Antelope Creek Habitat Development Area 2016

Photo by Duane Radford

By Neal Wilson

Antelope Creek Ranch
2015 Annual Report

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
Travis Ripley – 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
Mica Pettibone

A Year in Review – 2016 Highlights

Extension and Outreach

ACR ranch managers attended and participated in two Prairie Conservation Forum (PCF) meetings and the summer tour was held at the ranch as part of our 30th Anniversary celebration. Neal also serves on the board of directors for the PCF, this provides opportunities to promote and showcase the ranch to a wide audience.
ACR was visited by the ecology class of Edmonton's Concordia University as part of a larger tour of the EID in May. Lethbridge College was out for a day long tour again this spring speaking about range health and wildlife.
The ACR had its' 30th Anniversary this year which was well attended and enjoyed by many.
We were invited to help out again at the Calgary Stampede cattle trail with the environmental portion of the display.
Foothills Restoration Forum held its' Range Health training days on the ranch with 65 participants.

Figure 1 Summer Range Technician Mica Pettibone hand picking 1" tall Downy Brome plants.

Figure 2 Boyd's 4H Pheasant project growing hens for release in the fall. 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 17th 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.

In 2016 ACR was able to hire a summer Range Technician by the name of Mica Pettibone. Mica helped throughout the summer with general ranch duties but the majority of her time was spent doing range evaluations and ground truthing the provincial grassland vegetation inventory that has been done on the ranch. Her full summer report is included at the end of this summary as Appendix 1.

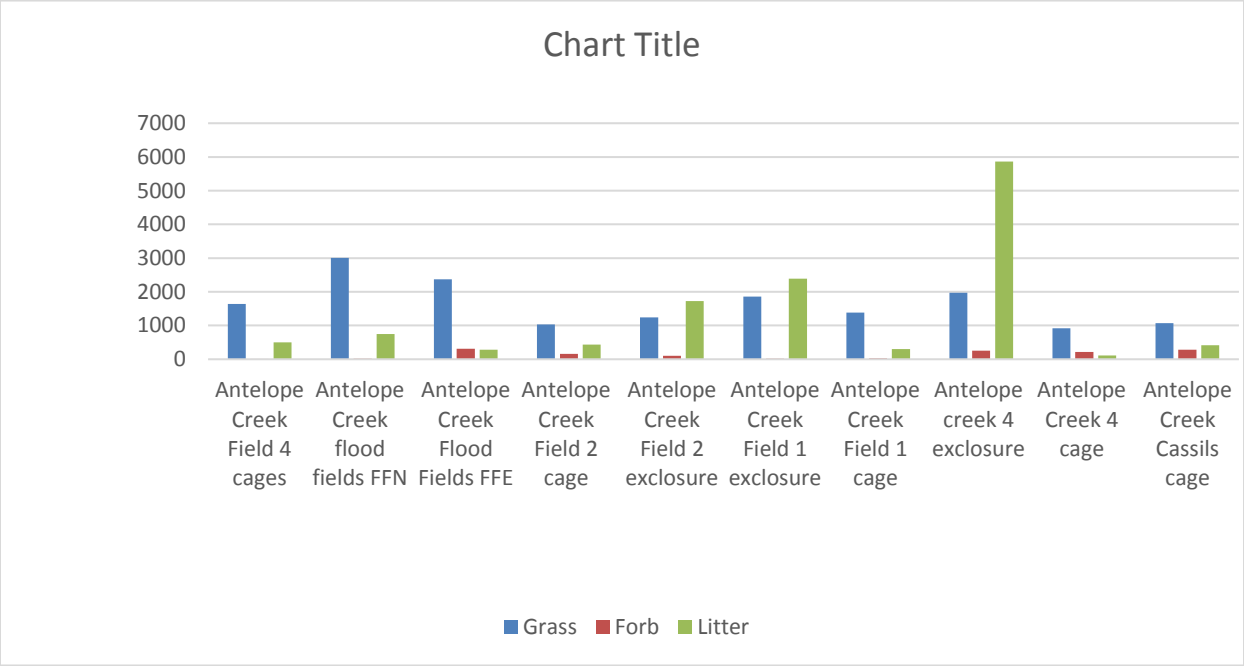

Figure 3. 2016 Clipping Data from Native Grass and Flood Irrigation Fields

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 2016 being so dry Downy Brome was present but was mostly going to seed at a couple of inches in height. This required a lot of labour to hand pick and bag along these sites. We continued to graze CWG pipelines in the native fields early in the year with the goal of helping the native prairie regain a foothold.

Figure 4. 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 2016. Activity has generally been maintenance traffic to producing wells on the ranch.

