

# SLUGS

## 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 when the temperature is between 38° and 88°F, the relative humidity is high and there is little to 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 deposit clusters of small, translucent or pearly white eggs that are laid under boards, pots, 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. Domestic birds, including mallard ducks and bantam chickens, and migratory birds

eat slugs, as do Rove, or ground, beetles, wood frogs, shrews and Opiliones, or daddy longlegs. Care must be taken when using domestic birds for control as they may eat the crop you are trying to protect along with the slugs.



## 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. Thin out and prune leaves and stems of crowded plants to encourage air movement, especially near the ground. 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 clusters of slug eggs on the edges of garden bed frames, in loose soil and under any rocks, pots or other stationary materials they may be protected by. Dispose of eggs along with juvenile and adult slugs. Wear disposable, waterproof gloves when hunting slugs; the evening or early morning is the most productive time. Look for slugs on or under succulent foliage. Place slugs in a container with 5 to 10 percent ammonia and water or just soapy water. Do not apply salt to slugs or soil in the garden. Slugs can also be picked and crushed. Dead slugs placed in compost may give off an objectionable odor and be an attractant to other slugs. Unless compost is well maintained and



“hot,” it is not a good place to dispose of slugs as they thrive in the moist decomposing materials.

Slug barriers include copper foil strips (1 inch wide) which, when placed on the edges of garden bed frames, will exclude slugs or corral existing slugs in the bed. Dry sawdust or diatomaceous earth placed around beds in strips an inch or more deep provides an effective slug barrier as long as it remains dry. Once watered or wet, they will need to be reapplied. There are unconfirmed reports that crushed eggshells provide an effective slug barrier. This method also needs frequent reapplication. The copper strip is the only effective barrier when wet.

Use slug traps to estimate slug populations and control small populations. First, irrigate the area suffering slug damage (if needed) in late afternoon. Place a small board or piece of plywood (12 inches or so) on bare ground, or place a piece of smooth, cardboard or sturdy plastic on bare ground following a late afternoon watering. The next morning, harvest the slugs from the underside of the board or other trap material and dispose of them as described above. This method should be used regularly to dispose of slugs and monitor populations.

Beer and yeast traps (involving beer or water and yeast in a container sheltered from rain) placed at or slightly above ground level have limited success but will capture some of the population. The beer and yeast traps need to be replaced every few days and should be placed several feet apart outside of the garden area.

## Organic Products

Iron phosphate provides slug control. One product, Slug-go, contains iron phosphate with Spinosad and is listed as an organic pest control product by Organic Materials Review Institute (OMRI). Mortality is slower when using organic pesticides versus nonorganic pesticides; however, the active ingredients of iron phosphate and Spinosad are naturally occurring elements and are fairly safe to the environment, humans, pets and wildlife.

*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.*

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## 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 and effective when applied according to labeled instructions.

Pesticides with the active ingredient metaldehyde applied as 4 percent bait provide effective slug control. Metaldehyde destroys slugs' mucus-producing system, reducing their mobility and digestion. Pesticides containing metaldehyde are sold as baits (Metarex, Deadline and others). 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, but care should be taken when placing them in the garden to avoid attracting non-target species. 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.

Realistically, controlling slugs requires all of the above-mentioned concepts and there will still be some slugs found and damage noted. Although growing conditions in Alaska are ideal for these molluscs, reducing damage to a tolerable level is a realistic goal.

Most slugs in Alaska, such as banana slugs (*Ariolimax columbianus*), meadow slugs (*Deroceras* spp.) and tail dropers (*Prophysaon* spp.), are a natural part of the environment. They are important in decomposing organic matter in forests, meadows and muskeg. However, control of slugs may be necessary in some food production or garden situations. Recent reports in Southeast and Southcentral Alaska identify an invasive, introduced black slug (*Arion* sp.) and a leopard slug (*Limax maximus*) that are native to Europe. Be alert for invasive plant and animal species. Report invasive species to the Alaska Department of Fish and Game or through the Invasive Species Hotline, 1-877-INVASIV (1-877-468-2748), or the Alaska Cooperative Extension Service Pest ID Portal, [www.uaf.edu/ces/ipm/cmp/sample-submission/](http://www.uaf.edu/ces/ipm/cmp/sample-submission/).



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