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A New Species and North American Record of *Pseudotriphyllus* (Coleoptera: Mycetophagidae)

Christopher E. Carlton
Louisiana State Arthropod Museum
Department of Entomology
LSU AgCenter
403 Life Science Building
Baton Rouge, LA 70803, U.S.A.
ccarlt@lsu.edu

and

Richard A. B. Leschen
New Zealand Arthropod Collection
Private Bag 92170
Auckland, NEW ZEALAND
LeschenR@landcareresearch.co.nz

Abstract

Pseudotriphyllus defoei **new species** represents the first North American species record of this predominantly Eurasian mycetophagid genus. The species is known from two specimens recovered from a single Berlese sample in the Great Smoky Mountains National Park, Tennessee (type locality, Albright Grove Loop Trail). It differs from other described *Pseudotriphyllus* by setal pattern, color, development of the pronotal lateral carina, size of the male prosternal fovea, and details of the aedeagus. The genus may be distinguished from all other North American mycetophagid genera by the presence of a median prosternal fovea on males and the width of the last antennal segment, which is narrower than the penultimate antennomere.

Members of Mycetophagidae occur in all major regions of the world, with greatest diversity in temperate regions (Lawrence and Leschen 2009). Most species are mycophagous (Leschen 1990; Leschen and Lawrence 1991; Nikitsky 1993; Nikitsky and Schigel 2004). Five genera and 26 species are recorded from the United States (Young 2002). Here we describe a new species of *Pseudotriphyllus* Reitter from Great Smoky Mountains National Park. This represents a new record of the genus for North America.

Five species of *Pseudotriphyllus* are known from Eurasia and a sixth was described from North Africa. These include *P. colchicus* (Reitter, 1876) (Caucasus), *P. lewisianus* (Wollaston, 1874) (Japan), *P. ohbayashii* Miyatake, 1968 (Japan), *P. suturalis* (Fabricius, 1801) (Europe), *P. nepalensis* Nikitsky, 2003 (Nepal), and *P. vicarius* Peyerimhoff, 1913 (North Africa). *Pseudotriphyllus* can be diagnosed from all other genera of mycetophagids by the following combination of characters: three segmented antennal club with the last antennomere narrower than the penultimate antennomere, frontoclypeal suture in the form of a deep groove, confused elytral punctation, and male with distinct single median setose fovea on the prosternum. These characters, especially the prosternal fovea of males and small last antennomere, will help distinguish this genus from others occurring in North America or elsewhere in the Western Hemisphere.

Figs. 1–2. *Pseudotriphyllus defoei* holotype. **1)** Dorsal view; **2)** lateral view.

The following measurements are used in the descriptions: PL = median length of pronotum; PW = greatest width of pronotum; EL = length of the elytra along suture; EW = combined greatest widths of elytra; BL = body length (excluding head) or PL + EL; GD = greatest depth (metaventrite to basal third of elytra). Label data are given verbatim, with label breaks indicated by slashes (/).

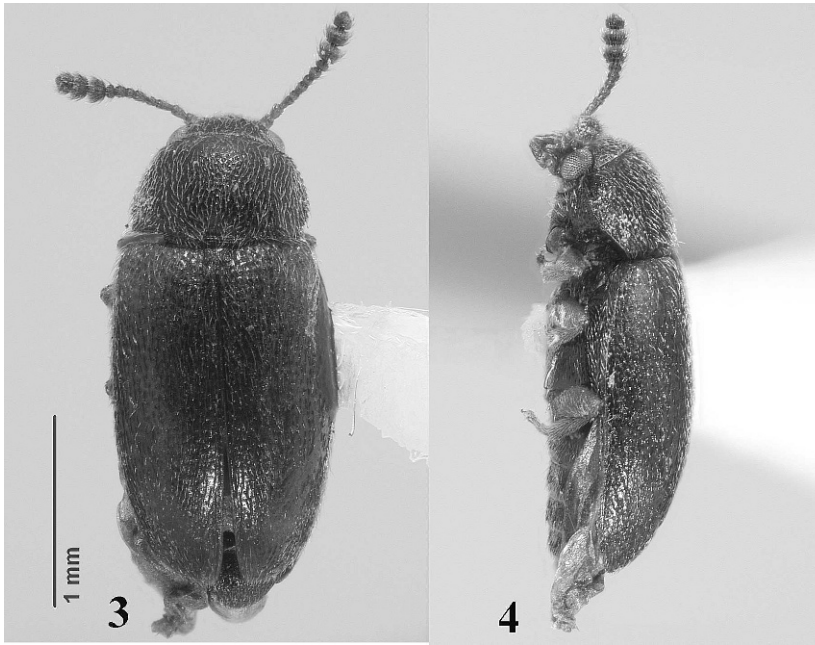
Pseudotriphyllus defoei new species
(Figs. 1–2, 5, 7a–b)

