

Leafy Spurge Beetles

It is important you read and understand the information contained within this publication so you may make the best use of your time and money. Failure to collect or release leafy spurge beetles correctly will result in frustration. If you have questions about how to collect or distribute leafy spurge beetles, the Sheridan County Weed and Pest team is happy to answer questions or assist you in the field.

Background

Leafy spurge beetles (also known as flea beetles, genus *Aphthona*) are a natural predator of leafy spurge and are native to the same area where leafy spurge is native, in central Asia. This document is intended to help landowners understand how to use leafy spurge beetles to aid in the control of leafy spurge on their property. Spurge beetles are intended to be used as part of an integrated management plan in conjunction with herbicides and other control methods where feasible.

Biology

Leafy spurge beetles emerge from the soil in the spring and early summer to feed on above-ground plant tissues and mate. After mating, female beetles lay their eggs near the soil



surface around the roots of leafy spurge plants. Each female is capable of laying over 200 eggs in a year. The eggs hatch a few weeks after being laid and beetle larvae burrow into the soil to feed on the roots of leafy spurge plants. At the end of the growing season, beetle larvae burrow into the roots of the spurge and hibernate until they emerge as adults the following

summer and the cycle begins again. Ideally, with time, the beetles will eventually eat so much spurge that they will reduce the population of an infestation to the point where the beetles will

begin to die off. This is why it is absolutely imperative that beetles are collected once established in an area and moved to other infestations of leafy spurge. Once a healthy population of beetles is established on your property, you should begin making collections annually and moving them to other leafy spurge infestations. **It will take 3-5 years to see the impacts of beetles after they are released**, as it takes time for the beetles to build their populations up to damaging levels.

There are two types of leafy spurge beetles available to us in Sheridan County. *Aphthona nigriscutis* and *Aphthona lacertosa*. *A. nigriscutis* beetles are brown in color, while *A. lacertosa* are black. These two species are adapted to slightly different areas. Brown spurge beetles typically perform best in dry sites and on south-facing slopes. Black spurge beetles are less picky and are capable of establishing over a wider variety of conditions. If you receive a cup of beetles from our office, it will contain both types of beetles so that whichever beetles are better suited for the release site will proliferate. Because the beetles can be adapted to specific sites, it is best to release beetles you collect in areas with similar characteristics to the areas where they were collected when possible.



Aphthona lacertosa adult.



Aphthona nigriscutis adult.

Collection

Leafy spurge beetles are best collected on sunny summer days when the adults are feeding on above-ground plant tissue, usually in early July. The best method for collection is a sweep net. Sweep nets are provided by Sheridan County Weed and Pest at no cost to the landowner. I like to find an area of dense spurge

where beetles are established and sweep the net back and forth through the plant canopy as I walk forward. When you have a net full of beetles, shake the net to get all of the beetles into the bottom of the net. Pinch off the net so the beetles can't jump around, and carefully transfer the beetles and some leafy spurge plant material to a sealed container. It's important to



transfer the container of beetles to a cool area as quickly as possible, so be sure to have a cooler with ice packs immediately available to keep the insects cool as you continue to make



collections. It is extremely unlikely that your beetle collection will inhibit the ability of the established population to continue to eat the spurge at the collection site, so go ahead and collect as many beetles as is feasible for you. Each container should contain around 1,000 beetles, and each container should be considered one "release". You should collect enough beetles to deposit at least

2 or 3 releases at each new location you want to establish the beetles, depending on the size of the new infestation.

Release

It is very important to release beetles to new spurge sites as soon as possible after collecting or receiving them. In a pinch, spurge beetles can survive for up to three days after collection if stored correctly. This means keeping them under refrigeration and providing leafy spurge plant material for them to eat. This is not an option with beetles you pick up from our office because we receive our beetles via overnight shipping from Montana - they have already undergone storage for multiple days by the time you pick them up. Whether you collect your beetles yourself or pick them up from our office, you should release them as soon as possible.

