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TURFGRASS TRENDS

BILLBUG CONTROL

Secrets to Controlling Hunting Billbug Reside in Warm-Season Turfgrasses

By Jake Doskocil and Rick Brandenburg

Billbugs are well known insect pests of turf in many parts of the world. Historically, this has been true in the United States in areas where cool-season turfgrass, such as bluegrass, is grown. In these regions, research on the bluegrass billbug, *Sphenophorus parvulus* Gyllenhal, has been quite thorough, and its biology and ecology is well understood. The billbugs have one generation per year, overwinter as adults, and the larvae are the damaging stage of the life cycle. Other species found in the Northeast to a lesser degree include *S. inaequalis* (Say), *S. minimus* Hart, *S. coesifrons* Gyllenhal, *S. venatus vestitus* (Say).

In regions that are dominated by warm-season turfgrass, the hunting billbug, *S. venatus vestitus*, has become an emerging pest. Damage is often noticed in the spring as grass is slow to recover from winter dormancy. It is noticed in the late summer and fall as a dry patch, which does not respond to additional watering. Unlike its counterpart, the lifestyle and habits remain more of a mystery. In the Southeast, hunting billbug adults are often observed, but our knowledge of their biology and ecology is limited, and our ability to effectively manage them is poor. Other species occasionally found in the Southeast include *S. inaequalis*, *S. minimus*, *S. coesifrons*, *S. parvulus* and *S. apicalis* LeConte.

PHOTO 1

Hunting billbugs typically are found in bermudagrass and zoysiagrass.

A rising occurrence

The number of reports of billbugs in the warm-season turfgrass region has been on the rise during the past 10 years. From these reports, the most abundant species appears to be the hunting billbug. Although it has been cited as being present in both warm- and cool-season turfgrass, we have observed it most frequently in bermudagrass and zoysiagrass. Based upon the reports of billbug biology in cool-season turfgrass, we assumed that this billbug overwintered in many stages, including adults and larvae. It was also assumed that the larval stage damaged turfgrass.

Continued on page 52

IN THIS ISSUE

OUR SPONSORS

Continued from page 49

This damage often results in initial yellow areas that grow larger and coalesce into patches of brown or tan turfgrass. The most severe damage often occurs in late summer and early fall and in the same areas each year.

Ongoing projects at North Carolina State University and the University of Florida have been set up to monitor adult activity throughout the year and find the presence of larvae in the turf to gain insight into the hunting billbug's lifecycle in the Southeast. While adult billbugs can be collected in large numbers easily, locating larvae in the field has been next to impossible. The few larvae we found in 2007 were 6 inches below the surface, deeper than the 4 inches previously reported for billbug larvae.

During intense monitoring in North Carolina during 2007, large numbers of adults were present in the fall just prior to and during occurrence of damage. The damage is a result of the large number of adults feeding on the surface during a time of the year when most warm-season grasses are stressed. At this time, larvae are too small to cause damage on this scale, and adults are ravenously feeding to build fat stores for overwintering — or in the case of females, egg production. Only the locations that receive intense feeding result in the "dry patches" during the summer and fall with the majority of damage going unnoticed until the following spring.

During early March 2008, late instar larvae were found in the thatch rather than the soil of dormant zoysiagrass. Traditional knowledge holds that early instars feed in and on the crowns of grass while late instars feed on the root system below the surface. It is assumed these larvae were in the thatch to feed, but this is the first behavior of this kind recorded.

Containment and control

If we are to effectively manage this pest, we need to elucidate more clearly some of this critical information. We need to know which stage causes the damage and have a clear picture of the presence of each life stage. Control of the larval stage can most likely be accomplished with an effective grub insecticide if it is timed properly. Adults can possibly be controlled with a number of the pyrethroid insecticides, such as Talstar, DeltaGard or Scimitar. In the absence of a thorough knowledge of pest biology and ecology, the use of combination products, such as Allectus or Aloft, could cover all the bases. For example, the bifenthrin in Allectus will have activity against the adults, and the imidacloprid should control the larvae. Given our ignorance of pest biology at this time, combinations might be the best insurance treatment available until our knowledge base improves.

It has long been known that effective control of white grubs and mole crickets requires knowledge of pest biology, a means to monitor activity and timely applications of the best product(s) for control. The same is true for the hunting billbug. This knowledge will be gained through comprehensive field and laboratory studies that outline its lifecycle and behavior in the warm-season turfgrass areas.

In the coming years, we will continue to monitor adult activity with linear pitfall traps, not only in warm-season grasses, but expand to include cool-season grasses such as fescue and bluegrass. Greenhouse studies are being conducted using field-collected adult billbugs to gain a clearer understanding of lifecycle length and potential generations per year. Laboratory studies will provide new information on the damaging stages and adult behavior. In addition, studies tracking the movement and location of adults on the surface, in the thatch and in the soil before, during, and after overwintering will be conducted using innovative tracking methods. As our knowledge of this pest increases, our ability to manage it and prevent the damage that we are seeing more frequently on bermudagrass and zoysiagrass will also improve.

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