



## MULTISAR

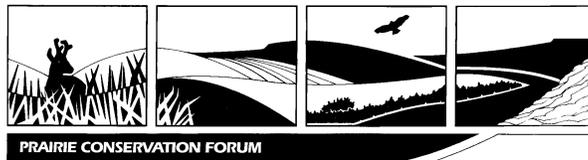
# A Multi-Species Conservation Strategy for Species at Risk in the Grassland Natural Region of Alberta

## 2017-2018 Report



# MULTISAR

Alberta Species at Risk Report No. 162



# MULTISAR: A Multi-Species Conservation Strategy for Species at Risk in the Grassland Natural Region of Alberta

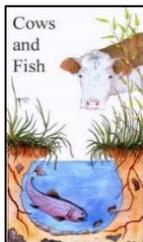
## 2017-2018 Report

Prepared for:  
Alberta Environment and Parks

Prepared by:  
MULTISAR

Alberta Species at Risk Report No. 162

March 2018



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## EXECUTIVE SUMMARY

MULTISAR 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. 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 Round Table for Sustainable Beef, and Environment and Climate Change Canada.

The Habitat Conservation Program includes the development of detailed Habitat Conservation Strategies (HCS) in the core project area of southern Alberta, as well as the more compact Species at Risk Conservation Plans (SARC Plans) delivered throughout the Grassland Natural Region. In 2017-2018, a new HCS was developed on seven ranches totalling approximately 62,973 acres. Associated habitat enhancement projects were also developed to improve the habitat of key wildlife species. A number of habitat projects were developed on HCS properties. These varied from planting of native grass plugs, wildlife-friendly fencing, Japanese brome control, installation of several ferruginous hawk poles, the fencing of wetlands and dugouts, and portable watering unit use.

Species at Risk Conservation Plans (SARC Plans) and Beneficial Management Plans (BMP Plans) were delivered upon request in 2017-2018 on three properties. One property received a SARC Plan (~80 acres) and two properties received BMP plans (~35,184 acres) where landowners wanted to install ferruginous hawk nesting platforms to assist with Richardson ground squirrel control.

The Education, Outreach and Awareness program was achieved primarily by MULTISAR staff that were able to give presentations and demonstration tours to landowners, wildlife and conservation groups, college students, and the general public. MULTISAR partnered with the Canadian Cattlemen's Association to man a booth during the Calgary Stampede that was viewed by over 100,000 people. Communication material produced included one issue of MULTISAR's newsletter and a new bat BMP (beneficial management practise) fact sheet. In total, MULTISAR made over 118 different contacts with more than 2,146 people (and an additional 100,000 people at the Calgary Stampede) including landholders, the general public, academia, industry, media, government and non-government 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 habitat conservation strategies. A subsample of range and riparian sites and wildlife points were revisited on two MULTISAR HCS ranches (~41,670 acres), five years after their initial assessment, to determine if management recommendations had been implemented and their impact on species at risk habitat. Thirty five habitat enhancement projects, on participating HCS ranches, were monitored in 2017 to determine if enhancements are achieving their objectives.

MULTISAR has compiled the wildlife observation and vegetation assessment data it has been accumulating since its first Habitat Conservation Strategy. In 2018, MULTISAR will continue to focus on determining inferences between species at risk occurrences and habitat metrics and that Beneficial Management Practices recommendations can be improved to maximize habitat quality.

## ACKNOWLEDGEMENTS

Many individuals, agencies, organizations, programs, and corporations allowed MULTISAR to successfully achieve its habitat stewardship mandate in the Grassland Natural Region in 2017-2018. We would like to convey our sincere appreciation to them.

The MULTISAR project received financial support from Alberta Conservation Association (ACA), Alberta Environment and Parks (AEP) through a grant to the Prairie Conservation Forum (PCF), the Government of Canada through the Habitat Stewardship Program for Species at Risk (HSP) grant to ACA and the Species at Risk Partnership on Agricultural Lands (SARPAL- Environment and Climate Change Canada) grant to the Canadian Cattlemen's Association (CCA), and private donations. Additional in-kind support was provided by Alberta Environment and Parks, Alberta Conservation Association, Prairie Conservation Forum, Canadian Cattlemen's Association, Milk River Watershed Council, M.D. of Ranchlands, Altalink, EQUUS, and private landholders.

Sasha Harriott (PCF) was instrumental in the administration of the AEP grant to PCF in support of MULTISAR, and Fawn Jackson (CCA and Canadian Roundtable for Sustainable Beef, CRSB) was instrumental in securing and administering the SARPAL grant to ACA in support of MULTISAR.

We are grateful to Rob Simieritsch, Mike Alexander, Kim Morton, and Sue Cotterill (AEP) for their support in championing the MULTISAR program for grant funding by Alberta Environment and Parks and to Doug Manzer, Lance Engley and Trevor Council for their support in championing the MULTISAR program for funding by Alberta Conservation Association.

The MULTISAR Steering Committee, comprised of Katheryn Taylor (PCF), Brad Downey (ACA), Brandy Downey (AEP), Paul Jones (ACA), Joel Nicholson (AEP), Craig DeMaere (AEP) and Amanda Miller (AEP), was responsible for the planning and the management of the MULTISAR program. The SARPAL Advisory Committee, comprised of Bob Lowe (Alberta Beef Producers, ABP), Rich Smith (ABP), Fawn Jackson (CCA/CRSB), Monica Hadarits (CRSB), Brad Downey (MULTISAR, ACA), Katheryn Taylor (MULTISAR, PCF), Kelsey Cartwright (Cows and Fish) and Norine Ambrose (Cows and Fish) was responsible for overseeing the SARPAL funds.

Katheryn Taylor (PCF), Brad Downey (ACA), Darryl Jarina (PCF), Ken Pitcher (PCF), Kristen Rumbolt-Miller (PCF), Mike Verhage (ACA), Julie Landry-Deboer (ACA), Lee Moltzahn (ACA), Adam Moltzahn (ACA), Rachel Whitehouse (ACA), Allie Olson (ACA), Brook Skagen (ACA), Graydon Garner (ACA), Amanda MacDonald (ACA), Emma LaRoque (ACA), Mike Jokinen (ACA), Jeff Forsyth (ACA), Brad Hurkett (ACA), Logan Redman (ACA), Jason Blackburn (ACA), Tyler Johns (ACA), Jessy Dubnyk (ACA), Alan Dodd (LE), and Elaine Kennedy (RCS) completed the range, wildlife, and fisheries inventories and range health assessments for the Habitat Conservation Strategies (HCS's) and their monitoring and evaluation. Cows and Fish completed riparian vegetation inventories and health assessments. Volunteers helped survey properties for snakes and short-horned lizards.

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MULTISAR is very fortunate to be working with a ranching community that has embraced the project and the continued stewardship of rangeland and wildlife habitat. The working relationships established with landholders over the years provide the essential foundation for which the MULTISAR program can be successful.

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## 1.0 INTRODUCTION

Grasslands have evolved over thousands of years, yet over the last century we've managed to lose roughly 80% of our 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 landowners and increasing awareness of species at risk.

MULTISAR 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. The program is a collaborative effort among landholders, Alberta Conservation Association, Alberta Environment and Parks, and the Prairie Conservation Forum. The primary goals of MULTISAR are to implement collaborative strategies to manage multiple species on a defined working landscape and to assist with their implementation. These strategies are built as landholder-specific Habitat Conservation Strategies (HCS), leading to the implementation of habitat enhancement activities that benefit both the farm or ranch operation and wildlife. Through these relationships MULTISAR has implemented 173 habitat enhancement projects on ~400,000 acres of land.

MULTISAR consists of three primary components:

- 1) Habitat Conservation Strategies which are detailed plans developed with the landholder(s) that can be used as a tool for the management of their land.
- 2) Education, Outreach, and Awareness Program which involves developing Beneficial Management Practices for various species, development of the annual Grassland Gazette, development of presentations for the public, and completion of Species at Risk Conservation Plans, which are a condensed form of the HCS and completed for landholders outside the priority landscape of the Milk River Watershed and portions of the South Saskatchewan River Watershed.
- 3) Research, Monitoring, and Evaluation which involves the monitoring of habitat enhancements every one to two years and evaluation of the detailed plans (HCS) every five years to determine if 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:

**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.

**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.

## **Program Area Goals**

### **Habitat Conservation Program:**

**Goal:** Incorporating the values of all partners, 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 (focussing 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 through the MULTISAR process.

## **2.0 EDUCATION, OUTREACH & AWARENESS**

### **2.1 Introduction**

MULTISAR continued to deliver its Education, Outreach and Awareness program as time and resources permitted. Activities included everything from field training events, to presentations to school, college, community and landholder groups, to attendance at events with the MULTISAR display. Direct communication with landholders is ongoing, as is communication with other organizations and government agencies.

### **2.2 Landholder Awareness**

#### **2.2.1 At Home on the Range, Grassland Gazette and other Informational Publications**

A total of 1,241 copies of MULTISAR's flagship booklet, *At Home on the Range: Living with Alberta's Prairie Species at Risk* (Saunders et al. 2016), was distributed to landholder cooperators, mailed out to county and municipal district offices, provided to non-profit organizations for distribution, and given to interested members of the public at events such as the Calgary Stampede. The 12<sup>th</sup> issue of MULTISAR's newsletter, the *Grassland Gazette*, was produced in December 2017 and sent to over 575 MULTISAR contacts, including program participating landholders. Over 2,000 MULTISAR fact sheets and species at risk information cards were handed out.

#### **2.2.2 Southern Alberta Grazing School for Women**

The 14<sup>th</sup> Annual Southern Alberta Grazing School for Women was held on July 25 - 26, 2017 in Munson, Alberta, with 50 women in attendance. The two day "school" included topics such as grazing principles and practices, range health, pasture weeds, beavers, post-calving care, and social license/verified sustainable beef. Time was also spent in the field honing plant ID skills, learning why range and riparian health is important and how to assess this on individual range units, as well as a look at watering enhancement systems and a trip to a robotic dairy farm. MULTISAR is one of the organizing partners of this event. The MULTISAR display was set up and various brochures and the At Home on the Range booklets were handed out.

2.2.3 Southern Alberta Youth Range Days

Southern Alberta Youth Range Days was held on July 18 - 20, 2017 in Gold Springs, Alberta. MULTISAR is one of the organizing partners of this event and had staff in attendance to help deliver presentations. The agenda included range plant identification and quiz, a ranch management challenge, dealing with invasive species on a working landscape, a look at key stone species with the use of prey abundance surveys using ‘gopher callers’, and how species at risk such as hawks and northern leopard frogs interact with the landscape. Twenty five youth and five parent chaperones were in attendance. Attendees came from various backgrounds, including farm and ranch, acreage and town.

2.2.4 Presentations/Training to Landholder Groups

MULTISAR had numerous conversations with individual landholders (125+) about topics such as species at risk, wildlife friendly fencing, hawk poles, water management, native grass restoration, herbicides for invasive weeds, habitat assessments, the MULTISAR process, and so on. In addition, MULTISAR also gave presentations and/or training to landholder groups on several occasions. Table 1 summarizes presentations, training or discussions about ranch management that were given to landholder groups.

**Table 1. Summary of activities by MULTISAR associated with landholder groups.**

<b>Date</b>	<b>Event</b>	<b>Location</b>	<b>Type</b>	<b>Attendance</b>
July 25-26, 2017	Southern Alberta Grazing School for Women	Munson, AB	Species at risk and grazing management	50 attendees
January 31, 2018	Ranch Annual Meeting	Lethbridge, AB	Ranch management plan and enhancement discussion	9 attendees
February 2, 2018	Ranch Annual General Meeting	Fincastle, AB	Presentation about MULTISAR and enhancement projects	12 attendees
February 7, 2018	Ranch Meeting	Longview, AB	Presentation about MULTISAR	15 attendees
February 13, 2018	A Provincial Park Management Meeting	Lethbridge, AB	Management plan discussion	6 attendees
March 12, 2018	Grazing Reserve Board Meeting	Lomond, AB	Presentation about MULTISAR and enhancement projects	10 attendees

## 2.3 Educational Presentations

MULTISAR was involved in youth and post-secondary education activities on 11 occasions, reaching a total of 313 individuals. Table 2 summarizes these activities.

