

Frequently Asked

Questions

How and when can I get knapweed biological control agents?

You can call the Colorado Department of Agriculture's Insectary at (970)464-7916 or toll free at (866)324-2963 and get on the request list. Most of the insects are collected and distributed in June and July. When the insects are ready the insectary staff will call you and either deliver or ship the insects to you.

Is there a charge for the controls?

The Insectary charges a fee for most of our biological controls. Please visit our website or call for pricing.

How do I identify my knapweeds?

Diffuse knapweed flowers are mostly white or purple and are located on each branch tip. The bracts surrounding each flower bear 4 to 5 pairs of lateral spines and one, long terminal spine. Diffuse knapweed can sometimes resemble spotted knapweed with the black tipped bracts. The difference is the sharp spine at the end of the bract that is characteristic of diffuse knapweed.

Spotted knapweed can be distinguished from its close relative diffuse knapweed by the lack of a terminal spine at the tip of its bracts. The flowers are pinkish-purple or rarely cream colored.

Russian knapweed (*Rhaponticum repens*) flowers are smaller than those of spotted knapweed and do not have black mottling on the flower bracts. Its flowers can also be distinguished from other knapweeds by the pointed papery tips of the floral bracts. We are currently establishing field sites of a newly-approved biocontrol insect, *Jaapiella ivannikovi*, a flower/bud-gall fly that will help control Russian knapweed. Once sites are well established and populations of the flies are sufficient we will begin to distribute this control on a limited basis to weed control supervisors.

CWMA.org

About the

Palisade Insectary

Mission Statement

Our mission is to develop and distribute safe and effective biological controls for non-native weed and insect pests.

The Knapweed Biocontrol Program

The Colorado Department of Agriculture initiated a biological control program for spotted and diffuse knapweed in 1989 with the release of *Urophora* gall flies. Since that time, several additional species have been acquired to help control these troublesome weeds. When a new species is acquired by the Insectary, it is either reared at our facility or field released at a protected site. When field insectary sites are successfully established, collection of knapweed predators can be made for release at other knapweed sites.

For more info on the knapweed biocontrol program at the Insectary please write or call:

Dan Bean
Insectary Manager
750 37.8 Road
Palisade, CO 81526

(970) 464-7916
Toll-free: (866) 324-2963
insectary@ag.state.co.us
www.palisadeinsectary.com



Biological Control of

Diffuse and Spotted Knapweed



Division of Conservation Services
Biological Pest Control Division
Palisade Insectary



Printed on 100% recycled paper, 50% post-consumer waste.

What Is Knapweed?

Spotted knapweed, *Centaurea maculosa*, and diffuse knapweed, *Centaurea diffusa*, are both native to Eurasia but were detected in the Pacific Northwest in the early 1900s. Both of these knapweed species are short-lived perennials that reproduce by seed and can grow to be three feet tall. See the FAQ for identification tips.



Spotted knapweed

Both of these knapweeds have become well established in Colorado and are some of the most economically important rangeland weeds in the western United States. Knapweeds readily invade any disturbed soil, and their early spring growth makes them very competitive for soil moisture and nutrients. Also, there is evidence that knapweeds release chemicals that inhibit the growth of surrounding native vegetation. Chemical control can be effective, but the cost is prohibitive, and some knapweeds grow in environmentally sensitive areas or in terrain that is difficult to reach.



Diffuse knapweed

Lesser Knapweed Flower Weevil

Larinus minutus

This seed head weevil attacks diffuse and spotted knapweed, and produces just one generation per year. Overwintering adults feed on open flowers and lay eggs deep into the flower head. Developing larvae consume nearly all contents of the seed head, eliminating all the seed in that flower. *Larinus minutus* is well established in Colorado and is currently our most effective control agent. Collections for redistribution take place in June and July.



Larinus minutus

Knapweed Root Weevil

Cyphocleonus achates

This large root-boring weevil is a predator of diffuse and spotted knapweed. Feeding by weevil larvae in the roots of knapweed causes severe plant damage exhibited by stunted plants and stems that quickly wilt and die.



Cyphocleonus achates

Attack by several *Cyphocleonus achates* larvae usually results in the death of the plant. Larvae overwinter in the knapweed roots and in the spring begin to feed heavily. As the weather warms and the larvae grow large, the plants begin to show the symptoms of *Cyphocleonus achates* damage. Adult beetles emerge from July to September, and live for 8-15 weeks. Adults feed on the foliage and females lay an average of 45 eggs. The knapweed root weevil has become well established in Colorado.



Russian knapweed