

**Help protect Lincoln County's environment from noxious weeds!**

[www.co.lincoln.wa.us/weedboard/weecboard.html](http://www.co.lincoln.wa.us/weedboard/weecboard.html)

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**Noxious Weed Control**



**For More Information:**

The mission of the weed board is to educate landowners to be responsible stewards of the land and resources, to make Lincoln County a better place to live by protecting and preserving all lands and natural resources of the County from the degrading impact of invasive noxious weeds; and to provide quality, timely, and responsive service to the residents of Lincoln County.

**Our Mission Statement:**

**Lincoln County Noxious Weed Control Board**

- INTEGRATE BIOLOGICAL AGENTS INTO YOUR WEED PLAN.
- WHY BIOCONTROL AGENTS MAY BE RIGHT FOR YOU.
- GET HELP IN USING BIOCONTROL AGENTS
- RELEASE BIOCONTROL AGENTS.
- MAKE BIOCONTROL WORK IN AREAS YOU NEVER THOUGHT COULD BE CONTROLLED.

**LEARN HOW TO :**



**BIOLOGICAL CONTROL AGENT OWNER'S MANUAL**

**THE THOUSAND YEAR OLD SOLUTION**

It may come as a surprise to you that the solution to your weed problems began thousands of years ago. As plants slowly evolved in Europe and Asia, each species developed a specialized group of herbivorous insects. Some insects ate only the seeds. Others formed abnormal growths on the stems. And others devoured the insides of the root system of the plant. Through the centuries, these insects became so specialized in their diet that without their host plant, they could not survive. Today, after thousands of years of evolution, overwhelming majorities of the world's plant feeding insects are host-specific. They feed only on a single plant species or a narrow group of closely related species. It is because of this destructive feeding that these plants are an insignificant component of their native natural environment. They are uncommon, in part because of the stress exerted upon them by these host-specific herbivorous insects.

**BIOLOGICAL WILDFIRE**

The history of humankind is one of movement and settlement. As people expanded their travels on land and across oceans, they carried with them seeds from their distant homelands. As settlers arrived in North America, some of these seeds were dumped on shore from ship ballast. Other seeds were hidden among the desirable seeds of crop plants. When these undetected and overlooked invaders became established in North America, they flourished. They were free of their evolved natural enemies; free of the insects that kept them under control. Slowly, decade after decade, these immigrant plant species spread from coast to coast. They invaded the river valleys and crept up mountainsides. Their invasion was a biological wildfire spreading from state to state. These plants are no longer the obscure wildflowers of some distant land. They are the weeds that plague millions of acres of our rangelands and pastures.

**BIOLOGICAL CONTROL TODAY**

Once a weed is identified as a candidate for biological control, the U.S. Department of Agriculture, together with foreign agricultural organizations, explores regions of the world where the weed originated. There insects are observed and the most promising candidates for biological control are collected and identified.

Some are collected alive and shipped to special facilities (insect quarantine laboratories) where extensive testing is completed on the diet and reproduction of the insect under study.

Host-specificity testing is slow. Dozens of plants related to the target weed are tested. Unrelated plants, which have physical and chemical similarities, may be on the test list. Of course, crop plants, economically important to North America agriculture, are tested on the insect as well. Once the host-specificity testing is completed, a wide range of individuals examines the data. Botanists, entomologists, zoologists, agriculturists, members of the public, and the governments of Canada and Mexico all examine the host data. From the information, a determination is made whether an insect is safe for field release into the United States.

Once an insect is deemed safe for introduction, the USDA and State cooperators begin making releases of small numbers of these biological control agents. Cooperation with County Noxious Weed Control Boards with these initial releases allows for adequate monitoring of the agents to ensure that they respond in the field the same as in the laboratories.

**WHY BIOLOGICAL CONTROL?**

Herbicide application has been the most widely adopted management tool against rangeland and pasture weeds. Unfortunately, the marginal economic rewards and inaccessibility of many of the infested rangelands has limited the value of chemical application. Simultaneously, the elimination of desirable broad leaved species and the potential contamination of the water table by herbicidal application have been major side effects.

