Utah State University
IPM Mini-Grant Proposal
2005

Project Title: <u>Biological Control of Leafy Spurge, Spotted and Diffuse Knapweed and Purple Loosestrife in Non-accessible Areas</u>

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Situation Statement: Leafy Spurge is an invasive perennial weed that is extremely competitive. Leafy Spurge emerges early in the spring and gets a head start on most other vegetation. As such, Leafy Spurge robs desirable plants of space, sunlight, water and nutrients. Prolific seed production and an extensive deep tap and lateral root system give this plant a huge competitive advantage and make control extremely difficult. Of special concern in these northern Utah counties, is the reduced productivity of range lands for livestock and wildlife as desirable plants are crowded out by thick Leafy Spurge patches. This plant is taking over hundreds of acres of quality rangeland, pastures, stream banks and waste areas each year. Most wildlife and range animals, excluding sheep and goats, avoid eating leafy spurge. If eaten in sufficient quantities, leafy spurge can cause weakness or death of some animals. Studies show a reduction of forage from 10 percent to 100 percent in infested areas. The use of herbicides for control is generally not effective, since the vast majority of these plants are in areas of rough terrain that are not easily accessible. Proximity to water ways is also a major limitation. We have had some initial success introducing bio-control agents for control of troublesome Leafy Spurge patches. Aphthona czwalinse, Aphthona flava and Aphthona nigriscutis all appear to be good possibilities, but little is known about their long term potential for Utah rangelands and pastures.

Spotted and Diffuse Knapweed are short-lived perennials, native to Eurasia. These troublesome knapweeds are rapidly infesting Utah rangelands, pastures and roadsides. Knapweeds release chemical substances into the soil that inhibit the growth of competitive vegetation. As such, grazing levels are significantly reduced and economic impacts on Utah's rural communities are becoming substantial. Chemical treatments of these troublesome weeds are often not practical because they are growing in areas that are not easily accessible. Larinus minutus is a weevil that has been introduced on Diffuse Knapweed and appears to be doing a respectable job. We think it will also work on Spotted Knapweed, but have not had the resources to expand that effort yet.

Purple Loosestrife is a sem-aquatic bushy perennial plant that reproduces by seed and creeping rootstock. This plant has a strong affinity for moist or saturated soils or marshy wetlands. In certain areas of our northern Utah Counties, Purple Loosestrife has become so thick as to impede water flow. Clogged irrigation or drainage ditches, restricted streams and blocked wetlands are all adversely impacted by the growing presence of this troublesome, but beautiful plant. The

proliferation of Purple Loosestrife in wetlands also adversely alters native plant communities that may serve as vital habitat for waterfowl, fur-bearing animals and other aquatic wildlife.

Because Purple Loosestrife is generally found in wet, marshy areas, typical methods of control are not feasible. Biological control with a small weevil, Galerucella pusilla, has shown promise in reducing plant populations to acceptable levels. These insects, initially released near Pelican Pond by APHIS in 1997, need continuous management to move to new or inaccessible areas. Their populations must also be monitored because of mortality from flooding. The vast majority of private and public land owners are not aware of this biological control option.

Objectives: Since biological control agents have already been introduced, our major objectives are to:

* assess successes or failures of established insectaries in Counties
* collection and recovery of bio-control agents in established areas
* release and re-distributing bio-control agents to new areas.
* education and public awareness of benefits of bio-control agents
* cooperator involvement and professional personnel training

Procedures:

Project leaders will contact land owners of existing and prospective sites
Visit respective sites to evaluate suitability for establishing insectaries
Obtain permission from land owners to establish and monitor sites
Collect bio-control agents using proper procedures from established phase one sites
Properly release bio-control agents at new phase two sites
Involve cooperating land owners and other personnel in these steps
Organize two educational field days to illustrate potential of bio control
Write and print 2000 educational brochures for state wide distribution

Budget:

Two Educational Field Days	$ 500.00
2,000 Educational Brochures (high quality, 8 page, 4 color process)	$ 975.00
Photographer and layout editor	$ 500.00
Mileage (800 miles @ .25/mile)	$ 200.00
Monitoring/collecting Bio-control Species	$ 350.00
Equipment for Redistribution of Bio-control Agents (sweep nets, vials, cartons, coolers, blue ice, clippers etc)	$ 200.00
Total Budget	$2725.00

Noxious Weeds Targeted for Integrated Pest Management