Billbugs?

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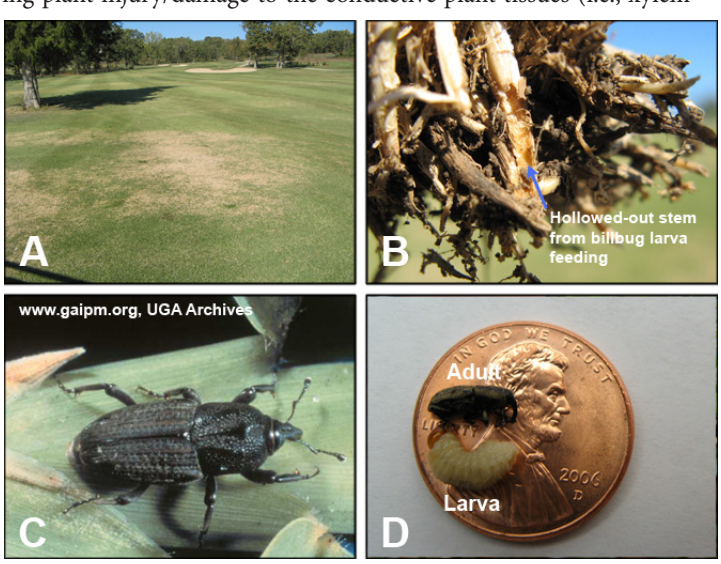
Probably not anywhere on your radar, but billbugs very well should be an insect pest for concern. Billbugs are considered one of the most commonly misdiagnosed turf pests! Billbug damage is often mistaken for drought, disease, heat stress or damage caused by other turfgrass insect pests including white grubs, sod webworms and chinch bugs. There are several billbug species that occur in the United States, the bluegrass billbug, Sphenophorus parvulus, and the lesser billbug, S. minimus, are the two important billbugs that can be found in cool-season turfgrass. Of these, the bluegrass billbug is the more common species.

Adult billbugs are similar to most other weevils (snout beetles) in appearance, thus they have a characteristic and unique elongated snout (mouthpart) and hardened wing covers. Bluegrass billbug adults are about 5/16 inch long and the lesser billbug is slightly smaller (1/4 inch long). Unlike other white grubs such as Japanese beetle, billbug larvae (grubs) do not have legs and they are much smaller, only about 0.05 inch long while Japanese beetle larvae are about 0.4-1.3 inches long. The bluegrass and lesser billbugs prefer Kentucky bluegrass, perennial ryegrass as well as certain fescue species over most other cool season turfgrasses.

There is typically only one generation per year of billbugs, they overwinter as adults in the turf and surrounding areas. Billbug adults begin laying eggs in the leaf sheaths of turfgrass in the spring (i.e., May), the eggs hatch in 10-14 days. The larval stage is the damaging life stage, 1st instar larvae burrow up and down the leaf sheath causing plant injury/damage to the conductive plant tissues (i.e., xylem and phloem) as well as the apical meristem (crown).



A. Drought like damage from Billbug Larvae. B. The turf pulls up easily when tugged and small legless larvae are present. C. The adult Billbug does not feed on turf. D. Both adults and larvae are small and often unnoticed. **(Photo from University of Arkansas Turfgrass Science, Turfgrass Tips, Nov 1, 2007)**

Prior to reaching physiological maturity, billbug larvae chew their way out of the turfgrass plant to feed and cause damage to roots before pupating (transforming into an adult) sometime in August. Larval feeding damage typically occurs in June and July. After pupation (i.e., August – September), adult billbugs begin to emerge to feed and prepare for overwintering, initially they are typically reddish-brown in color, but eventually turn slate. Several options for managing billbugs exit: 1) cultural control; 2) plant resistance; and chemical control (insecticides). Cultural control of billbugs consists of providing adequate fertility and irrigation to minimize or mask billbug damage.

The use of endophyte (fungi) enhanced turfgrasses including perennial ryegrass and tall fescue can provide plant resistance due to the toxic properties of the endophyte that kill billbug larvae as they feed on the endophyte enhanced turfgrass. Research has shown that stands of turfgrass that contain 40-50% endophyte infections keep damaging populations of billbugs in check. Finally, there are three chemical (insecticide) approaches to managing billbugs, they include: 1) Larval preventative, 2) Adult curative and 3) Larval curative. Of these, larval preventative and adult curative are the most effective, the larval curative management strategy does not prevent turf damage as billbug larvae have already caused turf damage.

Larval preventive insecticide treatments are most effective when applied in late April to mid-May to ensure that the insecticide can be readily absorbed and available when billbug larvae eggs hatch and larvae begin feeding within the leaf sheath in late May to early-June. To ensure maximum insecticide performance of larval preventative insecticide treatments, be sure to apply post-treatment irrigation to move the insecticide into the soil so that it can be absorbed the turfgrass roots and translocated into the leaf sheath where billbug larvae feed. It is hypothesized that this larval preventive insecticide treatment application may also kill some overwintered adults, however this has not been confirmed.

The second effective billbug management strategy is to apply an adult curative insecticide to active adults in the spring, typically in late April to early-May or at the first sign of active adult billbugs. If this billbug management strategy is used, do not apply post-treatment irrigation. To assist in the proper timing of an adult curative insecticide application, merely monitor or observe paved surfaces such as sidewalks and driveways for the presence of billbug adults.

Determining bluegrass and lesser billbug larval attack is fairly simple, use the "tug-test" to confirm the presence of billbug larvae. To carry out the tug-test, simply grab several of the affected leaf sheaths and tug upward. If the turf is or was damaged by billbug larvae, the leaf sheaths will break off easily just below the thatch level and the broken leaf sheaths will be packed with a fine sawdust-like material. This material is commonly referred to as frass or billbug fecal matter. Unfortunately, at this point, the damage is done and no insecticide treatment application will resolve the turf damage issue. Remember, when using pesticides, ALWAYS read and follow the label directions!