**Table 2. Summary of activities by MULTISAR associated with youth and post-secondary education.**

<b>Date</b>	<b>Event</b>	<b>Location</b>	<b>Type</b>	<b>Attendance</b>
April 19, 2017	Lethbridge College Field Trip	Elkwater, AB	Presentation on MULTISAR enhancements	25 college students
June 5, 2017	Grade 3 Species at Risk Presentation	Raymond, AB	Presentation about Species at Risk	100 youths
July 18-20, 2017	Youth Range Days	Gold Springs, AB	Presentation on range, Species at Risk	30 (youth and parents)
August 19, 2017	Lethbridge College Field Trip	Milk River, AB	Ranch Tour in the dry mixed grass	10 college students
August 30, 2017	Presentation for summer PLAY program	Coaldale, AB	Wildlife BINGO game	28 youths
September 12, 2017	Lethbridge College Field Trip	Elkwater, AB	Presentation on MULTISAR Enhancements	43 college students
September 21, 2017	Lethbridge College	Lethbridge, AB	Bat lecture and night time survey at Elizabeth Hall Wetlands	15 college students
November 8, 2017	Medicine Hat College	Medicine Hat, AB	Presentation on MULTISAR, grasslands, and native grass reseeding	25 college students
November 22, 2017	Lethbridge College	Lethbridge, AB	Presentation on MULTISAR wildlife survey techniques	21 college students
November 26, 2017	Lethbridge College	Lethbridge, AB	Presentation on MULTISAR wildlife survey techniques	9 college students
November 28, 2017	Medicine Hat College	Medicine Hat, AB	Discussion of partnership between MULTISAR and College	7 college personnel

## 2.4 Public Outreach

### 2.4.1 Presentations, Demonstration Tours and Displays

In addition to MULTISAR's involvement with landholders, youth, and post-secondary students, MULTISAR delivers presentations and tours to other groups working on the landscape (such as non-government organizations, not-for-profit organizations, and government agencies), as well as participating in their events. At public events, MULTISAR will give presentations and take its interactive species at risk and grassland display. In 2017-2018, MULTISAR gave live presentations and set up the display on twelve occasions. Presentations and tours were also given to individuals of groups to inform them about MULTISAR and MULTISAR processes. These types of presentations and displays allowed MULTISAR to directly reach over 800 individuals, and received direct and indirect exposure from at least 100,000 people who visited the Calgary Stampede Cattle Trail. At the Calgary Stampede, MULTISAR, as well as various other environmental organizations working towards engaging people in grasslands related issues, was invited by the Canadian Cattlemen's Association to set up displays. Table 3 summarizes MULTISAR's public outreach activities.

**Table 3. Summary of 2017-2018 public outreach activities by MULTISAR.**

Date	Event	Location	Type	Attendance
April 6, 2017	Mixed Grass Forum	Medicine Hat, AB	Presentation about Species-at-Risk and Native Grass Restoration; MULTISAR Grass Roots Display	100 attendees
June 9, 2017	County Agrologist Workshop	Brooks, AB	Presentation about Species-at-Risk	60 attendees
May 25, 2017	Milk River Watershed Council Canada Annual General Meeting	Milk River, AB	MULTISAR display (NGO)	40 attendees
July 5 – 15, 2017	Calgary Stampede; Canadian Cattlemen's Association	Calgary, AB	MULTISAR display (general)	Over 100,000 visitors from around the world
July 2018	Country in the City	Medicine Hat, AB	MULTISAR Display (general)	Over 200 people visited the booth
August 26, 2017	Waterton Biosphere Workshop	Beaver Mines, AB	Presentation about Northern Leopard Frog Stewardship	16 attendees
September 14, 2017	Foothills Restoration Forum Range Training Course	Brooks, AB	Range training	12 attendees
October 19, 2017	Eastern Watershed Bus Tour	Milk River, AB	Presentation about grassland reclamation	50 attendees
November 16, 2017	Foothills Restoration Forum Fall Information Session 2017	Claresholm, AB	MULTISAR update on activities and display	60 attendees

Date	Event	Location	Type	Attendance
December 5, 2017	Milk River Watershed Council of Canada Science Forum	Milk River, AB	Presentation about Smooth and Japanese Brome Control using Simplicity	45 attendees
January 18, 2018	Prairie Conservation Forum Annual General Meeting	Balzac, AB	MULTISAR update on activities (NGO)	40 attendees
January 28-February 2, 2018	Society of Range Management Annual Meeting	Sparks, NV	Poster Presentation about MULTISAR	400 attendees

#### 2.4.2 Web Site and Social Media

The MULTISAR website ([www.multisar.ca](http://www.multisar.ca)) continues to be the key portal where information about the project, beneficial management practices (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/Facebook posts from this past year was 55.

#### 2.4.3 Media and other Publications

MULTISAR's newsletter, the *Grassland Gazette*, was produced and sent to over 575 contacts. A new BMP fact sheet for bats was also produced. MULTISAR received media attention by the Medicine Hat news (Kalinowski, 2018) and Ag Matters (Kalinowski, 2018) through an article on prairie species at risk and the MULTISAR program.

#### 2.4.4 Contacts, Extension and Outreach

Through the course of any fiscal year MULTISAR staff interacts on a daily basis with landholders and other individuals representative of a broad spectrum of sectors. Between April 1, 2017 and March 31, 2018, a total of 118 contacts were made with 2,146 people, plus over 100,000 people that visited the Calgary Stampede Cattle Trail and either stopped to talk with staff or walked by and saw the MULTISAR display. MULTISAR also collaborates with other organizations/agencies, and this year talked with, and had meetings with, approximately 130 people in other organizations/agencies. Table 4 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 because of the interaction with these contacts.

**Table 4. MULTISAR contacts for 2017-2018.**

Contact Type	# Contacts	# People Reached
Academic	8	155
Company	2	6
Consultant	0	0
Contractor	3	568
Government	12	145
Individual (non-landholder)	2	Over 100,000 at the Calgary Stampede
Industry	0	0
Landholder	59	141
Landholder Group	3	22

Contact Type	# Contacts	# People Reached
Media	1	unknown
NGO	18	417
School	3	130
Other	8	558
<b>Total:</b>	<b>119</b>	<b>2,146</b>

## 3.0 HABITAT CONSERVATION STRATEGIES

### 3.1 Introduction

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 the Habitat Conservation Strategy (HCS). The majority of the province's remaining native prairie is found in the Grassland Natural Region, 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 landowners and lease holders. The HCS team works together to balance the needs for healthy rangelands and quality fish and wildlife habitats through grazing recommendations and habitat improvement projects. The strategy is a result of detailed range, wildlife and riparian inventories and assessments, from which management goals and objectives can be made.

### 3.2 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 Alberta Environment and Parks, Alberta Conservation Association, Prairie Conservation Forum 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 actions for species identified as a priority on the land and from MULTISAR's Beneficial Management Practices document (RCS 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).

### 3.3 HCS Achievements for the Fiscal Year 2017-2018

To date, MULTISAR has completed 42 HCSs on 395,296 acres of land within the Milk River and South Saskatchewan watersheds (Table 5). In 2017, MULTISAR completed an HCS for seven new properties in southern Alberta, totaling 62,973 acres. Work on these properties included detailed wildlife, range and riparian inventories.

**Table 5. Habitat conservation strategy participant summary.**

<b>Year*</b>	<b># Landholder Participants</b>	<b>Acres Surveyed</b>
2004	1	62,050
2005	1	159
2006	2 <sup>^</sup>	32,868
2007	3	85,712
2008	2	7,680
2009	3	38,630
2010	5	4,731
2011	5	17,878
2012	3	13,127
2013	1	7,859
2014	2	43,250
2015	2	8,553
2016	5	9,837
2017	7	62,973
<b>Total</b>	<b>42</b>	<b>395,296</b>

\*HCS were counted in the year in which field work was initiated, however, some surveys continued for more than one year.

<sup>^</sup> In 2006, MULTISAR absorbed the Western Blueflag Program and its 8 participating landholders. These properties did not have a HCS completed and therefore they are not included in this total.

To date, 18 HCSs that have been implemented for at least five years were reassessed (Table 6). 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 Section 5.0.

**Table 6. Habitat conservation strategy reassessment summary.**

<b>Year of HCS Reassessment</b>	<b>MULTISAR Participant</b>	<b>Size of Property (ac)</b>
2011	MP_1	62,050
2012	MP_4	28,797
2013	MP_7	41,332
2013	MP_8	3,479
2013	MP_9	4,201
2014	MP_2	159
2014	MP_3	4,071
2014	MP_6	40,547
2015	MP_5	3,832
2015	MP_10	2,209
2015	MP_11	3,055
2015	MP_16	1005
2016	MP_1	62,050
2016	MP_13	311
2016	MP_15	854
2016	MP_17	1,263

Year of HCS Reassessment	MULTISAR Participant	Size of Property (ac)
2016	MP_18	1,297
2016	MP_20	2,026
2017	MP_4	28,797
2017	MP_19	14,271
<b>Totals</b>	<b>18*</b>	<b>305,606</b>

\*This number excludes the most recent reassessment for MP\_1 in 2016 and MP\_4 in 2017.

### 3.3.1 Wildlife

To date, approximately 61,610 wildlife observations have been submitted to the Fish and Wildlife Management Information System (FWMIS) since 2004, including 7,587 in 2017. Fifty-four (54) different species at risk were recorded on HCS properties in 2017. Table 7 summarizes the species at risk observed on all HCS properties assessed (or reassessed) during the 2017 field season.

**Table 7. Species at risk recorded during the 2017 Habitat Conservation Strategy field season.**

Species	General Status <sup>1</sup>	Legislative Status <sup>2</sup>	# of Observations	Feature	Significance
<b>BIRDS</b>					
Alder flycatcher	Sensitive	N/A	60		
American bittern	Sensitive	N/A	1		
American kestrel	Sensitive	N/A	5		
American white pelican	Sensitive	N/A	10		
Baird's sparrow	Sensitive	Special Concern	120	1 nest	
Bald eagle	Sensitive	N/A	4	1 nest	
Baltimore oriole	Sensitive	N/A	47		
Bank swallow	Sensitive	Threatened	13	1 colony	
Barn swallow	Sensitive	Threatened	30		
Black tern	Sensitive	N/A	4		
Bobolink	Sensitive	Threatened	13		
Brewer's sparrow	Sensitive	N/A	126		
Burrowing owl	At Risk	Endangered	1		

<sup>1</sup> Alberta General Status (AEP 2015)

<sup>2</sup> Legislative Status for Canada's Species at Risk Act (GOC 2018) or Alberta's Wildlife Act (GOA 2014)

N/A = Not Assessed

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<b>Species</b>	<b>General Status<sup>1</sup></b>	<b>Legislative Status<sup>2</sup></b>	<b># of Observations</b>	<b>Feature</b>	<b>Significance</b>
Chestnut-collared longspur	At Risk	Threatened	123	1 nest	
Clark's nutcracker	Sensitive	N/A	1		
Common nighthawk	Sensitive	Threatened	10		
Common yellowthroat	Sensitive	N/A	20		
Eastern kingbird	Sensitive	N/A	102	2 nests	
Ferruginous hawk	At Risk	Endangered	49	13 nests	
Golden eagle	Sensitive	N/A	5		
Grasshopper sparrow	Sensitive	N/A	144		
Great blue heron	Sensitive	N/A	22		
Lark bunting	Sensitive	N/A	12		
Least flycatcher	Sensitive	N/A	132		
Loggerhead shrike	Sensitive	Threatened	7	1 nest	
Long-billed curlew	Sensitive	Special Concern	34		
McCown's longspur	May Be At Risk	Special Concern	6		
Olive-sided flycatcher	May Be At Risk	Threatened	1		
Pied-billed grebe	Sensitive	N/A	4		
Pileated woodpecker	Sensitive	N/A	2		
Prairie falcon	Sensitive	Special Concern	5	1 nest	
Sandhill crane	Sensitive	N/A	9		
Sharp-tailed grouse	Sensitive	N/A	90	17 leks	
Short-eared owl	May Be At Risk	Special Concern	8	2 nests	
Sora	Sensitive	N/A	19		
Sprague's pipit	Sensitive	Threatened	113	1 nest	
Upland sandpiper	Sensitive	N/A	25		
Western tanager	Sensitive	N/A	3		
Western wood-pewee	May Be At Risk	N/A	85		

