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A NEW SPECIES OF *EUCLEMENSIA* (COSMOPTERIGIDAE) FROM THE UNITED STATES

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ABSTRACT. A new species of *Euclemensia* (Cosmopterigidae) is described from Louisiana. The imago and genitalia of the male and female are illustrated, and diagnoses are provided to differentiate the new species from the four other described species of the genus.

Additional key words: Louisiana, Kermesidae, scale parasitoid, disjunct species.

Despite the extremely high diversity of Lepidoptera and their level of importance in biotic communities, our knowledge of the Lepidoptera fauna in North America is quite depauperate, especially for microlepidoptera. This lack of knowledge of our native species is combined with the need to provide baseline inventories for specialized and restricted communities. Descriptions of new species in these unique habitats are needed to facilitate conservation efforts by land management personnel as well as to provide new information for those studying evolutionary history and biogeography.

A survey of moths on Barksdale Air Force Base was conducted during 1996. During this survey male and female specimens of a new species of *Euclemensia* were collected in a prairie habitat with scattered shrubs and *Quercus stellata* Wangenheim (Fig. 1). Collections in similar prairies, glades and other habitats in southeastern U.S. since 1996, as listed in a database of sampled habitats (Brown & Lee 2010), have not yielded additional specimens. This species is not present in the major collections holding microlepidoptera, including the U.S. National Museum of Natural History, the Canadian National Collection, the Essig Museum at Berkeley, CA, and the private collection of Vernon Brou in Louisiana. Although only a male and female specimen of this new species have been collected, this species is described to document a fifth species of this genus and to document the fauna of the prairie habitat on Barksdale Air Force Base.

Euclemensia Grote (Cosmopterigidae) is an enigmatic genus among the Lepidoptera because its four known species have been described from disjunct regions of the world, and only *E. bassettella* (Clemens), the type species, is encountered frequently. The lack of diversification in this genus is combined with the unusual larval habit of being parasitoids of scale insects.

Two species of *Euclemensia* are known to occur in America north of Mexico, *E. bassettella* in eastern United States and Canada and *E. schwarziella* (Busck) in Arizona, both of which have been illustrated by Hodges (1978). *Euclemensia caminopa* (Meyrick) was described from St. Augustine, Trinidad based on a single female that was illustrated by Becker (1999); no other specimens of this species are known. *Euclemensia woodiella* (Curtis) has not been seen since its original collection near Manchester, England in 1829, and it is considered to be extinct; it has been redescribed and illustrated by Koster & Sinev (2003).

Larvae of both *E. bassettella* and *E. schwarziella* are parasitoids of scale insects, specifically *Kermes* spp. and *Allokermes kingii* (Cockerell) (Hemiptera: Kermesidae)

Fig. 1. Type locality of *Euclemensia barksdaleella* n. sp. Lee and Brown at Barksdale A.F.B., with Quercus stellata and in foreground.Fig. 2. Adult photo of *Euclemensia barksdaleella* n. sp. Lee and Brown. Scale bar: 2 mm.

(Olsen 1919; Hollinger & Parks 1919; Hodges 1978; Turner & Buss 2005). Some references to *Kermes* Boitard as hosts may be inaccurate because *Kermes* has been restricted to four western species and one eastern species (Bullington & Kosztarab 1985). Ten species previously assigned to *Kermes* and two additional new species have been assigned to *Allokermes* Bullington and Kosztarab, and these include six species occurring in the eastern United States (Bullington & Kosztarab 1985).

MATERIALS AND METHODS

Specimens were collected with a 15-watt blacklight box trap, as illustrated by MacGown (2006), with calcium cyanide A dust used as a fumigant. Dissection and slide mounting methods for genitalia followed Clarke (1941), except that the preparations were stained in eosin and mounted in Euparol. A Leica MZ 125 Stereo-Microscope and Olympus Compound Microscope were used for examining specimens and slide mounts at magnifications ranging from 10–100x and 100-400x, respectively. Terminology for genitalia follows Koster & Sinev (2003), including use of brachia for dorsal projections of the tegumen, as defined by Hodges (1978) for Cosmopterigidae, and valvella for the sclerotized plates surrounding the phallus. Measurements were made with an ocular micrometer in the stereomicroscope at magnifications of 40x for the forewing, and 100x for the male genitalia. Lengths of male genital structures were measured for the right brachium (left in Fig. 3) along the medial margin, for the tegumen along the lateral margin (its greatest length), for the right valva along the costal margin from base to apex, and for the valvella from the ventral base to dorsal apex. The photograph of the imago was made with a Leica stereoscope with Image Pro Plus 5.1 program for autoformatting.

