

LARVAE OF WRACK COLEOPTERA
IN THE FAMILIES CORYLOPHIDAE,
RHIZOPHAGIDAE, AND LATHRIDIIDAE*

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Wrack studies in New Hampshire have revealed a number of poorly known beetles. The temporary habitat produced by moist rotting seaweeds presents an environment which allows certain insects to become quite abundant for a short time. After processing with a Berlese funnel the siftings of several square meters of wrack from Odiorne Point State Park, I noted that large numbers of three unfamiliar taxa of beetle larvae were present. Two of these three taxa, *Orthoperus scutellaris* LeConte (Corylophidae) and *Monotoma producta* LeConte (Rhizophagidae), were subsequently reared. The third taxon is associated with *Corticaria valida* Fall, the only adult lathridiid collected in or near this habitat. Generic characters of another described larva of *Corticaria* confirm this placement. Descriptions of these larvae are presented in this paper to aid those workers studying wrack fauna.

All larvae were obtained from beach wrack by the author on June 15, 1982, at Odiorne Point State Park, Rockingham County, *New Hampshire*. Adults were reared by July 1, 1982. The two reared taxa were processed with a simple program. Plastic boxes with removable tops were supplied with a thin layer of sand, enough water to saturate the sand, and a piece of rotting wrack. A number of the largest larvae of the taxa were separated out, placed in the containers, and left undisturbed except for the occasional addition of water every 3-4 days. Examination of the gut contents of field collected larvae indicated that all three taxa feed on the spores of two species of Fungi Imperfecti, *Helminthosporium* sp. and *Alternaria* sp., which grow on the rotting kelp.

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Orthoperus scutellaris LeConte
(Figs. 1, 2)

There are two apparent taxa of *Orthoperus* found in wrack at Odiorne Point. These run to *Orthoperus s. scutellaris* LeConte and *Orthoperus s. piceus* Casey in the last revision of the family (Casey 1900). I have not been able to separate these two taxa when examining specimens mounted on slides. Both forms are represented in the type series of LeConte for *scutellaris* at the Museum of Comparative Zoology.

Their collection in the same habitat at the same time indicates that the differences observed may be no more than normal variation within the species. All of the reared adults were assignable to the nominate subspecies.

Last instar larva: length 1.5–2.0 mm. Body elongate, slightly flattened dorso-ventrally, white with grey or brown patches in dorsal view. Head slightly declined, two stemmata to each side, setae aciculate, frontal arms of epicranial suture widely V-shaped, epicranial stem absent, gular sutures distinct and widely separated through length to head base; antennae two-segmented, sensorium almost as long as terminal seta; mandibles symmetrical with several teeth at apex, mola well-developed with series of large teeth on margin; sclerites of maxillary base fused, palps two-segmented, mala arcuate and blunt at apex, labial palps of a single segment; hypopharyngeal sclerome elongate, the arcuate anterior cap may be the reduced epipharynx. Thorax and abdominal segments densely covered with short spicules, scattered setae are apically enlarged and truncate, fluting is visible toward the apex, aciculate setae are found only on the lateral margins. Prothorax with large quadrate shield formed by dense clustering of larger spicules; medial longitudinal light area dividing shield lacking spicules; the remaining thoracic and abdominal segments each with dark lateral area formed by dense large spicules, last abdominal segment lacking urogomphi, somewhat explanate, darkened by dense large spicules, with alternating fluted and aciculate setae on margin; abdominal segments 1–7 with large glandular openings on lateroposterior margins of lateral darkened areas. Spiracles annular. Legs well-developed, with five segments, coxae widely separated, tarsungulus with single seta.