Species	General Status <sup>1</sup>	Legislative Status <sup>2</sup>	# of Observations	Feature	Significance
White-faced ibis	Sensitive	N/A	7		
<b>HERPTOFAUNA</b>					
Bullsnake	Sensitive	N/A	18		
Great Plains toad	Sensitive	Special Concern	1		
Northern leopard frog	At Risk	Threatened	62	8 breeding sites	
Plains garter snake	Sensitive	N/A	10		
Prairie rattlesnake	Sensitive	Special Concern	32	3 Hibernacula	
Wandering garter snake	Sensitive	N/A	10	1 Hibernacula	
Western tiger salamander	Sensitive	Special Concern	4		
<b>MAMMALS</b>					
American badger	Sensitive	Special Concern	8	1 burrow	
Eastern red bat	Sensitive	N/A	3		Recorded acoustically
Grizzly bear	At Risk	Threatened	1		
Little brown bat	May Be At Risk	Endangered	6		Recorded acoustically
Long-tailed weasel	May Be At Risk	N/A	7		
Pronghorn	Sensitive	N/A	59		
Silver-haired bat	Sensitive	N/A	6		Recorded acoustically
Western small-footed bat	Sensitive	N/A	33		Recorded acoustically

### 3.3.2 Range

The HCS properties assessed (and reassessed) across southern Alberta in 2017 displayed a wide range of diversity in the plant communities and range health found. MULTISAR conducted a total of 245 detailed range transects (vegetation inventories), 575 range health assessments, 96 tame pasture assessments, and 48 forest health assessments during the 2017 field season (Table 8). During these inventories, nine species of rare plants were observed on the properties, which are listed in Table 8.

**Table 8. Summary of range work completed by MULTISAR during the 2017 Habitat Conservation Strategy field season.**

<b>Property</b>	<b>Acres</b>	<b>Sites Assessed*</b>	<b># Plant Communities</b>	<b>Rare Plants</b>
MP_4	28,797	55 range health assessments 4 tame pasture assessments	26	None
M_19	14,271	65 range health assessments 4 tame pasture assessments	31	None
MP_35	11,182	77 detailed transects 75 range health assessments 15 tame pasture assessments	46	None
MP_36	22,200	22 detailed transects 83 range health assessments 18 tame pasture assessments 27 forest health assessments	128	Limber pine
MP_37	20,595	42 detailed transects 177 range health assessments 39 tame pasture assessments 13 forest health assessments	97	Limber pine
MP_38	2,197	25 detailed transects 41 range health assessments 8 tame pasture assessments 8 forest health assessments	43	Limber pine
MP_39	295	15 detailed transects 14 range health assessments 2 tame pasture assessments	15	Western sea-blite
MP_40	3,080	32 detailed transects 33 range health assessments 4 tame pasture assessments	22	Butte candle Stiff yellow paintbrush
MP_41	3,425	32 detailed transects 32 range health assessments 2 tame pasture assessments	28	Squirreltail Narrow-leaf cottonwood Mojave sea-blite Louisiana broomrape Red three-awn

### 3.3.3 Riparian

The Alberta Riparian Habitat Management Society – Cows and Fish was contracted to complete seven riparian health assessments within the Milk River watershed, all of which were done on reassessment properties that were assessed during the original HCS. In addition, 21 assessments were completed in the South Saskatchewan River watershed, as part of the new partnership between MULTISAR and Cows and Fish.

### 3.3.4 Wildlife and Range Health Inferences

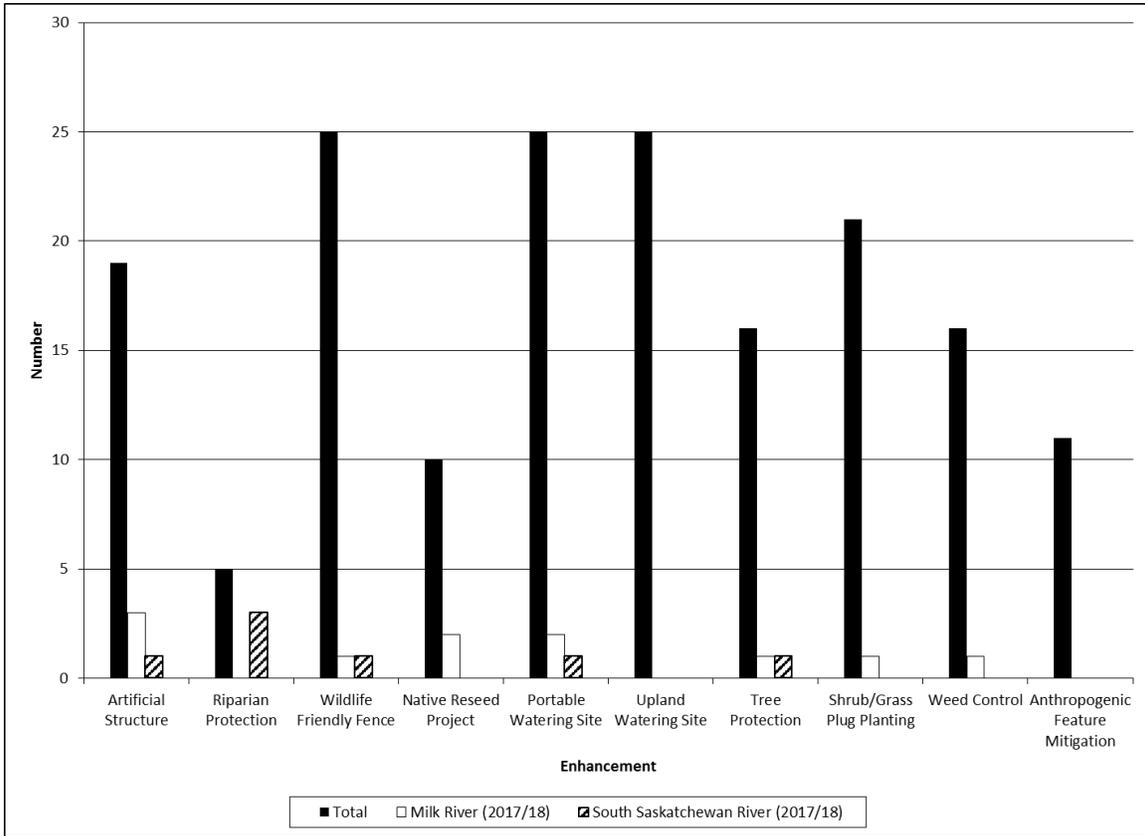
Compiling the data gathered from the wildlife, range and riparian health assessments on each property allows MULTISAR to make inferences regarding the range and riparian health of a site and the corresponding wildlife and habitat features observed. Using this information, management plans were created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

### 3.3.5 Implementation of HCS Habitat Enhancements

MULTISAR completed 11 new habitat enhancements within the Milk River watershed in 2017 and early 2018, and continued work on another three enhancements initiated in previous years, including the continued restoration of 1,300 acres back to native grass through spraying for brome, Canada thistle, and other weeds to ensure a clean seed bed. Approximately 160 acres was seeded back to native grass and another 2,000 needle-and-thread grass plugs were planted on the same HCS property. We continued collaborating with another producer to remove 34 acres of crested wheatgrass and plant a simple four-species native mix. Two portable watering units were purchased to be used around dugouts and wetlands to improve habitat for amphibians and waterfowl. On one HCS property, 4 km of new wildlife-friendly fencing was installed to assist pronghorn movements. Over 30 cottonwood trees were wrapped to protect them from beavers, and one treatment of bio-control was used to help control a Canada thistle infestation on one producer's property. Three ferruginous hawk platforms were installed in ideal locations to assist with Richardson's ground squirrel control.

Within the South Saskatchewan watershed, seven habitat enhancements have been implemented in 2017 and early 2018 as part of the Habitat Conservation Strategies. These enhancements include the installment of fencing to protect two wetland and dugout complexes that contain tiger salamanders and waterfowl on one HCS property, while a portable electric fencer was purchased to protect about 1 km of a suspected pure Westslope cutthroat trout bearing creek on another property. Wildlife-friendly fencing and one portable watering unit was installed to assist ungulate movements and distribute cattle grazing, respectively, on the same HCS property. A hawk pole was installed to encourage use by ferruginous hawks to aid in the control of Richardson's ground squirrels and cottonwood trees were wrapped along a creek to prevent damage from beaver activity.

In total, 173 on-the-ground enhancement projects have been completed by MULTISAR participants since 2005 (Figure 1).



**Figure 1. Habitat enhancement projects completed in the Milk River and South Saskatchewan watersheds, by category, since 2005.**

Habitat enhancement projects continue to be monitored through MULTISAR’s monitoring and evaluation protocol to ensure that the enhancements are having the desired positive impact on specific habitat and wildlife. Section 5.0 discusses in more detail MULTISAR’s monitoring and evaluation process and the positive results that are being seen on the landscape as a result of these enhancement projects.

### 3.4 Conclusion

Over the last 15 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 395,296 acres of land, of which a large portion is interconnected, allowing for landscape planning versus 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 and will continue to provide open communication, information and awareness, team based wildlife habitat planning, and will continue to build long-term relationships with landholders, government, non-government organizations, and industry.

## **4.0 SPECIES AT RISK CONSERVATION PLANS**

### **4.1 Introduction**

In 2017-2018, MULTISAR continued the use of its extension program to influence rangeland management and benefit prairie wildlife habitats. Species at Risk Conservation (SARC) Plans were introduced in 2007 as an extension of the MULTISAR Habitat Conservation Strategy (HCS). They are a more condensed version of the HCS applied at the ranch level and delivered throughout the entire Grassland Natural Region (GNR) and the adjacent Rocky Mountain and Parkland Natural Regions.

Following a large demand for species specific or habitat specific management tools, MULTISAR introduced its Beneficial Management Practices (BMP) assessments in 2012-2013. Over the years, MULTISAR staff have been approached by landowners wanting to complete specific habitat improvements on their properties (e.g., installation of hawk nesting poles, water developments, etc.), 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 guidance on that specific topic. For this reason, BMP specific assessments were developed that focused solely on the proposed habitat improvements or on the habitat requirement of species of interest.

### **4.2 SARC Plan/BMP Assessment Process**

The MULTISAR 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).

Of the six steps noted above, the BMP assessment follows the same process as the SARC Plan, except for step one. These assessments are normally completed in response to a landowner's request.

### **4.3 Achievements**

Since the inception of the SARC Plan program in 2007, 82 assessments (one in 2017-2018) have been completed throughout the GNR covering a total area of 156,254 acres. The SARC that was completed in 2017 was located near Strathmore, Alberta. After finding MULTISAR through an online search, the landowner requested an assessment of the property.

This was the fifth year that BMP specific assessments were completed. Two BMP assessments (on a combined 35,184 acres) were completed this year for landowners who wanted to install artificial hawk nesting platforms, with interest in controlling Richardson's ground squirrels on their property in an ecological manner. One BMP was completed at the Bow Island Provincial Grazing Reserve, while the other assessment was conducted in the area of Beiseker, Alberta. Since beginning these assessments in 2012, MULTISAR has completed 20 BMP assessments for a total of 56,712 acres.

