

## The genera *Aphanisticus* Latreille and *Endelus* Deyrolle in Fiji (Coleoptera: Buprestidae: Aphanisticini)<sup>1</sup>

C.L. BELLAMY

Plant Pest Diagnostic Laboratory, California Department of Food & Agriculture,  
3294 Meadowview Road, Sacramento, California 95832, USA; email: cbellamy@cdfa.ca.gov

**Abstract.** The first species of *Aphanisticus* Latreille, *A. cochinchinae* ssp. *seminulum* Obenberger, is recorded from Fiji and illustrated. Four new species of *Endelus* (*Endelus*) Deyrolle are described from Fiji: *E. cupreocingulatus*, sp. nov., *E. cupreoviridis*, sp. nov., *E. fijiensis* sp. nov. and *E. castaneocupreus* sp. nov. *Endelus bicolor* Bellamy is proposed as a new junior synonym of *E. speculifer* Théry. The Fijian species of *Endelus* are described, illustrated, and differentiated in a key.

### INTRODUCTION

The buprestid genus *Aphanisticus* Latreille (Coleoptera: Buprestidae: Aphanisticini) is a relatively large genus (354 species, 6 subspecies) found throughout the continents and habitats of the Old World, but until recently not known from the New World or Oceania. The introduction of one subspecies (*A. cochinchinae* ssp. *seminulum* Obenberger) into the Hawaiian archipelago and its association with sugarcane (Chang & Oto 1984, Heu 1986) has been followed by further spread into sugarcane fields in the United States (Wellso & Jackman 1995, Peck & Thomas 1998, MacRae & Nelson 2003) and south into various areas in Latin America (Hespenheide, pers. comm.). It is not surprising to find that it has also spread to Fiji, although the specimens collected as part of the Fiji Arthropod Survey come from outside of the sugarcane fields of Viti Levu suggesting that it can utilize other grasses, whether native or other introduced species.

The genus *Endelus* Deyrolle currently contains 119 species distributed in the Australasian and Oriental biogeographic regions with some species found on various Western Pacific islands including Fiji. Two Fijian species are currently known: *E. speculifer* Théry and *E. bicolor* Bellamy. With the wide ranging collecting activity of the Fiji Arthropod Survey, especially the very productive use of malaise traps, four additional species are available for description.

The term “belt-buckle setae” was first used by Wellso *et al.* (1976) in describing *Pachyschelus confusus* Wellso & Manley and later by Bellamy & Hespenheide (1988) describing two buprestids from South Africa: *Paracylindromorphus cephalopristis* Bellamy and *Taprocerus capensis* Hespenheide. This structure is present in all species of *Endelus* from Fiji, discussed and/or described herein.

---

1. Contribution No. 2007-009 to the NSF-Fiji Arthropod Survey..

## MATERIALS AND METHODS

Abbreviations. The following collection codens are used in the text: BPBM - Bishop Museum, Honolulu, Hawai'i, USA; CLBC – my research collection, this address; CSCA – California State Collection of Arthropods, Sacramento, California, USA; FNIC, Fiji National Insect Collection, Suva, Fiji; MNHN, Museum National d'Histoire Naturelle, Paris, France; NMPC – National Museum, Prague, Czech Republic. Label data are cited verbatim. For handwritten and printed label data, “(h)” and “(p)” are used respectively.

## SYSTEMATICS

### Tribe APHANISTICINI

Two subtribes comprise this tribe: the nominate Aphanisticina which contains only two genera, *Aphanisticus* and *Endelus*, and Anthaxomorphina, which is monotypic for *Anthaxomorphus* Deyrolle. *Anthaxomorphus* is not recorded from any of the Pacific islands and known species are found no closer than Indonesia, Papua New Guinea, and the Philippines.

### Subtribe APHANISTICINA

#### Genus *Aphanisticus* Latreille

*Aphanisticus* Latreille, 1829: 448; Obenberger, 1937: 1285; Bellamy, 2003: 92. Type species: *Aphanisticus pusillus* Gyllenhal, 1808 (fixed by subsequent designation: Westwood, 1838: 25).

