Alberta Conservation Association

2021/22 Project Summary Report

Project Name: Connectivity Project

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Partnerships

Alberta Environment and Parks
Alberta Fish & Game Association (Zone 1)
Canadian Agricultural Partnership
Lethbridge Fish and Game Association
Pheasants Forever
Southern Alberta Bowhunters Association
St. Mary River Irrigation District
Taber Irrigation District

Key Findings

- This was our fourth year working with St. Mary River Irrigation District (SMRID) to develop comprehensive habitat conservation strategies designed to improve wildlife habitat and water quality across 18 reservoirs and 10,000 acres. After the third field season, we have completed assessments on 13 reservoirs.
- We completed vegetation assessments and wildlife surveys on the lands surrounding five reservoirs in 2021 including Forty Mile Reservoir, Klaudt Reservoir, Sauder Reservoir, Seven Persons Reservoir, and Yellow Lake Reservoir. These vegetation assessments focused on lotic riparian health (8), lentic riparian health (71), riparian visual health (1), range health (34), tame pasture health (3), as well as range visual health (12).

- We observed 94 unique wildlife species and recorded 692 incidental wildlife encounters in the 2021 field season, 18% of which being species at risk at the provincial or federal level.
- We completed range health assessments on an SMRID-owned parcel north of Horsefly Lake Reservoir and provided grazing and Animal Unit Month (AUM) recommendations for future operations.
- We collaborated with leaseholders to implement recommended AUM reductions to prevent overgrazing and re-establish functional habitat connectivity on SMRID lands from the 2020 field season.
- Working with SMRID staff, we first sprayed herbicide and then purchased an appropriate grassland blend and seeded 230 acres of previously developed land back to permanent cover near Horsefly Lake Reservoir.
- We worked with SMRID to plan and complete fencing to exclude cattle grazing on approximately 10 km of sensitive shoreline along the SMRID boundaries on Horsefly Lake Reservoir, Murray Lake Reservoir, and Stafford Reservoir.
- With support of Pheasants Forever, we collected data for the shrub heights, species present, and mortalities of last year's 9,500 planted shrubs; completed manual and mechanical weed control within the shrub rows; and planted 1,500 replacement shrubs at the peninsula on Sauder Reservoir (SMRID).
- We planted approximately 500 willows at an inlet along Stafford Reservoir to enhance riparian and upland game bird habitat.
- In spring 2021, we completed point count surveys for migratory birds on Chin, Murray Lake, Raymond, Sherburne, and Stafford reservoirs and sharp-tailed grouse surveys on Stafford, Chin, and Murray reservoirs.
- We installed cattle panels and page wire around the base of trees with active ferruginous and Swainson's hawks nesting sites at Chin Reservoir to prevent nest abandonment from cattle disturbances.

Abstract

The Connectivity Project addresses habitat fragmentation in southern Alberta by working collaboratively with irrigation districts, municipalities, conservation groups, recreationists, and agricultural producers to improve water quality and re-establish and enhance wildlife habitat. Doing so will benefit agriculture, hunters, anglers, and other outdoor enthusiasts. In 2021, we completed the fourth year of the project and the third year of extensive data collection around five St. Mary River Irrigation District (SMRID) reservoirs: Forty Mile Reservoir, Klaudt Reservoir, Sauder Reservoir, Seven Persons Reservoir, and Yellow Lake Reservoir. We completed eight lotic riparian health assessments, 71 lentic riparian health assessments, one visual riparian assessment, 34 range health assessments, two tame pasture health assessments, and 12 visual range assessments for use in the third Habitat Conservation Strategy for SMRID. We made 692 incidental wildlife observations across the five reservoirs, 18% of which were species at risk. These data provide a baseline assessment of the plant communities around each reservoir and the wildlife species utilizing them. It also identifies priority sites where habitat enhancements and/or grazing management recommendations will improve ecosystem service provision (carbon sequestration, water filtration and nutrient retention, wildlife habitat, and biodiversity). The hydrogeomorphology of these reservoirs pose ecological and physical challenges to these ecosystem service provisions, developing unique data sets and vegetation communities in comparison to natural systems. To help mitigate these challenges, adaptive management plans to enhance and protect these ecosystems were developed and implemented in 2021. Working with the partners of the project, approximately 10 km of exclusion fencing on three reservoirs were installed, and upland game bird and wildlife habitat was planted along two reservoirs and a SMRID-owned parcel. We also implemented integrated protection plans for sensitive and at-risk wildlife species in select areas. The recommendations from the report are developed to provide data, design, and implement enhancements to improve water quality and wildlife habitat, while cohesively increasing the resilience of the irrigation district operations and grassland ecosystems.