To be successful, an introduced biological control agent need not kill its weedy host outright. If the insect can stress the plant and reduce its competitive advantage, more desirable vegetation can displace the weed. Biological control using insects is slower than other weed control methods. Five to fifteen years is a realistic timetable for some degree of weed suppression to occur, but biological control is a safe, permanent, and inexpensive weed management tactic.

- ⇒ Consultation on noxious weed control plan
- ⇒ Selection of available biocontrol agents
- ⇒ On-site weed walk of infested property
- ⇒ Help in ordering the biocontrol agents
- ⇒ We will place the order via email
- ⇒ Provide current price sheets from vendors
- ⇒ We will receive delivery of the biocontrol agents
- ⇒ We will help in the initial release of insects
- ⇒ We will release them at a predetermined location
- ⇒ Release the insects together with the landowner
- ⇒ Obtain GPS coordinates and map biocontrol agent locations for future monitoring.
- ⇒ Provide future monitoring of release sites
- ⇒ Offer educational brochures to landowners for clarification and reference.

The following is a list of the services pertaining to bio-control that we offer landowners:

The Lincoln County Noxious Weed Control Board offers assistance FREE of charge to Lincoln County landowners interested in utilizing biocontrol agents as an integrated approach to their noxious weed control plan.

**BIOCONTROL SERVICES WE PROVIDE**

You now can get control of those infestations that lie up steep grades and down in canyon bottoms. Don't risk injury to yourself or desirable plants trying to get to those pesky infestations. Use the insects to control these areas and say goodbye to those hard to reach infestations and maintain the plant diversity you desire.

**LIMITATIONS**

Not all noxious weeds have a biological control agent available for redistribution. Scientists are constantly on the look out for new biological control agents. This limited availability coupled with the slow rate at which control occurs and biotype matching make biological control a challenge.

**HOW BIOLOGICAL CONTROL WORKS FOR YOU**

- 1. Low-cost weed control**  
Biological control is considered by many to be the most cost-effective weed management method available. A recent economic analysis revealed a benefit/cost ratio as high as 100 to 1.
- 2. Effective weed control**  
All the insects that are available have a proven scientific record in attacking and feeding upon their target weeds. In addition to scientific studies, there are the numerous landowners of Lincoln County who tell us of their satisfactions with their insects. They might be your neighbors.
- 3. Permanent weed control**  
Once established and feeding in your weed infestations, your insects will continue to attack your weeds, month after month, year after year. No other weed management method provides you with such long-lasting control.
- 4. Environmentally friendly weed control**  
Only the target weed is attacked—non-target trees, shrubs, grasses and crops are unaffected; safe for use along shelterbelts and waterways; so safe a child can use this weed control method!
- 5. Integrated weed control**  
Using biological control agents is easy—just release each container into specific areas where you want them to go to work. You can continue to use herbicides if you desire. Just limit your chemical treatments around your insect release sites in the first few years. As your insects expand their range and have an increasing effect, your herbicide use can decline or be integrated for an even greater degree of weed control.

# BIOLOGICAL CONTROL AGENT STEP-BY-STEP APPROACH TO RELEASING AND CARING FOR YOUR INVESTMENT

## STEP #1—Care & Receiving

The biocontrol agents are usually sent via U.S. Postal Service. You may be able to make special arrangements with the vendor. You may choose to have the insects shipped/delivered to the Lincoln County Noxious Weed Control Board office. You may choose to have staff bring the agents to you, meet you at the release site, or release the agents at the agreed upon locations.

Whatever you choose, it is important to remember to always keep the biocontrol agents cool and avoid overheating. Your biocontrol agents CANNOT survive overheating and will DIE! The easiest way is to simply put the containers that contain the agents into a refrigerator. This will put the agents into a false-state of dormancy and will ensure their safety from overheating. DO NOT ALLOW THE INSECTS TO BE REFRIGERATED MORE THAN 1 WEEK.



If you are able to release the insects immediately onto the infestation sites then you don't need to refrigerate them and you can skip to **STEP #2**. How-

ever, if you will not be releasing the agents immediately then you will need to either keep the agents in a cool place (shaded area out of direct sunlight) if it will be no longer than 1 hour. If it will be longer than 1 hour, you will need to remove the containers from the shipping box and place them in a refrigerator.