#### *Aphanisticus cochinchinae* ssp. *seminulum* Obenberger

(Fig. 1)

*Aphanisticus cochinchinae* ssp. *seminulum* Obenberger, 1929: 111; Chang & Oto, 1984: 36; Bílý, 1986: 202; Heu, 1987a: 2; 1987b: 7; Wellso & Jackman, 1995: 287; Peck & Thomas, 1998: 67; MacRae & Nelson, 2003: 63.

**Diagnostic summary description.** Size (maximum length x width): 2.5–3.0 x 0.8–1.0 mm; elongate ovoid, flattened; surface completely black with faint aeneous to purplish reflections; surface sculpture finely rugose-imbricate overall, head and pronotum with large, shallow foveate punctures, elytra with nearly striate large, shallow punctures; head with very narrow groove between very large eyes; frontclypeus very strongly compressed, distal margin strongly arcuate; groove for antennae in repose oblique ventrad eye; antennae short, very narrow, only antennomeres 8-11 expanded; pronotum strongly, convex on median portion of disc; widest at midpoint, elytra very slightly wider posterior to midpoint; scutellum small, very slender triangle, much longer than wide; elytral apicolateral margin finely serrate; anterior prosternal margin angularly concave, process feebly trispinose; abdominal ventrites 1, 2 subequal, longer together than 3+4+5; apical margin of ♀ 5 serrate; legs with femora flattened, subexplanate to cover tibiae and tarsi in repose; tarsal claws simple.

**Specimens Examined.** FIJI: **Viti Levu:** 1 ♀ [FBA 517179] Abaca, ca. 9 km SE Lautoka, 1740', S17°40'14" E177°32'38", 15.xi.2005, Bellamy, Lingafelter, Reid, Samuel-

---

**Figure 1.** *Aphanisticus cochinchinae* ssp. *seminulum* Obenberger, 1929. Scale bar = 1.0 mm.



son, Tokota'a, sweeping; 1 ♀ [FBA 517180] Nadarivatu, Emperor Gold Mine, vicinity of guest house, S17°34'28" E177°57'34", 16.xi.2005, same collectors; 3 ♀ [FBA 517183–517185] South Ridge Radio tower, S17°35'19" E177°55'17", 3350', 16.xi.2005, same collectors; 1 ♂, 1 ♀ [FBA 528325–528326] Koro Ni O, north ridge, NW of Nadarivatu, 1028 m, S17°34'32" E177°58'02", 18.i.2006, S.D. Gaimari; FIJI: **Vanua Levu**: 1 ♀ [FBA 145967] Batigere Range, 6 km NW Kilaka Village, 98 m, 28.VI.–21.VII.2004, Malaise 5, Schlinger, Tokota'a, 16.807°S, 178.991°E; 1 ♀ [FBA 528327] Vatudiri, 4 km SE Lomatoma, 630 m, 16°37'48"S, 179°12'29"E, 25.i.2006, S.D. Gaimari; FIJI: **Kadavu**: 1 ♀ [FBA 528328] Vunisea Airport, 0–5 m coastal veg., beating, 25.xi.2005, C. Reid, on grass (**new country records**). These specimens will be deposited in FNIC, BPBM, CSCA, and CLBC.

**Comments.** This small, black beetle represents the first record of this genus in Fiji. Considering the apparent original introduction into sugarcane fields in Hawai'i took place in the 1980s (Chang & Oto, 1984; Heu, 1987a) but not identified until several years later (Bílý, 1986; Heu, 1987b), the spread into similar habitats in South Pacific islands and economies where sugarcane is grown is not surprising considering how far it has already spread into Latin America. One of the Fijian specimens was sent to Dr. Svatopluk Bílý, NMPC, who provided the original identification for the Hawaiian specimens by comparing it to the type housed in the Obenberger collection and he has confirmed this identification.

### Genus *Endelus* Deyrolle

*Endelus* Deyrolle, 1864: 227; Théry, 1932: 1; Obenberger, 1937: 1277; Bellamy, 2003: 92. Type species: *Endelus cupido* Deyrolle, 1864 (fixed by subsequent designation: Cobos, 1979: 427).

**Comments.** Several of the character states repeated in the species descriptions below are likely to be generic level characters. I have not studied this genus in more detail nor species from other parts of the general range and there is no need to write a revised genus-level description now. Kalashian (1997) proposed a second subgenus of *Endelus*: *E. (Kubaniellus)* for species from China and Vietnam. The Fijian species all belong to the nominate subgenus.

