

# Antelope Creek Ranch 2015 Annual Report



Figure 1 photo by Neal Wilson

Neal Wilson

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## **What is the Antelope Creek Ranch?**

The Antelope Creek Ranch (ACR) was established in 1986 through a multi-agency partnership. Alberta Fish and Wildlife Division, Wildlife Habitat Canada, Ducks Unlimited Canada and the Alberta Fish and Game Association were the purchasing partners of the Antelope Creek Ranch. ACR is located in southern Alberta, west of Brooks. The land base is managed to provide productive plant cover for livestock and wildlife, and adequate nest cover for waterfowl on mixed grass prairie and wetland margins. Crested wheatgrass, irrigated pasture and native rangeland are incorporated into a complementary, deferred-rotation grazing system to achieve the management goals.

The Antelope Creek Ranch serves as a demonstration project for producers and resource managers in the mixed grass prairie region. ACR research focuses on range improvement through specialized grazing systems to benefit both livestock and wildlife. ACR has been a valuable tool in assisting several M.Sc. thesis research projects from the University of Alberta the University of Lethbridge and the University of Regina. In addition, ACR supports independent studies concerning wetlands, industrial reclamation, and tame grass production.

Research at ACR consists of a co-operative, multi-disciplinary monitoring program to document changes in range vegetation and range condition, forage production and utilization, litter reserves, cattle performance, soil chemical and physical characteristics, and changes in relative diversity of wildlife.

## **Vision**

To improve the health of Alberta's prairie ecosystems while maintaining the benefits which society derives from its use of these landscapes.

## **Mission**

Use the ACR as a demonstrative and educational tool to show land users and resource managers how to manage and integrate agricultural, recreational and industrial use of the prairie landscape while maintaining its health and the integrity of its ecosystems.

## **ACR Management**

Antelope Creek Ranch is managed by two very different and distinct committees. They are the management committee and the technical committee. The committees consist of members from Alberta Fish and Game Association (AFGA), Ducks Unlimited Canada (DUC), Alberta Fish and Wildlife (ESRD) and Wildlife Habitat Canada (WHC).

The management committee is responsible for managing the financial aspect of the ranch and setting policy of overall management. The Technical committee is responsible for the management of the habitat and anything that applies to the ground work of the ranch. This is all implemented with the grass roots contribution from the ranch managers.

The ranch managers work closely with the technical committee, and manage the day to day operation of the ranch with consideration for cattle and range management, wildlife, oil and gas development, as well as monitoring recreational activities on the ranch.

## **The People and Partners of ACR**

### **Management Committee**

Ron Bjorge – Chairperson, EPA  
Duane Radford – AFGA representative  
Wayne Lowry – ACR Finance Chair  
Perry McCormick – Ducks Unlimited representative  
Doug Stewart – Wildlife Habitat Canada representative

### **Technical Committee**

Joel Nicholson – Chairperson, EPA, Fish and Wildlife Division  
Colin Kure – AFGA representative  
Craig DeMaere – Public Lands Division representative  
Morgan Stromsmoe – Ducks Unlimited Canada

### **Ranch Managers**

Neal Wilson  
Shannon Burnard

### **Summer Range Technician**

Ross Adams

## **A Year in Review – 2015 Highlights**

### **Extension and Outreach**

ACR ranch managers attended and participated in two Prairie Conservation Forum (PCF) meetings and the summer tour throughout the year, Neal also serves on the board of directors for the PCF, this provides opportunities to promote and showcase the ranch to a wide audience. As a member of the PCF we participated in a workshop to help develop the next 5 year PCAP for the province. We also helping in the very initial stages of organizing a Transboundary Workshop to be held in January 2016. In January 2015 the ranch managers attended the Saskatchewan PCAP Reclamation and Remediation workshop in Saskatoon to learn about different reclamation practices.