The only illustration of an *Orthoperus* sp. was by Perris in 1852 (in Klausnitzer 1978, p. 275). The illustration indicates the general form

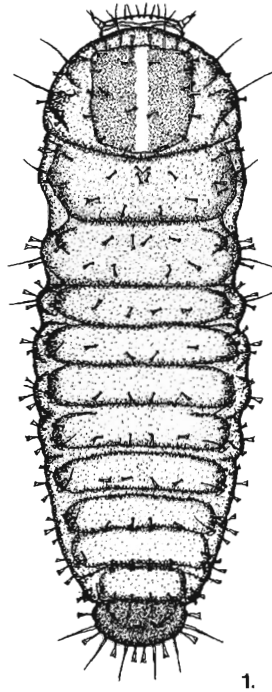


Figure 1. *Orthoperus scutellaris* LeConte, dorsal view of larva; line equals 0.1 mm.

of members of the genus, but differs in many of the fine details. Considering the age of the description, no attempt is made here to contrast it with the description of *O. scutellaris*.

Monotoma producta LeConte
(Figs. 3, 5, 6)

Adults were identified by using the key of Horn (1879), and comparing specimens with the LeConte type. Last instar larva: length 4.0–4.5 mm. Body elongate, flattened dorso-ventrally, whitish, all setae aciculate. Head with patches of darkly sclerotized tubercles, labrum distinct, single stemma on each side, frontal arms of epicranial suture lyriform, epicranial stem absent; antennae three-segmented, sensorium two-thirds length of third segment; maxillary base divided into three sclerites, palps three-segmented, mala bluntly

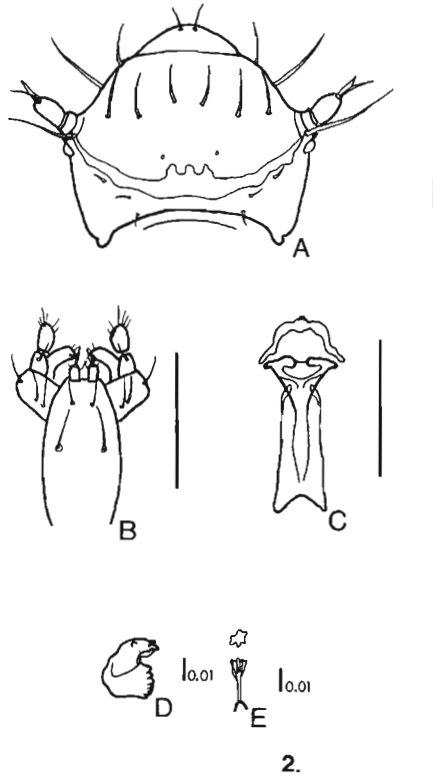


Figure 2. *Orthoperus scutellaris* LeConte. A, dorsal view of head; B, ventral view of maxillae and labium; C, ventral view of hypopharyngeal sclerome; D, dorsal view of left mandible; E, dorsal and lateral views of enlarged setae. Line equals 0.1 mm unless otherwise indicated.

produced at apex, row of thick setae in inner margin to apex; labium transversely divided, palps one-segmented; mandibles symmetrical, with large prosthema, prosthema and incisor edge of mandible serrate, accessory ventral process present on mandible base, mola with series of fine teeth over surface, two widely separated long setae on outer margin; the area of the hypopharyngeal sclerome and epipharynx very complex, only outline of sclerome is figured. Prothorax with scattered patches of dark tubercles on anterior half, notum with two transverse rows of four multiply tubercu-

