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(Coleoptera: Cucujoidea: Endomychidae) from the Bahamas, with a
key to the New World genera of Anamorphinae

Floyd W. Shockley
Department of Entomology
413 Biological Sciences Building
University of Georgia
Athens, GA 30602-2603 USA

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Floyd W. Shockley

Department of Entomology
413 Biological Sciences Building
University of Georgia
Athens, GA 30602-2603 USA
fws@uga.edu

Abstract. A new species of anamorphine endomychid, *Micropsephodes bahamaensis* Shockley is described from a small series of 3 specimens collected on North Andros Island in the Bahamas. Besides being the only species known from the Bahamas, *M. bahamaensis* is readily recognizable from its congeners based on its much larger size, more elongate habitus and features of the galeae and maxillary palpomere IV. Keys to the known species of *Micropsephodes* and to the adults of the genera of Anamorphinae that occur in the Western Hemisphere are provided.

Key Words. Endomychidae, Anamorphinae, *Micropsephodes*, the Bahamas, new species, key

Introduction

Anamorphinae Strohecker is a relatively well-defined subfamily of small, round, coccinellid-like beetles in the family Endomychidae Leach. The subfamily is relatively large, including approximately 174 species in 37 genera worldwide. In the New World, Anamorphinae is represented by 54 species divided among 13 genera. The biology of anamorphine species is poorly known, but they are believed to be obligate fungal spore feeders as both adults and larvae (Pakaluk 1986, Leschen and Carlton 1993). The morphology of the larvae of Anamorphinae was recently reviewed by Shockley and Tomaszewska (2007).

Champion (1913) described the genus *Micropsephodes* Champion for a new species of round, glabrous endomychid from Guatemala, *M. serraticornis* Champion (Fig. 3). Blackwelder (1945) listed only the type locality for the distribution of this species. Strohecker (1953) updated the generic description of Champion, but included no new distributional records for *M. serraticornis*. Leschen and Carlton (2000) re-described the type specimen of *M. serraticornis* while describing *M. lundgreni* Leschen and Carlton, an endemic species from the southeastern United States (Fig. 4). However, their redescription was primarily diagnostic to better aid in the comparison of the two species.

As part of a family-level phylogenetic analysis of Endomychidae, Tomaszewska (2000) thoroughly re-described and illustrated the morphology of *Micropsephodes*. She justifiably expanded the range of the genus to include the Dominican Republic, but the DR specimens examined in that study were probably not *M. serraticornis* (M. Ivie, pers. comm.) based on comparison of other specimens from the series with the type. However, without examining the actual specimen(s) dissected and described by Tomaszewska, I am hesitant to erect a new name for that species at this time. Whether the Dominican Republic species examined by Tomaszewska was the same as that referred to in Leschen and Carlton (2000) remains unclear. No new *Micropsephodes* have been described since Leschen and Carlton (2000). Immature stages for *Micropsephodes* are unknown.

Micropsephodes is readily recognizable from other similar anamorphine genera based on the combination of the following features: 8-segmented antennae with a 3-segmented serrate club, pronotum lacking sulci or carinae; posterior margin of the pronotum medially-lobed, and 3-segmented tarsi with simple tarsal claws; dorsally glabrous, shiny often with a metallic sheen.

Material and Methods

Three female specimens of a new *Micropsephodes* species were collected at Forfar Biological Station (Lat: 24°53'52"N, Long: 77°55'53"W; elev. 1m) on North Andros Island in the Bahamas (Fig. 1). These are the same specimens reported by Turnbow and Thomas (2008) as "*Micropsephodes* n. sp." Initial observa-

tions were made using a Leica Wild MZ8 stereo microscope. One specimen was disarticulated and placed in glycerine on slides for further study. Illustrations were made from this prepared specimen using a Leitz DMRB compound microscope. The dorsal and lateral habitus images were produced using a Canon EOS-1DS digital camera attached to an ML-1000 Digital Imaging System (Microptics, Inc., Ashland, VA). Specimens used in this study are deposited in the following collections: Florida State Collection of Arthropods (FSCA), Floyd W. Shockley Research Collection (FWSC), and Robert H. Turnbow Collection (RHTC).

