

## An Integrated Approach to Insect Management in Turfgrass:

# Hairy Chinch Bug

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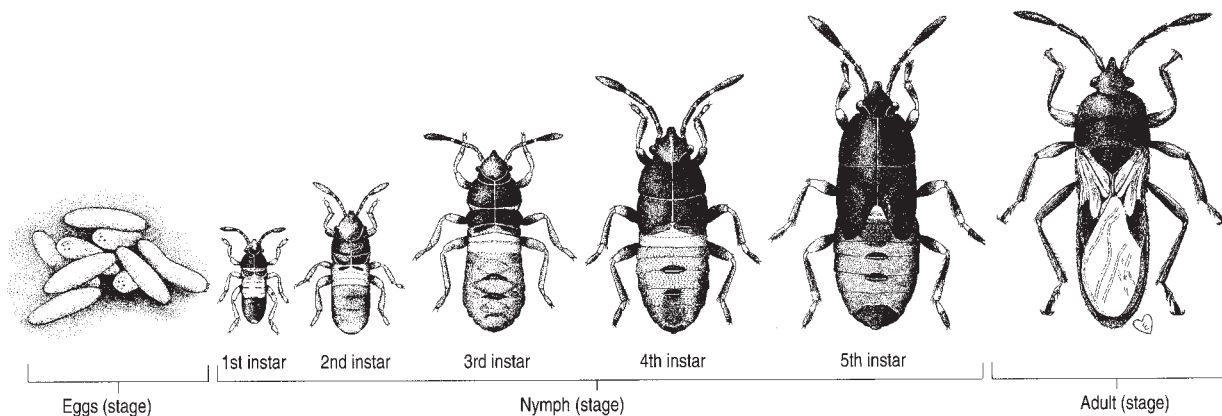


Fig. 1. Developmental stages of the hairy chinch bug (courtesy of D. Shetlar)

**Introduction:** The hairy chinch bug, *Blissus leucopterus hirtus* Montandon, is one of the most destructive insect pests of New Jersey turfgrass. Hairy chinch bugs (HCB) are found in all of the Northeastern states, west to Minnesota, and south to Virginia. They are also troublesome in Canada from Ontario to the Atlantic Coast. These surface feeding insects attack a wide range of grasses including Kentucky bluegrass, fine fescues, perennial ryegrass, bentgrass, and zoysia.

**Symptoms of infestation:** Hairy chinch bugs have piercing-sucking mouthparts, which they use to suck sap from and inject toxins into the crowns and stems of grasses. This type of feeding disrupts the water-conducting system of the grass, causing the grass to wilt, turn yellow, then brown and die. Because HCB generally occur in

scattered patches, their feeding results in localized turfgrass injury. The spots often coalesce into large areas of thinning, dead, or dying turf.

Moisture or heat stressed turf with thick thatch is most susceptible to HCB injury. HCB injury closely resembles drought injury or sunscald and is often mistaken as such during the summer when grass is in a dormant state. The first indication of injury is often when the grass fails to recover after irrigation or late summer rains. HCB seem to prefer open sunny lawns with a high percentage of perennial ryegrass and/or fine fescues.

**Insect Description (Fig. 1):** HCB adults are black with shiny white wings. There are long-winged and short-winged adults. The ratio of these two

forms varies considerably among populations. The shiny-white wings are folded flat over the body so that the tips overlap in the long-winged adults. Each wing has a distinctive, triangular-shaped black marking in the middle of the outer edge. From these marking extend black lines in an "X"-shaped pattern across both wings. HCB adults are slightly more than 3/64" (1 mm) wide by 1/8" (3.5 mm) long.

HCB immatures, called nymphs, have five growth stages. Their length increases from 1/32" (0.9 mm) in the first stage to around 1/8" (3 mm) in the fifth stage. Young nymphs are orange with a characteristic white stripe across their backs. Intermediate stages darken to an orange/brown and the final stage is black. Wingpads become apparent by the third stage. New HCB eggs are elongate, oval shaped, and white. They darken as they age to a reddish color just before hatching.

**Seasonal History and Habits:** In New Jersey the HCB has two generations each year. Adults overwinter in infested turf areas that still have enough undamaged grass to provide cover. They are also found during winter in thatch, plant debris, and in or on other objects that border turf areas.

The overwintering adults become active and leave their hibernation sites when the temperature reaches 45°F (7°C). The HCB can fly, but migrates mainly by walking. Individuals feed and mate immediately. Females begin to lay eggs after about 2 weeks. Peak egg-laying occurs from early May through early June, about the time when white clover is in early bloom. Females will lay about 170 eggs and live about 100 days.

Egg hatch occurs after several weeks in early spring and as few as 7 days in summer. The first generation brood develops through the five nymphal stages in 4 to 6 weeks between May and mid-July. Emergence of the first-generation adults occurs around the time when sumac is in full bloom.

