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REVIEW OF THE GENUS *THAMIARAEA* THOMSON IN NORTH AMERICA (COLEOPTERA: STAPHYLINIDAE: ALEOCHARINAE) WITH DESCRIPTION OF A NEW SPECIES

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Abstract.—*Thamiaraea americana* Bernhauer, an athetine aleocharine staphylinid rarely encountered in North American collections, is redescribed; illustrations of structural features are provided; and lectotype and paralectotype designations are made. *Thamiaraea lira* is described as new from Pennsylvania. Male members of North American *Thamiaraea* are distinctive due to a setiferous sex patch on the dorsum of the head and the structural modifications of the eighth tergite.

Thamiaraea Thomson, a primarily tropical genus of athetine staphylinids, includes about 60 described species worldwide. Nearly two-thirds of the described species are found in the Old World, with 6 from the Palearctic, 5 from the Ethiopian, 29 from the Oriental, and 10 from the Australian region. In the Americas, 3 described species are found in Argentina and Colombia, 3 in Guatemala and Panama, and 1 in North America. Palm (1972) and Lohse (1974) provided keys to the European forms, while Cameron (1939) described many new species from India and gave a key to these and to previously described species from the Indian subcontinent.

Thamiaraea and seven other genera were classified in the Schistogeniae by Bernhauer and Scheerpeltz (1926), a subtribe of the Myrmedoniini, based on the possession of 2-segmented labial palpi. Seevers (1978) was unconvinced of the phylogenetic significance of this subtribe and instead placed *Thamiaraea* and *Earota* Mulsant & Rey in the "*Thamiaraea* group" of the tribe Athetini, distinguished by the "relatively broad intercoxal processes, and the distinctive eighth male tergite."

The genus *Thamiaraea,* although very similar to other athetine genera in external habitus, can be distinguished from these by combination of 4,5,5 tarsal formula; first and second segments of labial palpus usually, but not always, fused (Figs. 5, 6); third segment of labial palpus narrowed at base, but distinctly dilated along mesal margin to apex (Figs. 5, 6); numerous sensilla along mesal margin of last labial segment; medial setae of prementum approximate at base; fourth segment of maxillary palpus at least ½ as long as preceding segment; temples margined below by fine ridge; mesosternal process usually reaching middle of coxae, separated from metasternal projection by short intercoxal isthmus (Fig. 8); distinctive male eighth tergite; and dorsum of male head (all North American species) with setiferous sex patch (Figs. 11, 12).

While providing identifications for specimens of aleocharine staphylinids submitted by D. L. Stephan (North Carolina State University), 2 male *Thamiaraea americana* Bernhauer were identified and confirmed by comparison with the type series. The original description given by Bernhauer (1907:401) is of little use in distinguishing

the species. During a recent examination of unidentified Aleocharinae in the Cornell University Insect Collection, I discovered a series of specimens of *Thamiaraea* from Pennsylvania. A detailed study of these specimens revealed morphological characters significantly different from the previously described species in North America (*T. americana*) and necessitated the description of a new species.

Since no study of the genus has ever been undertaken in North America, the purpose of this paper is to redescribe and illustrate *Thamiaraea americana* Bernhauer, to designate a lectotype from the syntype series in the Bernhauer collection, and to describe a new species from Pennsylvania. Recent comparative studies by Sawada (1970, 1972) have demonstrated the significance of structural characters in the mouthparts of aleocharines. In light of the emphasis placed on these character systems, I have described and illustrated the mouthparts of *Thamiaraea americana.* Most of the mouthpart characters discussed in the redescription (below) are probably genus-specific characters rather than species-specific characters.

