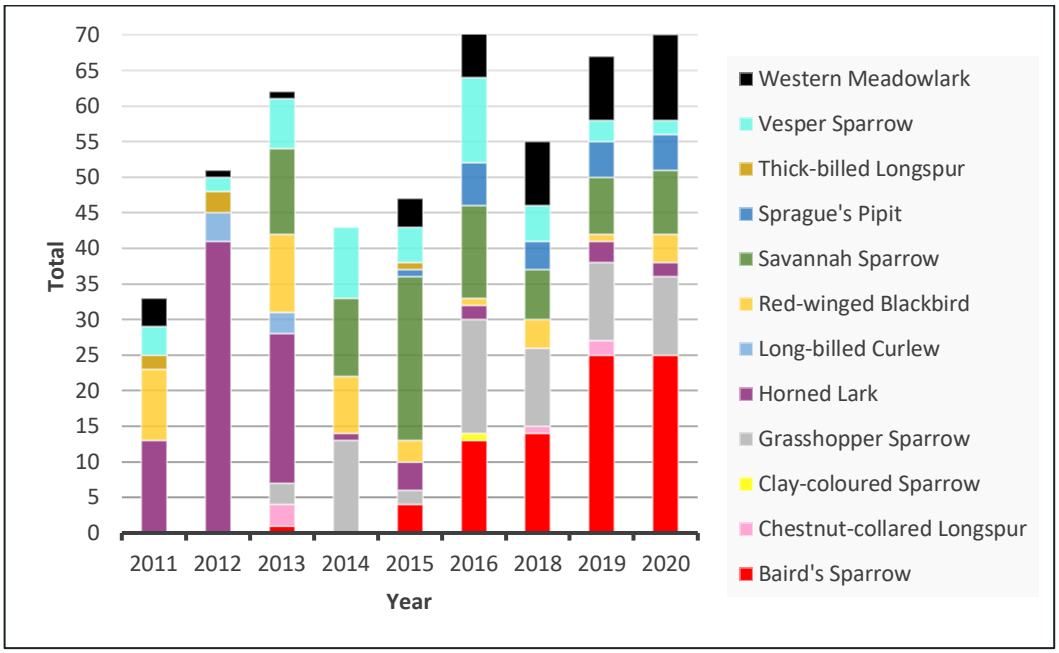

Figure 6. Abundance of specific grassland bird species on reseeded fields for MP_18 RP_02.

