

The Scydmaenidae of Costa Rica

I. *Leptochromus* MOTSCHULSKY, *Eutheia* STEPHENS, and *Paracephennium* gen.n. (Coleoptera: Scydmaenidae)

S.T. O'KEEFE

Abstract

The genera *Leptochromus* MOTSCHULSKY and *Eutheia* STEPHENS (Coleoptera: Scydmaenidae) are revised for Costa Rica and *Paracephennium* gen.n. is described. Two species of *Leptochromus*, *L. fulvescens* MOTSCHULSKY and *L. agilis* (SHARP), are recorded for the first time from Costa Rica. *Eutheia linda* sp.n. is described and is the first species of *Eutheia* known south of Mexico. *Paracephennium* is represented by four new species: *P. monteverde* sp.n., *P. laselva* sp.n., *P. penasblancas* sp.n., and *P. newtoni* sp.n. Habitus illustrations are provided for each genus and illustrations of male genitalia and antennae and distribution maps are provided for each species.

Key words: Coleoptera, Scydmaenidae, *Leptochromus*, *Eutheia*, *Paracephennium*, new species, new genus, Costa Rica.

Introduction

Until 1967 the scydmaenid fauna of Latin America (Mexico, Antilles, Central America, and South America) has received little attention. SCHAUFUSS (1867) provided the first major treatment of Latin American Scydmaenidae. He described 68 new species from Mexico, Cuba, Venezuela, Colombia, Brazil, and Chile. REITTER (1882, 1883a, 1883b, REITTER & CROISSANDEAU 1890) published a few short papers on scydmaenids from the Antilles and Brazil. SHARP (1887) provided the only treatment of Central American Scydmaenidae. He described 51 new species collected by Champion from southern Mexico, Guatemala, and Panama.

In the past 30 years Herbert Franz has contributed significantly to the knowledge of Latin American Scydmaenidae. In 24 papers he has described 13 new genera, 15 new subgenera, and over 700 new species. He has worked on the scydmaenid fauna of Mexico (FRANZ 1977, 1994), the Caribbean (FRANZ 1984, 1991), and nearly all of South America, particularly Surinam, Venezuela, and Brazil (numerous papers, see O'KEEFE 1998 for full discussion).

Despite the recent activity by Franz, very little is known of the Costa Rican scydmaenid fauna. To date only seven species are known from Costa Rica; four of these are *Euconnus* THOMSON described by FRANZ (1994), two are *Scydmaenus* LATREILLE, and one is a *Homoeconnus* SHARP. Only these three genera have been reported from Costa Rica (CSIKI 1919, BLACKWELDER 1944). Three other genera (*Leptochromus* MOTSCHULSKY, *Eutheia* STEPHENS, and *Neuraphanax* REITTER) have been collected from, but have not been reported from, Costa Rica and three others (*Alloraphes* FRANZ, *Archiconnus* FRANZ, and *Microscydmus* SAULCY & CROISSANDEAU) occur from Mexico to Brazil and possibly occur in Costa Rica. Nearly 200 species from Costa Rica, mostly undescribed, are represented by specimens in museums as the result of recent collecting efforts.

This first part of the Scydmaenidae of Costa Rica covers taxa in the tribes Clidicini, Eutheini,

and Cephenniini. Later parts will cover the remaining taxa in the Cyrtoscydmini and Scydmaenini. Because several taxa of generic or subgeneric rank are undescribed, a key to genera will be provided at a later date.

Sources of specimens examined are indicated by codons in the Material Examined sections and explained in the Acknowledgements section. Drawings of genitalia and antennae were made using a Nikon Aphafoot-2 YS2 compound microscope with attached drawing tube at 400X. Observations and measurements were made using an Olympus SZX12 at 108X with a calibrated ocular micrometer.

Leptochromus MOTSCHULSKY

TYPE SPECIES: *Leptochromus fulvescens* MOTSCHULSKY 1855: 12.

DIAGNOSIS (Fig. 1): Members of *Leptochromus* are easily separated from all other Neotropical Scydmaenidae by the following combination of characters: elongated first antennomere, presence of a bisetose cuticular process on maxillary palpomere II, three elongate spines on each profemur, an elongate spine on each procoxa, and three long spines on each postgena.

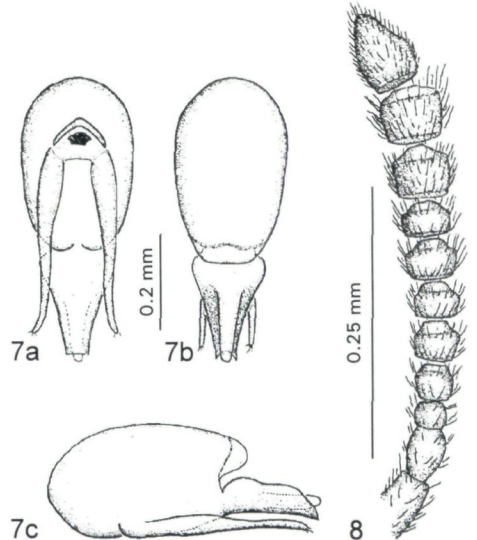
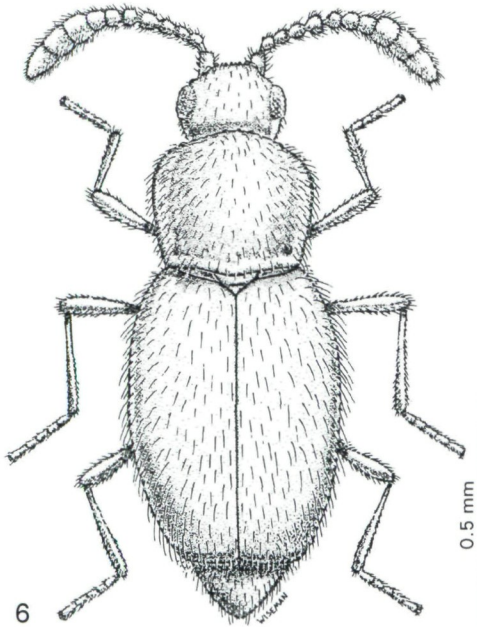
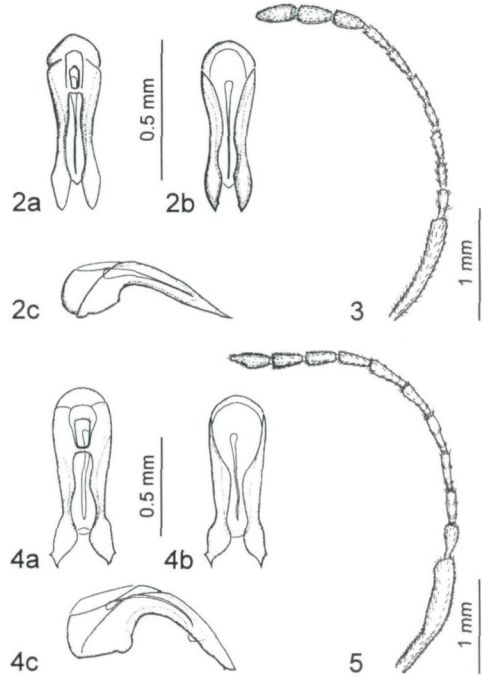
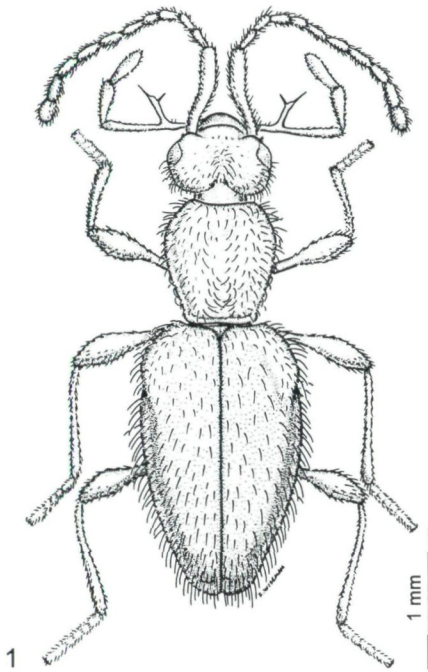
DESCRIPTION: Body elongate, with distinct constrictions between head and pronotum, and between pronotum and elytra; head nearly as wide as pronotum; pronotum narrower than elytra; larger size (3.0 - 4.5 mm in length).