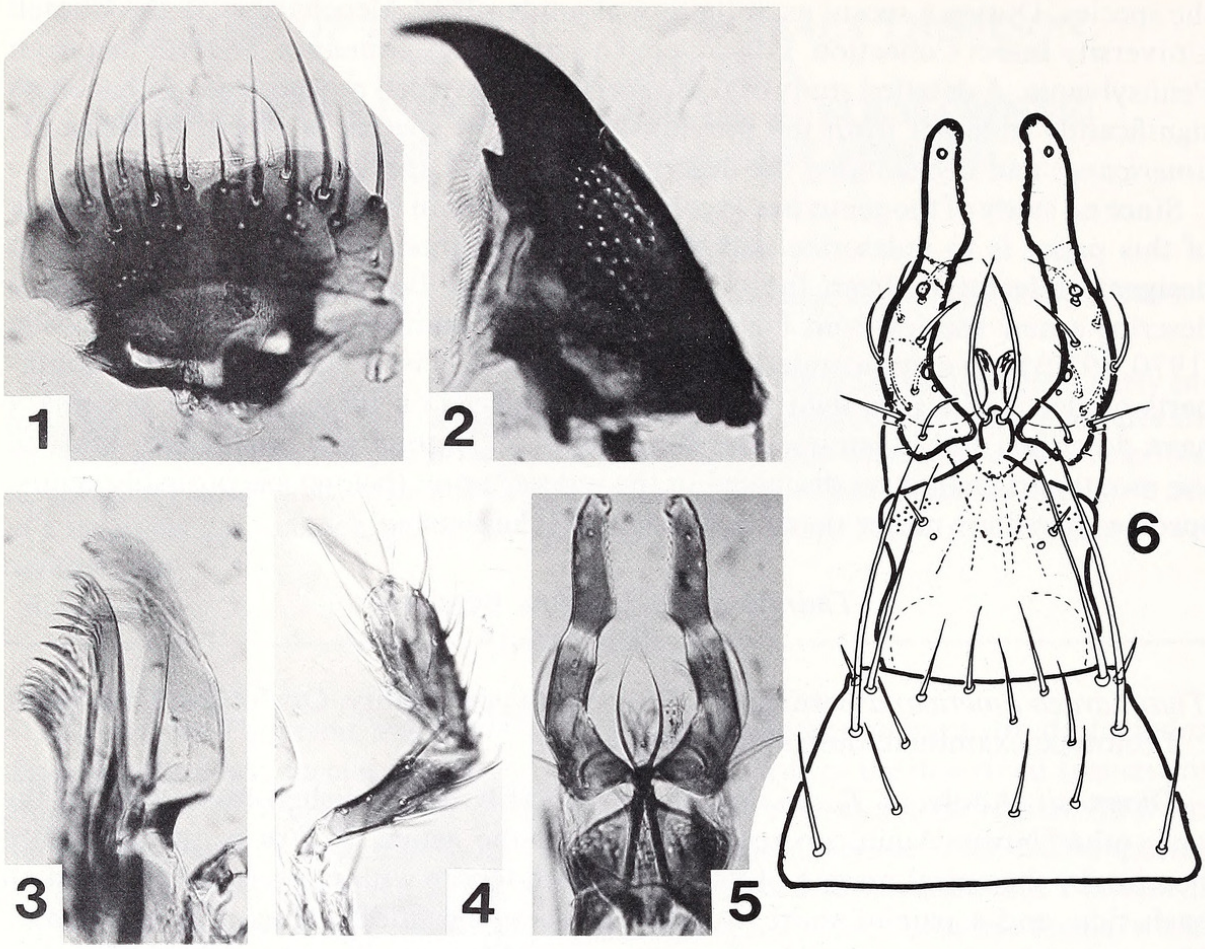
Thamiaraea americana Bernhauer
Figs. 1–10, 15–19

Thamiaraea americana Bernhauer, 1907:401 (Type locality, Opelousas, Louisiana). Lectotype examined, designated herein.

Diagnosis. Adults of *T. americana* can be easily distinguished from those of the only other North American representative of the genus, *T. lira* n. sp. (described herein), by the apical margin of the male eighth tergite with a robust, outer tooth on each side, and a pair of short, truncate lobes at the middle (Fig. 15); by 2 small, blunt tubercles, 1 on each side of midline at middle of male eighth tergite (Fig. 15); by the elongate, rounded apical lobe of the paramerite with setal arrangement as in Figure 19; and by the characteristic female spermatheca (Fig. 18).