Introduction

Loss of habitat and habitat fragmentation is one of the greatest underlying threats to many of our wildlife species in southern Alberta. To mitigate the effects of habitat loss and fragmentation, a broad range of stakeholders are needed to re-establish functional habitat connectivity across a large land base. Establishing strong relationships with partner groups including municipalities, town councils, chambers of commerce, irrigation districts, and other conservation groups is essential for the development of these large-scale projects. The Connectivity Project aims at capitalizing on the relationships that Alberta Conservation Association (ACA) has built with these various groups through other projects like MULTISAR, the Taber Pheasant Festival, and Milk River Ridge Water Quality Stewardship Initiative. Working collaboratively with other program areas within ACA, we offer landowners, grazing reserves, and irrigation districts a multitude of options to meet their operational needs as well as benefit wildlife and re-establish connectivity across the southern landscape.

In 2018, ACA and St. Mary River Irrigation District (SMRID) entered a Memorandum of Understanding (MOU), with the overarching goal of improving water quality and habitat important for wildlife within their system. The first phase of the MOU includes the development of comprehensive habitat conservation strategies that assess the health of the vegetation communities around 18 reservoirs. These 18 reservoirs will cover approximately 10,000 acres of land that together spans more than 360 km of shoreline habitat. As of 2021, ACA has completed range, riparian, and wildlife assessments on 13 reservoirs covering approximately 9,300 acres of SMRID lands over three years of data collection. Baseline water quality sampling will be undertaken by SMRID to provide additional data for the project. These assessments will be compiled into habitat conservation strategy reports for each year of fieldwork, which will guide the implementation of enhancements and grazing practices to improve both water quality and wildlife habitat.

Methods

We meet with municipalities, irrigation districts, and grazing reserves to better understand their operations and discuss habitat needs of various wildlife. Using our range (Adams et al. 2016) and riparian (Ambrose et al. 2009; Fitch et al. 2009) assessment data, we work with stakeholders to

identify priority habitat enhancements and grazing management recommendations that can be dovetailed into their operations to benefit not only wildlife, but also improve other parameters such as water quality, vegetative stands for grazing, water availability for grazing, social licensing, and recreational access. Additionally, we conduct wildlife surveys to record the local population numbers and species present to provide baseline data for future monitoring of enhancements. After initial plans have been developed with the landholder, we approach other conservation groups for assistance in terms of letters of support, funding, and staffing needs. Once plans are finalized, we implement multi-year habitat enhancement strategies on the landscape, continuing to monitor and adaptively manage enhanced ecosystem service provisions.

We engage the public in a variety of ways to profile the projects and partners. Public engagement activities include presentations at workshops, stakeholder meetings, signage, public presentations, distribution of information booklets, site tours, and social media. As part of our long-term adaptive plan, we evaluate the long-term impacts of enhancement actions on upland game birds (e.g., pheasants, grey partridge, and, in some areas, sharp-tailed grouse) as well as other wildlife species that may also be affected. We develop seed blends to create permanent cover and re-establish functional wildlife connectivity over developed landscapes. Habitat protection tools are utilized to prevent local wildlife populations to decline further in sensitive areas, and we monitor the success of these enhancements throughout the project. We also monitor shrub growth, mortality, and species to determine the shrub-planting techniques that are most beneficial for developing habitat for these target species. Additionally, we use a photo-point protocol to document changes in habitat over time resulting from these habitat enhancements.