Key to the New World genera of Anamorphinae

1. Elytra with broad, explanate margins; fossil in Dominican amber *Discolomopsis* Shockley
— Elytra without broad, explanate margins; not fossilized 2
- 2(1). Procoxal cavities open externally 3
— Procoxal cavities closed externally *Acritosoma* Pakaluk and Slipinski
- 3(2). Posterior margin of pronotum distinctly lobed medially 4
— Posterior margin of pronotum truncate or weakly bisinuate 11
- 4(3). Tarsal claw with a sharp internal tooth ventrally 5
— Tarsal claw simple or at most expanded basally 7
- 5(4). Pronotum with conspicuous lateral sulci, although sometimes faint 6
— Pronotum lacking lateral sulci entirely *Rhybomicrus* Casey
- 6(5). Lateral sulci connected by a fine transverse stria near middle of pronotal disc; antennae 9- or 10-
segmented *Anamorphus* LeConte
— Lateral sulci not connected; antennae 11-segmented *Micropsephus* Gorham
- 7(4). Pronotum with lateral carinae connecting with lateral sulci externally and reaching the front
margin *Austroclermus* Strohecker
— Pronotum without lateral carinae 8
- 8(7). Pronotum with distinct lateral sulci *Bystus* Guérin-Méneville
— Pronotum lacking lateral sulci 9
- 9(8). Antennal club serrate *Micropsephodes* Champion
— Antennal club not serrate 10
- 10(9). Tarsi 4-4-4; antennae 11-segmented *Catapotia* Thomson
— Tarsi 3-3-3; antennae 9-segmented *Dialexia* Gorham
- 11(3). Pronotum with lateral carinae extending to anterior margin; habitus ovoid 12
— Pronotum with carinae not reaching anterior margin; habitus subparallel
..... *Symbiotes* Redtenbacher
- 12(11). Tarsi 3-3-3 *Clemmus* Hampe
— Tarsi 3-4-4 *Exysma* Gorham

Key to adults of *Micropsephodes*

1. Pedicel ovoid to elongate; antennomere III elongate (length greater than 2x width) (Fig. 6C);
lacinia unisetose apically (Fig. 6F); larger species (>1.25 mm) 2



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Figure 1. Map of the Bahamas showing North Andros Island (yellow) and Forfar Biological Station (red dot). Map courtesy of the University of Texas Libraries, The University of Texas at Austin.

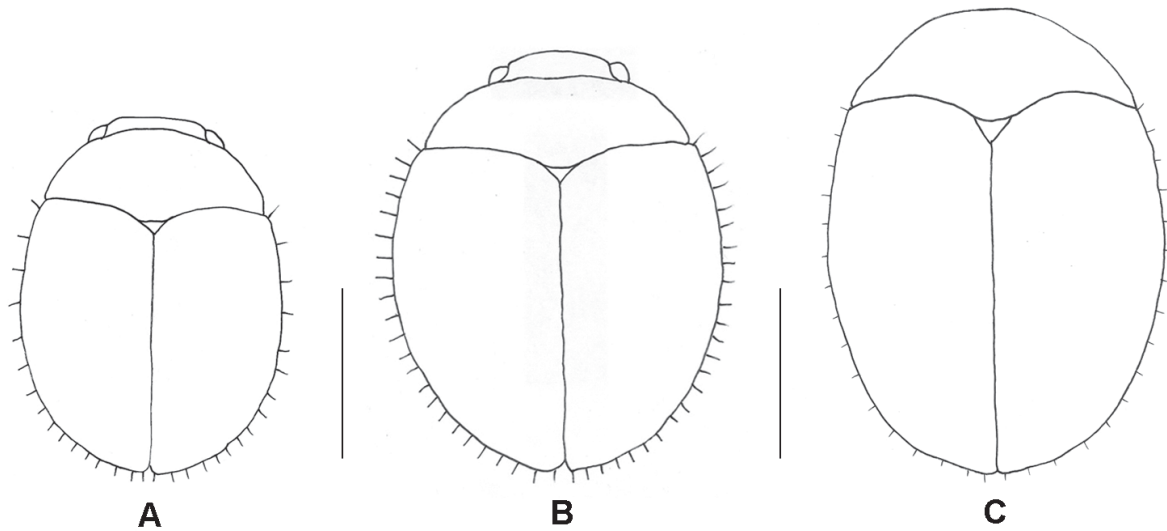


Figure 2. General body forms and relative sizes of *Micropsephodes* species. **A)** *M. lundgreni* Leschen and Carlton. **B)** *M. serraticornis* Champion. **C)** *M. bahamaensis* Shockley, new species. Scale bars = 0.50 mm.