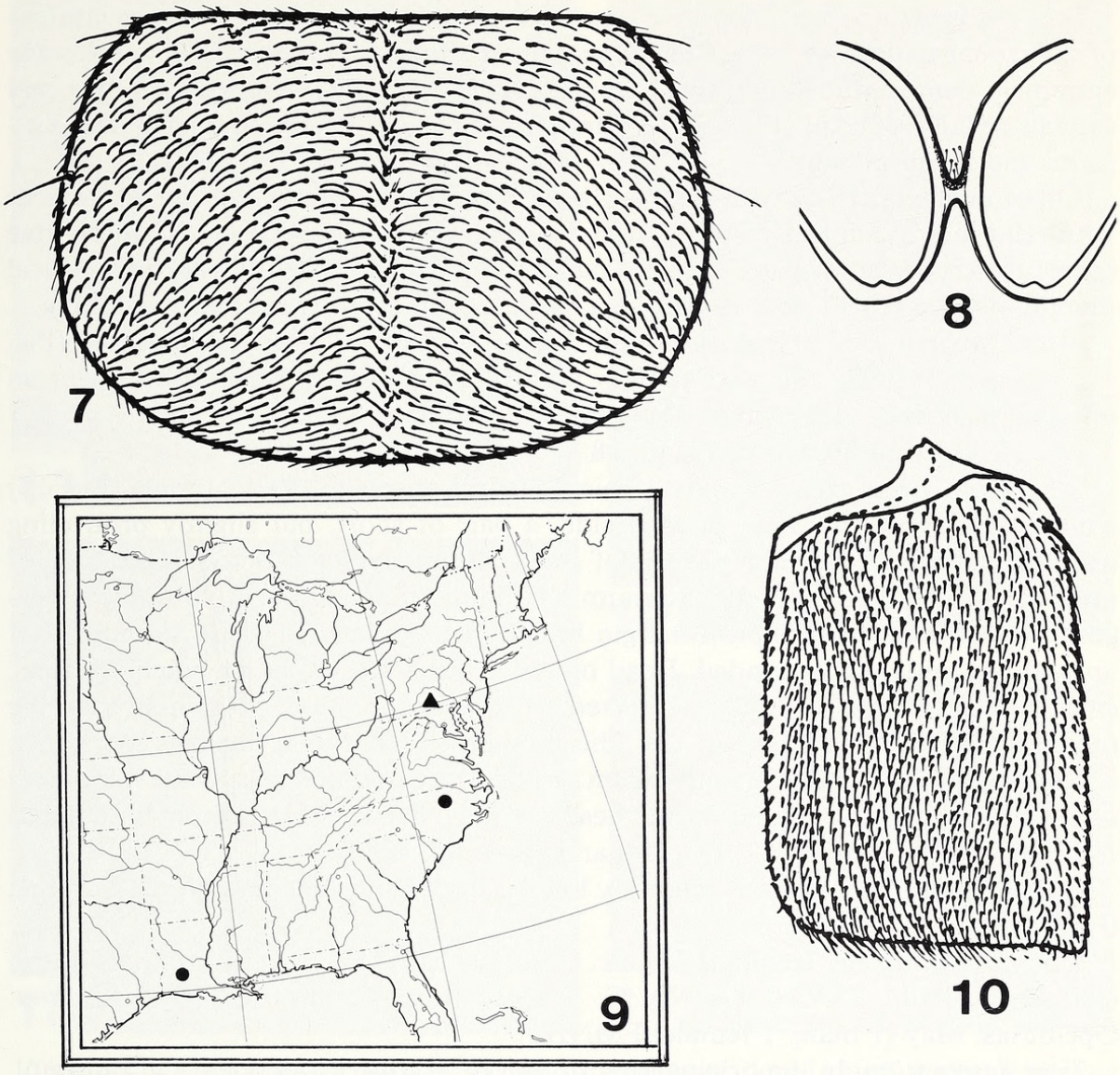
Redescription. Moderate sized, ranging in length from 3.1 to 3.6 mm. Body shape elongate, slender, somewhat flattened. Body color uniformly reddish brown to dark brown, except apical three abdominal segments which are darker. Antennae, legs and mouthparts paler, brownish yellow. Head, pronotum and elytra with reticulate microsculpture (polygonal pattern of microlines as in Fig. 13); abdominal terga with transverse microsculpture (interconnecting, wavy transverse microlines, Fig. 14). Integument surface covered with uniform vestiture of short, fine, densely arranged pubescence of microsetae; surface between punctures slightly shining; macrosetae present, but inconspicuous; punctures very fine, uniformly distributed.

Head broad across eyes (Ratio L/W = 0.80), basal angles broadly rounded, neck absent. Eye moderate in size, very finely pubescent. Temples moderately short, less than ½ length of eye, broadly rounded. Surface with microsculpture of polygonal pattern of microlines. Dorsal pubescence of microsetae directed mesad. Antenna moderate in length, reaching base of elytra; segments I–III somewhat elongate, with long, erect setae; segments IV–XI with vestiture of fine, recumbent pubescence and long setae; segment III slightly longer than II; segment IV quadrate; segments V–X transverse, progressively decreasing in length; segment XI slightly longer than IX and X combined, tapered and pointed apically. Labrum (Fig. 1) broadly transverse, slightly emarginate along anterior margin; outer angles broadly rounded; arrangement and number of labral macrosetae as in Figure 1; anterior margin at middle with



Figs. 1–6. *Thamiaraea americana* Bernhauer. 1. Labrum. 2. Right mandible. 3. Galea and lacinia of maxilla. 4. Maxillary palpus. 5. Labium. 6. Line drawing of labium.