Holotype. Point-mounted, male, aedeagus and associated genital sclerites in glycerine vial below specimen. U.S.A., TN, Cocke Co., GSMNP, Albright Grove Trail, 83°16′45″W, 35°44′10″N/ elv 1,000 m, old growth Berlese, 29 June 2001, C. Carlton, A. Tishechkin, V. Moseley. Type locality: Albright Grove Loop Trail, Great Smoky Mountains National Park. Deposited in the Florida State Collection of Arthropods, Gainesville, FL.

Paratype. Point-mounted, teneral male with aedeagus in glycerine vial below specimen, same data as holotype. Deposited in the Great Smoky Mountains National Park Collection, Gatlinburg, TN.

Etymology. The species is named for Don Defoe (1938–2003), Curator at Great Smoky Mountains National Park from 1957–2003. Defoe devoted much of his career to documenting the insect fauna and studying the natural history of the park.

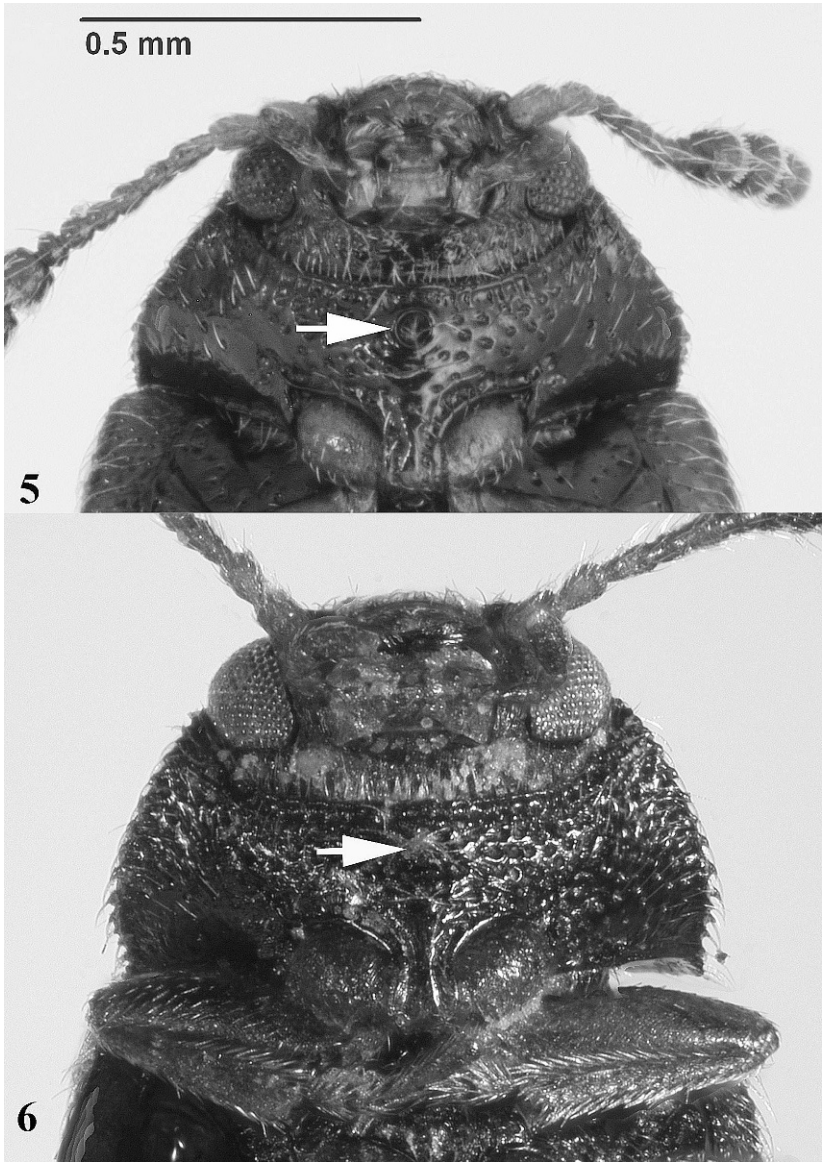
Diagnosis. Anterior portion of each lateral pronotal carina barely visible in dorsal view. Posterior angles of pronotum rounded. Width of prosternal process