- Pedicel subglobose; antennomere III short (length never greater than 2x width); lacinia bisetose apically; smaller species (<1.25 mm) ***M. lundgreni* Leschen and Carlton**
- 2(1). Maxillary palpomere IV elongate and cylindrical, widest apically; labial palpomere I small, subglobose; habitus subhemisphaerical (Fig. 2B, 3) ***M. serraticornis* Champion**
- Maxillary palpomere IV less elongate, widest near midlength (Fig. 6F); labial palpomere I large, elongate and subcylindrical (Fig. 6G); habitus elongate-oval (Fig. 2C, 5) ***M. bahamaensis* Shockley**

***Micropsephodes bahamaensis* Shockley, new species**

(Fig. 2C, 5-9)

Etymology. The specific epithet is based on the fact that this is the first species of *Micropsephodes* to be described from the Bahamas.

Diagnosis. Adults of *M. bahamaensis* may be distinguished from those of *M. lundgreni* and *M. serraticornis* by the combination of the following characters: larger size and elongate habitus; much shorter setae along the lateral margins of the elytra (Fig. 2); ovoid pedicel and elongate antennomere III (Fig. 6C); lacinia unisetose apically (Fig. 6F); galea with 10 setae apically, the two most laterad much narrower and less stout compared to the medial eight (Fig. 6F).

Description. Length 1.35-1.41 mm (mean = 1.38); width 1.00-1.02 mm (mean = 1.01); depth 0.70 mm (n = 3). Body (Fig. 2C, 5A, B) elongate oval, moderately convex; dorsum shining, dark brown-black, glabrous; venter, antennae, mouthparts, and legs reddish-brown, covered with vestiture of short, fine, pale-colored setae.

Head. Head (Fig. 6A, B) deeply retracted into prothorax, highly deflexed and hypognathous, completely obscured when viewed dorsally; frontoclypeal suture present; gular sutures relatively short; frons finely and sparsely punctate; clypeus transverse and rectangular; tentorium with anterior arms convergent, but not fused medially, corpotentorium lyriform. Eyes large, round, and finely-faceted. Labrum (Fig. 6D) transverse and ovoid, truncate and submembranous apically. Mandible (Fig. 6E) bifid apically with prominent subapical tooth; prostheca divided longitudinally with a basal tuft of setae just distad of



Figure 3-5. Holotypes of *Micropsephodes* species. **A)** Dorsal habitus. **B)** Lateral habitus. **C)** Labels. **3)** *M. serraticornis* Champion. **4)** *M. lundgreni* Leschen and Carlton. **5)** *M. bahamaensis* Shockley, **new species**. Scale bars = 0.50 mm.

the mola; mola relatively large and finely, transversely ridged. Maxilla (Fig. 6F) with small triangular shaped cardo, well-developed and large basistipes, and narrow, elongate dististipes; galea with 10 large apical spines, the two lateral most spines narrow, the remaining medial eight spines thickened; lacinia narrow, bearing a single prominent spine apically; maxillary palp 4-segmented, palpomere I small and narrow, palpomere II long and expanded apically, palpomere III subquadrate, palpomere IV as long as preceding 3 segments combined and expanded medially with greatest width at 2/3 its length and apex narrowly rounded. Labium (Fig. 6G) with transverse mentum and quadrate prementum; labial palp 3-segmented, palpi narrowly separated basally, palpomere I large, elongate and subcylindrical, palpomere II transverse, palpomere III large ovoid to subquadrate and truncate apically. Antenna (Fig. 6C) 8-segmented; scape prominent, long, widening apically; pedicel subglobose; antennomere III narrow and elongate, distinctly longer than pedicel; antennomeres IV and V very small bead-like; antennomeres VI-VIII greatly enlarged to form a large, loosely articulated club, antennomeres VI and VII internally serrate.