There is a general impression, perhaps only anecdotal, that species of *Endelus* are associated with ferns. I've seen specimens of *Endelus* spp. labeled "on ferns" and I've collected *Endelus* spp. in disturbed habitats of peninsular Malaysia by sweeping ferns. Dr. S. Bílý (pers. comm.) has told me "many specimens of *E. bakerianus* were reared by A.D. Wright from a fern (*Lygodium microphyllum*) and an additional unidentified *Endelus* sp. from *Nephrolepis biserrata* from Thailand. I collected a few specimens of *E. cupido* from unidentified fern in Sarawak." These specimens are in NMPC. The literature on the ferns of Fiji is not specific about insect associates and exists only as a summary flora (Parham, 1972) or one specific work (Brownlie, 1977). In the work by Parham (1972), the account of 'Filicopsida' summarizes some 282 species placed in 16 families, including five mostly terrestrial fern groups: Aspidiaceae, Aspleniaceae, Blechnaceae, Cyatheaceae and Pteridaceae. From such a vast flora of potential host plants, much more focused and specific collecting will be required to demonstrate the host plants of the species of *Endelus* discussed herein.

KEY TO THE SPECIES OF *ENDELUS* OF FIJI

1. Dorsal coloration: vertex and pronotum shining red cupreous, elytra green with cupreous punctures (Fig. 6) ... (Tavueni) ..... **E. cupreoviridis** Bellamy, **sp. nov.**
- Dorsal coloration otherwise, various colors black, cupreous and with some type of elytral pattern ..... 2
2. Elytra with alternating surface sculpture creating pattern of concentric rings with central spot in anterior half and several parallel “zig zag” fasciae in posterior half (Figs. 2,3) ... (Kioa, Ovalau, Vanua Levu, Viti Levu) ..... **E. specularifer** Théry
- Elytra without complicated pattern although disc and lateral portions having different surface sculpture ..... 3
3. Dorsal surface shining cupreous, darker so on head, pronotal and elytral discs; brighter with more dense punctation laterally on pronotum and elytra (Fig. 5) ... (Viti Levu) ..... **E. cupreocingulatus** Bellamy, **sp. nov.**
- Dorsal surface darker, surface black to brown with cupreous pattern on lateral portions of pronotum and elytra ..... 4
4. Body slightly more slender, dorsal coloration more coppery on head, pronotum and perimeter of elytra; overall appearance of body smooth, less punctate (Fig. 4) ... (Kadavu, Viti Levu) ..... **E. fijiensis** Bellamy, **sp. nov.**
- Body slightly more robust, dorsal coloration more somber, only a slight difference in surface sculpture appearance from disc; overall appearance of body more punctate (Fig. 7) ... (Vanua Levu) ..... **E. castaneocupreus** Bellamy, **sp. nov.**

*Endelus (Endelus) specularifer* Théry

(Figs. 2, 3)

*Endelus specularifer* Théry, 1932: 10; Obenberger, 1937: 1283; Bellamy, 1990: 91.*Endelus bicolor*, Bellamy, 1990: 89., **Syn. nov.**

**Description** of holotype of *E. bicolor* [verbatim from Bellamy (1990: 89–91)]. *Diagnosis.* Size (maximum length x width): 4.0 x 1.6 mm; elongate ovoid, flattened; colour of head, middle of pronotum and some nearly glabrous portions of the elytral disc dark cupreous; latera portion of pronotum and some of elytral disc moderately shagreened, appearing brighter cupreous; remaining elytral surface shagreened with deep blue reflection; underside and legs very dark, nearly black; surface irregularly covered with large shallow punctures. *Head:* frontovertex deeply excavata between widely separated eyes; eyes large, inner margins slightly diverging dorsally; median longitudinal groove of frontovertex with a single fovea at either end, distal end of groove confluent with supra-antennal grooves which extend laterally, on either side, almost to inner margin of eye; frontoclypeus longitudinally depressed, narrowed between antennal cavities; disc of clypeus a nearly ventrally facing inverted “Y”, distal margin roundly emarginate; labrum not visible; genal scrobe beneath each eye; *Antennae:* antennomere 2 globose; 3 narrower, shorter than 2; 4 shorter than 3; 5 subserrate; 6–10 serrate. *Pronotum:* nearly 2 x wider than long, widest at middle; anterior margin very slightly arcuate at middle; basal margin bisinuate on either side of narrow truncate prescutellar lobe: basal angles obtuse, rounded; lateral margins widening in an arc to widest point, then arcuately rounded to anterior margin; disc strongly gibbous in middle, on anterior 2/3, width of swollen portion of disc slightly narrower than head; remainder of pronotum flattened, explanate laterally. *Scutellum:* nearly an equilateral triangle; disc slightly depressed behind anterior margin. *Elytra:* slightly wider than pronotum opposite prominent humeri; one slight depression on either side between humerus and scutellum; basal angles rounded; lateral margins straight for short distance past humeri, narrowing slightly to