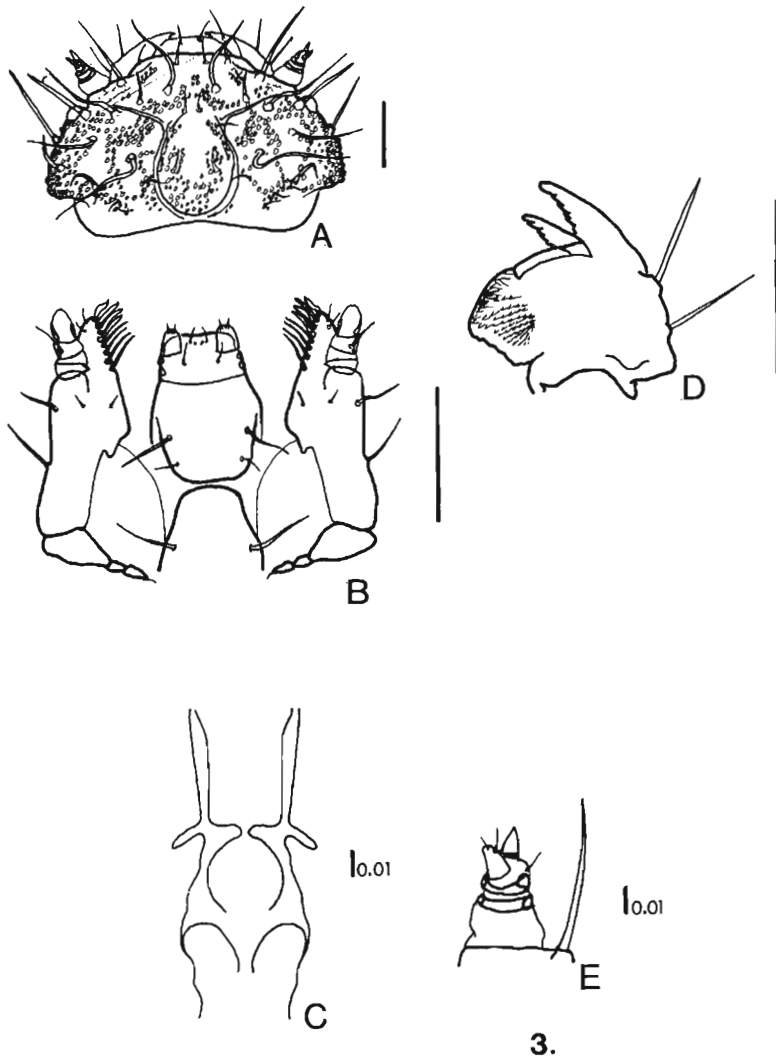


Figure 3. *Monotoma producta* LeConte. A, dorsal view of head; B, ventral view of maxillae and labium; C, ventral view of hypopharyngeal sclerome; D, dorsal view of right mandible; E, dorsal view of right antenna. Line equals 0.1 mm unless otherwise indicated.

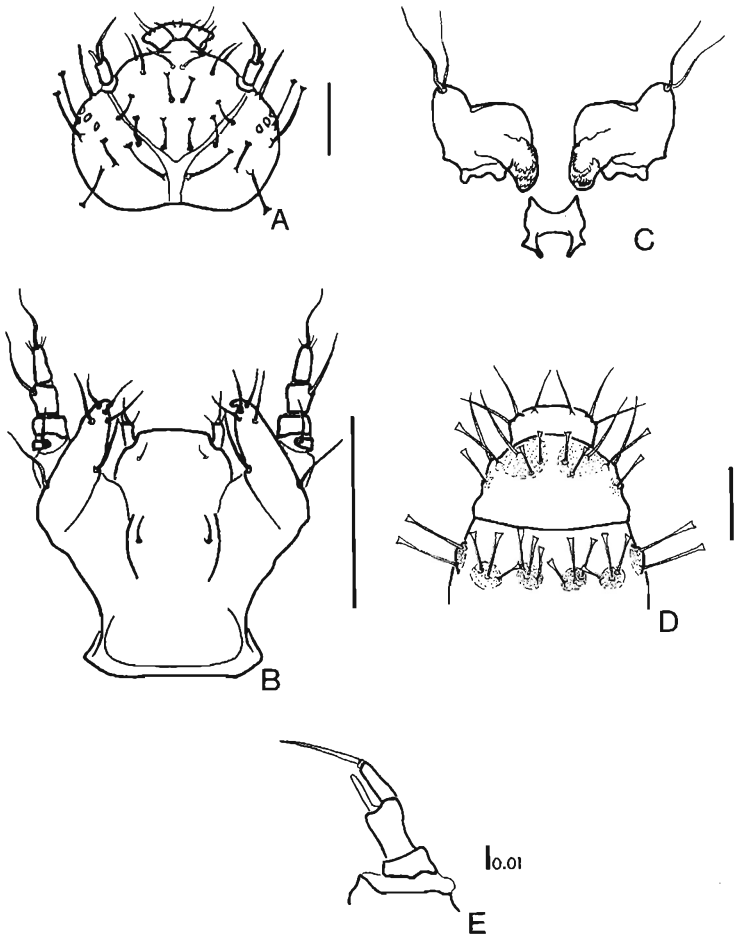
late processes, the processes of the posterior row being reduced, basal lateral margins posterior to other lateral tubercles with single tuberculate process, each process bearing a single long seta; the remaining thoracic segments and abdominal segments 1-8 bear dorsally two transverse rows of six multiply tuberculate processes, each process bearing a single long seta, segment 9 possesses an anterior row of three and a posterior row of two processes similar to those of the other segments, lateral margins of all segments with 2-3 large palmate tubercles bearing 1-2 long setae; urogomphi similar in form to the lateral processes, multiply tuberculate and bearing 2-3 long setae; spiracles biforous, borne on short tubes. Legs well-developed, with five segments, coxae moderately separated, tarsungulus with two short adjacent setae.