Thorax. Pronotum (Fig. 7A) strongly transverse (length 0.40 mm; width 0.86 mm), highly convex, widest at base and narrowing anteriorly; anterior angles weakly produced and rounded apically; posterior angles roundly obtuse; lateral margins narrow; lacking lateral sulci; basal margin strongly lobed medially, opposite scutellum. Mesonotum (Fig. 7B) with small, triangular mesoscutellum. Elytra (Fig. 7D, E)

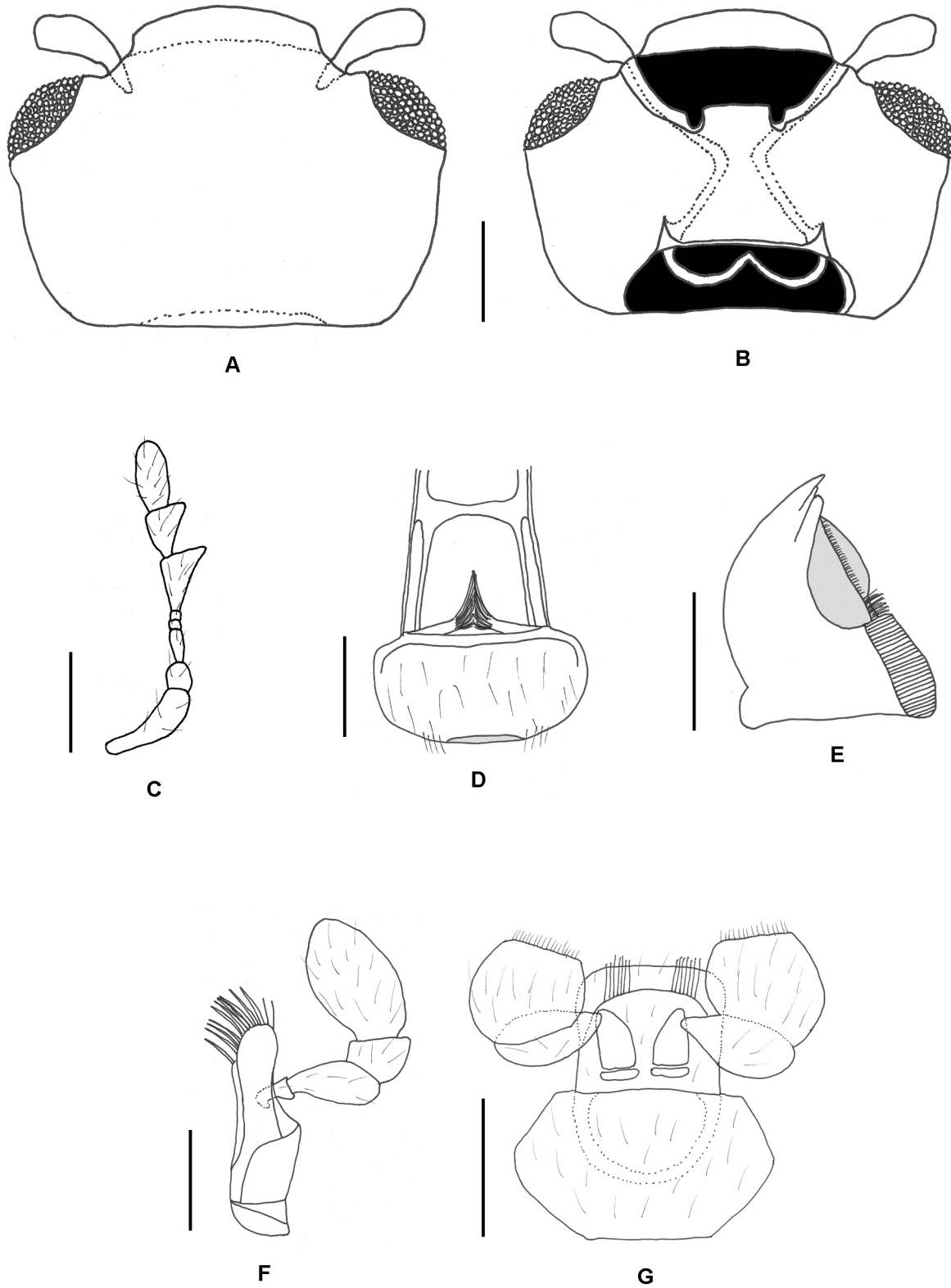


Figure 6. Head capsule and appendages of *Micropsephodes bahamaensis* Shockley, new species. **A)** Head capsule, dorsal. **B)** Head capsule, ventral. **C)** Antenna, left, dorsal. **D)** Labrum, dorsal. **E)** Mandible, left, dorsal. **F)** Maxilla, right, dorsal. **G)** Labium, ventral. Scale bars = 0.10 mm.