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 2017. 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. Boyd released 30 Pheasant hens on the ranch which stuck around the yard for a long time until a Cooper's hawk showed up and chased them away. Gates off the designated routes are now locked so that cattle can't get into places they are not supposed to be.

Figure 5 Beaver runs in the wetland next to the irrigation canal. 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 6 Display at the Calgary Stampede. Photo by Neal Wilson.

Contact Information

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Appendix 1

Antelope Creek Habitat Development Area Range Technician Report 2016

Mica Pettibone

Antelope Creek Ranch is a 5,500 acre property managed under a partnership of Alberta Fish and Game, Ducks Unlimited Canada, Alberta Environment and Parks, and Wildlife Habitat Canada. The Ranch was purchased in 1986, with the 2016 year marking the 30th anniversary. The Ranch is managed to preserve and integrate wildlife habitat and values with several different competing land use interests. The ranch showcases the mixed use of grazing, oil and gas development, research, education, and maintenance of healthy wildlife habitat.

The Ranch has had many research initiatives and projects over the years, often hiring summer technicians to accomplish work on indexing and monitoring the production values of the rangeland. The most recent project is the inventory and mapping of the plant communities on the Ranch. With advances in technology and an ever-increasing use of GIS mapping and data processing it is important to keep data for projects such as the Ranch up to date and accessible. This project started in the summer of 2015 with Ross Adams who surveyed most of Field 2, Cassils Field, and began work on Field 1. I continued this work in the summer of 2016; completing polygons for Field 3 and some backfill of unfinished riparian areas in Field 2 (Figure 1.5).

Precipitation over the 2016 Field Season;
Figures 1.1 through 1.4 show the precipitation over the 2016 field season. The data for these was taken from the Environment Canada weather station data, located in the city of Brooks, AB. The ranch is located approximately 20km outside of Brooks and may have slightly different precipitation totals. This year was a very wet year for the area, with rainfall exceeding 100% of the normals (Fig 1.9). May exceeded the normal total; with Brooks receiving 70.8 mm of rain as compared to the normal 38.9 mm (Table 1.0). July far exceeded the normal average of 44.9 mm with a total of 105.6mm throughout the month (Table 1.0). While both June and August were slightly under the respective normals the excess rain in May and July accounted for an additional 80 mm of rainfall (Table 1.0). Rainfall events in July were frequent and often heavy, resulting in the grasses staying vegetative well into August and giving some nice regrowth in areas that had been grazed.

Description of duties;
May was largely spent doing various chores around the ranch including checking and repairing all of the fences on the ranch, moving range cages prior to cattle arrival, and cleaning the yard. A week was spent hand picking downy brome in Field 2 where several patches are present on a capped well site.
Downy Brome (*Bromus tectorum*) is an invasive species that flowers early in the season and germinates in fall to overwinter as a seedling. Often this species seeds are introduced as a contaminant on machinery. As such control measures are important to put into place early before large populations, and seed banks, can be established. This lease site and a few locations along the road have shown patches of downy brome in the last few years. The ranch manager and summer technician spent a week picking in the 2015 summer and the roadside patches seem to have been reduced to a few individual plants that were picked when detected throughout the summer. The lease site had several large patches (in excess of 1 m^2) with high density within patches. Both Cenovus employees and I picked these sites. However inspection at the end of the 2016 season shows a few small patches that were missed altogether and a strong likelihood that patches that were picked will have more individuals in the 2017 season. GPS points and polygons were taken at occurrences of Downy Brome and input into ArcGIS in mid-June.

Vegetation Inventory;
Training for range inventory and range health assessment was provided by Alberta environment and Parks and MULTISAR took place in early June and vegetation inventory began June 20th. The first few days of this were spent with guidance from Craig DeMaere and Tanner Broadbent to ensure consistency of technical assessments.
Mapping of plant community types utilized GVI, AGRASID, and LIDAR data to assist with on the ground observations for determining plant community boundaries (polygons). Once polygons were established a linear 50m transect was run in a representative area of the polygon. Assessment of percent cover of species within a dobbelaere frame was made at 5m increments along the 50m transect for a total of 10 plots. These data included estimation of litter, lichen, and bare ground cover and was entered into Ecosys and used to help establish communities through an ordination at the end of the summer. In addition to the transect data for weeds, shrubs, grazing, and any other notes for the polygon were recorded on the backside of the Prairie MF5 forms used for data collection. Range Health Assessments were also conducted for each polygon

following the procedures outlined in the Range Health Assessment Field Workbook and at the contractor training in June. The majority of polygons were assessed with a transect in this manner, however riparian areas and polygons that were small with monospecies features did not receive transects; rather a visual assessment of dominant species composition was recorded (Fig 1.7).