minute sensilla. Mandibles moderate sized, heavily sclerotized, curved and pointed at apex; right mandible (Fig. 2) with sharp, molar tooth near middle and with scrobal pore at distal end of lateral scrobe; left mandible without tooth, simple; narrow membraneous prostheca extending from base to near apex of mandible, finely ciliated at ends, but broader and more coarse at middle. Galea and lacinia of maxilla as in Figure 3; galea slightly longer and broader than lacinia, distal lobe finely and densely ciliate. Lacinia elongate, hooked and pointed at apex; mesal margin with 8 closely arranged, elongate spines at apex, with patch of fine setae with hooked apices below spines. Palpus of maxilla (Fig. 4) 4-segmented; segment I small; segment II elongate, slightly expanded towards apex; segment III as long as segment II, but more incrassate at apex; segment IV at least ½ as long as segment III, subulate. Bundle of filamentous sensilla present at base of segment IV. Mentum of labium (Fig. 6) transverse, trapezoidal, slightly emarginate along anterior margin; arrangement and number of macrosetae as in Figure 6; 2 medial setae of prementum (Figs. 5, 6) long, convergent at apices, approximate at base. Labial palpi (Figs. 5, 6) elongate, appearing 2-segmented (segment I and II usually, but not necessarily, fused); segment I + II curved and convex laterally; segment III shorter and narrower than segment I + II, somewhat dilated on mesal margin; length of mesal margin with numerous sensilla; arrangement



Figs. 7–10. *Thamiaraea americana* Bernhauer and North American distribution of *Thamiaraea* spp. 7. Pronotal pubescence pattern, *T. americana*. 8. Mesosternal process, metasternal projection and intercoxal isthmus, *T. americana*. 9. Known distribution of *T. americana* (closed circles) and *T. lira* n. sp. (closed triangle). 10. Pubescence pattern of right elytron, *T. americana*.

and number of palpal macrosetae as in Figure 6. Ligula long, deeply bifid, lobes divergent.

Pronotum flattened, broadly transverse (Ratio L/W = 0.70), with surface microsculpture of polygonal pattern of microlines; surface dull to slightly shining; pubescence of microsetae dense, uniform, in a narrow median strip directed caudad or laterocaudad, with remaining microsetae swirling laterad from median row (Fig. 7 = Pattern C of Seevers, 1978, or Type IV of Lohse, 1974); punctures fine, uniform, inconspicuous. Mesosternal process moderately long, attaining middle of mesocoxal cavities, broadly rounded at apex, separated from narrowly rounded metasternal projection by a short, raised intercoxal isthmus (Fig. 8). M:i:m ratio (mesosternal process: isthmus: metasternal projection) = 7.6:1:5.9.

Elytra slightly wider at base than maximum width of pronotum; microsculpture of polygonal pattern of microlines; integument shining; pubescence of microsetae extremely dense, moderately short, appressed, in slightly sinuate pattern, directed caudad or laterocaudad (Fig. 10 = Pattern S of Seevers, 1978); punctures fine, uniform, and inconspicuous.

Abdominal terga III–V with shallow, basal impressions, impunctate; tergal surfaces with faint microsculpture of wavy, transverse microlines; pubescence of microsetae sparse, more dense on basal 3 terga; punctures very fine, slightly asperate. Apical margin of terga III–VI with row of long setae. Tergal integument slightly shining.

Male. Median lobe of aedeagus as in Figure 17. Apical lobe of paramerite (Fig. 19) elongate, broadly rounded apically, with 2 short, apical setae; 1 erect seta on outer surface; and 1 long, curved seta on inner surface.

Female. Spermatheca as in Figure 18.

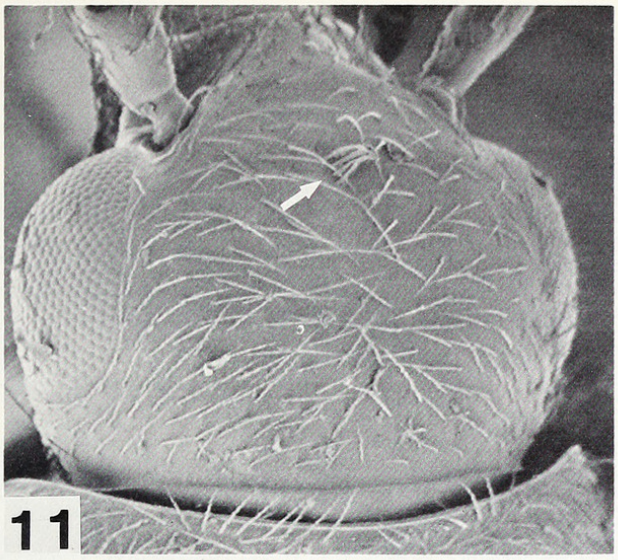
Secondary sexual characteristics. Apical margin of tergum VIII of male (Fig. 15) with a strong, robust tooth on each side; a pair of short, but slightly protruding truncate lobes at middle; and a pair of small, blunt tubercles, one on each side of midline, near middle of tergite. Sternum VIII unmodified, uniformly rounded. Tergum VIII of female with apical margin broadly emarginate (Fig. 16); sternum VIII unmodified, uniformly rounded. Head of male with a setiferous sex patch on frons, consisting of a brush of caudally-directed setae which are more prominent than the other setae of the head (Figs. 11, 12). This setal brush is within a glabrous area which is also defined by a cuticular impression or pit. An undoubted parallel development of setiferous patches is found on the heads of male beetles of the staphylinid genus *Neobisnius* (see Frank, 1981; Faustini and Halstead, 1982).

