Elm Bark Beetles

Native and introduced bark beetles of elm

Name and Description—Native elm bark beetle—*Hylurgopinus rufipes* Eichhoff

Smaller European elm bark beetle—*Scolytus multistriatus* (Marsham)

Banded elm bark beetle—*S. schevyrewi* Semenov [Coleoptera: Curculionidae: Scolytinae]

Three species of bark beetles are associated with elms in the United States: (1) the native elm bark beetle (fig. 1) occurs in Canada and south through the Lake States to Alabama and Mississippi, including Kansas and Nebraska; (2) the introduced smaller European elm bark beetle (fig.2) occurs throughout the United States; and (3) the introduced banded elm bark beetle (fig. 3) is common in western states and is spreading into states east of the Mississippi River. Both the smaller European elm bark beetle and the banded elm bark beetle were introduced into the United States from Europe and Asia, respectively. *Hylurgopinus rufipes* adults are approximately 1/12-1/10 inch (2.2-2.5 mm) long; *Scolytus multistriatus* adults are approximately 1/13-1/8 inch (1.9-3.1 mm) long; and *S. schevyrewi* adults are approximately 1/8-1/6 inch (3-4 mm) long. The larvae are white, legless grubs.

Figure 1. Native elm bark beetle. *Photo: J.R. Baker and S.B. Bambara, North Carolina State University, Bugwood.org.*

Hosts—Hosts for the native elm bark beetle include the various native elm species in the United States and Canada, while the introduced elm bark beetles also infest introduced species of elms, such as English, Japanese, and Siberian elms. American elm is the primary host tree for the native elm bark beetle. Siberian elm is the native host tree species for the banded elm bark beetle in Asia. Siberian elm is a host for the smaller European elm bark beetle in the United States but not in Europe because the tree species' range does not overlap the beetle's native range in Europe.

Figure 2. Smaller European elm bark beetle. *Photo: J.R. Baker and S.B. Bambara, North Carolina State University, Bugwood.org.*

Life Cycle—The native elm bark beetle has a variable life cycle depending on latitude, with two generations in the southern portion of its range and a 1-year life cycle in the northern portion of its range. The egg gallery for this species has two branches and barely etches the wood (fig. 4). It is not known whether the native elm bark beetle utilizes aggregation pheromones.

The smaller European elm bark beetle and the banded elm bark beetle have two generations per year in most locations and may have a third generation in some warmer locations. Beetles fly in the spring and infest dying elms. The egg galleries have a single branch and generally score the wood surface (figs.5-6). Larvae develop through the summer months and overwinter as larvae in brood trees. The smaller European elm bark beetle produces an aggregating pheromone, but the banded elm bark beetle apparently does not produce one. Host odors play an important role in both of these introduced species.

Figure 3. Banded elm bark beetle. *Photo: Jim LaBonte, Oregon Department of Agriculture.*

Damage—The first sign of attack is the accumulation of boring dust around the base of the tree. Trees infected with Dutch elm disease, caused by the exotic fungal pathogen, Ophiostoma novo-ulmi, are highly attractive to elm bark beetles (fig. 7). The native elm bark beetle undergoes a period of feeding on healthy elms before seeking a dying tree for gallery construction and brood production, which provides an opportunity for adults to transmit the Dutch elm disease pathogen to uninfected elms. The smaller European elm bark beetle is an efficient vector of Dutch elm disease in American elms because newly emerged adults

Figure 4. Native elm bark beetle egg gallery. *Photo: Roland J. Stipes, Virginia Polytechnic Institute and State University, Bugwood.org.*

Figure 5. Smaller European elm bark beetle egg gallery. *Photo: William M. Ciesla, Forest Health Management International, Bugwood.*

Figure 6. Banded elm bark beetle egg gallery. *Photo: Jose Negron, USDA Forest Service.*

undergo a period of maturation feeding in tunnels on branches of healthy elm canopies prior to dispersing to dying elms for gallery construction, thereby creating an opportunity to transmit the fungal pathogen to healthy trees. The banded elm bark beetle appears to have the same behavior and is known to carry the fungal pathogen when brood beetles leave diseased trees, but it has not yet been confirmed as a vector of Dutch elm disease.

Management—The native elm bark beetle is not an aggressive species and was not a major pest problem prior to the introduction of Dutch elm disease. The smaller European elm bark beetle and the banded elm bark beetle are serious pests of native and introduced elms. The banded elm bark beetle is more aggressive than the smaller European elm bark beetle and appears to be displacing this species in western states. Drought stress predisposes exotic elm species to infestation by these two introduced elm bark beetle species. In urban settings, rapid removal of Dutch elm disease-infected American elms followed by destruction of the host material is the key to successfully managing these two species.

Figure 7. American elm dying from Dutch elm disease. *Photo: Jose Negron, USDA Forest Service.*

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1. Wood, S.L. 1982. The bark and ambrosia beetles of North and Central America (Coleoptera: Scolytidae), a taxonomic monograph. Great Basin Naturalist Memoir 6. 1359 p.