Field 3 was chosen as the main focus for the summer due to the ongoing GPS collar studies taking place within that field. Collared cattle are being analyzed for utilization of Crested Wheatgrass stands (CWG: *Agropyron pectiniforme*). Field 3 has some of the most CWG of any of the fields as it has the most development and linear disturbances (Figure 1.8). For these reasons the polygons I assigned differed from the GVI polygons far more than those given in Field 2. Where possible CWG dominated communities were given their own polygons; this was achieved by combining field observations with a previous mapping of CWG occurrence in the field.

Crested Wheatgrass is an invasive species and will outcompete native species in the Dry Mixedgrass Region; as such it is a management concern on the ranch. Although palatable while young and vegetative, CWG becomes less palatable as the awns are produced and the plant hardens off. A build up of previous years' growth can cause the plants to become wolfy and avoided by grazers like cattle. Mowing or burning can remove this dry standing old growth, freeing up nutrients and allowing for even grazing. Recently the Ranch Manager has begun to let Cattle into the fields earlier in the season to facilitate grazing of CWG prior to hardening off in the hopes of reducing its competitive ability. Field observations show a high selection for CWG by the cattle in Field 3 with cattle often seen grazing in CWG dominant areas and these areas are showing a much higher utilization than surrounding native communities.

No polygons in Field 3 were given perfect scores under the Range Health Forms Plant Community score. This was often due to the presence of either CWG or a weedy species such as thistle (Cirsium arvense, Sonchus arvensis, Cirsiusm vulgare). While these species may not be highly adverse they do present a management concern. As Field 3 is highly disturbed most polygons have at least some CWG present; often areas without CWG were low-lying areas with a higher incidence of thistle or other weedy species. Range Health scoring is a qualitative judgment and based on the individuals' observations, the scoring from this year may vary from that given in previous or future years. However given that all range health scores are just a guideline and subject to individual bias and error the 2016 assessments seem in line with expected variance. As seen in Figure 1.6 most polygons were rated as healthy with problems, with a handful of healthy and unhealthy occurrences.

Clipping;

Clipping took place in August on the 2nd, 3rd, and 14th. Range cages and enclosures are in all four of the native fields. Field 4 has another six cages in the northwest corner as production varies across this field. Cassils field and the flood fields have cages only (10 and 8 cages, respectively). Clipping of cages and enclosures provides data on production for the fields and the effect of grazing on the production values. Antelope Creek Ranch has been collecting this production data since 1988 providing strong historical records of grazing on the ranch.

Data analysis;

Inputting and analyzing of collected data took up the majority of August and a portion of late July. Polygons were created in ArcGIS through editing of the pre-existing GVI layer and with reference to previously mapped CWG occurrence layers and satellite images. Fencelines for

Field 3 were also updated and roads, lease sites, and other disturbances had their own polygons created. All transect data collected was entered into EcoSys for ease of analysis.
Once inputted the data were run through an ordination to group like plant communities. For the purposes of our assessment all agropyrons occupying the same growth habit (*Agropyron dasystachyum, Agropyron smithii, Agropyron trachycaulum, Agropyron repens*) were consolidated into one 'species' for the ordination. As existing community types are not pulled apart by individual Agropyron species we did not wish to have this occur with our own data. Ordinations were run in groups based on dominant soil type. The majority of our polygons were blowout types, and the remainder (Loamy and Sub irrigated) were consolidated into an "Other" group for the purposes of the ordination. Outliers were comprised of the low-lying or depressional sub irrigated areas that were affected strongly by the increased moisture and salinity or fairly large areas dominated to near exclusivity by single species. Most sites in Field three fell into earlier seral stages of DMGA3, DMGA15 or DMGA35 (Figure 2.0). Once plant community types had been assigned to each transect dataset all relevant information was joined to the polygons created by myself earlier in July.

Concluding remarks;

Field 3 was largely in line with the GVI assessment in areas that were undisturbed, however where there are disturbances or encroaching non-native species polygons were often split or changed. Disturbances included linear pipelines, lease and well sites, old road features, and areas where groundwork was done to facilitate wetland/dugout/slough features. Establishing boundaries of polygons often proved to be the most time consuming component, particularly where changes between plant communities were gradual. As Fields 1 and 4 have less disturbance features it is predicted that they will require less modifying of GVI polygons. The dataset collected in 2015 did not create separate polygons for CWG occurrences and as such may require modification to incorporate these features in future. As CWG spreads over time it is recommended that the CWG polygon boundaries be updated at a regular interval. As the current project to inventory the ranch is yet to be completed these data presented here are unfinished and largely meant only as a visual representation of the collected information for the 2016 season.