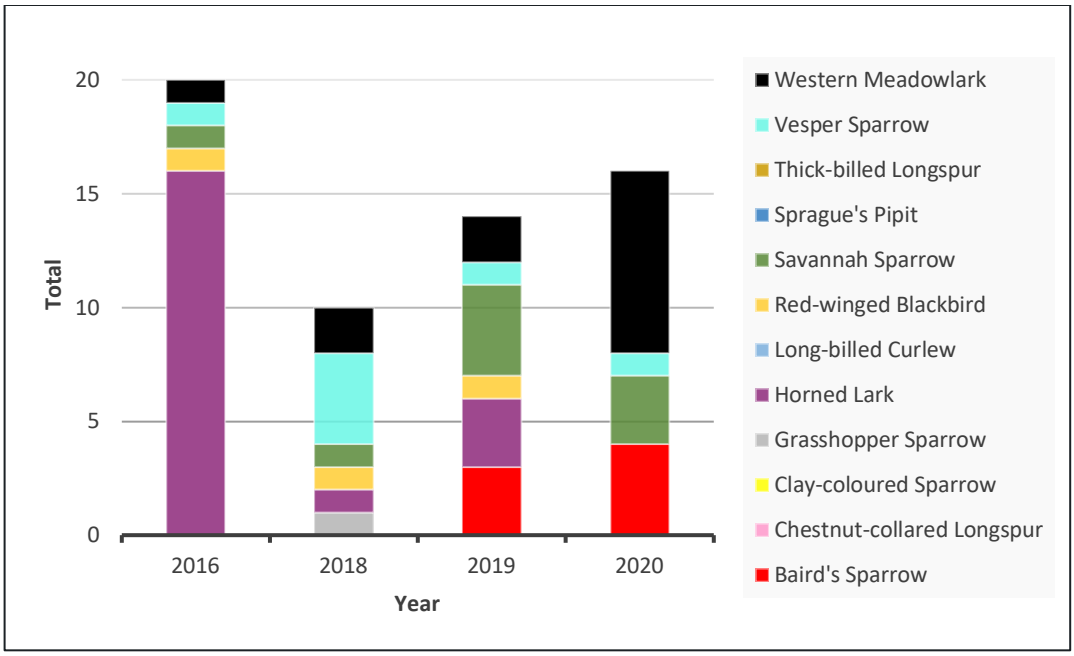

Figure 7. Abundance of specific grassland bird species on reseeded fields in MP_18 RP_03.

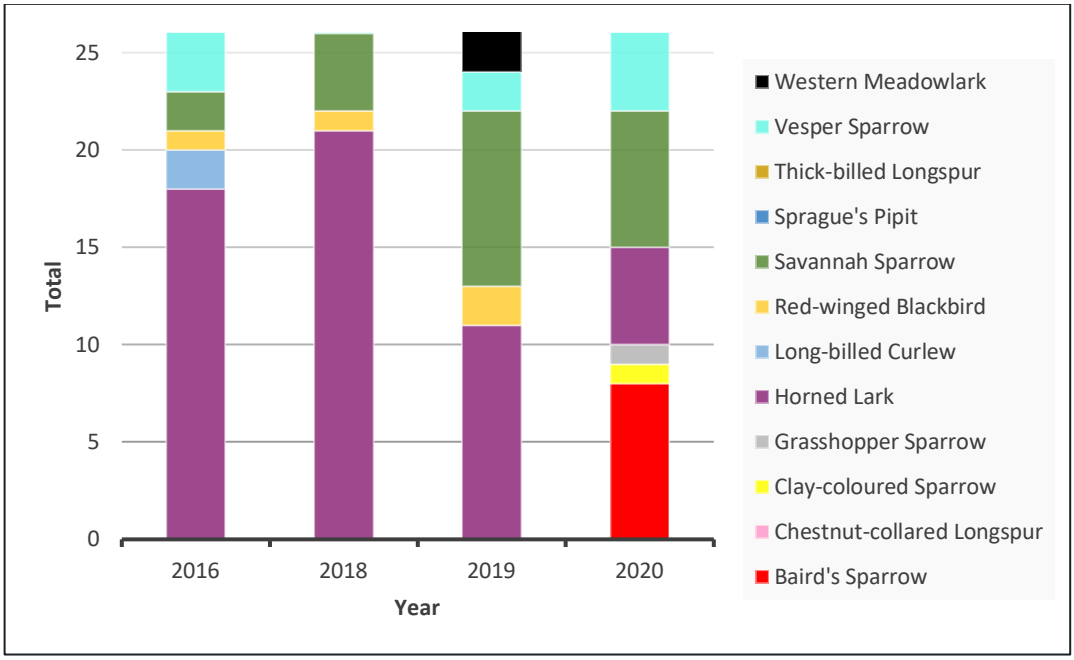

Figure 8. Abundance of specific grassland bird species on reseeded fields in MP_18 RP_04/5.

Shrub/Forb/Grass Plantings

Over the span of several years, the MULTISAR program has planted plugs of thorny buffaloberry (*Shepherdia argentea*), chokecherry (*Prunus virginiana*), silver sagebrush (*Artemisia cana*), American vetch (*Vicia americana*), golden bean (*Thermopsis rhombifolia*), and needle-and-thread grass (*Hesperostipa comata*). In addition, needle-and-thread grass and silver sagebrush seeds were spread on reseeded areas. Shelterbelts and shrub planting can increase nesting habitat for a variety of wildlife species such as ferruginous hawks and loggerhead shrikes and increase forage and winter habitat for greater sage-grouse, sharp-tailed grouse and pronghorn. When possible, plantings will be monitored annually for the first five years (unless deemed to be thriving or not successful at all), to determine establishment and growth. See Downey *et al.* (2011; Section 5.3.2) for more detailed objectives and desired measures of success for shelterbelt and shrub planting. No plantings were monitored in 2020–2021, however, more willow stakes were planted on MP_6 and shrubs were planted along a creek on MP_44. These sites will be monitored in 2021–2022.