Head: Head distinctly broader than long, vertex nearly twice as broad as long, with medial subtriangular depression at posterior margin; frontoclypeal region flat, broad; occiput distinctly narrower than rest of head, sharply constricted from vertex, half as wide as head width at eyes, nearly a third of length of entire head from frons to posterior of occiput; eyes relatively large, circular to subcircular in outline, strongly convex, finely faceted, positioned just anterior to middle of head, slightly below and posterior to antennal insertions; antennal insertions widely separated, exposed; antennomere I elongate, 5 - 8 times as long as wide at widest, apex emarginate; antennomere II 2.0 - 2.5 times as long as wide, distinctly and abruptly widened at distal end; antennomeres III-VIII distinctly longer than wide, subcylindrical to slightly and gradually expanded at distal end, sparsely covered with setae usually arranged in 3 or 4 circlets, antennomeres IX-XI each slightly wider than any of the preceding antennomeres, often densely covered with both long and short setae not distinctly arranged in circlets.

Prothorax: Pronotum ovoid, nearly as wide as long, lateral margins rounded dorsoventrally as well as anteroposteriorly, widest at anterior third, anterior and posterior angles rounded, strongly convex, posterior angles sharp, posterior sixth sharply demarcated by transverse groove with 5 faint pits in a transverse row; basisternum + preepisternum relatively long, one-third prothoracic length; tergopleural suture lacking; procoxal cavities relatively small, widely separated, separated by twice their length, evenly rounded.

Metasternum: Basisternum large, broad, anterior margin depressed for mesocoxae, raised medially and fused to mesosternal carina, lateral margins straight, bordered by episterni, posterior margin biemarginate; coxal cavities widely separated; episterni elongate, triangular, widest at posterior end.

Legs: Procoxae large, conical, contiguous; mesocoxae somewhat smaller than procoxae, elliptical, separated by mesosternal carina, with lateral excavation; metacoxae small, conical, widely separated; trochanters small, triangular; metatrochanter fully separates metacoxa from metafemora; female protrochanters slightly (*Leptochromus fulvescens*) to greatly (*L. agilis*) extended; femora relatively long, distinctly and abruptly expanded distally; profemora with 2 or 3 long basal setae; tibiae elongate, slender; protibia recurved, dense setal patch along distal third; mesotibia and metatibia straight; mesotibia with dense setal patch along distal quarter; tarsi long, slender; tarsomeres I-IV decreasing in length, tarsomere V elongate.



Figs. 1 - 3: *Leptochromus fulvescens*; Fig. 1: dorsal habitus. Fig. 2: aedeagus: a) dorsal view, b) ventral view, c) right lateral view; Fig. 3: right antenna, dorsal view; Figs. 4 - 5: *Leptochromus agilis*; Fig. 4: aedeagus: a) dorsal view, b) ventral view, c) right lateral view; Fig. 5: right antenna, dorsal view.

Figs. 6 - 8: *Eutheia linda*; Fig. 6: dorsal habitus. Fig. 7: aedeagus: a) dorsal view, b) ventral view, c) right lateral view; Fig. 8: right antenna, dorsal view.

Elytra: Elytral silhouette entire, ovoid, 1.5 times as long as wide, widest at middle, base distinctly wider than posterior of pronotum, lateral margins expanded, sharply narrowed posteriorly; moderately convex, elevated at posterior third; humeri very distinct; elytral punctation in 3 distinct rows on each side of disc; basal fovea lacking; scutellum visible; hindwings fully developed.

Abdominal sternites: Sutures slightly arcuate; sternite I 1.5 times as long as sternite II; sternites II-V subequal in length; sternite VI subtriangular, nearly as long as wide, unmodified in females, variously modified in males. *Leptochromus agilis* and *L. fulvescens* both have a broad V- shaped emargination at middle of posterior margin.

DISCUSSION. The Neotropical genus *Leptochromus* was first proposed by MOTSCHULSKY (1855) for a unique scydmaenid collected from Panama. SHARP (1887) described a new species of Scydmaenidae from Panama and another from Mexico and placed them both in the new genus *Hecotus*. CSIKI (1919) placed *Hecotus* as a junior synonym of *Leptochromus* and placed *L. agilis* (SHARP) as a junior synonym of *L. fulvescens* MOTSCHULSKY. Here I remove *Leptochromus agilis* from synonymy with *L. fulvescens*. These are distinctly two different species based on the presence/absence of a postgenal process and form of the apices of the parameres. Further elaboration of this change will be covered in my revision of *Leptochromus*. To date, five species of *Leptochromus* are known (O'Keefe, in preparation) that range from Veracruz, Mexico to Manaus, Brazil.