**Figures 2–7.** *Endelus* (*Endelus*) spp., dorsal habitus. **2.** *E. speculifer* Théry, holotype; **3.** *E. bicolor* Bellamy, holotype; **4.** *E. fijiensis*, sp. nov., holotype; **5.** *E. cupreocingulatus*, sp. nov., holotype; **6.** *E. cupreoviridis*, sp. nov., holotype; **7.** *E. castaneocupreus*, sp. nov., holotype. Scale bars = 1.0 mm.

before middle, then widening before becoming gradually attenuate prior to nearly rectangular, serrate apicolateral angles; margins carinate, separating epipleuron and disc from base to opposite 2nd abdominal sternite; sutural margins with feebly elevated costae; disc flattened with slight depressions and swellings, steeply declivous past humeri to middle laterally. *Underside:* prosternum short, wide, process between procoxae, apex triangular; metepimeron hidden beneath epipleuron; metacoxal plate with posterior margins strongly arcuately emarginate; abdominal sternites with suture between 1 and 2 only indicated laterally; length of 1 + 2 nearly 1.5 x as long as 3 + 4 + 5; 5 with submarginal groove extending around entire perimeter, broadest apically. *Legs:* femora fusiform, pro- and mesofemora flattened, posterior margin explanate dorsoventrally to hide tibiae and tarsi in repose; metafemora roundly fusiform, metatibiae and tarsi free in repose; metatibiae with setal comb on distal half of dorsal side; tarsomeres 1–4 short, each with pulvillus; 1–4 shorter together than 5; 5 narrow, elongate, claws swollen basally, tips widely separated.

**Variation.** The holotype of *E. speculifer* is 3.2 x 1.2 mm; the two female paratypes vary slight in size: 3.7–3.9 x 1.4–1.6 mm but otherwise agree in all other aspects to the holotype. One additional specimen varies in size: 4.1 x 1.8 mm.

**Specimens examined:** Holotype of *E. speculifer* (gender unknown) (MNHN): Museum Paris (p), Ovalau (h), Collection Léon Fairmaire 1906 (p)/ *Endelus speculifer* Frm. Ovalau L. Fairmaire det. (h)/ Exempleire dessine (p)/ TYPE (red card, p)/ Muséum Paris, Coll. générale (p); holotype of *E. bicolor* ♀ (BPBM 14174) from FIJI: **Vanua Levu:** Tabia (Thakaundrove), 0–2m, 5.X.1979 (p)/ 214 (h)/ S.N. Lal, G.A. & S.L. Samuelson Colls., BISHOP Museum Acc. No. #1979.387 (p); 1 ♀ paratype **Viti Levu:** Naduruloulou, 0–25m, 26.IX.1979 (p)/ ferns (p)/ G.A. Samuelson Coll. BISHOP Museum Acc. #1979.380 (p) (BPBM); 1 ♀ paratype **Kioa:** S coast to center, 0–60 m, 4.X.1979 (p)/ M.K. Kamath, S.N. Lal, G.A. & S.L. Samuelson Colls., BISHOP Museum Acc. #1979.387 (p) (CLBC); 1 spm, **Viti Levu:** Naitasiri Prov., Navai Village, Eteni. FJ-11a. Malaise, 15.V–2.VI.03, M. Irwin, E. Schlinger, M. Tokota'a, 17°37'S, 177°59'E, 700 m, [FBA 041819] (FNIC).

