Management Methods: Prescribed Grazing

PRESCRIBED GRAZING IN ACTION

Slide 1: CASE STUDY 1
Prescribed Grazing to Restore Bog Turtle Habitat

Slide 2: The Bog Turtle
Once abundant throughout New Jersey, bog turtles (*Clemmys muhlenbergii*) are now considered federally threatened and are endangered within the state. These palm-sized, elusive turtles are habitat specialists and rely upon abundant groundwater resources, organic soils, diverse herbaceous vegetation, and contiguous tracts of land for dispersal.

New Jersey wetlands provide one of the largest bog turtle strongholds in the eastern United States. However, exotic and native invasive plants now dominate nearly half of the wetlands currently known to support bog turtles in the state. In many cases, the new, altered plant communities provide far less suitable habitat conditions for the tiny bog turtle.

Slide 3: Target Species
Four invasive plants that are degrading bog turtle habitats are purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*), common reed (*Phragmites australis*), and Japanese stiltgrass (*Microstegium vimineum*). Once established in bog turtle habitats, these plants rapidly replace the native low-growing, grassy vegetation the bog turtle depends on for survival.

Slide 4: Purpose
New Jersey Division of Fish and Wildlife established four experimental sites in 1999 to determine the potential of grazing animals to restore bog turtle habitat. They hoped to find a benign alternative to herbicides and labor-intensive hand removal of invasive plants.

Slide 5: Site 1
<u>Horned Goats and Common Reed</u>
Two horned goats grazed a 0.2-acre plot that had been infested with common reed for over a decade.

After two seasons, common reed cover had decreased by 50 to 60%.

Native and other desirable species cover increased by 75%.

Slide 6: Site 2
Goats and Sheep on Common Reed and Japanese Stiltgrass

A 0.5-acre wet meadow was grazed by either four horned goats, or three sheep and two goats.

After two seasons, common reed cover was reduced by 85%.

Where goats grazed alone, Japanese stiltgrass grew, flowered, and set seed. When sheep were added, stiltgrass never reached more than three inches in height and did not reproduce.

Slide 7: Site 3
Cattle and Reed Canary Grass

Three dairy cows grazed a three-acre fen heavily infested with reed canary grass.

After one season of grazing, reed canary grass cover persisted at 95-100%.

However, the cattle trampled and compacted dense reed grass mats and transformed them into hollow-hummock topography, creating ideal habitat for bog turtles.

Slide 8: Site 4
Cattle, Purple Loosestrife, and Shrubs

25 cattle grazed a 35-acre pasture that included a three-acre limestone fen infested with purple loosestrife.

Cattle reduced purple loosestrife cover by 40% and shrub cover by 33%.

Slide 9: Conclusion

Although grazing did not always "control" the targeted invasive species at the three study sites, livestock helped to make the areas more hospitable to the bog turtle.

Slide 10: Learn More
References

Tesauro J. 2001. Restoring wetland habitats with cows and other livestock: A prescribed grazing program to conserve bog turtle habitat in New Jersey. Conservation In Practice 2:2. <http://http://www.conservationbiology.org/cip/article22wet.cfm>. Accessed 2007 May 30.

Hugh, MJ. 2004. The Plight of the Bog Turtle. In: Hales S, Mars S, Popolizio C, Robinson S, Stern C. US Fish & Wildlife Service Field Notes, New Jersey Field Office, Spring 2004. <http://www.fws.gov/northeast/njfieldoffice/Publications/Publications.htm>. Accessed 2007 May 30.

Slide 11: CASE STUDY 2

Goats Control Multiflora Rose

Slide 12: Target Species

Multiflora rose (*Rosa multiflora*) was imported from Japan in 1886 and promoted in the United States for its use as rootstock, erosion control, and as a "living fence" to confine livestock.

Multiflora rose occurs throughout the eastern United States and is listed as a noxious weed in several states. Dense thickets of multiflora rose exclude most native shrubs and forbs.

Slide 13: Purpose

Researchers from North Carolina State University conducted studies to determine the effectiveness of using goat and cattle grazing to control multiflora rose while enhancing more desirable vegetation.

Studies were conducted in an abandoned apple orchard in the Appalachian region of North Carolina. Goat grazing had been excluded from the orchard for two years prior to the study, and the site had become overrun with multiflora rose and other woody species.

Slide 14: Methods

Experimental plots were grazed by either six to seven steers, or six to seven steers with nine to 14 goats. Control plots were not grazed.

Rotational grazing periods lasted for four to six months over a four-year period. Animals were removed when forage availability was limited.

Vegetation measurements were taken in the spring and fall, before and after grazing periods each year.

Slide 15: Results 1

Multiflora Rose Control

In ungrazed plots and plots grazed only by cattle, multiflora rose canopy cover continued to increase over a four-year period.

Inclusion of goats controlled multiflora rose bushes whereas cattle provided only modest control.

Slide 16: Results 2

Herbaceous Grass Species

Grass species decreased in ungrazed plots whereas plots grazed by cattle alone or in combination with goats experienced an increase in the number of grass species.

Slide 17: Conclusion

Both grazing treatments resulted in higher numbers of grass species and increased vegetative ground cover compared to ungrazed plots.

The inclusion of goats may slow encroachment by woody species, and improve pasture productivity for cattle.

Slide 18: Learn More

Luginbuhl, JM. 2000. Use of goats to manage vegetation in cattle pastures in the Appalachian region of North Carolina. Sheep and Goat Research Journal 16(3):124-134.