Turf Pests

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Scouting

SCOUTING: Find the insect
Be sure to examine an area of turf that contains living as well as damaged grass. The most serious insects of turf feed on living turf and are not found in dead areas. Insects found in completely dead patches generally are not responsible for the damage. Cutworms, sod webworms, aphids, chinch bugs, and other blade defoliation and blade sucking insects can be detected by the flotation method.

Root-feeding insects such as white grubs and billbugs will not respond to the flotation method. If infestations are heavy, the grubs will have removed most of the grass roots and the turf will roll back like a carpet.

Steps in IPM

Steps in IPM:
1. Routinely inspect or scout the turf.
2. Determine changes in cultural practices that can increase turf health and vigor.
3. Determine what is an acceptable threshold of pest damage.
4. Time the pesticide application to the vulnerable stage in the insect's life history.
5. Return to step 1. Begin inspecting/ scouting/ monitoring.

Root Feeding

Root Feeding: White Grubs

May/June beetles
Northern masked chafer
Black turfgrass *Ataenius*
Aphodius beetle
Green June beetle
Japanese beetle
False Japanese beetle
Oriental beetle

Root Feeding: Weevil

Bluegrass billbug

Blade Defoliation

Blade Defoliation: Larvae only

Sod webworm

Cutworms

Black cutworm

Bronzed cutworm

Variegated cutworm

Armyworm

Fall armyworm

Blade Sucking

Blade Sucking: Adults and nymphs

Leafhoppers
Chinch bug
False chinch bug
Greenbug

May/June Beetles

Identification:

May or June beetles (*Phyllophaga* spp.)
Order Coleoptera, Family Scarabeidae

Clemson University, USDA Cooperative Extension Slide Series, www.insectimages.org

Larva

Joyce Gross, CityBugs, http://nature.berkeley.edu/citybugs/index.html

Adult

May/June Beetles

Identification:

All species of *Phyllophaga* are called May or June beetles. Adults are about 1 inch long and a chestnut brown color and fly to lights in the early summer. The adult scarab beetle feeds on foliage and lays eggs in the turf in early summer (May beetles) and summer (June beetles). The grubs are whitish with brown heads and are usually found curled in a "C" shape and range from 1/2 to 1 inch in length. These are the largest grubs found in turf.

May/June Beetles

Damage, scouting, and management:

May/June beetle grubs feed on grass roots for three years before becoming adults. The first year grubs grow up to 1/2 inch long and produce little damage. The second year, they range from 1/2 to 3/4 inch in length, and damage becomes more apparent. This second year is the best time to control grubs since damage usually is not extensive, and an insecticide will be effective. Control for grubs is desirable when there are more than 4 grubs per square foot.

May/June Beetles

Damage, scouting, and management:

The third year, the grubs grow to 1 inch long and damage becomes very apparent, particularly in July and August. In late summer grubs become adults in pupal chambers in the soil and emerge the following spring as adults.

Terry Price
Georgia Forestry Commission
www.insectimages.org

May/June Beetles

Pesticides:

***Steinernema glaseri* nematodes,**
***Heterorhabditis bacteriophora* nematodes,**
halofenozide, imidacloprid, trichlorfon

Northern Masked Chafer

Identification:

Northern masked chafer (*Cyclocephala borealis*)
Order Coleoptera, Family Scarabeidae

Northern Masked Chafer

Identification:

Adults are shiny brown scarabs around 1/2 inch in length with a dark brown mask across the head and a dark spot on each side of the thorax. After overwintering in the soil, adults emerge in late June and females lay egg clusters on top of the soil. Adults are nocturnal and do not feed. Northern masked chafers have a one-year life cycle. Damage is more severe in late summer when the grubs are third instar.

Northern Masked Chafer

Damage, scouting, and management:

The larvae feed on roots, separating crown from roots. The larvae reach maximum size in September and then move down deeper in the soil to overwinter. Healthy turf can tolerate greater than 20 grubs per square foot; while stressed turf can tolerate less, around 10 grubs per square foot.

Northern Masked Chafer

Pesticides:

***Steinernema glaseri* nematodes,**
***Heterorhabditis bacteriophora* nematodes,**
halofenozide, imidacloprid, trichlorfon

Black Turfgrass *Ataenius*

Identification:

Black turfgrass *Ataenius* (*Ataenius spretulus*)
Order Coleoptera, Family Scarabeidae

Black Turfgrass *Ataenius*

Identification:

The adult is a small, black scarab around 1/5 inch in length that is common on high maintenance golf courses, especially highly watered and fertilized areas. Larvae are around 1/4 inch in length. This native insect has become a turf pest in the last 20 years.