Euclemensia barksdalensis **n. sp.** Lee and Brown (Figs. 2–4)

Description. Adult (Fig. 2): Wing length 3.0 (1 female)–4.0 mm (1 male). Head and thorax metallic dark gray. Antenna dark brown with four white segments near apex. Labial palpus smoothly scaled, yellowish white, second segment slightly longer than third segment, with a few dark brown scales on the apex of third segment. Legs dark brown; hind tibiae with two silvery white annulations at bases of silvery white spurs. Forewing dark brown, with a postbasal band of yellowish orange scales, extending to base between two dark brown basal spots. Fringe dark brown. Hindwing dark brown. Abdomen dark brown, with band consisting of 6–7 irregular rows of dentate microtrichia on anterior margins of terga IV-VII.

Male genitalia (Fig. 3): Brachia 0.84 length of lateral margin of tegumen, 0.60 length of costal margin of valva, and 0.55 length of valvella; valva simple of nearly uniform width from base to apex, apical and ventroapical margins setose on inner surface, scaled and setose on outer surface; valvella developed as pair of lateral plates extending from base of valva to slightly beyond bases of brachia, subequal in length with valva; phallus cylindrical, with a large cornutus on vesica; vinculum broad, without saccus.

Female genitalia (Fig. 4): Apophyses anteriores 0.57x length of apophyses posteriores; ostium bursae in membrane between seventh and eighth abdominal sterna with antrum encircled by sclerotized band; ductus bursae short, connecting with corpus bursae and smaller appendix bursae, both having dentate microtrichia detectable with compound microscope, signum absent.

Diagnosis. This new species can be differentiated from other *Euclemensia* by the dark brown forewing with a postbasal yellowish orange band. The forewings of *Euclemensia bassettella* and *E. caminopa* are black or indigo blue with crimson red or reddish orange markings, respectively. Forewings of *E. woodiella* and *E. schwarziella* are dark brown with extensive yellow to orange markings beyond the postbasal area. The two known specimens of *E. barksdalensis* have shorter forewings (3–4 mm) than most *E. bassettella*, although the latter can range in size from 3 mm to 6 mm. Of the 161 specimens of *E. bassettella* that were examined, including six specimens from Barksdale A.F.B., only slight variations in wing pattern or color were detected, and none of these variations were close to the distinctive color and pattern of *E. barksdalensis*. The male and female genitalia of *E. barksdalensis* and *E. bassettella* are very similar in shape, and these two species are examples of different species that cannot be reliably differentiated by male genitalia. Males of both species have a single cornutus in the phallus, in contrast to two cornuti in *E. schwarziella*. The relative lengths of the brachia to the tegumen, valva, and valvella are similar between *E. barksdalensis* and *E. bassettella*. The only difference between the two species in male genitalia is the presence of more setae on the medioapical region of the valva in *E. bassettella*, but this may be a variable character. The female genitalia of *E. barksdalensis* differs from that of *E. bassettella* in having a completely sclerotized ring encircling the antrum in contrast to having a sclerotized dorsal plate on the antrum in the latter species, based on dissections of three specimens from Mississippi and Louisiana. The ventral portion of the antrum of *E. bassettella* is unsclerotized. In addition, the dorsal area of the eighth tergite is membranous in *E. barksdalensis*, whereas it is weakly sclerotized in *E. bassettella*.

Holotype. [♂] Bossier Parish, LA., Barksdale A.F.B., 32°29'29"N 93°35'07"W, 11 April 1996, D.M. Pollock (Genitalia slide MEM No. 1028). Deposited in the US National Museum of Natural History.

Paratype. 1[♀ Bossier Parish, LA., Barksdale A.F.B., 32°29'29"N 93°35'07"W, 11 April 1996, D.M. Pollock (Genitalia slide MEM No. 1029). Deposited in the Mississippi Entomological Museum.

Etymology. The name is derived from the type locality at Barksdale Air Force Base.