Key to the species of *Leptochromus* of Costa Rica

- 1 Antennae as long as body; antennomeres III-IX 4 times as long as wide; elongate cuticular projection beneath eye; length 3.5 - 4.5 mm *L. agilis* (SHARP)
- Antennae two-thirds length of body; antennomeres III-IX 3 times as long as wide; without elongate cuticular projection beneath eye; length 3.1 mm or less *L. fulvescens* MOTSCHULSKY

Leptochromus fulvescens MOTSCHULSKY (Figs. 1 - 3, 18)

Leptochromus fulvescens MOTSCHULSKY 1855:12, pl. 1, fig. 5; 1870:255; CSIKI 1919:87; BLACKWELDER 1944:88; FRANZ 1995:78, fig. 33.

TYPE LOCALITY: PANAMA, Opispo.

TYPE MATERIAL: **Holotype**, appears to be male (not dissected due to fragile condition of holotype), in ZMUM. Label information includes: small green label with what appears to be a male symbol (♂); small light green label with "Opispo" (handwritten); large, dark green label with "Leptochr - mus fulves - cens Motsch Panama" (handwritten); and a red label without writing. The specimen is glued ventral side down and missing left antennomeres II - XI.

MATERIAL EXAMINED (34):

COSTA RICA: Cartago: 2 ♀♀, Turrialba, La Sulza, 1923, Pablo Schild, (CMNC); 1 ♂, Turrialba, 610 m, 31.V.1973, G. Ekis, (USNM); 1 ♀, Turrialba, 5.VI.1951, O.L. Cartwright, (USNM); 1 ♂, Turrialba, 650 m, 26.II.1980, H. & A. Howden, moss, (CNCI); 1 ♂, CATIE [Centro Agronomico Tropical de Investigacion y Ensenaza], 3 km southeast Turrialba, 600 m, 29.V.1985, J.T. Doyen, (CISC). Heredia: 1 ♂, Est[acion] Biol[ogica] La Selva, 11-13.I.1995, E.G. Riley, (TAMU). Limon: 2 ♂♂ 5 ♀♀, near Limon, F. Nevermann, 1.IV.1929, 5.V.1923, 2.VI.1925, 21.IV.1935, 1.XII.1935, (USNM); 10 ♂♂ 8 ♀♀, La Lola [on Hwy 32 midway between Matina and Siquirres, 10°5'N 83°23'W], 21.V.1957 to 8.VIII.1957, M.J. Stelzer, (UWEM). Puntarenas: 1 ♂, Monteverde, 1,400 m, 28.V.1977, H. & A. Howden, lichen and moss, (CNCI). Province unknown; 1 ♀, 8.III.1973, F. Mathews, (USNM).

DIAGNOSIS: Members of *Leptochromus fulvescens* lack a postgenal process and are smaller in size compared to *L. agilis*.

DESCRIPTION: 3.0 - 3.1 mm long; brown; vestiture long, suberect, golden, fairly dense on vertex, pronotum, and elytra; head 0.63 - 0.75 mm wide at eyes; postgenae rounded, with 3 subocular bristles: antennae (Fig. 3) two-thirds body length; antennomere I 5 - 6 times as long as wide, 0.5 - 0.6 mm long, as long as II-IV combined, sides slightly and gradually expanded towards distal end; antennomeres II-VIII elongate, subcylindrical, setae arranged in 3 or 4 circlets on each antennomere; antennomeres II-III subequal in length, 2.5 times as long as wide, each shorter than antennomere IV; antennomeres IV-VIII subequal in length, 4 times as long as wide; antennomeres IX-XI subequal in length, elongate, 3 times as long as wide, setae short, dense, not arranged in circlets; antennomeres IX-X subquadrate, sides slightly expanded, each wider than any of the preceding antennomeres, antennomere XI elliptical, widest at basal third, slightly longer than X; pronotum widest anteriorly, anterior angles gradually curved, lateral margins slightly concavely sinuate, 0.75 - 0.80 mm long, 0.65 - 0.70 mm wide at widest part, 0.50 - 0.55 wide at base; profemur with 3 basal spines; elytra 1.68 - 1.83 mm long, 1.00 - 1.18 mm wide; apical margin of last sternite of males with broad V-shaped notch and medial anterior pit.

Male genitalia (Fig. 2): Moderately arched in lateral view; dorsal and ventral portions of median lobe lightly sclerotized, base moderately sclerotized, ventral apex pointed; parameres slender, apices enlarged with 2 small points, 1 at apex and the other subapical, on inner margin; basal opening quadrate, nearly twice as long as wide.

DISTRIBUTION (Fig. 18): *Leptochromus fulvescens* occurs in the central and eastern parts of Costa Rica, principally in Puntarenas, Cartago, Heredia, and Limon provinces.

HABITAT & COLLECTION METHODS: The only biological information available was on a few specimens collected in moss and lichens by Howden. Collection elevations ranged from 600 m to over 2,000 m.

Leptochromus agilis (SHARP)

(Figs. 4, 5, 18)

Hecotus agilis SHARP 1887:71, plate II fig. 25.

Leptochromus agilis (SHARP), revised status

TYPE LOCALITY: PANAMA, Chirique, Bugaba [22 km NW David, 1,000 ft, 8°28'N 82°38'W (SELANDER & VAURIE 1962)].

TYPE MATERIAL: **Lectotype, here designated**, appears to be female (not dissected due to fragile condition of specimen), in BMNH. Label information includes: "*Hecotus agilis* Type D.S." and "Bugaba Panama Champion" handwritten on card with specimen. "Syntype" typed on circular label with blue border. "Type H.T." typed on circular label with red border. "Bugaba, Panama, Champion" typed.

MATERIAL EXAMINED (5):

COSTA RICA: Alajuela: 1 ♂, Peñas Blancas, 850 m, 17.V.1989, J. Ashe, R. Brooks, R. Leschen, (SEMC). Cartago: 1 ♂ 1 ♀, Santa Cruz de Turrialba, 650 m, 15.I.1933, F. Nevermann, (USNM). Heredia: 1 ♂, Est[acion] El Ceibo, P[arque].N[acional]. Braulio Carrillo, 400 - 600 m, II.1990, C. Chaves, (INBC). Limon: 1 ♀, Hamburgfarm Reventazon ebene Limon [on Rio Reventazon, 15 km N Siquirres], 10.VIII.1924, F. Nevermann, in fallen leaves, (USNM).