Larva and Pupa

Adults

Black Turfgrass *Ataenius*

Damage, scouting, and management:

Adults overwinter in woodlots and start to fly in May to June to lay eggs in the thatch. The larvae feed and develop over two months with peak damage in late July and early August. Most root injury occurs near the soil-thatch interface. Larvae pupate in the soil and start emerging in August. High levels of infestation of this pest can be tolerated. Control when greater than 50 grubs per square foot are found.

Black Turfgrass *Ataenius*

Pesticides:

***Steinernema glaseri* nematodes,**
***Heterorhabditis bacteriophora* nematodes,**
halofenozide, imidacloprid, trichlorfon

Aphodius Beetle

Identification:

***Aphodius* beetle (*Aphodius granarius*)**
Order Coleoptera, Family Scarabeidae

Aphodius Beetle

Identification:

This is a small, black scarab beetle around 1/5 inch in length that can be common around high maintenance golf courses, especially highly watered and fertilized areas. *Aphodius* beetles primarily feed on decaying organic matter, particularly compost and manure, but also damage turf roots. This European scarab beetle can fly to turf and be found feeding with black turfgrass *Ataenius* in areas with high organic material. It is also commonly found at dung.

Aphodius Beetle

Damage, scouting, and management:

Adults overwinter in woodlots and start to fly in May to June to lay eggs in the thatch. The larvae feed and develop over two months with peak damage in late July and early August. Most root injury occurs near the soil-thatch interface. Larvae pupate in the soil and start emerging in August. High levels of infestation of this pest can be tolerated. Control when greater than 50 grubs per square foot are found.

Aphodius Beetle

Pesticides:

***Steinernema glaseri* nematodes,**
***Heterorhabditis bacteriophora* nematodes,**
halofenozide, imidacloprid, trichlorfon

Green June Beetle

Identification:

Green June beetle (*Cotinis nitida*)
Order Coleoptera, Family Scarabeidae

Larva

Adult

Green June Beetle

Identification:

Green June beetle may be transported on nursery stock. The green June beetle is green in color trimmed with brown along the edge. The underside is also green, but has a very shiny, metallic look. The adults are attracted to manure for oviposition and grubs can be found in many crops and ornamentals that have manure added to the soil. Adults reach a length of 3/4 - 1 inch. Larvae have typical scarab characteristics and reach 2 inches in length.

Green June Beetle

Damage, scouting, and management:

The larvae feed on the roots of turfgrass as well as corn, oats, sorghum, alfalfa, and nursery stock, especially where manure has been added to the soil. Adults feed on a variety of ripening fruits such as apples, pears, and grapes. Tolerance levels for this species have not been set.

Green June Beetle

Pesticides:

***Steinernema glaseri* nematodes,**
***Heterorhabditis bacteriophora* nematodes,**
halofenozide, imidacloprid, trichlorfon

Susan Ellis, www.insectimages.org

Japanese Beetle

Identification:

Japanese beetle (*Popillia japonica*)
Order Coleoptera, Family Scarabeidae

Larvae

Adult

Japanese Beetle

Identification:

The Japanese beetle is an exotic scarab originally established in New Jersey. Japanese beetles are approximately 7/16 inch long. The front of the beetle is dark metallic green and the wing covers are dark tan. There are five small, white patches of short hairs along each side of the dorsal abdomen on the beetle. These white patches are a key characteristic for identification. If it does not have these white hair patches, it is the false Japanese beetle.

Japanese Beetle

Damage, scouting, and management:

One of the favored foods of adult Japanese beetles is rose foliage and flowers, although adults feed on over three hundred species of plants. Larvae feed on the roots of grasses. Inspect your plants for skeletonized leaves and the presence of adult beetles. Pheromone traps use a rose-scented lure to attract the adult beetles and can be purchased in garden centers. Threshold is 7 grubs per square foot.

