

**Priorities of Future Bioagent Project Work**

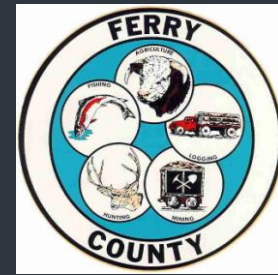
The following non-indigenous weed species identified as priority targets for possible future biological control within Okanogan & Ferry Counties. Currently, there are biological agents certified for release in the United States that will attack Dalmatian toadflax and Knapweeds. The most effective agent on Dalmatian is not abundantly available yet, but representatives of the Regional Bioagent Project are actively pursuing its distribution throughout this area. The first redistributions made in 2001. There are no approved agents for use against Houndstongue, Hoary alyssum, Common bugloss, or Yellow and Orange hawkweeds in the United States at this time, but they are currently being studied. There are, however, biological agents presently used in Canada to fight Houndstongue. These weevils have crossed the Canadian border into the United States; it is against the Endangered Species Act to redistribute this agent in the USA.

**Priority Weeds to be on the Lookout for and Control Through Non-Biological Means.**



Z://WSU Office/WSU-1/Bioagent Project/2010/Regional Flyer. docx

**WSU Ferry County Extension**  
**Courthouse**  
 350 E. Delaware Ave. #9  
 Republic, WA 99166  
 509.775.5225 X1116 phone  
 509.775.5218 fax  
[fagerlie@wsu.edu](mailto:fagerlie@wsu.edu)  
<http://ferry.wsu.edu/>



Cyphocleonus achates  
 For Spotted knapweed

**Regional Integrated Weed Control Project**  
**Request for Biological Agents**  
*Project Director:*  
**Daniel L. Fagerlie**

Project managed by WSU Ferry County Extension and jointly funded by that office in partnership with USFS Colville and Wenatchee-Okanogan National Forests Secure Rural Schools Title II projects, in participation with Ferry & Okanogan County communities and The Colville Confederated Tribes.

The Regional Integrated Weed Control Project is an effort to expand the knowledge of invasive weeds and availability of biological agents for the suppression of non-native noxious weeds in our area. The WSU Ferry County Extension office is leading this project, with foundation funding of USFS Ferry & Okanogan Counties RAC projects, and The Colville Confederated Tribes and Bureau of Indian Affairs. This collaboration provides for the collection, redistribution, monitoring, and education on the use of biological agents, weed identification, and control options to fight noxious. This work carried out in close cooperation with USDA APHIS (Animal and Plant Health Inspection Service) personnel, WSU Extension Entomologist Gary Piper, as well as representatives of County Extension, County Weed Boards, State Weed Board, The Confederated Tribes of the Colville Reservation, USFS National Forests, and private landowners in the regional area.

**What are Noxious Weeds?**  
 Noxious weeds are non-native plant species, most of which originated in Europe and Asia. Many of these weeds were introduced to North America either by accident, possibly as contaminants of crop seed, or deliberately, perhaps as ornamental plants, for dye, or for medicinal purposes. In their native ecosystems, these plants do not pose a problem because they evolved with natural controls such as insect predators, plant pathogens, fungi, other competing plants and grazing animals. Without those natural controls in North America, these non-native plants overtake the native plant communities here, decreasing biological diversity, reducing forage for wildlife and livestock, increasing water erosion, and altering nutrient cycling.



Dan Fagerlie,  
 Project Director



Diffuse  
 Knapweed

## What is Biological Control?

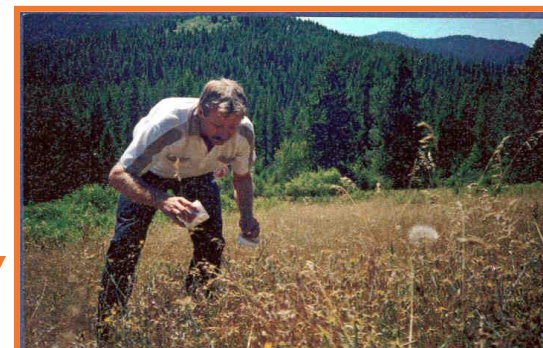
Biological control is the intentional use of living organisms to try to suppress the population of a pest to an acceptable level.

