

WYO-BIO

Biocontrol News and Views for Wyoming

Volume 7, Number 2  Fall 2006

SOME CABI NEWS

Hariet L. Hinz, CABI Europe-Switzerland

I recently had the pleasure to visit Wyoming together with my colleague, Urs Schaffner, and to participate in the Annual Weed & Pest Council Conference and consortia meetings of the Wyoming Biological Control Steering Committee organized by Brett Richardson. Some of you who read this Newsletter will have been there, but for those who were not, I would like to highlight some recent developments that may be of interest. First of all we had some recent internal changes at CABI in Switzerland that you might have already read about in our last Quarterly Report. Matthew Cock, Centre Director and formerly leader of the Weeds Section took over responsibility coordinating CABI's six international research centres, as well as continuing as Regional Director for the Switzerland Centre. Accordingly, he delegated some of his former responsibilities, so that from 1 July, I took over leadership of the Weed Biological Control Programme, while my colleague, André Gassmann became Assistant Centre Director, apart from his responsibility for several weed biocontrol projects.

Second, since I appear to be working more and more on weeds of the family Brassicaceae, I would like to highlight some developments here as well. I am currently responsible for four brassica weeds, i.e. garlic mustard, hoary cress, dyer's woad and perennial pepperweed. Although garlic mustard is mainly a problem in the eastern U.S., plants regularly pop up in Washington and surrounding States. It is the oldest

of the four projects and therefore furthest advanced. We are currently preparing our first petition for the root-feeding weevil *Ceutorhynchus scrobicollis*, which is able to kill overwintering rosettes and reduces seed production of surviving plants. We think that it has good great potential to be an effective agent against garlic mustard.

You might be wondering why I'm telling you all this although you don't even have the plant in Wyoming. Well, we think that the acceptance of this petition will also be of relevance for other projects, since it would be the first biocontrol agent released against a brassica weed in North America. Apart from important commercially grown plants, e.g. canola, there are 95 genera native to North America in the same family. So no easy task to find a safe biocontrol agent! However, one should not forget that there has been successful *and* safe biocontrol of target weeds with a large number of native relatives in the past. For instance, there are 100+ native species related to leafy spurge.



Pictures by CABI staff

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Vegetative Ground Cover on *Apthona nigriscutis* Release Sites

Tracking the Trend Over Sixteen Years

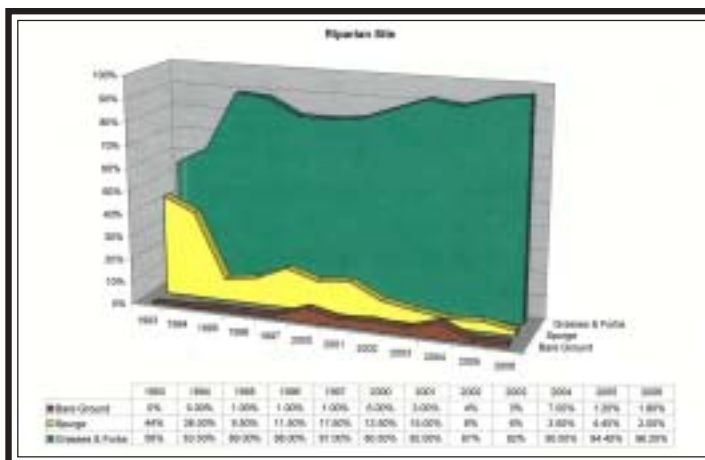
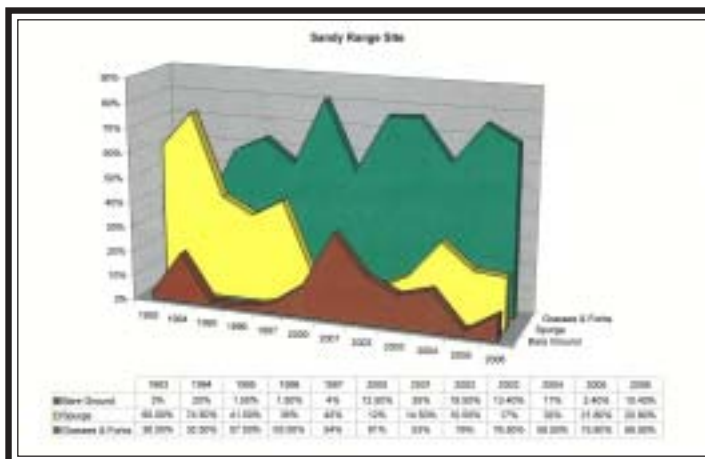
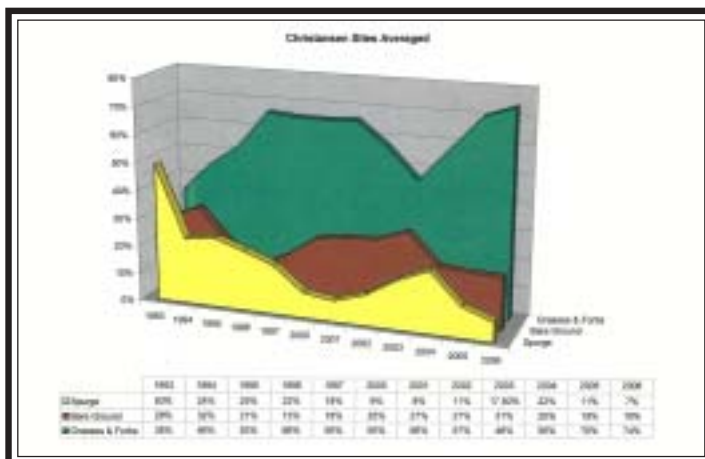
Nancy Webber, Fremont County Weed & Pest Control District

In 1990 the biological control agent *Apthona nigriscutis* was released on heavy infestations of leafy spurge in the Squaw Creek area west of Lander in Fremont County. In 1993 Weed and Pest Control staff started collecting data to assess the impact that the bio-agents were having on the leafy spurge at a number of the sites where *A. nigriscutis* had been released. With the exception of 1998 and 1999, the data has been collected every year since 1993. The data from this study was reported in Wyo-Bio in 2003. That data and the data recorded since is included in the graphs presented here.

