WYO-BIO

Biocontrol News and Views for Wyoming

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Consortium Funding Report

John L. Baker, Fremont County Weed & Pest Control District

Wyoming participates in a number of consortia that fund biological control work on specific weeds. Consortia allow research costs to be spread across several states and agencies reducing the burden on a single entity. Wyoming Weed & Pest Control Districts currently contributes to North American consortia for Canada thistle, Perennial pepperweed, Dalmatian toadflax, Salt cedar, Spotted knapweed, Russian knapweed, Hoary cress, Dyers woad, and Houndstongue and has made significant commitments on many of these weeds. Current research status can be followed by reading the CABI Quarterly Report on their website at www.cabi-bioscience.org/ch.asp. It appears that at the present time the Wyoming funding commitments for 2006 will be met. A special thanks to Sublette County Weed and Pest which has made a significant contribution this year joining the many other Wyoming contributors. We can now start building our account balances for the 2007 research season. Our working relationship with overseas cooperators is much stronger when we have cash in the bank and know what we can afford.

Overseas research on Russian knapweed is tapering off, as is Dalmatian toadflax. Our support for Canada thistle, Salt cedar, Spotted knapweed, and Houndstongue is low as those programs, while still active, are either in the distribution phase or pending permits. The research programs for Perennial pepperweed, Hoary cress and Dyers woad are growing and will need the greatest contributions in the near future. Each species could annually cost over $100,000, a situation aggravated by a sinking US dollar in the world market. Successful biological control programs for Leafy spurge and Musk thistle in the recent past can help us justify current and future spending on Russian knapweed and the mustards.

Current Balances after meeting 2006 commitments:

Canada thistle	$13,262.64
Perennial pepperweed	$6,000.00
Dalmatian toadflax	$2,000.00
Salt cedar	$3,500.00
Spotted knapweed	$0.00
Russian knapweed	<$363.04>
Hoary cress	$8,000.00
Dyers woad	$15,000.00
Houndstongue	$16,532.00

Inside Wyo-Bio

Chinese Beetles Munch Salt Cedar

Tim Collier, College of Agriculture, University of Wyoming

On some riverbottoms and lakesides across Wyoming, if you listened closely, you might hear the sound of beetles munching. Originally from Fukang, in Northwestern China, the beetle is called *Diorhabda elongata*, and they are muching *Tamarix* or salt cedar. Salt cedar is an invasive tree/shrub that steals groundwater and chokes out native plants all across the Western U.S.

Released in Lovell, Wyoming in 2001, additional releases have been made in six Wyoming counties in 2005 and four counties in 2006 through cooperation between USDA APHIS and the University of Wyoming. It is hoped that the high beetle populations and extensive defoliation caused by the beetle at Lovell will be repeated at these new sites, and that the beetle can ultimately be distributed throughout Wyoming.

Diorhabda damages salt cedar by feeding on foliage, both as a larva and as an adult. Adult *Diorhabda* first appear in June, emerging from the leaf litter under plants to feed and lay clusters of tan eggs. First-generation larvae soon appear on the foliage, tiny and black at first but growing to grey-green grubs up to a quarter of an inch long. The larvae pupate in the leaf litter and emerge as first-generation adults in mid-July. Second-generation beetles develop as larvae in July-August and appear as adults in early September. These second-generation adults feed briefly and then head for the leaf litter where they spend the winter.

One of the first questions about *Diorhabda* has been: is it "safe", in other words, is it harmful to native species? USDA ARS scientists have evidence that *Diorhabda* is indeed relatively safe. In host specificity tests, Chinese *Diorhabda* fed only on salt cedar and a few native species of Sea Heaths or *Frankenia*. At Lovell and in Nevada, *Diorhabda* nearly ignored transplanted *Frankenia*, even as salt cedar was being heavily defoliated by large beetle populations.

The second question about *Diorhabda* is whether the beetle can kill salt cedar plants. Salt cedar plants are tough; they resprout from the base after being defoliated. Multiple defoliations, however, may kill even large salt cedar trees. At the initial release sites in Lovell and Lovelock, Nevada, at least some individual trees are dying. The impact of *Diorhabda* may take some time but the potential for success appears to be high.