Results

Over the summer of 2021, we collected vegetative data (129 assessments) on approximately 2,255 acres of SMRID lands along five reservoirs: Forty Mile Reservoir, Klaudt Reservoir, Sauder Reservoir, Seven Persons Reservoir, and Yellow Lake Reservoir. Of these assessments, 49 were scored using range health (34), visual assessment (12), or tame health guidelines (3); and 80 were scored using lentic (71), lotic (8), or visual (1) riparian health protocols and

guidelines. We made 692 incidental wildlife observations across the five reservoirs, 18% of which were species at risk. Individual summaries of these five reservoirs are listed below:

- Forty Mile Reservoir: The average riparian health score is 48% among 46 lentic sites and one lotic site. The average range health score is 76% among 30 range health, two tame health, and four visual range assessments. We observed 50 unique wildlife species with ten categorized as species at risk.
- Klaudt Reservoir: The average riparian health score is 66% among two lentic sites and three lotic sites. There were no range health assessments done on this reservoir. We observed 29 unique wildlife species with six categorized as species at risk.
- Sauder Reservoir: The average riparian health score is 58% among 18 lentic sites and one lotic site. The average range health is 70% among two range health, one tame health, and four visual range assessments. We observed 63 unique wildlife species with 11 categorized as species at risk.
- Seven Persons Reservoir: The average riparian health score is 79% among two lentic sites and three lotic sites. Three visual health assessments were completed: two scored low healthy with problems, and one scored high healthy with problems. We observed 26 unique wildlife species were observed with six categorized as species at risk.
- Yellow Lake Reservoir: The average riparian health score is 74% among three lentic sites, and one visual riparian assessment. The average range health score is 67% among two range health and one visual range assessments. We observed 41 unique wildlife species and ten species at risk.

We worked with leaseholders on lands surrounding SMRID reservoirs to implement recommended habitat enhancements from observations and data gathered in previous field seasons, including exclusion fencing and Animal Unit Month (AUM) recommendations and reductions. These enhancements will apply suitable stocking rates for livestock, while collectively improving ecosystem provision within the riparian and upland landscapes.

In 2020, we identified sensitive shorelines along Horsefly Lake, Murray Lake, and Stafford reservoirs that indicated a decline in riparian health from induced grazing pressures. To limit the

impacts of overgrazing to the riparian zones, we worked with SMRID in 2021 to install approximately 10 km of fence along these right-of-way boundaries.

In addition to the 2021 reservoir assessments, we completed range health assessments on an SMRID-owned parcel north of Horsefly Lake Reservoir and provided grazing and AUM recommendations for future operations.

Collaborating with SMRID staff, we worked cohesively to first spray herbicide and then seed permanent grassland cover into approximately 230 acres of land by Horsefly Lake Reservoir. The seed blend consisted of agronomic and native grass species to provide initial cover, and in future years of the project, forb species will be selectively integrated into the plant community. Broad-leaf invasive and undesirable species control and eradication is a priority for this parcel of land, so we will not incorporate preferred forb species until a successional grassland habitat is established in the following years.

Working with SMRID and Pheasants Forever, we continued to monitor the succession rate of the shrub species we selected and planted in the 2020 field season on a 156-acre parcel of land along the south shore of Sauder Reservoir. After the first growing season, we collected data for the height, species present, and mortalities of the 9,500 shrubs planted. In 2021, dominant shrubs observed were sea buckthorn and caragana; 1,500 replacement shrubs were planted by hand; and weed removal / maintenance between shrub rows was completed to increase shrub survival rates.

We planted approximately 500 willow cuttings on Stafford Reservoir in April of 2021 to improve wildlife habitat and water filtration from upland runoff. Dormant willow stakes were harvested from compatible habitat conditions within healthy riparian stands during the winter of 2021. Willows were chosen due to their quick regeneration rates and their ability to effectively stabilize riparian soils.

A preliminary desktop Fisheries and Wildlife Management Information System (FWMIS) review was conducted prior to wildlife surveys in 2021 to identify any historical sightings of sensitive or at-risk species within SMRID right-of-way boundaries. Any wildlife species observed throughout the 2021 field season were recorded within the FWMIS database.