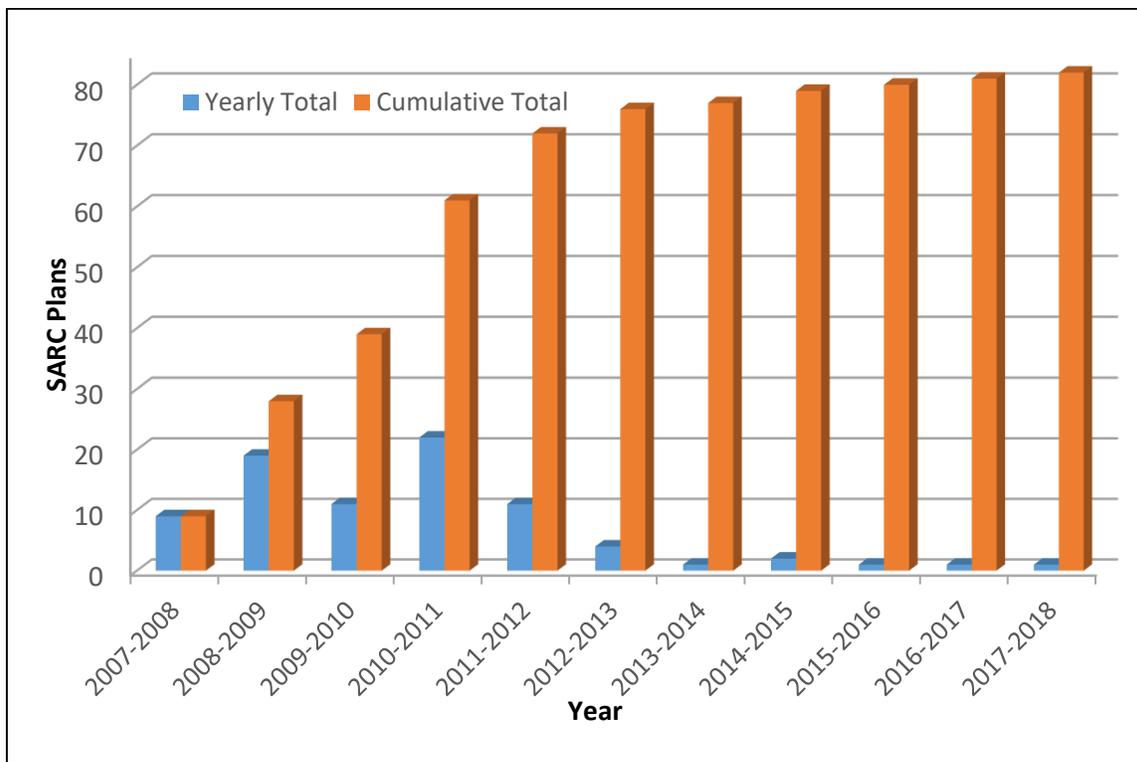
Several habitat improvements have been developed as demonstration sites on SARC Plan co-operator properties throughout the years and are periodically monitored to ensure that they are achieving their objectives. Habitat improvements include nesting platforms erected for ferruginous hawks, several wetland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

### 4.4 Discussion

Since their inception in 2007, SARC Plans initially were popular with landowners. This was due to the fact that the first ‘wave’ of SARC Plans were 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.

Due to 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 summarises the number of participating SARC Plan landowners/properties per year over the eleven 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 landowners 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, landowners 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 to benefit species at risk. Therefore, it was decided that SARC Plans would target those landowners who approached (or were referred to) MULTISAR and requested a plan. This scenario gives MULTISAR the best “bang for their buck”, as time and resources can focus on properties and landowners where the information passed on to them will be most useful.

This past year, all three plans that were completed were for landowners who contacted MULTISAR after hearing about the program and services that MULTISAR offers. The initial contact or knowledge of the program is typically from interactions of MULTISAR staff with landowners or other conservation organizations during various conferences, training days, tradeshow, etc.

## **4.5 Conclusion**

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 landowners throughout the Grassland Natural Region and increase awareness of species at risk beneficial management practices. Without an Education and Outreach Coordinator, MULTISAR will continue to provide SARC and BMP plans on a responsive basis and promote them at various landowner events.

# **5.0 HABITAT CONSERVATION STRATEGY EVALUATION AND MONITORING PROGRAM**

## **5.1 Introduction**

2017-2018 marks the eighth year of MULTISAR's evaluation and monitoring program. The process of monitoring and evaluating occurs on two levels: Re-assessment of Habitat Conservation Strategies (HCS) and monitoring of completed enhancements on properties that have an HCS. The following sections will provide a summary of MULTISAR's evaluation and monitoring accomplishments for the year.

## **5.2 Evaluation of the HCS component of the MULTISAR Project**

An evaluation of each HCS completed for the MULTISAR project is scheduled to occur five years after the HCS implementation. The focus of this assessment is to measure the effectiveness of the HCS plan and its 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 2017-2018, MULTISAR evaluated two participating properties that had HCS plans in place and will be referenced in this report with code names (MP\_4 and MP\_19).

### 5.2.1 Evaluation of the HCS Process

During HCS evaluations, the following is completed:

1. A subsample of the initial wildlife, range health, and riparian health (if applicable) assessments are reassessed and/or resurveyed.
2. Assessed wildlife surveys are completed at specific locations (multi-species point counts and species-specific surveys). In order to make comparisons, surveys should mirror as much as possible baseline methodologies. The subsample amount varies based on property size.
  - If the property is small (5000 acres or less), roughly half of the original 200 or 100 meter points counts are completed. If the property is larger than 5000 acres, a maximum of 100 point counts are completed using 100 and 200 meter point counts (survey distances) with a focus on the 100 meter counts.

- When selecting point counts to reassess, every pasture/management area should have at least one point count completed within it. Point count boundaries falling completely within grassland vegetation inventory (GVI) polygons are singled out first for reassessment and the following conditions are applied:
  - At least one wildlife point count falls within the same GVI polygon as a range health reassessment location.
  - If possible, point count boundaries should not span more than one GVI polygon.
  - If baseline point count surveys only completed 200m point counts (prior to GVI's inception), emulate this unless the above criteria are not met. If 200m point counts do not fit within GVI polygons, complete 100m point counts or select a different point count location to survey.
- 3. The reassessment of the health of native and tame pastures is evaluated by completing range health (RH) assessments at original assessment locations ensuring at least one transect is completed in each management unit of the HCS property and usually associated with a wildlife point count.
  - Assessed range health is scrutinized against the HCS desired habitat conditions within management units or areas within a management unit (i.e. “maintain” range health within  $\pm 10\%$ ”, “increase” range health  $> 10\%$ , or “decrease” range health  $> 10\%$ ).
  - When vetting range health data, to be able to compare results, all scoring is confirmed to be on the same ranking scale. In particular, the noxious weed scores are adjusted in the current assessment year to reflect the same ranking from the baseline year. As an example, in 2008 downy brome was not on the noxious weed list and did not change the range health scoring unless it caused a change in the plant community. By 2009, downy brome was listed and could affect more of the range health scoring results.
- 4. Riparian health is reassessed at original polygon locations. A subsample is selected if funding constraints exist.
- 5. A landholder questionnaire is completed to document perspectives on the HCS process and its recommendations and their views on species at risk.
- 6. Review and/or analysis of data collected during monitoring of completed enhancements recommended in the HCS.
- 7. Achievement of MULTISAR’s HCS goals are measured based on the following: desired range and riparian health is occurring, desired wildlife species are occurring on the site, some of the recommendations in the HCSs are being implemented, enhancements are having the desired effect, and MULTISAR is increasing awareness and knowledge about species at risk and is found to be beneficial to the ranching community.

## 5.2.2 HCS Evaluation Statistical Methods

### 5.2.2.1 Range

Standard range health monitoring protocols were used to determine range health trends. Please refer to MULTISAR 2014, sections 5.2 – 5.2.2.2 for an explanation of the methodologies for evaluating this part of the HCS process.

The difference between the range health scores from baseline and assessment years are calculated. Thereafter, the mean difference between the range health scores were looked at to see if they were

different than  $\pm 10\%$  for areas where the objective was to “maintain” range health,  $>+10\%$  for areas where the objective was to “increase” range health, and  $>-10\%$  for areas where the objective was to “decrease” range health. This was accomplished by applying a paired t-test with the baseline and current health results within the statistical software JMP®. Values are reported as the mean ( $\bar{x}$ )  $\pm$  its standard deviation (SD). The null hypothesis was rejected if significance (P-value) was less than 0.05. In addition, since MP\_4 has had a second reassessment, an Analysis of Variance (ANOVA) was used to determine whether the range health means across the three years are different. The ANOVA uses an F-test to determine if the variability between yearly range health means is larger than the variability within each year’s range health scores.

#### 5.2.2.2 Riparian

Using the JMP software, a paired t-test was applied to the riparian data comparing health scores per polygons assessed with values reported as the  $\bar{x} \pm$  SD. A significance of 0.05 was used to interpret the results.

#### 5.2.2.3 Wildlife

Using the JMP software, a paired t-test was applied to the wildlife data comparing species richness and species diversity per multi-species point count with values reported as  $\bar{x} \pm$  SD. A significance of 0.05 was used to interpret the results.

### 5.2.3 HCS Evaluation Results for 2017

#### 5.2.3.1 Range Health Trend

MP\_19 was originally assessed in 2011. A total of 69 range health assessments were performed; 65 were in native grasslands and four in tame pastures. Of these transects, two cannot be compared as they were not assessed the same way in the baseline year and the reassessment year. From the remaining sixty-seven (n= 67) range health assessment sites revisited in 2017, the overall health changed from 74.7%  $\pm 12.5$  in 2011 to 70.5%  $\pm 15.2$  ( $p = 0.02$ ,  $t = -2.30$ ). The fifty-six areas with goals to “maintain” ( $\pm 10\%$ ) in range health from 2011 did on average decrease in health by 5.7% ( $p < 0.01$ ,  $t = -2.88$ ). The eleven (n=11) sites desired to “increase” in range health ( $>10\%$ ) had a mean difference of +3.2% ( $p = 0.50$ ,  $t = 0.75$ ). When looking at the range health from a health category classification, we find the percentage of “High Healthy” and “Healthy” to be similar from year 1 to reassessment (Table 9). There is however a shift out of “High Healthy with Problems” and “Low Healthy with Problems” into the “Unhealthy” category in 2017.

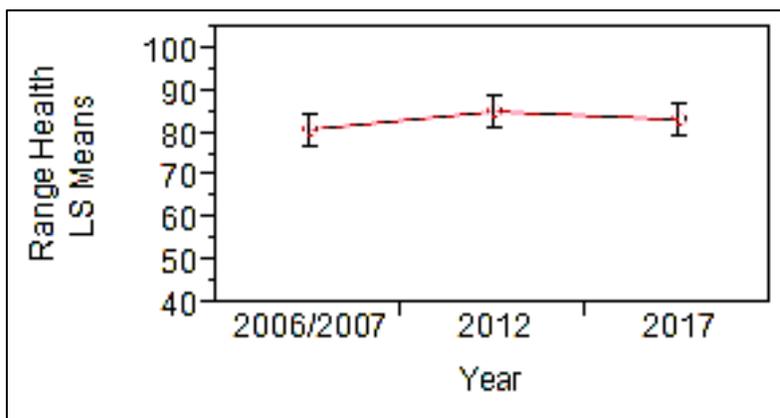
**Table 9. MP\_19 Assessed Range Health Categories.**

Category	2011	2017
High Healthy (86-100%)	20.9%	19.4%
Healthy (75-85%)	26.9%	31.3%
High Healthy with Problems (61-74%)	37.3%	23.9%
Low Healthy with Problems (50-60%)	13.4%	10.5%
Unhealthy <50%	1.5%	14.9%

Across all 55 native sites revisited for MP\_4 (55 of the 94 assessed in 2012), overall range health stayed relatively the same from baseline year to 2017 (Figure 3). There has been a shift in the range health category trend with 83.6% (46 of the 55 sites) in the “Healthy” and “High Healthy” categories in 2017 from 69.1% (38 of the 55 sites) in these same categories in baseline years (Table

10). Forty-eight sites were desired to “maintain” range health from the 2012 scores. Their current range health mean difference in 2017 was -3.1% which meets the goal to stay within 10 percent of original scores ( $p = 0.02$ ,  $t = -2.15$ ). The seven areas having goals to “increase” in health did increase in percentage but on average remained within 10 percent of original health scores with a mean difference of 6.9% ( $p = 0.89$ ,  $t = 1.35$ ).

Four tame pasture range health reassessments were completed with scores changing from 76.75%  $\pm 13.1$  in 2006/2007 to 90.25%  $\pm 7.1$  in 2012 to 85.5%  $\pm 9.6$  in 2017 with trends not showing significant changes from the means ( $p = 0.22$ ,  $F = 1.78$ ).