The third question that researchers and land managers may find themselves asking about *Diorhabda* is: "where'd they go?" In past releases of *Diorhabda*, few beetles may be seen at the release site in the first few years following the release. The reason for this is not entirely clear but the beetles may move off the site or enough get eaten by predators that the population grows slowly at first. Research addressing this question is ongoing but initially low numbers are not necessarily a cause for concern.

In short, we now have a good biological control agent for salt cedar; as *Diorhabda* populations establish along riverbottoms and lakesides across Wyoming, the hope is that salt cedar will ultimately decline, leaving more water and habitat for humans, livestock and wildlife.

Adult *Diorhabda* Beetle
Photo Courtsey of Cory Gilchriest

Toadflax Gets Beat Up in Fremont County

John L. Baker, Fremont County Weed & Pest Control District

There are about 100 acres of Dalmatian toadflax in Fremont County scattered around the Lander cemetery, golf course, and Squaw Creek Area. The Dalmatian toadflax appeared to be spreading faster than the District could spray. The toadflax was mostly growing in areas where Tordon use has been prohibited. We released *Brachypterolus pulicarious and Calophasia lunula* in 1996. *Calophasia* has never been found, but *Brachypterolus* established. For the first time in 2002 and again in 2003 we released *Mecinus janthinus,* received from APHIS. *Mecinus* established well and we were able to redistribute in 2005 and 2006. We visited several of these sites on a recent weed tour of the Popo Agie Weed Management Area. The Dalmatian toadflax at the early release sites is little more than dead stems from last year. Most crowns are completely dead and a few have a single green stem four to six inches tall with no flowers. These sites were very impressive when compared to photos from the year before. A few years ago, it appeared that Dalmatian toadflax was poised to take over from Leafy spurge as it declined. Our tour in July gave us all hope that this weed is also going to be severely impacted by biological control.

Sheridan County has Great Year for Bios

John L. Baker, Fremont County Weed & Pest Control District

Bob Benjamin reports that they collected over three million *Aphthona* beetles for redistribution this year. They are making good progress on inoculating all Leafy spurge in the county with available agents. If you need insects for redistribution, it sounds like Sheridan County Weed & Pest can help out next year.

Drought Limits Fremont County *Aphthona* Collecting

John L. Baker, Fremont County Weed & Pest Control District

Aphthona nigriscutis and *A. lacertosa* emerged this year in early June across the county, but populations were low in contrast to 2005 when insects actually darkened the landscape in patches. Nancy Webber, Fremont County Weed & Pest Assistant Supervisor was able to collect at only a few sites where the flea beetles were present in adequate numbers. These sites were largely spent by the first week in July. We were unable to supply *Aphthona* beetles to other counties. It appears that the 2006 decline is drought related, as there is still some Leafy spurge at these locations. However, county-wide we have experienced a significant decline in the Leafy spurge where *Aphthona* has been established for ten years or more; rendering collection of beetles for redistribution impractical at sites that once yielded millions of insects for others in Wyoming and surrounding states.

ABOUT WYO-BIO

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Published three times yearly, **Wyo-Bio** is intended to keep individuals concerned with weed control in Wyoming informed about the latest in biological control news. Free to interested parties, **Wyo-Bio** includes upcoming insect collection dates, the latest finds in biological control research, and other news as it relates to biological control in Wyoming.

Wyo-Bio is a joint effort of the Wyoming Biological Control Steering Committee, the University of Wyoming Department of Renewable Resources and the Wyoming Cooperative Agricultural Pest Survey (CAP) program.

Suggestions on content and submissions for features are welcome at the above addresses.

Wyo-Bio Mailing List

Since it has been several years since the mailing list was last updated, I am requesting your help. If there is anyone in your organization that you think would like a newsletter and did not receive one, please fill out the form below and return it to Fremont County Weed & Pest Control District, 450 North 2nd St., Rm 315, Lander, WY 82520 or the information can be emailed to Roz@fcwp.org. If you are receiving this newsletter and would like to be removed form the mailing list you can write me at the above address or email and I will remove your name from the mailing list. Anyone interested in receiving the Wyo-Bio newsletter electronically in a .pdf format please let me know and forward your email address, I will be implementing that option soon. Check out our website at www.fcwp.org, each issue of the newsletter will be posted on the website at the link www.fcwp.org\wyobio.

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