Artificial Nesting/Roosting Structures

Artificial structures are used by the MULTISAR program in areas that have the potential to support a species at risk without negatively affecting other species in the area. Artificial structures include raptor nest poles, bat boxes, and burrowing owl burrows. Refer to Section 5.3.3 of Downey *et al*. (2011) for objectives and desired measures of success for MULTISAR's artificial structures.

Artificial nesting structures monitored in 2020–2021 included 16 nest poles installed for ferruginous hawks (Table 10). Areas in vicinity of several designated nest poles were also surveyed for Richardson's ground squirrels to help determine prey availability for ferruginous hawks (Table 11). Ten of the sixteen poles surveyed were occupied by nesting ferruginous hawks.

Table 10. Ferruginous hawk artificial nesting structures monitored in 2020 (with no Richardson's ground squirrel survey).

Number of Poles	2020 Survey Results
MP_5 2 poles	May 29, 2020: both poles had female ferruginous hawks sitting on nests.

MP_8 3 poles	July 03, 2020: 1 pole: 2 active adults and 4 young of the year ferruginous hawks 1 pole: 2 active adults and 5 young of the year ferruginous hawks. 1 pole: not active.
MP_34 1 pole	Nest pole not active in 2020
MP_BMP 3 poles	May 15, 2020: 2 of 3 nest poles had active ferruginous hawk nests.

Table 11. Richardson's ground squirrel surveys and associated ferruginous hawk nest poles monitored in 2020.

Participant Implementation Year # of Poles	2013 Survey Efforts and Results	2014 Survey Efforts and Results	2015 Survey Efforts and Results	2019 Survey Efforts and Results	2020 Survey Efforts and Results	Is Desired Effect Occurring and What Evidence
MP_6 3 poles in 2013 3 poles in 2020	N/A	1.90 km^2 138 RGSQ	1.51 km^2 142 RGSQ	1.90 km^2 124 RGSQ	1.90 km^2 124 RGSQ	Yes 3 of 6 nest poles checked being used by ferruginous hawks
MP_42 2018 1 pole	N/A	N/A	N/A	1.38 km^2 11 RGSQ	1.51 km^2 12 RGSQ	No Nest pole not active, but ferruginous hawk observed in vicinity

RGSQ = Richardson's ground squirrel

Weed Control

Sites invaded by noxious and restricted weed species experience reduced range health as invading species quickly replace native vegetation, reducing diversity and productivity. Refer to

Section 5.3.5 of Downey *et al.* (2011) for objectives, desired measures of success, and monitoring time frames for weed control enhancement sites. Four sites were monitored in 2020–2021: two for Dalmatian toadflax (MP_8 and MP_9; *Linaria dalmatica*) and two for leafy spurge (MP_8; *Euphorbia esula*). The Dalmatian toadflax on MP_8 had 40% standing dead toadflax stalks within ten meters of the biocontrol release site and at the leafy spurge sites there was 90-95% standing dead spurge plant stalks (Figure 9).

On MP_9 the Dalmatian toadflax plant numbers were low at the biocontrol weed site, however, downy brome (*Bromus tectorum*) is now very common at this site.

Figure 9. Flea beetle damage on leafy spurge.

Watering Systems

Water improvement monitoring will occur at two levels depending on the scale of impact.

Portable Watering Units

Portable watering units are used to help reduce impacts to wetlands/riparian areas and to better distribute cattle throughout the pasture. Portable watering units can attract cattle away from wetlands/riparian areas thereby improving wildlife habitat by increasing emergent vegetation, reducing erosion of slopes and shoreline by livestock, and increasing the longevity of wetlands/riparian areas.

Portable watering units are being used by several MULTISAR participants. Since they are portable, these units have been used at various locations on participating properties assisting with water distribution where needed. Many of the dugouts where these units have been in use have demonstrated an increase in bank vegetation, increased presence of shrubs, and less water turbidity.

