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LARVA AND PUPA OF *CUPES VARIANS* Lea,
and some observations on its biology
(Coleoptera; Cupedidae)

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Ever since the European house borer, *Hylotrupes bajulus* L., was discovered in pre-cut houses imported into Australia between 1948 and about 1952, the Victorian Government has co-operated with the Commonwealth Quarantine authorities in an active campaign to discover and eradicate this pest. In the course of surveys made to detect *Hylotrupes* in imported houses, some damage caused by other insects was discovered and, where necessary, appropriate treatment recommended and applied.

Amongst the more interesting insects discovered in these surveys was *Cupes varians* Lea. The insect was discovered in partially decayed spruce (*Picea abies*) used as a plinth to a weatherboard house at Puckapunyal, near Seymour in Central Victoria. The damaged timber was submitted to the Division of Forest Products, CSIRO, in the mistaken belief that the damage might be due to *Hylotrupes*. Officers of the Division recognized that this was not so, and referred the damaged timber, and the insects to the author for examination.

Detailed study of the infested wood showed that the insect damage was confined to those portions of the board which had rotted through ground contact, indicating that the insect requires decayed wood and, probably, a relatively high moisture content in the wood it attacks. The larval galleries were typical of those of the 'longicorn' group of wood borers, in that they were oval in cross-section and followed along the grain of the wood, usually avoiding the harder autumn wood. The galleries were tightly packed with abundant frass in which distinct pellets were occasionally visible.

In addition to larval galleries, the attacked wood contained three or four pupal chambers, (Pl. 7, fig. 1), which are enlarged sections of the larval galleries, but isolated from them by a plug of tightly packed frass. These chambers were of a flattened, elongate oval shape, measuring about 4 mm by 7 mm wide with an average length of about 22 mm.

The damaged wood yielded two full-grown larvae, two pupae and one adult, freshly emerged from its pupal case (Pl. 7, fig. 2).

DESCRIPTION: Mature larva—length 20.5 mm; width (thoracic segments) 2.8 mm; form elongate, somewhat cylindrical with distinct lateral ridge; sixth, seventh and eighth abdominal segments shorter and slightly wider than the preceding ones; the entire body covered with fine, sparse pubescence.

Head wider than long, rounded laterally, median suture distinct. Most of the mouth parts ferruginous, distinctly darker than frons and epicranium; distal half of the clypeus as well as the four segmented antennae pale yellowish. Labrum 3.5-4 times wider than long, densely covered with fine short pubescence; anterior margin concave. Mandibles with cutting edge forming three distinct teeth, the lower one recessed; molar structure slightly narrower than the mandible itself (Fig. 8).