**Figure 3. Mean range health trend for MP\_4 from baseline year to current year (n= 55).**

**Table 10. MP\_4 Assessed Range Health Categories.**

Category	2006/2007	2012	2017
High Healthy (86-100%)	47.3%	60%	65.5%
Healthy (75-85%)	21.8%	21.8%	18.1%
High Healthy with Problems (61-74%)	16.4%	14.6%	9.1%
Low Healthy with Problems (50-60%)	10.9%	3.6%	5.5%
Unhealthy <50%	3.6%	0%	1.8%

### 5.2.3.2 Riparian Assessments

Riparian inventories and health assessments help to identify problems and land use issues along waterbodies. The information collected during a riparian assessment is intended to help promote riparian functions such as water storage, forage production, and habitat for wildlife. The results of the assessment offer suggestions for landscape management for the landowner. In 2017, two HCS reassessment properties (MP\_4 and MP\_19) had riparian health assessments completed by the Alberta Riparian Habitat Management Society (Cows and Fish).

Riparian health of five sites on MP\_4 were previously assessed in 2007 and 2012 (Table 11). These same sites were evaluated in 2017 using Cows and Fish’s detailed Lotic Inventory for the four creek sites and both Lotic Inventory and Large River Health assessment for the one river site. From the baseline year assessments (2007), all creek sites are seeing a downward trend in health; however, this change is not statistically significant ( $p = 0.1$ ). The river site is now in an “Unhealthy” condition. Due to external factors, this site sees large fluctuations in water levels and struggles to establish bank stabilizing preferred woody species, resulting in lower health scores.

For MP\_19, two sites were revisited in 2017, with one Lotic Inventory (creek) and one Large River/Lotic Inventory (river) health assessments completed. The creek site did not change in health category or scoring (85%) and is considered “Healthy”, despite an increase in invasive and disturbance plant species, including Canada thistle and perennial sow-thistle. The river site has also seen an increase in undesirable plant species and increased alterations to the site from cattle use but did change health categories and is considered “Unhealthy”.

**Table 11. Riparian Health Reassessments for assessed HCS properties.**

Property	Inventory*	Baseline Year	Year 2	Reassessment Year	Trend
MP_4	Lotic: large river 1	**	63% “Healthy but with Problems”	55% “Unhealthy”	Declining
	Lotic 1	86% “Healthy”	75% “Healthy but with Problems”	75% “Healthy but with Problems”	The trend is declining for Lotic 1-4, but statistically not significant
	Lotic 2	72% “Healthy but with Problems”	67% “Healthy but with Problems”	70% “Healthy but with Problems”	
	Lotic 3	74% “Healthy but with Problems”	65% “Healthy but with Problems”	72% “Healthy but with Problems”	
	Lotic 4	82% “Healthy”	83% “Healthy”	78% “Healthy but with Problems”	
MP_19	Lotic 1	85% “Healthy”	N/A	85% “Healthy”	No change
	Lotic: large River		65%	64% “Healthy but with Problems”	No change

\* Name changed for landowner privacy

\*\* Baseline year and others not assessed using same protocols so not comparable

### 5.2.3.3 Wildlife Assessments

A subset of wildlife surveys from the baseline years on MP\_4 and MP\_19 were repeated in 2017. For this reporting, we will focus on multi-species point count surveys with comparisons on species richness and species diversity between baseline year to assessment year. We also look at the top 10 species recorded for each year.

Seventy-four point counts were completed on MP\_4 in 2017 and were compared to 2012 wildlife information. This is the second reassessment for MP\_4, however, point counts completed in the baseline year used different methodologies and cannot be directly compared to current assessments. Species richness has increased slightly in the last five years from  $3.69 \pm 1.3$  (to  $3.92 \pm 1.5$  ( $p = 0.33$ ,  $t = -0.99$ )) but the change is not significant. Species diversity has also seen a slight increase, changing from  $1.08 \pm 0.41$  to  $1.13 \pm 0.46$  ( $p = 0.4$ ,  $t = -0.84$ ) in 2017.

The two species recorded most frequently in 2012 and 2017 were the Richardson’s ground squirrel (*Urocitellus richardsonii*) and the chestnut collared longspur (*Calcarius ornatus*) with 2017 seeing a 73.1% increase in ground squirrel numbers but a decrease in chestnut-collared longspurs by 58.7% (Table 12). In 2017, horned lark (*Eremophila alpestris*) and savannah sparrow (*Passerculus sandwichensis*) saw decreases in numbers and the Baird’s sparrow (*Ammodramus bairdii*) fell from the top 10 species recorded.

From the HCS to the reassessment year, wildlife species richness and diversity have seen some changes on MP\_19 property. Seventy point counts were compared and average species richness was  $4.87 \pm 1.7$  in 2017, a decrease from  $5.01 \pm 2.2$  in the baseline year ( $p = 0.66, t = -0.44$ ). Species diversity was  $1.10 \pm 0.4$  in 2017 and  $1.26 \pm 0.4$  in 2011 and has negatively changed ( $p = 0.02, t = -2.3$ ). On this property in 2017, we saw a shift in species composition and numbers from 2011. A 389% increase in Richardson’s ground squirrels at reassessment point counts was seen from 271 to 1,325 (Table 12). There was also an augmentation in the number of horned larks recorded in 2017 (+55%). Decreases in numbers of Baird’s sparrows and chestnut-collard longspurs were also documented. When running the statistics without Richardson’s grounds squirrels, boreal chorus frogs and other non-avian species, the results still show a declining shift in bird species richness and diversity. With this analysis (birds only), the 2017 species richness is  $4.1 \pm 1.5$  compared to  $4.33 \pm 2$  ( $P = 0.43, t = 0.78$ ) and the species diversity is  $1.18 \pm 0.4$  in 2017 and  $1.2 \pm 0.4$  in 2011 and are not considered different.

**Table 12. Most abundant species from point count data for baseline and reassessment years.**

Property	Baseline year		Reassessment year	
	Species	Count Totals	Species	Count Totals
MP_4	Chestnut-collard Longspur	179	Richardson’s Ground Squirrel	161
	Richardson’s Ground Squirrel	93	Chestnut-collared Longspur	74
	Horned Lark	87	Horned Lark	64
	Savannah Sparrow	48	Vesper Sparrow	57
	Vesper Sparrow	39	Western Meadowlark	52
	Brewer's Blackbird	30	Brewer’s Sparrow	28
	Baird's Sparrow	29	Savannah Sparrow	26
	Clay-Colored Sparrow	21	Pronghorn	16
	Western Meadowlark	21	Clay-Colored Sparrow	14
	Brewer’s Sparrow	20	Grasshopper Sparrow	10
MP_19	Richardson’s Ground Squirrel	271	Richardson’s Ground Squirrel	1325
	Chestnut-collared Longspur	210	Horned Lark	199
	Boreal Chorus Frog	174	Vesper Sparrow	132
	Horned Lark	128	Western Meadowlark	128
	Savannah Sparrow	62	Chestnut-collard Longspur	78
	Western Meadowlark	41	Brewer’s Sparrow	71

Property	Baseline year		Reassessment year	
		Northern Pintail	39	Savannah Sparrow
	Baird's Sparrow	37	Franklin's Gull	21
	Canada Goose	29	Rock Wren	20
	Vesper Sparrow	27	Willet	20

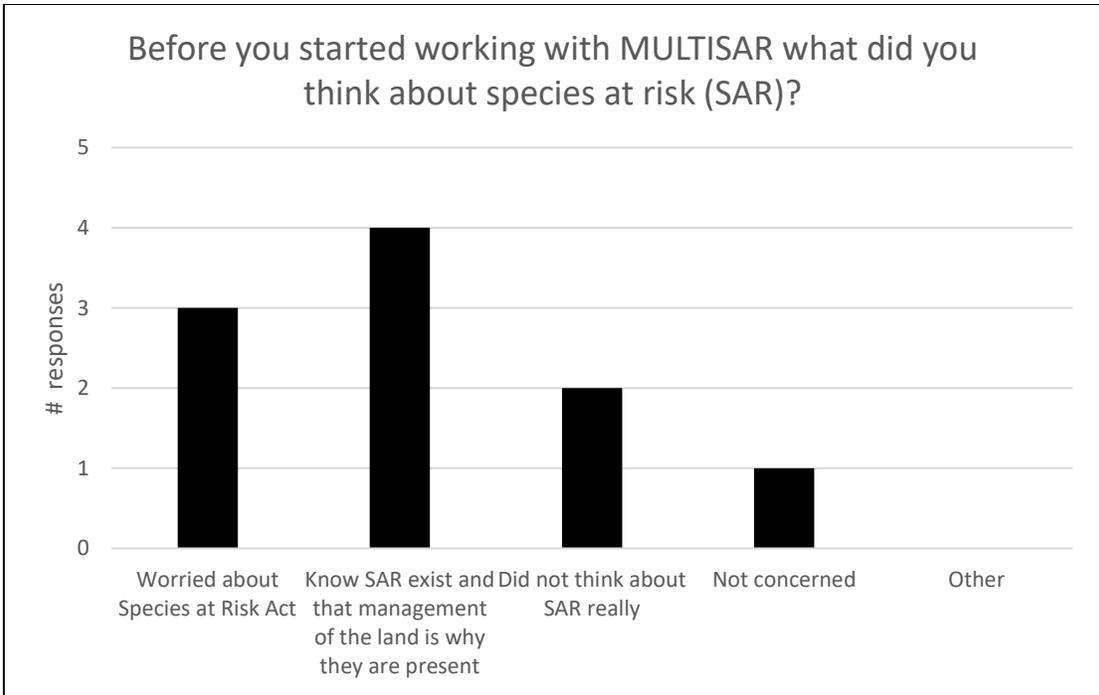
#### 5.2.3.4 Questionnaire

As of January 2017, we have compiled 13 reassessment questionnaires that have been filled out by landholders that have had their HCS reassessed. The questionnaire consists of open-ended questions with an opportunity to answer many of the questions with multiple responses, opinions and suggestions. Overall, the results of the questionnaires were very positive. The landholders valued the friendly and collaborative work that MULTISAR has provided and appreciates MULTISAR's multi-partner, multi-species and grassroots approach.

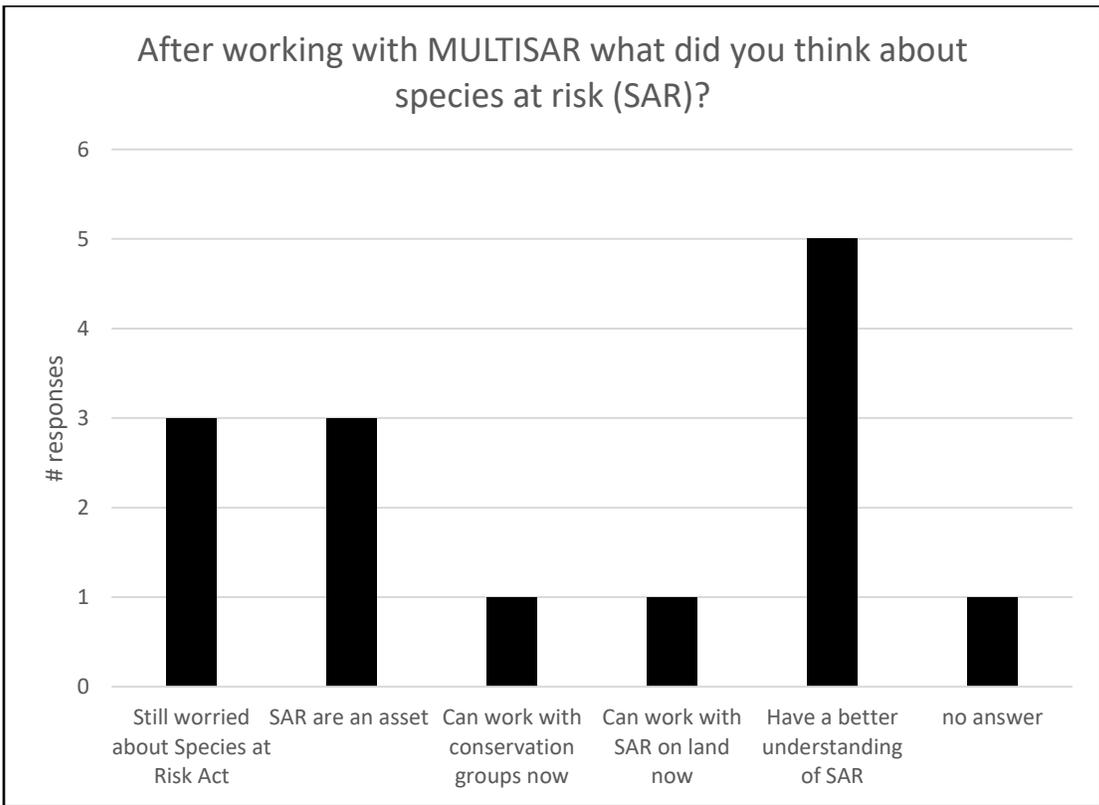
Prior to working with MULTISAR, many participants had reservations about species at risk because of their impressions of the federal government's authority on these species. After having worked with MULTISAR, most participants have increased their appreciation for species at risk and view them more as an asset and not a liability (Figures 4-5).

