



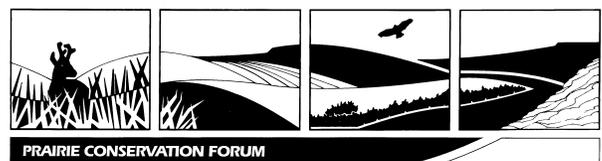
MULTISAR

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

2013-2014 Report



Alberta Species at Risk Report No. 152



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Strategy for Species at Risk in the Grassland
Natural Region of Alberta**

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March 2014





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The MULTISAR Steering Committee, comprised of Francois Blouin (PCF), Brad Downey (ACA), Brandy Downey (ESRD), Paul Jones (ACA), Joel Nicholson (ESRD), Jennifer Richman (ESRD) and Craig DeMaere (ESRD), was responsible for the planning and the management of the MULTISAR project. Sasha Harriott was instrumental in the administration of the ESRD grant to PCF in support of MULTISAR.

François Blouin (PCF), Julie Landry-DeBoer (ACA), Lee Moltzahn (ACA), Ken Pitcher (PCF), Kristen Rumbolt-Miller (PCF) and Deanna White (ACA) completed the range and wildlife inventories and Habitat Conservation Strategies (HCSs). They were assisted by Brad Downey (ACA), Darryl Jarina (PCF), Megan Jensen (ACA) and Michael Verhage (ACA). Kris Kendell (ACA), Amanda Rezanoff (ACA), Cows and Fish (on contract) as well as Mike Uchikura (ACA) and Deanna White (ACA) completed riparian inventories and health assessments.

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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 rangelands and wildlife habitat. The working relationships established with landholders over the years provide the essential foundation for which the MULTISAR project is successful.

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IN MEMORY OF JENN

This past year, MULTISAR lost a cherished team member and a dear friend, Jennifer Richman. On June 7, 2013, several days after giving birth to a healthy baby boy named Kipp, Jenn passed away from complications. Having grown up on a ranch bordering the Oldman River, Jenn developed an early passion for the land and devoted her career to taking care of it. Jenn worked as a Rangeland Specialist with Public Lands (Alberta Environment and Sustainable Resource Development) in Lethbridge for many years and was an integral part of the MULTISAR team. As head of MULTISAR's range team, Jenn was a teacher and mentor to many of MULTISAR's staff (both past and present). She was also a member of MULTISAR's Steering Committee which oversees the development and management of the MULTISAR program. As a great supporter and advocate of the MULTISAR program and the support the program provides to landholders, Jenn championed MULTISAR within government to help ensure MULTISAR's continued support and funding. But above all else, Jenn was a dear friend. Her infectious smile and cheerful personality always made Jenn a pleasure to be around. She was exceptionally kind and truly cared for, and she always took interest in the lives of her friends and the landowners she worked with. The contributions that Jenn has made to the MULTISAR program are significant and will continue to shape the program as MULTISAR moves forward. Jenn will always be remembered with great fondness and admiration and will never be forgotten.



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 Sustainable Resource Development, and the Prairie Conservation Forum. Due to funding delays in 2013-2014, MULTISAR delivered a scale backed program.

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 2013-2014, a new HCS was developed on one ranch totalling approximately 7,834 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 native prairie restoration, erection of artificial raptor nesting structures, wildlife-friendly fencing, shrub planting, tree protection and anthropogenic feature mitigation.

SARC Plans were delivered on a request only basis due to limited funds and staff available for the program. Beneficial management recommendations for wildlife habitats were developed on two private ranches totalling approximately 240 acres. As the program became fully funded after the field season MULTISAR took this opportunity to evaluate the SARC program and make new recommendations to improve it.

The Education, Outreach and Awareness program was greatly scaled back this year due to reduced resources and important delays in funding. However, MULTISAR staff 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 88,000 people. Communication material included one issue of MULTISAR's newsletter. In total, MULTISAR made over 264 different contacts with more than 826 people (and an additional 88,241 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 three MULTISAR HCS ranches, five years after their initial assessment, to determine if management recommendations had been implemented and their impact on species at risk habitat.

MULTISAR began compiling the wildlife observation and vegetation assessment data it has been accumulating since its first Habitat Conservation Strategy. It is hoped that inferences can be made between species at risk occurrences and habitat metrics and that Beneficial Management Practices recommendations can be improved to maximize habitat quality.

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's no surprise then 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, the Alberta Conservation Association, Alberta Environment and Sustainable Resource Development, 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 compiled into 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 we've implemented almost 90 habitat enhancement projects on over 270,000 acres of land.

MULTISAR consists of three primary components: 1) Habitat Conservation Strategies which are detailed plans developed with the landholder that can be used as a tool for the management of their land. A condensed form of the HCS called Species at Risk Conservation Plans can also be completed for landholders outside the priority landscape of the Milk River Watershed and portions of the South Saskatchewan River Watershed. 2) Education, Outreach, and Awareness Program which provides Beneficial Management Practices for various species, annual Grassland Gazette, and several presentations to the public. 3) Research, Monitoring, and Evaluation which involves monitoring habitat enhancements every year or two and going back to evaluate the detailed plans (HCS) every five years to determine if they are having the desired effect or are in need of adjustments. The following chapters outline the accomplishments for MULTISAR under these project components for 2013-2014.

The MULTISAR Program is guided by the 2009-2014 Business Plan. The mission, vision, and goals are:

Vision: Multiple species of wildlife, including species at risk, are effectively conserved at the landscape level, through a process that integrates landuse management with fish and wildlife management principles, and in a manner that may contribute to the species and habitat recovery and to the sustainability of the rural economy.

Mission: To develop and implement the MULTISAR process which directs conservation of multiple species at risk, associated fish and wildlife and their habitats, within the Grasslands Natural Region of Alberta.

Goal: To assist landowners and lessees to manage land to benefit provincial and federal species at risk, while maintaining an economically viable operation.

2.0 EDUCATION, OUTREACH & AWARENESS

2.1 Introduction

The MULTISAR Education, Outreach and Awareness program continued in a reduced capacity for 2013-2014. New opportunities brought new collaborative endeavors with agricultural and conservation groups. Extension activities resulting from these partnerships allowed MULTISAR to promote its message at the provincial, national and international level. MULTISAR also continued its participation at the Grazing School for Women and its involvement with the Milk River Watershed Council Canada.

2.2 Landholder Awareness

2.2.1 At Home on the Range, Grassland Gazette and other Information Brochures

A total of 1467 copies of MULTISAR's flagship booklet, *At Home on the Range: Living with Alberta's Prairie Species at Risk*, was distributed to landholder cooperators or mailed out to Alberta Environment and Sustainable Resource Development (ESRD), county and municipal district offices, provincial parks and Members of the Legislative Assembly (MLAs) of Alberta constituency offices in the Grassland Natural Region. The booklet was also offered at a number of events throughout the year. The eighth issue of MULTISAR's newsletter, the *Grassland Gazette*, was produced in the winter of 2013-14 and sent to all 159 landowner cooperators and other MULTISAR contacts. Moreover, over 75 species at risk brochures and BMP fact sheets were handed out.

2.2.2 Southern Alberta Grazing School for Women

The 10th Annual Southern Alberta Grazing School for Women was held on July 24 - 25, 2013 in the community of Foremost. MULTISAR is one of the organizing partners of this event. The two day "school" included topics such as range and riparian health, stocking rates and record keeping, grazing with multiple species, succession planning, wildlife and ranching, use of off-site watering systems and featured talks from two local female producers. This year, approximately 32 women attended the grazing school. MULTISAR had its display set up and handed out various brochures and the At Home on the Range booklet.

2.2.3 Presentations/Training to Landholder Groups

Presentations were given to landowner groups on five occasions. On May 28th, MULTISAR provided 2.5 hours field training to two individuals from the Blood Tribe on grassland species at risk identification. On September 18th, MULTISAR partnered with Operation Grassland Community and Cows and Fish in a demonstration day held at a ranch near Drumheller. A field tour allowed the partners to discuss grasslands as well as managing for cattle, wildlife, and a healthy watershed with 24 ranchers and food industry representatives. The day was also filmed and made into a short clip that will be toured in Edmonton, Calgary and Lethbridge in March and April 2014. On October 18th, an overview presentation of MULTISAR was given to 15 individuals for the Environmental Committee of the Alberta Beef Producers. A similar presentation was also given to approximately 75 members and guests of the Alberta Beef Producers during their AGM on December 3rd, 2013. Finally, an evaluation of the five years of

implementation of their Habitat Conservation Strategy was presented to the five members of the Sandstone Grazing Coop on February 6th, 2014.

2.3 Youth Education

MULTISAR was involved in youth education activities on three occasions, reaching a total of 90 individuals. Table 1 summarizes these activities.

Table 1. Summary of activities by MULTISAR associated with youth education.

Date	Event	Location	Type	Attendance
August 28, 2013	Jennie Emery School	Coaldale, AB	Live presentation: Prairie Mammals	40 Students
November 1, 2013	Lethbridge College	Lethbridge, AB	Live presentation: Habitat Elements of MULTISAR	50 Students of the Wildlife Habitat Management Course
November 1, 2013	Lethbridge College	Lethbridge, AB	Live presentation: Wildlife Surveys by MULTISAR: Design and Considerations	50 Students of the Wildlife Conservation and Field Techniques Course

2.4 Public Outreach

2.4.1 Presentations, Demonstration Tours and Displays

In 2013-2014, MULTISAR gave live presentations and setup displays on five occasions and gave a demonstration tour on two occasions. These allowed MULTISAR to directly reach a minimum of 214 individuals, and receive direct and indirect exposure from 88,241 people who visited the Calgary Stampede Cattle Trails. The latter was a new partnership with the Canadian Cattlemen’s Association for the manning of an Environmental Booth for 10 days during the Calgary Stampede, with an interactive display about the grasslands and wildlife, and various brochures. A field demonstration tour of MULTISAR’s native grassland restoration project was given on August 21st, 2013 to Land Use Framework representatives (six in total) and on February 26th, 2014 to members of the Northern Sagebrush Steppe Initiative (15 in total). Table 2 summarizes these public outreach activities.

Table 2. Summary of public outreach activities by MULTISAR.

Date	Event	Location	Type	Attendance
April 11, 2013	Milk River Watershed Council Canada Annual General Meeting	Milk River, AB	MULTISAR Display	121 landowners and individuals from various interest groups
July 5-14 th , 2013	Calgary Stampede Cattle Trails	Calgary, AB	Environmental Booth	88,241 visitors from around the world

Date	Event	Location	Type	Attendance
August 21, 2013	Meeting	Orion, AB	Field Demonstration	6 planners from the Land Use Framework
August 23, 2013	Speaker Series	Writing-on-Stone Provincial Park, AB	Live Presentation: <i>How's your range?</i>	15 park users
August 26, 2013	Meeting WWF representatives	Bozeman, MT	Live Presentation: <i>MULTISAR</i>	6 Staff members
September 8, 2013	Speaker Series	Writing-on-Stone Provincial Park, AB	Live Presentation: <i>Mammals and Mammals of the Prairies</i>	51 park users
February 26, 2014	Meeting	Manyberries, AB	Field Demonstration	15 members of the Northern Sagebrush Steppe Initiative

2.4.2 Web Site and Social Media

The MULTISAR website (www.multisar.ca) continues to be the key portal where up-to-date 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. This year MULTISAR updated its web site to make it more appealing, intuitive and easy to maintain. It also receives direct feeds from both, the MULTISAR Twitter and Facebook accounts, which continue to provide current news.

2.4.3 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 2013 and March 2014, a total of 264 contacts were made with 826+88,241 people through direct visits, phone calls, e-mails, tours, presentations or attendance at a booth (Table 3), cumulating to 278 hours. Of those, 88,241 people visited the Calgary Stampede Cattle Trails and either stopped to talk with staff or walked by and saw the MULTISAR display. Contacts with rural landholders to discuss the MULTISAR project, species at risk or various aspects of rangeland management made up 44% of all individuals reached (excluding those from the Calgary Stampede). Of notable mention, MULTISAR participated in the first Canadian Round Table for Sustainable Beef where companies representing the food industry, conservation and agricultural groups and financial institutions came together on July 23rd & 24th, 2013 to begin the dialog for developing the necessary tools to ensure that beef production is environmentally sound, socially responsible and economically viable. In addition, MULTISAR met with representatives of the World Wildlife Fund in Bozeman, MT on August 26th, to introduce them to the MULTISAR project and explore future collaboration through their Northern Great Plains Program.

Table 3. MULTISAR contacts for 2013-2014.

Contact Type	# Contacts	# People
Academic	5	105
Company	2	2
Consultant	4	5
Contractor	18	18
Government	54	84
Individual (non-landholder)	0	0
Industry	10	13
Landholder	103	134
Landowner Group	13	136
Media	4	4
NGO	35	207
School	1	40
Other	15	78 + 88,241
Total:	264	826 + 88,241

2.4.4 Media and other Publications

MULTISAR wrote one article, received attention in two additional articles and was interviewed for a television program (Table 4).

Table 4. Media exposure MULTISAR received in 2013-2014.

Media Name	Topic of Story	Date
<i>News and Views</i> (Town of Milk River's Newsletter)	<i>Congratulations to Ken and Nora Balog</i> (2013 Prairie Conservation Award recipients nominated by MULTISAR)	April 1, 2013
<i>Action News</i> (Canadian Cattlemen's Association's Newsletter)	<i>Cattle Production and Earth Day</i> (MULTISAR assisting the beef industry at being leaders in sustainability)	April 22, 2013 (Volume 9, Issue 3)
<i>The Alberta Wildlifer</i> (Alberta Chapter of The Wildlife Society's Newsletter)	<i>10th Prairie Conservation and Endangered Species Conference</i>	May 1, 2013 (Volume 24, Issue 2)
<i>Let's Go Outdoors</i>	<i>The Return of Native Prairie Grasses</i> (restoring native grasslands in southeastern Alberta)	Aired March 2 nd , 2014 on City TV

An article titled *Restoring Mixed Grass Prairie in Southeastern Alberta, Canada* submitted by MULTISAR staff was published in the June 2013 issue (#3) of "Rangelands". In addition, MULTISAR, who was a main contributor to the "wildlife" section of the second edition of the Milk River Transboundary State of the Watershed Report, provided additional information about

species ranking. The report was published and unveiled on May 31st, 2013 in Writing-on-Stone Provincial Park by the Milk River Watershed Council Canada.

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 75% 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 a 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 Sustainable Resource Development, 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. 2004).

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 2013-2014

To date, MULTISAR has completed 26 HCSs on 277,546 acres of land within the Milk River, Pakowki and St. Mary's Basins (Table 5). In 2013, MULTISAR completed an HCS for one new property in the Milk River Basin, totaling 7,834 acres. Work on this property included detailed wildlife, range and riparian inventories.

Table 5. Habitat conservation strategy participant summary.

Year*	# Landholder Participants	Acres Surveyed
2004	2	60,528
2005	1	160
2006	2 [^]	79,091
2007	2	48,667
2008	2	7,183
2009	3	38,515
2010	5	4,677
2011	5	17,908
2012	3	12,983
2013	1	7,834
Total	26	277,546

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

[^] 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, five 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 and wildlife inventories, as well as a complete reassessment of riparian health. More details on these reassessments can be found in Section 5.0.

Table 6. Habitat conservation strategy reassessment summary.

Year of HCS Reassessment	MULTISAR Participant	Size of Property (ac)
2011	MP_1	60,228
2012	MP_4	11,076
2013	MP_7	41,836
2013	MP_8	3,478
2013	MP_9	4,143

3.3.1 Wildlife

To date, approximately 42,625 wildlife observations (2,982 in 2013) have been submitted to the Fish and Wildlife Management Information System (FWMIS) since 2004. In 2013, 39 different species at risk were recorded on HCS properties. Table 7 summarizes the species at risk observed on all HCS properties assessed (or reassessed) during the 2013 field season. Another notable observation in 2013 was of a white-throated swift. This species is not considered to be at risk in Alberta, but is considered “accidental” and therefore is rarely observed in the province.

Table 7. Species at risk recorded during the 2013 Habitat Conservation Strategy field season.

