Pest Alert

United States Department of Agriculture
Forest Service

Rocky Mountain Region
Forest Health Protection

R2-PR-01-06
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Figure 1. Banded elm bark beetle adult

Banded elm bark beetle – *Scolytus schevyrewi*

The banded elm bark beetle, *Scolytus schevyrewi* Semenov (Coleoptera: Scolytidae) (Fig. 1), is native to northern China, Central Asia, and Russia. The beetle was first detected in the US in April 2003 in baited funnel traps in Aurora, Colorado, and Ogden, Utah. Since then, the beetle has been collected in 21 states (Fig. 2). The simultaneous detection of the beetle across the country suggests that it is not a recent introduction and a survey of museum specimens confirms that this beetle was present before 2003. The earliest museum specimen was collected in 1994 in Denver, Colorado.

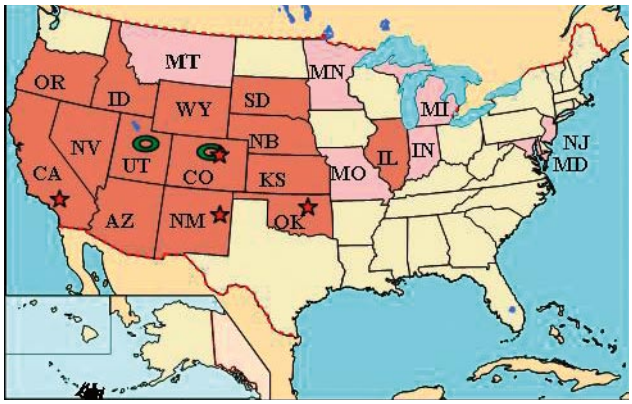

Figure 2. States where banded elm bark beetle has been collected as of March 2006, based on the National Agricultural Pest Information System (http://ceris.purdue.edu/napis/pests/barkb/imap/schevy/html) and correspondence with R. Hoebeke and J.R. LaBonte.

Host Range and Impact

Currently in the US, the beetle has attacked four species of elm: American, *Ulmus americana*, Siberian, *U. pumila*, English, *U. thomasii*, and rock elm, *U. procera*. The host range of the beetle in Asia includes various elms, Russian olive, willows, woody plants in the pea family, and possibly fruit-producing trees in the rose family. Severe infestations of banded elm bark beetle alone have killed drought-stressed trees in Colorado, New Mexico and Wyoming. In Newcastle, Wyoming, 333 infested elms were removed in 2004. An additional threat is that the beetle may vector the fungal pathogen causing Dutch elm disease, *Ophiostoma novo-ulmi*. When beetles are allowed to attack American elm bolts infected with Dutch elm disease, emerging beetles often carry the fungal spores.

Identification

The banded elm bark beetle (BEBB) is small (3-4 mm long), brown, and generally has a dark transverse band across its wing covers (elytra) (Fig. 1,3). The band can be dark to absent. BEBB resembles the smaller European elm bark beetle (SEEBB), *Scolytus multistriatus* (Marsham), another exotic bark beetle that established itself in the US a century ago and is a potent vector of Dutch elm disease. SEEBB can be distinguished from BEBB because it lacks a band, is slightly smaller, has posteriolateral teeth on abdominal sternites 2, 3, and 4, and the 2nd abdominal ventral spine is more anterior than the posteriorly placed spine in BEBB (Fig. 3). Larvae and pupae of both species are creamy white legless grubs found in the phloem and outer bark (Fig. 4, 5). Infested elms have boring dust and small entrance holes on the bark surface. Removal of the bark

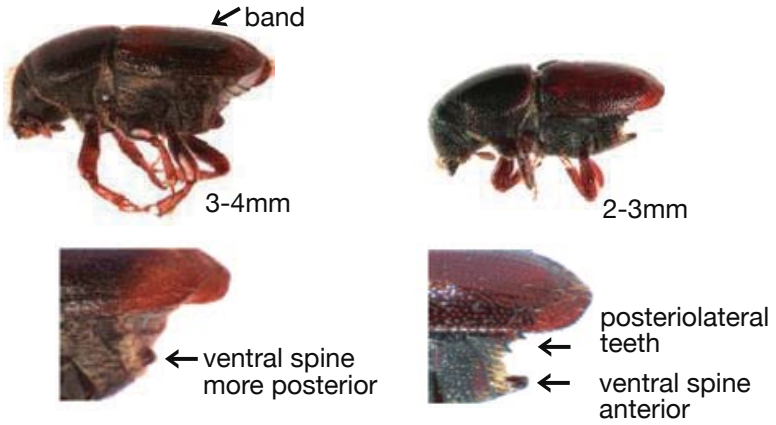

Figure 3. Distinguishing between the banded elm bark beetle (left) and smaller European elm bark beetle (right)

