

## **Alberta Conservation Association 2015/16 Project Summary Report**

**Project Name:** Sharp-tailed Grouse Habitat Inventory and Stewardship

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**Project Leader:** Robb Stavne

**Primary ACA staff on project:** Robb Stavne

### **Partnerships**

Alberta Environment and Parks  
Dunvegan Fish & Game Association  
Peace Country Beef & Forage Association  
Wanham Provincial Grazing Reserve  
Whitemud Provincial Grazing Reserve

### **Key Findings**

- We helped design a wildlife-friendly fence for a local landowner to minimize risk of collisions by sharp-tailed grouse at an adjacent site.
- We spoke to the general public about habitat needs and general status of sharp-tailed grouse in the Grande Prairie region at the Trumpeter Swan Festival.
- We found low attendance rates of sharp-tailed grouse at historical lek sites at the Wanham Grazing Reserve in spring 2015.
- We delivered presentations to the members and boards of the Wanham and Whitemud provincial grazing reserves.
- We formed a partnership with the Peace Country Beef & Forage Association to work on habitat stewardship in relation to beef production.
- We used an unmanned aerial vehicle to attempt to conduct lek surveys remotely but found that the resolution of the imagery was not sufficient to detect birds at the site.

### **Introduction**

Sharp-tailed grouse populations are likely declining in some areas of Alberta, particularly in areas where open grassland habitats are fragmented and converted for other uses, such as occurs in northern Alberta. To advocate for this sensitive species, we are approaching individuals and groups in a variety of ways. From a grassroots perspective, we target landowners through numerous conversations about their role as stewards of wildlife against an agricultural backdrop. Conversations occur individually with landowners at their properties or over the phone, in comfortable group settings as part of social community engagements, or at other opportunistic events.

## Methods

Building on relationships established in previous years, we continued to interact with members of the public in a variety of ways. From past work in the Wembley area west of Grande Prairie, we have maintained contact with landowners through e-mails and telephone calls to inquire about local sharp-tailed grouse populations and how landowners have observed or otherwise interacted with them. Through these interactions, we were approached by a landowner to help design a wildlife-friendly fence that would minimize the risk of fence collisions by grouse along a property line directly adjacent to an active lek. We also set up a poster display at the local Trumpeter Swan Festival held annually in this area to inform the general public about sharp-tailed grouse habitat needs and concerns.

To maintain an informed dialogue with managers and users of the Wanham Grazing Reserve, we worked with volunteers from Dunvegan Fish & Game Association to conduct a population inventory of sharp-tailed grouse at eight lek sites identified from past work. Of primary interest was a lek site occurring in a pasture (Pasture 11C) that had been broken and unsuccessfully reseeded to tame forage in the fall of 2011. Results of this inventory, along with information on habitat needs of sharp-tailed grouse, were conveyed during a presentation at the Wanham Provincial Grazing Reserve Annual General Meeting. We also delivered a presentation to members of the Whitemud Provincial Grazing Reserve to initiate inventory work in subsequent years.

Over the next three years, the Peace Country Beef & Forage Association will be conducting trials at the Wanham Provincial Grazing Reserve aimed at identifying optimal methods for pasture rejuvenation. This work could reduce impacts to the birds during their nesting season; therefore, we initiated discussions with this organization about including sharp-tailed grouse habitat needs into its trials. Outcomes from this study will also address habitat concerns for grouse in subsequent years.

In spring 2015, we conducted a brief pilot study to understand the utility of using an unmanned aerial vehicle (UAV) outfitted with a live-streaming and recordable video camera to identify locations of active sharp-tailed grouse leks and enumerate individual birds occupying the sites. Our objectives were to 1) fly a UAV over an active lek to see how visible birds were from overhead, 2) understand the efficacy of using a UAV to fly transects to detect active lek sites, and 3) determine whether the presence of a UAV would interfere with lek activity. A single lek site known to be active for the previous eight years was selected for the pilot study. Although UAV surveys at multiple lek sites would have been desirable, we surveyed a single site to minimize potential disturbance to breeding sharp-tailed grouse. The use of a single site seemed reasonable because we were interested in gauging the sightability of grouse from overhead as well as understanding their flight response.