While attending the Western Canadian Grazing Conference in Red Deer in December 2012 the ranch manager attended a presentation by LandEKG founder Charlie Orchard. This presentation highlighted some easy methods of pasture data collection which land owners and managers can use to determine if a pasture is over or under-grazed. Upon speaking with the presenters after the conference, the ranch was offered as a host venue for a workshop that was led by Ted Sutton in

July, 2013. There were 9 attendees ranging from Bassano to the Cypress hills as well as two agrologists from Special Areas for the two day workshop. During the workshop attendees learned LandEKG's method of production clipping and setting up transects and photo points. All of this was very well received by the landowners that attended. In 2014 we once again hosted a LandEKG workshop with 24 attendees in some very hot weather. In the fall we placed transects in the control field and another in Field 3, in the spring of 2015 we placed another transect in the Cassils field. Through the summer ABMI remote monitoring equipment was set up in conjunction with these transects in order to relate wildlife sightings with habitat.



Figure 2 setting up a remote monitoring station for ABMI in conjunction with a LandEKG transect. Photo Ted Sutton

2014 brought research to the ranch from the University of Alberta that is studying the rate of breakdown of different species of native grasses across the province and has sites in Fields 2 and 4 on the ranch with ongoing grass studies that continued and expanded in 2015 with the addition of a study measuring CO<sub>2</sub> in the prairie.





Figure 3 AFGA volunteers out installing wildlife friendly fencing in August. Photo Neal Wilson

## Grazing

Over the last few years there has been high grass growth on the ACR, resulting in litter values that were much greater than the optimal 750lbs/acre. This has allowed the ACR to increase the cattle stocking rate to 300 cow/calf pairs. We held the number of AUMs steady again this year, and were able to graze from May 15th until the 17<sup>th</sup> of October this year. Even though the year was very dry with very little growth in the early part of the season we were able to leave greater than the 750lbs/ac recommended in the native fields as shown in Figure 4. Patrons were complementary of the condition of cattle coming out of ACR this season and seemed very satisfied. Stock mortality was 2 calves late in the season to unknown reasons. Cattle herds were grazed separately for the whole season this year in order to try and avoid sickness problems and to better impact the crested wheat grass on pipelines.

2015 ACR was able to hire a summer Range Technician by the name of Ross Adams. Ross helped throughout the summer with general ranch duties but the majority of his time was spent doing

range evaluations and ground truthing the provincial grassland vegetation inventory that has been done on the ranch. His full summer report is included at the end of this summary as Appendix 1.