DIAGNOSIS: Members of *Leptochromus agilis* are over 3.5 mm in length and have an elongated cuticular process on the postgena.

DESCRIPTION: 3.5 - 4.2 mm long; body uniformly light brown; vestiture long, suberect, golden, fairly dense over vertex, pronotum, and elytra; head 0.78 - 0.93 mm wide at eyes; 3 subocular spines on elongate cuticular projection; antennae (Fig. 5) nearly as long as body; antennomere I 7 - 8 times as long as wide, 0.83 - 0.90 mm long, as long as II-IV; antennomeres

II-X elongate, subcylindrical; antennomere II shorter than III, 2.5 times as long as wide; antennomeres III-X subequal in length or III-VI subequal and each slightly shorter than VII, 4 times as long as wide; antennomere XI elliptical, widest near middle, 3 times as long as wide; pronotum widest anteriorly, anterior angles gradually curved (similar to Fig. 1), lateral margins concavely sinuate, 0.95 - 1.08 mm long, 0.88 - 0.93 mm wide at widest, 0.65 - 0.68 mm wide at base; profemur with 3 basal spines; elytra 2.03 - 2.10 mm long, 1.2 - 1.6 mm wide; apical margin of last sternite of males with broad V-shaped notch and median longitudinal groove.

Male genitalia (Fig. 4): Strongly arched in lateral view; dorsal and ventral portions of median lobe lightly sclerotized, base moderately sclerotized, ventral apex rounded; parameres wide, apices enlarged with 1 large apical point and 1 smaller subapical outer point; basal opening quadrate, nearly twice as long as wide.

DISTRIBUTION (Fig. 18): *Leptochromus agilis* occur in the central and eastern parts of the country, principally in Alajuela, Cartago, Heredia, and Limon provinces.

HABITAT & COLLECTION METHODS: The only habitat information available is that provided by Nevermann who noted that specimens were collected in dry leaves. Specimens were collected at elevations from 400 m to 1,500 m.

COMMENTS: A total of five specimens was found in the BMNH under the name *Leptochromus agilis*. Except for the specimen designated as the lectotype, all others in this series, and the specimen examined by FRANZ (1995:78), belong to *L. fulvescens*. SHARP (1887) neglected to designate a type specimen for *L. agilis*. The lectotype specimen was selected 1) because it was labeled as the type by G.J. Arrow (unpublished) (Jane Beard, BMNH, personal communication) and was assumed to be the first specimen in the series, and 2) to preserve Sharps name instead of proposing a new one for this species.

Eutheia STEPHENS

TYPE SPECIES: *Eutheia scydmaenoides* STEPHENS, 1830: 115.

DIAGNOSIS (Fig. 6): Members of *Eutheia* are easily separated from all other Neotropical Scydmaenidae by the following combination of characters: neck nearly as wide as head; tempora strongly reduced to absent; pronotum subrectangular, distinctly wider than long, only slightly convex, lateral margins distinctly carinate; elytra only slightly convex, truncate, exposing subhorizontal pygidium; mesosternum flat, without carina; metacoxae distinctly, but moderately separated.

DESCRIPTION: Body elongate, subrectangular; with distinct constriction between head and pronotum, without distinct constriction between pronotum and elytra; head distinctly narrower than pronotum, pronotum clearly, but not distinctly, narrower than elytra; small (1.16 - 1.38 mm length).

Head: Head (excluding eyes) slightly wider than long; vertex about as wide as long, slightly convex, vestiture thin, sparse; frons flat, sharply angled from vertex, anteriorly narrowed to clypeus; mouthparts only slightly projected from head; tempora very short to absent (i.e. posterior margin of eyes adjacent to nuchal constriction); eyes large, oblong, strongly convex, finely faceted, medial in position; antennal bases moderately separated.

Prothorax: Pronotum subrectangular, 1.21 - 1.30 times as wide as long, slightly wider than head; anterior margin transverse, straight; lateral margins slightly expanded laterally, slightly wider anteriorly, distinctly carinate; posterior margin slightly expanded posteriorly near middle; dorsum slightly convex at center, flatter at lateral margins; with 5 depressions along posterior margin; prosternum anterior to coxae equal to coxal width, non-carinate between coxae, lateral margins broadened anteriorly and posteriorly.

Metasternum: Basisternum large, broad, anterior margin depressed for mesocoxae, raised medially and fused to mesosternum, posterior margin slightly biemarginate; coxal cavities widely separated, without setal tufts; vestiture long, relatively sparse, decumbent.

Legs: Procoxae moderate in size, conical, contiguous; mesocoxae somewhat larger than procoxae, elliptical, distinctly separated by flat mesosternum; metacoxae small, transverse, widely separated; trochanters small, subtriangular; metafemora contiguous with coxae, relatively short, weakly and gradually expanded distally; tibiae elongate, slender, straight; pro and mesotibiae without dense setal patches; tarsi elongate, slender; protarsomeres I-IV subequal in length, V distinctly longer; meso and metatarsomere I elongate, II-IV shorter, decreasing in size, V elongate.

Elytra: Elytral silhouette subrectangular, 1.25 - 1.31 times as long as wide, elytra truncate, relatively flat; lateral margins slightly, evenly expanded laterally; pygidium exposed; 2 fovea at base of each elytron; scutellum visible; humeri small, but evident; hindwings fully developed.

Abdominal sternites: Sutures straight; sternite I 1.5 times as long as sternite II; sternites II-IV subequal in length; sternite V twice length of IV; sternite VI subtriangular, slightly longer than wide, twice length of V, nearly as long as II-IV combined.

DISCUSSION. The genus *Eutheia* was proposed by STEPHENS (1830) for a rather aberrant group of Scydmaenidae. To date, 33 species of *Eutheia* are known from the Palearctic, Nearctic, Nepal, Thailand, and Taiwan (NEWTON & FRANZ 1998). Three species were described from the United States (MARSH 1957) and another from Chiapas, Mexico (FRANZ 1977). To date, no *Eutheia* (or other Eutheini) has been described from Central or South America. Seven specimens representing a single new species are now known from Costa Rica. This represents the southernmost distribution of the Eutheini in the New World.

Eutheia linda sp.n.

(Figs. 6 - 8, 19)

TYPE LOCALITY: COSTA RICA, Puntarenas Province, Monteverde.