On the morning before the trial, the lek site was surveyed in person by a trained observer to confirm its status as active. On May 8, 2015, we set up just before dawn at a location approximately 1 km from the lek site. We wanted to locate ourselves far enough away from the lek site so that our presence or the noise associated with starting the UAV would not disturb the birds, but be close enough to ensure the maximum amount of flight time was spent overhead of

the active lek site. Weather conditions were optimal for flight and sightability, with clear skies and marginal wind (<1 kph). Snow cover had completely melted. We flew a DJI Phantom 2 vehicle outfitted with a GoPro 4 Black camera. The camera was set to take photos every two seconds at 12 megapixels. Video resolution was 1080 pixels. Upon take off, the UAV was immediately brought to a height of approximately 200 m and then flown overhead to the active lek site using live-feed images of the ground to landmark. We descended the drone slowly to 150 m and then to 100 m while observing the birds directly through binoculars from the ground. After several seconds of hovering at 100 m, the birds flushed, at which point we terminated our activity. To prevent further disturbance to the lek site, we discontinued flights.

## **Results**

On several occasions throughout the year, we interacted with local landowners who have sharp-tailed grouse on their land. Through interactions with this group, we continued to promote sharing of information about the status of specific populations as well as to further the development of roles within a stewardship framework. From this interaction, we discovered a new lek site near Peace River, and we were able to help develop a wildlife-friendly fence that would minimize loss of sharp-tailed grouse that are at risk from fence collisions. At least 20 family groups and more than 100 individuals visited our poster presentation at the Trumpeter Swan Festival. In addition to being able to present grouse habitat needs to a receptive audience at the festival, we were also informed about additional lek sites not previously known to us and formed collaborative relationships with other professionals presenting at the festival.

From our work with members of the Dunvegan Fish & Game Association to inventory lek attendance at the Wanham Grazing Reserve, we found that lek attendance appears to be at its lowest point since we started inventory work in 2008 (Figure 1). Four of the eight sites that were surveyed did not appear to have any sharp-tailed grouse activity, including lek site 97 (Figure 2) around which cover had been broken and reseeded in 2011, and another lek site that has had spotty attendance during previous surveys. Anecdotally, observers did hear activity around the grazing reserve, which could indicate a shifted lek site. This information was presented to approximately 30 users of the Wanham Grazing Reserve, along with Alberta Public Lands staff and grazing reserve board members, in November 2015.

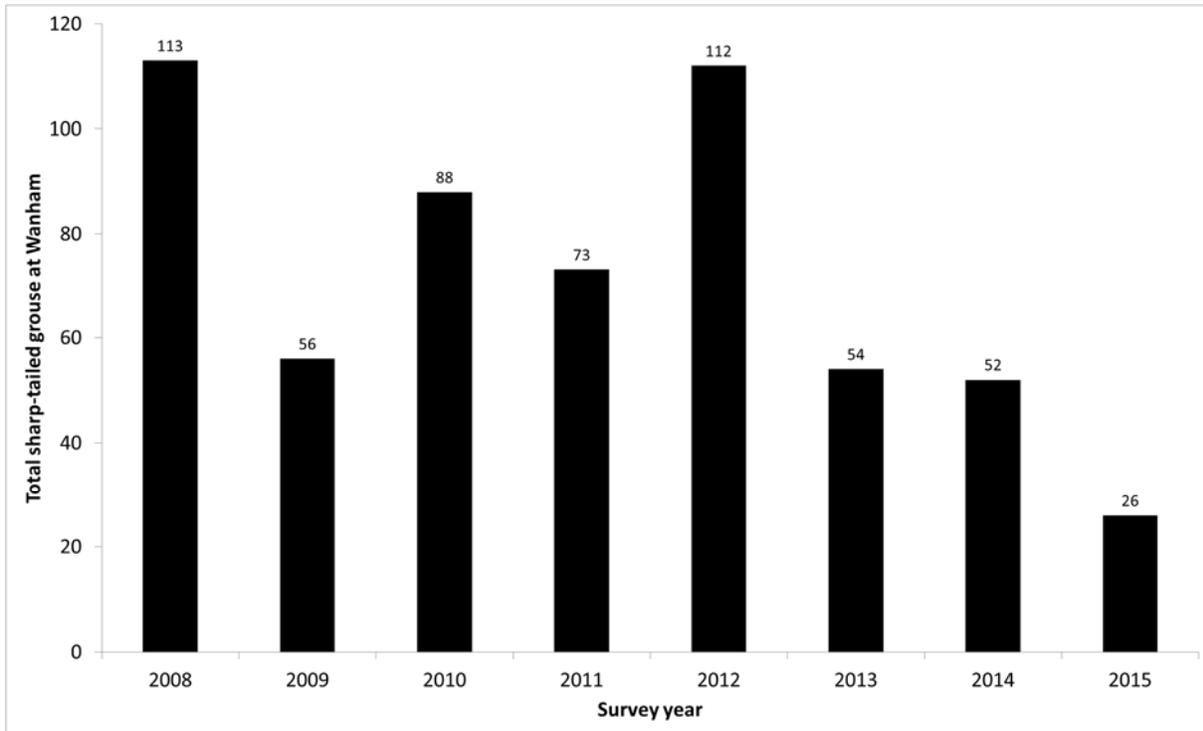


Figure 1. Total number of sharp-tailed grouse observed during spring surveys at the Wanham Grazing Reserve. The number of active lek sites ranged from six to nine in the years we have surveyed; in 2015, several leks appeared to be inactive, possibly owing to undocumented shifts to new locations.

