

Alberta Conservation Association 2017/18 Project Summary Report

Project Name: Enchant Project – Strong Farmlands. Thriving Habitat.

Wildlife Program Manager: Doug Manzer

Project Leader: Layne Seward

Primary ACA staff: Aiden Bateman, Jalen Hult, Kris Kendell, Doug Manzer, Kyle Prince, Blair Seward, Layne Seward, and Mike Uchikura

Partnerships

Haggins Family
Stamp Farms

Key Findings

- Four of five collared grey partridge females had successful nests in spring 2017.
- Two small wetlands were constructed in 2017 to reduce the amount of crop lost to periodic flooding, and provide thermal cover for pheasants during harsh winter storms.
- We received very positive feedback from our presentation at the 33rd International Union of Game Biologists Congress, “Life on the Fringe – can grey partridge thrive on a modern farm?” Our success in gaining high densities of grey partridge without predator control was considered novel by many.
- Naturalized hen pheasants went from none in 2014, to approximately two hens per square kilometres in spring 2017. With this threshold we opted not to release additional pen-reared hens in 2017 with the hope that the small naturalized population will increase on its own.
- The early spring density of grey partridge pairs continues to increase on the farm from ten square kilometres in 2014 to 35 square kilometres in 2017.
- We detected 62 bird species and two amphibian species during baseline monitoring on the farm in 2017/18.

Introduction

Crop production has evolved dramatically since the post-war recovery following WWII. Advances in equipment, knowledge, irrigation, and chemical applications have increased yields and decreased farm risk, but these advances have also had the unintended consequence of reducing resources important for game birds. With more than 24 million acres now under cultivation in Alberta, hunting opportunity for upland game birds has diminished substantively.

We have a long-term working relationship with a farm to evaluate approaches for re-establishing vibrant upland game bird densities while maintaining a profitable farming operation. We also monitor a range of non-target species to assess how these treatments impact biodiversity (amphibians and songbirds). We trial enhancements that focus on improving habitat features

important for nesting, brood rearing, and winter survival of pheasants and grey partridge. This includes approaches within the crop, the juxtaposition of crops types and rotation, harvest method, field edge improvements, water management and wetlands, and seed trial plots. Beginning in 2014, the initial two years of the project focused on collecting baseline data to allow for comparisons in the future.

Methods

The farm is located near Enchant in a landscape highly fragmented by a mix of irrigated and dryland farming. The farm has 893 acres of irrigated land under cultivation and is rented to a local seed producer. The cultivated land is divided among six fields, all with modern irrigation pivots. The farm is not a natural system so our approach is to target enhancements that are compatible with modern farming and also take advantage of marginal areas. For example, chick survival is closely linked to insect abundance, so we are testing seed varieties in mixes and in individual plots to evaluate their suitability as brood-rearing habitat. A brood-rearing mix is being trialed in dryland areas that currently lack insect-rich habitat.

A similar approach is taken with seed varieties that mimic the tall structure provided by shrubs. Tall structure is an important resource for both game bird species and commonly found within their respective home ranges. Males defend their territory from other males of the same species, so we are evaluating if tall edge habitat spaced around the farm can improve breeding densities. The first step is trialing tall-seed varieties in plots (sorghum, millet, and corn) and assessing germination and growth in dry and irrigated locations. After trialing various seeds in the plots, we will develop seed blends to trial on the farm to see how they grow and how wildlife responds to them. Woody shrubs take at least five years to grow tall enough to be beneficial to these species, so these annuals provide a short-term alternative. Annuals are cheaper over the short term, and for some operators, they may be the only viable option for creating territorial edge habitat.

We also plan to explore *within* crop strategies that may improve chick survival, site fidelity, and winter survival. Secondary cover crops that sit below the primary crop may provide more invertebrates for chicks and offer hiding cover over the fall and winter after the primary crop is cut. Cover crops may also benefit farm operations by adding nutrients to the soil. Stripper headers are a new technology that cut very near the top of cereal stems, removing only the grain head. They leave much taller stubble, which may provide better escape and roosting cover, and possibly improve site fidelity and overwinter survival. These headers may benefit farmers if they improve moisture retention, reduce erosion, and contribute organic content to the soil.