Japanese Beetle

Pesticides:

***Steinernema glaseri* nematodes,**
***Heterorhabditis bacteriophora* nematodes,**
halofenozide, imidacloprid, trichlorfon

False Japanese Beetle

Identification:

False Japanese beetle (*Strigoderma arboricola*)
Order Coleoptera, Family Scarabeidae

The Insects of Cedar Creek, http://cedarcreek.umn.edu/insects/

False Japanese Beetle

Identification:

This native scarab resembles the Japanese beetle. Adults are about 7/16 inch (10-12 mm) in length and are dark tan to brown with a slight metallic green color on the front third of the body. However, the dorsal abdomen edges lack white tuffs as found on Japanese beetle.

False Japanese Beetle

Damage, scouting, and management:

This insect has not been studied extensively. Larvae feed on plant roots, but a species list is not well known. Adults are found feeding on buds and flowers of wild and cultivated roses and other plants. Control is not necessary. Information on the false Japanese beetle is given so this species can be distinguished from the Japanese beetle, a major turf pest.

False Japanese Beetle

Pesticides:

***Steinernema glaseri* nematodes,**
***Heterorhabditis bacteriophora* nematodes,**
halofenozide, imidacloprid, trichlorfon

Oriental Beetle

Identification:

Oriental beetle (*Exomala orientalis*)
Order Coleoptera, Family Scarabeidae

Oriental Beetle

Identification:

Introduced into Connecticut as early as 1920, this scarab beetle has spread across the mid-Atlantic states. The adults are similar in size to Japanese beetles (7/16 inch), however the adult beetles do not have any green, but vary in color from light brown to black, often with darker mottling on the wing covers.

Oriental Beetle

Damage, scouting, and management:

Larvae feed on the roots of turf grasses. Adults are active at night and more cryptic compared to Japanese beetle. A good pheromone trap is available.

Oriental Beetle

Pesticides:

Steinernema glaseri **nematodes,**
Heterorhabditis bacteriophora **nematodes,**
halofenozide, imidacloprid, trichlorfon

Bluegrass Billbug

Identification:

Bluegrass billbug (*Sphenophorus parvulus*)
Order Coleoptera, Family Curculionidae

Bluegrass Billbug

Identification:

Adults are long-snouted, 1/4 inch long, gray-to-black beetles with strongly tapered abdomens. They are found walking on hard surfaces in spring prior to depositing eggs in grass sheaths. The plump, legless white larvae first feed inside stems, then on roots.

Bluegrass Billbug

Damage, scouting, and management:

Infested lawns have off-colored, irregularly shaped areas that rapidly yellow and finally turn brown. Scout for larvae by inspecting a square foot sample of lawn along the margin where dead or damaged grass meets healthy grass. Larval treatments are usually applied in mid May to early June. Control adults when first noticed migrating in April through May. Use pitfall traps to monitor adults or observe on warm, sunny days.

Bluegrass Billbug

Pesticides:

***Steinernema glaseri* nematodes,**
***Heterorhabditis bacteriophora* nematodes,**
halofenozide, imidacloprid, trichlorfon

Sod Webworm

Identification:

Sod webworm (*Crambus* and *Parapediasia* spp.) Order Lepidoptera, Family Pyralidae

Sod Webworm

Identification:

The adults of sod webworms are frequently called lawn moths. They are light-colored moths, which make short, erratic, darting flights above the turf and are attracted to lights at night. When resting they fold their wings back closely against their bodies, which gives them a very narrow appearance. Also, their heads appear to have a long snout. The moths lay their eggs in the lawn. The older larvae are a dirty white to light brown with darker spots and are about 3/4 inch long with a black head.

Sod Webworm

Damage, scouting, and management:

The larvae feed at night on grass blades. During the day the larvae hide in silk-lined tunnels or burrows at or slightly into the soil surface. Some species damage plant crowns or roots as well as blades. Two generations can occur in Minnesota. Heavy infestations of the second generation may seriously damage large areas of turf. Although webworm adults are commonly seen, larval damage is un-common.

Sod Webworm

Damage, scouting, and management:

Look for dew sparkling on the webs in the early morning or at dusk. Use the flotation method to force the caterpillars to the surface, where they can be counted. In the flotation method, a soapy solution is poured inside a topless and bottomless can. The soapy solution is made by adding one ounce of mild dishwashing detergent to one gallon of water. It is best to scout for sod webworms in June and again in early August, since sod webworms have two generations per year. Tolerance is around 12 larvae per square feet.

