

Slugs

J.D. DeAngelis

The Northwest is famous for slugs. Our mild, damp climate is ideal for slug development and survival. Most of the time, slugs do beneficial things. They cycle organic matter, contributing to our rich soils, and they are an important food source for other wildlife. When they get into our gardens and landscape plantings, however, they can be quite damaging.

Slugs are closely related to snails, and both are related to common shellfish such as clams. They all belong to the animal phylum Mollusca and are termed mollusks.

About 40 species of land slugs live in the 48 contiguous states. Roughly half are considered economically important. Of the pest species, all but one were introduced into this country. Introduction from foreign lands was, no doubt, by accident. However, at least one pest, the brown garden snail, was intentionally imported as a potential gourmet food item. About 10 pest slug species now are established in Oregon.

Slugs primarily are pests of home gardens, where they find excellent conditions for growth and reproduction. Flowers, herbaceous shrubs, and vegetables are available for food. Areas are kept moist by irrigation through the drier times of the season, and there are many places slugs can hide.

Commercial field crops can be seriously damaged by slugs during the winter or spring as well. In Oregon, seed clover, sweet corn, winter wheat, green beans, potatoes, and strawberries frequently are damaged.

Life history and habits

Slugs glide over a slime trail they produce. The mouth houses a hornlike rasping organ used to scrape at food. Slug damage generally is quite distinctive because of this unique feeding structure. All land mollusks require a damp, shady environment although snails, because of their protective shell, are more tolerant of extremes.

Each slug species has its own distinctive life history. The *European black slug* occurs in two different color forms, either black or red (brick red, brown, or yellow). The red form is predominant in western Oregon. This slug is common along the Oregon Coast and in home gardens of the Willamette Valley. Only one generation a year is produced. Large, white eggs are laid in clumps under leaves, boards, or in soil cavities from late August until freezing weather in the fall. Each slug can lay three or four clutches of 30 to 60 eggs each.

Most adult slugs die shortly after egg laying, although a few might survive until the following spring. With warm weather, the eggs hatch in 3 to 4 weeks, so a great many small, juvenile slugs can be present before winter begins. The last-laid eggs may not hatch until early spring, if not killed by a harsh winter.

The immature European black (or red) slug begins feeding as temperatures rise in the spring. Almost any organic material—dead plant or animal matter, fungi (toadstools), or algae can serve as food. Rock gardens, piles of wood or trash, and deep cracks in the earth serve as hiding places during the day. Slugs emerge at twilight and can travel as far as 100 feet to find food.

The *gray garden slug* is common in fields and landscapes. Adults are 1 to 1½ inches long. This slug has two principal breeding seasons: from the start of fall rains until the advent of freezing weather, and in the spring when temperatures warm. The clear, slightly oval eggs are laid in batches under dead leaves, in soil cavities, and in other protected places. Eggs hatch in 3 to 6 weeks.

This slug is tolerant of low temperatures. Slug movement has been seen at or near freezing. Undoubtedly, sudden cold snaps catch many of them in exposed areas, and winter kill might be higher when the soil freezes to 2 or more inches. Gray garden slugs can live as long as a year, but 6 months is more typical.

Slug control

Least toxic methods. Slugs seek dark, moist places in which to hide during the day. You can use this behavior to trap them. The method is quite effective, but is tedious and very time-consuming. Place scrap boards on the soil under plants and between garden rows. Slugs seeking shelter under the boards can be collected each morning in a bucket containing soapy water. The slugs will drown and can be disposed of later. (Don't put slugs into your compost pile as they will become smelly.) If you are patient and persistent, you can effectively keep the slug population at a low level so that other methods may not be necessary.

Jack D. DeAngelis, Extension entomologist, prepared this revision of an earlier edition by H.H. Crowell, professor emeritus; Ben C. Simko, Extension agent, Malheur County; and Joe Capizzi, professor emeritus; all at Oregon State University.



Yeasty odors are highly attractive to slugs. Many people use yeast and water, or beer, as an attractant for their slug traps. One trap design uses a coffee can in which a hole has been cut about one-third of the way up from the bottom. The can is buried so the hole is at ground level. Place about 2 inches of beer or yeast and water into the trap. Cover with the plastic lid to reduce evaporation and to keep out thirsty pets! Check and remove dead slugs daily, and replace the attractant every 4 days.

There is some evidence that copper strips or screens are effective barriers to slug movement. Apparently slugs will not cross a copper strip. Some gardeners place copper strips around raised beds to discourage slugs, and this method has even been used to protect trees. Be careful not to trap slugs *inside* your garden plot if you choose this technique.

Natural enemies. Some mammals, such as raccoons and possums, feed on slugs. Garter snakes, mallard ducks, and bantam chickens are effective slug predators as well. Ground-feeding birds such as starlings feed on juvenile slugs found in grass sod and under wet leaves. A parasitic ciliate protozoan, found in gray garden slugs in the Willamette Valley, causes disease. Climate, however, is probably the single most important control factor for slug populations—hot, dry summers and cold winters reduce numbers, while mild winters and cool, wet springs and summers favor slug growth and development.

Chemical control. Poison baits are still the easiest and most reliable method of slug control, but they pose some substantial risks. Many commercial

preparations can be found in garden centers. Cereal-based baits tend to be more attractive than apple pomace.

Metaldehyde is the most common active ingredient. Poisoning with metaldehyde causes slugs to slime heavily and thus reveal their presence. Be aware that poisoned slugs can recover from metaldehyde ingestion if they have access to sufficient water. If conditions are right, 100 percent of the stricken animals can recover and crawl off. Baits containing both metaldehyde and carbaryl (an insecticide) are considerably more effective but less common. A third type of bait, containing methiocarb (Mesurol), is effective even under moist conditions.

Follow label directions *carefully* when applying baits. Evening is the best time for application, just after a rain shower if possible. As an alternative, apply bait on warm evenings after heavy watering. Late summer and early fall is a good time to bait because many slugs are about to begin egg laying.

Do not apply slug spray or dust on crops to be eaten or those to be grazed by animals. *Always follow label directions.* Do not place baits in direct contact with edible crops, and keep pets away—especially dogs. If pets may have access to baits, substitute flaked baits or liquid baits and put these in refuge areas where slugs are likely to find them but pets are not.

New, less toxic baits containing iron phosphate are now available. Because they are new we have little practical experience with these products, but they might be appropriate in situations where more toxic materials pose an unacceptable risk.

For further reading

Grossman, J., and H. Olkowski, "Stopping Slugs and Snails," *Common Sense Pest Control*, vol. 6 (1990), No. 1, pp. 7–18.

Pacific Northwest Insect Control Handbook, a Pacific Northwest Extension publication (revised annually). \$25.00. Order from: Publication Orders, Extension & Station Communications, Oregon State University, 422 Kerr Administration, Corvallis, OR 97331-2119.

Use pesticides safely!

- **Wear** protective clothing and safety devices as recommended on the label. **Bathe or shower** after each use.
 - **Read** the pesticide label—even if you've used the pesticide before.
 - **Follow closely** the instructions on the label (and any other directions you have).
 - **Be cautious** when you apply pesticides.
 - **Know** your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.
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