Figures & Tables:

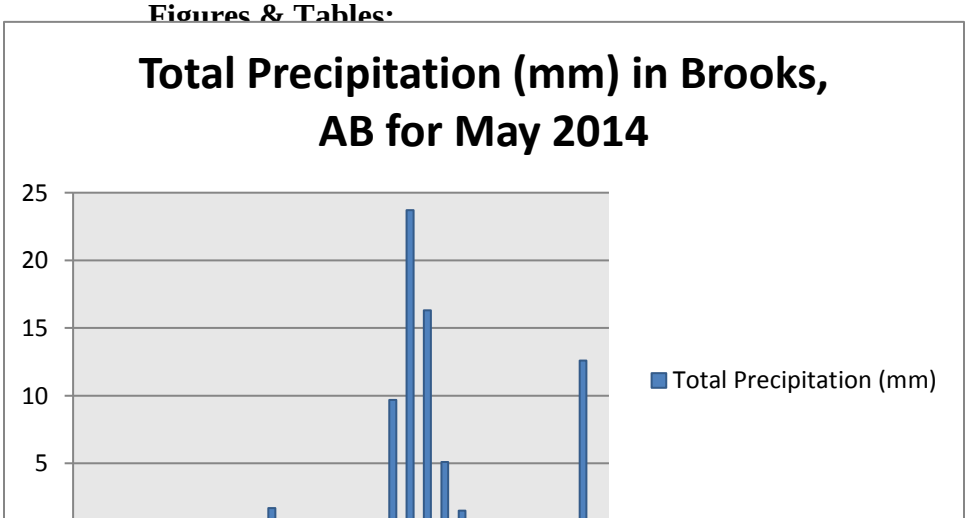
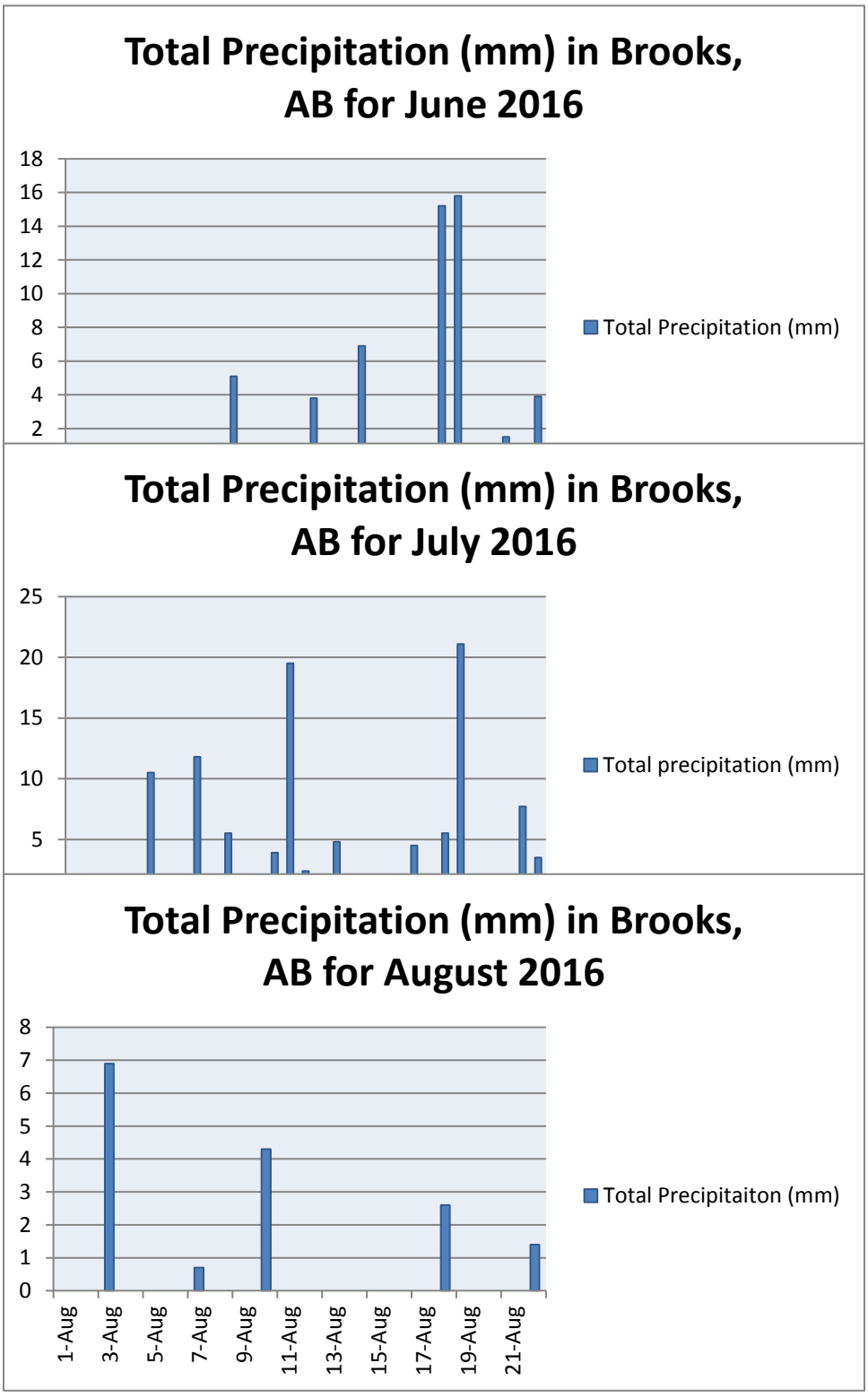


