

Integrated Weed Control

Biological products and consulting services for weed management



\$10 off your order!

Sign up to receive your 2017 catalog by email.

Buy 5 releases--Get 1 FREE!

☺ See inside back cover for more details.

Already have the insects? Just need help with monitoring or redistribution?

Call us for free tips and advice.

2016 Catalog

Phone toll free: 888-319-1632
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See our **NEW** website at: www.integratedweedcontrol.com



Mecinus janthinus in toadflax stems (top); *Galerucella californiensis* on purple loosestrife--feeding damage, eggs, and mating adults (bottom left); a typical *Aphthona* flea beetle mix for leafy spurge (bottom right).

To order insects, or just to get more information, call our toll-free number:
1-888-319-1632

Why Use Insects to Control Noxious Weeds?

- Exotic (non-native) weeds can be invasive. Introduced foreign weeds came without the successful co-evolved enemies present in their native ranges. Without these natural checks, the weeds are able to out-compete native vegetation. Introducing biological control agents can restore the natural checks and balances that control exotic weeds in their native habitats.
- Biological controls are not a "quick fix", but they are a permanent option for long-term management of invasive weeds.
- Biocontrols do not eliminate the invasive species, but instead work to control the abundance and to minimize the monoculture characteristic of infestations.
- The target weed will not be eradicated; instead the objective is to reduce the population to the point that it becomes just another "well-behaved member" of the existing plant community.
- Biocontrol impacts the density and vigor of weeds, allowing native species to re-establish and more effectively compete.
- The beauty of biocontrol is that it is self-perpetuating. Once the insects are released, they continue to reproduce and spread on their own. Collect them yourself after establishment.
- When the invasive species increases in numbers, the biocontrol organism increases correspondingly, causing the invasive species to decline.
- Biological control is most effective when used for large infestations of invasive species; however, it can be a viable option for smaller sites and private landowners.
- Biocontrols are thoroughly researched before being certified and permitted, assuring that they will not attack crops or non-target species.
- With proper planning and management, biocontrol releases can be an important component of integrated weed control, working effectively with cultural, mechanical, and chemical controls.
- Biological weed control has been widely proven to be a cost-effective and viable weed control method, even for controlling widely dispersed and inaccessible invasive plant populations.
- IWC's approach to weed control incorporates integrated pest management principles to provide biological control agents and related services for achieving maximum benefits economically.

Our Guarantee

1. We unconditionally guarantee that your insects will arrive in good health and will be ready to thrive in their new location.
2. We have the best commercial prices anywhere. We will not be undersold. If you can find a better price offered, we will match or beat that price for any insect we carry. Additional incentives or discounts are available for large orders.
3. We are the only company to guarantee delivery of the insects you order. If you do not receive the insects you ordered, they will be supplied in the following year at half of our catalog price.
4. We will work on your terms. Within the constraints of each insect, we will collect and ship to fit your needs. Your successful biocontrol program is important to us.
5. We are here to help you get the most out of your investment. Information and advice are always free. Let's talk.

The successful establishment of introduced insects depends upon biological and environmental conditions beyond our control. We will provide you with information to help ensure the best possible outcome. However, we make no warranty about eventual establishment or degree of control obtained.

Insect Descriptions

Canada Thistle

These insects are much more effective in combination, each insect stressing the plant in a different way. The insects do not compete with each other, but act together to reduce the thistle's carbohydrate stores (required for over-wintering and for competitive fitness against natives).

Stem mining weevil *Ceutorhynchus (Hadroplontus) litura*: The larvae of this hardy weevil hatch on young leaf or stem tissue, boring into the plant and entering the main stem. Older larvae mine the stem and then emerge to pupate, impacting root reserves for overwintering. Canadian research showed that the incidence of a fatal rust fungus disease was more than doubled when the insect is present. **\$125 per release**



Stem gall fly *Urophora cardui*: Adult flies lay eggs into stem tissue. The developing larvae then cause the plant's formation of a hard woody gall, robbing the plant of energy. Stems, buds, foliage, and flowers above the galls are often malformed or stunted, are prone to dry up ahead of unattacked stems, and contribute less energy to root reserves. **\$90 per release**

Knapweed

These hardy seed head and root boring agents (*Larinus* spp. and *Cyphocleonus achates*) are showing stunning declines in plant density and vigor after only several years of establishment. They attack diffuse and spotted knapweeds. The best results occur where the both are present.