In the spring of 2021, we completed five sharp-tailed grouse survey routes along Chin (2), Murray Lake (2), and Stafford (1) reservoirs. These survey routes were completed during the

recommended time of day, season, and within suitable sharp-tailed grouse habitat. Although these reservoirs were indicated to have historical FWMIS sightings, we observed no audio/visual activity or lek locations.

We completed point count surveys to document any migratory songbird activity on Chin, Murray Lake, Raymond, Sherburne, and Stafford reservoirs in the spring of 2021. Conducting these surveys provides baseline data for the reservoirs as migratory songbird populations can act as an ecological indicator of how healthy an ecosystem is. Point count surveys for the reservoirs assessed in the 2021 field season will commence in the spring of 2022 during the ideal environmental and seasonal conditions, and time of day according to standardized regulations and protocols.

Wildlife data collected in 2020 identified sensitive wildlife habitats requiring additional enhancements and monitoring plans. In 2021, we installed cattle panels and page wire around the base of trees at Chin Reservoir. Implementing these enhancements will alleviate cattle interference of active ferruginous and Swainson's hawks nesting sites, preventing possible nest abandonment.

Conclusions

The functionality and integrity of habitat connectivity relies crucially on the structural and ecological characteristics of the landscape. Riparian zones of manipulated, hydrological regimes may not fully develop due to the hydrogeomorphology of these systems, and the upland vegetation community becomes the primary source of wildlife habitat and filtration of agricultural runoff. Substantial plant vigor within these communities is essential to prevent the decimation of local population numbers of upland game birds, and other wildlife species by providing thermal cover and security. By integrating management and monitoring techniques within these systems, reservoirs can provide similar functional values of a healthy, natural system, connecting the landscape's economic and ecological values.

Coupled with long-term monitoring, we develop habitat enhancement plans on an evolving landscape while continuing to detect, assess, and validate the progress to ensure the longevity of wildlife species, and ecosystem provision within these landscapes. Additionally, throughout this

multi-year project, we have made considerable headway in developing partnerships with key members of the agricultural community and landholders within southern Alberta. These partnerships enable us to continuously reach our co-operative goal to integrate anthropogenic, and agricultural production, while providing ecosystem enrichment to enhance vegetative resources and habitats.

In future efforts of this project, we will continue to monitor and implement enhancements along sensitive habitat identified through our assessments, provide AUM and grazing recommendations to prevent the over grazing and extensive utilization of buffer zones, and provide resources and tools to help educate the public and landholders on the purpose and progress of this project. We will continue to develop relationships with the public, leaseholders, and stakeholders, connecting and creating partnerships within southern Alberta.

Communications

- Communications with the public were difficult in 2021. However, we met with some landowners to continue to implement habitat enhancements and grazing management changes from the 2020 field season.
- We met with the SMRID board to present the enhancement opportunities and data collected from the 2020 field season's assessed reservoirs. Opportunities that were suggested by our team have the support of SMRID, and we have been collaborating to implement these enhancements.
- We attended numerous meetings to discuss habitat enhancements and partnership opportunities.
- We received letters of support for the project from Lethbridge Fish & Game Association, Magrath Rod and Gun Club, Pheasants Forever – Calgary chapter, Pheasants Forever – Chinook chapter, Backcountry Hunters and Anglers – Alberta chapter, Medicine Hat Fish & Game Association, and Southern Alberta Bowhunters Association.
- We published an article entitled "A Winning Combination: Connect+Collaborate+Conserve" in the Spring/Summer 2021 issue of *Conservation Magazine* that highlights the partnerships, history, and goals of the Connectivity Project. Approximately 14,000 issues of the magazine were distributed to readers.

Literature Cited

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Photos

Photo 1. Dotted blazing star (*Liatris punctata*) observed on Klaudt Reservoir.
Photo: Cailyn Wilson

Photo 2. Habitat enhancements for a ferruginous hawk active nest on Chin Reservoir.
Photo: Samuel Vriend

Photo 3. Northern leopard frog observed on Sauder Reservoir. Photo: Samuel Vriend

Photo 4. Short-horned lizard observed on Forty Mile Reservoir. Photo: Samuel Vriend