COOPERATIVE EXTENSION SERVICE
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Slugs

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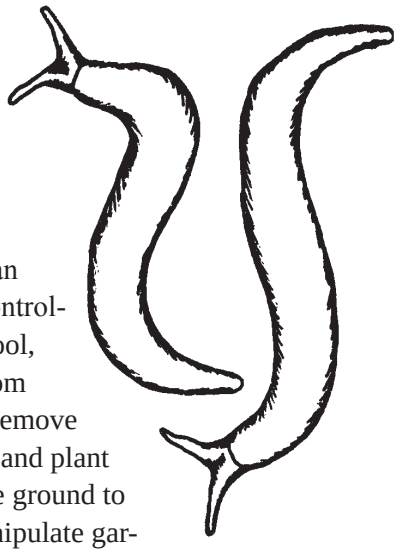
Biology

Slugs and snails are terrestrial gastropods, the largest group of mollusks, which includes squid, octopus and clams. They need a cool, moist environment. Slugs are active with a temperature between 38°F and 88°F, when the relative humidity approaches 100 percent and there is no wind. Slugs have a reduced shell and are unprotected, soft-bodied and susceptible to drying out. For these reasons, they are most active above ground during the night when temperatures are cooler and the humidity is higher. Slugs overwinter as adults by hibernating in the topsoil or as eggs. They move by a single muscular foot that secretes a fluid to help in movement. When the fluid dries out it leaves a silvery, slimy trail. If the surroundings are cool and moist, a slug may regularly travel the same route between its shelter and food source.

An individual slug has both male and female reproductive capability. Any slug is capable of laying eggs and producing young slugs after fertilization. Slugs give birth to clusters of small, translucent or pearly white eggs that are laid under boards, along edges of garden beds, in soil crevices or other cool, moist shelters. The presence of many small juvenile slugs may indicate a birthing location warranting control. Slugs most often lay eggs at the start of late-summer rains although some slugs lay eggs in early spring.

Slugs damage garden crops and are pests to many commercial crops. Their mouth has a rasplike organ that cuts away tender, succulent plant tissue. They typically feed on the soft leaf tissue between leaf veins. Slugs, unlike snails, spend considerable time underground and feed on underground plant parts. Underground slug damage is evident by small, shallow pits on roots and tubers. Slugs will readily eat planted grass seed and seedlings. Use a flashlight to find slugs on plant foliage after sunset following a rain or irrigation.

Slugs have many predators. Birds, including mallard ducks and bantam chickens, eat slugs as do other animals. Rove beetles and the protozoan *Tetrahymena rostrata* provide possible biologic control.



Slug Control

Habitat modification is an important first step in controlling slugs. Slugs need cool, moist conditions free from wind and disturbance. Remove debris, weeds, tall grass and plant branches that contact the ground to reduce slug habitat. Manipulate garden plants to encourage air movement, especially at ground level. Regularly till the soil between rows and in garden beds to disrupt slug habitat. If mulch is used, apply rough textured mulch (even compost) several inches deep. Tillage is one of the best slug controls.

Hand picking slugs is effective when combined with slug barriers. Look for one-inch clusters of slug eggs on the edges of garden bed frames. Dispose of eggs along with juvenile and adult slugs. Wear disposable, waterproof gloves when hunting slugs after sunset or early in the morning. Look for slugs on succulent foliage. Place slugs in a container with 5–10 percent ammonia and water or just soapy water. Do not apply salt to slugs in the garden. Slugs can also be picked and crushed. Dead slugs placed in compost may give off an objectionable odor.

Slug barriers include copper foil strips (one inch wide) which, when placed on the edges of garden bed frames, will exclude slugs, or corral existing slugs in the bed. Wood ash, dry sawdust and diatomaceous earth placed around beds in strips an inch or more deep all provide effective slug barriers as long as they remain dry. There

are unconfirmed reports that crushed eggshells provide an effective slug barrier. Only the copper strip is an effective barrier when wet.

Slug traps are used to estimate slug populations and to control small populations. First the area suffering slug damage is irrigated (if needed) in late afternoon. A 12-inch-square board or piece of plywood with two one-inch wood strips nailed opposite each other on the bottom of the board is placed on bare ground. Likewise, a piece of asphalt shingle with aluminum foil taped on the rough surface (to reduce heating from sunlight), is nailed in the center with the smooth, black side down to bare ground following a late afternoon watering. The next morning the slugs are harvested from the underside of the board or shingle and disposed of as described above.

Beer and yeast traps (involving beer or water and yeast in a container sheltered from rain) placed at or slightly above ground level are more novelties than actual control. The beer and yeast traps need to be replaced every four days and have to be placed several feet apart.

Organic Products

Iron phosphate provides slug control. One product, Sluggo, contains iron phosphate and is listed as an organic pest control product by Organic Materials Review Institute (OMRI). Mortality is slower compared to the nonorganic pesticide described below. The active ingredients of iron phosphate are naturally occurring elements and are fairly safe to the environment, humans, pets and wildlife.

Pesticides

Pesticides are registered by the Environmental Protection Agency and have undergone vigorous testing. Always read and follow the label before buying, and when handling and applying pesticides. Pesticides are only safe when applied according to labeled instructions.

Pesticide with the active ingredient metaldehyde applied as 4 percent bait provides effective slug control. Metaldehyde destroys slugs' mucus-producing system, which reduces slug mobility and digestion. Pesticides containing metaldehyde are sold as baits (Metarex, Deadline, and Orcal). Ideal baits are small, fine and resistant to breakdown in rain. Metaldehyde is attractive to dogs and other mammals. A bittering agent, Bitrex, is added to metaldehyde-based molluscicides to discourage feeding by nontarget animals. When used alone, metaldehyde is not harmful to beneficial organisms (insects, millipedes, spiders, etc). It does not accumulate in the soil and rapidly breaks down in sunlight and water.

Most slugs in Alaska, such as the banana slug (*Ariolimax columbianus*), are a natural part of the environment. They are important in decomposing organic matter in forests and muskeg. Control of slugs may be necessary in some situations. Eradication of indigenous slugs is neither probable nor reasonable. Recent reports in Southeast identify an invasive, introduced black slug (*Arion sp.*) native to Europe. Be alert for invasive plant and animal species. Report invasive species to the Alaska Department of Fish and Game.

To simplify information, trade names of products have been used. No endorsement of named products by the University of Alaska Fairbanks Cooperative Extension Service is intended, nor is criticism implied of similar products that are not mentioned.

For more information, contact your local Cooperative Extension office or Robert Gorman, Extension Faculty, Natural Resources and Community Development, at 907-747-9413 or rfgorman@alaska.edu. Wayne Vandre, Extension Horticulture Specialist, developed this publication in 1984 and it was substantially revised by Gorman in February 2010.

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