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An Oriental Wood Borer, *Heterobostrychus aequalis* (Waterhouse) (Insecta: Coleoptera: Bostrichidae)[1]

Robert E. Woodruff and Thomas R. Fasulo[2]

Introduction

In January 1967, specimens of a wood boring beetle were collected in oak lumber at Ft. Lauderdale, Florida and forwarded for identification to the Department of Entomology, University of Florida. These were later sent to the Division of Plant Industry and identified by the senior author as *Heterobostrychus aequalis* (Waterhouse), a species not previously known to be established in the United States (Fisher 1950).

Since this species is a serious pest of lumber and nearly all wood products, a survey was immediately conducted by the Division of Plant Industry and the U.S. Department of Agriculture to determine the extent of the infestation. Subsequent inspections of lumber yards revealed additional infestations in the Ft. Lauderdale and Miami areas. In 2001, specimens were found infesting pallets and containers of machine parts imported from Singapore in St. Petersburg, Pinellas County, Florida (Halbert 2001).

Sixty-four species of the family Bostrichidae are recorded for the U.S. and Canada (Arnett 2000), and twenty-nine additional species have been intercepted, but they have not become established (Fisher 1950). The genus *Heterobostrychus* contains only one other species, *brunneus* (Murray), that has been intercepted in the U.S, both in Florida (Arnett 2000). It differs from *aequalis* in the lack of hook-like tubercles at the apical declivity in the male and in the presence of short recumbent pubescence on the dorsal surface.

Synonymy

H. uncipennis Lesne is listed as a synonym of *H. aequalis* (Fisher 1950).

Distribution

The type locality is Timor Laut Islands; additional records include Indochina, Madagascar, Andaman and Mariana Islands, India, Sri Lanka, Malaysia, Java, Philippines, New Guinea, Cuba, and Surinam. It now is also found in Queensland, Australia, where is it known as the lesser auger beetle (Anonymous 2004). In the United States it has been

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2. Robert E. Woodruff, Florida Department of Agriculture and Consumer Services, Division of Plant Industry and Thomas R. Fasulo, Entomology and Nematology Department, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL.

intercepted numerous times. This exotic beetle is now established in the wild in Florida (Halbert 2001).

Description

Adult: The adult beetles are elongate, cylindrical, reddish brown to brownish black, moderately shining, without dorsal pubescence. They range from 6 to 13 mm long and 2 to 3.5 mm wide. The head is not visible from above, as it is recessed beneath the pronotum. The pronotum is strongly convex, quadrate, arcuately emarginate in front, the sides with broad tooth-like projections on anterior one-half, converging to plate-like sculpture on the central area It is strongly deflexed on the apical half, with the posterior angles projecting.

Figure 1. Adult male *Heterobostrychus aequalis* (Waterhouse), a wood-boring beetle. Credits: Lyle J. Buss, University of Florida

Figure 2. Adult female *Heterobostrychus aequalis* (Waterhouse), a wood-boring beetle. Credits: Lyle J. Buss, University of Florida

The elytra are nearly tubular in shape until the posterior 1/10 where they abruptly descend to the abdomen. This area, called the apical declivity, is somewhat excavated and variable between the sexes; the males possess two incurved, hook-like projections (not send in the female) as well as an additional smaller, highly variable, tubercle near the sides. The surface is densely, deeply punctate, with the punctures arranged in fairly distinct rows, but somewhat variable in shape and extent, especially near the apical declivity.

Larva: The larva is white to yellowish, with a characteristic bostrichid shape, variable in size with most last instars averaging 10 mm. The mandibles are black, conical and the darkest area on the larva. The setation is sparse and pale, and not readily visible to the unaided eye. The antenna is shown in the figure below. The epipharynx possesses posterior projections and a characteristic setal pattern. The maxilla is shown in the figure below.