In this case, the pests we are attempting to suppress are noxious weeds, and the living organisms that we use are mostly insects. These insects are natural enemies of the targeted weeds that come from the weeds' native ecosystems. Biological agents are collected and tested by the USDA (United States Department of Agriculture) ARS (Agricultural Research Service) EBCL (European Biological Control Laboratory) insects are tested extensively to be specific to the plant being targeted for biological control. The USDA attempts to insure that certified biological agents will not attack native vegetation or crops, but due to the uncertainties in a biological world, there will always be risks involved. There are numerous advantages of biological weed suppression. Biological agents are host specific, self-perpetuating, possess the mobility to spread into areas that are difficult to use other control methods, and may be an alternative to herbicide use in sensitive areas, such as near waterways. The limitations of biological control are that it is a long-term method for weed management, biological agents may be site specific, may not overwinter, and will not eradicate the weeds. Once insects introduced, it must be seen if they will become established. If the biological agent does establish, then it may take several years (5-7) for the agent to reach a density where it will have a noticeable impact on the weed. Biological agents will not eradicate the weed population because they depend on the weed for their life cycle. Insect species lay their eggs on these weeds and progress through their development while feeding on these weeds.

## Are You Interested in Having Biological Agents Released on Your Property?

If you have a sizeable weed infestation on your property, one acre or more, it may be possible to use biological agents. Eradicate smaller patches through other means. Potential areas for bioagent release should be free of vehicular traffic and insecticide use. The presence of livestock is fine. If we release on your property, we ask that representatives of the Regional Integrated Weed Control Project be able to enter site for approximately seven years. It will be necessary to monitor the sites to see if the insects are able to establish. If they do establish and the population becomes high enough, then we will collect for further redistributions. If you are interested in biocontrol for your property, please fill out the insert, which accompanies this flyer, and return it to the WSU Ferry County Extension office. There are varieties of biological agents available for a diversity of non-native weeds. In addition, there are more bioagents going through testing now. The availability of some agents may be limited at this time due to recent certification for their introduction into the United States.

Some noxious weeds commonly found throughout the area which biological agents are available are St. Johnswort, Diffuse & Spotted knapweed, Dalmatian and Yellow toadflax, Canada and Musk thistle. The following pages contain short descriptions of a few biological agents that have been redistributed in this area by the Regional Integrated Weed Control Project.



Dan Fagerlie WSU Ferry County Extension Director releasing Bioagent for Yellow Starthistle

## Bioagents Available for Diffuse and Spotted Knapweed



*Larinus minutus*

This weevil attacks knapweed seed heads, feeding on the seeds. A single larva can consume all of the seeds in a Diffuse knapweed seed head.



*Sphenoptera jugoslavica* adult on diffuse knapweed.

*Sphenoptera jugoslavica*

This beetle prefers Diffuse knapweed, but will attack Spotted knapweed. The larva mines down into the root and feeds on the root reserves. Feeding stops rosette growth.



*Cyphocleonus achates*

This large weevil will attack both Diffuse and Spotted knapweed, but is established only on the Diffuse in this state. The larva mines down into the root and feeds on the root reserves.

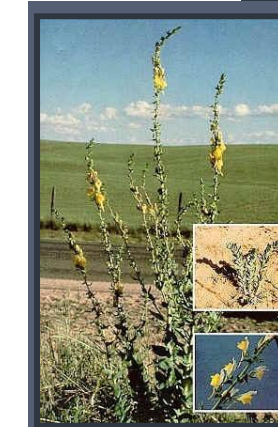
## Bioagent Available for St. Johnswort



*Chrysolina species*

Both adults and larvae attack the leaves. Feeding reduces foliage and lowers root reserves, making it difficult for plants to survive harsh conditions.

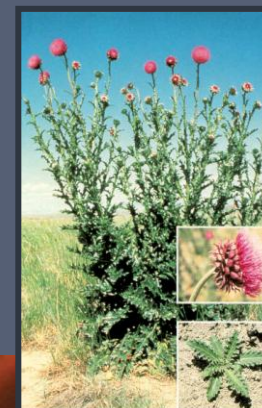
## Bioagent Available for Dalmatian and Yellow Toadflax



*Mecinus janthinus*

Adults feed on leaves and stems; larvae mine the stems. Larva feeding damages the plant's transport system, leading to premature wilting and suppression of flower formation.

## Bioagent Available for Musk and Canada Thistle



*Rhinocyllus conicus*



Larvae infest the seed head feeding on the receptacle and seed tissue. This agent is extremely effective on Musk thistle since it reproduces exclusively by seed. It is not as effective on Canada thistle as it reproduces by seed and spreads by lateral roots.