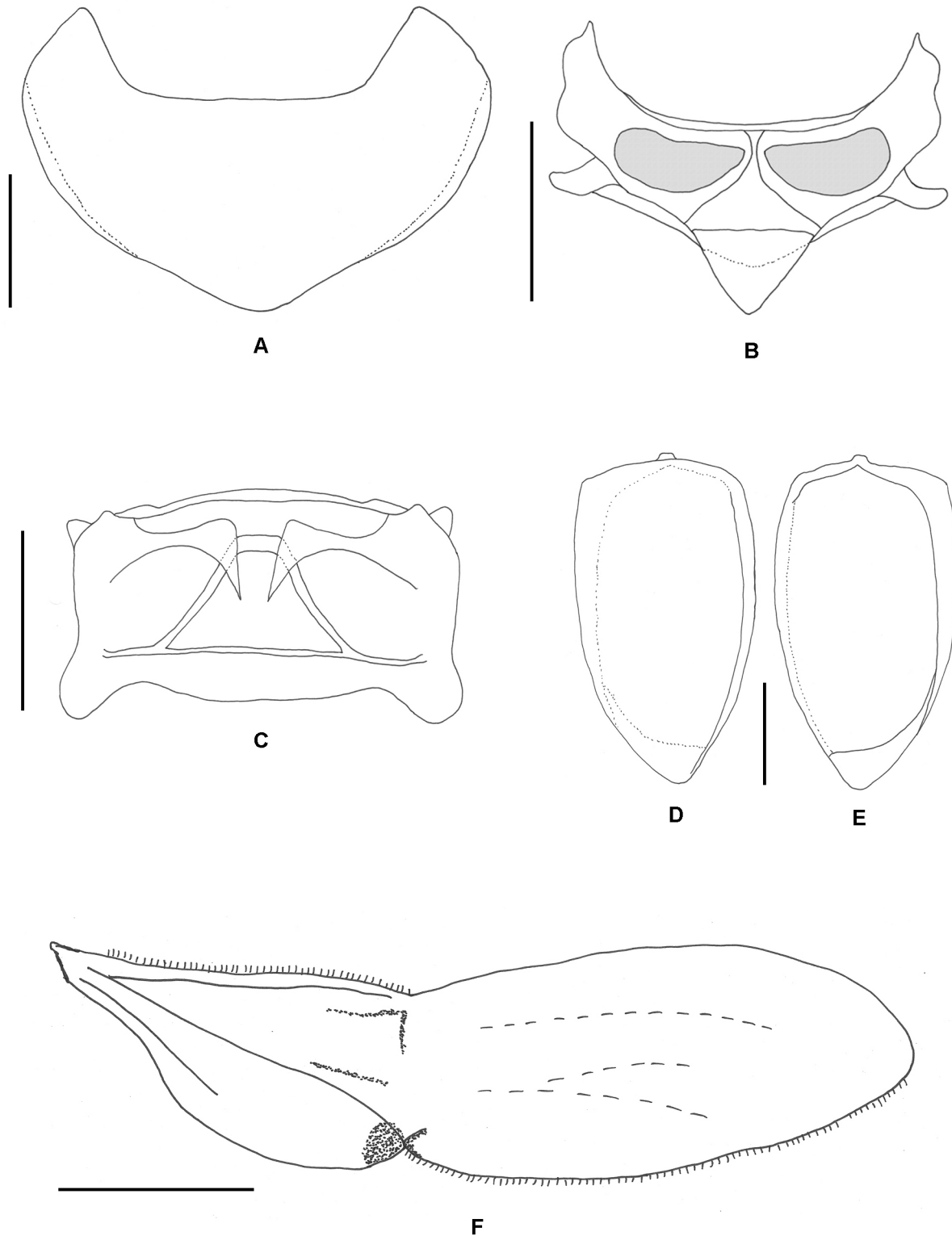


Figure 7. Thoracic nota and appendages of *Micropsephodes bahamaensis* Shockley, new species. **A)** Pronotum. **B)** Mesonotum. **C)** Metanotum. **D)** Elytron, left, dorsal. **E)** Elytron, left, ventral. **F)** Metathoracic wing, right. Scale bars = 0.25 mm.