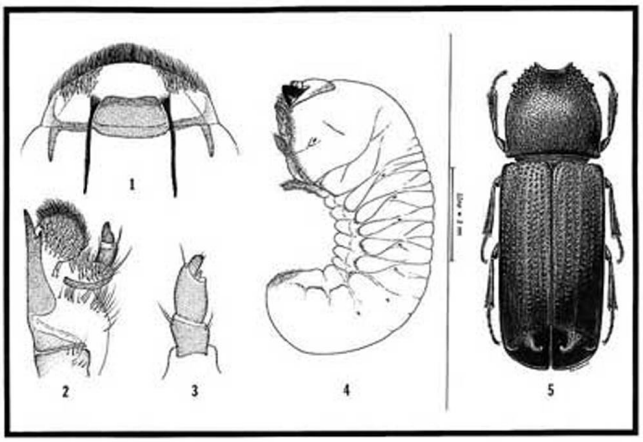

Figure 3. Larval and adult characteristics of *Heterobostrychus aequalis* (Waterhouse), a wood-boring beetle. 1-4: third instar larva - 1) Epipharynx, 2) left maxilla (ventral), 3) left antenna (ventral), 4) larva (lateral). 5: adult male. Line between larva and adult represents 3 mm. Credits: Division of Plant Industry

Biology

All stages are found in dry lumber which is eaten by the adults and larvae. The life cycle in Florida has not been studied, but in India it is as follows (Beeson & Bhatia 1937):

The eggs are deposited on rough surfaces of sawed lumber and logs, in holes, cracks or short

tunnels made by the female. The larval borings may be 1/4 inch wide, winding for several inches. The tunnels are usually filled with tightly packed, fine, sawdust-like material which is characteristic of this genus. Tunnels of most pinhole and shothole borers contain very little such material. Pupation occurs in a cell at the end of the tunnel.

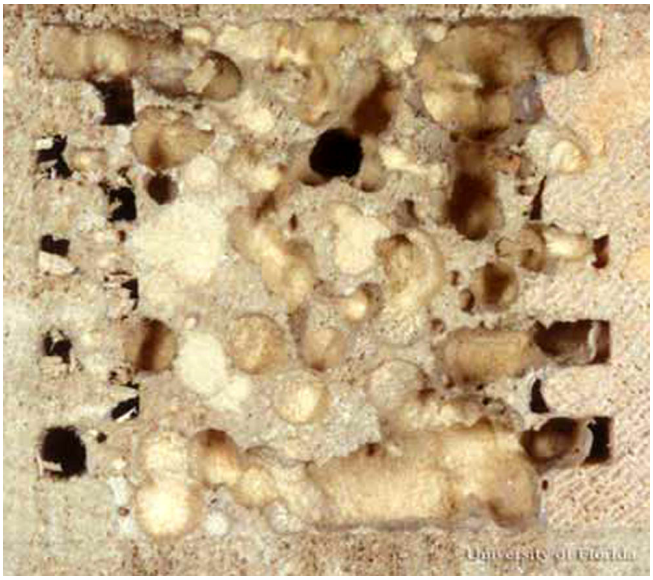

Figure 4. Tunnels, with sawdust-like debris, made by larvae of *Heterobostrychus aequalis* (Waterhouse), a wood-boring beetle. Credits: Lyle J. Buss, University of Florida

The adult emerges through an exit hole, often after chewing through a few inches of wood. Length of development from egg to adult is variable from one to several years (up to six years recorded). Apparently they can survive under dry conditions present in manufactured wood products and emerge several years later, as do some of the Cerambycidae.

Figure 5. Exit holes for adults of *Heterobostrychus aequalis* (Waterhouse), a wood-boring beetle. Credits: Lyle J. Buss, University of Florida

Hosts

The species is probably non host-specific, and has been recorded from 35 species of trees including the following genera: *Adina*, *Albizzia*, *Anisoptera*, *Bambusa*, *Bombax*, *Boswellia*, *Canarium*, *Cassia*, *Cedrela*, *Dalbergia*, *Dendrocalamus*, *Dipterocarpus*, *Endospermum*, *Garuga*, *Koompassia*, *Kydia*, *Lannea*, *Leucaena*, *Mangifera*, *Morus*, *Parashorea*, *Parishia*, *Poinciana*, *Pterocarpus*, *Quercus*, *Shorea*, *Sterculia*, *Tectona*, *Terminalia*, and *Anogeissus*. Only oak and Philippine mahogany have been found infested in Florida.

Economic Importance

It is apparently the most common of the larger false powder-post beetles in India and parts of southeast Asia. Its habit of boring in packing cases, boxes, plywood, furniture and lumber make it a serious pest. In heavy infestations the wood is often reduced to powder to a depth of 2 to 3 inches. It is a threat to nearly all wood products, and has even been recorded as boring into the lead linings of boxes. In hardwoods, the damage is usually confined to the sapwood, but may extend deeper in soft woods.

Management

For management information see the Insect Management Guide for powderpost beetles (http://edis.ifas.ufl.edu/IG119).

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