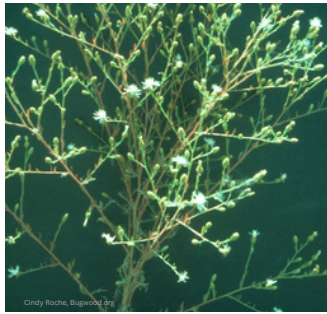


Diffuse Knapweed Biocontrol Factsheet



Diffuse knapweed plant



Diffuse knapweed flower



Diffuse knapweed rosette

HOW THEY WORK:

Biological control agents (typically insects) weaken the target plant's seed production and overall plant integrity by feeding on the seed heads, and other parts of the plant, such as their root systems. Biocontrol will not typically get rid of your weeds all together. It is a long-term control strategy and results are usually seen over numerous years.

Biocontrol Agents

Cyphocleonus achates

TYPE OF AGENT: Root feeding beetle (weevil)

COLLECTABILITY: Limited

ORIGIN: Austria, Hungary and Romania

INVASIVE PLANTS ATTACKED:

Spotted knapweed (*Centaurea stoebe*)

Diffuse knapweed (*C. diffusa*)

BIOCONTROL AGENT LIFECYCLE:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Overwintering larva			Larva	Pupa	Pupa/Adult	Adult	Overwintering larva				

Larva:

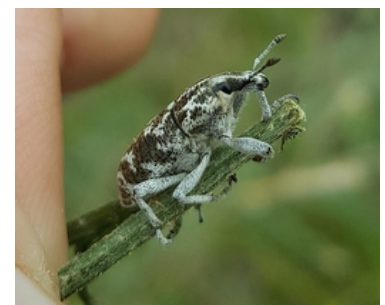
They are creamy white or yellowish, with large, light brown head capsules. Appearance is maggot-like. Larvae feed on the roots which notably reduce the plants ability to dispense energy used to produce shoot growth including shortened growth, fewer flowers and less seeds produced. There will be a swelling in the root where the larvae is found.

Adult weevils:

Measure 0.8 - 1.75 cm and at first have dark reddish-brown soft bodies. In a few days their bodies harden and they become grey-brown. Adults are found climbing the stems and perched on the tips of flowers and stems on hot days in late summer.



C. achates larvae in spotted knapweed root



C. achates adult on spotted knapweed



C. achates larvae present on spotted knapweed left tap root (swollen) vs. absent on right

Larinus minutes and L. obtusus

TYPE OF AGENT: Seed feeding beetle (weevil)

COLLECTABILITY: Mass

ORIGIN: Central Europe east to the Caucasus mountain region

INVASIVE PLANTS ATTACKED:

Spotted knapweed (*Centaurea stoebe*)

Diffuse knapweed (*C. diffusa*)

Meadow knapweed (*C. debauxii*)

BIOCONTROL AGENT LIFECYCLE:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Overwintering adult				Adult	Adult/Larva	Larva/Pupa	Adult	Overwintering adult			

Larva:

Larvae are small, white, slightly yellow, and "C" shaped, with light brown heads. They are found within the seed head and emerge as adults which create a “bullet hole” in the middle of the seed head. Larvae feed in the flowers which causes significant decreased seed production. They then emerge and create a hole in the flower head.

Adult weevils:

Measure 4.5 - 10 mm long, mottled rusty brown, with a line of short yellowish hairs on their wing covers. Their rostrum (nose) is short, bent and blunt. They are strong fliers and readily take flight on hot days. Adults are reported to be heavy feeders on the early emerging spring seedlings and rosettes. Adults are found along the stems and flowers most notably from June to late July.

More Information:

Classical biocontrol is a long term management tool used in integrated pest management (IPM). IPM involves selecting from a range of manual, mechanical, chemical, cultural and biological control methods to match the management requirements of a specific site. The goal is to maximize effective control and to minimize negative environmental, economic and social impacts. Biocontrol is an important tool in the IPM toolkit. It involves controlling invasive plants, by introducing natural enemies.

The biocontrol’s listed are tertiary insects regulated by the BC Ministry of Forests. There are currently 12 knapweed biocontrol agents that have been released in BC and are most effective when used in combination. The information in this factsheet was created using the Province of British Columbia Government’s Biocontrol resources found at www.gov.bc.ca/invasiveplants.



Larinus spp. new adult emerging from spotted knapweed seed head



Larinus spp. evidence on spotted knapweed seed head



Larinis spp. adult



Larinis spp. adult on top of spotted knapweed seed head



For more information about the TNRD’s biocontrol program and how to request insects contact us!

Phone: 1-877-377-8673
 Email: invasiveplants@tnrd.ca
 Website: www.tnrd.ca/invasiveplants