elongate oval, convex, finely and sparsely punctate, apex slightly and narrowly reflexed; epipleuron narrowing at 2/3 length, broad basally and apically; disc and lateral margin glabrous. Metanotum (Fig. 7C) transverse with prominent metascutellar ridge. Metathoracic wing (Fig. 7F) with a single cubitoanal vein posteriorly and a long sclerotized media posterior; medial and subcubital flecks small, conspicuous and undivided; anal lobe lacking. Prosternum (Fig. 8A) with short, narrow intercoxal process, acute apically with two apical setae, process extending to posterior margin of the procoxal cavity but not beyond. Mesosternum (Fig. 8B) flat, intercoxal process transverse, weakly narrowing towards apex, and truncate (nearly concave) apically and extending to posterior margin of mesocoxal cavity but not beyond it. Metasternum (Fig. 8B) highly transverse; intercoxal process broad straight, extending to middle of metacoxal cavity where it broadly meets the rounded intercoxal process of abdominal ventrite I; metendosternite (Fig. 8C) with widely separated anterior arms, short anterolaterally-directed tendons and long, posterolaterally-directed struts.

Legs. Procoxae (Fig. 9A) triangularly transverse, narrowly separated by prosternal process; mesocoxae (Fig. 9B) globose to ovoid, widely separated by mesosternal process; metacoxae (Fig. 9C) highly transverse, narrowing laterally, widely separated by metasternal process and intercoxal process of abdomen. Pro-, meso-, and metathoracic legs similar in structure for femora, tibiae and tarsi; femora short, stout; tibiae long, narrow slightly expanded apically. Tarsi (Fig. 9D) 3-3-3 with long, lobed tarsomere I bearing spines ventrally and apically; tarsomere II relatively short with a narrow ventral lobe; tarsomere III long and narrow; pretarsus with claws sharp and ventrally bearing a flat, rectangular expansion basally, the apex of which is not acute or produced into a tooth.

Abdomen. Abdomen (Fig. 8D) with six visible, transverse ventrites, widest near the midpoint of ventrite I and gradually narrowing apically, ventrite VI approximately half as wide as ventrite I. Ventrite I with postcoxal femoral lines recurved and nearly complete, shallow posteriorly reaching less than half length of ventrite I, merging anteromedially with the lateral margins of the heavily sclerotized intercoxal process; ventrites II-V similar in length and narrowing apically; ventrite VI with posterior margin notched medially in female.

Note. The female genitalia were damaged during clearing and dissection, but generally appeared similar to that described and illustrated for *Micropsephodes* by Tomaszewska (2000). Given the small size of the type series, no additional specimens were dissected.

Material Examined. Holotype and paratype (both female) bear the following collection data: BAHAMAS: Andros; Forfar Field Station; mv + bl, 4 June 2001; R. Turnbow. Holotype deposited at FSCA; Paratype