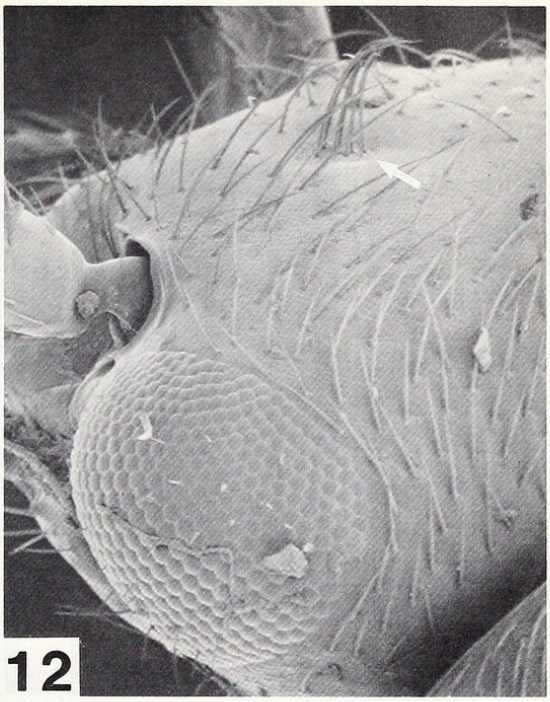
Distribution. The species is presently known from Louisiana and North Carolina (Fig. 9).

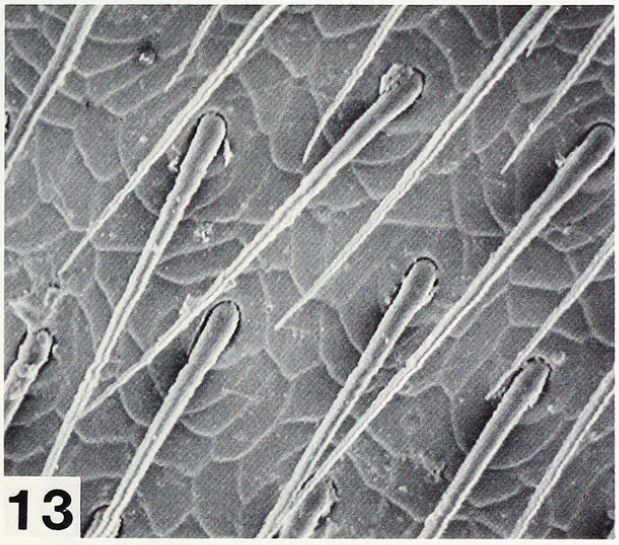
Material examined. 3 males, 1 female. UNITED STATES: *North Carolina*: Orange Co., Chapel Hill, 27-VI-1986, Ms. C. S. Rosenberg (2 males) CUIC. *Louisiana*: Opelousas, May (1 male, 1 female) FMNH.