Sod Webworm

Pesticides:
acephate,
bifenthrin,
carbaryl,
cyfluthrin,
halofenozide,
trichlorfon

The Insects of Cedar Creek,
http://cedarcreek.umn.edu/insects/

Cutworms

Identification:

Black cutworm (*Agrotis ipsilon*)
Bronzed cutworm (*Nephelodes minians*, below)
Variegated cutworm (*Peridroma saucia*)
Order Lepidoptera, Family Noctuidae

Cutworms

Identification:

Full-grown larvae are 1-1/2 inches long. Variegated cutworms (pictured below) are brown to gray. Black cutworms are dark gray above and light gray below with black dots along the sides of the body. Bronze cutworms are a mottled burgundy brown. When disturbed, cutworms roll into a ball.

Cutworms

Damage, scouting, and management:

Black cutworm adults arrive in summer on southerly winds and larvae cannot overwinter in Minnesota. The larvae feed on the grass blades or cut the grass off at the soil surface at night. During the day they hide in the soil or under debris. Aeration holes in greens are often utilized by cutworms as burrows. However, the presence of these aeration holes does not increase the number of cutworms. It is possible to have 1-3 generations per year.

Cutworms

Pesticides:

acephate, bifenthrin, carbaryl, cyfluthrin, halofenozide, trichlorfon

Armyworm and Fall Armyworm

Identification:

Armyworm (*Pseudaletia unipunctata*)
Fall armyworm (*Spodoptera frugiperda*, below)
Order Lepidoptera, Family Noctuidae

Alton N. Sparks, Jr., The University of Georgia, www.insectimages.org

Armyworm and Fall Armyworm

Identification:

Armyworm caterpillars feed on a variety of grasses including agricultural grass crops such as small grains and corn. Turf grasses are not commonly infested. Mature larvae reach 1-1/2 to 2 inches in length. Larvae are a dull yellow to gray with stripe running lengthwise along the body. Fall armyworm caterpillars feed on a variety of grasses. Mature larvae reach 1-1/2 to 2 inches in length. Larvae have a black stripe down the middle of the back and on each side; four black dots on the dorsal side of each abdominal segment; and the face with a yellow inverted Y-marking.

Armyworm and Fall Armyworm

Damage, scouting, and management:

Populations arrive as annual flights from overwintering southern populations. Armyworms are typically kept in check by natural means, though population booms can occur, generally after a drought. Thresholds are not well developed. Below: armyworm.

Alton N. Sparks, Jr., The University of Georgia, www.insectimages.org

Armyworm and Fall Armyworm

Pesticides:

acephate, bifenthrin, carbaryl, cyfluthrin, halofenozide, trichlorfon

Fall Armyworm Adult

William Lambert, The University of Georgia
www.insectimages.org

Leafhoppers

Identification:

Leafhoppers
Order Hemiptera, Family Cicadellidae

Leafhoppers

Identification:

A number of species can be found in turf. During some seasons these very tiny green or gray insects become so numerous that when disturbed into flight, they rise like a cloud of dust. Most of the grass-infesting leafhoppers are less than 1/4 inch long, narrow, and tapered from head to tail.

Leafhoppers

Damage, scouting, and management:

Populations arrive as annual flights from southern populations. Eggs are inserted into leaf tissue. Leafhoppers are sap-sucking insects, and their damage usually appears as irregular patches in which the grass has yellowed or bleached-out lesions. Established lawns are seldom seriously damaged. Eggs hatch in one to two weeks, and the young nymphs begin to suck on grass blades. Control is suggested for new lawns only and thresholds are not well established.

Leafhoppers

Pesticides:

acephate, carbaryl, cyfluthrin

Grass Leafhopper (*Draeculacephala minerva*)

Greenbug

Identification:

Greenbug (*Schizaphis graminum*)
Order Hemiptera, Family Aphididae

Greenbug

Identification:

Greenbugs are aphids that can damage established turf. The insects are small and yellow to green, and they can be found by sweeping your hand over suspected areas.

Greenbug

Damage, scouting, and management:

Greenbugs are carried into Minnesota by southerly winds, so they can show up overnight. Aphid suck the sap from blades and the damage appears as pale areas often with yellow streaking. Damage is almost always near areas of the lawn shaded by trees or shrubs. Bluegrass is a prime target for greenbug attacks. Control is suggested when damaging greenbug populations are first noted, as they reproduce very quickly. First found in late July or August.