Upland Watering Sites

Upland watering sites such as wells, permanent troughs, etc. can be used to attract cattle into areas that are underutilized to create improved grazing distribution and increased grazing pressure in specific areas to benefit targeted wildlife species. In addition, upland watering sites can also help decrease impacts on wetlands and riparian areas in the same pasture. Refer to Section 5.3.6 of Downey *et al*. (2011) for objectives, desired measures of success, and monitoring time frames for upland watering sites.

Several wildlife species were recorded at a new dugout on MP_7, which included northern shoveler (*Spatula clypeata*), blue-winged teal (*Anas discors*), American wigeon (*Mareca americana*), barn swallow, and red-winged blackbird. MP_8 has one portable watering site and one upland watering system. At the time of survey the watering systems were not in place yet but wildlife surveys were still completed at the upland watering location and three species were detected: horned lark, savannah sparrow, and gadwall (*Mareca strepera*) in the dugout where water is sourced for the water trough. On MP_9, two upland watering sites and control sites were monitored in 2020–2021 with only one trough in use. Species observed included Sprague's pipit, Baird's sparrow, savannah sparrow, western meadowlark, cliff swallow (*Petrochelidon pyrrhonota*), and red-tailed hawk (*Buteo jamaicensis*).

On MP_ 24 savannah sparrow and western meadowlark were recorded in vicinity of the upland watering site. On MP_25, at the three watering systems surveyed, wildlife recorded included the horned lark, savannah sparrow, clay-colored sparrow (*Spizella pallida*), vesper sparrow, Brewer's blackbird (*Euphagus cyanocephalus*), chestnut-collared longspur, Brewer's sparrow, western meadowlark, red-winged blackbird (*Agelaius phoeniceus)*, pronghorn, and Richardson's ground squirrel.

On MP_43, one upland winter watering site and one portable watering site were surveyed. At the upland winter watering site, vesper sparrow, barn swallow, and brown-headed cowbird (*Molothrus ater*) were recorded. At the portable watering unit, photos were taken to document use of the system.

Due to lateness in the season, no wildlife surveys were completed at MP_37, MP_44, and MP_48, however photos were taken at the portable watering unit locations, as well as at the five upland watering sites on MP_37.

Tree and Shrub Protection

It is generally recommended by the MULTISAR program that trees and shrubs that are experiencing heavy damage by cattle should have fences or corral panels placed around them to help prevent their gradual destruction. Trees, especially lone trees that can be used as nesting sites by ferruginous hawks, should be protected. Trees in riparian areas can also be protected from excessive beaver damage. These trees are wrapped with stucco wire where possible. Sites at which the landholder implements a tree or shrub-protection enhancement are monitored every two years, with photos taken to document the reduced impact of cattle on trees or shrubs. Wildlife species observed using the sites will also be recorded.

Monitoring occurred at eight locations in 2020–2021. At MP_34 several large areas of riparian trees were protected in 2017 and in 2020, and at MP_53 riparian trees were wrapped in 2018 and 2020. Beaver damage continues at both sites, but new trees are establishing (Figure 10). At MP_9, the beaver damage has slowed down dramatically. Several songbirds were recorded at MP_9 including least flycatcher, eastern kingbird, yellow warbler (*Setophaga petechia*), house wren (*Troglodytes aedon*), and American goldfinch (*Spinus tristis*). A bald eagle nest with three young of the year was also observed. MP_23 has had a large exclusion area since 2012 to allow tree and shrub regrowth along a river to provide important bank stability. Banks have increased in stability at this site and many of the new trees and shrubs which have naturally regenerated are now taller than the erected fence. MP_25 has had a tree protected since 2013, where the following species were observed: red-winged blackbird, eastern kingbird, brown-headed cowbird, and a Swainson's hawk (*Buteo swainsoni*). The tree protected on MP_43 had a successful nesting pair of ferruginous hawks with four young of the year on the nest when the site was monitored this past summer. One of the two sites protected on MP_4 was visited in 2020. The tree at this site has increased in branch foliar fullness and still provides shade to cattle.