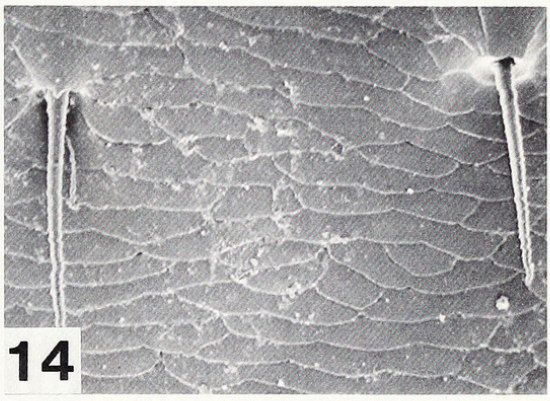
Type designation. In the original description of *T. americana* (Deutsch. Entomol. Z., 1907:401), Bernhauer listed Opelousas, Louisiana, as the type locality, but did not mention the number of specimens examined. One male and one female specimen are present in the Bernhauer collection in the Field Museum of Natural History (Chicago). The male is hereby designated as the lectotype; it is labelled: Opelousas, Louisiana May (label cut in two)/"Klages"/"140"/"americana Brh. Typus"/Chicago NHMus, M. Bernhauer Collection. I have added the label: LECTOTYPE *Thamiaraea americana* Bernhauer, desig. E. R. Hoebeke 1986. The male genitalia, and terminal terga and sterna have been dissected and mounted in Euparol on a micro-coverslip (6 mm diam.) and placed below the specimen. The female, herein designated paralectotype, bears the same data as the lectotype, except for the labels "120" and "americana Brh. Cotypus." I have added the label: PARALECTOTYPE *Thamiaraea americana* Bernhauer, desig. E. R. Hoebeke 1986. The terminal terga and sterna, and spermatheca have been dissected and mounted in Euparol on a micro-coverslip and placed below the specimen.

Biological notes. Several Indian species of *Thamiaraea* are recorded from the fungus *Polyporus* (Cameron, 1939), and the common British species (*T. cinnamomea* and *T. hospita*) have been reported "at the exuding sap of trees burrowed by the larvae