Species	General Status¹	Legislative Status²	# of Observations	Feature	Significance
Burrowing Owl	At Risk	Endangered	1	1 nest burrow	
Ferruginous Hawk	At Risk	Endangered	60	9 nests	Both historic and new nesting sites
Prairie Falcon	Sensitive	Special Concern	1	7 nests	
Northern Leopard Frog	At Risk	Special Concern	10		
American White Pelican	Sensitive	N/A	16		
Barn Swallow	Sensitive	Threatened	16		
Bobolink	Sensitive	Threatened	2		
Chestnut-collared Longspur	Sensitive	Threatened	342		
Common Nighthawk	Sensitive	Threatened	18		
Sprague's Pipit	Sensitive	Threatened	140		
American Badger	Sensitive	Special Concern	2		
Baird's Sparrow	Sensitive	N/A	126		
Baltimore Oriole	Sensitive	N/A	1		
Brewer's Sparrow	Sensitive	N/A	54		
Bullsnake	Sensitive	N/A	2		2 hibernacula
Common Yellowthroat	Sensitive	N/A	3		
Golden Eagle	Sensitive	Not at Risk	7		
Grasshopper Sparrow	Sensitive	N/A	17		

¹ Alberta General Status (ASRD 2010a)

² Legislative Status for Canada's Species at Risk Act (EC 2012) or Alberta Wildlife Act (GOA 2012)

N/A = Not Assessed

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Species	General Status ¹	Legislative Status ²	# of Observations	Feature	Significance
Greater Sage-grouse	Endangered	Endangered	1		
Great-blue Heron	Sensitive	N/A	8		
Green-winged Teal	Sensitive	N/A	17		
Least Flycatcher	Sensitive	N/A	1		
Lesser Scaup	Sensitive	N/A	4		
Loggerhead Shrike	Sensitive	Threatened	15	1 nest	
Long-billed Curlew	Sensitive	Special Concern	12		
McCown's Longspur	Sensitive	Special Concern	21		
Northern Harrier	Sensitive	Not at Risk	22	1 nest	
Northern Pintail	Sensitive	N/A	32		
Osprey	Sensitive	N/A	1		
Plains Garter Snake	Sensitive	N/A	7	Hibernaculum	Historic hibernaculum, three new hibernacula
Plains Spadefoot	May be at Risk	N/A	1-20	Breeding site	
Pronghorn	Sensitive	N/A	69		
Rocky Mountain Sculpin	May be at Risk	Threatened	9		
Sharp-tailed Grouse	Sensitive	N/A	112	4 leks	3 historic leks and one new lek
Short-eared Owl	May be at Risk	Special Concern	1		
Sora	Sensitive	N/A	5		
Swainson's Hawk	Sensitive	N/A	25	2 nests	
Upland Sandpiper	Sensitive	N/A	6		
Wandering Garter Snake	Sensitive	N/A	17		Historic hibernaculum, one potential new hibernaculum

3.3.2 Range

The HCS properties assessed (and reassessed) in 2013 displayed a wide range of diversity in the plant communities and range health found. MULTISAR conducted a total of 169 detailed range transects (vegetation inventories), 244 range health assessments and 49 tame pasture assessments during the 2013 field season (Table 8). During these inventories, seven 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 2013 Habitat Conservation Strategy field season.

Property	Acres	Sites Assessed	# Plant Communities	Rare Plants
MP_8	3,478	65 detailed transects and 14 tame pasture assessments	41	Velvety goldenrod, Stiff-yellow paintbrush
MP_9	4,143	48 range health assessments and 9 tame pasture assessments	32	Western blue flag
MP_7	41,836	6 detailed transects, 100 range health assessments and 20 tame pasture assessments	44	Small-flowered hawk's beard, Macoun's cryptanthe, Spatulate-leaved heliotrope
MP_26	7,834	98 detailed transects, 96 range health assessments and 6 tame pasture assessments	63	Prickly milk vetch

3.3.3 Riparian

The Alberta Riparian Habitat Management Society – Cows and Fish was contracted to complete riparian health assessments at three sites in 2013. Another 14 sites were assessed by the Alberta Conservation Association and MULTISAR. Six transects were assessed on the North Milk River, two on the Milk River, two on Red Creek and seven transects were completed on unnamed tributaries of the North Milk River. All but one of the sites had been assessed in the past, which provided the added benefit of having historic information on which to compare current findings.

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 practises for each management unit that promote sustainable ranching and habitat for species at risk.

3.3.5 Implementation of HCS Habitat Enhancements

In 2013, 13 habitat enhancements were implemented as a result of recommendations identified in both past and present HCSs. Habitat enhancement projects completed in 2013 include the planting of 2,900 silver sagebrush and wild vetch plugs at two separate sites in greater sage-grouse habitat. In addition to installing fence reflectors on approximately four miles of fence that surround one of the few remaining active greater sage-grouse leks, two old buildings that were providing habitat for predators, believed to be negatively impacting greater sage-grouse, were also removed from the landscape, along with an old shelterbelt. In 2013, four nest platforms for ferruginous hawks were erected on several different properties with the goal of attracting ferruginous hawks to aid in Richardson’s ground squirrel control and to provide additional nesting sites for this Endangered species. In addition, a tree with an active ferruginous hawk nest was fenced for protection from potential livestock impact. Other completed habitat enhancements include the installation of 12 km of wildlife friendly fence (smooth bottom wire to facilitate pronghorn movement) by one landowner and another 800 m around a restoration site. The reclamation of 10 acres of a crested wheatgrass field back to native grasses was initiated in 2013, as was the control of Canada thistle on 480 acres of native grass reseed and on one acre encompassing a northern leopard frog breeding pond which was seeded with native grasses. A partnership with Dupont was also established in 2013 regarding trials of a broadleaf herbicide named Rejuvra® on two 12 acres test plots. Since 2005, MULTISAR has completed 86 habitat enhancement projects with cooperating landholders, the details of which are summarized in Figure 1.

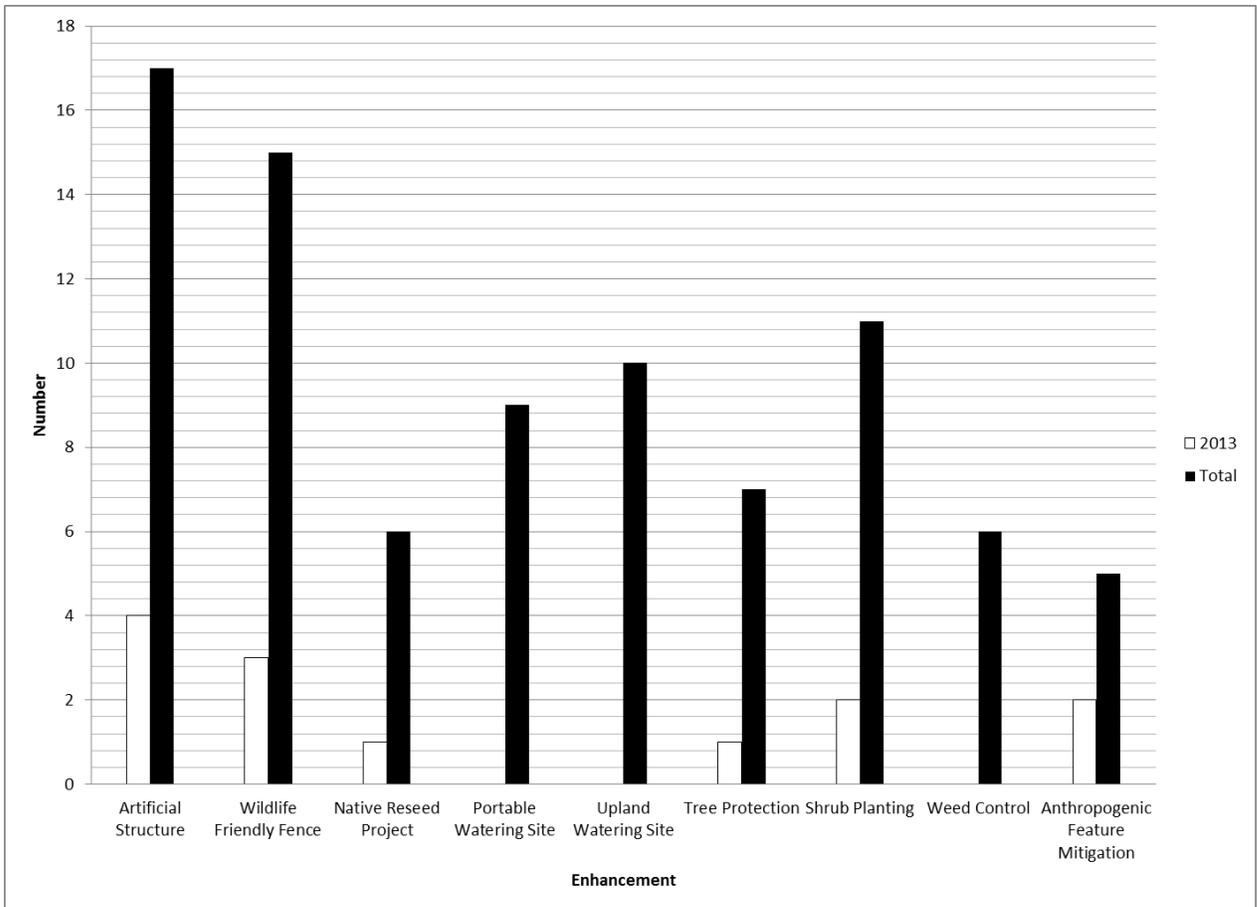


Figure 1. Habitat enhancement projects completed, by category, since 2005.

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 12 years, MULTISAR has become increasingly more recognized and its HCS work has grown tremendously throughout the St Mary's River, Pakowki Lake and Milk River basins. MULTISAR has developed plans for approximately 277,546 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 2013-2014, 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 as opposed to the active solicitation involved with the SARC Plan program.

4.3 Achievements

Since the inception of the SARC Plan program in 2007, 78 assessments (one in 2013-2014) have been completed throughout the GNR covering a total area of 149,944 acres (160 acres in 2013-2014). This was the second year that BMP specific assessments were completed. A total of one BMP assessment (80 acres) was completed this year for a landowner who wanted to install an artificial hawk nesting platform, with interest in controlling Richardson's ground squirrels on their property in an ecological manner. Since beginning these assessments in 2012, MULTISAR has completed 13 assessments for a total of 13,545 acres.

For the one SARC Plan (160 acres) completed by MULTISAR this year, BMPs were recommended for the following species and groups of species:

1. Raptors – 1 (160 acres)*
2. Grassland Birds – 1 (160 acres)
3. Amphibians – 1 (160 acres)

** BMP recommendations for species/groups of species are not mutually exclusive.*

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 achieve their objectives. Habitat improvements include a nesting platform erected for ferruginous hawks, several wetland and riparian fencing projects, shelterbelt fencing, artificial burrow construction, and portable watering unit development.

4.4 Program Evaluation

In 2013-2014, an evaluation was completed in order to determine how well the SARC Plan program met its objectives since its inception in 2007. The SARC Plan program was originally developed as a way to reach out to landowners whose land contained suitable habitat for species at risk, but was outside the priority HCS area made up of the Milk River, St. Mary's River and Pakowki Lake basins. They are less resource-demanding than HCSs and were designed as a more efficient way of influencing management to benefit species at risk habitat at a broader scale by promoting learnings from HCSs. These plans would essentially be a rapid version of the HCS using visual assessments rather than detailed ecological metrics. Their focus would be on all areas of the Grassland Natural Region where it would be able to reach a much larger number of landowners in order to spread the word about sustainable ranching and species at risk conservation.

The SARC Plan evaluation focused on the original goals of the program to determine if any of them had been achieved. The evaluation also looked at whether the SARC Plan program was still a desirable option for landowners to implement and a useful one for MULTISAR to promote species at risk BMPs. The evaluation was based on the feedback from participating landowners

who received a plan, results of the follow-up questionnaire, and also on the experiences of the biologists who completed the plans.

The landowner follow-up questionnaire, given two years after completion of the SARC Plan, was designed to allow MULTISAR staff to compare information with the original questionnaire given prior to completing the SARC plan (Appendix A). The questionnaire's primary focus was on changes in attitudes and management, but also focused on the landowners experience with and their comments on SARC plans.

The original goals of the SARC Plan program as outlined in MULTISAR's 2007-2008 Progress Report (Downey et al., 2008) are as follows:

1. Apply methods and knowledge learned from the MULTISAR Habitat Conservation Strategies to the entire Grassland Natural Region of Alberta;
2. Recommend and assist with applying MULTISAR Beneficial Management Practices (BMPs) to applicable areas for each of the MULTISAR focal species and key species at risk habitat types;
3. Track changes in attitudes towards species at risk;
4. Track management changes and results.

4.4.1 Questionnaire Results

The follow-up survey began in 2011 and was intended to be given to all landowners two years after the plan was completed. A total of 57 SARC Plans were eligible for a follow-up survey and these landowners were all contacted, and in most cases were contacted several times. Out of these, only 14 landowners (24.6%) agreed to complete the survey. Reasons for not completing the survey ranged from an outright refusal due to time constraints or because the plan was not being used. Others had not yet read the plan and felt that they could not answer the survey, or the plan was read years ago and they didn't feel that they could comment on the plan or the SARC Plan process. Many others were contacted several times and messages were left on voice mails or with family members, which did not result in a call back from the landowner. Several others had either sold the property or were not the main contact for management of the property anymore.

All who completed the follow-up survey stated that they liked the plan, and 86% said that the BMP fact sheets provided were useful. When asked if wildlife were beneficial to their operation 93% agreed, which was the same result as the original survey for this group given at the first SARC Plan meeting. All respondents said that it is possible to run a profitable operation while keeping wildlife in mind, while 93% said that programs like MULTISAR are useful in helping them maintain suitable wildlife habitat. All respondents also stated that their land is important for wildlife/Species at Risk (SAR), which is from a score of 93% in the original survey. Eighty-five (85) percent of people were aware of what species at risk were on their property, which was the same as the original survey. Finally, everybody surveyed said that they would recommend a SARC Plan to a friend, family member, or neighbour.

4.4.2 Program Goal Status

Goal 1 – Apply methods and knowledge learned from the MULTISAR Habitat Conservation Strategies to the entire Grassland Natural Region in Alberta.

This first goal was achieved almost immediately after inception of the SARC Plan program. All aspects of SARC Plans were derived from knowledge and experience gained with the HCS program. Methodologies used were different as species specific surveys were not completed for SARC Plans; however the known relationship between various species and their habitat needs is utilized when completing the plans. The biologists completing SARC Plans were experienced in completing HCSs and were able to use their knowledge of species at risk and their associated habitats in order to make appropriate recommendations for SARC Plan landowners.

The BMP's that MULTISAR utilizes in their HCS and SARC Plan programs were developed in 2004 and are just starting to be tested in the field through HCS evaluations. However, habitat response to management changes may require several years before being detectable. As more information is gathered about various species during HCS evaluations, this information will be used to test and potentially alter our current BMPs, which will then be reflected on SARC Plans. The SARC Plan process is dynamic as it is ever evolving based on knowledge gained from HCSs and from other work being done on sensitive species throughout Alberta.

Goal 2 – Recommend and assist with applying MULTISAR Beneficial Management Practices (BMPs) to applicable areas for each of the MULTISAR focal species and key species at risk habitat types.

For each SARC Plan, the biologist outlines the different habitat types on the ranch and also identifies the specific habitat availability for each of MULTISAR's focal species. In addition to habitat availability, other information including FWMIS data, species ranges, and habitat suitability models are used in order to determine which focal species have the potential of occurring on the property. Once this is determined, BMPs are recommended that are applicable to each property. These BMPs not only focus on individual species/species groups, but also focus on specific habitat types important to multiple focal species (eg. native prairie).

Although BMPs are provided for each SARC Plan, they are not all necessarily used by the landowner. Several landowners have used the SARC Plan as a baseline tool to set up a particular grazing scheme that may benefit their property. Others have utilized fencing, watering units, and salt placement to directly improve cattle grazing while at the same time improving or maintaining their rangelands for wildlife. Some landowners have not made direct changes as a result of the plan, but have been influenced to make changes to their habits which directly and positively impacts wildlife. This will be discussed further under Goal 4.

Goal 3 – Track changes in attitudes towards species at risk.

One of the major focuses of the SARC Plan program, and MULTISAR in general, is to monitor landowner's attitudes towards species at risk (SAR). It appears that myths and rumours about species at risk are still prevalent in the Grassland Natural Region. Many landowners have told MULTISAR staff outright that they did not want us on their land and/or did not want locations of SAR given out due to fear of losing control of their land. MULTISAR has always tried to dispel these myths and rumours and support landowners whose land contains known SAR or SAR habitat. Unless landowners are engaged in a SARC Plan, their misbeliefs toward SAR may not change; however, SARC Plans alone may not be sufficient to completely dispel fears by landowners.