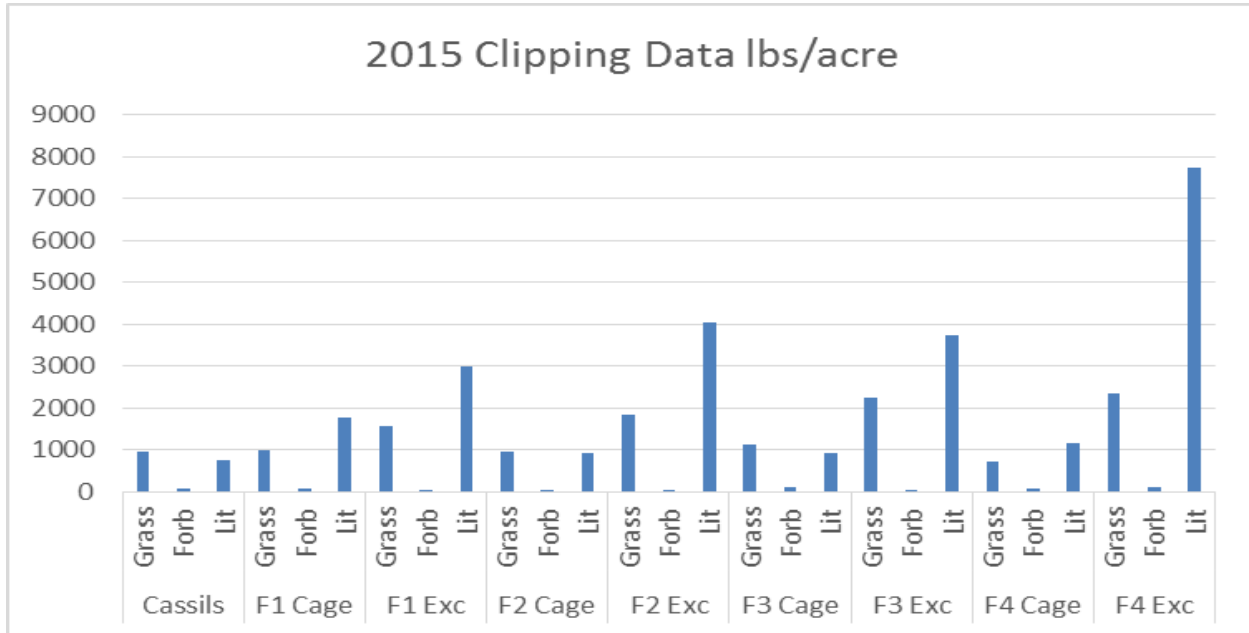


Figure 4. 2015 Clipping Data from Native Grass Fields

### Invasive Species Management

A contract to develop an invasive species management plan for the ranch was awarded in the spring of 2013 to Paskwa Consultants Ltd and M-Over-C Land and Cattle Co. Field surveys were conducted in June and July of 2013 after consultations with the ranch managers and meeting with The County of Newell weed inspector. The management plan was completed in the fall of 2014 and presented to the technical committee in November this plan enables the ranch managers to implement practices to slowly control and in the case of some invasive species eradicate them, depending on the risk assessment that has been completed. Included in the plan is a monitoring program so the ranch will be able to react quickly to new infestations.

With the spring of 2015 being so dry Downy Brome really seemed to take off and by the time it was spotted there were a number of new sites going to seed. This required a lot of labour to hand pick and bag along these sites. Communications with Cenovus resulted in sites being sprayed with herbicide in the fall of 2015 to control growth in 2016.

We rented a 15 foot rotary mower for two days this spring and mowed some of the crested wheatgrass pipelines with the intention of removing the top growth and opening up the canopy so the cattle would graze it and keep it from going to seed. This seemed to work as we had some cows move onto these areas immediately after they were mowed.



Figure 5. Cattle on pipeline right of way seeded to crested wheatgrass. Photo Neal Wilson.

## **Oil and Gas**

There has been a relatively low level of new oil and gas activity since 2009. There were no new wells drilled in 2015. Activity has generally been maintenance traffic to producing wells on the ranch. Both Blackspur and Cenovus abandoned short sections of pipelines on the south end of the ranch this year for safety reasons, Cenovus then replaced theirs with a new line in the fall.

## **Recreational Users**

2015 started off pretty slow with very few recreational users of the ranch out and about. There were a few trucks that went through during the annual bird count on the May long weekend, but there were not many birders through this year. We had a number of boats out on Lake San Francisco during the waterfowl hunting season. And quite a few different hunters out on the potholes in the native fields spread throughout the ranch. All the wetlands were left full this fall except for the Norman project which is leaking so we left it dry so that it could be repaired in 2016. The pheasant release occurred on the ranch again this fall with some very good birds that were very active and provided a good hunt for the guys that were out. Some of these roosters survived the hunting season and found their way to the yard where they wintered. Everything had gone smoothly until a gate was left open which allowed a couple groups of cattle to get mixed up days before they were to go home, requiring some time spent to sort them back out. Gates off the designated routes are now locked so that this won't happen again.





Figure 6 Predated eggs from a nest. Photo by Neal Wilson

## Wildlife

In August of 2015 the ranch was lucky to have AFGA volunteers come out for two days of fencing that saw them replace approximately 8 miles of bottom barbwire with smooth wire to provide a wildlife friendly fence. This, along with the previous 5 miles has just about completed all the fence on the ranch to the wildlife fencing. Wildlife Friendly fence consists of a smooth bottom wire placed at 18 inches off the ground and the top wire is at 42 inches with the remaining wires spaced evenly between. This spacing is optimal for allowing wildlife to crawl under the fence and not pull hair out as well as allowing the larger deer to go over the fence without getting tangled up in it.

No surveys of wildlife were done on the ranch this year. Our personal observations saw a rise in the numbers of coyotes on the ranch. There were 4 encounters with porcupines and cattle, horses this year and one with the dog so we got a lot of practise this year pulling quills. There was a lot of badger activity in the crested wheat grass fields and maybe one reason there seemed to be a smaller number of Richardson ground squirrels. Once again this fall during the pheasant season a pair of golden eagles showed up for a couple days which really slowed the pheasants and the pheasant hunters down.