Many of the landholders found that the HCS process helped them learn something about their property, as well as empowered them with useful tools for their operation. Others responded that they did not think change was needed at this time (Figure 6). All but one participant was sure that having an HCS provided the landowner with a tool acknowledging their good range management practices and the provision of habitat to protect species at risk.

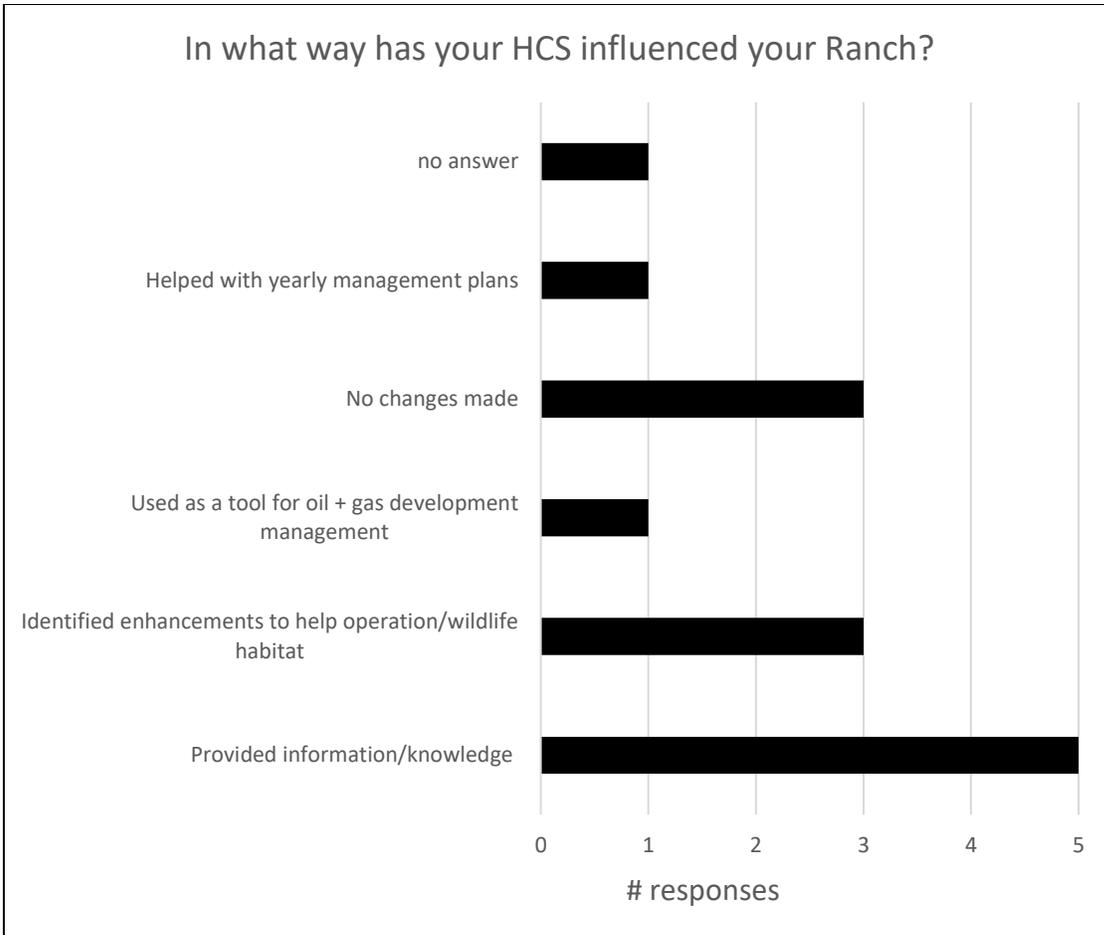
On every questionnaire it was noted that all participants increased their knowledge of range management principals and most were prepared to make some changes. All participants were willing to complete projects that help benefit their cattle operations, as well as wildlife, and have agreed to voluntarily work with MULTISAR for another five years.



**Figure 4. Number of landholder responses to question #3 of the MULTISAR questionnaire, 2011-2017.**



**Figure 5. Number of landholder responses to question #3a of the MULTISAR questionnaire, 2011-2017.**



**Figure 6. Number of landholder responses to question #7a of the MULTISAR questionnaire, 2011-2017.**

5.2.4 HCS Reassessment Concluding Remarks

Continuing to strive for a varied landscape will benefit both the livestock producer’s operation and wild species’ habitat. For the two HCS properties where we reassessed and analyzed range, riparian, and wildlife data, we saw varied results for our pre-determined objectives and goals. With many factors at play including habitat type (soil, plant communities, etc.), climatic conditions, and range management, our goals may vary between assessment years. In the forthcoming years, based on knowledge acquired through the HCS re-evaluation process, modifications may be made to recommendations and desired outcomes for each property. In addition, adjustments may also be made to allow for improved assessments and monitoring for each HCS.

**5.3 Monitoring Habitat Enhancements on HCS Participant Properties**

Monitoring is the periodic collection of data to determine if enhancement activities are accomplishing the project goals and objectives. Monitoring enhancements can help aid in the evaluation process (Margoluis and Salafsky 1998). Problems and corrective actions identified during monitoring can help direct future enhancements and/or monitoring protocols. However, determining the success of an enhancement can be a complex question since the habitat manipulation (enhancement) can cause varied effects and effects may not be linked to the manipulation (Fletcher et al. 2007). Approximately 35 enhancements, which were implemented on

several different properties as a result of HCS recommendations, were monitored in 2017. The following will be a summary of the key findings for this year.

### 5.3.1 Restoration Projects

Conversion of cropland back to native grasses can benefit a suite of wildlife species. Monitoring of enhancement projects that involve native grass restoration is completed every year for several consecutive years. For detailed objectives and desired measures of success for MULTISAR restoration projects see Downey et al. (2011; Section 5.3.1). Monitoring at three MULTISAR restoration sites was conducted in 2017. Two sites were on reseeding projects on MP\_7 (RP\_01 and RP\_02), implemented in 2008 and 2011, respectively. One site was on property MP\_2 which was implemented in 2010. Native restoration takes many years to accomplish goals, therefore continuing to monitor the area will help determine trends for these sites.

MP\_7 RP\_01, reseeded in 2008, has seen an increase in litter amounts and range health and has had grazing incorporated into the management for seven seasons (Table 13). MP\_7\_RP\_02, reseeded in 2011, has always had some form of grazing each season and has had more fluctuations in range health and litter amounts (Table 14).

MP\_2 has seen little change in the reseeded section of Field 1 (Table 15). Field 2 was not reported on as it was in tame pasture until the spring of 2017 and will be discussed in 2018/2019.

**Table 13. Range information collected for restoration project MP\_7\_RP\_01.**

<b>Total of 3 or 4 transects/range health assessments</b>	<b>2008</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2016</b>	<b>2017</b>
Range Health % Average	N/A	69.0	70.5	65.9	63.8	69.0	77.3	82.3
Total Vegetative Cover % Average	N/A	N/A	85.3	85.9	96.5	97.5	N/A	95.5
Litter Average (lbs)	N/A	203	483	626	388	544	435	625
Needle and Thread Grass % Average	<1	3.33	1.95	1.20	1.60	1.00	1.9	1.4
June Grass % Average	0.5	10.90	4.93	6.67	4.53	4.53	9.6	5.6
Blue Grama Grass % Average	4	13.53	3.60	6.93	6.50	3.55	9.2	2.3
Northern Wheatgrass % Average	N/A	12.97	8.60	N/A	9.30	4.93	3.8	0.7
Western Wheatgrass % Average	N/A	6.73	5.95	N/A	2.45	2.18	1.5	2.3
Silver Sagebrush % Average	0.00	0.00	<1	<1	<1	<1	<1	0
Average Wheatgrasses species*	9.6	N/A	N/A	14.7	N/A	N/A	N/A	N/A

N/A: not recorded or assessed; \*combined when they were not discerned to individual species

**Table 14. Range information collected for restoration project MP\_7\_RP\_02.**

<b>Total of 2 transects/range health assessments</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Range Health % Average	45	40	42	72.5	63.5	55.5
Total Vegetative Cover % Average	59.2	74.1	77.2	77.4	N/A	91.2
Litter Average (lbs)	172	175	255	425	450	200
Needle and Thread Grass% Average	0.1	0.15	0.1	0.5	1	0
June Grass % Average	4.5	4.95	4.55	6.4	10.5	4.3
Blue Grama Grass % Average	3.8	2.6	2.3	2.8	4.5	3.0
Northern Wheatgrass % Average	N/A	8.9	4.55	7.1	N/A	0
Western Wheatgrass % Average	N/A	3.7	3.3	4.9	N/A	2.8
Silver Sagebrush % Average	<1	1.5	<1	<1	1	0
Average Wheatgrasses species %*	5.5	N/A	N/A	N/A	10	N/A

N/A: not recorded; \*combined when they were not discerned to individual species

**Table 15. Range information collected for restoration project MP\_2.**

<b>Total of 1 or 2 transects/range health assessments in each RP</b>	<b>RP_01 2014 Field 1</b>	<b>RP_01 2016 Field 1</b>	<b>RP_01 2017 Field 1</b>
Range Health % Average	51%	64%	61%
Litter Average (lbs)	400	260	450
Total Vegetative Cover % Average	81	N/A	83
Needle and Thread Grass% Average	0	0	0
June Grass % Average	0	0	0
Blue Grama Grass % Average	25.7	36.9	26.5
Northern Wheatgrass% Average	0.05	0.3	0.2
Western Wheatgrass% Average	3.1	3.5	2
Silver Sagebrush% Average	0	0	<1

The wildlife component of the reseeding projects was determined by completing wildlife point counts at historic point count locations (control and reference sites were also monitored). The following graphs show the trends for different grassland bird species. Of particular interest are Baird's sparrow, grasshopper sparrow, Sprague's pipit, chestnut-collared longspur, and McCown's longspur. The graphs look at total numbers of each species per reseed treatment location, comparing baseline data (year of treatment or year prior to treatment) with data collected in all years. In Figures 7-8, data compares only point count information recorded, omitting any incidental sightings.

MP\_7 RP\_01 has seen a gradual shift in desired species with Sprague's pipit, Baird's sparrow, and grasshopper sparrow all recorded (Figure 7). During surveys on RP\_01, a female sharp-tailed grouse and five chicks were observed on the property, as well as clay-colored sparrow, savannah sparrow, western meadowlark, brown-headed cowbird, killdeer, and mule deer. RP\_02 has seen more sporadic increases in desired species (Figure 8), but has a high species richness value of 13 with the following other species recorded: vesper sparrow, clay-colored sparrow, savannah sparrow, horned lark, western meadowlark, northern pintail, willet, red-winged blackbird, brewer's blackbird, and American wigeon. Further monitoring will be conducted every year as grazing of the sites has been incorporated. Species richness for RP\_01 is 10 with the native reference site having a species richness of 12 and the non-native control site having a species richness of seven.