Figure 10. Riparian tree protection 2020.

Wildlife-Friendly Fencing and Reflectors

All fence lines constructed with funding from MULTISAR are wildlife friendly, which includes a smooth double stranded bottom wire at least 46 cm off the ground and a top wire at a maximum height of 101 cm. Where required, vinyl markers are also installed to help avoid avian collisions. In 2020–2021, wildlife-friendly fencing was monitored on four properties (MP_8, MP_43, MP_48, and one of two sites on MP_57). All sites were built to wildlife-friendly standards.

Grazing Management Tools

Several MULTISAR participants have enhancements to assist with grazing management. Mobile electric fence trailers are becoming popular for their ease of use and versatility to move from one pasture to another to provide temporary fencing to attain desired grass utilization or to protect an area. Five sites were monitored for the use of portable electric fencing in 2020–2021 (MP_4, MP_37, MP_44, MP_48, and MP_57; Figure 11). At all sites, units were in operation and provided the rancher with a good tool to support their grazing management.

Figure 11. Electric fencer used to temporatily split a pasture.

Future Direction for Monitoring

In 2021–2022, MULTISAR will continue to monitor a sub-sample of enhancement projects to determine whether desired effects are occurring. Table 12 lists the proposed enhancement monitoring schedule.

Table 12. Planned monitoring of enhancement projects in 2021.

Enhancement Type and Associated Items to Monitor	# of Sites or Participants
Artificial Structures • Nest poles o Incorporating 5 Richardson's ground squirrel transects	18
Restoration Projects • Range health transects will be the focus as they were not completed in 2020–2021 • Wildlife point counts	9
Shrub/Forb/Grass Plantings • Needle-and-thread grass plug sites (2) • Native seed: silver sagebrush (1)	2

Weed Control • Biocontrol sites	4
Portable Watering Sites • Phone calls to landholders to discuss location of use and success	Min 10 + visits to 5 properties
Upland Watering Sites • Wildlife point counts and range health transects • Photos taken	9
Tree and Shrub Protection • Wildlife point count • Vegetation regrowth recorded • Photos taken	11
Riparian Protection • Riparian shrub plantings • Reference photos taken at wetland	3
Grazing management Tools • Document pastures where portable electric fencer is being used. If used in same location multiple years, measure litter at one location inside fencing and one location outside fencing. • Take photo reference points	5

Future Direction

In 2021-2022, MULTISAR will continue to work collaboratively with its partners to achieve goals and objectives in three core program areas:

1. Habitat Conservation Program:

    1.1 Continue to seek interested landholders in priority species at risk areas.

    1.2 Complete three new HCSs (~9120 acres) and two HMPs (~1200 acres). These will include detailed vegetation and wildlife inventories, and range and riparian health assessments to identify habitats, priority species and the ecological condition of the rangeland and riparian areas.

    1.3 Complete range inventories on two HCSs and one HMP property that were initiated in 2020.

    1.4 For those species at risk detected during inventories, use MULTISAR as a tool to implement recovery and conservation management actions identified in provincial and national recovery plans and provincial conservation management plans.

    1.5 Secure habitat for species at risk through signed stewardship commitment agreements with landholders.

    1.6 Assist landholders, based on priority, that have had an HCS or HMP completed, in implementing habitat enhancement recommendations outlined in their HCS or HMP.

    1.7 Complete new SARC plans or beneficial management plan assessments upon request and continue to seek interested landholders, conduct pre-assessment interviews and research, carry out rapid assessments and deliver final reports to landholders.

2. Education, Outreach and Awareness Program:

    2.1 When opportunities with watershed or other conservation groups, or the public, present themselves, promote the MULTISAR message and distribute relevant information to target audiences.

    2.2 Deliver two to five formal presentations to interest groups according to demand.

    2.3 Assemble information and images, write and distribute one issue of the *Grassland Gazette* (MULTISAR's newsletter).

2.4 Update and reprint MULTISAR brochures and fact sheets on species at risk and BMPs, as needed.

2.5 Regularly update MULTISAR's website and Facebook and Twitter accounts and ensure that posted information is relevant and accurate.