Figure 7 LandEkg transect in the Control Field. Photo by Neal Wilson.

## Contact Information

Neal Wilson or Shannon Burnard  
P.O. Box 2011  
Brooks, AB  
T1R 1C7  
Phone: 1 403 793 2544  
Email: [antelopecreekbranch@eidnet.org](mailto:antelopecreekbranch@eidnet.org)

## Appendix 1.

### **Summer 2015 ACHDA By Ross Adams**

#### **Introduction**

Field activities were carried out at the Antelope Creek Habitat Development Area (ACHDA) from 1 May to 21 August, 2015. The entirety of May was spent in assisting the ranch manager with various tasks. Several weeks were spent inspecting and repairing the fences. Several days were spent mowing patches of the native pastures that are infested with Crested Wheatgrass (the mowing will be discussed in detail in the third section). A week was spent moving and placing grazing cages near the four exclosures as well as in the Cassils field. During May I also occasionally assisted the ranch manager with moving or handling livestock.

During the first week of June I attended range inventory training provided by AEP, prepared maps to be used during the inventory, and pulled up downy brome growing along roadsides in the native pastures. During the second week of June, I attended MULTISAR range inventory training, repaired fence, and pulled up downy brome along roadsides. The last two weeks of June were spent on range inventory of native pastures.

The entirety of July was spent on the range inventory of the native pastures. The inventory will be discussed in detail in the fourth section.

The first week of August was spent clipping the exclosures and range cages in the native pastures, as well as cages in the Cassils field. The second and third weeks were spent assisting the ranch manager with various tasks. The major task during the final weeks was demolition and removal of old fences. The final week of August was spent entering data and preparing this report.

#### **Climatic conditions**

Conditions were unusually dry for most of the 2015 field season. Table 1 shows precipitation recorded at Brooks, as well as the deviation from 30-year average monthly precipitation.

Table 1. Precipitation received at Brooks during the summer of 2015, average monthly precipitation, and percent deviation from normals.

Month	Precipitation (mm)		Deviation (%)
	2015	Average	
May	4.6	41.0	-88.8
June	20.8	64.5	-67.8
July	16.4	44.9	-63.5
August	47.4	35.3	34.3

Table 1 may present an underestimate of how dry this summer was; ACHDA is located approximately 20km from the Brooks weather station, and the weather often differed between ACHDA and Brooks. Over the course of the summer there were several rainfall events that affected Brooks but not ACHDA.

### **Mowing**

The native pastures contain several large stands of Crested Wheatgrass (CWG) which have become decadent and contain large amounts of standing dead litter. Decadent material is poor quality forage, and is often much taller than the current year's growth. As a consequence, cattle may avoid grazing decadent stands of CWG. Mowing may make CWG stands more attractive to cattle by breaking up and dispersing litter, thereby exposing recent growth to livestock. The combination of mowing and grazing is expected to stress CWG, and over time this treatment may reduce the dominance of CWG and promote the re-establishment of native vegetation on the ACHDA landbase.

Mowing was carried out during 26 and 27 May, using a 15-foot wide rotary mower. The perimeter of the mowed patches was recorded using a GPS. Four transects were established to allow long-term evaluation of community composition and range health on mowed patches.

Both the ranch manager and I frequently observed cattle grazing and loafing on mowed areas.

### **Range Inventory**

A range inventory was conducted in the native pastures from 15 June to 1 August, 2015. The purpose of this inventory was to provide ground truthing of Grassland Vegetation Inventory (GVI) classification of the ACHDA landbase, and to provide a vegetation map for future GPS collar studies. Prior to the beginning of the ACHDA



range survey, training in range inventory methods was provided to me by Terri France and Craig Demaere of AEP as well as Ken Pitcher and Lee Moltsen of MULTISAR.

The inventory was conducted using standard range survey methods per Alberta Environment and Parks' Range Survey Manual. For the majority of sites sampled, a 50m transect was laid out in an area representative of the vegetation and range health for a given polygon. Ten nested microplots were sampled along the transect at 5 m intervals. Shrub cover was estimated using a 1 m<sup>2</sup> quadrat. Cover of grasses, forbs, moss & lichen, and bare soil was estimated using a 1/10 m<sup>2</sup> quadrat (or Daubenmire frame). All cover estimates were ocular. Litter was estimated by collecting all the litter present in a ¼ m<sup>2</sup> area at 5, 25, and 50 m along the transect. For each site sampled, a grassland range health assessment was conducted per AEP's Rangeland Health Assessment for Grassland, Forest, and Tame Pasture.

