



Hunting Billbugs

Identification and Control

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Hunting billbugs (Fig. 1) are an occasional turfgrass pest in Texas, though their presence and impact appear to be increasing. The grasses they damage most often include bermudagrass and zoysiagrass turf, but they have also been known to feed on St. Augustinegrass and Centipedegrass. Damage typically appears as irregular, elongated, or round areas of brown and dying grass. These patches can often be misidentified as delayed spring green-up, disease, or as insufficient water or nutrients. Damage can occur at any time during the spring, summer, or early fall but typically occurs in the spring and fall when adults use chewing mouthparts (Fig. 2) to feed on the stems of the turfgrass plant. Female adults also cause damage by laying their eggs into turfgrass stems and leaf sheaths during spring and fall. Damage that occurs in the summer is typically associated with larvae feeding on the turfgrass roots and initially appears as small pockets of yellowing and dying grass that may grow larger and coalesce as the larvae continue to feed. Damage symptoms include hollowed out stems (Fig. 3) as well as turfgrass leaves and sheaths that separate easily from the crown when pulled apart. *Zoysia matrella* cultivars appear to be more resistant to the hunting billbugs compared to *Z. japonica*



Figure 1. Adult hunting billbug.

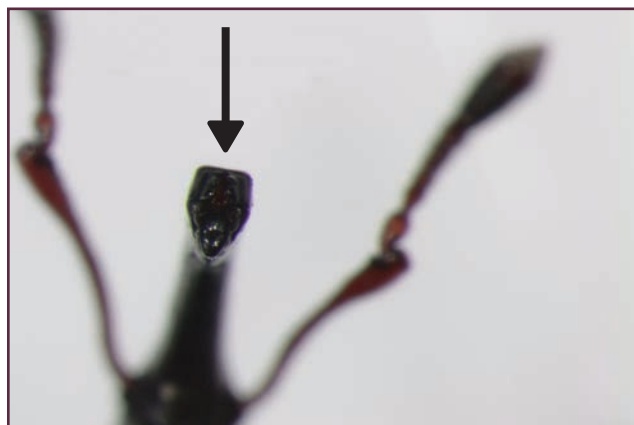


Figure 2. Chewing mouthparts on adult hunting billbug beak.

cultivars. In one study, ‘Diamond’, ‘Zorro’, and ‘Cavalier’ suffered significantly less damage from hunting billbugs than most japonica varieties, including ‘Palisades’, ‘Meyer’, and ‘El Toro’.



Figure 3. Hollow stems, a symptom of billbug injury.

Hunting billbug life cycle

Hunting billbugs belong to the insect order Coleoptera (beetles) and family Curculionidae (weevils). They are between $\frac{1}{3}$ to $\frac{1}{2}$ inch long and are reddish-brown to black. The adult beetle has a characteristic long beak (Fig. 4) that is often associated with insects in the weevil family. Hunting billbugs go through complete metamorphosis, and can be identified to species by markings on the first segment of the thorax (pronotum) and the modified, hardened, first pair of wings (elytra).

Hunting billbug biology and life cycle timing are poorly understood for the various regions of Texas. Billbugs most often overwinter in the adult stage but can also overwinter as large larvae. As soil temperatures increase in the spring, adults



Figure 5. Hunting billbug larvae.



Figure 4. Hunting billbug beak.

begin to feed, mate, and lay eggs. Once they become active in the spring, female adult billbugs begin to lay (oviposit) creamy white oblong shaped eggs that take 3 to 10 days to hatch. Larvae (Fig. 5) of the hunting billbug are white with a brown head capsule. They are legless and are $\frac{1}{4}$ to $\frac{3}{8}$ inch long at the last instar. These larvae feed within the stems of the turfgrass plant, the crown, and the root zone for 3 to 5 weeks before pupating. After remaining in the pupal stage for 3 to 7 days, the adult billbugs emerge and the life cycle begins again until temperatures decrease in the fall.

Scouting methods

Scouting for adult hunting billbugs is easier and more effective than scouting for the larval stage, because larvae are often found only in the



Figure 6. Adult hunting billbug activity on the turfgrass surface.

root zone and can be as deep as several inches in the soil. Scouting for larvae requires destructive monitoring techniques, which is not acceptable in many turfgrass settings. Monitoring for adult hunting billbugs is less damaging because it relies on visual inspection of the turfgrass surface as well as linear pitfall traps.

Adults become active on the turfgrass surface at or near sunset and remain active until they burrow into the soil profile approximately one hour before sunrise. As a result, the ideal time to scout for adults is immediately before or after sunset (Fig. 6). The easiest way to scout for hunting billbugs is to use a flashlight to find adults on the turfgrass surface. Light from the flashlight disturbs the billbugs, and they will often play dead. This makes it easy to collect and identify them. Areas of turfgrass that are mowed to less than 1 inch tall, such as the approach and collars of a golf course, are the easiest places to find them. If this is not possible, you may need to push the turfgrass apart to look for billbugs at or near the soil surface. One benefit of scouting for adults at night is that you can detect them and record the magnitude of the population. Knowing the extent of the infestation will help you determine whether treatment thresholds have been exceeded.

Another scouting method, used principally in research, involves linear pitfall traps. This method can be used to collect adults without having to scout for them at night. Linear pitfall traps can be

made of any smooth plastic material that prevents the adults from crawling out of the trap after they have fallen in. They are often made of plastic gutters, PVC pipe cut in half, and even plastic cups. When using this method, install the trap at or near the soil surface so that when adults crawl across the turfgrass at night, they will fall in and not be able to escape. The traps can be inspected the following morning to see if they contain adult hunting billbugs. When installing pitfall traps, be sure they are not so large as to be a safety hazard to people or animals that might encounter them at night.

Control and treatment

Insecticide applications are most effective just after larvae have hatched or when they coincide with adult activity. Preventative treatments that target the hunting billbug's egg hatch and small larvae include products that contain chlorantraniliprole, cyantraniliprole, clothianidin, imidacloprid, or thiamethoxam. Curative treatments that target the adult stage include products containing bifenthrin, chlorpyrifos, deltamethrin, or lambda-cyhalothrin.

For further product recommendations for hunting billbug control, please consult the Texas Turfgrass Pest Control Recommendations guide. As always, be sure to read and follow label directions for control recommendations and precautionary statements.

Acknowledgment

*All photos by Casey Reynolds,
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