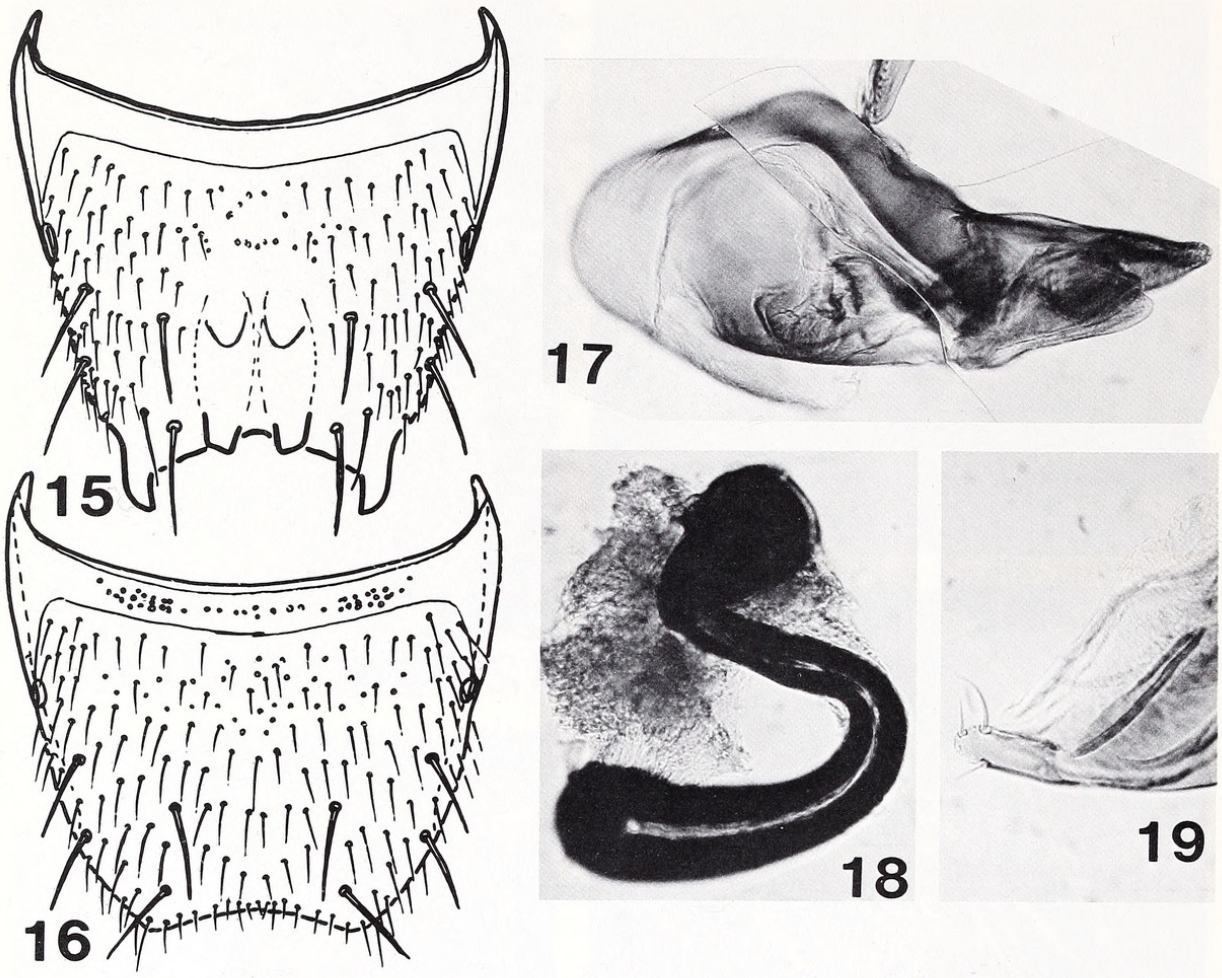


Figs. 11–14. *Thamiaraea lira,* new species. 11. Male head, dorsal aspect, sex patch marked by arrow. 12. Male head, lateral dorsal aspect, sex patch marked by arrow. 13. Microsculpture of pronotum. 14. Microsculpture of tergum VIII.

of the moth *Cossus ligniperda.*" (Joy, 1932:50) and in rotting fungi (Benick, 1952: 107). The North Carolina specimens were found "associated with slime flux on [a] trunk of *Quercus alba* L.," agreeing with the habits of the British species.

Thamiaraea lira, new species
Figs. 9, 11–14, 20–23

Diagnosis. The body shape, color, vestiture and microsculpture are similar to that of *T. americana,* but adults of *T. lira* n. sp. can be readily separated from those of the latter species by the apical margin of the male eighth tergite with a long, slender tooth on each side and a pair of protruding, rounded lobes at the middle (Fig. 20); by the deeply-channelled, broad ridge along the midline of the male eighth tergite (Fig. 20); by the short, truncate apical lobe of the paramerite with setal arrangement as in Figure 22; and by the shape of the female spermatheca (Fig. 23).

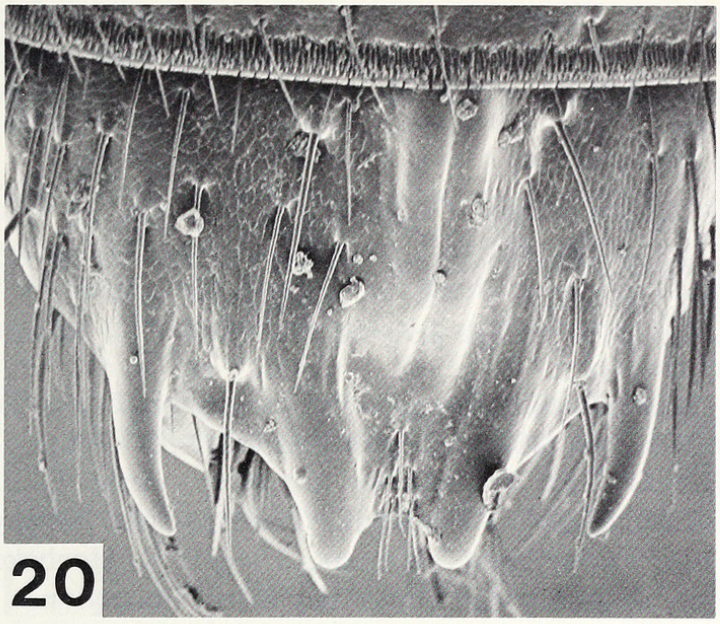


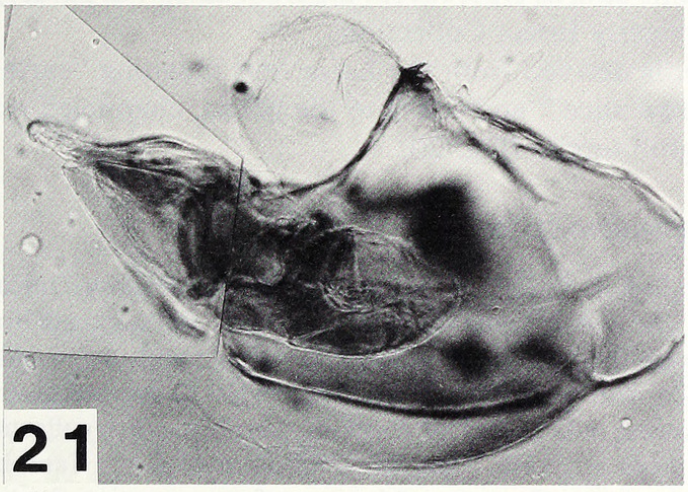
Figs. 15–19. *Thamiaraea americana* Bernhauer. 15. Male tergum VIII. 16. Female tergum VIII. 17. Median lobe of aedeagus, lateral aspect. 18. Spermatheca. 19. Apical lobe of paramerite.