In polygons that contained more than one distinct plant community type, an effort was made to map each community separately. In polygons where more than one community type was present, but the boundaries were too diffuse to map, the percentage of the polygon occupied by each vegetation type was estimated to the nearest 10%. When noxious weeds were observed, they were mapped using a GPS. Weed patches that were smaller than the maximum accuracy of the GPS (a radius of 3m) were mapped using points. Where weed infestations were larger than 3m in radius, the perimeter of the infestation was walked and the perimeter was recorded using GPS.

Vegetation and site data were entered into AEP's EcoSys database, under the study code 74AC9. GVI polygons were edited using GIS software. Range health data was entered in a spreadsheet.

Inventory activities were carried out between 15 June and 1 August, 2015. A total of 28 days were spent on inventory activities. A total of 91 plots were sampled, of which 67 were detailed 50m transects. The remaining plots were range health plots based on 3 microplots spaced 50m apart. Range health plots were used mainly on disturbances whose plant communities were already well described by other transects. A total of 527.5 ha (2 sections) were inventoried which accounts for 27% of the area of native pasture at ACHDA. Figures 1 and 2 show the extent of the 2015 range survey.

Overall, the GVI classification of the ACHDA was excellent. Polygon line work and range site classifications were highly accurate, with only two polygons requiring major line work revision. The only shortcoming of the GVI classification was that it did not represent the complexity and fragmentation of the landscape associated with industrial disturbance. The vast majority of changes that I made to the line work was to identify the boundaries of wellsites, pipelines, and the impacts of developed roads.

The majority of inventory work conducted during 2015 was done in pasture #2. Pasture 2 was highly complex, with fragmentation caused by industrial activity, roads, and the influence of irrigation canals. The result of this complexity was a high diversity of plant communities on a relatively short spatial scale, and many polygons required 3 or more sample points to completely describe them (Figure 2). The other native pastures, particularly pastures #1 and #4, are less complex and I am confident that future inventory work can be accomplished more quickly as fewer sample points will be required per polygon.

Of 90 sites on which range health assessments were conducted, 24, 59, and 7 sites were rated as "healthy", "healthy with problems", and "unhealthy", respectively. The most common causes of deductions to range health score were the presence of invasive agronomic species or noxious weeds. Erosion and bare soil were very rare, and the majority (71%) of sites had a "healthy" amount of litter as described by the table on page 36 of the range health assessment guide. Weeds were mapped, and the distribution of weeds is shown in figure 3.

The following data files, as well as original hard copies of data sheets and maps have been provided to Craig Demaere of AEP.

#### Shapefiles

GVI polygons of ACHDA (achda\_gvi\_final\_10tm)

Main roads (achda\_roads\_10tm)

Locations of survey points (achda\_survey\_points)

Locations of weeds (polygons for large infestations, points for small infestations) (achda\_weed\_points\_10tm, achda\_weed\_polys\_10tm)

Range Health Data (range\_health\_final)

Comparison of GVI classifications and field range site calls (ACHDA polygons)

Location of transects on mowed CWG stands (mowed\_transect\_locations)

Plot Photos

#### **Clipping**

Exclosures and range cages were clipped in pastures 1-4 as well as the Cassils field between 3 and 7 August, 2015. 10 plots were clipped within each exclosure, and 10 cage plots were clipped adjacent to the exclosure. In the Cassils field only cages were

clipped. Each clipping plot was 1/4 m<sup>2</sup> and included litter and all green vegetation clipped to 1cm in height. Litter, grasses, forbs, and shrubs were separated. Samples were dried and weighed by the AEP public lands office in Lethbridge.

Figure 1. Area of ACHDA sampled during 2015 inventory.