These adults lay eggs from mid-July through late August. Once the second generation begins to

emerge all life stages, mixed from the first and second generation, can be found at the same time. The second-generation nymphs mature by September or October.

**Monitoring:** HCB are fairly easy to control if infestations are detected early. Lawns with a history of HCB should be monitored, especially after warm dry springs. Larger nymphs and adult HCB can be detected by parting the grass at the interface of healthy and damaged turf and inspecting the lower stems and thatch.

The best sampling method for HCB is floatation. A metal cylinder made from a can (e.g., large coffee can) by cutting off both ends is pushed through the thatch of the area to be inspected and filled with water to the brim. Keep the water level above the grass foliage. Any HCB present will float to the surface within a few minutes.

Alternatively, take a small piece of sod using a golf course cup cutter or spade and place it in a bucket of water to float up HCB. Adjust the number of HCB counted in the sample to 1 ft<sup>2</sup>. A golf course cup cutter is 0.1 ft<sup>2</sup>, a square cut with the blade of a spade is 0.25 ft<sup>2</sup>. The potential for injury is greatest when the population reaches 25 to 30 per ft<sup>2</sup>.

Degree-day models can be used to focus attention to developing populations. Using a 50°F base temperature, egg laying in spring starts at 198 to 252 degree-days and the first eggs hatch at 522 to 702 degree-days.

**Cultural control:** The first step in a HCB management program is plant resistance. Several turfgrass varieties, primarily perennial ryegrasses and fescues that are infected with *Neotyphodium* endophytes, are resistant to HCB. Certain Kentucky bluegrass cultivars have also been reported to tolerate feeding injury.

Thatch reduction, proper fertilization, and regular irrigation can minimize HCB damage.

**Natural mortality:** HCB nymphs drown in great numbers during spring rains. Furthermore, during certain years winter mortality is very high due to desiccation. Generally, low humidity at low temperatures and high humidity at high temperatures contribute to the decline of HCB populations.

**Natural enemies:** After cool wet springs and during warm moist summers, the insect pathogenic fungus *Beauveria bassiana* can nearly wipe out HCB populations. After killing the insect, the fungus covers the body with white mycelium and spores. Beware that fungicide applications will reduce this natural enemy of HCB. Furthermore, at least eight species of arthropods in the turfgrass fauna feed on the HCB including a predatory mite, big-eyed bugs, and ground beetles. It is always prudent to assess the population of natural enemies in the ecosystem before using insecticides.

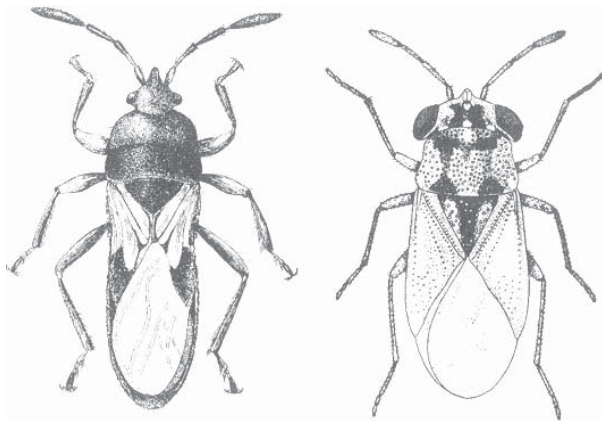


Fig. 2. Adult HCB (left), adult big-eyed bug (right) (From USDA)

**Chemical Control:** The commonly accepted period for HCB control is from June to August when peak populations are active. Preventive

early spring applications against overwintered females are often wasted because the pest may not reach damaging levels. Restrict preventive applications to potential hot spots as determined by monitoring and site history.

Either liquid or granular applications can be effective. For liquids, unless sufficient spray volume has been used, a light irrigation (1/8" = 3 mm) done before the spray dries will help move the insecticide into the thatch. If thatch and soil surface are very dry, watering the day before application helps the spray to move into the thatch. Granular applications should be made to dry foliage and followed by light (1/8") irrigation. The material can also be applied in a gentle rain or just before a predicted rainfall. Be sure to rotate materials of different chemical classes to reduce the chance for resistance development.

To aid in locating control products, active ingredients listed below are followed by trade names in parentheses. Be aware that the active ingredients in these products may change. When purchasing control products, always check the label for the active ingredient. Always read instructions on insecticide labels very carefully.

Effective insecticides for HCB control include the organophosphates acephate (Orthene®, Address®), diazinon (Diazinon®; not for golf courses, sod farms, turf areas > 1 A), chlorpyrifos (Dursban®; not for residential turf or where children may be exposed), the carbamate carbaryl (Sevin®), the pyrethroids bifenthrin (Talstar®, Ortho® Lawn Insect Killer Granules), cyfluthrin (Tempo®), deltamethrin (Deltagard®), lambda-cyhalothrin (Battle®, Scimitar®), and permethrin (Astro®). Chlorpyrifos, deltamethrin, and lambda-cyhalothrin are presently only available for commercial use.

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Published: June 2002

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