This is the first member of the genus to be formally described. Peacock (1977) presents a brief description without figures. Her diagnosis agrees with the features described here for *M. producta*.

Corticaria valida Fall

(Fig. 4)

This species is quite distinctive and fits the characters presented in the key and description of Fall (1899). This identification is tentative, however, since the type localities of Fall were the Midwest and Rocky Mountain states. Last instar larva: length 2.5-3.0 mm. Body elongate, cylindrical, whitish with scattered long setae abruptly expanded and flattened at apex. Head slightly declined, with scattered modified setae, the few aciculate setae on or near anterior margin, labrum free, four stemmata to each side, three in vertical row, the fourth posterior to the lowest stemma, epicranial suture moderately long, frontal arms broadly V-shaped; antennae three-segmented, sensorium as long as third segment, second segment twice as long as first; maxillae and labium fused at base, maxillary palps three-segmented, mala with acute hook at apex, labial palps one-segmented; mandibles lacking apical teeth, with lateral enlarged fleshy lobe bearing two long setae at apex, mola enlarged, with series of fine teeth over surface; hypopharyngeal sclerome short, distinct. Thorax and abdomen dorsally with smoothly raised circular sclerotized patches bearing 1-4 modified setae, abdominal segments 1-8 with row of six sclerotized raised areas each bearing three



4.

Figure 4. *Corticaria valida* Fall. A, dorsal view of head; B, ventral view of maxillae and labium; C, dorsal view of mandible and hypopharyngeal sclerome; D, dorsal view of abdomen apex; E, dorsal view of left antenna. Line equals 0.1 mm unless otherwise indicated.

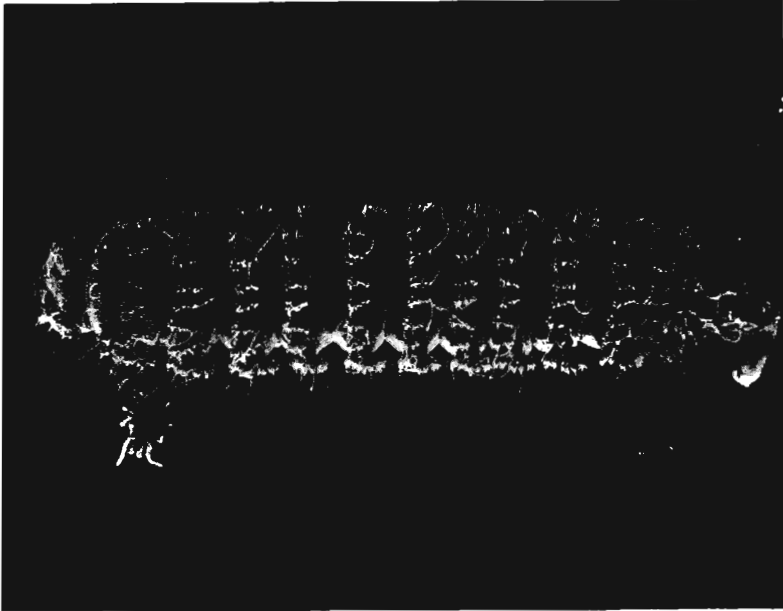


Figure 5. *Monotoma producta*, dorsal view of larva.