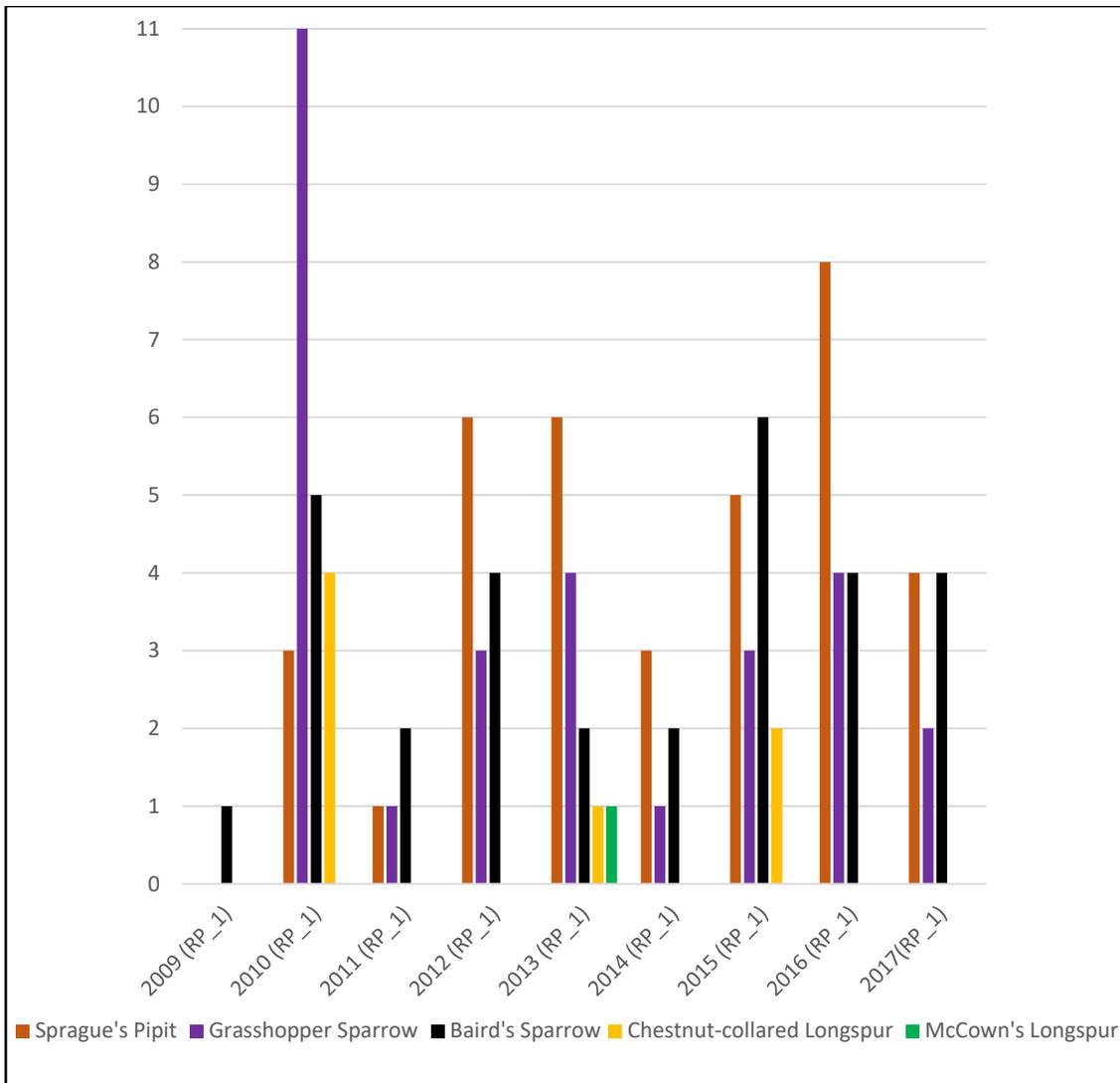
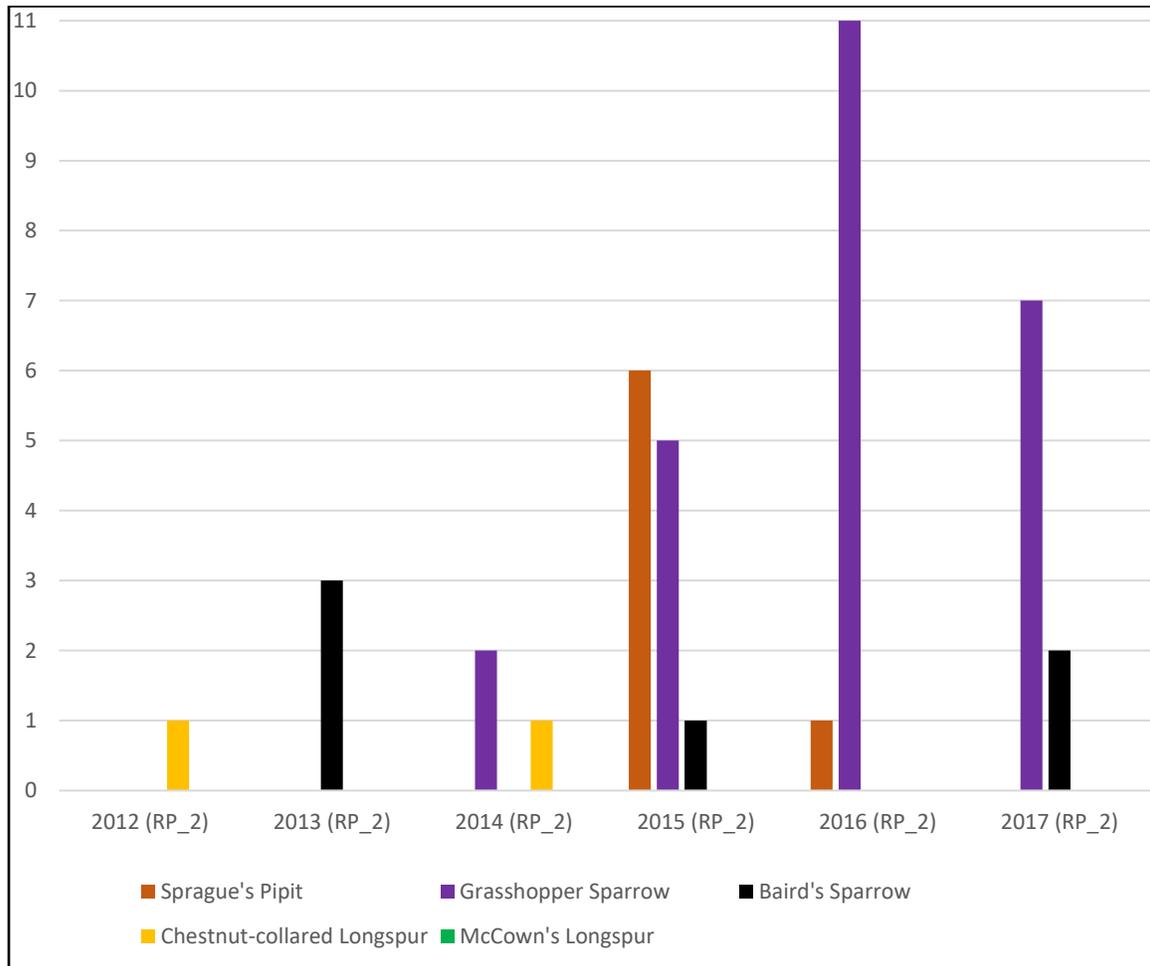
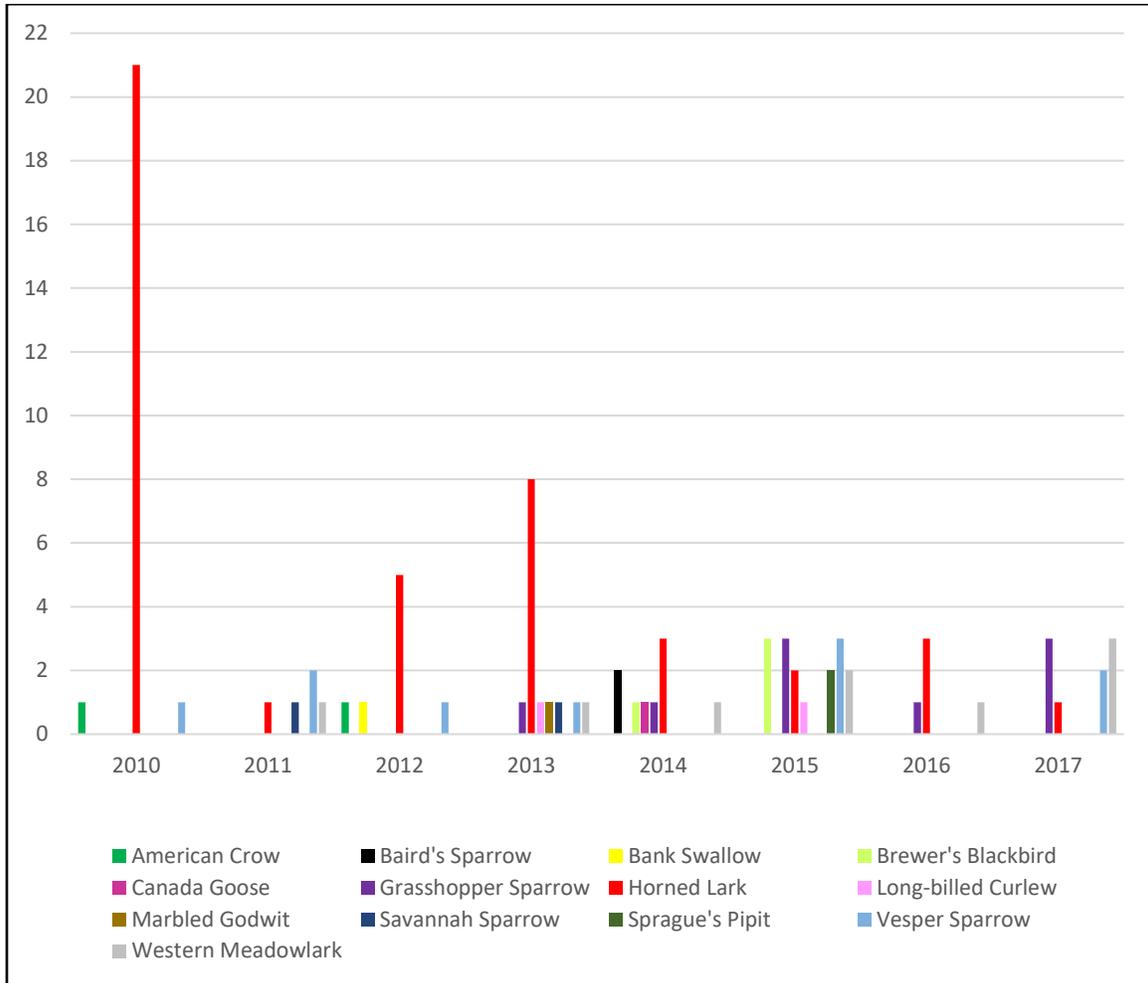


Figure 7. MP\_07 RP\_01 specific grassland bird trend (2009 was first year post reseed).



**Figure 8. MP\_07 RP\_02 specific grassland bird trend (2012 was first year post reseed).**

MP\_2 was reseeded in 2010, but there have been many issues with seed catch and weeds, such as downy brome. Wildlife species observed have been varied but increased desirable species are appearing (Figure 9).



**Figure 9. MP\_02 RP\_01 grassland bird trend in reseeded fields (year 2010 was prior to reseeding).**

### 5.3.2 Shrub/Forb/Grass Plantings

Shelterbelts and shrub planting can increase nesting habitat for a variety of wildlife species such as ferruginous hawks (*Buteo regalis*) and loggerhead shrikes (*Lanius ludovicianus*) and increase forage/winter habitat for greater sage-grouse (*Centrocercus urophasianus*), sharp-tailed grouse (*Tympanuchus phasianellus*) and pronghorn (*Antilocapra americana*). Plantings will be monitored yearly 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.

Over the span of several years, MULTISAR has planted plugs of thorny buffaloberry, chokecherry, silver sagebrush, American vetch, golden bean, and needle and thread grass. In addition, needle and thread grass and silver sagebrush seeds have been spread on reseeded areas. There has been no survivorship of the forb plugs and varied survival success for the shrubs from the last five years (Table 16).