Figs. 3–4. *Pseudotriphyllus suturalis* from UK. **3)** Dorsal view; **4)** lateral view.

larger than half the width of a prothoracic coxa. Separation of prosternal punctures equal to their diameters or greater. Elytron without strongly contrasting markings. Parameres not hooked apically, each bearing one long and two short lateral setae.

Description. Length 2.00 (paratype)–2.10 (holotype) mm. Body about 1.85× as long as wide (BL/EW = 1.91–2.09), and greatest depth about 0.66× as great as elytral width (GD/EW = 0.64–0.68). Color light to medium brown (elytron without strongly contrasting markings); head and ventral portions of body medium brown; pronotum and most of elytra darker brown; antennae, frons near antennal insertions, palps, legs, and basal one-fifth of elytra yellowish-brown. Dorsal vestiture of short suberect (pronotum) and decumbent (pronotum and elytra) yellowish-gray setae, longest setae longer than one-half length of eye; setae on ventral surfaces slightly shorter; setal insertions separate (clypeus, frons, pronotum), confluent (elytra) or within (ventral surfaces) punctures. Punctation coarse on all surfaces except elytra, where the punctures are shallow with indistinct rims, but larger in size than elsewhere; punctures separated by 0.5–1.0 diameters (clypeus and frons), 1.0–3.0 diameters (pronotum), 1.0–2.0 diameters (elytra and ventral surfaces), becoming finer on abdominal ventrites. Small median area of vertex impunctate. Antennomere lengths (mm) .10/.08/.07/.05/.06/.05/.05/.04/.10/.10/.08; antennomere 10 weakly transverse (width about 1.5× that of length). Maxillary palpomere three about 3× longer than two. Eye coarsely facetted (edges of ommatidia distinct), greatest length about 10 facets, greatest width about 19 facets. Pronotum about 0.63× as long as wide (PL/PW = 0.60–64); sides rounded, not strongly angulate, diverging to posterior third, then weakly converging posteriorly and wider in basal third; posterior angles rounded;



Figs. 5–6. *Pseudotriphyllus* spp. details of male prosterna showing median foveae (arrows). **5)** *Pseudotriphyllus defoei* holotype; **6)** *P. suturalis* from UK.

basal fovea three diameters from lateral margin and about three-fourths diameter from posterior margin. Lateral pronotal carinae barely visible anteriorly in dorsal view. Width of prosternal process larger than half the width of a prothoracic coxa. Elytra 1.25× as long as wide (EL/EW = 1.19–1.32) and 2.05× as long as

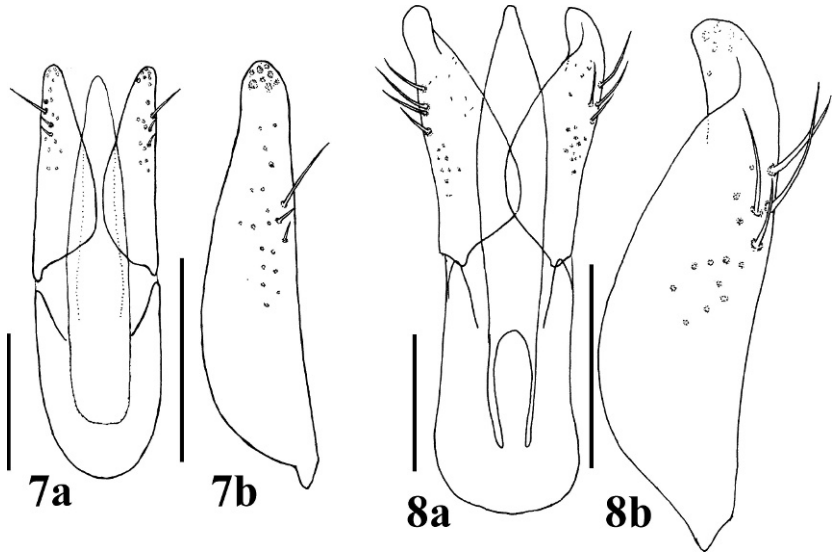


Fig. 7–8. *Pseudotriphyllus* spp., aedeagi. Scale bars = 0.1 mm. **7)** *Pseudotriphyllus defoei* holotype; **7a)** dorsal view; **7b)** left paramere; **8)** *P. suturalis* from UK; **8a)** dorsal view; **8b)** left paramere.