TYPE MATERIAL: **Holotype** ♂: "COSTA RICA: Puntarenas, Monte Verde, 1400 m 21 May 1989, J. Ashe, R. Brooks, R. Leschen, ex., flight intercept"; "Snow Entomol Mus. Costa Rica Exped #311"; "Holotype (typed) *Eutheia linda* O'Keefe (handwritten)" on red label (type deposited in Snow Entomological Museum Collection, Lawrence, KS [SEMC]). **Paratypes** (5): Costa Rica: Puntarenas: Monteverde: 1 ♂, 1,400 m, 21-24.VIII.1987, H. & A. Howden, flight intercept trap, (CMNC); 1 ♀, Monteverde Reserve, trail near lab, 1.VI.1993, C. Michalski, flight intercept trap, (SEMC); 1 ♀, Monteverde Reserve, Eladio Refugio, 28.V.1993, S. Lingafelter, ex. rotten log, SEMC; 2 ♀♀, 1,760 m, 10.V.1989, J. Ashe, R. Leschen, R. Brooks, flight intercept trap, (SEMC). Paratypes deposited in SEMC, CMNC, and S.T. O'Keefe collection.

DIAGNOSIS: *Eutheia linda* is the only species of *Eutheia* known from Central America and can be separated from other Scydmaenidae by characters given in the generic diagnosis. Species confirmation can be made by examination of the aedeagus.

DESCRIPTION: 1.16 - 1.38 mm long; uniformly brown; vestiture moderately dense, decumbent, moderately short; head 0.24 - 0.27 mm wide, 0.15 - 0.19 mm long; antennae (Figs. 6, 8), short, barely length of head and pronotum combined; antennomere I subcylindrical, twice as long as wide; antennomere II submoniliform, nearly as wide as I, half length of I; antennomere III moniliform, two-thirds smaller than II; antennomeres IV-VIII subpentagonal, gradually increased in size; antennomere IV as wide as long; antennomeres V-VI slightly wider than long; antennomeres VII-VIII distinctly wider than long; antennomeres IX-XI form club that is only slightly differentiated from base; antennomere IX distinctly longer than VIII, slightly wider than VIII; antennomere X only slightly longer and wider than IX; antennomere XI subtriangular, base broad, apex rounded, as wide as X, slightly longer than X; all antennomeres

of uniform color, III-VIII mostly with series of long setae interspersed by moderate-length setae, IX-XI mostly with short and moderate-length setae and a few long setae; pronotum 0.35 - 0.37 mm wide at widest point, 0.31 - 0.35 mm wide at base, 0.28 - 0.31 mm long, pronotal width-length ratio = 1.21 - 1.30; posterior margin of pronotum with 5 foveae along transverse basal impression; posterolateral corners each with single distinct fovea; vestiture thin, decumbent, relatively dense; elytra 0.46 - 0.56 mm wide, 0.60 - 0.69 mm long, elytral length-width ratio = 1.25 - 1.31.

Male genitalia (Fig. 7): Median lobe base bulbous, ovoid, twice as long as wide, rounded; distal portion of median lobe apex narrowed laterally to apex, forming a trough in which the endophallus rests; parameres present, elongate, slender, nearly as long as median lobe, with 3 short setae; basal opening small, bordered basally by sclerotized ridge.

DISTRIBUTION (Fig. 19): Known only from type locality.

HABITAT & COLLECTION METHODS: Most individuals were collected from flight intercept traps at moderate (1,400 - 1,760 m) elevation. One specimen was collected from a rotten log.

ETYMOLOGY: The name was derived from lindo, Spanish for pretty.

Paracephennium gen.n.

TYPE SPECIES: *Paracephennium monteverde* sp.n.

DIAGNOSIS (Fig. 9): Members of *Paracephennium* are easily separated from all other Neotropical Scydmaenidae by the following combination of characters: body ovoid from dorsal perspective, without constriction between head and pronotum or between pronotum and elytra; pronotum rectangular, distinctly wider than long; antennal club distinct, formed by distal 3 antennomeres; antennomere XI as long as VIII-X combined; procoxae divided by carinate prosternal process; abdominal sternite I with row of elongate setae; sternites III-IV barely visible at midline, more visible at lateral margins.

DESCRIPTION: Body ovoid, without distinct divisions between head and pronotum and between pronotum and elytra; head distinctly narrower than pronotum, pronotum only slightly narrower than elytra; minute (0.96 - 1.20 mm long).

Head: Head nearly as broad as long; vertex about as broad as long; frontoclypeal region flat, broad; occiput wider than rest of head, not constricted from vertex, a third the length of head from frons to posterior of occiput; eyes relatively large, circular in outline, strongly convex, coarsely faceted, positioned just anterior to middle of head, slightly below and posterior to antennal insertions; antennal insertions widely separated, exposed; antennae relatively short, barely able to reach posterior margin of pronotum; antennal club distinct, composed of antennomeres IX-XI; antennomeres I-II subcylindrical; antennomeres III-VI smaller, subequal in size and shape; antennomeres VII-VIII variable with VIII usually narrower than VII; antennomere XI elongate, as long as or longer than VIII - X.

Prothorax: Pronotum subrectangular, 1.27 - 1.50 times as wide as long; anterior margin expanded, rounded anteriorly; lateral margins sinuate; anterior angles distinctly rounded; posterior angles acuminate; lateral margins distinctly carinate only at posterior half, moderately carinate at anterior half; dorsal margin without transverse groove or fovea, posterolateral corners with depressions but without fovea; posterior margin slightly expanded posteriorly at middle; slightly convex at middle, gradually flatter to lateral margins; prosternum short, not visible anterior to coxae, strongly carinate between coxae, lateral margins expanded anteriorly and posteriorly.