**Table 16. Re-establishment of shrubs, forbs, and grasses in 2017.**

Property	Year planted	Species	Plots or transects	Percent 2014	Percent 2015	Percent 2016	Percent 2017
MP_18_SSP_05	2013	Silver Sagebrush plugs	50m line intercept transect	2.5% Cover	Not completed	Not completed	2.3% Cover
MP_18_SSP_06	2014	200 Silver Sagebrush plugs	1 (15x15')	-	48% Survivorship	39.5% Survivorship	35% Survivorship
MP_13_SSP_02	2014	200 Silver Sagebrush plugs	1 (15x15')	-	7.8% Survivorship	2.8% Survivorship	0.03% Survivorship
MP_18_SSP_09	2016	Silver Sagebrush seed	63m line intercept transect	-	-	-	5.2% Cover
MP_18_SSP_10	2016	Needle and thread seed	25m line intercept transect	-	-	-	11.8% Cover

### 5.3.3 Artificial Nesting/Roosting Structures

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

Artificial nesting structures monitored in 2017 included 10 nest poles installed for ferruginous hawks. These nest poles are monitored for raptor use and Richardson's ground squirrels are surveyed as an indicator of prey availability in the area (Table 17). Seven of the 10 nest poles produced young in 2017. Ground squirrel numbers vary depending on region.

**Table 17. Artificial ferruginous hawk nesting structure monitoring in 2017.**

Participant + implementation year	# nest poles	2013 RGSQ Adults	2014 RGSQ Adults	2015 RGSQ Adults	2016 RGSQ Adults	2017 RGSQ Adults	2017 Desired Effect/Trend Occurring
MP_8 2012/2014	4	3.4 km <sup>2</sup> surveyed <b>288</b> RGSQ*	3.6 km <sup>2</sup> surveyed <b>258</b> RGSQ	3.8 km <sup>2</sup> surveyed <b>210</b> RGSQ	3.4 km <sup>2</sup> surveyed <b>228</b> RGSQ	3.4 km <sup>2</sup> surveyed <b>67</b> RGSQ	Yes 3 of 4 nest poles active with ferruginous hawks and young
MP_6 2013	3	N/A	3.0 km <sup>2</sup> surveyed <b>138</b> RGSQ	2.4 km <sup>2</sup> surveyed <b>142</b> RGSQ	Not completed, young of the year seen	Not completed as young of the year emerged early	Yes 2 of 3 nest poles active with ferruginous hawks and young

Participant + implementation year	# nest poles	2013 RGSQ Adults	2014 RGSQ Adults	2015 RGSQ Adults	2016 RGSQ Adults	2017 RGSQ Adults	2017 Desired Effect/Trend Occurring
MP_25 2013	1	N/A	4.0 km <sup>2</sup> surveyed <b>32</b> RGSQ	4.0 km <sup>2</sup> surveyed <b>59</b> RGSQ	4.0 km <sup>2</sup> surveyed <b>43</b> RGSQ	4.0 km <sup>2</sup> surveyed <b>113</b> RGSQ	Yes: Nest pole active with ferruginous hawk on nest- nest too high up to be able to see young of the year at time of survey.
MP_26 2013	2	3.4 km <sup>2</sup> surveyed <b>71</b> RGSQ	3.8 km <sup>2</sup> surveyed <b>84</b> RGSQ	3.8 km <sup>2</sup> surveyed <b>177</b> RGSQ	3.6 km <sup>2</sup> surveyed <b>95</b> RGSQ	Not complete d as young of the year emerged early	Yes 1 of 2 nest poles active with ferruginous hawk sitting on nest.

\*RGSQ = Richardson's ground squirrel

#### 5.3.4 Weed Control

Sites invaded by noxious and restricted weed species reduce range health, as the invading species quickly replaces the 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.

One property that implemented bio-control (insects) for leafy spurge (*Euphorbia esula*) was monitored by a biological control specialist from Agriculture and Agri-Food Canada. The specialist reported that the beetles used to aid with the leafy spurge control overwintered and established successfully but it may be a slow process to see impact as the insect populations are congregating on a north facing slope. A north facing aspect usually has cooler temperatures in winter making it more difficult to over-winter.

Downy brome is a large problem on the prairies as once it is established it is tenacious and can out-compete native perennial seedlings (AB Invasive Species Council 2014). MULTISAR is working with two properties using different methods of control. At these sites we have seen varied results over the last three seasons and will continue to monitor to document trends.

#### 5.3.5 Watering Systems

In 2017, two properties (MP\_06 and MP\_25) that installed new upland watering systems were visited to take photo documentation. GPS locations with wildlife point counts were completed on one of the properties. Range surveys will be incorporated in 2018.

### 5.3.6 Tree and Shrub Protection

Trees and shrubs which have been, or have the potential to be heavily impacted by cattle, are generally recommended to have fences or corral panels placed around them to help prevent their gradual destruction and subsequent loss. Trees (especially lone cottonwood trees) in pastures that can be used as nesting sites by ferruginous hawks should also be protected. Sites in which the landholder implements a tree or shrub protection enhancement will be monitored every two years with photos taken to document the reduced impact of cattle on trees or shrubs. Wildlife observed using the sites is also documented.

Monitoring occurred at two locations in 2017. One of the sites had an active ferruginous hawk nest with young. The other site was a tree and shrub sapling protection site along a river bank. This site should now see greater bank stability and less erosion as the trees and shrubs grow (Figure 10).



Figure 10. Before and after pictures of tree and shrub protection on MP\_23.

### 5.4 Future Direction

In 2018 MULTISAR will continue to monitor a sub-sample of enhancement projects to determine if desired effects are occurring. Before-After-Control-Impact design (BACI) will continue to be utilized to build habitat representations before and after treatments as well as look at control sites. In 2018, 117 enhancement sites are scheduled for monitoring (Table 18).

Table 18. Monitoring of enhancement projects in 2017.

Enhancement Type and Associated Items to Monitor	# of Sites
<b>Artificial Structures:</b> <ul style="list-style-type: none"> <li>• Nest poles                             <ul style="list-style-type: none"> <li>○ Incorporating 4 Richardson’s ground squirrel transects</li> </ul> </li> <li>• Burrowing owl tunnels</li> <li>• Bat boxes</li> </ul>	22
<b>Restoration Projects:</b> <ul style="list-style-type: none"> <li>• Range health transects</li> <li>• Wildlife point counts</li> </ul>	9

<b>Enhancement Type and Associated Items to Monitor</b>	<b># of Sites</b>
<b>Shrub/Forb/Grass plantings:</b> <ul style="list-style-type: none"> <li>• Needle and thread grass plug sites (2)</li> <li>• Native Seed: Silver sagebrush/ needle and thread grass (2)</li> <li>• Silver sagebrush plugs (3)</li> </ul>	4
<b>Weed Control</b> <ul style="list-style-type: none"> <li>• Brome spraying trails (2)</li> <li>• Bio-control sites (3)</li> </ul>	5
<b>Portable Watering Sites:</b> <ul style="list-style-type: none"> <li>• Wildlife point count</li> <li>• Emergent vegetation recorded</li> <li>• Photos</li> </ul>	26
<b>Upland Watering Sites:</b> <ul style="list-style-type: none"> <li>• Wildlife point counts</li> <li>• Range health transects</li> <li>• Photos taken</li> </ul>	27
<b>Tree and Shrub protection:</b> <ul style="list-style-type: none"> <li>• Wildlife point count</li> <li>• Vegetation regrowth recorded</li> <li>• Photos taken</li> </ul>	16
<b>Riparian Fencing or restoration project:</b> <ul style="list-style-type: none"> <li>• Photos taken from same locations</li> </ul>	8

## 6.0 FUTURE DIRECTION

In 2018, Habitat Management Plans (HMPs) will be introduced and included under MULTISAR's Habitat Conservation Program area. They are designed to be a rapid assessment version of the Habitat Conservation Strategy (HCS). Currently, the number of landowners that MULTISAR can work with on HCSs in a given year is limited, as HCSs are time consuming and expensive to complete. HMPs are designed to fill the gap between detailed Habitat Conservation Strategies and the more limited Species at Risk Conservation Plans, with the goal of reaching an increased number of landowners in MULTISAR's core areas, thereby informing and influencing more land management decisions.

MULTISAR will now focus HCSs on large properties (4,000 acres or more) that influence more habitat, and focus HMPs on smaller properties (less than 4,000 acres) that, while still important, influence less habitat. Focusing HMPs on smaller properties will allow MULTISAR to work with more landowners, and is more cost effective. HMPs will include wildlife point counts, as well as targeted wildlife surveys for specific species; a quick range assessment, including litter values and Robel pole measurements; wildlife and range assessments in areas where habitat enhancement projects will be completed; and monitoring for any habitat enhancement projects implemented. No reassessments will occur for HMPs. HMPs will also be conducted on ranches that have received an HCS and are on their second (or more) reassessment. SARC Plans will continue to be offered to landowners outside of MULTISAR's core area, while Beneficial Management Plan (BMP) strategies will continue to be offered to landowners looking for solutions to specific management concerns.

In 2018-2019, MULTISAR will continue to work collaboratively with its partners to achieve its goals and objectives in its three core program areas:

1. Habitat Conservation Program:

- 1.1. Continue to seek interested landholders in priority species at risk areas, and complete five new Habitat Conservation Strategies (~55,700 acres) and three Habitat Management Plans (~6,600 acres), with their cooperation and with Alberta Environment and Parks, the Alberta Conservation Association, Prairie Conservation Forum, Cows and Fish, Canadian Cattlemen's Association, Alberta Beef Producers and Canadian Roundtable for Sustainable Beef. This includes detailed vegetation and wildlife inventories, as well as range and riparian health assessments to identify habitats, priority species and the ecological condition of the rangeland and riparian areas.
- 1.2. For those species at risk detected during inventories, use MULTISAR as a tool to implement recovery actions identified in provincial and national recovery plans.
- 1.3. Secure habitat for species at risk through signed stewardship commitment agreements.
- 1.4. Assist landholders, based on priority, that have had a Habitat Conservation Strategy or Habitat Management Plan completed, in implementing habitat enhancement recommendations outlined in their HCS or HMP.
- 1.5. Complete new Species at Risk Conservation Plans or Beneficial Management Plans 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 and other conservation groups present themselves, promote the MULTISAR message and distribute relevant information to target audiences.
- 2.2. Deliver 2-5 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 or fact sheets on species at risk and beneficial management practices, as needed.
- 2.5. Regularly update MULTISAR's website, Facebook and Twitter accounts and ensure relevancy and accuracy of posted information.
- 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.

3. Research, Monitoring and Data Management Program:

- 3.1. Assist Alberta Environment and Parks in conducting sharp-tailed grouse monitoring on leks in southeastern Alberta.
- 3.2. Assist Alberta Environment and Parks in conducting nine ferruginous hawk quadrants.
- 3.3. Conduct four Richardson's ground squirrel surveys in vicinity of installed ferruginous hawk nest platforms.

- 3.4. Monitor loggerhead shrike on one to two routes in southern Alberta.
- 3.5. Monitor amphibians on up to 10 road transects (RANA Routes), if temperatures and precipitation allow, for the great plains toad and the plains spadefoot to emerge and reproduce.
- 3.6. Assess the relationship between wildlife species occurrences, wildlife species diversity, relative abundance, plant community type and metrics or range health.
- 3.7. Evaluate five properties (~61,000 acres) originally assessed in 2007, 2008 and 2012, to measure how effective the HCS plan was at influencing habitat management, habitat value for species at risk and landholders' perceptions of species at risk.
- 3.8. Monitor habitat enhancement projects at 117 (of approximately 165) enhancement sites implemented within the MULTISAR's project area since 2005.
- 3.9. Submit all wildlife observation data collected to the FWMIS (Fish and Wildlife Information System) 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 and Dry Mixedgrass Natural Subregions of Alberta.
- 3.11 Submit all range health assessment data on Crown lands into the provincial database on an annual basis.

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## APPENDIX A: LIST OF ACRONYMS

ABP	Alberta Beef Producers
ACA	Alberta Conservation Association
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
HCS	Habitat Conservation Strategy
HSP	Habitat Stewardship Program
MULTISAR	Multiple Species At Risk
PCF	Prairie Conservation Forum
RCS	Rangeland Conservation Services
SARC	Species at Risk Conservation
SARC Plan	Species at Risk Conservation Plan
SARPAL	Species at Risk Partnership on Agricultural Lands