Fig 1.1 Precipitation events for May, Brooks AB



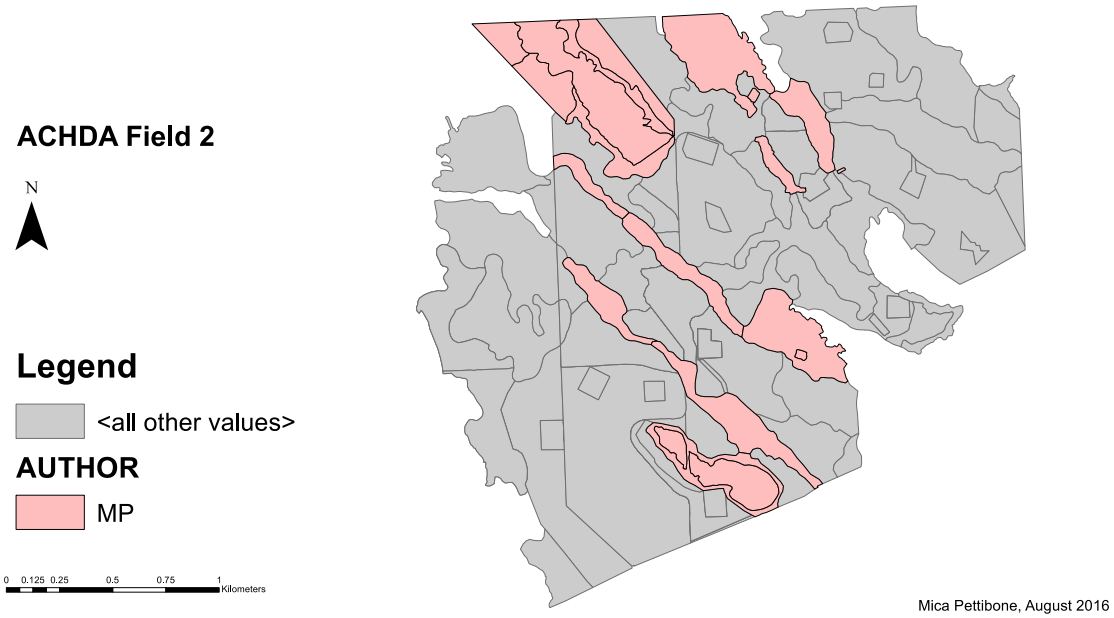


Fig 1.5 polygons in Field 2 completed by Mica Pettibone in the 2016 year

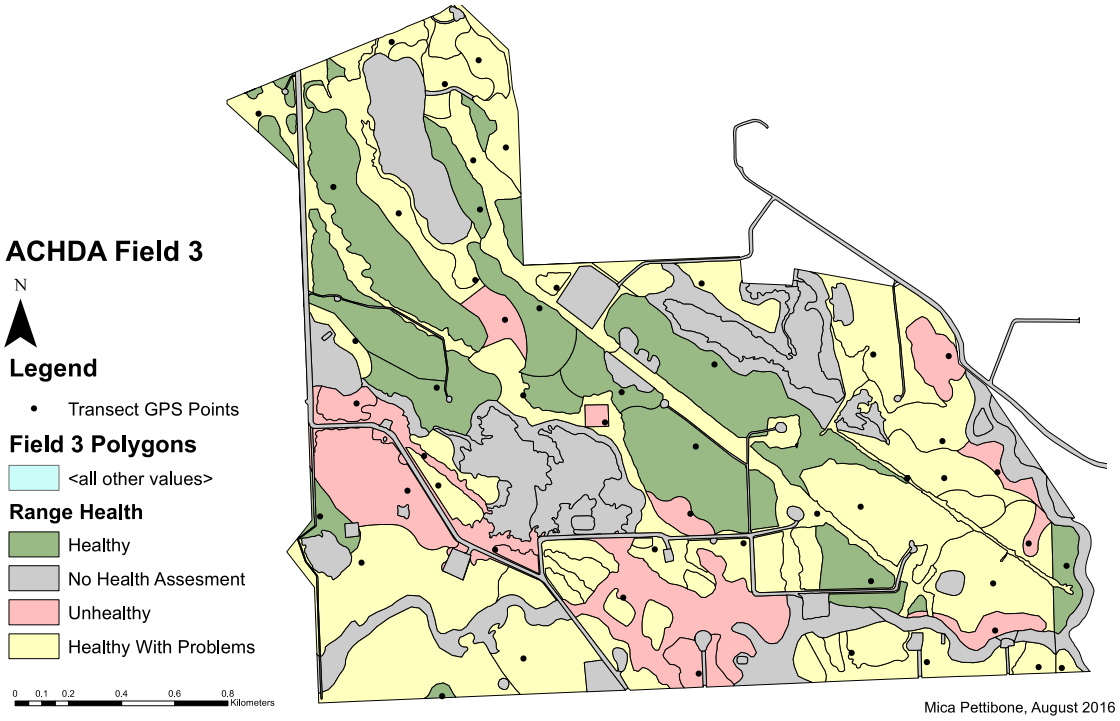


