Biocontrol: Students Learn To Control Weeds Without Herbicides

Project participants: Clark Israelsen, Joel Merritt, Jake Forsgren and Amber Medenhall

Leafy spurge and Dalmatian toadflax are invasive weeds. Leafy spurge has taken over vast areas in both Montana and North Dakota. The weed severely reduces the productivity of rangelands for cattle. Dalmation toadflax grows on rangelands and along roadsides with sandy soils.The weed is very aggressive and hard to control due to deep roots and a thick waxy leaf cuticle.

Biocontrol reduces the productivity of pests using natural predators, parasites, or pathogens. One example of biocontrol is using of ladybugs to eat on aphids. This project engaged high school students to collect Dalmatian toadfalx stem weevils and leafy spurge flea beetles. Insects were then released in weedy areas without the bugs.

On May 10th and 11th, Joel Merritt (Cache County Weed Department), Jake Forsgren, and Clark Israelsen (Cache County Extension) met with FFA students enrolled in Plant Science classes at Mountain Crest and Sky View High Schools and presented a powerpoint on biocontrol and weed identification. All interested students were invited to sign up for field days in the summer where they would actually collect and redistribute insect under the supervision of County Weed Department and Extension professionals.

During the summer of 2011, Cache County Weed Department and the Cache County Extension Office hosted two field days to allow students in Cache County to experience collecting and releasing of biocontrol agents. The agendas below outline student activities and what they learned.

June 16th and 17th, 2011

Day One

9:00 am – Meet at Logan High

9:00-10:00 am – Student introductions. Watch selected clips from the movie “Gremlins” to introduce the concept of an invasive species.

10:00-11:00 am – Powerpoint by Eric Bingham: 1) What are invasive species? 2) Why they are so hard to control? 3) Using biocontrol to keep invasive species in check.

11:00-11:30 am – Lunch (Pizza)

11:30-12:30 pm – Travel to Ogden Canyon to collect bugs for biocontrol for Dalmatian toadflax.

12:30-1:00 pm – Hike up canyon to collection site

1:00-3:00 pm – Collect Dalmatian toadflax weevils, aspirate them out of the nets, and put them in containers for tomorrow’s release.

3:00-4:00 pm – Return to Logan High School.

Day Two

9:00-9:30 am- Meet at Logan High. Discuss yesterday’s collection as well as today’s release.

9:30-9:45 am – Travel to Poison Plant Lab

9:45-1:30 am – Poison plant lab presentation/observation of various poison plants growing in Cache County.

11:30-11:45 am – Travel to Dalmatian toadflax biocontrol release site near first dam in Logan.

11:45-12:15 pm – Release Dalmation Toadflax weevils and fill out a biocontrol release form.

12:15-1:00 pm – Lunch at first dam (Sub Sandwiches)

1:00-3:00 pm – Travel to Cornish to view a Dalmatian toadflax site that has been successfully controlled using the Dalmatian toadflax weevil. Stop for ice cream and look at leafy spurge growing in Richmond.

3:00-4:00 pm – Return to Logan High to fill out evaluation form.

This workshop went great! We had the cooperation of three teachers from Logan High School that brought 18 students for these two days. Amber Mendenhall (the APHIS biocontrol coordinator) and Clark Israelsen also helped with the field trip. We collected over 5,000 toadflax weevils. We collected so many bugs that we had plenty for Cache County releases, and were able to send the leftover bugs

with Amber Mendanhall to take to Salt Lake for releases there.

Students learned how biocontrol works and received hands-on experience with biocontrol. Many were overheard students say things like, “This is actually really fun!,” and “How do I get a job doing this?” The weather cooperated and the bugs were out in droves. The teachers that participated all said that they would love to have this be a regular activity for their kids to every summer. Amber said that it was the most successful toadflax biocontrol collection she has ever had.

June 30th
9:30 am – Meet at Sky View FFA building
9:30-10:30 am – Powerpoint by Eric Bingham: 1) What are invasive species? 2) Why they are so hard to control? 3) Using bio-control to keep invasive species in check.
10:30-12:00 pm – Collect leafy spurge biocontrol bugs from a field in Richmond.
12:00-12:30 pm – Travel to release site in Cove. Eat lunch on the bus (pizza)
12:30-1:30 pm – Hike up to release site in Cove, release bugs, and fill out biocontrol release form.
1:30-2:00 pm – Return to Skyview FFA building.

 Another great day for biocontrol! Four teachers from Mount Logan Middle School and Logan High, and two teachers from Skyview, as well as Amber Mendenhall and Clark Israelsen all helped make this fieldtrip a success. We had a total of 20 students, and collected over 100,000 leafy spurge flea beetles. We were able to send 10 releases with Amber to take to Salt Lake, three release in Cove, and six more releases were made the next day in other areas of Cache County. Again we were fortunate to have the weather and the bugs both cooperate. We were worried that the leafy spurge bugs wouldn’t be out yet, since it’s been so cold, but the bugs came out a few days before our workshop. The teachers and students alike had a lot of fun, and developed a better understanding of biocontrol.

If bugs had been purchased for release, the cost of leafy spurge flea beetles would would be $10,000 and the cost of toadflax stem weevils woud be $7,500.

Photos: Top and middle photos collecting bugs. Bottom photo

More information: slide shows, article, and movie

1. Invasive Species (powerpoint)
2. Biocontrol for Invasive Species (powerpoint)
3. Herald Journal Article