The release sites were analyzed for plant canopy coverage using a ten pin point frame. Permanent transects were laid out in a spoke like fashion from the point of release. At four sites five 50 foot transects were measured at five foot intervals along each transect totaling 500 data points at each of these sites. The other three sites have eight 100 foot transects measured at 10 foot intervals totaling 800 data points per site.

While the data shows considerable variation from site to site, and from year to year, at all sites the vegetative ground cover of leafy spurge has leveled off at considerably lower levels than before the insects were introduced. When the four most consistent rangeland sites were averaged the leafy spurge coverage went from 50% in 1993 to 7% in 2006. Over the same period the percentages of grasses and forbs went from 35% up to 74%. On the one riparian site studied the data shows the leafy spurge canopy coverage decreased from 44% cover in 1993 to 2% while grasses and forbs increased from 56% up to 96%.

With the introduction of the biological control agent, *A. nigriscutis*, there has been a reduction in leafy spurge canopy and an increase in desirable vegetation on both dry rangeland and riparian sites.



Historical Wyoming Reported Biological Control Activity

Biocontrol Agents Released

52	Biocontrol Agent Species
15,482	Releases
44,515,887	Organisms Released (Not including mites, nematodes, or rust)
20	Weed Species Targeted

Biocontrol Agents Recovered

36	Biocontrol Agent Species
7,450	Recoveries at release site after 1 year
399	Recoveries more than .25 miles from release site after 1 year
15	Weed Species with Recovered Biocontrol Agents

Information provided by Wyoming Pest Detection Program www.uwyo.edu/capsweb caps@uwyo.edu

Yet as Lars Baker and others have shown, the successfully released *Aphthona* beetles cause no long-term damage to these.

Next year we hope to follow with a petition for the hoary cress gall-forming weevil *Ceutorhynchus cardariae*, which we have been studying since 2003. I will include more details on this weevil in one of the next issues of the newsletter.

Dyer's woad is still a rather localized but severe and spreading problem in South-eastern Idaho, Northern Utah and Western Wyoming. We are working with a root-feeding weevil (*Ceutorhynchus rusticus*) as a potential biocontrol agent against this plant, which in fact has a similar biology and impact as *C. scrobicollis* on garlic mustard.



Typical field site of dyer's woad in Kazakhstan
Photo by H. Hinz, CABI

So far results of host specificity tests look promising. In addition we started host specificity tests with a shoot-mining flea beetle, *Psylliodes isatidis*, which is one of the most prolific insects I ever worked with. Emergence of 100 beetles and more from one plant is not uncommon, in which case not much is left of the plant! During 2006 we conducted surveys in Turkey and Kazakhstan. What struck me most during my survey in Kazakhstan was the rarity of the plant and the low density at which it grows in its natural environment - in sharp contrast to parts of the Western US.

Perennial pepperweed (PPW) is the most recent of the four brassica projects. In 2005 CABI joined forces with Massimo Cristofaro from BBKA (another not-for-profit foreign exploration institute, based in Rome). Massimo used to work at the USDA ARS station in Montpellier, France, and they mainly receive their funding from ARS sources. Our collaboration is a unique opportunity to make the most of our complementary expertise and networks, which can only be beneficial to the success of the project. During our first joint surveys in Turkey and Kazakhstan during 2006, we were able to find sites where PPW was heavily damaged, take attacked plant material back to Switzerland and rear insects through. Some of these show good

potential as biocontrol agents (see below). I therefore hope to go back to Kazakhstan next year, the vast, contrasting landscapes of which reminded me a lot of parts of the Western United States. Except for the odd camel maybe ☺...

These are just some recent highlights. In case you are interested in more details, we are currently preparing Annual Reports for all of



Rust on PPW in Kazakhstan (Photo by Massimo Cristofaro, BBKA)

these projects, summarizing work conducted during 2006. Just contact me via email (h.hinz@cabi.org) in case you are not already on the distribution list for these reports.

I hope some of this was of direct interest to you. We are planning to include short articles regularly now in the



Perennial pepperweed damaged by the flea beetle *Phyllotreta reitteri*
Photo by Massimo Cristofaro, BBKA



Adult of *Phyllotreta reitteri*
Photo by Ghislaine Cortat, CABI

Wyo-Bio Newsletter, featuring highlights of particular relevance to Wyoming.

Finally I would like to thank Brett Richardson and all members of the Biological Control Steering Committee for their continued support and trust in us. It's a pleasure working with you people!!!



PPW damaged by the gall-forming weevil *Ceutorhynchus marginellus*
Photo by Massimo Cristofaro, BBKA

ABOUT WYO-BIO

Editor: Tim Collier
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Submit articles to:
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Published four 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 from 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 in full color on the website at the link www.fcwp.org/wyobio.

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