Fig 1.6 Health Condition of Polygons in Field 3

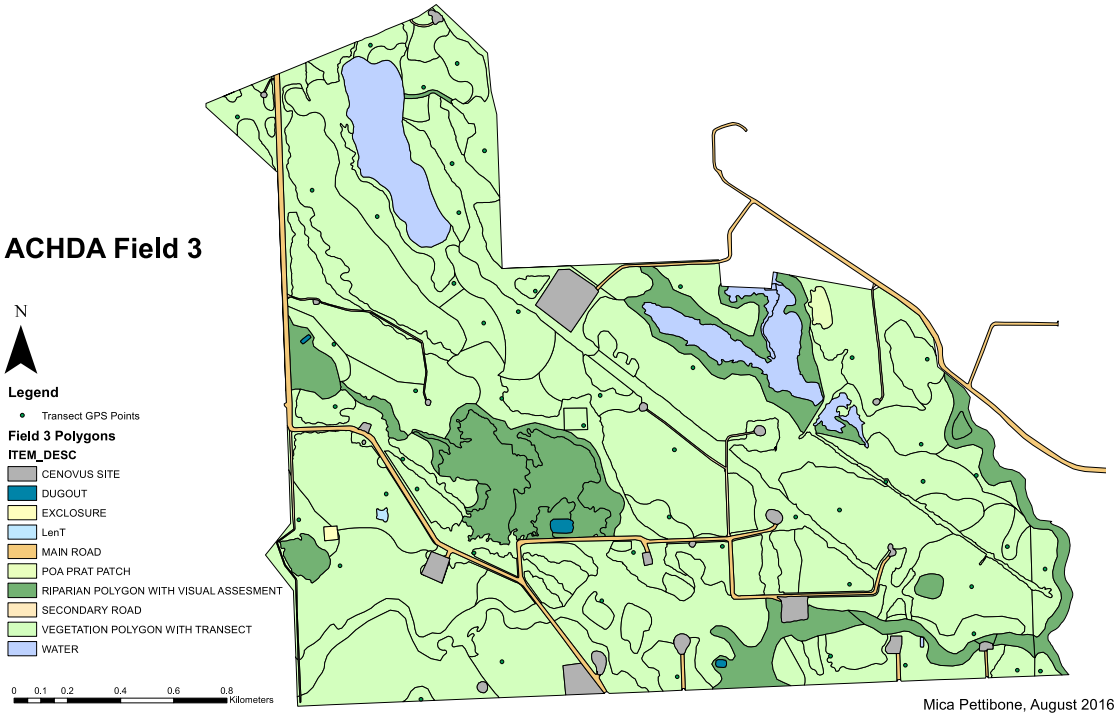


Fig 1.7 Type of Assessment Completed for Polygons in Field 3

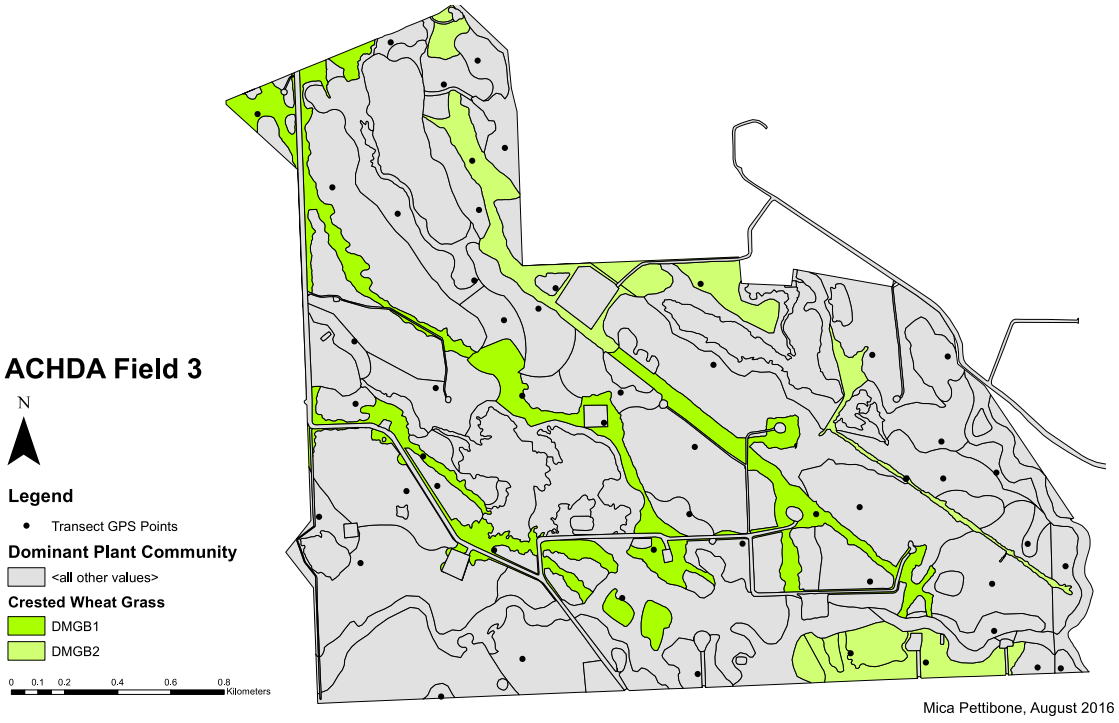


Fig 1.8 Crested Wheat Grass Occurrence and Community Type for Field 3

