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ANOBIID BEETLES IN STRUCTURES

In coastal areas of Washington wood-infesting beetles cause extensive damage to wooden buildings. Damage often is overlooked, as these insects live in portions of the structure where people seldom see them. Wood breakdown from beetle infestations can lead to serious structural weakness (Fig. 1). In addition, chemical treatments and wood replacement to limit insect damage are costly. *Hemicoelus gibbicollis* (LeConte), a member of the beetle family Anobiidae, causes the most significant damage. Several other anobiid species occur in wooden timbers, but they do not cause serious problems. Infestations usually build to damaging levels over a period of years.

Structure-infesting anobiids occur primarily in older homes that have crawl spaces or damp basements. These beetles also infest outbuildings, such as barns or garages. Wooden support timbers, floor joists, and sub-flooring are commonly infested. The insects will attack new hardwoods (maple, walnut, oak) and softwoods (Douglas-fir, cedar, hemlock) or those that have been in service for many years. Larvae also feed on plywood. New replacement wood attached (or scabbed) over old infested wood is more likely to be attacked and shows damage very quickly. Whether or not odor and texture play a part, the new wood has higher nutritional value and attracts the insects. Once established, and if environmental conditions remain appropriate, anobiids will continuously reinfest until only powdery frass (feces) covered by a thin layer of wood remains (Fig. 2). Conditions of high moisture, no ventilation, and poor drainage away from the structure encourage development of these insects. Homes in Washington west of the Cascade Mountains are most susceptible, and beetles favor those near coastal areas.

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Description

People rarely see these insects. Adult beetles range from 2 to 5 mm long and are reddish to chocolate brown in color (Fig. 3). Eggs are 0.5 mm long, white, and teardrop shaped (Fig. 4). Larvae are white, C-shaped, and 5 to 6 mm long when fully developed (Fig. 5). Pupation takes place just beneath the wood surface (Fig. 6).

Life History

Adult beetles mate during July and August, and females soon lay 10 to 30 eggs singly or in groups of 2 to 10 within natural depressions of wood. Eggs hatch in about 3 weeks, and newly emerged larvae bore directly into wood or, quite commonly, leave the oviposition site to find a more suitable place to feed. Anobiids may spend 4 to 5 years in the larval form feeding on wood. In late spring and early summer, mature larvae bore tunnels to within a few millimeters of the wood surface to pupate and change into adults. Adult beetles chew a circular exit hole and emerge during June, July, and August. These holes are often seen in large numbers on a wooden surface (Fig. 7).

Monitoring

Since these insects are so well hidden, it is extremely difficult to determine whether an infestation is active. Finding exit holes does not always mean that

anobiids still are feeding within the wood. Discovering frass as it is pushed out of exit holes is the best indicator of larval activity (Fig. 8). Remember that frass can filter out of exit holes due to normal activities in upper levels of a building. Often infestations will die out for undetermined reasons. Before undertaking control measures, have the building inspected and try to determine infestation levels. To check for new frass being expelled, place a black background under areas that are suspect for several weeks during summer months, or paint portions of wooden surfaces to look for new adult exit holes. Researchers are currently testing light traps to catch adult beetles in crawl spaces. Low levels of activity (that is, a few exit holes in one or two boards in the building) do not warrant control.

Use a hammer to tap on wood and listen for differences in sounds. If the wood does not sound solid, anobiids may be present. When a knife penetrates easily into the timber and dustlike frass appears, examine that portion of the structure further to determine if wood replacement or other treatments are necessary. Homes that show signs of damaged wood and beetle exit holes, that have damp crawl spaces or standing water from poor drainage, or that have inadequate ventilation are prime candidates for active infestations.

Control

Several methods must be used together for anobiid control to work successfully.

Cultural control—Anobiid beetles thrive best in wood when moisture content ranges between 14% and 20 %. Lowering wood moisture by ventilation (vents near corners are especially important), repairing gutters, positioning vapor barriers to cover the entire crawl space floor, and replacing wood are the best ways to reduce anobiid populations. Remove scraps of lumber, such as form boards, from crawl spaces. These may contain beetle larvae. When replacing wood, take out as much infested material as possible and burn it. These insects will not reinfest wooden surfaces that have been painted or varnished. Abandoned buildings that harbor active infestations should be torn down if practical.

Chemical control— Pest control applicators can use borate (disodium octaborate tetrahydrate) to treat anobiid infestations. Homeowner formulations are also available. If applications are timed for use during the adult emergence period, they can be very effective. However, these insecticides only penetrate a few millimeters into most wood, and larvae that live deep inside a timber may not contact the material for several years. During this time, the effectiveness of these compounds will decrease. Use pressure-treated wood for any structural wood which is in contact with soil. Remove subfloor insulation before applying chemicals to control these wood-infesting beetles effectively.

Tenting and fumigating is becoming more widespread as a means to control many insects. For the most part, fumigations can effectively eliminate pest insects from a structure. However, this procedure will not prevent reinfestations. Fumigations are not recommended due to their high cost and lack of lasting (residual) protection. An overall program that reduces

Fig. 1. Beetle damaged floor.

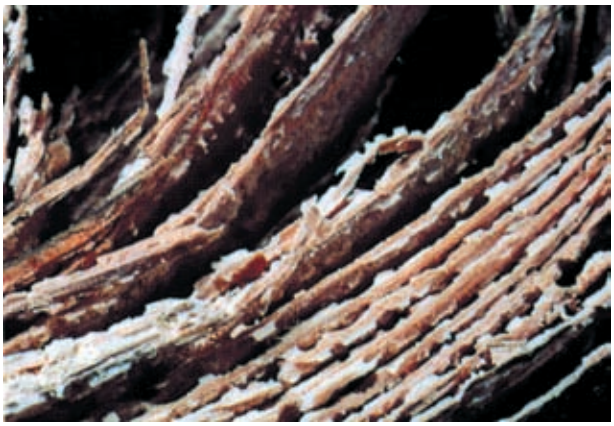

Fig. 2. Infested plywood.

Fig. 3. Hemicoelus gibbicollis adult, top left. Fig. 4. Anobiid egg, top center. Fig. 5. Anobiid larva, top right. Fig. 6. Anobiid pupa, lower left. Fig. 7. Adult beetle exit holes, lower center. Fig. 8. Frass (feces) pushed from holes by larvae, lower right.

moisture, improves ventilation, replaces infested wood with pressure-treated wood, and applies chemical controls at the proper time will go a long way to reducing anobiid infestations in structures.

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By Daniel A. Suomi, M.S., former Washington State University Extension entomologist. Photos for Figures 2 and 3 by Roger D. Akre, WSU entomologist, deceased. Reviewed by Art Antonelli, WSU Extension entomologist, WSU Puyallup.

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