Management Methods: Biological Control

Biocontrol Success on Refuges

Slide 1: Introduction

Biological control is an important management method for the National Wildlife Refuge System as it can provide long-term, low-cost, effective control in areas where other methods may not be feasible. National Wildlife Refuges have experienced success with biocontrol programs. Here are a few examples.

Slide 2: St. Johnswort Control at the National Bison Range, MT

Refuge managers at the National Bison Range in Montana saw dramatic results from foliage feeding beetles (*Chrysolina quadrigemina*) released to control St. Johnswort (*Hypericum perforatum*). Between 1994 and 1997, the number of acres infested with St. Johnswort was reduced from 8,000 to 400 acres. This biocontrol project saved an estimated $400,000 compared to the cost of herbicide applications that would have been necessary to treat widespread infestations.

Slide 3: Leafy Spurge Control at Waubay NWR, SD

Two species of leafy spurge (*Euphorbia esula*) flea beetles (*Aphthona czwalinae* and *A. lacertosa*) were released on the Waubay NWR in South Dakota in the mid-1990s. In just a few years, the beetles had reduced populations significantly. Leafy spurge plants had become almost undetectable where cover had previously been nearly 100%. Success with leafy spurge biocontrol at Waubay NWR has attracted a great deal of interest from local farmers and ranchers who are now working to implement biocontrol programs on their own land.

Slide 4: Purple Loosestrife Control at Great Swamp NWR, NJ

For the first three years after releasing *Galerucella calmariensis* beetles to control 150 acres of purple loosestrife (*Lythrum salicaria*), Great Swamp NWR biologists in New Jersey were beginning to wonder if would have to start spraying with herbicides again. Beetle populations were hard to establish for a number reasons, however, after the fourth year the beetles began consuming increasing acreage of purple loosestrife. Ten years after releasing beetles, refuge biologists report purple loosestrife to be completely under control.

Slide 5: Spotted Knapweed Control at Tamarac NWR, MN

The Tamarac NWR in northwestern Minnesota decided to use biocontrol to manage about 100 acres of upland that were completely dominated by spotted knapweed (*Centaurea maculosa*). In the mid-1990s, herbicide treatments were abandoned due to product and application costs and the ecological sensitivity of the site. Populations of the knapweed seedhead weevil (*Larinus minutus*) and root weevil (*Cyphocleonus achates*) took about 10 years to become established, but for the next five years they reduced knapweed densities dramatically.

Slide 6: Conclusion

During the spring of 2007, alligatorweed (*Alternanthera philoxeroides*) flea beetles (*Agasicles hygrophila*) were released into wetlands and moist soil management units at Aransas NWR in Texas. Hopefully, this and other releases across the National Wildlife Refuge System will produce more biocontrol success stories as agents establish and take effect on target invasive plant populations.