reveals gallery systems in the phloem with individual vertical egg galleries (Fig. 6) and numerous larval mines radiating from both sides. BEBB galleries are asymmetric with overlapping larval mines (Fig. 7), whereas SEEBB galleries are symmetric, fan-shaped and without overlapping larval mines.

Biology

BEBB adults emerge in early spring and feed on the phloem in the crotches of tender twigs. Later, females excavate entrance holes in the bark on large diameter branches or trunks. Males search the bark surface for females and mate with them at the entrance holes. Each female then excavates an egg gallery, lays 20-120 eggs, and guards the gallery until death. Larvae feed on the phloem and construct individual larval mines that are somewhat perpendicular to both sides of the egg gallery. Larvae develop through five instars and move to the outer bark to pupate. In China where the biology is best known, there are 2-3 generations per year and individuals overwinter as mature larvae or pupae.

Figure 4. Complete consumption of phloem by banded elm bark beetle larvae

Figure 5. Pupa in outer bark

Figure 6. Egg gallery

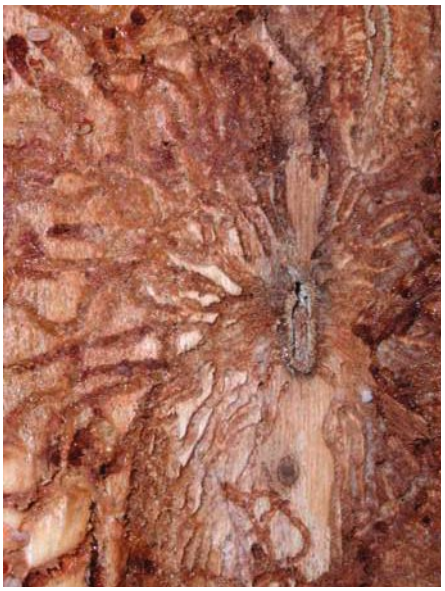

Figure 7. Egg and larval mines in phloem

Figure 8. Dead Siberian elm that has been severely atacked by banded elm bark beetle (Newcastle, WY, July 2005)

Management

Early removal of infested elms is recommended. Populations build in dying trees, broken branches and recently cut logs. Thus, preventative management includes debarking, chipping, or burning cut stems and branches, and limiting movement of elm firewood. Proper watering of standing elms can reduce the probability of an infestation since BEBB have frequently infested drought-stressed trees. Recommendations for SEEBB should apply to BEBB, which has similar behavior and biology. This includes preventing attacks on firewood by immediately sealing felled pieces under 6 mil UV-resistant polyethylene sheeting. Firewood sealed and aged for seven months or more in this manner is no longer attractive to beetles. Research is proceeding on an attractant for monitoring BEBB and to discover repellent semiochemicals to protect standing trees.

Sources

- LaBonte, JR, RJ Rabaglia, ER Hoebeke. 2003. A screening aid for the identification of the banded elm bark beetle, *Scolytus schevyrewi* Semenov (http://ceris.purdue.edu/napis/pests/barkb/schevy/schevyrewi_ID_new 1A.pdf).
- Négron, JF, JJ Witcosky, RJ Cain, JR LaBonte, DA Duerr II, SJ McElwey, JC Lee, SJ Seybold. 2005. The banded elm bark beetle: A new threat to elms in North America. American Entomologist 51: 84-94.

Photo Credits

(Figs. 1, 5-7–J. Négron; Fig. 2–J. Vandewater, USDA Forest Service; RMRS, Fig. 3–J. LaBonte, Oregon Dept. Ag.; Figs. 4, 8–J. Lee

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