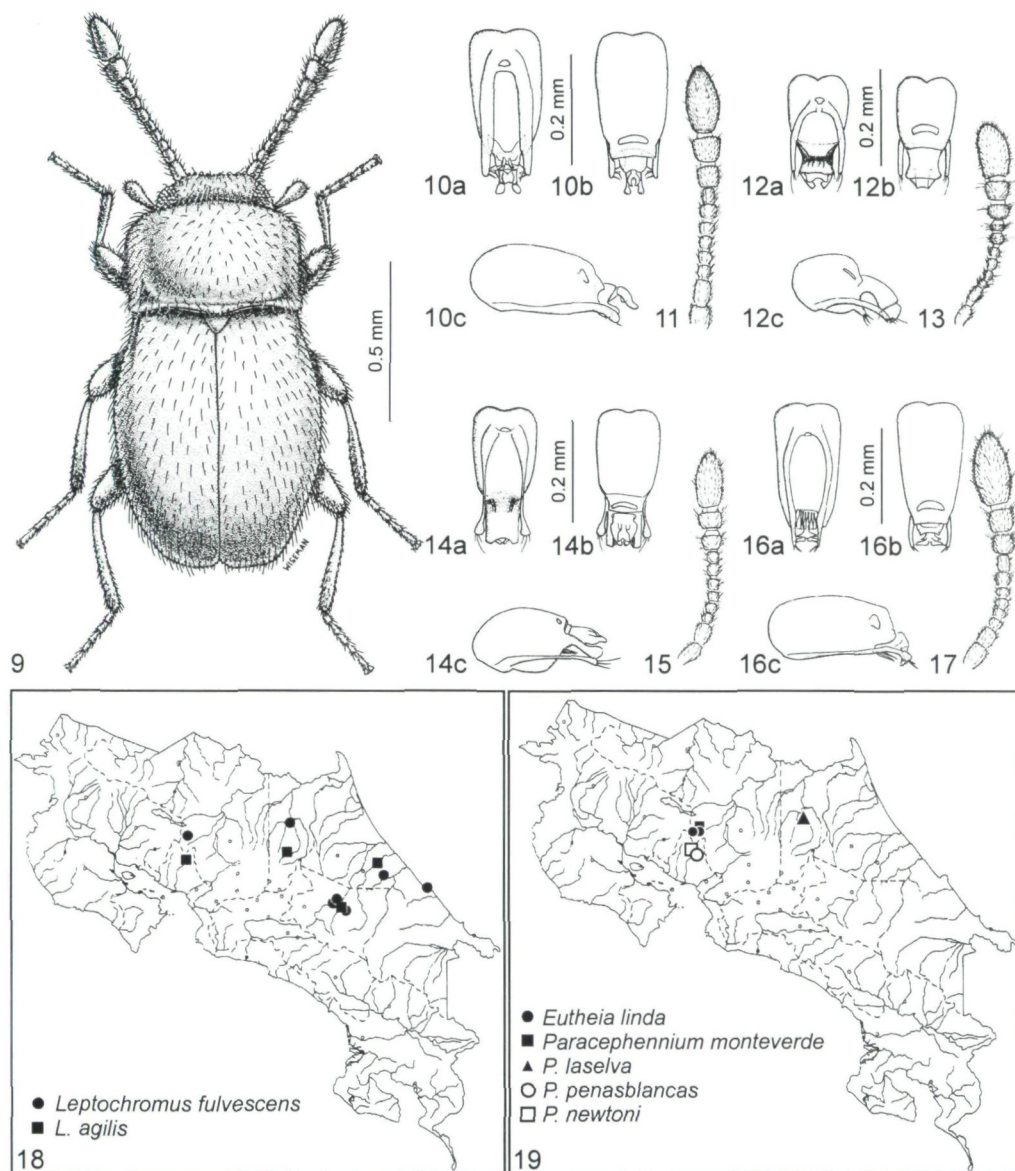


Fig. 9: *Paracephennium monteverde*, dorsal habitus. Figs. 10 - 11: *Paracephennium monteverde*; Fig. 10: aedeagus: a) dorsal view, b) ventral view, c) right lateral view; Fig. 11: right antenna, dorsal view. Figs. 12 - 13: *P. laselva*; Fig. 12: aedeagus: a) dorsal view, b) ventral view, c) right lateral view; Fig. 13: right antenna, dorsal view. Figs. 14 - 15: *P. penasblancas*; Fig. 14: aedeagus: a) dorsal view, b) ventral view, c) right lateral view; Fig. 15: right antenna, dorsal view. Figs. 16 - 17: *P. newtoni*; Fig. 16: aedeagus: a) dorsal view, b) ventral view, c) right lateral view; Fig. 17: right antenna, dorsal view.

Figs. 18 - 19: Fig. 18: distribution map for *Leptochromus fulvescens* and *L. agilis*; Fig. 19: distribution map for *Eutheia linda*, *Paracephennium monteverde*, *P. laselva*, *P. penasblancas*, and *P. newtoni*.

Metasternum: Basisternum large, broad, carinate between mesocoxae; anterior margin depressed for coxae, without dense vestiture, raised medially and fused to carinate mesosternum; metacoxal cavities widely separated, separated by flat process extended posterior to coxae, without setal tufts; vestiture long, decumbent, relatively sparse.

Legs: Procoxae large, conical, nearly contiguous, separated by prosternal process; mesocoxae somewhat smaller than procoxae, conical, separated by mesosternal carina; metacoxae small, subtransverse, distinctly separated; trochanters small, subtriangular; femora moderate in length, distinctly and abruptly expanded distally, metafemora contiguous to coxae; tibiae elongate, slender, parallel-sided, pro and mesotibiae slightly excavated at inner distal end, without dense setal patch; tarsi long, slender; tarsomeres I-V subequal in length.

Elytra: Entire, elytral silhouette 1.12 - 1.27 times as long as wide, widest at middle, sharply rounded at posterior; moderately convex, non-striate; disc slightly convex; lateral margins strongly expanded laterally; lacking basal fovea or pits; humeri present, but weak; posterior edge of last tergite exposed in posterior oblique view; scutellum visible, triangular; hindwings fully developed.

Abdominal sternites: Sutures I-III straight, IV-V strongly arcuate; sternite I as long as sternite II, with dense setal fringe; sternite II hidden by dense setal fringe of sternite I; sternites IV-V nearly hidden at midline; sternite VI subtriangular, nearly as long as wide.

DISCUSSION. The Cephenniini include ten known genera (NEWTON & FRANZ 1998) of which two, *Cephennium* MÜLLER & KUNZE and *Chelonoidum* STRAND, are known from the Nearctic and a third, *Pseudocephennium* REITTER, is known from the Neotropics. Four specimens representing four new species are known from Costa Rica. The specimens clearly do not belong to either *Cephennium* or *Chelonoidum*, of which *Cephennium* is found as far south as Guatemala (O'Keefe, unpublished), but they do share some characters with *Pseudocephennium*. However, characters (as used in the key below) that are often used to separate taxa at generic and suprageneric rank separate these new species from *Pseudocephennium*. Therefore, I propose the new genus *Paracephennium*.

ETYMOLOGY: Greek "para" - beside or near and *Cephennium*.