2.6 Continue membership and maintain active participation in the Canadian Roundtable for Sustainable Beef.

2.7 Continue collaboration with the Canadian Cattlemen's Association on the environmental display along the Cattle Trail during the Calgary Stampede (pending COVID-19 restrictions).

3. Research, Monitoring and Data Management Program:

3.1 Assist AEP in conducting sharp-tailed grouse monitoring on leks in southeastern Alberta.

3.2 Participate in the five-year monitoring of ferruginous hawks throughout their range in collaboration with AEP.

3.3 Conduct five Richardson's ground squirrel surveys in vicinity of installed ferruginous hawk nest platforms.

3.4 Assist AEP in conducting surveys for loggerhead shrike on one or two routes in southern Alberta.

3.5 Monitor the Great Plains toad and the plains spadefoot on up to 10 road transects (routes for the Researching Amphibian Numbers in Alberta program), if temperatures and precipitation allow, for evidence of emergence and reproduction.

3.6 Continue to assess the relationships among wildlife species occurrences, wildlife species diversity, relative abundance, plant community type and metrics of range health.

3.7 Evaluate five properties (~51 655 acres), originally assessed in 2010, 2014, 2015, and 2016 to measure how effective the HCS plan was at influencing habitat management, habitat value for species at risk and the landholders' perceptions of species at risk.

3.8 Monitor 76 (of approximately 258) habitat enhancement projects implemented within MULTISAR's program area since 2005.

3.9 Submit all wildlife observation data collected to FWMIS annually.

3.10 Continue to analyze MULTISAR's point count and range health data to examine habitat requirements of specific grassland bird species in the Mixedgrass, Dry Mixedgrass and Foothills Fescue Natural Subregions of Alberta.

3.11 Submit all range health assessment data on Crown lands to the provincial GLIMPS database on an annual basis.

Literature Cited

Adams, B.W., G. Ehlert, C. Stone, M.Alexander, D. Lawrence, M. Willoughby, D. Moisey, C Hincz, A. Burkinshaw, J. Richman, K. France, C. DeMaere, T. Kupsch, T. France, T. Broadbent, L. Blonksi, A.J. Miller. 2016. Rangeland Health Assessment for Grassland, Forest and Tame Pasture. AEP, Rangeland Resource Stewardship Section.

Alberta Environment and Parks. 2015. The general status of Alberta wild species 2015. URL: https://extranet.gov.ab.ca/env/wild-species-status/default.aspx. [Accessed 11 February 2021].

Bailey A., D. McCartney and M. Schellenberg. 2010. Management of Canadian prairie rangeland. Agriculture and Agri-Food Canada, Government of Canada. Swift Current, SK. 58 pp.

Downey, B.A., P.F. Jones and C.A. Koenig. 2011. MULTISAR evaluation and monitoring protocol. Pages 32–47 in Rumbolt, K.S., F. Blouin, B.A. Downey, B.L. Downey, C.A. Koenig, D.J. Jarina, P.F. Jones, J.P. Landry-DeBoer and E.R. Wesley. MULTISAR: a multi-species conservation strategy for species at risk 2010–2011 report. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report No. 141. Edmonton, AB. 84 pp.

Fletcher, R., A. Cilimburg and R. Hutto. 2007. Evaluating habitat restoration at O'Dell Creek using bird communities: 2006 report. Avian Science Center, University of Montana. Missoula, MT. 30 pp.

Government of Alberta. 2017. Species assessed by the conservation committee: Alberta species at risk. URL: https://open.alberta.ca/publications/species-assessed-by-the-conservation-committee-alberta-species-at-risk. [Accessed 11 February 2021].

Government of Canada. 2020. Species at risk public registry: species list. URL: https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html. [Accessed 11 February 2021].

Margoluis, R., and N. Salafsky. 1998. Measures of success: designing, managing, and monitoring conservation and development projects. Island Press. Washington, D.C. 384 pp.