The results of the questionnaire are misleading based on who completed the survey. Out of the 14 follow-up surveys completed, 85% believed that wildlife were beneficial to their operation, which

was similar to the original survey. All respondents after two years believed that their land was important for providing habitat to SAR, which increased from 93% in the original survey. Although these numbers are encouraging, it is difficult to determine if there was an actual attitude shift with participating landowners. By completing plans for people who are known to have an interest in wildlife and wildlife conservation, it becomes difficult to detect changes in attitudes. The majority of people who completed a SARC Plan love wildlife and/or species at risk, and are supporters of conservation. It is likely that these landowners would remain in this mindset, which is where we would want them to be. There is effectively no change from the initiation of the plan to the time of the follow-up survey for this group of landowners, which is still beneficial from MULTISAR's viewpoint. Those who were not as supportive of species at risk or conservation and who were less keen on the SARC Plans, typically did not participate in the follow-up survey. This did not allow MULTISAR to detect any changes in their attitudes towards species at risk, but suggests that they either did not read their plan or the plan did not have an impact on their attitude toward species at risk or groups like MULTISAR.

Goal 4 – Track management changes and results.

Another important aspect of the follow-up survey was to determine if management changes were being made by participating landowners. Changing the attitudes of landowners with respect to species at risk is important, but converting that attitude into a management change may even be more beneficial to species at risk. Management changes can be as drastic as installing fencing, watering units, changing a grazing regime etc., to simple things like delaying haying for a short period and limiting activity in the grasslands during breeding season.

Out of the 14 landowners who completed the follow-up survey, 13 had stated that they have made a management change since completing the SARC Plan, which have ranged from water developments to salt placement. These numbers are very telling of the impact of the SARC Plan. Almost all of the respondents were advocates of conservation and were very 'in tune' with wildlife on their property. The fact that almost all of them made some sort of management change indicates that the SARC Plan is benefiting even the most environmentally conscious of landowners.

As discussed previously, some changes in attitudes are likely occurring without the landowner even knowing that a change has occurred. An example of this was with one of our landowners in the Milk River basin. After discussing any influence that the SARC Plan had on his management, he stated that he had not adopted any of the BMPs, but found the information in the plan interesting. While touring the property with him, he noted that he only drove on trails while checking cattle, and did not drive through the grassland like he had done previously. He had decided this in order to reduce pressure to nesting grassland birds, which was something that was written in his SARC Plan. He had made this change without even thinking that he had been influenced by the plan.

Situations like this are an important part of the SARC Plan, but are very hard to measure and quantify. MULTISAR can only assume that other positive changes like this have been made by other landowners. This is the kind of change that landowners may not necessarily promote with their family or friends in the ranching community; however the changes are still important from a species at risk perspective.

4.4.3 Discussion

Since their inception in 2007, SARC Plans initially were popular with landowners. This is likely 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 landowners were known to staff and were previously approached about wildlife conservation. Because MULTISAR had already established a relationship with the landowners, many of them were willing participants in the SARC Plan program.

The next few years were fairly steady in the number of plans that were being completed, and then interest slowly began to taper off. The pool of potentially interested landowners who were known to staff was running out, and MULTISAR was beginning to rely more on word of mouth and promotion of the program. Several attempts at garnering interest in the program were mildly successful (presentations, mailouts, etc.) and adoption of the program stalled. In the last seven years, the number of participating SARC Plan landowners/properties per year is indicated in Figure 1.

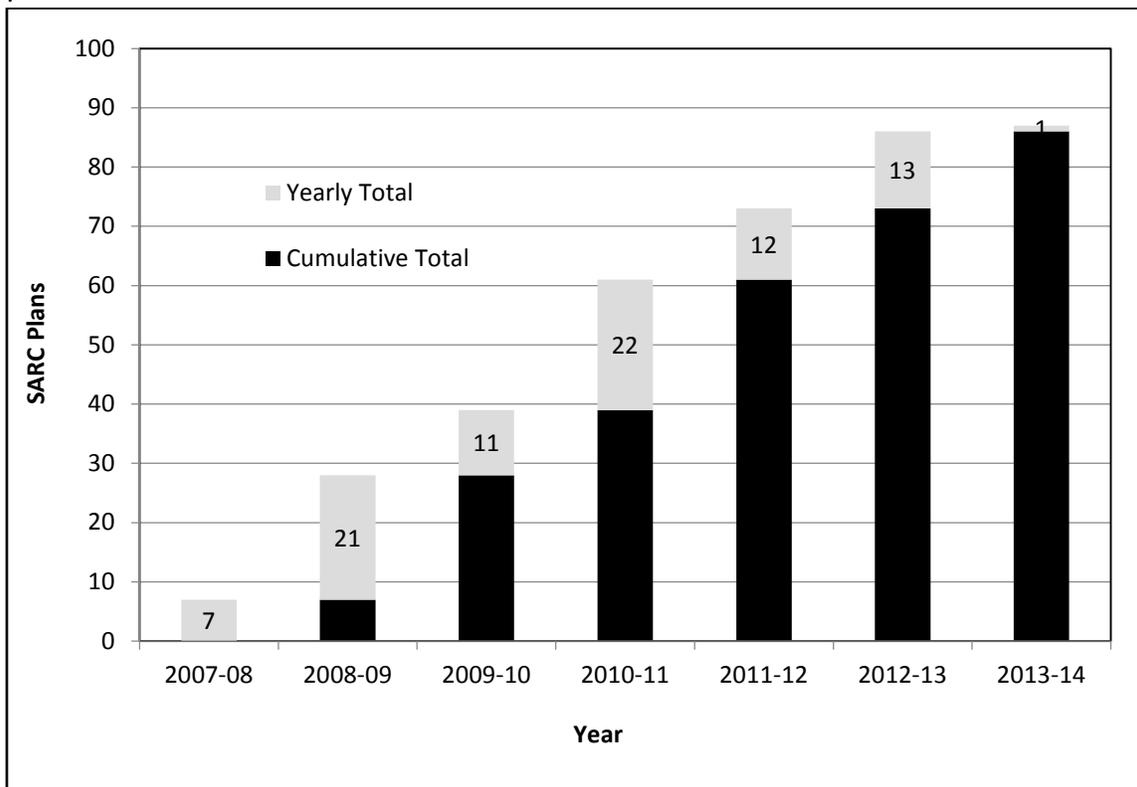


Figure 2. Number of SARC Plans completed since program inception.

A major concern as of late was not necessarily the quantity of SARC Plans being completed, but more so the effectiveness or landowner buy-in of the plans. Many of the recent plans completed were for people who were referred to MULTISAR, and whom did not specifically seek out guidance. In these instances, many landowners were willing to let MULTISAR complete a SARC Plan, but did not necessarily feel that the plan would be a major benefit to them. Without the interest of the landowner, the plans cannot fully achieve their goals. There appears to be three types of audience for SARC Plans: 1) landowners who highly value wildlife and would do

everything they can to benefit their habitats, 2) landowners who care about wildlife, don't have it as a priority in their operation but would change their management approach to benefit wildlife if it was seen as not impacting their operation or as benefitting it, and 3) landowners who are solely focused on their operation and will not change things based on wildlife habitat requirements. Although MULTISAR should not ignore the first type of audience and deliver SARC plans to them on an as requested basis, it should focus some promotional efforts on the second type of audience who might benefit the most from a SARC Plan. They are the ones that are likely to register the biggest change in attitude and in management behaviour.

From 2007 and until 2010, MULTISAR had employed a full time Education and Outreach Co-ordinator. The role of the co-ordinator was to increase awareness by the public and various user groups of wildlife conservation and to promote the MULTISAR project through presentations, attendance at conservation or producer meetings, and interaction with school groups, etc. The Co-ordinator's role helped to make MULTISAR known within the ranching community and allowed the SARC Plan program to slowly grow and gain some momentum with southern Alberta landowners. Due to a shortage of funding, the co-ordinator position was ended in 2010, which has ultimately led to a slow decline in the number of SARC Plans being completed each year since that time. If funding permits, it may be beneficial to re-open this position to promote the MULTISAR SARC Plans.

One avenue to assist with maintaining a full time Education and Outreach Co-ordinator could be to share the position with one or several conservation agencies, which would help to reduce the costs of each agency. MULTISAR works closely with several conservation groups in order to promote the same message of sustainability and conservation. Some of the groups that MULTISAR works closely with have areas of expertise slightly different than ours. A co-ordinator could essentially spread the same message and could point each conservation group in the various directions that they feel would best fit the landowner. This may also help to reduce the overlap of conservation agencies that are essentially completing the same work for a particular landowner, which is sometimes seen as a burden to the landowner.

Another method that may be useful in engaging landowners in the program is an effective marketing campaign. Proper marketing will allow MULTISAR to target a specific group of individuals and would be very beneficial for not only SARC Plans, but for the MULTISAR project as a whole. This type of campaign is likely something that can't be done in house and would need the expertise of a marketing agency.

It was apparent that the majority of those who did complete a follow-up survey were landowners who originally had contacted MULTISAR about getting a plan done or those who were very keen on the process once contacted by MULTISAR staff. The awareness of wildlife and species at risk of those who completed the survey was evident in the results and created an obvious (positive) bias in their response to the survey. There was also an inherent bias in the landowners who completed a SARC Plan. Even landowners who did not have complete or even partial faith in the program still had a love or interest for wildlife. Not a single SARC Plan was completed for a landowner who thought that wildlife and/or wildlife management was not important to them as SARC Plans may not be the appropriate tool for this type of landowner. For this reason, the content of the SARC Plan questionnaires may never accurately assess the changes in attitudes towards species at risk.

Another issue with the SARC Plan survey may have been that it was given via phone calls, which may have skewed the results to the positive. Some questions may have been answered differently

if they had not been asked in person, which may need to be addressed in the future. A quick survey that could be completed online through the MULTISAR website or mailed/emailed in anonymously may give a better representation on the true views of many of the landowners on topics related to species at risk or the MULTISAR program itself. During the original visit, staff could simply ask the landowner on his/her preference for the format of the follow-up survey which may help to increase the number of surveys that are being completed. This would be a benefit to the SARC Plan program as it would potentially increase landowner participation in the follow-up survey and allow MULTISAR to make appropriate changes to these plans in order to benefit the landowner.

A change to the content of the original and follow-up survey questionnaire may also help to better quantify data on future SARC Plans. Instead of structuring questions that result in yes or no answers, a core group of questions may need to be asked so that respondents can choose their answers on a scale system (1 (poor)... ..5 (excellent), for example). Using this methodology, data gained from these core questions can be better analyzed using statistical analysis, and will also allow us to compare data from original surveys to follow-up surveys without having to interpret some of the answers.

4.4.4 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. The primary concern with the plans going forward is to garner enough interest in the program in order to effectively promote species at risk conservation to the appropriate audience, which are essentially audience types 1 and 2 listed above.

Going forward, there are several areas that MULTISAR may need to focus on in order to improve the SARC Plan program. These changes should lead to greater uptake of the program from the target audience, increase the objectiveness of the information gathered during the surveys, and increase the participation in the follow-up surveys. The following recommendations to enhance and promote SARC Plans are as follows:

- Continue to pursue and complete SARC Plans throughout the Grassland Natural Region (GNR).
- Be selective when deciding on eligibility for a SARC Plan. For those that fit type 1 audience, provide SARC Plans in a responsive manner (if they ask, we will provide), for those in type 2, promote the SARC Plans; and for those in type 3, no targeted efforts. Focusing efforts on those who would most benefit from a SARC Plan would better help to achieve the goals of the program.
- Contract a marketing agency (funding permitted) to develop an appropriate marketing strategy in order to target the SARC Plan core audience.
- Hire or share with another agency (funding permitted), an Education and Outreach Coordinator in order to educate and promote MULTISAR and the SARC Plan program to ranchers and conservation groups in the GNR.
- Adjust the questionnaires and add several questions with a numerical scale value to better quantify data.

- Provide an anonymous follow-up survey questionnaire that can be completed via email, mail in, or through the MULTISAR website. This will help to more accurately assess landowners' views of SARC Plans and will also help to address issues in regards to tracking attitude changes towards wildlife and species at risk.

5.0 HABITAT CONSERVATION STRATEGY EVALUATION & MONITORING PROGRAM

5.1 Introduction

In 2009, MULTISAR began developing its evaluation and monitoring program, with initiation commencing in the 2010-2011 fiscal year. MULTISAR evaluates and monitors on two levels: re-assessment of Habitat Conservation Strategies (HCS) and monitoring of completed enhancements on HCS properties.

Over the last four years, objectives, methodologies, protocols, and how results are evaluated have evolved. The following sections will provide a brief synopsis of MULTISAR's Evaluation and Monitoring Program and outcomes for 2013-2014. Recommendations and future monitoring guidelines in turn will be discussed.

5.2 Evaluation of the HCS component of the MULTISAR Project

An evaluation of each HCS completed for the MULTISAR project may occur five years after its implementation. The main focus of this evaluation is to measure how effective the HCS plans are in influencing habitat management, habitat for species at risk, and landholders' perceptions of species at risk and their associated habitat. In the spring and summer of 2013, MULTISAR evaluated three HCSs (hereafter referred to as MP_7, MP_8, and MP_9).

5.2.1 Evaluation of the HCS Process for 2013

During evaluation, the following was completed:

1. Range health and riparian health (when applicable) was reassessed at specific locations. Range health was evaluated based on desired habitat conditions within management units or areas within a management unit (i.e., "maintain within $\pm 10\%$ ", "increase", or "decrease" range health).
2. Wildlife surveys completed at specific locations (multi-species point counts and species specific surveys).
3. Landholder questionnaire to document perspectives on the HCS process and its recommendations and their views on species at risk.
4. Review of data collected during enhancement monitoring.

In 2013, the health of native and tame pastures was evaluated by completing range health (RH) assessments at original assessment locations ensuring at least one transect was completed in each management unit of the HCS property.

In the baseline years, the main wildlife surveys (multi-species point counts) were conducted primarily along grid transects. In order to make comparisons, the 2013 surveys had to mirror as much as possible baseline methodologies, however only locations falling within grassland vegetation inventory (GVI) polygons were selected. In addition, wildlife survey point count locations were also selected based on the following conditions to emulate MULTISAR's current methods:

1. At least one wildlife point count fell within the same GVI polygon as a 2013 range health reassessment location did.
2. Point count boundaries (200 m) did not span more than one GVI polygon.

Riparian health was reassessed by Alberta Conservation Association staff at historic riparian polygons. Despite survey methodologies from baseline years to current year being slightly different, comparisons were made on overall results for health conditions.

Landholders were asked to participate in a questionnaire to document changes (positive or negative) in attitudes, and knowledge of species at risk and range management. The questionnaire also queried the partnership with MULTISAR and whether the landholder had experienced a benefit from the collaboration on their HCS.

Achievement of MULTISAR's HCS goals was measured based on the following: desired range and riparian health is occurring, desired wildlife species are occurring on the site, 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 for 2013

5.2.2.1 Range

The difference between the range health scores from 2008 and 2013 were calculated. Thereafter, the mean difference between the range health scores were looked at to see if they were different than +10% or -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}) plus or minus its standard deviation. The null hypothesis was rejected if significance (P-value) was less than 0.05.

5.2.2.2 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 the mean plus or minus standard deviation. A significance of 0.05 was used to interpret the results.

5.2.3 HCS Evaluation Results for 2013

5.2.3.1 Range

Across all native sites revisited for MP_7, overall health has increased from $\bar{x} = 81\% \pm 16$ (n=95) to $86\% \pm 1$. Tame pastures have also increased in health from $\bar{x} = 78\% \pm 14$ (n=20) to $80\% \pm 12$.

Native and tame areas desired to “maintain” range health did have similar health scores (were within plus or minus 10%) and native regions desired to “increase” in range health also did achieve this goal (Table 9).

As baseline data was limited for MP_8, only overall results were looked at and to increase sample size, native and tame pasture were examined together (n= 14). The fourteen range health sites on average increased in health from 69.9% \pm 17 in the baseline year to 79.6% \pm 7 in 2013 and areas desired to “maintain” range health have done so (Table 9).

Across all tame and native sites revisited for MP_9, overall health has increased from 63.6% \pm 16 (n=54) to 73.8% \pm 17. Native areas desired to “maintain” range health did have similar health scores and native regions desired to “increase” did increase significantly (p< 0.0001) in range health (Table 9).

5.2.3.2 Riparian

In 2013, two of the three HCSs being evaluated had riparian health assessments completed at baseline locations (MP_8 and MP_9). MP_7 was not evaluated extensively enough to report changes.

Two riparian sites (polygons) were reassessed for MP_8. It was determined that there was a negative shift in health for one of the polygons evaluated from 72% in 2008 to 60% in 2013, however the site still remains within the same health category of “Healthy but with Problems”. The other polygon scored very similar to baseline only decreasing by 2% from 72% to 70%. Survey conditions were very different from 2008 to 2013 as there was very little flow and pools in the first year to the stream flowing steadily at the time of reassessment. Score degradations in 2013 were caused by the increased presence and number of invasive species and physical alterations to the streambank and riparian area. Encouragingly, woody plant species along the stream have been maintained. In addition, desired willow species were observed in certain areas, providing the opportunity to increase bank stability and habitat for wildlife.