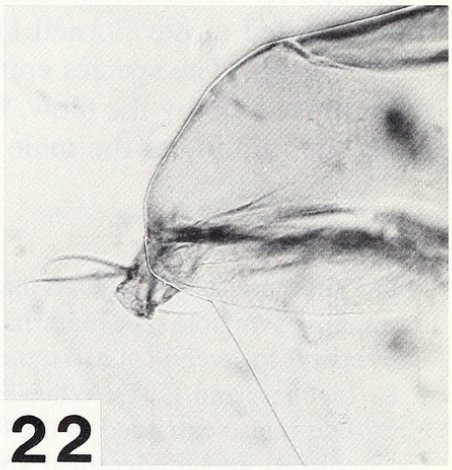
Description. Length 3.2–3.5 mm. Body color reddish brown, with head, apical III–IV abdominal segments, and basal impressions of abdominal segments III–V dark brown. Antennae yellowish brown with distal segments slightly darker. Legs and mouthparts uniformly light yellowish brown.

Head broad across eyes (Ratio L/W = 0.78), basal angles broadly rounded, neck absent. Eyes prominent, scarcely pilose. Dorsal pubescence of microsetae moderately dense, appressed, directed medially. Microsculpture reticulate, forming polygonal pattern of microlines; surface shining between punctures; punctures very fine, uniformly distributed. Antenna moderate in length, extending to basal ⅓ of elytra; segments loosely organized; segment II shorter than I, somewhat broadened apically; segment III elongate, longer than II, attenuate basally, broadened at apex; segments I–III lacking fine recumbent pubescence; segment IV–X becoming progressively shorter, more transverse to segment XI; segment XI longer than IX and X combined, pointed apically.

Pronotum flattened, broadly transverse (Ratio L/W = 0.70); anterior margin truncate to slightly and broadly emarginate at base of head; posterior margin broadly arcuate at middle; slightly bisinuate towards outer angles; lateral margins broadly curved; surface with microsculpture of polygonal pattern of microlines (Fig. 13);







Figs. 20–23. *Thamiaraea lira,* new species. 20. Male tergum VIII. 21. Median lobe of aedeagus, lateral aspect. 22. Apical lobe of paramerite. 23. Spermatheca.

surface slightly shining to dull between punctures; pubescence of microsetae fine, dense, appressed; pubescence pattern consisting of narrow strip along midline with microsetae directed caudally, and remaining microsetae directed laterocaudally from midline and narrow band of microsetae along posterior margin directed laterally from midline; punctures fine, uniformly distributed.

Elytra slightly wider than pronotum at base; microsculpture of polygonal pattern of microlines; surface slightly shining between punctures; punctures fine, slightly asperate, uniformly distributed; pubescence of microsetae directed caudally, slightly sinuate.

Abdominal terga with moderate setae and punctures, with faint microsculpture of interconnecting, transverse microlines; terga III–V with broad, shallow transverse impression; impression without punctures; terga III–VI with row of long caudally directed setae along apical margins; surface between punctures smooth, shining; punctures moderate to sparse, somewhat coarse, uniformly distributed.

Male. Median lobe of aedeagus as in Figure 21. Apical lobe of paramerite (Fig. 22) short, robust, with truncate apex, and with 2 relatively short apical setae, and 2 long, erect setae arising from the outer surface; the bases of these setae are nearly approximate.

Female. Spermatheca as in Figure 23.

Secondary sexual characteristics. Apical margin of male tergum VIII (Fig. 20) with a long, slender tooth on each side; a pair of prominent, rounded lobes at the middle; and a broad, deeply-sulcate longitudinal ridge along the midline. Male head with brush of setae on frons (Figs. 11, 12). Apical margin of female tergum VIII similar to that of *T. americana,* but more truncate.

Distribution. Known only from the type locality, Arendtsville, Pennsylvania (Fig. 9).

Type material. Holotype, male, with the following labels: Arendtsville. Pennsylvania, 5-24-1927, S. W. Frost/HOLOTYPE *Thamiaraea lira* n. sp., desig. E. R. Hoebeke 1987. Allotype, female, with the labels: Arendtsville, Pennsylvania, 10 May 1927, S. W. Frost Coll./ALLOTYPE *Thamiaraea lira* n. sp., desig. E. R. Hoebeke 1987. The holotype and allotype are in the Cornell University Insect Collection.

Paratypes, 4 males, 1 female. Same data as type, except different dates. All paratypes are deposited in the Cornell University Insect Collection.

Etymology. The species epithet is derived from the Latin *lira,* meaning "earth or ridge thrown up by the plow, furrow slice," and refers to the broad, channeled ridge along the midline of the male eighth tergite (Fig. 20).

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