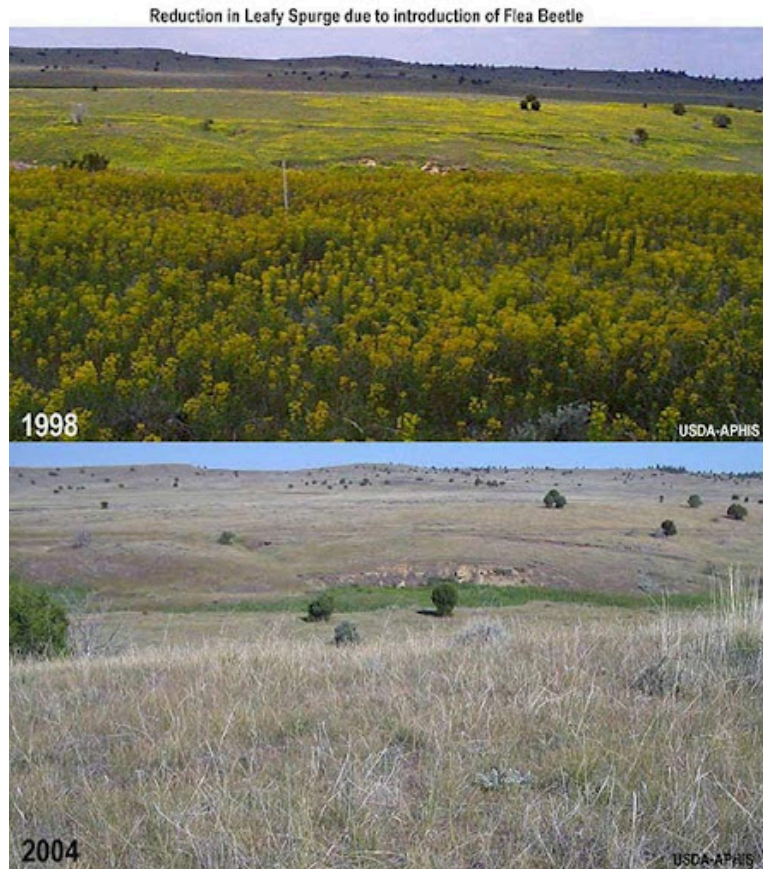


Releases are most successful on sunny days in early to mid-summer (the same conditions as when they are best collected.) You may feel tempted to spread the beetles out when you release them, but it is important you deposit each release in the same spot. The spurge beetles cannot travel well, and if they are spread out they will die

without mating and laying eggs. Deposit your release on the ground at the base of a moderately dense infestation of spurge. Somewhat counterintuitively, beetles are less successful at establishing in very dense spurge than in moderately dense spurge. If the spurge where you deposit your release is so thick that sunlight cannot make it to the soil surface, the beetles will not be successful. Best practice is to deposit the beetles at the edge of a patch of leafy spurge. Depending on the size of your leafy spurge patch, you may want to make multiple releases. For a small patch, one or two releases should be sufficient. For larger patches, you may want to release 3 - 5 containers of 1,000 beetles. Best practice is to release your beetles on the upslope end of the leafy spurge patch, as beetles will naturally work their way downhill and have a harder time

working uphill. Beetles are most successful at upland sites and less so in river bottoms and riparian areas. If the leafy spurge patch does not receive direct sunlight for most of the day, the beetles will not thrive. Other control methods are preferred for river bottom infestations. You should mark the release point of your leafy spurge beetles in some way so you can monitor the impact the beetles have over the years. The best way to do this is by pounding a t-post into the spot where you will release your beetles and take a photo of the spurge patch from that point. This way, you can return to the exact same point year after year to monitor the success of your beetles.

SCWP is developing a tool that will allow you to submit this photo to assist us in monitoring the overall leafy spurge beetle program.



Expectations and stewardship

It takes multiple years for beetles to reproduce to the point where they will have a noticeable impact on an infestation of leafy spurge. It will take at least 3-5 years for the effects to be noticeable to the eye. Best practice includes monitoring the area where beetles were released to check for beetles on plant leaves in the early summer of the years following release. If you can't find any beetles, it is possible the release was unsuccessful. This could be due to weather conditions at or following the time of release, a harsh winter, low beetle vitality at the time of



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release, or just plain bad luck. If this happens, another release should be attempted. Once spurge density is noticeably reduced, you should begin making collections with a sweep net as described in the above section and moving your beetles to other leafy spurge infestations. Sheridan County Weed and Pest offers a financial incentive for spurge beetle collections and movement.

Leafy spurge beetles are not intended to completely eradicate leafy spurge. Beetles are an effective tool when combined with other management strategies as part of an integrated approach. Beetles will, over time, reduce densities of leafy spurge to a level where it is more easily controlled with other tools such as herbicides. We do not recommend herbicide application in areas where you are attempting to establish leafy spurge beetles for the first time until the beetle population reaches a level where they can be collected and moved. Once you see reductions in spurge as a result of beetles, you can make beetle collections and begin spraying with herbicides recommended for the specific use site by Sheridan County Weed and Pest. Generally, fall applications of Tordon or Tordon and 2, 4-D are the best bet for areas where beetles have been released. This will allow you to lower the density of your spurge without taking away the food source beetles when they are actively feeding during summer. If you have any questions about leafy spurge beetles, your spurge management plan, or other aspects of weed management, please don't hesitate to reach out to our team.

Walker Billings

District Supervisor

Sheridan County Weed and Pest