

# FIELD CROPS



CORNELL Cooperative Extension

## Banded Slug

*Arion fasciatus* (Nilsson)

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The banded slug was introduced from Europe during the 1800s. It has become a common pest of vegetables, field crops, and ornamentals throughout the United States and Canada. The banded slug attacks seedlings of a number of crops, particularly no-tillage corn and alfalfa, and strawberries. It is occasionally a pest in greenhouses.

### Identification

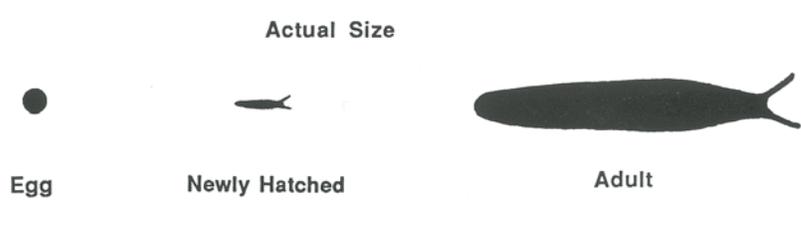
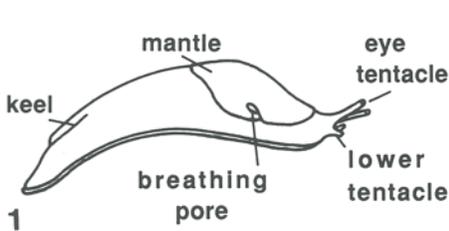
A slug is often described as a snail without a shell, and its morphological features are shown in Figure 1. The slug has two sets of tentacles. The eyes are on the tips of the upper tentacles. The lower tentacles, which are shorter, are used for tasting and smelling. The mouth is located between and below the lower tentacles, and is equipped with a radula, a tooth-covered rasp that the slug uses to grate plant tissue. The slug glides

along a path of mucus that is secreted by the pedal gland, located just below the mouth. The mantle is a fold of skin on the back of the slug. At the edge of the mantle is an opening called the breathing pore or respiratory pore, which can be seen opening and closing rhythmically as air passes in and out. In some species there is a ridge down the back of the slug called the keel.

The external features of the slug that are used for identification are color, size, body shape, skin texture, position of the mantle, position of the breathing pore, presence or absence of a keel, and color of the mucus. The banded slug is about 5 cm (2 in.) long when fully grown (fig. 2). It is pale gray with a dark brown or black stripe running along the side of its mantle and continuing along the sides of its body. Just below the dark stripe is another yellow or orange stripe, which is sometimes difficult to see. The breathing pore is on the slug's right side, below the yellow or orange stripe on the mantle. The banded slug has no keel and the slime it produces is clear.

### Biology

Slugs need a certain amount of dampness or humidity to survive. They are usually active at night or when it rains, and



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spend sunny days under logs, sticks, stones, or crop debris such as corn stalks. Many slugs are omnivorous; they may eat a variety of foods such as fungi, dead worms or dead insects, in addition to green plants.

## Life Cycle

In most areas of the country, slugs mate and lay eggs throughout the year. Slugs are hermaphroditic, meaning that they have both male and female reproductive organs. An individual may start out as a male, become both male and female, and finally become solely female. Certain species may even self-fertilize, which means that they can produce viable offspring without mating.

After banded slugs mate, clusters of twelve to thirty-six or more jelly-like eggs are laid in the soil under ground litter (fig. 3). The eggs are yellow to pale amber in color and measure about 2.5 mm (0.1 in.) in diameter. All life stages of the banded slug are present throughout the year.

## Damage

Slugs injure plants by chewing holes of various sizes in the leaves and stems (fig. 4). These holes may be in the middle of the leaf or on the edge. Because slugs often feed at night, the only evidence of their presence may be glistening patches or streaks of dried slime seen on the plants and ground nearby. The banded slug is less likely to climb up onto the plant than other species, and is more likely to be feeding at the soil line or even at the roots.

## Sampling Methods

One way to sample slug populations in field crops is to dig holes 10 cm (4 in.) in diameter and 15 cm (6 in.) deep (a golf-hole digger works well) and cover them with asphalt shingles wrapped in aluminum foil. The reflective surface keeps the hole dark, cool and moist – an ideal hiding place for slugs (fig. 5). Slugs exhibit homing behavior and a tendency to aggregate. They will return to a secure hiding place night after night and will also seek out other slugs. After several nights, the traps can be checked and the slugs counted (fig. 6). This sampling method is most accurate in open row crops such as corn; in crops like alfalfa, the

slugs may tend to hide under the foliage.

Another way to sample for slugs is to remove soil samples of a fixed volume, wash them through a series of sieves, and look for both adults and eggs. This method is tedious and does not allow for continuous sampling at a single location. However, it yields an absolute count.

## Control

If the area is small – for example, a garden – removing shelter for the slugs can help to control them. The gardener should remove debris, logs, and stones, and trim grass and weeds along the edge of the garden. For high populations, it may be necessary to remove slugs by hand from plants at night. Day-time collection is also possible if the gardener lays a “trap” of boards or shingles on the ground near the most susceptible plants. The slugs will crawl under the boards at night and can be crushed or removed in the morning. Other methods of control are to search for egg masses and destroy them; to encircle the most susceptible plants with wood ashes, diatomaceous earth, or even screen to exclude slugs from the plants; and to encourage natural enemies of slugs – toads, garter snakes, and predacious ground beetles (fig. 7).

For field crops, avoid planting corn, alfalfa, beans, or other susceptible crops in wet fields where slugs have been a problem. Damage is often highest in fields that were in sod the previous year, or that had crop debris on the ground. If corn or alfalfa is to be planted following sod, plow as early as possible in the fall. If high populations of slugs are detected, use conventional tillage or a molluscicidal bait to prevent slug damage.

A molluscicidal bait is more effective than a chemical spray for controlling slugs in crops. The bait works best if applied in the evening when the ground is damp and slugs are active. Further information about molluscicides may be obtained from local Cooperative Extension agents.

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Publication number 102G795.20. Produced by the New York State Integrated Pest Management Program, which is funded through Cornell University, Cornell Cooperative Extension, the NYS Department of Agriculture and Markets, the NYS Department of Environmental Conservation, and USDA-CSREES. Designed by Media Services, Cornell University. Cornell Cooperative Extension provides equal program and employment opportunities. © 2003 Cornell University and the New York State IPM Program. Posted 1/04.