Greenbug

Pesticides:

acephate, carbaryl, cyfluthrin

Chinch Bug

Identification:

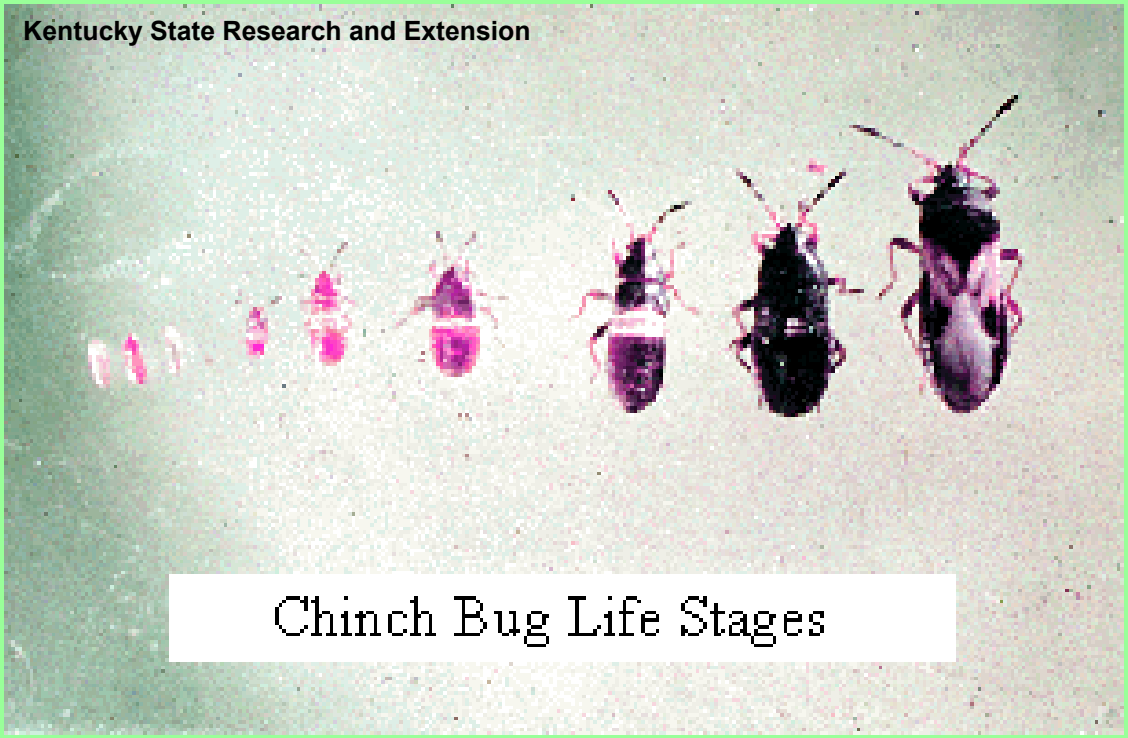
Chinch bug (*Blissus* spp.)
Order Hemiptera, Family Lygaeidae

Chinch Bug

Damage, scouting, and management:
Chinch bugs on turf are rare in Minnesota. Immature bugs are red, but become dark as they mature. Adults are 1/5 inch long, have a head that is narrower than the thorax (shoulder), and have light colored forewings with a conspicuous black triangle midway along the outside margin. Immature chinch bugs (nymphs) are similar in appearance to adults except smaller with the wings absent or only moderately developed.

Chinch Bug

Damage, scouting, and management:
Populations of 20 to 25 bugs per square feet can cause damage and may warrant treatment.



Chinch Bug

Pesticides:

acephate, carbaryl, cyfluthrin

False Chinch Bug

Identification:

False cinch bug (*Nyssius* spp.)
Order Hemiptera, Family Lygaeidae

False Chinch Bug

Damage, scouting, and management:

False chinch bugs are small gray bugs resembling true chinch bugs. They are more frequently encountered on herbaceous plants, although they can feed on turf when the preferred food is not available. False chinch bugs are approximately 1/4 inch long, brown, and generally found in dead areas of the turf. They can be distinguished from the true chinch bug by the absence of a conspicuous black triangle on the outer wing margin and by a head that is about the same width as the thorax (shoulder).