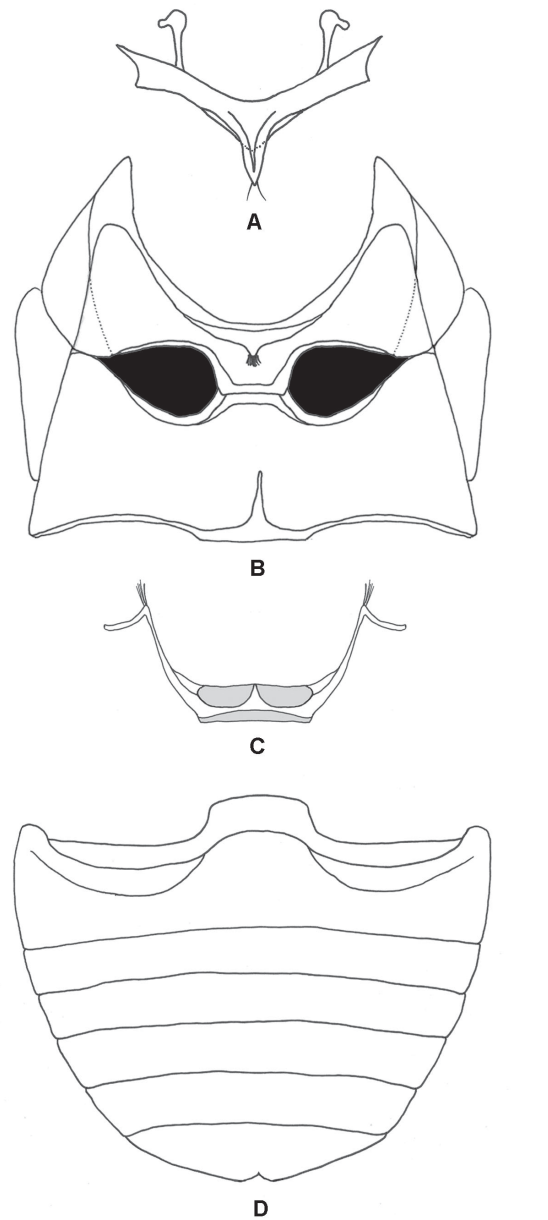


Figure 8. Thoracic and abdominal venter of *Micropsephodes bahamaensis* Shockley, new species. **A)** Prosternum, ventral. **B)** Mesosternum and Metasternum, ventral. **C)** Metendosternite, ventral. **D)** Abdomen, ventral. Scale bar = 0.50 mm.