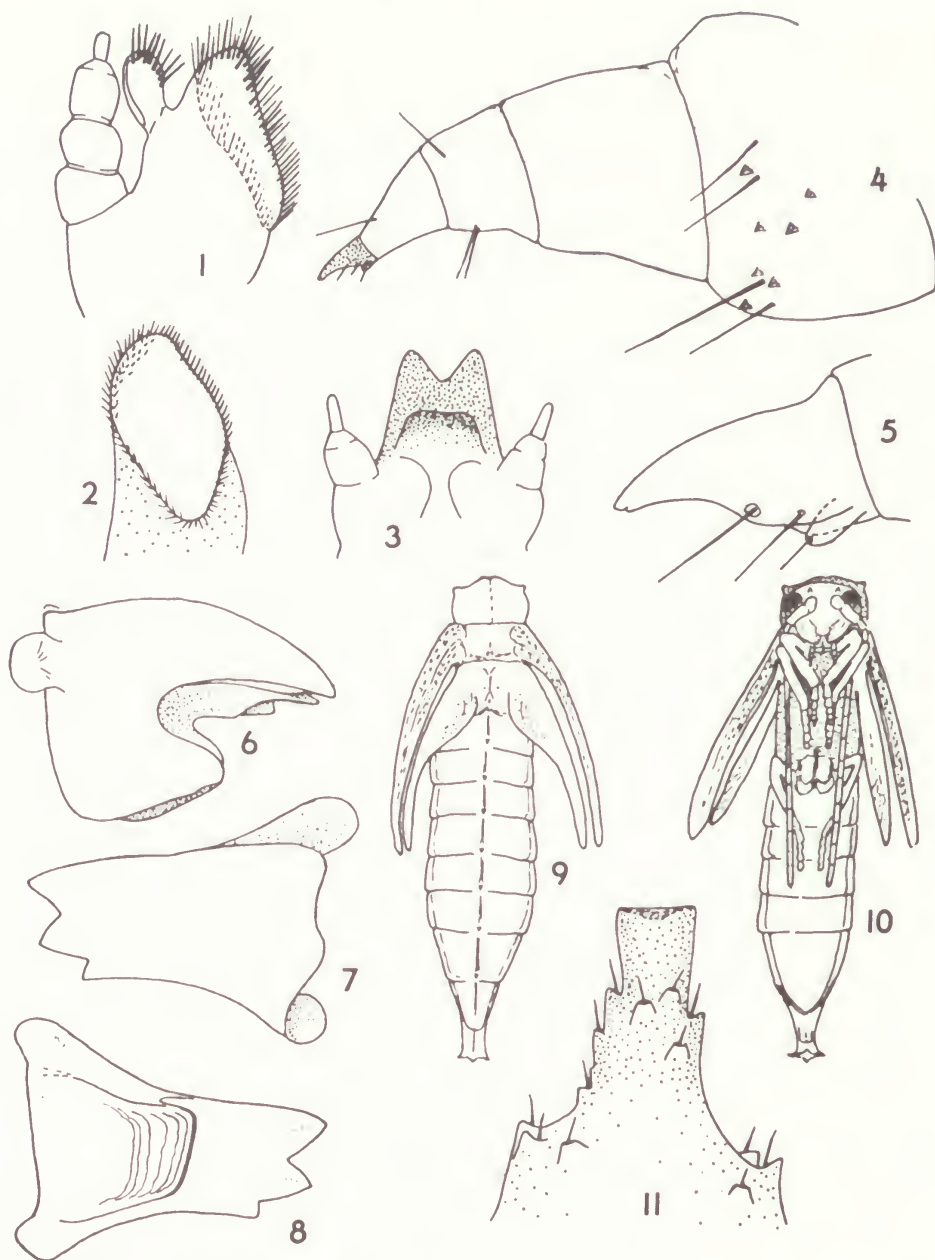


FIG. 1-11— 1, maxilla; 2, lacinia—inner surface; 3, labium; 4, front leg; 5, claw; 6, mandible—ventral view; 7, mandible—outer surface; 8, mandible—inner surface; 9, pupa—dorsal view; 10, pupa—ventral view; 11, larva—apex of the 9th abdominal segment.

Maxilla rather short and broad; lacinia and galea separate and of the same length as the maxillary palp. Lacinia covered with short, strong bristles along the inner margin and forms a complete elongate ring; galea with similar type bristles located at distal end. Maxillary palpi four segmented. Labium strongly chitinized with deep V-shaped incision at distal end (Fig. 3); mentum and ligula fused; labial palpi two segmented.

Thoracic segments similar in size, legs short, claws fused (Fig. 4 and 5). Ventral surface of the first thoracic segment with chitinous spiny plate between the legs. A few short, stout chitinous spines on the inner surface on all coxae; femurs, tibiae and tarsi with a few fine, long hairs.

The first three abdominal segments approximately as long as wide; fourth and fifth slightly longer than wide; sixth to eighth distinctly shorter than wide; ninth, conical, terminates with strongly chitinized short cylindrical projection which has a concave depression at the distal end and a number of irregular chitinous spines at its base (Fig. 11).

Pupa (Fig. 9 and 10) length 13-13.5 mm width; (widest abdominal segment) 3-4 mm. On pupation the larval skin splits dorsally and is pushed posteriorly where it stays with the pupa.

Head bent down under the thorax, and could not be seen from above. Eyes prominent, dark; antennae outwards and towards the ventral side of the thorax where they are placed longitudinally and parallel to the tarsal segments of the legs and reach third or fourth abdominal segment, about as far as the third pair of legs. Elytra and wings extending as far as fourth abdominal segment; sculpturing of the elytral pattern visible. Pronotum with prominent anterior angles, median line slightly depressed. Meso- and metathorax with elevated tubercles at the centre of the posterior margin. Abdominal tergites with a distinct median keel, which is more pronounced apically; occasionally on each segment near the highest point at the posterior margin there is a short chitinous spine.

LOCALITY: Seymour (Puckapunyal Army Camp), Victoria, 15 Oct. 1963. (House erected 1951). Specimens in the National Museum of Victoria collection.

A pupa of another species—*Cupes eumana* Neboiss was found by K. M. Moore at Lisarow, N.S.W. on 25th September, 1956, and the adult emerged 30th September, 1956. Pupa has been taken from 'rotted scrubwood' but no further biological data of this specimen are available.

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Explanation of Plate

PLATE 7

- Fig. 1—Newly hatched adult in pupal chamber.
Fig. 2—Pupal chamber with specimen removed.
Fig. 3—Larval galleries showing tightly packed frass and pellets.
Fig. 4—Pupal chamber.