False Chinch Bug

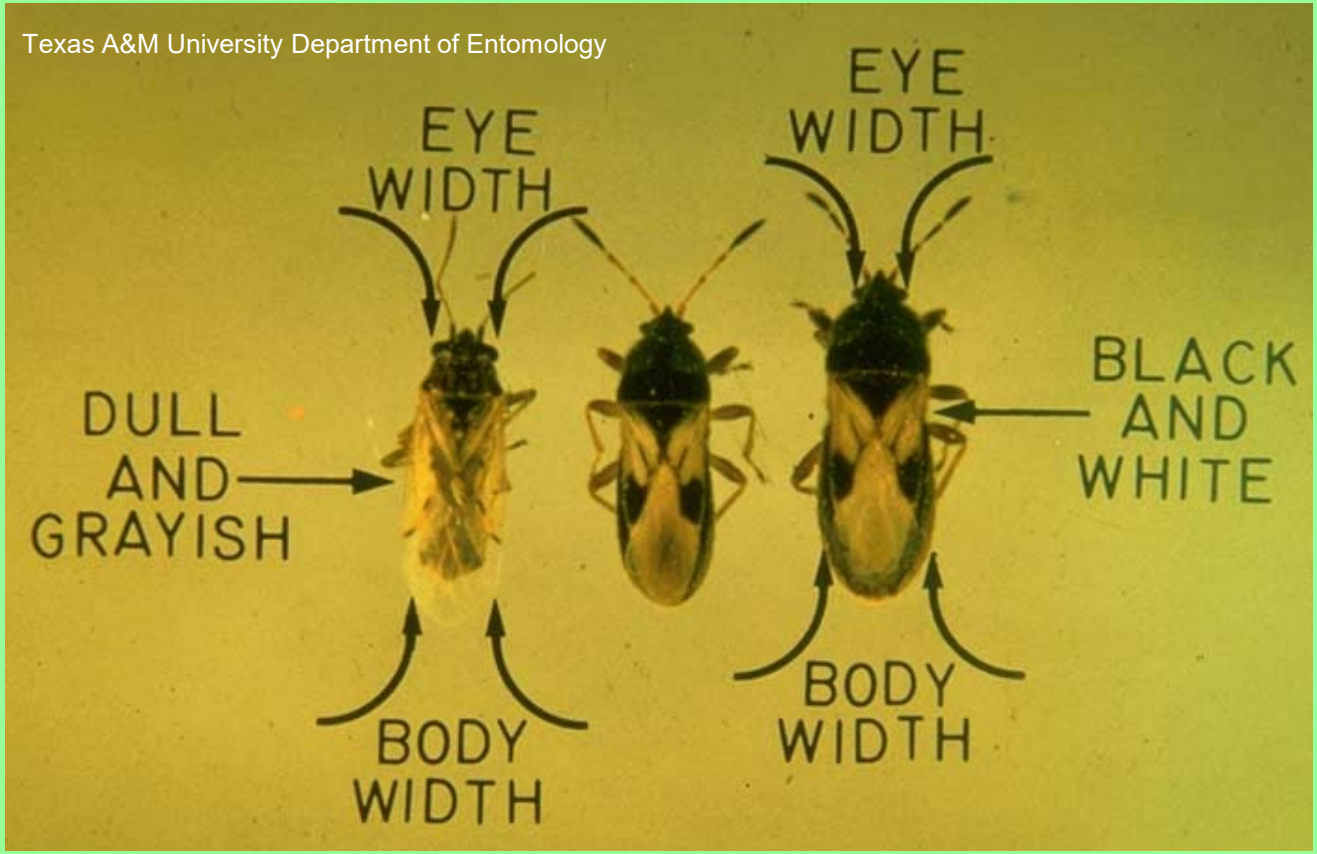
Damage, scouting, and management:

Control is not recommended.

False Chinch Bug

Pesticides:

acephate, carbaryl, cyfluthrin



False Chinch Bug (Left) and Chinch Bugs

Bigeyed Bug

Identification:

Bigeyed bug (*Geocoris* spp.)
Order Hemiptera, Family Lygaeidae

Bigeyed Bug

Big-eyed bugs are predators and often confused with true chinch bugs. However, the head of the big-eyed bug is as wide as the thorax (shoulder) and the eyes are very noticeable. Big-eyed bugs are predators that feed on other insects.

Nymph

Others

No control is warranted:
Ants, Isopods (pillbugs and sowbugs), millipedes, centipedes, spiders, earthworms