Knapweed seed head weevil *Larinus minutus/obtusus*: These weevils are doing a great job in the field. Larvae consume developing seeds. Adults feed on foliage and flowers. Widely distributed and well established. Call for monitoring or redistributing tips. **\$100 per release**

Knapweed root boring weevil *Cyphocleonus achates*: This highly effective and adaptive insect is very large and hardy. These weevils do a great deal of damage to a wide size range of knapweed taproots, often killing the attacked plants over the winter. This species is our top pick for spotted knapweed control. **\$100 per release**



Leafy Spurge

The flea beetle species are the most effective biocontrol agents for leafy spurge. They perform well in most places, but are known to thrive best in open well drained areas. The adaptable *Oberea erythrocephala* thrive in a wide range of habitat conditions (including sandy soil), causing significant damage to root crowns as well as shoots and leaves. These two insects work well together, providing greater impacts on spurge infestations.

Leafy spurge flea beetles *Aphthona* species mix: The flea beetles are very effective insects that develop within the spurge root system. These insects have contributed to profound declines in spurge infestations. *Aphthona* larvae feed on root hairs and young roots, compromising the plant's ability to take up moisture and nutrients. Adults feed on the foliage in the summer. Research in the Dakotas, Montana, and Canada has documented greater than 90% declines in plant density.

To provide for successful establishment and to account for site variations and conditions (such as soil type, canopy cover, and moisture), we now provide a multiple-species a mix of field-collected species ("brown ones" and "black ones"). This combination of species assures the best possible results for your location.

- ◆ Each mix is predominately *A. nigriscutis* and *A. lacertosa*. (*A. cyparissiae*, *A. flava*, and/or *A. czwalinae* may also be present.)

\$150 per mixed release

Leafy spurge stem borer *Oberea erythrocephala*:

Adults girdling the stem and developing larvae feeding in the stem stress the plants and often cause shoot death. Larval feeding in the crown and root tissues diminishes root reserves. These hardy beetles do well in sunny, shady, and/or riparian habitat. They thrive in a wide variety of soils composition.



(*Oberea* larva in root; *Oberea* adults mating)

\$125 per release (No discount on this insect)

Leafy spurge tip gall midge *Spurgia esulae*: Larvae attack the growing shoot tips. The attacked apical tissue dies, preventing flowering, stimulating branching, and causing roots to send up new shoots. Multiple generations (up to three per summer) continue attacking new shoots. Recommended release sites have cooler areas (shading during part of the day) and dense spurge. **\$50 per release**

Purple Loosestrife

The defoliating beetle *Galerucella californiensis* is voracious, prolific, and hardy. Our collection is in mid-to-late May. (Limited releases of an additional biocontrol are available--call for information.)

Loosestrife defoliating beetle *Galerucella californiensis*: Larvae and adults feed on leaves, buds, shoots, and flowers. Feeding damage reduces loosestrife growth, flowering, seed production, and photosynthetic capability, negatively impacting overwintering energy, vigor, and native plant competition. Studies cite an impressive ability to relocate to loosestrife up to a kilometer away within a few days of adult emergence. Up to 500 eggs per female and multiple generations per year significantly accelerate establishment and control. This effective insect is easy to establish and easy to redistribute.

\$80 per release



Galerucella damage on purple loosestrife: eggs and larvae, adult feeding, and eggs deposited after adult feeding.

Dalmatian and Yellow Toadflax

We recommend the stem mining weevil *Mecinus janthinus/janthiniformus* as the foundation for a toadflax control program (cited as "the most effective single control agent available"). We believe a combination of all available species is the best approach, but the flower insects have been widely distributed and are well established. Call us to be sure you don't already have them.

Toadflax stem boring weevil *Mecinus janthinus/janthiniformus* (Dalmatian/yellow toadflax): This insect is causing dramatic declines in toadflax density, often very quickly by biocontrol standards. Experts are saying that this is one of the most effective biological control agents available for any weed—a must-have for any toadflax program. **\$100 per release**

Toadflax flower beetle *Brachypterolus pulicarius*: Larvae and adults feed on the young tissue and reproductive plant parts, reducing seed production. **\$75 per release**

Toadflax flower weevil *Gymnetron antirrhini*: The feeding damage of larvae and adults reduce toadflax seed production. **\$75 per release**



Poison Hemlock

Hemlock defoliating moth *Agonopterix alstroemeriana*: The larvae of this moth defoliate the plant by consuming leaves, stem tissue, flowers, and seeds. The damage/defoliation is often severe. Moths over-winter as adults and are very hardy. Our collection season may not coincide with more temperate climates, so call to talk about other establishment strategies.

(Hemlock moth pupae)

\$75 per release (No discount on this insect)

St. Johnswort

Klamath weed beetle *Chrysolina quadrigemina/hyperici*: These foliage feeding insects have dramatically reduced the overall levels of St. Johnswort infestation in the Northwest and Pacific states. Damage to the foliage by larval feeding lowers root reserves, making it more difficult for the plant to survive harsh winter and/or dry summer conditions. **\$75 per release**

St. Johnswort inchworm *Aplocera plagiata*: Larvae of this moth feed on leaves and flowers. When numerous larvae are present, the plants are defoliated, and flower and seed formation is inhibited.