Twelve riparian sites for MP_9 were reassessed, five of which were situated on a major river and the other seven on tributaries of that river. In the baseline year all sites scored “Healthy but with Problems”. After reassessment, two sites have been determined to be “Unhealthy” with the rest remaining in “Healthy but with Problems”. All sites still have good vegetative cover; however, invasive species are becoming more prevalent and physical alterations have increased. It must be noted that this particular property has no other source of water (dugouts, etc.) for livestock; however, alternate sources are currently being explored.

5.2.3.3 Wildlife

Several wildlife surveys from the baseline years on MP_7, MP_8, and MP_9 were repeated in 2013. For this report focus will be on multi-species point count surveys with comparisons on species richness and species diversity between baseline year to assessment year.

One hundred and fifteen (115) 200 m multi-species survey point counts were planned for MP_7 with final comparable sample size being 111. Species richness has increased significantly (p<0.0001) from 5.1 \pm 2 to 6.8 \pm 2. Species diversity was evaluated at a lower sample size (n = 104) due to survey protocol differences by surveyors in baseline year and reassessment year and

Table 9. Comparison of range health values between baseline surveys and reassessment surveys or three cooperating MULTISAR participants in southern Alberta.

	MP_7			MP_9				MP_8*		
	Baseline Year RH Average	Evaluation Year RH Average	Desired Effect /Trend Occurring	Baseline Year RH Average	Evaluation Year RH Average	Desired Effect /Trend Occurring		Baseline Year RH Average	Evaluation Year RH Average	Desired Effect /Trend Occurring
Native “Maintain” ±10%	85.5%	85.9%	Yes (n= 74, t= 0.26, p= 0.80)	78.0%	82.6%	Yes (n= 24, t=1.52, p= 0.14)	Native and Tame “Maintain”	76.1%	80.9%	Yes (n= 9, t= 1.11, p= 0.30)
Native “Increase”	58.3%	84.1%	Yes (n= 16, t=8.89, p<0.0001)	51.1%	66.2%	Yes (n= 26, t= 6.8, p<0.0001)	Native and Tame “Increase”	51.3%	77.3%	Sample size only 4; hard to determine trend
Native “Decrease”	95%	89%	Sample size only 5; hard to determine trend	N/A	N/A	N/A	Native and Tame “Decrease”	88%	77%	Sample size only 1; hard to determine trend
Tame “Maintain” ±10%	76.7%	76.6%	Yes (n= 15, t= -0.021, p= 0.98)	58.8%	70.8%	Sample size only 4; hard to determine trend				
Tame “Increase”	52%	61%	Sample size only 1; hard to determine trend	N/A	N/A	N/A				
Tame “Decrease”	88.5%	95.0%	Sample size only 4; hard to determine trend	N/A	N/A	N/A				

* combined native and tame health assessments for MP_8 to increase sample size; N/A = not applicable

results were also significantly ($p < 0.0001$) different increasing from 1.4 ± 0.4 to 1.68 ± 0.4 per point count location.

In the baseline year, species seen the most frequently included horned lark (*Eremophila alpestris*), chestnut-collared longspur (*Calcarius ornatus*), and western meadowlark (*Sturnella neglecta*) (Table 10). In the reassessment year chestnut-collared longspurs decreased in numbers, however, Sprague’s pipits (*Anthus spragueii*) and Baird’s sparrows (*Ammodramus bairdii*) were on the increase. Despite the decrease in some species numbers, all desired species were still present and suitable habitat was readily available.

Forty-seven 200 m multi-species survey point counts were planned for MP_8, some of which were newly assigned in locations that were deemed data deficient. Species richness has increased from 5.0 ± 1.5 ($n = 38$) to 5.4 ± 1.6 , however species diversity has slightly decreased from 1.3 ± 0.4 to 1.2 ± 0.4 . Richardson’s ground squirrel (*Spermophilus richardsonii*) populations are thriving and on the increase in the area (Table 10). The “threatened” chestnut-collared longspur also increased in numbers since the original assessment.

Fifty-one 200 m multi-species survey point counts were planned for MP_9, seventeen of which were newly assigned in areas that were deficient in wildlife information. Species richness determined per stop has decreased from 5.2 ± 1.34 ($n = 34$) to 4.2 ± 1.22 . Species diversity has also decreased from 1.5 ± 0.29 to 1.2 ± 0.26 . This property has seen a shift in grazing regime since the HCS commencement and range health has overall increased. Despite the decrease in some species numbers, all desired species were present on the property and suitable habitat was available.

Table 10. Most abundant species recorded for baseline and reassessment years.

Property	Baseline Year		Reassessment Year	
	Species	Count	Species	Count
MP_7	Horned Lark	225	Savannah Sparrow	156
	Chestnut-collared Longspur	142	Horned Lark	143
	Western Meadowlark	109	Western Meadowlark	115
	Richardson's Ground Squirrel	109	Richardson’s Ground Squirrel	101
	Sprague's Pipit	74	Vesper Sparrow	94
	Vesper Sparrow	62	Sprague’s Pipit	90
	Lark Bunting	61	Chestnut-collared Longspur	88
	Savannah Sparrow	53	Baird’s Sparrow	84
	McCown's Longspur	43	Red-winged Blackbird	64
	Pronghorn	36	Brewer’s Sparrow	48
MP_8	Horned Lark	138	Richardson’s Ground Squirrel	384
	Chestnut-collared Longspur	83	Chestnut-collared Longspur	105
	Richardson’s Ground Squirrel	60	Horned Lark	93
	Western Meadowlark	58	Cliff Swallow	75
	McCown's Longspur	41	Vesper Sparrow	33
	Vesper Sparrow	34	Savannah Sparrow	30
	Brewer's Blackbird	34	Clay-coloured Sparrow	23

Property	Baseline Year		Reassessment Year	
	Species	Count	Species	Count
	Mule Deer	31	Brewer's Blackbird	17
	Savannah Sparrow	14	McCown's Longspur	15
	Canada Goose	10	Western Meadowlark	11
MP_9	Savannah Sparrow	96	Savannah Sparrow	103
	Horned Lark	78	Horned Lark	47
	Western Meadowlark	61	Vesper Sparrow	34
	Chestnut-collared Longspur	52	Western Meadowlark	31
	Vesper Sparrow	44	Richardson's Ground Squirrel	27
	Sprague's Pipit	24	Canada Goose	10
MP_9	Canada Goose	10	Bank Swallow	10
	Clay-coloured Sparrow	10	Sprague's Pipit	9
	Brewer's Blackbird	6	Clay-coloured Sparrow	4
	Red-winged Blackbird	5	Cliff Swallow	3

5.2.3.4 Questionnaire

Overall, the results of the questionnaires completed by MP_7, MP_8, and MP_9 were very positive. The landholders valued the friendly and collaborative work that MULTISAR has provided and appreciates MULTISAR's multi-partner and grassroots approach.

Prior to working with MULTISAR, the 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 for a minimum of five years, most participants have increased their appreciation for species at risk and view them more as an asset and not a liability.

All participants are still willing to complete projects that help benefit cattle operations as well as wildlife and have agreed to voluntarily work with MULTISAR for another five years.

5.2.4 Concluding Remarks

For the three HCS properties reassessed it was determined that range health objectives have generally been met. In some instances desired wildlife species were on the rise and others contrarily declined. Factors surrounding and causing any decline is unknown and further investigation is needed. In the forthcoming years, based on knowledge acquired through the HCS re-evaluation process, modifications will be made to allow for improved assessment of HCSs and their recommendations and desired outcomes for each property.

5.3 Monitoring Habitat Enhancements on HCS Participants

Based on recommendations found within HCS reports, enhancements have been applied on several properties. Monitoring of these habitat enhancements will allow MULTISAR staff to measure whether enhancements are having the desired effect, and what changes may be necessary to ensure the desired effects are achieved.

Monitoring is the periodic collection of data to determine if 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 perceived effects may not be linked to the manipulation (Fletcher et al. 2007). Eighteen enhancement projects that have been implemented on five different properties, as a result of HCS recommendations, were monitored in 2013. The following will be a description of the current MULTISAR monitoring program and recommendations for improvements to better link enhancement effect on species at risk habitat.

5.3.1 Restoration Projects

Conversion of cropland back to native grasses can benefit a suite of species at risk. Monitoring of enhancement projects that involve native grass reseeding will be completed every year. For detailed objectives and desired measures of success for MULTISAR restoration projects see Downey et al. (2011; Section 5.3.1).

Monitoring at four MULTISAR reseeding projects was conducted in 2013. MP_7 has two reseeding projects (RP_01, implemented in 2008; and RP_02, implemented in 2011), the results of which are summarized in Tables 11 and 12. RP_01 was grazed for the first time since reseeding, which is reflected in the decrease in litter found. This site continues to increase in vegetative cover and with continued monitoring, trends will become more apparent. RP_02 has only had three growing seasons and will need additional years of monitoring to determine any trends (Table 12).

Table 11. Range information collected for restoration project MP_7_RP_01.

	2008	2010	2011	2012	2013
Range Health % Average	N/A	69.0	70.5	65.9	63.8
Litter Average (lbs)	N/A	203	483	626	388
Robel Average (dm)	N/A	0.11	0.07	N/A	N/A
Needle and Thread Grass (<i>Stipa comata</i>) % Average	<1	3.33	1.95	1.20	1.60
June Grass (<i>Koeleria macrantha</i>) % Average	0.5	10.90	4.93	6.67	4.53
Blue Grama Grass (<i>Bouteloua gracilis</i>) % Average	4	13.53	3.60	6.93	6.50
Northern Wheatgrass (<i>Agropyron dasystachium</i>) % Average	N/A	12.97	8.60	N/A	9.30
Western Wheatgrass (<i>Agropyron smithii</i>) % Average	N/A	6.73	5.95	N/A	2.45

	2008	2010	2011	2012	2013
Silver Sagebrush (<i>Artemisia cana</i>) % Average	0.00	0.00	<1	<1	<1
Average Wheatgrasses species*	9.6	N/A	N/A	14.7	N/A

No assessments completed in 2009

*combined when they were not discerned to individual species

Table 12. Range information collected for restoration project MP_7_RP_02.

	2012	013
Range Health % Average	45	40
Litter Average (lbs)	172	175
Needle and Thread Grass % Average	0.1	0.15
June Grass % Average	4.5	4.95
Blue Grama Grass % Average	3.8	2.6
Northern Wheatgrass % Average	N/A	8.9
Western Wheatgrass % Average	N/A	3.7
Silver Sagebrush % Average	<1	1.5
Average Wheatgrasses species %*	5.5	N/A

*combined when they were not discerned to individual species

MP_18 has two different reseeded areas. The first site, RP_01 was reseeded in the fall of 2011 and the seconded site was reseeded in the spring of 2012 (RP_02). More years of growth are needed to evaluate the development of these two areas as there has only been two years of growth (Table 13).

Table 13. Range information collected for restoration project MP_18_RP_01 and RP_02.

	RP_01		RP_02	
	2012	2013	2012	2013
Range Health % Average	40	36	42	37
Litter Average (lbs)	483	467	371	225
Needle and Thread Grass % Average	0.17	0.23	0.4	0.5
June Grass % Average	0.1	2.2	1.2	3.9
Blue Grama Grass % Average	0.6	1.9	1.3	4.1
Northern Wheatgrass % Average	N/A	2.6	N/A	4.2
Western Wheatgrass % Average	N/A	1.3	N/A	5
Silver Sagebrush % Average	0	0	0	0
Average Wheatgrasses species %*	2.1	N/A	2.5	N/A

*combined when they were not discerned to individual species

The wildlife component of the reseeding project was determined by completing wildlife point counts at historic point count locations (control and reference sites were also monitored but not discussed here). The following tables look at the trends for five different grassland bird species: Baird’s sparrow, grasshopper sparrow (*Ammodramus savannarum*), Sprague’s pipit, chestnut-collared longspur, and McCown’s longspur (*Rhynchophanes mccownii*). The tables look at total numbers of each species per reseed treatment locations from either year of treatment or year prior to treatment to 2013 and only compares point count data, omitting any incidental sightings (Tables 14 and 15).

Table 14. MP_7_RP_01 and RP_02 grassland bird trend.

MP_7 Species	RP_01					RP_02	
	2009	2010	2011	2012	2013	2012	2013
Sprague’s Pipit	0	3	1	6	6	0	0
Grasshopper Sparrow	0	11	1	3	4	0	0
Baird’s Sparrow	1	5	2	4	2	0	3
Chestnut-collared Longspur	0	4	0	0	1	1	0
McCown’s Longspur	0	0	0	0	1	0	0

Table 15. MP_18_RP_01 and RP_2 grassland bird trend..

MP_18 Species	RP_01			RP_02		
	2011 (pre-treatment)	2012	2013	2011 (pre-treatment)	2012	2013
Sprague’s Pipit	0	0	0	0	0	0
Grasshopper Sparrow	0	0	3	0	0	3
Baird’s Sparrow	0	0	1	0	0	1
Chestnut-collared Longspur	2	2	3	0	0	3
McCown’s Longspur	6	5	0	2	3	0

5.3.2 Shrub Planting and Shelterbelt

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*). Shrubs will be monitored yearly for the first five years, 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 plantings.

In 2013, MULTISAR planted silver sagebrush and American vetch (*Vicia americana ssp*) plugs at MP_18_RP_02 (SSP_04 and SSP_05). Six previously planted sites were monitored either

visually or by incorporating line intercept transects to record shrubs (Table 16). It may take multiple years for shrubs to establish substantially as these shrubs must compete with other vegetative species, and withstand browsing by wildlife.

Table 16. Shrub monitoring in 2013.

Property	Year Planted	Species	Number of Transects	Percent Cover of Transect
MP_7_SSP_01	May 2010	Silver Sagebrush plugs	1	0.036%
MP_7_SSP_02	May 2012	Silver Sagebrush plugs	1	0%
MP_7_SSP_03	November 2012	Silver Sagebrush seeds	2	0%
MP_13_SSP_01	May 2011	Silver Sagebrush plugs/Thorny Buffaloberry (<i>Shepherdia argentea</i>)/Chokecherry (<i>Prunus virginiana</i>)	1	0%
MP_18_SSP_02	May 2012	Thorny Buffaloberry	1	0%
MP_18_SSP_03	November 2012	Silver Sagebrush seeds	2	0.0046%

5.3.3 Artificial Nesting Structures

Artificial structures are used by MULTISAR in areas which have potential to support a species at risk without negatively impacting other species at risk 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 2013 included five nest poles installed for ferruginous hawks. The nest poles are monitored for raptor use and Richardson’s ground squirrels are surveyed for prey availability in the area (Table 17). Three new ferruginous hawk nesting poles were installed on MP_6 and one on MP_25 in the summer/fall of 2013 and will be monitored in the spring of 2014.

Table 17. Artificial nesting structure monitored in 2013.

Participant	Enhancement	Year Implemented	Species Desired to Use Structure	Desired Effect /Trend Occurring	Richardson’s Ground Squirrels
MP_8 (AS_01-03)	3 Nest Poles	2012	Ferruginous Hawk	Yes 2 of 3 had active nests.	Within 3.4km ² 288 ground squirrels were counted
MP_25 (AS_01-02)	2 Nest Poles	2013	Ferruginous Hawk	Not yet: No active nesting observed	Within 3.4km ² 71 ground squirrels were counted

5.4 Future Direction

In 2014 MULTISAR will continue to monitor 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 and reference sites. The BACI design is favored over before and after comparisons because the effect found may not be due to implemented enhancements but rather to some temporal change such as moisture levels (Schwarz 2010). As the MULTISAR enhancement and monitoring database grows, all information, results, etc., will be entered into an appropriate database for proper storage for future reference and statistical analysis.

Table 18. Monitoring of enhancement projects in 2014.