MULTISAR. 2012. MULTISAR: a multi-species conservation strategy for species at risk in the Grassland Natural Region of Alberta 2011–2012 report. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report No. 144. Edmonton, AB. 45 pp.

Rangeland Conservation Service Ltd. 2016. Beneficial management practices for the Milk River Basin and South Saskatchewan watersheds, Alberta (2016 update): a component of the multiple

species at risk (MULTISAR) conservation strategy. Unpublished report prepared for MULTISAR. Airdrie, AB. 526 pp.

Robel, R.J., J.N. Briggs, A.D. Dayton and L.C. Hulberts. 1970. Relationship between visual obstruction measurements and weight of grassland vegetation. Journal of Range Management 23: 295–297.

Rumbolt, K.S., F. Blouin, B.A. Downey, B.L. Downey, C.A. Koenig, D.J Jarina, P. F. Jones, J.P. Landry-DeBoer and E.R. Wesley. 2011. MULTISAR: a multi-species conservation strategy for species at risk 2010–2011 report. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report No. 141. Edmonton, AB. 84 pp.

Salafsky N R, Margoluis K, Redford H, and Robinson J G. 2002. Improving the practice of conservation: a conceptual framework and research agenda for conservation science. *Conservation Biology* 16(6) 1469-79.

Saunders, E., R. Quinlan, P. Jones, B. Adams and K. Pearson. 2016. At home on the range: living with Alberta's prairie species at risk (second edition). Alberta Conservation Association and Alberta Environment and Parks. Lethbridge, AB. 48 pp.

Willoughby, M.G. 2007. Range survey manual for Alberta rangelands version one. Rangeland Management Branch, Alberta Sustainable Resource Development. Edmonton, AB. 8 pp.

Appendices

Appendix A: New MULTISAR HCS Participant Questionnaire

Landholder: _____ Interviewer(s): _____ Date: _____

Questions:

How long have you owned/lived on your property?

What are the primary uses of your property?

Have you heard about the MULTISAR program prior to us contacting you?

a) If so, what do you know about the MULTISAR program?

b) Do you know which organizations make up the MULTISAR program?

What would you consider at “species at risk”?

a) Can you name a few species at risk on your property or in Alberta?

b) Do you feel that your land is important in providing habitat for species at risk?

c) Do you feel species at risk are beneficial to your ranching operation?

Had you ever heard of the term Beneficial Management Practice (BMP)?

a) Do you currently use any BMPs in your operation?

b) If yes, please list some of them.

If you need help thinking of some, here are some examples of the BMPs for Burrowing Owl:

- Varying stocking rate in accordance with precipitation
- Promote heterogeneous habitat conditions (patchiness)
- Avoid intensive, high stocking rates that encourages uniform utilization of pastures
- Minimize the sue of cross fencing to avoid raptor perch sites
- Remove marginal farmland from production

- Protect large tracts of native prairie
- Use water developments and salt placement to create areas of heavier grazing

What interests you the most about the MULTISAR program and what do you hope to achieve by working with us?

How would you prefer to communicate with us?

Are you interested in receiving our newsletter? If yes, by mail or electronically?

Email address: _____

Mailing address: _____

Appendix B: List of Abbreviations Used in MULTISAR Reports

Abbreviation	Expansion
ABP	Alberta Beef Producers
ACA	Alberta Conservation Association
ACIMS	Alberta Conservation Information Management System
AEP	Alberta Environment and Parks
CCA	Canadian Cattlemen's Association
CRSB	Canadian Roundtable for Sustainable Beef
BACI	Before-After-Control-Impact
BMP	Beneficial Management Practice
FWMIS	Fish and Wildlife Management Information System
GNR	Grassland Natural Region
GVI	Grassland Vegetation Inventory
HCS	Habitat Conservation Strategy
HMP	Habitat Management Plan
HSP	Habitat Stewardship Program
MULTISAR	Multiple Species at Risk
PCF	Prairie Conservation Forum
RCS	Rangeland Conservation Service
SARC	Species at Risk Conservation
SARC Plan	Species at Risk Conservation Plan
SARPAL	Species at Risk Partnership on Agricultural Lands