\$75 per release (No discount on this insect)

Common Mullein

Mullein seed head weevil *Gymnetron tetrum*: Adult weevils lay eggs in the flower and larvae feed on the seeds and other tissues in the seed capsules, substantially reducing seed production.

\$100 per release (No discount on this insect)



Oberea erythrocephala destroying a leafy spurge flower.



Mecinus janthinus emerging from toadflax stem.

We will answer any questions you may have, discuss your specific sites and problem weeds, and work with you to arrive at the best integrated control strategies. This includes assisting you with monitoring your existing populations of weed-feeding insects—there is no need to purchase something that you already have. Interested in establishing, collecting, and moving your own insect populations? We can advise you. Let's talk about getting there.

This catalog features the widest selection of insects currently available. We are continuously working to include new products as they become available. If you want to know more about a weed or insect, including ones not featured in this catalog, please give us a call. You can also find more information on line at: www.integratedweedcontrol.com



Mecinus janthinus (stem boring weevil) in toadflax stems.



Cyphocleonus achates (root boring weevil) on knapweed.



Ceutorhynchus litura (also known as *Hadroplontus litura*) feeds on Canada thistle.



Ceutorhynchus litura larvae and larval mining damage in Canada thistle stem.

2016 Integrated Weed Control Insect Price List (888-319-1632)

☺ **Buy 5—Get 1 FREE!**

Please ask about discounts and incentives for larger orders.

Weeds / Insects	Quantity	Price	Type of Damage	Availability
Canada thistle				
<i>Urophora cardui</i> ☺	105	\$ 90.00	Stem gall fly	May-July
<i>Ceutorhynchus litura</i> ☺	105	\$125.00	Stem and crown mining weevil	Aug-Oct
Leafy Spurge				
<i>Aphthona mix</i> (4-5 spp.) ☺	1200+	\$150.00	Root mining beetles	June-July
<i>Oberea erythrocephala</i>	105	\$125.00	Stem mining and girdling beetle	June-July
<i>Spurgia esulae</i> ☺	50 galls	\$ 50.00	Gall forming midge	June-Aug
Knapweeds				
<i>Larinus minutus/obtusus</i> ☺	105	\$100.00	Seed head weevil	June-July
<i>Cyphocleonus achates</i> ☺	105	\$100.00	Root boring weevil	July-Aug
Poison Hemlock				
<i>Agonopterix alstroemeriana</i>	250+	\$ 75.00	Defoliating moth	May-June
Yellow and Dalmatian Toadflax				
<i>Mecinus janthinus/janthiniformis</i> ☺	105	\$100.00	Stem mining weevil	May
<i>Brachypterolus pulicarius</i> ☺	105	\$ 75.00	Flower-head beetle	June
<i>Gymnetron antirrhini</i> ☺	105	\$ 75.00	Flower-head weevil	June-July
Saint Johnswort				
<i>Chrysolina quadrigemina</i> ☺	105	\$ 75.00	Foliage feeding beetle	June-Sept
<i>Aplocera plagiata</i>	105	\$ 75.00	Leaf eating moth	May-July
Common Mullein				
<i>Gymnetron tetrum</i>	105	\$100.00	Seed eating weevil	May-July
Purple Loosestrife				
<i>Galerucella californiensis</i> ☺	105	\$ 80.00	Defoliating beetle	May

- Since we fill our orders on a first-ordered first-served basis, it is advisable to order as soon as possible, especially for those insects with limited availability.
- All insects are available only during specific time periods, depending on the life cycle of each species.
- When you order, you will be given an estimated timeframe for the delivery of each insect. We will work within your time constraints as much as possible, but be prepared to receive the insects when we call—insects cannot be shipped outside their window of availability.
- All orders are shipped by overnight delivery. We do not ship without confirmation—all shipments are coordinated with you (or the recipient) prior to shipping so that you know they are coming.
- We will work closely with you to make the release process as efficient as possible. We will provide any consulting advice that you may require regarding the release, establishment, monitoring, and redistribution of these biocontrols as a service included with the purchase of the insects.
- Shipping charges are in addition to the price of the insects. At your request, we will provide shipping quotes for your location.
- All insects are packaged in breathable, escape-proof containers in well-insulated packaging. Packages are kept cool with frozen cold packs. We do not charge for our packaging.
- Additional incentives or discounts are available for larger orders.

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ADDRESS SERVICE REQUESTED



(top row, left to right) *Oberea erythrocephala*, *Cyphocleonus achates*, *Mecinus janthinus*.
(bottom row, left to right) *Mecinus janthinus*, *Galarucella californiensis* larva, *Nanophyes marmorates* (purple loosestrife flower weevil) **This insect is available in limited quantities--call early for details.**