Enhancement Type and Associated Items to Monitor	Number
<p>Artificial Structures:</p> <ul style="list-style-type: none"> • Nest poles (11) • Richardson’s ground squirrel transects (4) • Bat boxes (2) • Burrowing owl tunnels (2) 	15
<p>Restoration Projects:</p> <ul style="list-style-type: none"> • Range health transects • Wildlife point counts 	6
<p>Shrub/Forb and Shelterbelt planting:</p> <ul style="list-style-type: none"> • Line intercept transects for shrubs (plugs and seeds)/forbs 	11
<p>Weed Control</p>	7
<p>Portable Watering Sites:</p> <ul style="list-style-type: none"> • Wildlife point count • Emergent vegetation recorded • Photos 	11
<p>Upland Watering Sites:</p> <ul style="list-style-type: none"> • Wildlife point counts • Range health transects • Photos taken 	8
<p>Tree and Shrub protection:</p> <ul style="list-style-type: none"> • Wildlife point count • Vegetation regrowth recorded • Photos taken 	6
<p>Anthropogenic Feature Mitigation</p>	2

6.0 MULTISAR & THE RECOVERY OF ALBERTA’S SPECIES AT RISK

6.1 Introduction

The MULTISAR project provides conservation of multiple species at risk (SAR), and associated fish and wildlife, within the Grassland Natural Region (GNR) of Alberta. A key component of the

MULTISAR project is to implement recovery actions for *Endangered* and *Threatened* species in the GNR. To better understand how MULTISAR is addressing the recovery of species at risk, a review of existing Provincial and National Recovery Plans was completed. This review included the:

- Burrowing owl (*Athene cunicularia*) (Alberta Burrowing Owl Recovery Team 2005)
- Ferruginous hawk (*Buteo regalis*) (Alberta Ferruginous Hawk Recovery Team 2009)
- Greater sage grouse (*Centrocercus urophasianus*) (Alberta Sage Grouse Recovery Action Group 2005)
- Northern leopard frog (*Lithobates pipiens*) (Alberta Northern Leopard Frog Recovery Team 2005)
- Short-horned lizard (*Phrynosoma douglasii*) (Recovery Action Summary 2013c)
- Swift fox (*Vulpus vulpus*) (Alberta Swift Fox Recovery Team 2007)
- St. Mary's/Rocky Mountain sculpin (*Cottus bairdi*) (ESCC 2004b)
- Stonecat (*Noturus flavus*) (ESCC 2004c)
- Western silvery minnow (*Hybognathus argyritis*) (The Milk River Fish Species Recovery Team. 2008)
- Soapweed (*Yucca glauca*) and yucca moth (*Tegeticula yuccasella*) (Alberta Soapweed and Yucca Moth Recovery Plan 2012-2022)

Additionally, provincial *Sensitive* and *Species of Special Concern* Management Plans were also reviewed.

- Harlequin duck (*Histrionicus histrionicus*) (Alberta Sustainable Resource Development 2010b)
- Long-billed curlew (*Numenius americanus*) (Alberta Sustainable Resource Development 2010c)
- Sprague's pipit (*Anthus spragueii*) (Alberta Sustainable Resource Development 2010d)
- Prairie falcon (*Falco mexicanus*) (Alberta Environment and Sustainable Resource Development 2012)
- Western blueflag (*Iris missouriensis*) (Canada Western Blueflag Maintenance/Recovery Team 2002)

For each species, a review of the recovery and management actions that have been addressed by MULTISAR since the program's inception in 2002 or will be addressed by MULTISAR in the future was conducted. The following details how MULTISAR addresses the recovery actions and provides measures of success.

6.2 Burrowing Owl

6.2.1 Recovery Strategy: Habitat Management and Protection

Determine beneficial management practices (BMPs) and encourage stewardship using the best available knowledge to enhance the quality of burrowing owl habitat and increase burrowing owl densities.

Table 19. MULTISAR’s contribution to the implementation of Habitat Management and Protection actions identified in the Alberta Burrowing Owl Recovery Plan (ESRD 2012a).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
1. Stewardship: Promote habitat conservation programs to private landholders.	<ul style="list-style-type: none"> • MULTISAR is a conservation program designed for landholders with SAR on their land. • MULTISAR works cooperatively with other non-government organizations to support private landholders. 	<ul style="list-style-type: none"> • 26 HCSs and 78 SARC Plans have been completed as of March 2014. • MULTISAR has directly contacted over 300 landholders about the species.
2. Implementation of Beneficial Management Practices	<ul style="list-style-type: none"> • Developed BMPs for the species in 2004. • Implements BMPs in the Milk River Basin through the HCS program. • Implements BMPs throughout the GNR through the SARC Plan program. 	<ul style="list-style-type: none"> • Developed BMPs for the species which were adopted by the Alberta Recovery Team as the Burrowing Owl BMPs. • Distributed Burrowing Animals BMP information via brochures or within reports to approximately 53 landholders throughout the GNR. • Recommended burrowing owl BMPs on over 70,400 acres on HCS properties and 16,500 acres on SARC Plan properties.
3. Management of fossorial mammals: Encourage land managers to maintain management systems that sustain availability of fossorial animal burrows for burrowing owls. 4. Manage control of fossorial animals	<ul style="list-style-type: none"> • Developed BMPs for keystone species. • Monitored ground squirrel populations throughout the GNR and through the HCS program. • Encourages landholders to provide habitat for keystone species through the HCS and SARC Plan programs. 	<ul style="list-style-type: none"> • Provided management recommendations specifically for keystone species on 81,200 acres. • MULTISAR team has helped influence landholders to maintain over 232,000 acres of native prairie habitat for use by keystone species. • Created 2 artificial nest burrows for burrowing owls to compensate for the lack of keystone species in these areas. • Distributed 53 burrowing animals BMPs via brochures or within reports.
6. Enhance Habitat Quality: Increase the area and enhance the quality of burrowing owl habitat through	<ul style="list-style-type: none"> • The MULTISAR project promotes a mosaic of range regimes and grass heights through: <ol style="list-style-type: none"> 1. MULTISAR BMPs 	<ul style="list-style-type: none"> • 26 HCSs have been completed as of March 2014. • By March 2014, the HCS program has been active on 277,542 acres and 149,944

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
<p>increasing habitat patch sizes and reducing habitat fragmentation.</p>	<p>2. HCSs 3. SARC Plans 4. MULTISAR's Education Outreach and Awareness Program</p> <ul style="list-style-type: none"> • HCS program identifies key habitat for conservation of burrowing owls and other species at risk and develops an integrated plan balancing the needs of the species with the other land users, including the rancher. • Works on both private and public land. • Uses the concept of "natural variation" in range management. • Promotes habitat connectivity. • Promotes re-seeding projects in marginal areas surrounded by native prairie. • Incentives are provided to landholders as free assessments through the HCS and SARC Plan program and the implementation and cost sharing of habitat improvement projects for rangelands. 	<p>acres respectively through the HCS and SARC Plan program.</p> <ul style="list-style-type: none"> • 70,400 of acres conserved for burrowing owls through the HCS program and 16,500 acres conserved through SARC Plans. • More than 18 habitat improvements developed through the MULTISAR project using incentives from other NGOs and existing government programs. • 1,390 acres have been re-seeded to native cover. • Over 232,000 acres are currently being maintained as native prairie habitats by MULTISAR.
<p>7. Minimize impacts of industrial development</p>	<ul style="list-style-type: none"> • Information on the effects of industrial developments is included in all HCSs and SARC Plans. • Developed and updated an Industrial Guidelines brochure for landholders. 	<ul style="list-style-type: none"> • Over 308 landholders have been given information on minimizing the impact of industrial developments.
<p>9. Integrated Management Planning: provide burrowing owl conservation input in to land management planning processes.</p>	<ul style="list-style-type: none"> • Developed Habitat model for the burrowing owl. • Assisted in developing a user friendly tool to identify areas of high priority for the burrowing owl. 	<ul style="list-style-type: none"> • MULTISAR developed the HSI model to identify habitat for the species on the landscape. Currently developing a Grassland Vegetation Inventory-based Resource Selection Function (RSF) model. • HSI tool available for use by all prairie region biologists and is available for download by industry and the public on the ESRD website.

6.2.2 Recovery Strategy: Population Conservation and Management

Implementation of policies and programs that maintain or increase the burrowing owl population in Alberta.

Table 20. MULTISAR’s contribution to the implementation of the Population Conservation and Management actions identified in the Alberta Burrowing Owl Recovery Plan (ESRD 2012a)

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
1. Reduce Avian Predation: Implement BMP’s to reduce mortality arising from avian predation. 3. Limit negative impacts of pesticides.	<ul style="list-style-type: none"> • Developed BMPs for the species in 2004, which discussed reducing perch locations for avian predators. BMPs also discussed their sensitivity to pesticides and the need to leave a 500m setback distance around burrows when applying pesticides • Performed pre-development surveys prior to installation of hawk nesting platforms and fences to reduce conflicts between avian predators and burrowing owls. 	<ul style="list-style-type: none"> • Distributed burrowing animal BMP’s to 53 landowners throughout the GNR.

6.2.3 Recovery Strategy: Population Monitoring

Monitor populations of burrowing owls.

Table 21. MULTISAR’s contribution to the implementation of Population Monitoring actions identified in the Alberta Burrowing Owl Recovery Plan (ESRD 2012a).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
1. Systematic Monitoring: Implement long-term systematic monitoring approach using trend blocks. 4. Monitor productivity: Continue to record productivity in specific nesting areas and develop a consistent method to do so.	<ul style="list-style-type: none"> • Aids in the completion of trend block surveys • Developed an in-house monitoring system which includes revisiting know burrowing owl nesting locations on MULTISAR cooperator’s properties. 	<ul style="list-style-type: none"> • 126 sightings entered into FWMIS since 2002 by MULTISAR. • MULTISAR has taken part in ESRD trend surveys for burrowing owls since 2005

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
2. Public Reporting and Data Management: promote public reporting systems to identify occupied sites throughout the burrowing owls range.	<ul style="list-style-type: none"> All information collected through the HCS and SARC Plan programs has been entered into FWMIS. 	
3. Refine databases		

6.2.4 Recovery Strategy: Information and Outreach

Increase support of the burrowing owl and prairie conservation through public education and awareness programs.

Table 22. MULTISAR's contribution to the implementation of Information and Outreach actions identified in the Alberta Burrowing Owl Recovery Plan (ESRD 2012a).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
<p>1. Public Education Opportunities: Increase general public awareness of grassland conservation, the burrowing owl, and related prairie conservation issues.</p> <p>2. Landholder Awareness: Make direct contact with landholders to explain the status of burrowing owls, BMP's, and potential mitigation measures.</p>	<ul style="list-style-type: none"> Provides management information to landholders through the HCS and SARC Plan programs. Develops educational materials and presentations, including the <u>At Home on the Range</u> brochure for living with Alberta's species at risk. Developed a youth education program with the PCF and Alberta Parks. Presents to landholders, youth groups, and the general public about grassland conservation and prairie conservation issues. 	<ul style="list-style-type: none"> 53 BMPs via brochures or within reports distributed to private landholders. Have distributed over 7,900 copies of the <u>At Home on the Range</u> brochure. 79 presentations/public meetings held for private landholders, government agencies, watershed groups and school groups by MULTISAR. 26 HCS's and 78 SARC Plans completed.
5. Incentives: Inform landholders about existing incentive programs and conservation partnerships available to help conserve burrowing owls.	<ul style="list-style-type: none"> Incentives are provided to landholders as free assessments through the HCS and SARC Plan program and the implementation and cost sharing of habitat improvement projects for rangelands. Informs landholders of incentive programs through the biannual <i>Grassland Gazette</i>. 	<ul style="list-style-type: none"> More than 18 habitat improvements developed through the MULTISAR project using incentives from other NGOs and existing government programs. Distributed 1,577 copies of the <i>Grassland Gazette</i> to landholders in the GNR.

6.2.5 Recovery Strategy: Research

Work with ESRD, Environment Canada, non-government organizations, and Universities to complete the following research:

Table 23. MULTISAR’s contribution to the implementation of Research actions identified in the Alberta Burrowing Owl Recovery Plan (ESRD 2012a).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
<p>a) Beneficial Management Practices: conduct research on different management techniques to improve habitat for burrowing owls and their prey and to increase owl densities.</p> <p>c) Fossorial animals: Encourage study of the relationships between burrowing owls and fossorial animals.</p> <p>d) Prey Management: manage habitat to maximize prey densities near burrowing owl nests.</p>	<ul style="list-style-type: none"> • HCS program identifies key habitat for conservation of burrowing owls and other species at risk and develops an integrated plan balancing the needs of the species with the other land users, including the rancher. • MULTISAR makes recommendations for all habitat types and not just specifically for potential nesting areas. These other habitat types include foraging areas for burrowing owls. 	<ul style="list-style-type: none"> • 26 HCSs have been completed as of March 2014. • Distributed 53 burrowing animals BMPs via brochures or within reports.

6.2.6 Recovery Strategy: Resourcing

Table 24. MULTISAR’s contribution to the implementation of Resourcing actions identified in the Alberta Burrowing Owl Recovery Plan (ESRD 2012a).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
1. Funding: Annually approach government, NGO’s, universities, and private companies/individuals to participate in or fund burrowing owl recovery initiatives.	<ul style="list-style-type: none"> • MULTISAR is a partnership between Alberta Sustainable Resource Development (ASRD), Alberta Conservation Association (ACA), and Prairie Conservation Forum (PCF) and meets federal requirements of the Habitat Stewardship Program. 	

6.2.7 Recovery Strategy: Plan Management and Administration

Table 25. MULTISAR’s contribution to the implementation of Plan Management and Administration actions identified in the Alberta Burrowing Owl Recovery Plan (ESRD 2012a).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
1. Coordinate Research Effort: research activities will need to be properly permitted and coordinated to maximize benefits from research and minimize disturbance to the population.	<ul style="list-style-type: none"> • MULTISAR is with a partnership between Alberta Sustainable Resource Development (ASRD), Alberta Conservation Association (ACA), and Prairie Conservation Forum (PCF) and meets federal requirements of the Habitat Stewardship Program. 	<ul style="list-style-type: none"> • Maintained successful partnerships between agencies.
3. Data Submission: survey data will be entered in to the Fish and Wildlife Management Information System (FWMIS).	<ul style="list-style-type: none"> • All information collected through the HCS and SARC Plan programs has been entered into FWMIS. • 	<ul style="list-style-type: none"> • 126 sightings entered into FWMIS since 2002 by MULTISAR.

6.2.8 Burrowing Owl Summary

The MULTISAR project goals and objectives are closely aligned to many of the key action items identified in the provincial Burrowing Owl Recovery Plan. MULTISAR is a valuable tool in achieving action objectives of the recovery plan; in particular the objectives pertaining to landholder education, development of tools, such as the burrowing owl BMPs, maintenance of native prairie habitat, retention of burrows and keystone species, and multi-species conservation on the prairie. The MULTISAR project should continue to be used as a key tool in delivering the objectives of the Burrowing Owl Recovery Plan.

6.3 Ferruginous Hawk

6.3.1 Recovery Strategy: Habitat Management

Table 26. MULTISAR’s contribution to the implementation of Habitat Management actions identified in the Ferruginous Hawk Recovery Plan (Ferruginous Hawk Recovery Team 2009).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
<p>1.3 Habitat Protection: Information and education encouraging retention of trees for nest sites.</p> <p>1.4 Habitat Development: Erect nest platforms in suitable habitat where no conflicts with other SAR exist.</p>	<ul style="list-style-type: none"> • Provides management information to landholders through the HCS and SARC Plan programs. • Maintains native habitat, including trees used for nesting. • Developed Raptor BMP and <i>Artificial Nest Platforms for Ferruginous Hawks</i> brochures for landholder use. • Identify sites where historic nests have fallen down or where suitable habitat exists and assist in erecting artificial nest poles. • Promotes the importance of ferruginous hawks to landholders, especially for pest control. 	<ul style="list-style-type: none"> • 58,850 acres through the HCS program are being managed for ferruginous hawks. • Distributed 92 Raptor BMP brochures to landholders. • 11 nest poles have been installed on MULTISAR co-operators’ land.
<p>1.6. Financial incentives to producers for providing SAR habitat.</p>	<ul style="list-style-type: none"> • Development of free HCSs and SARC Plans. • Developed BMP specific plans that included plans specific to addressing the suitability for ferruginous hawk nest poles. • Installed free raptor nesting poles at key locations. 	<ul style="list-style-type: none"> • Completed 26 HCSs, 78 SARC Plans, and 13 BMP Plans as of March 2014, all of which have highlighted the benefits of providing habitat for ferruginous hawks. • Have erected 11 nest poles for ferruginous hawks.

6.3.2 Recovery Strategy: Reduction of Human Disturbances

Table 27. MULTISAR’s contribution to the implementation of the Reduction of Human Disturbance actions identified in the Ferruginous Hawk Recovery Plan (Ferruginous Hawk Recovery Team 2009).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
2.1 Industrial Land Planning: Provide information on current and historic nesting locations and use of Prairie Sensitive Species Guidelines.	<ul style="list-style-type: none"> • All information collected through the HCS and SARC Plan programs has been entered into FWMIS. • Developed Industrial Guideline brochure for SARs. • HCS reports and SARC Plans include industrial guidelines for ferruginous hawks. 	<ul style="list-style-type: none"> • Over 727 ferruginous hawk observations have been entered into FWMIS by MULTISAR since 2002. • Distributed 88 Industrial Guideline brochures to landholders. • By March of 2014, MULTISAR will have completed 26 HCSs, 78 SARC Plans, and 13 BMP Plans, all of which have provided industrial guidelines for raptors, including ferruginous hawks.