Key to the New World genera of Cephenniini

- 1 Six abdominal sternites clearly visible; sternite I without brush of long setae; elytra each with single deep pit near base; United States, Mexico, Guatemala 2
- Three abdominal sternites clearly visible, the others partly concealed by sternite II; sternite I with brush of long setae; elytra lacking deep pits near base; Costa Rica, northern South America 3
- 2 Posterolateral corners of pronotum with single fovea; prosternum with extended process projected between procoxae; eastern United States, California *Chelonoidum* STRAND
- Posterolateral corners of pronotum without foveae; prosternum without extended process between procoxae; California, Mexico, Guatemala *Cephennium* MÜLLER & KUNZE
- 3 Prosternum without cuticular process between procoxae; antennal club gradual; antennomere VII smaller than VIII; larger size (over 1.5 mm); Venezuela, Colombia *Pseudocephennium* REITTER
- Prosternum with cuticular process between procoxae; antennal club distinct; antennomere VII larger than VIII; smaller size (under 1.5 mm); Costa Rica *Paracephennium* gen.n.

Key to the species of *Paracephennium* of Costa Rica

- 1 Antennomere VIII distinctly wider than long (Fig. 13); apex of aedeagus strongly curved dorsoventrally (Fig. 12c) *P. laselva* sp.n.

- Antennomere VIII slightly to distinctly longer than wide; apex of aedeagus either truncate or straight 2
- 2 Antennomeres IX-X hexagonal (Fig. 15), lateral margins angulate; antennomere VIII slightly longer than wide; apex of parameres with setae (Fig. 14); apex of aedeagus narrowed dorsoventrally (Fig. 14) *P. penasblancas* sp.n.
- Antennomeres IX-X trapezoidal, lateral margins rounded; antennomere VIII distinctly longer than wide; apex of parameres with spines (Figs. 11, 17); apex of aedeagus truncate (Figs. 11c, 17c) 3
- 3 Antennomeres III-VI quadrate (Fig. 11); apex of aedeagus with 2 narrowed lateral projections (Fig. 10); dorsum of median lobe without elongate spines (Fig. 10a) *P. monteverde* sp.n.
- Antennomeres III-VI slightly wider than long (Fig. 17); apex of aedeagus with 2 blunt apical projections (Fig. 16); dorsum of median lobe with 7 elongate spines (Fig. 16a) *P. newtoni* sp.n.

***Paracephennium monteverde* sp.n.**
(Figs. 9 - 11, 19)

TYPE LOCALITY: COSTA RICA, Puntarenas Province, Monteverde.

TYPE MATERIAL: Holotype ♂: "COSTA RICA, 1520 m Monteverde, FIT [flight intercept trap] 9-13.VII.1983 D. H. Lindeman" and "HOLOTYPE (typed) *Paracephennium monteverde* O'Keefe" (handwritten) on red label. Type deposited in Canadian Museum of Nature, Ottawa, Ontario (CMNC).

DIAGNOSIS: Antennomere VIII cylindrical; antennomeres IX-X trapezoidal; parameres with apical spines; median lobe elongate, oval, without spines.

DESCRIPTION: 1.2 mm long; light to moderate brown; head 0.24 mm wide, 0.28 mm long; setation sparse, short, decumbent; antennae (Fig. 11): antennomere I subcylindrical, relatively short, 1.5 times as long as wide; antennomere II subcylindrical, subequal in size to I; antennomeres III-VI subequal in size and shape, subquadrate, as wide as long, each slightly wider than II, half length of II; antennomere VII subquadrate, distinctly larger than VI; antennomere VIII cylindrical, distinctly narrower than VII, as long as VII; antennomeres IX-XI form distinct, compact club; antennomeres IX-X distinctly larger than VIII, subtrapezoidal to quadrate, slightly wider at distal end than long, each twice wider than VIII, 1.5 times as long as VIII; antennomere XI obovoid, as long as VIII-X combined; setation sparse, moderately long on antennomeres I-VIII, dense, short, with few of moderate length on antennomeres IX-XI; pronotum 0.39 mm wide at widest point, 0.37 mm wide at base, 0.28 mm long, pronotum width-length ratio = 1.4; setation dense, short with longer setae on posterolateral corners, decumbent; elytra 0.54 mm wide, 0.65 mm long, elytral length-width ratio = 1.2; setation dense, short, decumbent.

Male genitalia (Fig. 10): Median lobe ovoid, elongate, twice as long as wide; basal margin bilobed; basal opening small, hemispherical; median plate transverse, narrow; apex truncate ventrally, protruded dorsally into narrowed basal collar with expanded dorsal processes and blunt bilobed medial extensions lateral to median process; basal collar with 2 recurved spinose projections; parameres elongate, slender, longer than median lobe, but not extended beyond median process, apex of each paramere with 3 stout inwardly-directed spines, middle one of which is bispinose.

DISTRIBUTION (Fig. 19): Known only from type locality.

HABITAT & COLLECTION METHODS: The holotype was collected from a flight intercept trap.

ETYMOLOGY: The name was derived as a noun in opposition for the type locality.

***Paracephennium laselva* sp.n.**

(Figs. 12 - 13, 19)

TYPE LOCALITY: COSTA RICA, Heredia Province, La Selva.

TYPE MATERIAL: **Holotype** ♂: "COSTA RICA: Heredia La Selva, 3.2 km SE Puerto Viejo, 100 m, 6 Mar 1992, W. Bell ex:flight intercept trap" (type deposited in SEMC).

DIAGNOSIS: Antennomere VIII pentagonal; antennomeres IX-X hexagonal; parameres with apical setae; median lobe narrowed, curved dorsoventrally, with row of 6 elongate spines.

DESCRIPTION: 1.05 mm long; medium to dark brown; head 0.24 mm wide, 0.23 mm long; setation sparse, short, decumbent; antennae (Fig. 13): antennomere I subcylindrical, 1.5 times as long as wide; antennomere II cylindrical, subequal in length to I; antennomere III moniliform, slightly wider than long, one-third length of II; antennomeres IV-VI subequal in size and shape, subquadrate, as long as wide, each slightly longer and wider than III; antennomeres VII-VIII subpentagonal, slightly wider than long; antennomere VII distinctly wider and slightly longer than VI; antennomere VIII slightly smaller than VII; antennomeres IX-XI form distinct club; antennomeres IX-X subtrapezoidal, distinctly transverse; antennomere IX distinctly wider than VIII, only slightly longer than VIII, nearly twice as wide as long; antennomere X distinctly larger than IX, 1.3 times wider, 1.5 times as long as IX; antennomere XI obovoid, as long as VIII-X combined, wider than X, apex rounded; setation on antennomeres I-VI sparse, long, VII-VIII moderately dense, long; IX-XI dense, erect, with numerous distinctly longer setae; pronotum 0.33 mm wide at widest point, 0.32 mm wide at base, 0.26 mm long, pronotum width-length ratio = 1.27; setation dense, long, suberect, even in length; elytra 0.50 mm wide, 0.56 mm long, elytral length-width ratio = 1.12; setation only moderately dense, long, suberect, with rows of longer, erect setae.