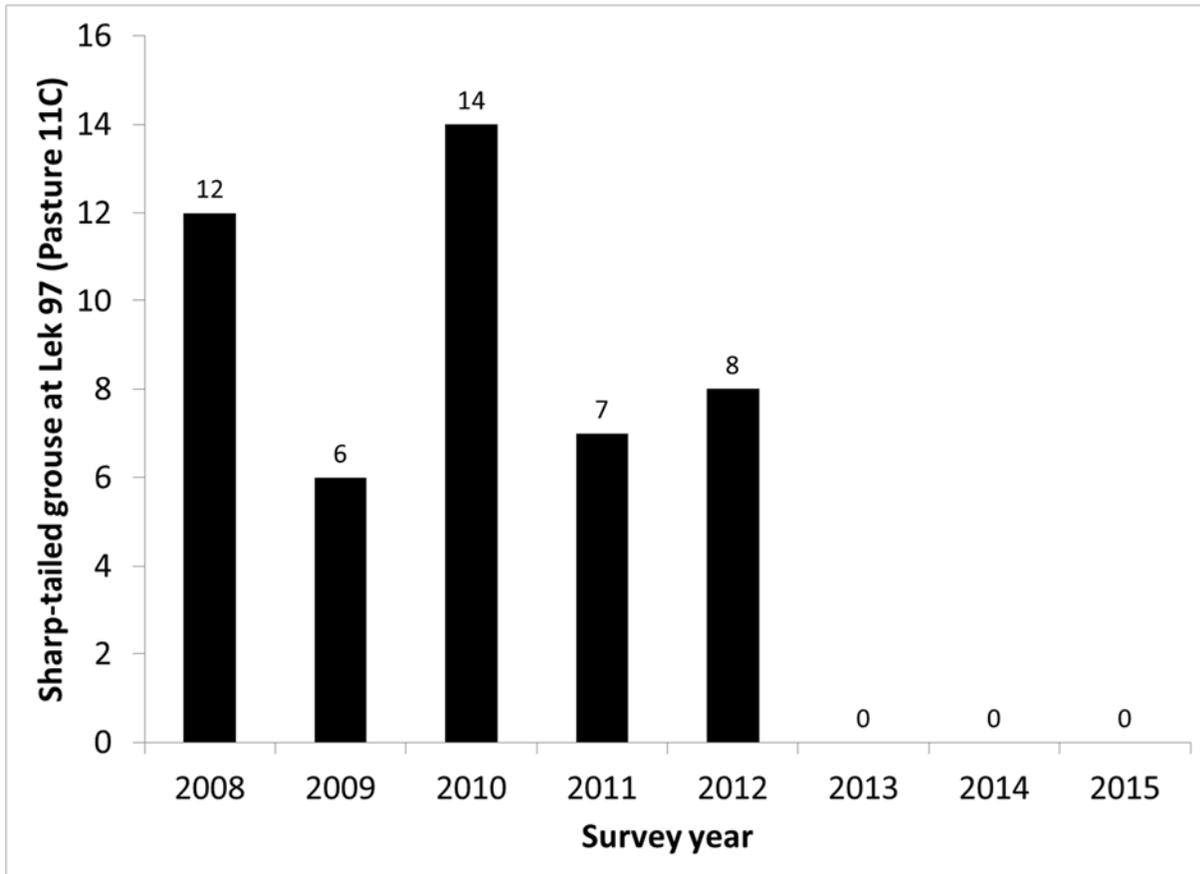


Figure 2. Total number of sharp-tailed grouse observed during spring surveys at Lek 97 in the Wanham Grazing Reserve. In 2011, grass cover was broken down in the field adjacent to the active lek site, except for a 100 m buffer surrounding the site. Although the site was active in 2012, it appears that grouse have since abandoned it.