6.3.3 Recovery Strategy: Reduction of Human Caused Mortality

Table 28. MULTISAR’s contribution to the implementation of the Reduction of Human Caused Mortality actions identified in the Ferruginous Hawk Recovery Plan (Ferruginous Hawk Recovery Team 2009).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
3.0. Information and education programs to discourage persecution of species at risk.	<ul style="list-style-type: none"> • Promotes the importance of species at risk to landholders for pest control. • Works with landholders to convey that species at risk, including the ferruginous hawk, are beneficial, as opposed to detrimental, to their operation. • Develops educational material and presentations including a youth education presentation on “Raptors at Risk” and the <u>At Home on the Range</u> brochure for living with Alberta’s species at risk. 	<ul style="list-style-type: none"> • MULTISAR has contacted over 1800 landholders since 2002 and distributed over 7900 copies of the <u>At Home on the Range, Living with Species at Risk Guide</u>, • Completed 26 HCS and 78 SARC plans, all of which explain the benefits of raptors to landholders. • 79 presentations/public meetings held for private landholders, government agencies, watershed groups and school groups by MULTISAR.

6.3.4 Recovery Strategy: Population Monitoring and Research

Table 29. MULTISAR’s contribution to the implementation of Population Monitoring and Research actions identified in the Ferruginous Hawk Recovery Plan (Ferruginous Hawk Recovery Team 2009).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
5.1 and 7.1. Population monitoring and inventories every 5 years.	<ul style="list-style-type: none"> • Participates in the 5 year ferruginous hawk population inventory and annual trend monitoring surveys. • Records all ferruginous hawk sightings and nest locations and submits observations into FWMIS. 	<ul style="list-style-type: none"> • Completes approximately 9 ferruginous hawk quadrants each year. • In the 2010 provincial monitoring year, completed 31 ferruginous hawk quadrants and <u>The 2010 Ferruginous Hawk Inventory and Population Analysis</u> report. • Over 727 ferruginous hawk observations have been entered into FWMIS by MULTISAR since 2002.
7.3. Prey monitoring and research (including annual ground squirrel trend surveys).	<ul style="list-style-type: none"> • Monitored ground squirrel populations throughout the GNR. • Encourages landholders to tolerate ground squirrel populations. • Developed BMP brochure for the Richardson’s ground squirrel. 	<ul style="list-style-type: none"> • Assisted in completing 45 transects as part of the ground squirrel monitoring program. • 81,200 acres have been recommended to be managed in consideration of Richardson’s ground squirrels. • Influenced over 232,000 acres of native prairie habitat for use by keystone species. • MULTISAR has distributed approximately 33 Ground Squirrel and 53 Burrowing Animals BMP brochures to landholders.
7.5: Research on range management and ferruginous hawks.	<ul style="list-style-type: none"> • Conducts range health assessments on grasslands through the HCS program 	<ul style="list-style-type: none"> • Conducted range health assessments on 26 HCS properties covering an area of approximately 277,546 acres.
7.8: Monitoring of ferruginous hawk population health.	<ul style="list-style-type: none"> • Participates in the 5 year ferruginous hawk population inventory with ESRD and annual trend monitoring 	<ul style="list-style-type: none"> • Completes approximately 9 ferruginous hawk quadrants each year. • In the 2010 provincial

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
	<p>surveys.</p> <ul style="list-style-type: none"> Records all ferruginous hawk sightings and nest locations and submits observations into FWMIS. 	<p>monitoring year, completed 31 ferruginous hawk quadrants and The 2010 Ferruginous Hawk Inventory and Population Analysis report.</p> <ul style="list-style-type: none"> Over 727 ferruginous hawk observations have been entered into FWMIS by MULTISAR since 2002.

6.3.5 Recovery Strategy: Information and Outreach

Table 30. MULTISAR's contribution to the implementation of the Reduction of Human Caused Mortality actions identified in the Ferruginous Hawk Recovery Plan (Ferruginous Hawk Recovery Team 2009).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
<p>6.1 Increase awareness of ferruginous hawks and native prairie conservation and to foster action through stewardship.</p>	<ul style="list-style-type: none"> Developed and implemented species BMPs, including Raptor BMPs brochures, as well as a BMP brochure for the ferruginous hawk's main prey, the Richardson's ground squirrel. Provides BMPs to landholders through the HCS and SARC Plan programs. Promotes the importance of species at risk to landholders for pest control. Works with landholders to convey that species at risk, including the ferruginous hawk, are beneficial, as opposed to detrimental, to their operation. Develops educational material and presentations including a youth education presentation on "Raptors at Risk", the At Home on the Range brochure for living with Alberta's species at risk, and participated in the development of the Artificial Nest Poles for Ferruginous Hawks brochure. 	<ul style="list-style-type: none"> MULTISAR has contacted over 1,800 landholders since 2002, distributed over 7,900 copies of the At Home on the Range, Living with Species at Risk Guide, and completed 26 HCS and 78 SARC plans, all of which explain the benefits of raptors to landholders. 79 presentations/public meetings held for private landholders, government agencies, watershed groups and school groups by MULTISAR. MULTISAR has distributed approximately 92 Raptor, 33 Ground Squirrel, and 53 Burrowing Animals BMP brochures to landholders.

6.3.6 Ferruginous Hawk Summary

The MULTISAR project goals and objectives are closely aligned to many of the key action items identified in the Ferruginous Hawk Recovery Plan. In particular, MULTISAR is key for achieving objectives related to landholder education, influencing the maintenance of native prairie habitat, retention of nest sites and keystone species and multi-species conservation on the prairie. MULTISAR has also developed relationships with energy distribution companies to assist with erecting artificial nesting poles. The MULTISAR project should continue to be used as a key tool in delivering the objectives of the Ferruginous Hawk Recovery Plan.

6.4 Greater Sage Grouse

6.4.1 Recovery Strategy: Habitat Conservation and Management

Conserve and manage habitat for greater sage-grouse in order to satisfy life cycle requirements and support of a viable population within its remaining historical range.

Table 31. MULTISAR’s contribution to the implementation of Habitat Conservation and Management actions identified in the Greater Sage Grouse Recovery Plan (ESRD 2013a).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
1.1 Conduct impact assessments of anthropogenic features	<ul style="list-style-type: none"> • During HCS and SARC Plan field surveys, all anthropogenic features will be documented and information will be forwarded to the Provincial sage grouse recovery biologist. 	<ul style="list-style-type: none"> • All features will be documented and site specific information will be gathered starting in 2014.
1.3 Establish or maintain protective notations around known lek sites regardless of activity.	<ul style="list-style-type: none"> • The HCS program encourages habitat protection in and around active sage grouse leks. 	<ul style="list-style-type: none"> • 2 active and 2 historical leks are present within MULTISAR cooperator properties.
2.11 Inform ranchers on recognizing key habitat types that support sage grouse. 2.12 Encourage landowners to collaborate with programs like MULTISAR 1.14 Identify sites where grazing disturbance is not optimal and encourage landholders to	<ul style="list-style-type: none"> • Where sage grouse habitat is present on HCS co-operators’ lands, MULTISAR will make appropriate range management and industrial recommendations to benefit the species. • Range health assessments are completed for all HCSs. • Range and wildlife analyses are completed for each HCS and take into consideration sage grouse within their range. 	<ul style="list-style-type: none"> • By March 2014, 7 HCSs have been completed that directly target management of habitat for sage grouse. • Range health assessments and vegetation inventories have been conducted through 7 HCSs on over 89,000 acres in sage grouse range, including 33,363 acres in sage grouse Critical Habitat.

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
<p>enhance plant community.</p> <p>1.15 Promote stocking rates and rotational grazing to improve sage grouse habitat.</p>		
<p>1.16 Through the MULTISAR program, provide incentives to landowners and lessees for appropriate land management.</p>	<ul style="list-style-type: none"> • Currently MULTISAR is working on restoration projects to return cultivated lands back to native grasslands in sage grouse range using local species that include sagebrush. • Removed anthropogenic features that attract predators from sage grouse Critical Habitat 	<ul style="list-style-type: none"> • So far 960 acres have been reclaimed in sage grouse range, including 320 acres considered as critical habitat. • Two old buildings and one shelterbelt were removed from two sites within Critical Habitat

6.4.2 Recovery Strategy: Population Management and Enhancement

Table 32. MULTISAR's contribution to the implementation of Population Management and Enhancement actions identified in the Greater Sage Grouse Recovery Plan (ESRD 2013a).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
<p>2.1 Continue annual counts at lek sites.</p>	<ul style="list-style-type: none"> • Continue to assist ESRD during the annual lek census 	<ul style="list-style-type: none"> • 2 active and 2 historical leks are present within MULTISAR cooperator properties. • MULTISAR has participated in the annual lek counts since 2005.
<p>2.9 Provide support for appropriate projects such as marking fence lines with markers to prevent mortalities through collisions.</p>	<ul style="list-style-type: none"> • Installing fence markers on fences within sage grouse critical habitat. 	<ul style="list-style-type: none"> • Markers have been installed on 29.6 km of fences within sage grouse critical habitat.

6.4.3 Recovery Strategy: Outreach and Information

Table 33. MULTISAR’s contribution to the implementation of Outreach and Information actions identified in the Greater Sage Grouse Recovery Plan (ESRD 2013a).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
4.3 Distribute maps of sage grouse habitat to producers to encourage them to steward these areas in order to benefit sage grouse. 4.4 Provide guidance to landholders on watering site developments, cross fencing, and salt placement in sage grouse habitat.	<ul style="list-style-type: none"> • Sage grouse critical habitat maps and BMP’s are provided to MULTISAR cooperators as part of the HCS. • MULTISAR cost shares and/or provides direct funding/support for landholders on various habitat improvement projects including water developments and cross fencing. 	<ul style="list-style-type: none"> • By March 2014, 7 HCSs have been completed that directly target management of habitat for sage grouse. • Have provided funding/support for 6.4 kilometres of wildlife friendly cross fencing and 3 water developments in sage grouse habitat.

6.4.4 Recovery Strategy: Plan Management and Administration

Table 34. MULTISAR’s contribution to the implementation of Plan Management and Administration actions identified in the Greater Sage Grouse Recovery Plan (ESRD 2013a)

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
5.3 Enter population data into the FWMIS database following each field season.	<ul style="list-style-type: none"> • Records all sage grouse sightings into FWMIS. 	<ul style="list-style-type: none"> • Over 650 sage grouse observations have been entered into FWMIS by MULTISAR since 2002.

6.4.5 Greater Sage Grouse Summary

MULTISAR continues to play a role in the recovery of greater sage-grouse in Alberta. Within the Recovery Plan almost all actions where Alberta Fish and Wildlife or Alberta Public Lands are listed as the lead, MULTISAR is involved. This includes habitat and species monitoring, implementation of BMPs within Critical Habitat, and education. Starting in the summer of 2014, MULTISAR will gather information on anthropogenic features within Critical Sage-Grouse Habitat and will assist with their removal. MULTISAR will continue to assist with the recovery of greater sage-grouse in Alberta.

6.5 Northern Leopard Frog

6.5.1 Recovery Strategy: Population Conservation and Management

Table 35. MULTISAR’s contribution to the implementation of Population Conservation and Management actions identified in the Northern Leopard Frog Recovery Plan (Alberta Northern Leopard Frog Recovery Team 2005).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
1.2 Conduct surveys of all currently occupied sites a minimum of once every 5 years.	<ul style="list-style-type: none"> • MULTISAR conducts annual spring inventories along a creek where northern leopard frogs are known to breed, as identified through a HCS. • MULTISAR participated in the 2005 northern leopard frog inventory. 	<ul style="list-style-type: none"> • Breeding inventories have been occurring on the property since 2008. • MULTISAR completed inventories at 32 sites.
1.3 Conduct targeted surveys each year to search for previously unknown frog populations.	<ul style="list-style-type: none"> • All water bodies with the potential as northern leopard frog habitat are identified and surveyed for the species during each new HCS. • MULTISAR has inventoried key areas of the Milk River Basin for evidence of breeding, primarily through the HCS and SARC Plan programs. 	<ul style="list-style-type: none"> • Two populations that were originally recorded as declining have been found to be productive populations through MULTISAR surveys.
1.7 Conduct reintroduction of eggs to augment populations.	<ul style="list-style-type: none"> • Potential re-introduction sites are identified through MULTISARs HCS and SARC Plan programs. 	<ul style="list-style-type: none"> • One of the HCS sites MULTISAR surveyed was used to re-introduce northern leopard frogs into other locations in 2005 and in 2008.

6.5.2 Recovery Strategy: Habitat Conservation and Management

Table 36. MULTISAR’s contribution to the implementation of Habitat Conservation and Management actions identified in the Northern Leopard Frog Recovery Plan (Alberta Northern Leopard Frog Recovery Team 2005).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
2.2 Make contact with landholders on private/leased land that support northern leopard frog populations.	<ul style="list-style-type: none"> • The MULTISAR education and outreach program provides landholders with information on northern leopard frogs, including: <ul style="list-style-type: none"> ▪ the importance of maintaining habitat for the northern leopard frog ▪ what individual landholders can do to help SAR, including the northern leopard frog. 	<ul style="list-style-type: none"> • Developed and distributed over 80 copies of MULTISAR’s BMP brochure for wetland species to landholders in the GNR.
2.3 Direct management of sites to alleviate threats through cooperative agreements with landholders or other initiatives.	<ul style="list-style-type: none"> • Developed BMPs for the species to provide to landholders. • MULTISAR helps implement BMPs through the HCS and SARC Plan programs. • Signs agreements with HCS landholders to help ensure sound management of northern leopard frog habitat. 	<ul style="list-style-type: none"> • 3 creeks and their adjacent wetlands are being managed for northern leopard frogs through the MULTISAR HCS and SARC Plan program. • Installed 1 portable watering system, 3 off-stream watering units, and a pipeline on co-operator’s lands to help reduce impacts on creeks supporting populations of northern leopard frogs.

6.5.3 Recovery Strategy: Information and Education

Table 37. MULTISAR’s contribution to the implementation of Information and Outreach actions identified in the Northern Leopard Frog Recovery Plan (Alberta Northern Leopard Frog Recovery Team 2005).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
3.4 Provide information on leopard frog related topics to technical and non-technical audiences through presentations, signage and other mechanisms.	<ul style="list-style-type: none"> • Developed and distributed wetland BMP brochures. • Provided information through presentations, public meetings, and school field trips. 	<ul style="list-style-type: none"> • Distributed 80 wetland BMP brochures to landholders. • Gave 79 presentations/public meetings to private landholders, school groups, government agencies, watershed groups. • Led 3 tours of a northern leopard frog re-introduction site with school groups. • Developed and erected 3 interpretative signs on the northern leopard frog at a reintroduction site. • Developed a page on the state of Northern Leopard Frogs in the Milk River Basin in the Milk River State of the Watershed Report (2008) and in the Milk River Transboundary State of the Watershed Report (2013)

6.5.4 Recovery Strategy: Research

Table 38. MULTISAR’s contribution to the implementation of Research actions identified in the Northern Leopard Frog Recovery Plan (Alberta Northern Leopard Frog Recovery Team 2005).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
4.3 Co-operate with other research initiatives that will better manage northern leopard frogs in Alberta.	<ul style="list-style-type: none"> • Member of the Research and Monitoring Team of the Milk River Watershed Council Canada which is looking at solutions to improve water quality in the basin. • Developing habitat model to better target new areas that have high potential for the species. 	<ul style="list-style-type: none"> • Currently developing a Resource Selection Function Model based on the Grassland Vegetation Inventory biophysical database.

6.5.5 Recovery Strategy: Plan Management and Administration

Table 39. MULTISAR’s contribution to the implementation of Plan Management and Administration actions identified in the Northern Leopard Frog Recovery Plan (Alberta Northern Leopard Frog Recovery Team 2005).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
5.3 Enter population data into FWMIS following each field season	<ul style="list-style-type: none"> All sightings documented during HCS and SARC Plan field work are entered into the FWMIS database. 	<ul style="list-style-type: none"> Since 2002, MULTISAR has contributed 769 northern leopard frog sightings into the FWMIS database.

6.5.6 Northern Leopard Frog Summary

MULTISAR has contributed to the recovery of the northern leopard frog through three key actions, monitoring, direct management of habitat and education and awareness. The MULTISAR project plans to continue to assist the recovery of this species through these actions.

6.6 Swift Fox

6.6.1 Recovery Strategy: Enhance and Maintain Habitat

Enhance and maintain habitat for swift foxes to satisfy life cycle requirements.