We attempted to capture female grey partridge and fit them with telemetry collars for tracking. We are hoping to gather pertinent information from the telemetry data such as nesting success, brood rearing success, habitat selection during nesting, overall habitat preferences, and dispersal.

We also investigate ways to gain more utility from runoff and irrigation water while reducing unintended consequences. Surface water causes erosion and can move unwanted nutrients into canals and reservoirs; these nutrients may also leech into groundwater. We are mapping contours and siting wetlands that will act as water filters. Wetland areas are important for wildlife, and the

surrounding vegetation is a hotbed for insects that are vital for chick survival. Cattail complexes also serve as refuge areas for pheasants during cold winter periods.

Baseline biodiversity monitoring is completed each year at sites on and off (control sites) the farm to allow for a comparison of patterns over time. As the project continues, we will establish graduate student projects in partnership with universities to help answer specific questions.

Results

In 2017, we trialed the edge habitat mix (sorghum/millet/corn varieties) in areas with and without irrigation. Unfortunately, growth in both the irrigated and non-irrigated plots was poor. We attribute the poor growth to spray drift from the in-crop spraying on the farm. Dirt work was undertaken by the landowner in spring/summer 2017 to establish two new wetlands and cattail complexes. The four wetland complexes that were constructed in 2016 were filled with water and have developed thriving cattail communities. We planted 1,500 shrubs in a nine-row shelterbelt that will eventually provide wind and snow protection for a newly formed wetland. We laid fabric mulch over the shrubs to aid in moisture retention and reduce weed competition.

In early spring, all five collared female grey partridges nested. Four out of the five collared partridges successfully hatched a nest. The density of partridge pairs has increased on the farm from 55 pairs in 2014, to 118 in 2015, to 151 in 2016, to 187 in 2017 ($10.3/\text{km}^2$, $22.2/\text{km}^2$, $28.4/\text{km}^2$, $35.2/\text{km}^2$ in 2014 to 2017, respectively). The density of grey partridge in our autumn survey was the highest it's been since starting the surveys in 2014 with about 204.3 partridge/ km^2 . We reached a threshold of two hen pheasants per km^2 resulting in no hen pheasants released on the farm in 2017 in hopes that the naturalized pheasant population will increase. Clay-colored sparrows were the most common songbird species detected at point count stations, followed by brown-headed cowbirds then Brewer's blackbirds. Blackbirds were the most represented songbird group, with six species identified. We detected 11 species of waterfowl with Canada goose being most common. Boreal chorus frogs and western tiger salamanders (species of concern federally) were the only amphibians detected.

Hunting occurs annually on the farm. For the past four years, harvest has occurred with waterfowl, deer, and pen-reared male pheasants. Based on fall counts, we established a conservative fall harvest of 50 grey partridge in 2017. This will be re-evaluated annually and adjusted in accordance with population goals and harvest objectives. The landowner releases pen-reared male pheasants each fall for harvest in the same year. The site was also used in 2017 by Pheasants Forever to host a mentored hunt with students from a local college. Pen-reared male pheasants were used for this event.

Conclusions

Finding approaches that increase game bird densities while complementing or minimizing impacts to farm operations is key for convincing producers that both goals are attainable on the same farm. We anticipate that overall species biodiversity and abundance will benefit from enhancements targeted for game birds.

Communications

- Presented at the 33rd International Union of Game Biologists Congress, “Life on the Fringe – can grey partridge thrive on a modern farm?”

Photos



Hairy vetch habitat strip planted for brood rearing habitat. Photo: Kyle Prince.



Two collared grey partridge females taking flight. Photo: Aiden Bateman.



A sorghum strip planted along the field edge to help provide thermal cover in winter and escape cover. Photo: Kyle Prince



A female grey partridge fitted with a radio collar and about to be released.
Photo: Kyle Prince