Our UAV trial provided interesting results. The live feed capabilities of the UAV navigation system enabled reasonable landmarking while in flight, allowing us to quickly navigate to the active lek site. Control of the UAV was exceptional, allowing us to pinpoint heights and locations, and to remain in a static position. Battery reserves for the UAV allowed approximately 30 minutes of flight time, which was sufficient for our needs for this day. The ability to upload pictures and video directly to a laptop computer immediately following the flight allowed us to readily understand what information was collected and assess whether the exercise was successful (Figure 3).



Figure 3. Aerial view of an active sharp-tailed grouse lek site from an unmanned aerial vehicle flying about 100 m above ground. Sharp-tailed grouse are occupying the hill in the centre of image, but they are not readily visible.

The sharp-tailed grouse that were active on the lek that day appeared to be wary of overhead objects. At 150 m high, birds stopped dancing and remained still. Although this could have been coincidental with periodic breaks that are a normal part of lekking, we assumed that the birds were responding to a perceived threat. At 100 m high, all individuals at the lek flushed to cover. Again, we assumed that this was a response to an elevated perception of threat from the UAV.

After reviewing the high-definition video and photographs, it was apparent that the birds were not readily detected at heights between 100 and 150 m above ground. It was only because we knew birds were at the lek that we persisted scanning the video to try to identify them against the drab vegetation on the ground. Once the birds flushed, however, we could see them easily.

## Conclusions

Maintaining an open dialogue with local communities, members of the general public, and targeted land managers continues to be rewarding and helps promote understanding of habitat needs for sharp-tailed grouse. Understanding a variety of perspectives on living with wildlife promotes discussion and contributes to discovering common goals and challenges. We will continue to advocate on behalf of sharp-tailed grouse and other wildlife through continued contact with grassroots communities and managers of larger grassland ecosystems, such as grazing reserves. One-on-one interactions are especially beneficial because landowners are more forthcoming about their thoughts and concerns than at community meetings. However, community gatherings promote a group mindset and allow celebrations of success to be a unifying factor for continued engagement. Additionally, presentations at opportunistic events such as the Trumpeter Swan Festival and distribution of our sharp-tailed grouse booklet allow us

to capture the attention of members of the public who are wildlife friendly and can also help promote education and awareness of sharp-tail concerns.

Presentations and collaborations with grazing reserve managers and users continue to be received positively. As we continue to work with this group, we hope to facilitate an effective style of adaptive management to promote conservation of breeding habitat that is complementary to cattle grazing. Although we are dismayed by the apparent abandonment of a lek site adjacent to a large management disturbance (cultivation and reseeded), we are cautiously optimistic that this is merely reflective of a shift in land use by grouse. Further work to investigate a potential shift will occur with volunteer groups in 2016. The upcoming study by the Peace Country Beef & Forage Association will also help identify preferential methods to rejuvenate pastures. It is anticipated that these practices will create shorter recovery times when habitat is disturbed or potentially could result in zero loss if zero-till options are available.

Although the results of the UAV exercise were somewhat disappointing, we believe there is a future use for UAVs in conducting research of this nature. Several improvements to our methods would be beneficial. The timing of the trial was oriented around peak lekking activity based on the idea that active birds would be detected more easily. However, this type of surveillance might be better suited to earlier in the spring when snow cover is still mostly complete. Sharp-tailed grouse typically collect at lek sites early in the spring. Although they are not actively displaying, the congregation of dark individuals set against a snowy-white backdrop should make them visible. Furthermore, conducting surveys early in the year would limit disturbance to active leks during the peak breeding season. Use of an infrared camera to detect congregations of birds across a landscape might also yield positive results.

The focus of this investigation was to hover over a lek site and enumerate individuals. For this purpose, it made sense for us to use a UAV quadcopter that was highly maneuverable and could hover, ascend and descend, or change directions quickly. However, future surveys might benefit from transect-based flights, whereby a UAV could follow a series of linear paths to detect congregations of birds through a distance-sampling exercise. These applications might warrant use of a fixed-wing UAV, which has much longer battery life and could sustain longer flights.

The live-feed imagery from our UAV was adequate to georeference the position of the camera relative to the landscape. Technological advances available in newer UAVs currently allow for preprogrammed flight patterns, which could offset limitations of live-feed viewing. Additionally, our camera did not have a zoom capability, so we had to physically position the UAV closer to the grouse, which elicited a flight response. Consideration should be given to using cameras with sufficient zoom capabilities, which would allow the UAV to be flown at higher altitudes to minimize disturbance of birds but would still maintain resolution quality.

## **Communications**

- Delivered presentation to Wanham and Whitemud provincial grazing reserve association general meetings.
- Delivered poster presentation to general public at the Trumpeter Swan Festival, Saskatoon Island Provincial Park, Alberta.