



Billbugs In Turfgrass

Billbugs are weevils that have the snout, head and thorax about as long as the wing covers. Though there are about a half dozen species that may be found in turfgrasses, only a few cause damage in any given region. The most common pest in Ohio is the bluegrass billbug, *Sphenophorus parvulus* Gyllenhal, though the lesser billbug, *S. minimus* Hart, is somewhat common. The adults are only 1/4- to 3/8-inch long and dark grey to black. They may be covered with a tan or brown coating of soil. The larvae are white with a brown head and look like legless white grubs.

The bluegrass billbug is most common in the northern states from New England to Washington State. It is found less commonly in southern states. Both billbugs seem to prefer Kentucky bluegrass-growing regions. Kentucky bluegrass seems the preferred host but occasionally this pest has infested perennial ryegrass, red fescue and tall fescue. It also attacks small grain crops such as corn, rye and wheat.

Type of Damage

Billbug damage usually appears in late-June through August, when summer drought stress is common. Light infestations in lawns often produce small dead spots that look like the turf disease, dollar spot. Sometimes the damage looks like irregular mottling or browning in the turf. Heavy infestations can result in complete destruction of the turf, usually by August. The major problem with billbug damage is that it looks like a variety of other problems. Most turf managers confuse billbug damage with drought, disease, chinch bugs, greenbugs or white grubs. Billbug damaged turf turns a whitish-straw color rather than the yellow caused by greenbugs. Soil under damaged turf is solid, not spongy as in white grub attacks.

Figure 1. Bluegrass Billbug Larvae



To confirm billbug attacks, grasp the affected turf and pull upward. If the stalks break easily at ground level and the stems are hollowed out or are full of packed sawdust-like material, billbugs are the culprit.

Life Cycle and Habits

In most of the Kentucky bluegrass growing regions this pest overwinters in the adult stage. Adults have been found in thatch, cracks and crevices in the soil, worm holes and in leaf litter near turf. The hibernating adults become more active in late-April to mid-May when the soil surface temperatures rise above 65 degrees F. The adults wander in search of suitable grasses and crops on which to feed. After feeding for a short period, the female begins to insert one to three eggs in a feeding hole made in grass stems. The females may continue laying eggs into August but most eggs are laid by early-July. Laboratory kept females have been known to lay over 200 eggs, usually two to five per day. The eggs hatch in six days depending on the temperature and the young larvae begin to tunnel up and down the stem. If a stem is hollowed out while the larva is small, an exit hole may be formed and the larva will drop out and bore into another stem. Eventually the larva becomes too large to fit inside the grass stems. They then drop to the ground to begin feeding externally on the grass crowns and roots. This is the point at which significant damage to the turf is noticed, especially if little rainfall or irrigation has occurred at this time. After 35 to 55 days, the larva is full grown and pupates in a cell of soil under the thatch. The pupa gradually darkens and the reddish-brown, teneral adult emerges in 8 to 10 days. The new adults appear to be common in late-August through September. These adults do some minor feeding and seek out suitable sites for overwintering. Some adults have been observed trying to fly but no great distances were covered. There is some evidence that adults which emerge early in August may begin laying eggs for a partial second generation. These larvae often do not develop rapidly enough to mature before freezing temperatures arrive.



Figure 2: Bluegrass Billbug Adult



Life stages of Billbug

Control Strategies

Billbugs are some of the most difficult turfgrass insects to control because the adults' armor-like bodies do not readily absorb insecticides. They also do not ingest much insecticide when they penetrate a grass stem while feeding. The larvae are also difficult to control because they are boring inside grass stems for much of their lives. Bluegrass billbugs seem to cluster in neighborhoods, especially where intensive bluegrass management is occurring.

Neighborhoods with mixed-grass lawns or lawns established using resistant varieties are often less severely attacked. Wise turf managers take time to observe all the turf in an area and watch for the beginnings of billbug attack in a neighborhood. Although bluegrass billbugs rarely fly, they may rapidly spread through continuous lawns of a neighborhood.

Option 1: Cultural Control - Use Resistant Turf Varieties - Kentucky bluegrass varieties 'Touchdown,' 'Merion,' 'Nugget,' 'Adelphi,' 'Baron,' 'Cheri' and 'Newport' are often susceptible to billbug attack. The varieties 'Park,' 'Arista,' 'NuDwarf,' 'Delta,' 'Kenblue' and 'South Dakota Certified' are often resistant or tolerant to attack. Most perennial ryegrasses, especially those with endophytes are resistant to billbugs as are the fescues. Occasionally, non-endophyte protected ryegrasses and fescues are attacked when bluegrass lawns nearby are heavily infested. It is strongly recommended that if a lawn must be renovated after billbug damage, use bluegrass that has resistance or use a blend of turfgrasses containing resistant varieties or species.

Option 2: Biological Control - Fungal Diseases - Billbug adults and larvae seem susceptible to the entomophagous fungus, *Beauveria*. However, this fungus rarely attacks enough billbugs to have a significant affect on the population. No commercial preparations of *Beauveria* are currently available for use on billbugs.

Option 3: Biological Control - Parasitic Nematodes - The entomophagous nematodes, *Steinernema carpocapsae*, *S. glaseri* and several *Heterorhabditis*, have been used to infect billbug larvae in the laboratory and in small field trials. These nematodes show promise for the future but additional studies are needed to find the environmental conditions needed for consistent results.

Option 4: Chemical Control - Spring Adults - This is the most commonly used strategy. Contact or stomach poisons are applied when adults come out of hibernation and are migrating in search of oviposition sites. Studies in Ohio show that adults may begin to migrate in late-April. Recent research shows that adults become active when the soil surface temperature approaches 65 to 68 degrees F.

Option 5: Chemical Control - Summer Larvae - Since the billbug larvae drop out of the grass stems after several weeks of feeding, they should be susceptible to the normal soil insecticides. But, experience indicates that these larvae may do considerable damage before exiting to the soil and many larvae may remain in the crowns and thicker stemmed rhizomes. Thus, when this strategy and timing is used, considerable damage often results unless irrigation and fertilization are also used.

Information obtained through the Ohio State Extension Factsheet HYG-2502-91



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