Alberta Conservation Association

2022/23 Project Summary Report

Project Name: Connectivity Project

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Partnerships

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

Key Findings

- This was our fifth year working with St. Mary River Irrigation District 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 17 reservoirs.
- We completed vegetation assessments and wildlife surveys on the lands surrounding four reservoirs and one drainage system in 2022, including Bullshead Reservoir, West Medicine Hat Reservoir, Stormham Reservoir, Weston Lake Reservoir, and Middle Coulee Drainage. These vegetation assessments focused on lotic riparian health (31),

lentic riparian health (9), riparian visual health (12), range health (8), as well as range visual health (25).

- We observed 62 unique wildlife species and recorded 166 incidental wildlife encounters in the 2022 field season, 19% of which are classified as species at risk at the provincial or federal level.
- We collaborated with leaseholders to implement recommended Animal Unit Month (AUM) reductions to prevent overgrazing and re-establish functional habitat connectivity on SMRID lands from the 2021 field season.
- Working with SMRID staff, we continued habitat maintenance which included spraying and mowing on 230 acres of land that was seeded to permanent cover.
- We worked with SMRID to plan and complete fencing to exclude cattle grazing on approximately 11 km of sensitive shoreline along the SMRID boundaries on Klaudt Reservoir, Chin Lake Reservoir, Horsefly Lake Reservoir, and the Malloy Drain.
- We planted approximately 400 willows and hydroseeded approximately 0.5 hectares at Sauder Reservoir along a riparian area.
- In spring 2022, we completed point count surveys for migratory birds on Forty Mile, Sauder, and Seven Persons reservoirs; and sharp-tailed grouse surveys on Forty Mile reservoir.

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 2022, we completed the fifth year of the project and the fourth year of extensive data collection around four St. Mary River Irrigation District (SMRID) reservoirs: Bullshead Reservoir, West Medicine Hat Reservoir, Stormham Reservoir, Weston Lake Reservoir, and one drainage called Middle Coulee Drainage. We completed 31 lotic riparian health assessments, nine lentic riparian health assessments, 12 visual riparian assessment, eight range health assessments, and 25 visual range assessments for use in the fourth Habitat Conservation Strategy for SMRID. We made 166 incidental wildlife observations across the four reservoirs, 17% 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. Baseline assessments also identify 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 2022. Working with the partners of the project, approximately 11 km of exclusion fencing on four reservoirs were installed, exposed areas were reseeded, and willows and shrubs were planted in specified areas for the benefit of wildlife and water quality. We also implemented integrated protection plans for sensitive and at-risk wildlife species in select areas. The recommendations from the report are developed to assist with planning, and aid in the design of enhancements needed 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 Multiple Species at Risk (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 include 10,000 acres of surrounding land that together spans more than 360 km of shoreline habitat. As of 2022, we have completed range, riparian, and wildlife assessments on 17 reservoirs covering approximately 9,600 acres of SMRID lands over four 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 [*Phasianus colchicus*], grey partridge [*Perdix perdix*], and, in some areas, sharp-tailed grouse [*Tympanchus phasianellus*]), 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 2022, we collected vegetative data (85 assessments) on approximately 2,255 acres of SMRID lands along four reservoirs and one drainage system: Bullshead Reservoir, West Medicine Hat Reservoir, Stormham Reservoir, Weston Lake Reservoir, and Middle Coulee Drainage. Of these assessments, 33 were scored using range health (8) or visual range assessment (25), while 52 were scored using lentic (9), lotic (31), or visual (12) riparian health protocols and guidelines. We made 166 incidental wildlife observations across the four

reservoirs, 17% of which were species at risk. Individual summaries of these four reservoirs are listed below:

- Bullshead Reservoir: The average riparian health score was 68% among three lentic sites and one lotic site. Two riparian visual assessments were completed, one scoring Healthy with Problems and the other scoring Unhealthy. Two range visual assessments were completed, one scoring Unhealthy and the other High Healthy with Problems. We observed 15 unique wildlife species with four of them categorized as species at risk.
- West Medicine Hat Reservoir: The average riparian health score was 85% among two lentic sites and two lotic sites. Three riparian visual assessments were completed, two scoring Healthy and one scoring Healthy with Problems. Two range visual assessments were completed, one scoring Unhealthy and the other Low Healthy with Problems. We observed 33 unique wildlife species with eight of them categorized as species at risk.
- Stormham Reservoir: The average riparian health score was 81% among four lentic sites. Three riparian visual assessments were completed, one scoring Healthy and two scoring Healthy with Problems. No range data was collected. We observed 16 unique wildlife species with four of them categorized as species at risk.
- Weston Lake Reservoir: Weston Lake Reservoir was visited but not assessed due to a lack of SMRID right-of-way around the reservoir.
- Middle Coulee Drainage: The average riparian health score was 64% among 28 lotic sites. Three visual riparian assessments were completed, two scoring Healthy with Problems and one scoring Unhealthy. Eight rangeland health assessments were completed, scoring an average of 50% based on the number of assessments alone. Additionally, 21 visual range assessments were completed with two scoring Healthy, two scoring High Healthy with Problems, nine scoring Healthy with Problems, six scoring Low Healthy with Problems, and two scoring Unhealthy. We observed 41 unique wildlife species with eight of them categorized as 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 2021, we identified sensitive shorelines along a drainage that feeds into Chin Lake Reservoir, Klaudt Reservoir, Malloy Drain, and along a drainage feeding into Horsefly Lake Reservoir, 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 2021/22 to install approximately 11 km of fence along these right-of-way boundaries and to provide one off-site watering unit.

Collaborating with SMRID staff, we worked cohesively to first spray herbicide and then mow permanent grassland cover that was seeded the previous year on 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. As part of our ongoing maintenance, we mowed and disced between the shrub rows to encourage shrub growth by reducing competition.

We planted approximately 400 willow cuttings and hydroseeded approximately 0.5 hectares on a reclaimed riparian area along Sauder Reservoir. Dormant willow stakes were harvested from compatible habitat conditions within healthy riparian stands during the winter of 2022. Willows were chosen due to their quick regeneration rates and their ability to effectively stabilize riparian soils.

A preliminary desktop review of Alberta's Fisheries and Wildlife Management Information System (FWMIS) was conducted prior to wildlife surveys in 2022 to identify any historical sightings of sensitive or at-risk species within SMRID right-of-way boundaries. Any wildlife species observed throughout the 2022 field season were recorded in the FWMIS database.

In the spring of 2022, we completed two sharp-tailed grouse survey routes along Forty Mile reservoir. These survey routes were completed during the recommended time of day, season, and within suitable sharp-tailed grouse habitat. However, we did not observe any individuals or record any grouse activity.

We completed point count surveys to document any migratory songbird activity on Forty Mile, Sauder, and Seven Persons reservoirs in the spring of 2022. 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 areas assessed in the 2022 field season will continue in the spring of 2023 during the ideal environmental and seasonal conditions, and appropriate time of day, according to standardized regulations and protocols.

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 vigour 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 overgrazing 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

- We met with six landowners to continue to implement habitat enhancements and grazing management changes from the 2022 field season.
- We met with the SMRID board to present the enhancement opportunities and data collected from the 2022 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.

Literature Cited

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Photos

Photo 1. Coulee habitat on SMRID lands. Photo: Samuel Vriend

Photo 2. Badland habitat on SMRID lands. Photo: Samuel Vriend

Photo 3. Bullsnake observed on SMRID lands. Photo: Samuel Vriend

Photo 4. Great plains toad observed at Sherburne reservoir. Photo: Samuel Vriend