modified setae, outer sclerotized patches on lateral margin visible dorsally, segment 9 with two lateral aciculate setae on each side, setae on segment 10 all aciculate. Spiracles annular, not raised on tubes. Legs well-developed, with five segments, coxae widely separated, tarsungulus with one seta.

Hinton (1945) is the only author who has provided a complete set of figures describing *Corticaria*. The form of the mandibles and mala, and the four stemmata to a side seem to characterize this genus. The most obvious difference between species are the setal forms. The long apically expanded setae of *valida* are most similar to those in *C. pubescens* (Gyllenhal) (Hinton 1945). Other larvae have been poorly or briefly described, and comparison with those species is not attempted.

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I would like to thank Dr. Alan L. Baker, Mary Lou Turner, and David Gadoury for their efforts in the identification of the two

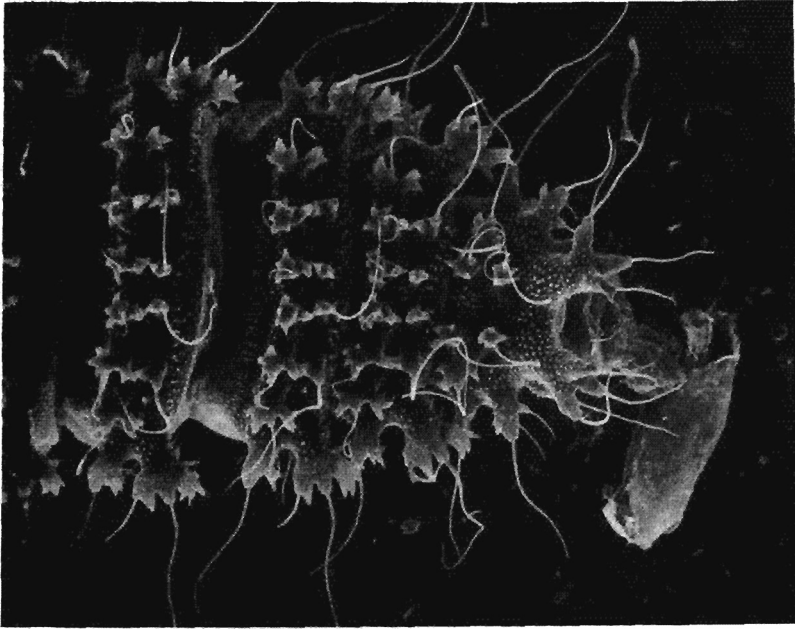


Figure 6. *Monotoma producta*, dorsal view of abdomen apex.

fungi. Dr. Ronald J. McGinley permitted the examination of the LeConte types in the Museum of Comparative Zoology, Harvard University. Dr. John F. Lawrence, C. S. I. R. O., Australia, offered comments on the manuscript and graciously sent copies of his characterizations of the three families. Drs. John F. Burger and R. Marcel Reeves, University of New Hampshire are thanked for checking the manuscript. Mrs. Marilyn Ecker, University of New Hampshire, kindly provided the photomicrographs.

SUMMARY

Wrack inhabiting larvae of three species of Coleoptera are described for the first time. *Orthoperus scutellaris* LeConte (Corylophidae) and *Monotoma producta* LeConte (Rhizophagidae) were reared, with the third larva being associated with *Corticaria valida* Fall (Lathridiidae). Spores of *Helminthosporium* sp. and *Alternaria* sp. (Fungi Imperfecti) were found in the guts of all three taxa.

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