- ⇒ When you are transporting the insects to the release location (s), it is important to keep them cool. Use the provided cold pack (s) to aid in keeping them cool.
- ⇒ If you will arrive at the release site (s) with in 30 minutes then you simply need to keep them out of direct sunlight.

## STEP #4—What to return

If you have purchased your biocontrol agents from the Washington State Entomology Department you will need to return the container with lid ring, the screen and the piece of sponge.

Return all of your empty containers to the original shipping box along with ALL cold packs and return to the Washington State Entomology Department.



Returning everything except the biocontrol agents, the host plant material and the shredded paper allows the department to keep the costs associated with collecting and distributing the biocontrol agents as low as possible.

- ⇒ If you picked up your biocontrol agents from the Weed Board office and released the agents yourself. Please return the empty containers to the Weed Board office so that they may be returned for reuse.
- ⇒ If you purchased your biocontrol agents from a private vendor then you do not need to return the empty containers.

## STEP #2—Releasing

When releasing the biocontrol agents you may choose to arrive and are standing in the exact location of release you can then proceed with the following steps.

You will need to remove the tape holding the outer ring of the lid. Simply peel the top of the tape from the lid ring releasing the lid ring. The other part of the lid will be a screen. You may notice that as soon as the insects warm-up and see the light they will migrate to the screen in an attempt to escape. Remove the screen and any insects on the screen. You will then notice some objects in the container other than the insects. There might be some pieces of the host plant for the insects to feed on. Also, there



will be some shredded paper that allows the biocontrol agents some freedom to move and not be piled up at the bottom of the container. The colored piece of SPONGE was moisten during collection and provides moisture for the insects.

You may not see the sponge at this step. When you do save it and return it. **CHECK THE SPONGE FOR INSECTS WITHIN THE HOLES.**

## Rush Skeletonweed Bio-Agents

If you have ordered biological control agents for Rush Skeletonweed, you will need to follow a different release procedure. The agents for Rush Skeletonweed arrive to the Weed Board office via personal delivery from Washington State University Entomology Department staff. Instead of releasing actual adult insects, you will be releasing infected Rush Skeletonweed material.

The infected material arrives in garbage sacks as shown below.



It is very important that as soon as you receive the infected material you make arrangements for the material to be distributed immediately. The garbage bags generate and trap heat which will destroy the insects and also moisture is contained and will trigger mold to grow on the material.

To release the insects, grab a handful of infected material and shove the material directly into the middle of the growing Rush Skeletonweed plant as shown below.



The insects will emerge from the plant material when it dries and the biocontrol agents will then infest the growing plants that you placed the material on.

## Are herbicides compatible with biocontrol?

Yes and No. Each noxious weed and beneficial insect has specific, case by case, situations where one can integrate herbicides and biological control agents. For most cases, while herbicides DO NOT kill the insects, the damage done to the host plants prevents the insects from completing their development. In other words, if all the noxious weeds die, then the insects won't have anything to live on.

To integrate insects with herbicides, we recommend releasing the insects on an area where you can guarantee herbicide treatment will be used closer than 20 feet after the initial release. Subsequent years will need initial monitoring prior to herbicide treatment to establish the distance of spread by the insects from the initial release location.

## Case Study:

The Canada Thistle infestation below was treated with herbicides. Weed Board staff saw this and checked to see if



(1) there were any seed heads infested with seed eating weevils and (2) if the larvae were damaged by the rapid desiccation of the plants from the herbicide treatment.

Sure enough some of the seed heads were infected. When staff opened up one of the infected seed heads they found a fully formed seed head weevil. Lucky for him his development was in the final stages when the treatment occurred.



When you have emptied the container and the agents have been released your new release site should look similar to the photo below. You may want to place a stake/post or if you have a GPS unit record the coordinates for future monitoring reference.



Pick out a plant or clump of plants and turn the container up side down. Dump the biocontrol agents, the host plant material and the shredded paper out in ONE SPOT. Make sure the container is completely empty. **FIND AND KEEP THE PIECE OF SPONGE.** You may need to pat the bottom of the container to extract all of the insects out of the container.

## STEP #3—Releasing (continued)