Table 40. MULTISAR’s contribution to the implementation of the Enhancement and Maintenance of Habitat actions identified in the Swift Fox Recovery Plan (Alberta Swift Fox Recovery Team 2007).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
1.1. Place protections on all known current swift fox dens and eliminate disturbance of known den sites by 2009.	<ul style="list-style-type: none"> MULTISAR contributes data to FWMIS through the HCS and SARC Plan programs. 	<ul style="list-style-type: none"> Entered 3 den sites and 16 individual observations into FWMIS.
1.3. Increase habitat area protected by stewardship providing for a sustainable ranching industry and high quality habitat by 2011.	<ul style="list-style-type: none"> MULTISAR encourages voluntary stewardship particularly within its HCS program. 	<ul style="list-style-type: none"> The HCS program is currently working on over 176,000 acres in swift fox range.

6.6.2 Recovery Strategy: Communication of Information

Communicate information about swift foxes to land managers, industry, trappers, recreational users and other relevant parties in the areas for the purpose of fostering stewardship of the species and its habitat.

Table 41. MULTISAR’s contribution to the implementation of Communication of Information actions identified in the Swift Fox Recovery Plan (Alberta Swift Fox Recovery Team 2007).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
4.1. Develop and disseminate an information package for outreach and education aimed at land managers, industry, trappers and recreational users by 2008.	<ul style="list-style-type: none"> • Developed Burrowing Animal BMP brochure. • Developed <u>At Home on the Range: Living with Alberta’s Prairie Species At Risk Guide</u>, which provides information on the swift fox. 	<ul style="list-style-type: none"> • Over 7,900 <u>At Home on the Range: Living with Alberta’s Prairie Species at Risk Guides</u> have been distributed. • 53 Burrowing Animal BMPs distributed via brochures or within reports.
4.2. Contact all relevant stakeholders to identify conservation and stewardship opportunities for swift foxes by 2009.	<ul style="list-style-type: none"> • MULTISAR works with several ranchers within swift fox range and have conveyed the importance of the species. 	<ul style="list-style-type: none"> • MULTISAR has worked directly with 5 landowners with known occurrences through HCSs.
4.3. Integrate swift fox biology and conservation information, along with other SAR and prairie conservation information, into local and provincial school curricula by 2008.	<ul style="list-style-type: none"> • Developed a youth education program for species at risk. 	<ul style="list-style-type: none"> • MULTISAR has completed more than 43 school presentations.
4.4. Disseminate information regarding Alberta SAR program illustrating potential benefits of stewardship activities for landowners by 2007.	<ul style="list-style-type: none"> • MULTISAR is working to help landholders benefit from SAR. This is achieved through partnerships, education about sustainable ranching practices. 	<ul style="list-style-type: none"> • Since 2002 MULTISAR has directly contacted over 1500 landholders. • Over 7,900 <u>At Home on the Range: Living with Alberta’s Prairie Species at Risk</u> have been distributed to landholders and land managers.

6.6.3 Swift Fox Summary

MULTISAR is contributing to many of the action items listed in the swift fox recovery plan and has even been listed in the Recovery Plan under several actions as a means of achieving an

objective. This is positive as it shows MULTISAR’s ability to work as a tool for SAR in Alberta’s GNR.

6.7 Rocky Mountain Sculpin, Stonecat and Western Silvery Minnow

6.7.1 Recovery Strategy: Education and Outreach

Table 42. MULTISAR’s contribution to the implementation of Education and Outreach actions identified in the Western Silvery Minnow Recovery Plan (The Milk River Fish Species Recovery Team 2008).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
E1. Improve awareness of the species.	<ul style="list-style-type: none"> • MULTISAR has and will continue to inform private landholders bordering the Milk and North Milk Rivers of the existence and importance of the three species. • HCSs and SARC Plans have been completed for landholders along the Milk and North Milk Rivers. 	<ul style="list-style-type: none"> • Met with over 190 landholders in the Milk River area. • Worked with 14 landholders through the SARC Plan and HCS programs who directly border the Milk and North Milk Rivers. • Completed in 2013 the evaluation of a HCS developed in 2008 and confirmed a population of the sculpin still present and healthy in one of the tributaries of the N. Milk River.
E2. Encourage stakeholder participation.	<ul style="list-style-type: none"> • MULTISAR completes HCSs and SARC Plans in the Milk River area and involves the landholder in developing stewardship approaches on their land. • MULTISAR works with other stakeholders such as Cows & Fish and the Milk River Watershed Council Canada. 	<ul style="list-style-type: none"> • 11 HCSs and 3 SARC Plans have been completed for landholders bordering the Milk and North Milk Rivers. • MULTISAR attends the Milk River Watershed Council annual general meetings and sits on their research team.
E4. Discourage species introduction.	<ul style="list-style-type: none"> • MULTISAR has developed a Wetland BMP brochure which explains the issues related to the introduction of non-native fish to water bodies. 	<ul style="list-style-type: none"> • Have distributed over 80 copies of the Wetland BMP brochure to landholders.

6.7.2 Summary

The Rocky Mountain sculpin, stonecat and the western silvery minnow are three fish species that are being addressed through the Milk River Basin Three Fishes Recovery Team. Formal recovery plans have not yet been developed for the Rocky Mountain sculpin and the stonecat. However, MULTISAR assisted in funding preliminary research on these species in 2002-2003 and 2005-2006. The information collected during these inventories is being used by the team to determine what habitats are important to these species, where they occur within the Milk River and population estimates. MULTISAR plans to continue supporting the recovery team through these or other initiatives as funding allows. MULTISAR is also focused on voluntary stewardship initiatives and will continue to promote appropriate BMPs in the Milk River Basin to protect the rivers and fish within it.

6.8 Short-horned lizard

Currently, there is not a recovery plan for short-horned lizards in Alberta. A draft plan is supposed to be released in the 2013-2014 fiscal year. A Recovery Action Summary has been developed based on recommendations from the Endangered Species Conservation Committee (ESCC). Within this Action Summary, several recovery actions have been initiated and/or are ongoing.

6.8.1 Recovery Action: Population Conservation and Management

Table 43. MULTISAR’s contribution to the implementation of Population conservation and Management actions identified in the Short Horned Lizard Recovery Action Summary 2012-2013 (ESRD 2013c).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
1.1 An initial population estimate has been completed with a more detailed estimate still required.	<ul style="list-style-type: none"> • All lands with the potential of providing eastern short horned lizard habitat are identified and surveyed for during each new HCS and SARC Plan. • MULTISAR conducts periodic surveys for short horned lizards on properties where populations have been identified. • MULTISAR contributes data to FWMIS through the HCS and SARC Plan programs. 	<ul style="list-style-type: none"> • Species specific surveys have been completed on 8 properties identified as having lizard habitat. • MULTISAR has identified/confirmed 4 populations of lizards and have entered 32 short horned lizard sightings into FWMIS since 2002.
1.2 Upcoming monitoring for changes in habitat quality.	<ul style="list-style-type: none"> • MULTISAR conducts monitoring of range lands for all HCS properties every 5 years. • MULTISAR provides BMP’s to landowners within short horned lizard habitat in order to appropriately manage rangelands within lizard habitat. 	<ul style="list-style-type: none"> • One fencing project will be completed and another watering development may potentially be developed in 2014 with ESHL habitat in mind.

6.8.2 Recovery Action: Habitat Conservation and Management

Table 44. MULTISAR’s contribution to the implementation of Habitat Conservation and Management actions identified in the Short Horned Lizard Recovery Action Summary 2012-2013 (ESRD 2013c).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
2.2 An HSI model developed for short horned lizards identifies likely to provide habitat for the species.	<ul style="list-style-type: none"> • HSI models are used in order to locate potential habitat areas for the lizards which aid in targeting our searches for this species. • MULTISAR directly contributed to the development of habitat models for short horned lizards. 	<ul style="list-style-type: none"> • Suitable short horned lizard habitat has been identified on 8 properties that work directly with MULTISAR. • One HSI and one Resource Selection Function (RSF) models were developed by MULTISAR for the species.

6.8.3 Recovery Action: Information and Outreach

Table 45. MULTISAR’s contribution to the implementation of Information and Outreach actions identified in the Short Horned Lizard Recovery Action Summary 2012-2013 (ESRD 2013c).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
3.1 Public education regarding short horned lizards and their habitat requirements is promoted through prairie conservation organizations.	<ul style="list-style-type: none"> • Developed reptile BMP brochure to give to landowners. • MULTISAR completes HCSs and SARC Plans in short horned lizard habitat and involves the landholder in developing stewardship approaches on their land. 	<ul style="list-style-type: none"> • Distributed over 20 reptile brochures to landowners whose land may contain short horned lizard habitat. • Have worked directly with 8 landholders within short horned lizard habitat.

6.9 Harlequin Duck

Table 46. MULTISAR’s contribution to the implementation of recovery actions identified in the Harlequin Duck Conservation Management Plan (ASRD 2010b).

Actions as Identified in the Recovery Plan	MULTISAR’s Contribution	Measure of Success
3.1. Inventory and Monitoring.	<ul style="list-style-type: none"> • MULTISAR contributes to the spring and late summer harlequin duck surveys in the Oldman/Livingston drainages and the Castle/Carbondale drainages. 	<ul style="list-style-type: none"> • Involved in harlequin duck trend surveys since 2002. • Documented and entered 122 observations into the FWMIS database.

6.10 Long-billed Curlew

Table 47. MULTISAR’s contribution to the implementation of recovery actions identified in the Long-billed Curlew Conservation Management Plan (ASRD 2010c).

Actions as Identified in the Management Plan	MULTISAR’s Contribution	Measure of Success
3.1. Inventory and Monitoring.	<ul style="list-style-type: none"> • Inventories areas of suitable habitat through its HCS and SARC plan programs. • Records all observations and enters information into FWMIS. 	<ul style="list-style-type: none"> • Surveyed 277,542 acres through the HCS program since 2002. • Participated in the annual provincial monitoring survey between 2002-2007. • Participated in the International Census between 2004-2005. • Over 485 observations have been entered into FWMIS by MULTISAR.
3.2 Habitat management.	<ul style="list-style-type: none"> • Provides information for landholders and implements BMPs through the HCS and SARC Plan programs. • Developed BMP brochure for grassland birds. • Re-seeding marginal cropland to native grassland. • Developed and updated a Habitat Suitability Index model and assisted in developing a user friendly search tool to identify areas of high priority for the long-billed curlew. 	<ul style="list-style-type: none"> • Has helped maintain and manage over 232,000 acres of native prairie for grassland birds. • Has distributed over 90 BMP brochures for grassland birds to landholders. • 1,390 acres of marginal cropland has been re-seeded back to native grasslands.
3.4 Education and communication.	<ul style="list-style-type: none"> • Developed BMP brochure for grassland birds for landholder use. • Provides information for landholders through the HCS and SARC plan programs. • Provides information through public and school presentations. • Developed the brochure <u>At Home on the Range: Living with Alberta’s Species at Risk</u> that discusses the habitat needs of the long-billed curlew and grassland birds in general. 	<ul style="list-style-type: none"> • Has distributed over 90 BMP brochures for grassland birds to landholders. • By March 2014, will have completed 26 HCSs and 78 SARC plans, all of which have recommended maintaining native grasslands for grassland birds. • 66 presentations/public meetings held for private landholders, government agencies, and school groups by MULTISAR. • Distributed over 6900 copies of the <u>At Home on the Range</u> brochure

6.10.1 Long-billed Curlew Summary

MULTISAR has contributed to the recovery of the long-billed curlew through three key actions: inventories, the maintenance of habitat, and through education and communication with the public. MULTISAR plans to continue to assist the recovery team and the recovery efforts of this species through the delivery of the MULTISAR project in priority areas that include the long-billed curlew.

6.11 Sprague’s Pipit

Table 48. MULTISAR’s contribution to the implementation of recovery actions identified in the Sprague’s Pipit Conservation Management Plan (ASRD 2010d).

Actions as Identified in the Management Plan	MULTISAR’s Contribution	Measure of Success
3.1. Inventory and monitoring.	<ul style="list-style-type: none"> • All Sprague’s pipit observations are documented and entered into the FWMIS database. 	<ul style="list-style-type: none"> • Submitted more than 2,050 sightings to the FWMIS database.
<p>3.2. Habitat Management</p> <ol style="list-style-type: none"> 1. Maintain large continuous blocks of native prairie habitat. 2. Reclaim disturbed grasslands back to native. 3. Promote grazing practices that create appropriate habitats. 4. Reduce or eliminate the use of insecticides. 5. Maintain healthy rangelands with a mosaic of habitats. 	<ul style="list-style-type: none"> • MULTISAR is a multi-species management program that encourages appropriate management of habitat for over 17 species at risk, including the Sprague’s pipit through HCSs and SARC Plans. • Currently working on restoration projects to return cultivated lands back to native grasslands. • Developed habitat models for the species to assist with identifying suitable habitat and focus habitat conservation efforts. 	<ul style="list-style-type: none"> • By March 2014, the HCS program has been active on 277,542 acres and 149,944 acres through the SARC Plan program. • MULTISAR team has maintained over 232,000 acres of native prairie habitat for use by grassland birds. • Over 90 grassland bird BMPs distributed. • Reseeded 1,390 acres of cropland to native grassland and witnessed the return of the Sprague’s pipit to one of the re-seeded properties. • Developed a Habitat Suitability Index model based on Native Prairie Vegetation Inventory. Then developed a more robust Resource Selection Function model based on the Grassland Vegetation Inventory.

Actions as Identified in the Management Plan	MULTISAR's Contribution	Measure of Success
3.2.1. Timing and setback recommendations.	<ul style="list-style-type: none"> Developed and distributed an Industrial Guidelines fact sheet. Fact sheet was updated in 2010-2011. 	<ul style="list-style-type: none"> More than 88 Industrial Guidelines fact sheets have been distributed.
3.3. Education and Communication	<ul style="list-style-type: none"> Developed and distributed grassland bird BMP fact sheet. 	<ul style="list-style-type: none"> More than 90 grassland bird BMP fact sheets have been distributed to landowners throughout the GNR.

6.11.1 Sprague's Pipit Summary

The MULTISAR project goals and objectives are closely aligned to many of the key action items identified in the Sprague's Pipit Management Plan. MULTISAR is a valuable tool in achieving action objectives of the recovery plan; in particular the objectives pertaining to inventory, maintenance of native prairie habitat, promotion of appropriate grazing practices, and multi-species conservation on the prairie. The MULTISAR project should continue to be used as a key tool in delivering the objectives of the Sprague's Pipit Management Plan.

6.12 Prairie Falcon

Table 49. MULTISAR's contribution to the implementation of recovery actions identified in the Prairie Falcon Conservation Management Plan (ESRD 2012b).

Actions as Identified in the Management Plan	MULTISAR's Contribution	Measure of Success
3.1. Inventory and monitoring.	<ul style="list-style-type: none"> All prairie falcon observations are documented and entered into the FWMIS database. 	<ul style="list-style-type: none"> Submitted more than 256 sightings and 61 nesting locations to the FWMIS database.
<p>3.2 Habitat Management –</p> <p>Maintain healthy rangelands that promote habitat for a variety of species.</p> <p>Limit use of chemical ground squirrel control agents.</p>	<ul style="list-style-type: none"> MULTISAR is a multi-species management program that encourages appropriate management of habitat for over 17 species at risk, including the prairie falcon through HCSs and SARC Plans. Promotes the importance of species at risk to landholders for pest control. Developed habitat models for the species to assist with identifying suitable habitat and focus habitat conservation efforts 	<ul style="list-style-type: none"> By March 2014, the HCS program has been active on 277,542 acres and 149,944 acres through the SARC Plan program. MULTISAR team has maintained over 232,000 acres of native prairie habitat for use by grassland birds. Over 33 ground squirrel BMPs distributed. Developed a Habitat Suitability Index model based on Native Prairie Vegetation Inventory. Then Developed a more robust

Actions as Identified in the Management Plan	MULTISAR's Contribution	Measure of Success
		Resource Selection Function model based on the Grassland Vegetation Inventory.
3.3. Education and Communication	<ul style="list-style-type: none"> • Developed and distributed raptor BMP fact sheet. • Developed the brochure <u>At Home on the Range: Living with Alberta's Species at Risk</u> that discusses the habitat needs of the prairie falcon and raptors in general 	<ul style="list-style-type: none"> • More than 92 raptor BMP fact sheets have been distributed to landowners throughout the GNR. • Distributed over 7,900 copies of the <u>At Home on the Range</u> brochure

6.12.1 Prairie Falcon Summary

The MULTISAR project goals and objectives are closely aligned to many of the key action items identified in the Prairie Falcon Conservation Management Plan. MULTISAR is a valuable tool in achieving action objectives of the recovery plan; in particular the objectives pertaining to inventory, maintenance of native prairie habitat, promotion of appropriate grazing practices, and multi-species conservation on the prairie. The MULTISAR project should continue to be used as a key tool in delivering the objectives of the Prairie Falcon Conservation Management Plan.