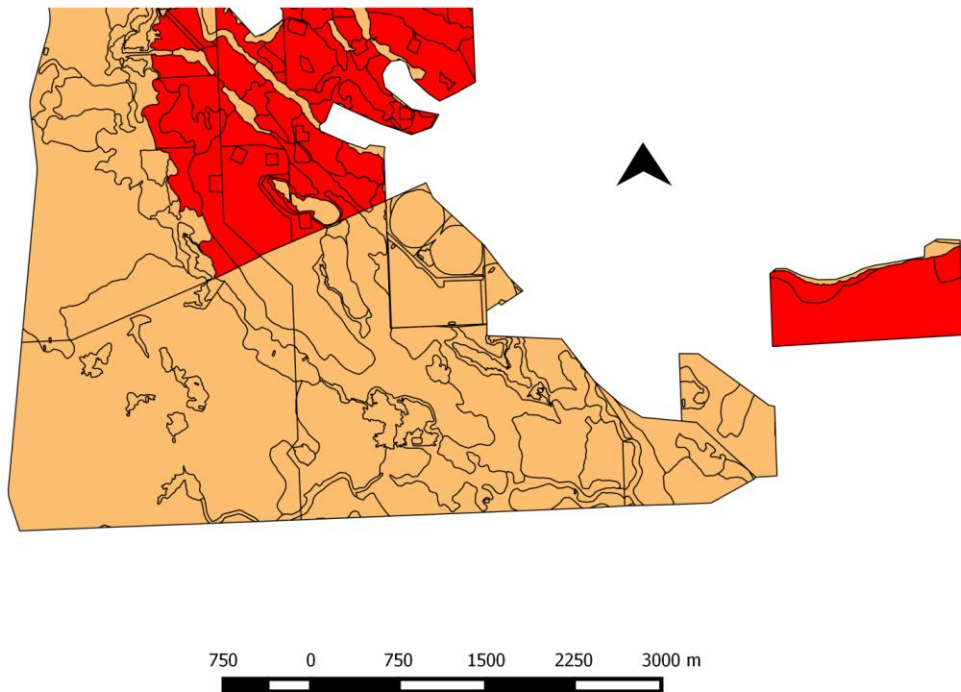




Figure 2. Location of sample points.

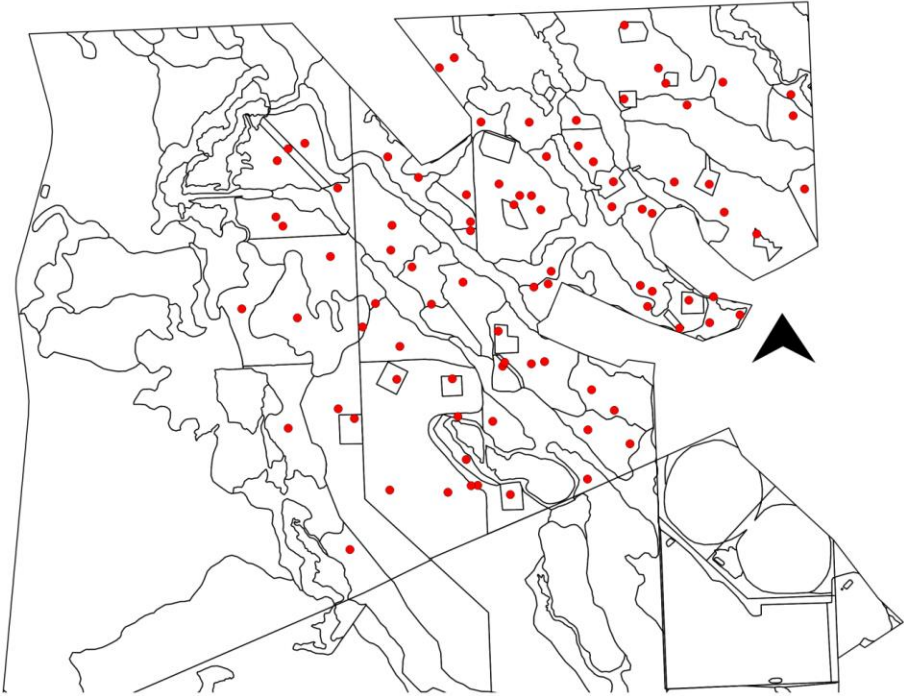


Figure 3. Weed locations.