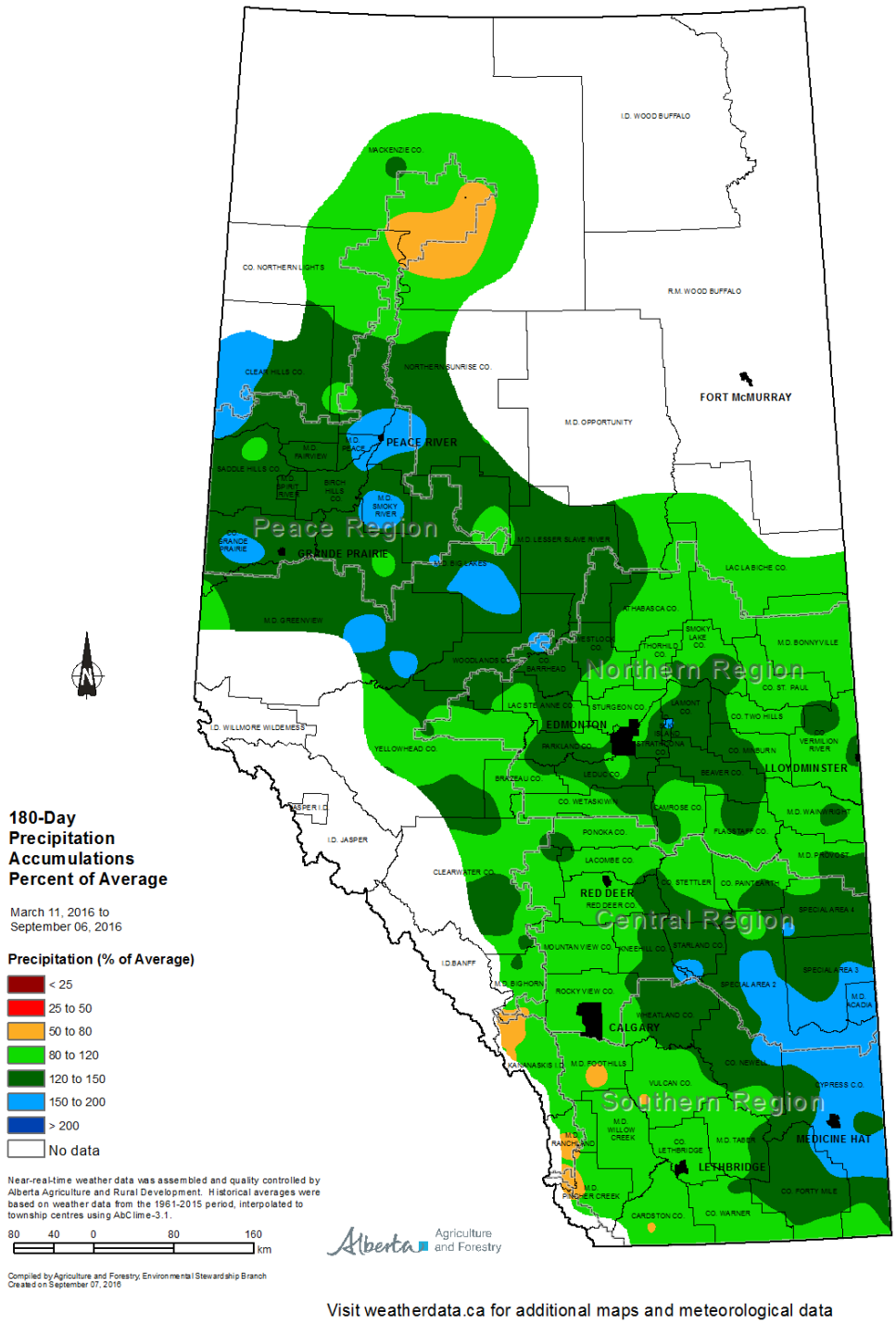


Fig 1.9 Precipitation as Percent of Average for March-September 2016

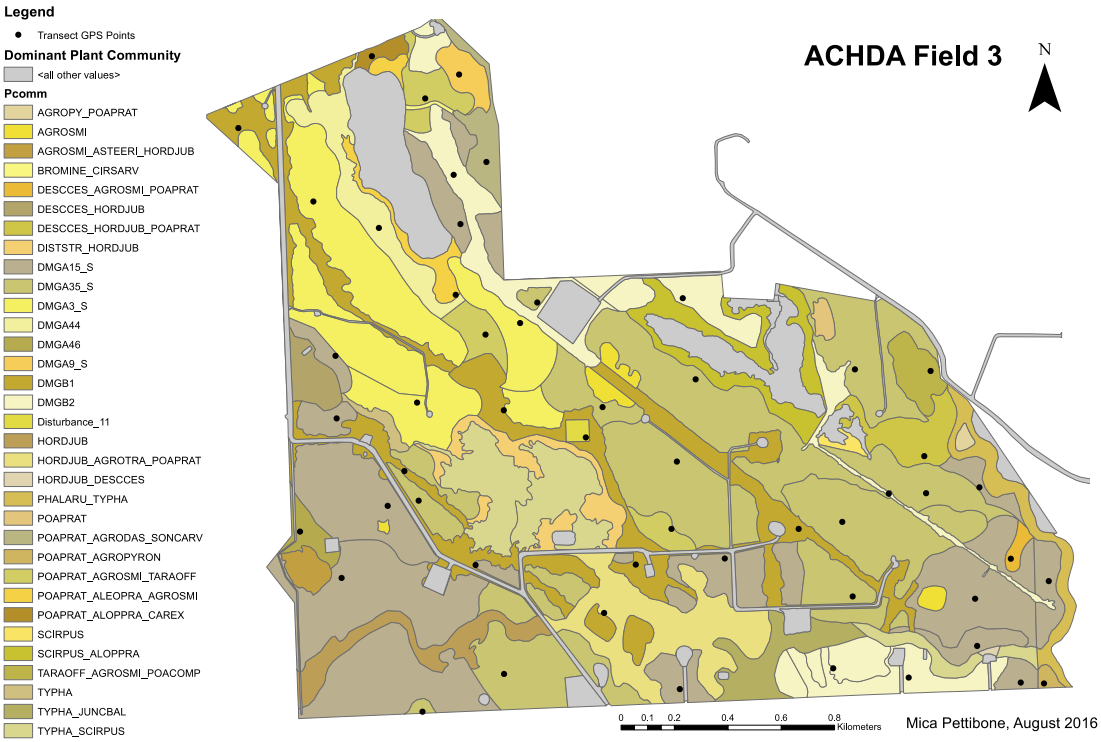


Fig 2.0 Plant Community's in Field 3

Total precipitation (mm)		
Month	**Normals (1981-2010)**	**2016**
May	38.9	70.8
June	64.5	54.1
July	44.9	105.6
August	34.7	32.8
Total	183	263.3

Table 1.0 Precipitation Normals vs 2016 Totals for Brooks Alberta (Data retrieved from http://climate.weather.gc.ca)