pronotum (EL/PL = 1.94–2.15); humeri weakly developed and very slightly elevated. Aedeagus simple, parameres extending slightly posteriorly beyond median lobe, apically rounded and slightly curved ventrally, and not hooked apically; median lobe evenly acuminate from midpoint to apex.

Female unknown.

Comments. *Pseudotriphyllus defoei* is similar to the European *P. suturalis*. It differs from this species by having a slightly smaller body, having the anterior portion of each pronotal lateral carina barely visible in dorsal view and posterior angle rounded (compare Figs. 1, 3), punctation, especially of the prosternum, less dense, prosternal fovea of male clearly visible, not mostly obscured by setae (compare Figs. 5, 6), and the aedeagal parameres straight apically, not slightly hooked, and bearing one long and two short setae, not four subequal longer setae (compare Figs. 7a–b, 8a–b). *Pseudotriphyllus defoei* keys to *P. colchicus* in Nikitsky (1993) but can be distinguished from this species by having completely irregular punctation. *Pseudotriphyllus nepalensis* also keys to *P. colchicus*, and *P. defoei* can be distinguished from it by the shape of the parameres. The apices are acute in *P. nepalensis* and sharply curved ventrally. In *P. defoei* they are rounded and only slightly curved. The most complete key to the species of *Pseudotriphyllus* is that of Nikitsky (1993), which does not include *P. ohbayashii*, *P. vicarius*, or *P. nepalensis*, the latter described more recently (Nikitsky 2003). The male and female syntypes of *P. vicarius* (described by Peyerimhoff 1913) were examined at the Muséum national d'Histoire Naturelle (MNHN). This species differs from *P. defoei* in having more strongly serrate pronotal margins, denser punctation on the dorsal surfaces, and a weakly infuscate band across the otherwise pale elytra (dark unicolorous in *P. defoei*). *Pseudotriphyllus vicarius* has slightly less dense punctation and vestiture than *P. suturalis*, and the marginal serrations of the pronotum are more strongly recurved.

The all taxa biodiversity inventory (ATBI) in Great Smoky Mountains National Park has resulted in numerous and sometimes surprising discoveries of new beetle species and taxonomic records, summarized in Carlton and Bayless (2007). The present example highlights the occasionally capricious nature of these discoveries. Both specimens of *P. defoei* were recovered from a single Berlese sample in Albright Grove, an area of old growth cove forest habitat in the northeastern part of the park. The collection was made during the first collecting trip of the Louisiana State Arthropod Museum's eight-year involvement with the ATBI. Albright Grove has been visited and sampled many times since, but despite repeated attempts to collect additional specimens using a variety of techniques, none have materialized. Most mycetophagids are fungus feeding as larvae and adults, apart from some that feed on plant pollen or fern spores (see Leschen 1990; Lawrence 1991; Leschen and Lawrence 1991; Nikitsky 1993; Nikitsky and Schigel 2004; Lawrence and Leschen 2009). European and Japanese *Pseudotriphyllus* have been collected from wood-decaying polypores, coral, and other fungi (*e.g.*, see Miyatake 1959; Nikitsky 1993). But, focused collecting on such fungi has not yielded specimens of *P. defoei*. This contrasts sharply with collecting success reported for the European species *P. suturalis*, which can routinely be collected from appropriate fungal hosts. Curators and collectors in North America may discover additional specimens of *P. defoei* by examining their holdings of mycetophagids, cryptophagids, tetratomids and similar small brown beetle families. Direct collecting efforts should focus on growths of fungi on dead wood as potential substrates for the species. Flight intercept traps may also be effective since other mycetophagids are regularly collected by using them.

Acknowledgments

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