

Yu, Chengming 1992. *Agrilus marcopoli* Obenberger (Coleoptera: Buprestidae), pp 400-401. In G. Xiao [ed.], Forest Insects of China (2nd edition). China Forestry Publishing House, Beijing, China.

Agrilus marcopoli, the ash buprestid, is distributed in Heilongjiang, Jilin, Liaoning, Shandong, and Inner Mongolia in China, as well as in Mongolia, Korea, and Japan. It attacks ashes, *Fraxinus* spp. (Oleaceae), with the most severe damages occur to *F. chinensis* subsp. *chinensis*. Larvae feeding on the cambium of the main trunk leads to the wilting of young ash trees and even total destruction of whole forest stands.

Morphology

Adults. The body is long and narrow, wedge-shaped; 8.5-13.5 mm long; metallic, coppery-green in color; head is flat with a shield-like vertex; compound eyes are kidney-shaped, obscure-aeneous (dark coppery) colored; prothorax rectangular, slightly wider than the head, but as wide as the front edge of the elytra; the front edge of the elytra has a horizontal, punctuated ridge; the back edge of the elytra rounded with small denticles (teeth).

Eggs. Eggs are cream-colored, becoming yellowish brown before hatching; oblate, 1.0 × 0.6 mm (length × width), slightly protruding in the center, with reductus (fold) extends radially toward the edges.

Larvae. Larvae are milk-white in color, flat and band-like, 26-32 mm long when fully mature. Head is small, brown in color, retracted inside the prothorax so that only the mouthparts appear visible. Prothorax is swollen whereas the meso- and metathorax are narrow. A pair of spiracles is found on the mesothorax and each of the first 8 abdominal segments. There are 10 segments in the abdomen with the last segment contains a pair of brown pincer-like appendages (urogomphi).

Pupae. Pupae are milk-white in color, 10-14 mm long; antennae extend backwards to the base of the wing buds; the last several abdominal segments slightly curved ventrally.

Biology

In Shenyang, Liaoning province, *A. marcopoli* has one generation a year and overwinter as larvae, whereas in Haerbin, Heilongjiang province, it takes two years to complete a generation; larvae overwinter between phloem and sapwood or in galleries at the outer layer of sapwood. In the latter province, after two winters, larvae start to feed in early to mid-April in the third year. Pupation occurs in late April, peaks in mid-May and ends in mid-June. Adults begin to emerge in mid-May, peaking in late June, whereas eggs appear in mid-June to mid-July. Larvae bore into phloem and sapwood in succession and feed inside after they hatched in late June, and overwinter inside the galleries by mid-October when temperature drops.

Newly enclosed adults remain in their pupal chambers for 8-15 d before boring ca.

3.5×4.1 mm oval exit holes for emergence. Adults are phototactic and thermotactic and most active between 9:00 to 13:00 hours on clear and windless days; they often fly to the sunlit side around tree crowns. Each flight covers 8-12 m at or below the height of 1-2 m above the ground. On cloudy or rainy days or days with strong wind, adults perch motionlessly on leaf petioles or inside bark crevices. When disturbed, adults will fall onto the ground and “play dead” (thanatosis). Adults prefer leaves of *F. chinensis* subsp. *chinensis*, *F. chinensis* subsp. *rhychophylla*, and *F. mandshurica* for maturation feeding, leaving irregular leaf patches with jagged edges. An adult can consume an average of 0.45-cm² leaf tissue per day. Adults start to mate between 9:00-15:00 hours, 7-10 d after emergence and are able to mate as many as 3 times maximum in their life. Oviposition begins 7–9 d after the initial mating. Most eggs are laid in sunny bark crevices and on the base of the trunk. Only one egg is laid at each site. A female can produce 68-90 (average 76.6) eggs in her lifetime. The average longevity for females and males is 21.6 and 13 d, respectively.

The egg stage lasts 7 to 9 days. The newly hatched larvae feed on the phellem (cork) layer of the bark first and then bore into the cambium. Larvae etch deeper into the outer sapwood as their development progresses. Galleries are flat, meandering, 9-16 cm long, and packed with frass, reaching deep to the sapwood. Most galleries are found on tree trunks below 1.8 m. Damage to the trees in the first year of infestation is light when *A. marcopoli* populations are low, however, being attacked by this pest consecutively for 2-3 yr with increasing population density will result in wilting or even death of the trees due to the destruction of their vascular systems.

In China, outbreaks of *A. marcopoli* occur primarily in the well exposed, unclosed forest stands of *F. chinensis* subsp. *chinensis* and *F. chinensis* subsp. *rhychophylla* at the ages of 8 years and older when the trunk bark starts to crack. Bark of infested trunks begins to peel off in patches within 1-2 yr because of the death of the cambial layer underneath. Consequently, dense feeding galleries become visible on the outer sapwood. Severe infestations eventually lead to the destruction of the whole forest stand.

Reference Cited

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