6.13 Western Blue Flag

Between 2002 and 2005, the majority of the western blueflag inventory, stewardship and educational work was completed through the Western Blueflag Project. In 2005, the Western Blueflag Project merged with MULTISAR. Today there is a monitoring component that is addressed through the MULTISAR project. MULTISAR currently monitors four watering improvements, three reseeding projects, and three fencing changes completed as part of the Western Blueflag Program. In 2005, western blueflag was downgraded under the Alberta *Wildlife Act* from a Threatened species to a Species of Special Concern. In 2009, MULTISAR funded the western blueflag five year inventories, the results of which found the current population estimate to be approximately 107,000 to 138,000 plants. MULTISAR conducted a HCS on two western blueflag properties in 2009 and one western blueflag property in 2010. A potentially new population was found (in seeds) on an existing HCS property in 2013. A revisit to confirm the identity (wild vs cultivated) will be done in 2014.

6.14 Additional Species

MULTISAR is also involved with several other listed species occurring in Alberta's Grassland Natural Region and on the bordering Foothills Parkland Natural Subregion through the HCS and SARC Plan programs. These species include: western spiderwort, peregrine falcon, soapweed/yucca moth, small-flowered sand verbena, long-toed salamander, trumpeter swan, prairie rattlesnake and the Ord's kangaroo rat. Many of these species or their suitable habitats have not been located on MULTISAR co-operator properties, primarily because they are only found in a few specific locations within the province. As these species and habitats are located, MULTISAR will provide BMPs and/or incentives for their protection and maintenance.

6.15 Program Summary

The MULTISAR project has successfully assisted in the implementation of many recovery and management actions for species at risk and sensitive species in the Grassland Natural Region of Alberta. MULTISAR is an important tool in education and outreach initiatives, implementation of BMPs, development of habitat improvement projects and in monitoring of species at risk. Additionally, the multi-species approach of MULTISAR allows for several species recovery actions to be included in each conservation strategy, thus decreasing the cost of implementing these actions and possible conflicts between different species at risk and their recovery.

Continued cooperation between Recovery Teams, the ESRD Species at Risk Program and MULTISAR is essential to ensure the timely implementation of the necessary recovery actions for several species at risk. To facilitate the process, Recovery Team leads for species occurring in the Grassland Natural Region should communicate with MULTISAR during the plan development and identify what aspects of the plan could be achieved through MULTISAR or multi-species initiatives. Multi-species initiatives may not be suitable with the recovery of all species but should be used whenever possible.

MULTISAR will continue to be a key tool in the implementation of species at risk recovery plans in the Grassland Natural Region.

7.0 FUTURE DIRECTION

In 2014-2015, MULTISAR will develop a new business plan outlining its goals and objectives for the next five years (2014-2019). In 2014-2015, and based on full and timely funding, MULTISAR will continue its work in its three core program areas as follows:

1. Habitat Conservation Program:
 - 1.1. Continue to seek interested landholders in priority species at risk areas and complete two new habitat conservation strategies (44,000 acres) with their cooperation and with Alberta Environment and Sustainable Resource Development, the Alberta Conservation Association and Prairie Conservation Forum. 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 the 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 completed, in implementing habitat enhancement recommendations outlined in their HCS.
 - 1.5. Implement the recommendations of the Species at Risk Conservation Plan evaluation. Complete new Species at Risk Conservation Plans or Beneficial Management Plans upon request and continue to seek interested landholders, conducting pre-assessment interviews and research, carrying out rapid assessments and delivery of final report 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 its target audiences.
- 2.2. Deliver 3-5 formal presentations at conferences, workshops, or similar events.
- 2.3. Give 5-10 presentations at landholder orientated events to promote the MULTISAR message, as well as the Habitat Conservation Program.
- 2.4. Assemble information and images, write and distribute 1 issue of the Grassland Gazette; MULTISAR's newsletter.
- 2.5. Update and reprint MULTISAR brochures or fact sheets on species at risk and beneficial management practices, as needed.
- 2.6. Regularly update MULTISAR's website, Facebook and Twitter accounts and ensure relevancy and accuracy of posted information.
3. Research, Monitoring and Data Management Program:
 - 3.1. Participate in the annual monitoring of ferruginous hawks throughout their range in collaboration with ESRD.
 - 3.2. Assist ESRD in conducting greater sage-grouse and sharp-tailed grouse monitoring on leks in southeastern Alberta.
 - 3.3. Monitor loggerhead shrike on two routes in southern Alberta.
 - 3.4. 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.
 - 3.5. Assess the relationship between wildlife species occurrences, wildlife species diversity, relative abundance, plant community type and metrics or range health.
 - 3.6. Evaluate three properties (~44,240 acres) originally assessed in 2005-2006 and 2007-2008, 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.
 - 3.7. Monitor habitat enhancement projects from up to 27 habitat conservation strategies (65+ enhancement sites) developed in the Milk River, St. Mary River and Pakowki Lake basins since 2005.
 - 3.8. Use updated habitat suitability and resource selection function models based on the new Grassland Vegetation Inventory (GVI) biophysical database and develop a new Multi-species Conservation Value model to prioritize the Grassland Natural Region for species at risk conservation.

8.0 LITERATURE CITED

- Alberta Sustainable Resource Development (ASRD). 2010a. The 2010 General Status of Alberta Wild Species. Online:
<http://www.srd.alberta.ca/FishWildlife/SpeciesAtRisk/GeneralStatusOfAlbertaWildSpecies/GeneralStatusofAlbertaWildSpecies2010/Default.aspx>.
- Alberta Sustainable Resource Development (ASRD). 2010b. Harlequin Duck Conservation Management Plan 2010-2015. Alberta Sustainable Resource Development. Species at Risk Conservation Management Plan No.4. Edmonton, AB. 17 pp.
- Alberta Sustainable Resource Development (ASRD). 2010c. Long-billed Curlew Conservation Management Plan 2010-2015. Alberta Sustainable Resource Development. Species at Risk Conservation Management Plan No.3. Edmonton, AB. 7 pp.
- Alberta Sustainable Resource Development (ASRD). 2010d. Sprague's Pipit Conservation Management Plan 2010-2015. Alberta Sustainable Resource Development. Species at Risk Conservation Management Plan No.2. Edmonton, AB. 11 pp.
- Alberta Environment and Sustainable Resource Development. 2012a. Alberta Burrowing Owl Recovery Plan 2012-2017. Alberta Environment and Sustainable Resource Development, Alberta Species at Risk Recovery Plan No.21. Edmonton, AB. 27 pp.
- Alberta Environment and Sustainable Resource Development. 2012b. Prairie Falcon Conservation Management Plan 2012-2017. Alberta Environment and Sustainable Resource Development, Species at Risk Conservation Management Plan No. 9. Edmonton, AB. 13 pp.
- Alberta Environment and Sustainable Resource Development. 2013a. Alberta Greater Sage-grouse Recovery Plan 2013-2018. Alberta Environment and Sustainable Resource Development, Alberta Species at Risk Recovery Plan No. 30. Edmonton, AB. 46 pp.
- Alberta Environment and Sustainable Resource Development. 2013b. Alberta Soapweed and Yucca Moth Recovery Plan 2012-2022. Alberta Environment and Sustainable Resource Development, Alberta Species at Risk Recovery Plan No. 25. Edmonton, AB. 24 pp.
- Alberta Environment and Sustainable Resource Development. 2013c. Species at Risk 2012-2013 Recovery Action Summary, Short-Horned Lizard. Alberta Environment and Sustainable Resource Development. Edmonton, AB. 2 pp.
- Alberta Ferruginous Hawk Recovery Team. 2009. Alberta Ferruginous Hawk Recovery Plan 2009-2014. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Recovery Plan No. 17, Edmonton, AB. 44 pp.
- Alberta Northern Leopard Frog Recovery Team. 2005. Alberta Northern Leopard Frog Recovery Plan, 2005-2010. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Recovery Plan No.7. Edmonton, AB. 26 pp.
- Alberta Swift Fox Recovery Team. 2007. Alberta Swift Fox Recovery Plan 2006-2011. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Recovery Plan No. 14. Edmonton, AB. 23 pp.
- Canada Western Blueflag Maintenance/Recovery Team. 2002, Maintenance and Recovery Plan for Western Blue Flag (*Iris missouriensis*) in Canada. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Recovery Plan No. 1. Edmonton, AB. 18 pp.

- Downey, B.L., B.A. Downey, R.W. Quinlan, S.L. Frank, D.E. Cross, D.J. Jarina, C.G. DeMaere, J. Nicholson, and P.F. Jones. 2008. MULTISAR: A Multi-Species Conservation Strategy for Species at Risk 2007-2008 Report. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report No. 117, Edmonton, AB. pp. 82
- 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. 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. 84pp.
- Endangered Species Conservation Committee. 2004b. St. Mary's Sculpin Initial Conservation Action Statement. Recommended to the Minister of Sustainable Resource Development.
- Endangered Species Conservation Committee. 2004c. Stonecat Initial Conservation Action Statement. Recommended to the Minister of Sustainable Resource Development.
- Environment Canada (EC). 2012. Species at Risk Public Registry. Online: http://www.sararegistry.gc.ca/default_e.cfm.
- 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, MT. 30pp.
- Government of Alberta (GOA). 2012. Species Assessed by Alberta's Endangered Species Conservation Committee: Short List. Online: <http://srd.alberta.ca/fishwildlife/speciesatrisk/SpeciesSummaries/documents/SpeciesAssessed-EndangeredSpeciesConservationCommittee-ShortList-Nov06-2012.pdf>.
- Margoluis, R., and N. Salafsky. 1998. Measures of success: designing, managing, and monitoring conservation and development projects. Island Press. Washington, D.C., USA.
- MULTISAR. 2012. MULTISAR: A Multi-Species Conservation Strategy for Species at Risk 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 (RCS) Ltd. 2004. Beneficial Management Practises for the Milk River Basin, Alberta: a component of the multi-species conservation strategy for species at risk in the Milk River Basin (MULTISAR). Unpublished report prepared for Alberta Fish and Wildlife Division and Alberta Conservation Association. Airdrie, AB.
- 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. 84pp.
- Schwarz, C.J. 2010. Analysis of BACI Experiment. Available at: <http://www.stat.sfu.ca/~cschwarz/CourseNotes>. Accessed: January 2014.
- The Milk River Fish Species Recovery Team. 2008. Alberta Western Silvery Minnow Recovery Plan, 2008-2013. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Recovery Plan No. 16. Edmonton, AB. 54 pp.

APPENDIX A: PRELIMINARY & FOLLOW-UP SARC PLAN QUESTIONNAIRES

Species at Risk Conservation Plan Landholder Questionnaire

Ranch:

Landholders:

Location of homestead (inc. UTM's):

Year:

Observers:

In office prep work (please attached all prelim work to forms):

- HSI/MCV check
- FWMIS search
- Range Benchmark site
- GIS map
- Airphoto
- Communication with range agrologist *Contact before assessment if any leased land*
- Review of SAR recovery plans
- Other _____

Suggested report date and meeting:

Contact Information:

Phone Number:

Would you like our newsletter twice a year? If yes, electronic or hardcopy?

Electronic - Email Address:

Hardcopy - Mailing Address:

Section 1: History, Land Base and Usage

1. How long have you owned/operated this ranch? (If inherited how long has family owned ranch)?
2. What is the total land base (*i.e.*, acres) of your operation?
 - a) # Deeded:
 - b) # Leased:
3. What acres do the following contribute to the land base of your operation?
 - i. Native prairie
 - ii. Seeded pasture
 - iii. Hayland (and dates of harvest)
 - iv. Cropland
4. Can you explain the details of how you graze?
(e.g. continuous vs. rotational, approx. time/season of use, how you decide to move cows, etc.)
5. Have you ever had a range or riparian health assessment completed on any of your land? If so, by whom? Yes – private land Yes – public land No
6. Do you currently have any wildlife issues on your land?
7. Are there any short or long-term projects you plan on completing on your ranch (e.g. add watering sites, fencing, etc.).

Section 2: Wildlife and Species at Risk

1. Do you feel that it is possible to run a profitable operation while providing suitable habitat for wildlife? Y N unsure
2. Do you feel that wildlife is beneficial to your operation? Y N unsure
Please explain your opinions.
3. Do you feel that programs like MULTISAR may be useful in assisting you with maintaining suitable habitat for wildlife? Y N unsure
4. a) Do you feel that your land is important for providing habitat for species at risk and/or other wildlife? Y N unsure
- b) Do you know of any species at risk on your land? Y N unsure
If so, which ones?
5. Do you feel that species at risk should be protected by law? Y N unsure
6. Have you heard of federal and provincial legislation such as the Species At Risk Act (SARA) and the Alberta Wildlife Act? Y N
7. Do you feel this legislation has an impact on your operation? Y N unsure
If so, is the impact positive or negative?
8. Do you currently make adjustments for wildlife in your operation? Y N
If yes, please give examples.
9. a) Would you consider making changes (or additional changes) to your operation in order to enhance habitat for wildlife? Y N maybe
- b) If no, are there any particular reasons?
10. What does (or would) motivate you to consider making changes to your operation in order to enhance habitat for wildlife?
11. Do you practice any of the following:

Keeping your native prairie (not plow)	Y	N	n/a
Rotational grazing	Y	N	n/a
Resting pastures	Y	N	n/a
Delaying haying until after wildlife has nested (after July 15 th)	Y	N	n/a
Using flushing bars	Y	N	n/a
Seeding fall seeded crops	Y	N	n/a
Using zero or minimal tillage	Y	N	n/a
Maintaining shelterbelts and natural trees	Y	N	n/a
Limiting chemical use around water bodies	Y	N	n/a
Leaving vegetative buffer around wetlands when haying/cultivating	Y	N	n/a
Not draining wetlands	Y	N	n/a
Limiting grazing around wetlands	Y	N	n/a
Removing invasive alien weeds	Y	N	n/a
Minimizing environmental disturbance from industry	Y	N	n/a

12. Are you willing to share wildlife sightings on your ranch with MULTISAR? Y N

7. Is the MULTISAR sign that we provided you still in good condition, or do you need another one?

Section 2: “This section helps us guide our SARC Plan program and makes us understand your circumstances.”

1. Do you feel that it is possible to run your operation while keeping the needs of wildlife in mind?

Y N unsure

4. How would you categorize wildlife in regards to your ranching (farming) operations (circle one).

- a. Important to my operation
- b. No impact to my operation, but I love having them and seeing them on the landscape.
- c. Negatively affect my operation
- d. I don't think about it.

5. How would you categorize the benefits of programs like MULTISAR. (circle one)

- a. Provide me with general wildlife knowledge for my property.
- b. Provide me with knowledge to make management changes beneficial to my operation.
- c. Both of the above
- d. None of the above

6. Has the MULTISAR program changed your perceptions of wildlife and/or species at risk? Explain.

5. a) Do you feel that your land is important for providing habitat for species at risk and/or other wildlife?

Y N unsure

b) Do you know of any species at risk on your land? Y N unsure

If so, which ones? (*May not need to ask if already mentioned in discussion*)

Section 3: Wrap Up

1. Are there any projects that you would like to complete? (*off stream watering units, fencing water bodies, re-seeding permanent cover, bioengineering, etc*)

2. Do you have any suggestions or comments for us to improve our Species At Risk Conservation Plans?

3. Is a SARC Plan something that you could see yourself recommending to your neighbours or friends?

yes no

4. Is there anything else we can do for you? (Provide you with information about wildlife or wildlife issues, technical assistance, etc.)

(Tell them about any special events / projects relevant to them). Please keep in touch and feel free to contact us at any time.

That is all, thank you very much for your time. Have a nice day!

APPENDIX B: LIST OF ACRONYMS

ACA	Alberta Conservation Association
AFGA	Alberta Fish and Game Association
ESCC	Endangered Species Conservation Committee
ESRD	Alberta Environment and Sustainable Resource Development
ATPR	Alberta Tourism, Parks and Recreation
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
MLA	Member of the Legislative Assembly
MULTISAR	Multiple Species At Risk
PCF	Prairie Conservation Forum
RH	Range Health
SAR	Species at Risk
SARC	Species at Risk Conservation
SARC Plan	Species at Risk Conservation Plan

For a list of additional reports in the Alberta Fish and Wildlife Species at Risk Report Series, please go to the website:

<http://esrd.alberta.ca/fish-wildlife/species-at-risk/species-at-risk-publications-web-resources/default.aspx>