

# IMPACT

 University of Idaho  
Cooperative  
Extension System

Butte County, PO Box 832, Arco, Idaho 83213 208-527-8587 Fax 208-527-3469

## Bug Bombing: Aerial Application of Flea Beetles for Leafy Spurge Management

### *The Situation*

Leafy spurge (*Euphorbia esula*) is an aggressive, long-lived, deep-rooted, herbicide-resistant perennial invader that was introduced into North America from Eurasia. This exotic plant produces an abundance of sticky seeds that are explosively expelled up to 15 feet, and can spread vegetatively more than 15 feet per year. Leafy spurge forms dense stands that exclude other vegetation. Its bitter, irritating sap discourages grazing on or near leafy spurge by wildlife and most domestic livestock. Spurge is capable of successfully colonizing a wide range of habitats from dry rocky slopes to moist riparian areas. These characteristics make it a significant threat to the intermountain range ecology and domestic forage production.

In the early part of the century, leafy spurge was introduced into Butte and Custer Counties as an ornamental. The undesirable nature of the plant was not recognized until the 1950's. Since that time, leafy spurge has spread across public and private lands, and now infests more than 8,000 acres in Butte and south Custer Counties. This includes remote mountainous areas as well as the banks of the irrigation system and natural waterways of the area. In addition to spreading in flowing water, on farm machinery, in harvested forage, and on the

coats of wild and domestic herbivores, leafy spurge is a favored food of mourning doves, which can successfully transport the seed long distances in unpredictable directions. It is conservatively estimated that \$100,000 annually is expended in time and materials to suppress this plant in the Lost River watershed.

### *Our Response*

Working with public and private land managers in the area, it has been possible to assemble an informal area-wide plan to reduce the spread of leafy spurge. This integrated program includes mapping and monitoring of the problem, public education, landowner education, short and long term herbicide applications, law enforcement activity, development of insectaries, the harvest and re-release of biological control agents and now bio-agent delivery to remote locations using helicopter.

The Animal Plant Health Inspections Service (APHIS) released 300 *Aphthona nigricutis* (flea beetles) in Lost River in 1988. The larva of this and other *Aphthona* species feed on the roots and shoots of leafy spurge and the adults feed on the leaves.

This original release has been nurtured, harvested and redistributed in the drainage in accessible loca-



 University of Idaho  
*College of Agriculture*

To enrich education through diversity the University of Idaho is an equal opportunity/affirmative action employer and educational institution.  
University of Idaho and U.S. Department of Agriculture Cooperating

All contents copyright and copy; 1999-2001. All rights reserved.

tions. It is now possible to economically harvest hundreds of thousands of these spurge-eating beetles in a few hours. In cooperation with the US Forest Service (USFS), Bureau of Land Management (BLM) and the weed departments of Butte and Custer counties, we have harvested and released thousands of *A. nigriscutis* in accessible areas.

In 1999, we discovered that the Rocky Mountain Research Station of the USFS with a grant from the and Forest Health Protection Division of the USFS had successfully demonstrated that these flea beetles could be delivered and established by dropping them from a helicopter on remote and inaccessible locations. We immediately mobilized our cooperators and with \$2,000 of Idaho Department of Agriculture Cost-Share Grant Funds we implemented a program in the Lost River Valley to deliver flea beetles to our inaccessible populations of leafy spurge.

## ***Achievements***

“Bug bombing” was wildly successful. We collected over 400,000 insects at a cost of about \$0.0021 each. Two hundred and forty thousand of these were packaged in 120 specially designed “bug bombs”. These bug bombs were placed in inaccessible locations using a helitack helicopter and their location recorded using GPS. In 2001, we will visit 10% of the sites to evaluate establishment. However, based on our experience with ground delivery in similar habitats, we expect to find better than 95% establishment.

The program appears to be cost effective. Our cost of a single “drop” was about \$20. This included direct helicopter costs, helicopter ferry time and chase crews, the materials and labor to construct the “bombs”, collection and “arming” the “bombs” with insects. This compares favorably with ground crews that can deliver insects to 20 or less sites per day. If one assumes that in several years each drop will expand to a diameter of 1000 feet, this works out to a one-time “control” cost of \$7.50 per acre, as compared to perennial or biennial herbicide treatments at \$150-250 per acre, or permitting the spurge to “run wild”.

There are also the subjects of timeliness and efficiency that are harder to quantify. *However, in our opinion, since the sites treated with the helicopter are so difficult and time-consuming to get to, none of them would have received treatment without using the helicopter.* Our partners who have other areas with access problems, such as the South Fork of the Snake River are considering the use of the “bug bomb” approach.

## ***The Future***

The “bug bombing” will be continued and extended to include “saturation bombing” of larger infestations on the south side of Antelope Creek. The “bombing” procedure also permits the mapping of remote spurge locations.

This program will be carried on in conjunction with the inventory, education and weed management programs of the Lost River Coordinated Weed Management Area.

## ***Cooperators***

Butte County and Custer County Department of Noxious Weeds  
Salmon District, Bureau of Land Management  
Big Butte Resource Area, Idaho Falls District, Bureau of Land Management  
Idaho Department of Agriculture  
Idaho Department of Transportation  
Big Lost Irrigation District  
Butte County and Custer County Commissioners  
US Animal Plant Health Inspection Service  
Lost River Ranger District, USFS  
Forest Health Protection, USFS  
Rocky Mountain Experiment Station, USFS  
Lost Rivers Coordinated Weed Management Area  
sponsored by the Butte Soil and Water Conservation District

## ***For More Information***

Charles C. Cheyney, Extension Educator  
University of Idaho, Butte County Cooperative Extension, PO Box 832, Arco, ID 83213; ph: 208-527-8587; fax: 208-527-3469; [butte@uidaho.edu](mailto:butte@uidaho.edu)