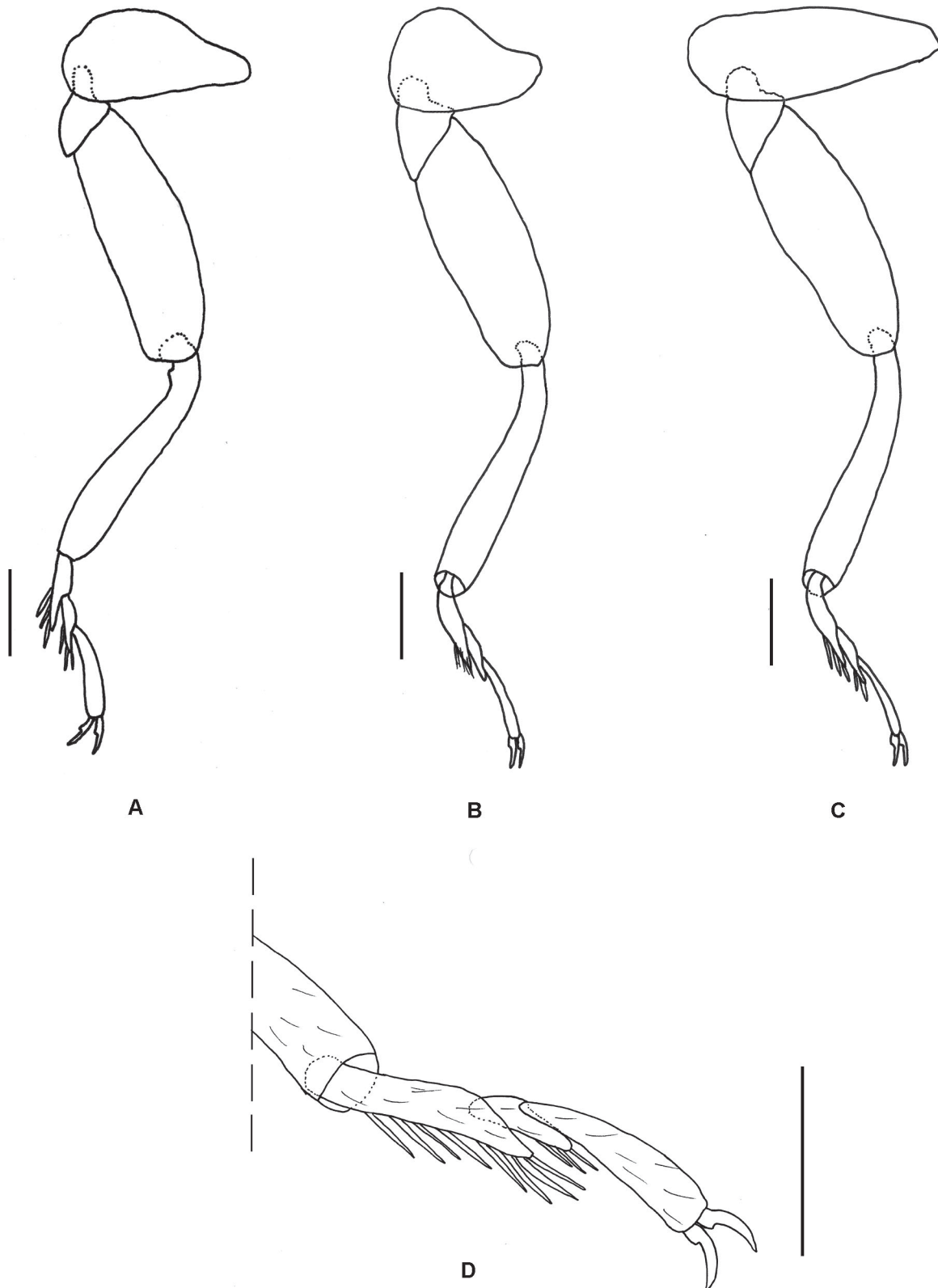


Figure 9. Legs of *Micropsephodes bahamaensis* Shockley, new species (vestiture removed). **A)** Prothoracic leg, left. **B)** Mesothoracic leg, left. **C)** Metathoracic leg, left. **D)** Close-up of prothoracic tarsus (vestiture intact). Scale bar = 0.1 mm.

deposited in RHTC. An additional paratype (disarticulated) is deposited in FWSC and bears the following collection data: BAHAMAS: Andros; Forfar Field Station; 2 June 2001; R. Turnbow.

Discussion

Leschen and Carlton (2000) noted that males of *M. lundgreni* have secondary sexual characters on the head that are lacking in the females of that species, namely the medially concave vertex and the presence of a frontal tumulus (Fig. 4A). They also described sexual differences in the form of the antennal club with males having much more pronounced serration on antennomeres VI and VII. The holotype of *M. serraticornis* lacks all three characters, suggesting either that the holotype is female or that males of that species lack these characters. Tomaszewska (2000) makes no reference to these features in the *Micropsephodes* specimens from the Dominican Republic examined in her study, despite having examined both sexes since male and female genitalia are both illustrated, suggesting these characters may be specific to *M. lundgreni*. At present, the male of *M. bahamaensis* is still unknown so it is impossible to say whether the presence of secondary sexual characters in males is truly unique to *M. lundgreni* or, conversely, if their absence is a unique feature of *M. serraticornis*.

As noted by Leschen and Carlton (2000), *Micropsephodes* is probably more widespread and diverse than currently known and is in need of revision. Their cryptic habits and scattered/isolated distributions make them rarely collected, generally overlooked, and often difficult to obtain in large numbers. Additional species from other locations likely already exist in collections but remain unidentified beyond the subfamilial or even family-level. Likewise, the natural history and biology of this genus is still very poorly known, and the immature stages remain unknown. *Micropsephodes lundgreni* was reported by Leschen and Carlton (2000) as occurring under bark, and it is likely that this habit is shared by most if not all species. The adults and larvae of *Micropsephodes*, like most Anamorphinae, are likely to be primarily sporophagous and probably feed on spores of subcortical fungi. All appear to have well-developed wings suggesting that they have the ability to fly, and they are occasionally collected in flight intercept traps. Ulyshen and Hanula (2007) reported collecting *M. lundgreni* in traps suspended in the canopy, suggesting that there may be some vertical stratification in this species. Shockley et al. (2008) also reported collecting *M. lundgreni* in Lindgren funnel traps baited with bark beetle pheromones. At present, the nature and significance of this interspecific chemical attraction, if any, remains unclear. Additional specimens and more detailed observations of natural history are needed.

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