Male genitalia (Fig. 12): Median lobe bulbous at basal half, narrowed, strongly recurved dorsoventrally (Fig. 12c) at apical half, overall length twice as long as wide; basal margin strongly bilobed; basal opening small; median plate flat, transverse; dorsum with 6 recurved, elongate, apically directed spines emanating from dorso-apical extension of median lobe; lateral margins of apical half of median lobe concave; apex with pair of valves; parameres elongate, slender, as long as median lobe, with 2 short and 1 long medially recurved seta.

DISTRIBUTION (Fig. 19): Known only from La Selva (Heredia Province).

HABITAT & COLLECTION METHODS: Collected from a flight intercept trap.

ETYMOLOGY: The name was derived as a noun in opposition for the type locality.

***Paracephennium penasblancas* sp.n.**

(Figs. 14 - 15, 19)

TYPE LOCALITY: COSTA RICA, Alajuela Province, Peñas Blancas.

TYPE MATERIAL: **Holotype** ♂: "COSTA RICA: Alajuela, Peñas Blancas, 10.I.1987 E. Cruz" Type deposited in CMNC.

DIAGNOSIS: Antennomere VIII quadrate; antennomeres IX-X pentagonal; parameres with apical setae; median lobe narrowed, straight, with 6 elongate spines in 2 groups.

DESCRIPTION: 0.96 mm long; light to moderate brown; head 0.21 mm wide, 0.19 mm long; setation sparse, short, suberect; antennae (Fig. 15): antennomere I subcylindrical, twice as long as wide; antennomere II ovoid, as wide as I, slightly shorter than I; antennomere III quadrate, distinctly narrower than II, half length of II; antennomeres IV-VI subequal in size and shape, as long as wide, each longer than III, as wide as III; antennomere VII subquadrate, slightly wider and longer than VI; antennomere VIII quadrate, as wide as VII, slightly shorter than VII;

antennomeres IX-XI form distinct club; antennomere IX subhexagonal, slightly wider than long, distinctly wider and longer than VIII; antennomere X subhexagonal, slightly wider than long, slightly wider and longer than IX; antennomere XI obovoid, as long as VIII-X combined; setation on antennomeres I-VI sparse, moderately long, erect; antennomeres IX-XI dense, long, erect, with numerous distinctly longer setae; pronotum 0.33 mm wide at widest point, 0.34 mm wide at base, 0.22 mm long, pronotum width-length ratio = 1.50; setation moderately dense, long, equal in length, suberect; elytra 0.44 mm wide, 0.56 mm long, elytral length-width ratio = 1.27; setation relatively sparse, long, suberect.

Male genitalia (Fig. 14): Median lobe ovoid, elongate, 2.5 times as long as wide, basal two-thirds broad, rounded, apical third narrowed dorsoventrally; basal margin bilobed; basal opening small, ovoid, partially covered by bases of parameres; median plate transverse, narrow, curved; dorsum with 2 groups of 3 elongate, apically directed spines; median apical process bilobed with narrowed, forked, ventral process; parameres elongate, slender, nearly as long as median lobe, apices expanded, apex with 2 short and 1 long inwardly directed setae.

DISTRIBUTION (Fig. 19): Known only from type locality.

HABITAT & COLLECTION METHODS: Unknown.

ETYMOLOGY: The name was derived as a noun in opposition for the type locality.

***Paracephennium newtoni* sp.n.**
(Figs. 16, 17, 19)

TYPE LOCALITY: COSTA RICA, Alajuela Province, Peñas Blancas.

TYPE MATERIAL: Holotype ♂: "COSTA RICA: Alajuela, Peñas Blancas X.1986 E. Cruz" Type deposited in CMNC.

DIAGNOSIS: Antennomere VIII cylindrical; antennomeres IX-X trapezoidal; parameres with apical spines; median lobe elongate, oval, with row of 7 elongate spines.

DESCRIPTION: 1.10 mm long; moderate brown; head 0.24 mm wide, 0.24 mm long; setation sparse, short, erect; antennae (Fig. 17): antennomere I subcylindrical to ovoid, twice as long as wide; antennomere II subcylindrical, 1.5 times as long as wide, as wide as I, slightly shorter than I; antennomeres III-VI subequal in size and shape, transverse, rectangular, each nearly as wide as II, half length of II; antennomere VII subquadrate, slightly wider and longer than VI; antennomere VIII subcylindrical, 1.75 times as long as wide, slightly narrower than VII, as long as VII; antennomeres IX-XI form distinct club; antennomeres IX-X subquadrate, as wide as long; antennomere IX distinctly wider and longer than VIII; antennomere X slightly wider and longer than IX; antennomere XI obovoid, as long as VIII-X combined; setation on antennomeres I-VIII sparse, long, erect; setation on antennomeres IX-XI dense, short with numerous long, erect setae; pronotum 0.39 mm wide at widest point, 0.38 mm wide at base, 0.28 mm long, pronotum width-length ratio = 1.40; setation relatively dense, long, equal in length, suberect; elytra 0.46 mm wide, 0.58 mm long, elytral length-width ratio = 1.26; setation relatively sparse, long, suberect.

Male genitalia (Fig. 16): Median lobe ovoid, elongate, 2.5 times as long as wide; basal margin slightly bilobed; apex truncate ventrally, with bilobed medial process dorsally; median plate transverse, rounded, convex; dorsum with 7 elongate, apically-directed recurved spines; parameres elongate, slender, longer than median lobe, each with 3 inwardly-directed spines.

DISTRIBUTION (Fig. 19): Known only from type locality.

HABITAT & COLLECTION METHODS: Unknown.

ETYMOLOGY: The name is for Alfred F. Newton, Jr., as acknowledgement for his numerous contributions to my work on scydmaenid beetles.

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