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## Effects of Intense Grazing on Cattails

The Rainwater Basin Wetland Management District is often asked the question “If your job is to manage for wildlife, why are you grazing the vegetation? There is nothing left for wildlife!”

It is believed that historically, grazing of Rainwater Basin wetlands by large herds, especially during dry conditions was a driving force in keeping wetland vegetation in an early successional state. Likewise, it is commonly observed that the lack of disturbance by animals, fire, or mechanical means will cause wetland vegetation to shift from annual, early successional plants to perennial, late successional plants such as cattail and river bulrush.

Historical accounts describe how Native Americans set prairie fires to attract bison to graze on the new growth of vegetation following fire. Patch grazing today demonstrates both bison and cattle preference for recently burned over non-burned grasslands.

Since wild fires and free-roaming bison no longer maintain the wetland vegetation, some type of modern day management has to be done to mimic the process. Management is now done using prescribed burning followed by intense livestock grazing.

Water birds, primarily ducks and geese benefit from the results of intense grazing. The benefits are open water, early successional plants, and greater abundance and diversity of aquatic invertebrates. Plants such as barnyard grass and smartweed produce an abundance of seeds, providing natural nutrients needed to put on body fat needed for the long migration and nest production. Cattail and bulrush are

### How much duck food does a wetland provide?

Food value of managed Rainwater Basin wetlands have been found to be higher than other types of habitat. A comparison is provided below.

Habitat	Kcal/acre	Ducks/Ac in Spring
Early succession wetland	250,000	>500
Late succession wetland	25,000	<50
Farmed wetland	100,000	>350
Stock dam	25,000	<50
Corn field (harvested)	148,583	>250
Soybean field (harvested)	10,729	<50

Vegetation height and density affects food availability as well.

### Management vs invertebrate populations:

*“But, some type of physical manipulation of vegetation in RWBR [Rainwater Basin] wetlands is warranted to not only enhance aquatic invertebrate productivity, but to reduce nuisance vegetation, enhance seed production of moist-soil plants, and create optimal habitat for various wetland-dependent birds. Of the management techniques we evaluated, grazing and disking may be more preferred because both of these techniques enhance key food resources (e.g., Chironomidae) and create optimal habitat conditions for waterfowl and shorebirds.”* (Source: Davis, C. A. and J. R. Bidwell. 2008. Response of aquatic invertebrates to vegetation and agriculture. Wetlands 28: 793-805.

unable to provide this food supply. The shredding of stems by hoof action and the deposition of animal waste by livestock increases the production of aquatic invertebrates.

Our example, described below is a modern day version of duplicating this ecological process.

From the fall of 2008 and throughout the winter a small portion of wetland, called the Bittern Unit, contained a dense, monotypic stand of cattail. The unit has a very small watershed and does not receive much for runoff. However, it does receive irrigation runoff which keeps the soil moist during the summer months—encouraging the growth of cattail. In past years, the unit has not been considered beneficial for waterfowl. For this reason, we decided to see how hard we could push grazing to influence the vegetation in the wetland.

On March 4, 2009 the conditions were right to allow us to do a prescribed burn. The burn was effective but did leave scattered patches of unburned cattail—representing about 25 percent of the area. Rains that followed saturated the soil and caused the cattail to begin growth and dominate the wetland plant community. A photo taken on May 25 showed how cattail dominated, providing no open areas or diversity of plants and plant heights.

We made arrangements with a neighboring livestock producer to graze the wetland. On May 25, 175 head of summer/fall calving cows were concentrated on 25 acres of dry wetland. Stocking rate was 7 cows per acre. They were left there for a total of 8 days before being moved to an adjacent grazing unit.

The result was a total of 1400 animal use

**March 4:** Vegetative conditions on the day of the prescribed burn was a dense stand of cattail. The only open area in the wetland was the small patch in the lower center of the photo.



**May 25:** Density and height of cattail prior to first graze on May 25. Photo was taken in deeper portion of wetland where a complete burn had not occurred. Cattails are about 24 inches tall.



Vegetation at the end of 56 animal use days per acre (total length of grazing was 8 days).



days or 56 animal use days per acre. Approximately 46 AUMs were harvested. An AUM (animal unit month) is equal to the amount of forage to feed a 1000 pound cow with calf for thirty days.

Immediately after the cattle were removed cattail regrowth began. The same herd was returned to the unit for four days beginning on June 19. This time the treatment was 700 animals use days or 28 animal use days per acre. Approximately 23 AUMs were harvested.

Again, cattail regrowth occurred but at a slower rate; partly due to dry conditions and partly due to the weakened state of the intensely grazed plants.

A July 15<sup>th</sup> photo shows that although the stand of cattail was thinner than at the beginning of the growing season, it was apparent that left alone, the cattail would be able to recover. It is obvious that the grazed cattail, although still present was not able to produce a seed head.

A third graze occurred for five days, beginning July 17. This time 274 summer/fall calving cows were used. Stocking rate was 11 cows per acre. This treatment resulted in 1370 animal use days or 54.8 animal use days per acre. Like the previous two treatments, the vegetation was grazed extremely short.

Removal of livestock by the end of July allowed time for annual, seed

**July 15:** Cattail regrowth two days prior to third grazing. Vegetation in foreground and on left side of photo shows vegetation height and composition with no grazing.



**Value of Cattails and Bulrush for Livestock Feed**

Forage tests on wetland plants at various times during the summer showed good crude protein levels during the early growing season. Protein levels remained high through August if plants were continually grazed.

	Early May	Late May	Early June	Late June	Early July
Cattail		25.0	19.5	20.3	15.8
Bulrush	19.1	21.1	19.2	24.4	13.1

**July 22:** Vegetation condition after five days of grazing with 274 cows (1370 animal use days).



The effect of both grazing and intense hoof action left much of the ground bare.





producing plants to regrow and produce seed for fall and spring migration. Photos taken on August 31 showed the contrast between the grazed and ungrazed portion of the wetland. Vegetation in the grazed area was dominated by barnyard grass with a scattering of cattail and smartweed. The portion of the wetland immediately outside the grazed area was dominated with a monotypic stand of cattail.

The challenges faced with this type of wetland management are the intensity of management and lack of livestock water. A large number of cattle must be used for a short period of time. Wetlands grazed with this method need to be dry or nearly dry, requiring a supplemental water supply. On this grazing unit, no water supply was available and water had to be hauled onto the site. At times during the summer, it required three trips a day by the producer.

During the periods of rest on the Bittern Unit, the livestock were kept in one larger wetland area until they returned to the Bittern Unit.

It is our plan to replicate this treatment on other wetland areas with dense monotypic stands of cattail, bulrush, or reed canarygrass. To accomplish this, wetlands will need to be fenced into smaller units, concentrating the animals and requiring more frequent moves to adjoining units. In addition, our goal is to install livestock wells to provide the needed water for large herds.

**August 31:** Photo taken along electric fence line. The left side shows what the vegetation in the wetland would have looked like without the treatment. The right side shows the contrast in vegetation height and composition.



Close-up shows a few cattail shoots still present by the area becoming dominated with barnyard grass and smartweed.



Bittern Unit Plant Composition Change from 2004-2007-2009