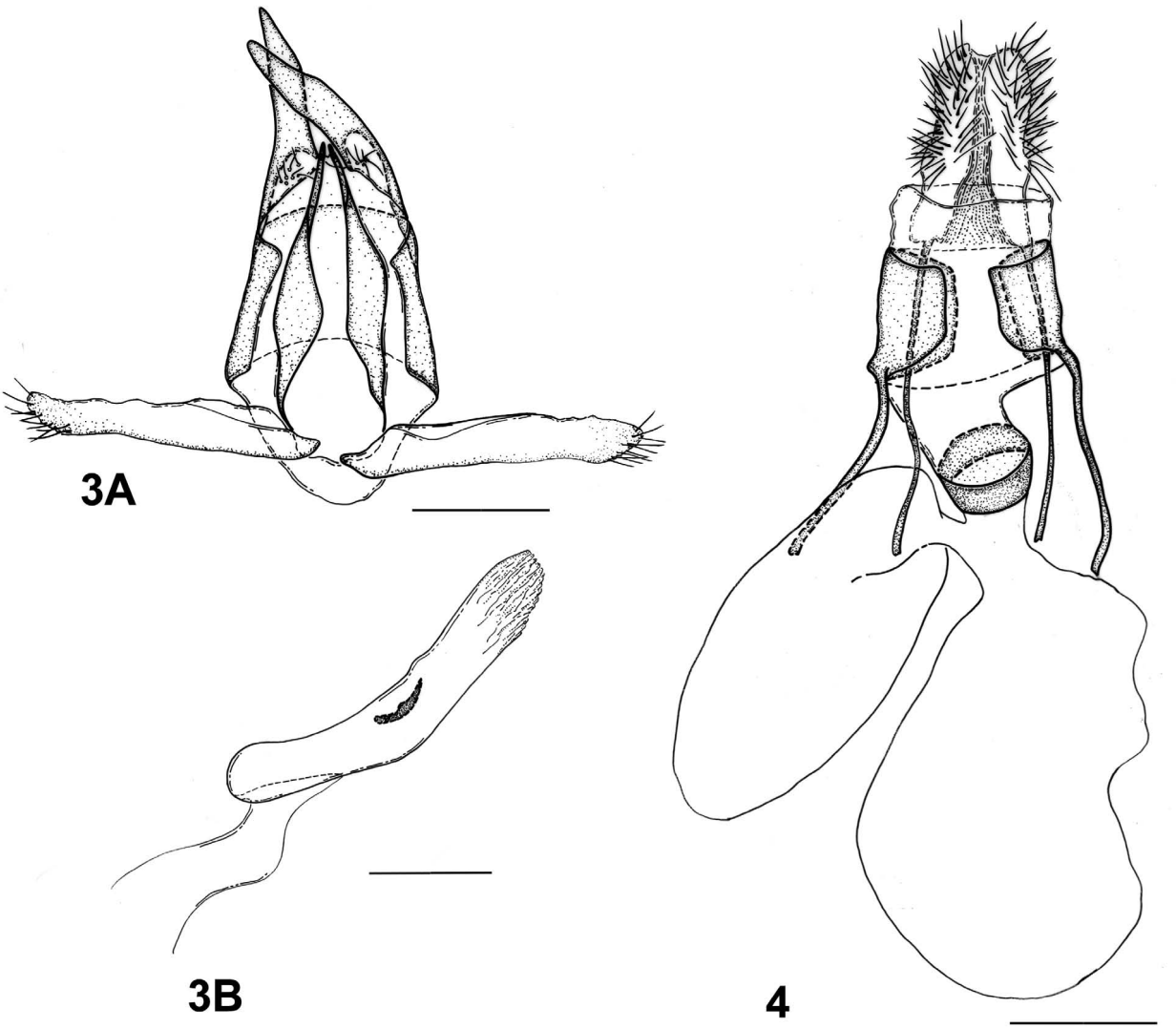

Fig. 3–4. **(3)** Male genitalia of *Euclemensia barksdaleella* n. sp. Lee and Brown, A. Tegumen, vinculum, and valva. B. Phallus. Scale bar: 0.2 mm. **(4)** Female genitalia of *Euclemensia barksdaleella* n. sp. Lee and Brown. Scale bar: 0.2 mm.

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