**Fiji Distribution:** Kioa Island, Ovalau, Vanua Levu, Viti Levu

**Comments.** As the labels and the original description indicate, *E. speculifer* was a Fairmaire manuscript name, finally described many years later by Théry. My identification of this species from specimens in the BPBM collection (Bellamy 1990) was wrong. Having the unique holotype before me in comparison to the type series of *E. bicolor* Bellamy, 1990, I find that these two species are very close, but they do differ in several ways. Having only the holotype of *E. speculifer* and the four specimens of *E. bicolor*, I believe that these specimens are conspecific. Although there is some geographical separation between these five specimens and some slight morphological divergence, proposing this synonymy now. The holotype of *E. speculifer* is more slender and the dorsal coloration less intense than of *E. bicolor*.

*Endelus (Endelus) fijiensis* Bellamy, sp. nov.

(Fig. 4)

**Description** of holotype (♂). *Diagnosis.* Size (maximum length x width): 3.4 mm x 1.3 mm, widest opposite humeri; elongate ovoid, slender, flattened above, transversely convex; body black with varied shining cupreous reflections on frontovertex, pronotum, around lateral and distal portions of elytra; ventral surface nitid black with no cupreous reflections; surface of head, pronotum and ventral surface very finely imbricate with irregular large, very shallow belt-buckle setae; elytral surface finely imbricate and sparsely foveolate, each small fovea with single, stout, adpressed seta; ventral surface with fine partially recumbent short white setae in median portion of thoracic and abdominal ventrites. *Head:* strongly, longitudinally depressed between two angulate projections that bear the eyes, when viewed from above, angle of frontovertex depression obtuse; anterior-most portion of longitudinal groove between eyes with one deep, circular pit; eyes relatively large, inner margins slightly diverging dorsally, without circumocular groove, but with four small deep pits on either side along inner margin around ventral portion of eye; frons with two small nearly transverse elevations above antennal cavities, on either side of pair of deep, circular pits; frontoclypeus narrowed between antennae, width less than that of antennal cavity, then widening strongly to very wide, partially ventrally declivous straight distal margin; antennal cavities each arcuate laterally, confluent with short, oblique genal depression to receive basal antennomeres in repose; antennae short, antennomere 1 slightly longer, partially recurved, slightly longer than 2, 2 slightly wider than 1, 3 and 4 shorter, more slender than 2, 4 shorter than 3, 5 expanded distally, slightly longer than 4, 6 broadly triangular, 7–9 subequal, each much wider than long, subrectangular, 10 subequal to 9, 11 oblong. *Pronotum:* 2.26 times wider than longer, widest near midpoint of length; anterior margin slightly arcuate on either side of nearly evenly transverse median portion; posterior margin bisinuate on either side of feebly concave median prescutellar lobe; lateral margins evenly arcuate anterior to obtuse lateroposterior angle, mar-

gin finely crenulate; disc flattened in posterior 2/3, anterior 1/3 feebly declivous anteriorly; lateral portion of disc moderately depressed before margin. *Scutellum*: nearly equilateral triangular, only slightly longer than wide; anterior margin feebly convex; lateral margins moderately concave, apex strongly acuminate. *Elytra*: 1.03 times wider than pronotum, widest opposite humeri; one slight broad depression on each elytron just beyond anterior margin, between humeri and suture; disc otherwise feebly transversely convex; sutural margin a slightly elevated costa; lateral margins narrowing gradually posterior to humeri to about anterior 1/4 before widening slightly to midpoint then gradually narrowing to just anterior to separately rounded apices; lateral margins carinate, entire to apicolateral angle then finely serrate. *Underside*: prosternum with anterior margin feebly concave, process broad, widening posterior to procoxae, apex broad, angularly convex apically; metacoxal plate strongly dilated along posterior margin; abdominal ventrite 1 longer than 2, 1+2 longer than 3+4+5; 4 and 5 subequal in length; 5 longer than 4; suture between 1 and 2 only vaguely visible; sutures between 2, 3, 4 and 5 feebly arcuate; 5 with premarginal groove along entire visible perimeter, apex arcuately rounded. *Legs*: femora strongly fusiform, expanded to partially obscure flattened tibiae in repose; tarsi with tarsomeres 1–4 each very short, each with progressively longer ventral pulvillus; 5 elongate, slender, as long as 1–4 together; each claw with stout basal appendix. *Genitalia*: not dissected.

**Variation.** Five unsexed paratypes differ from the holotype: size (maximum length x width): 3.4–3.9 mm x 1.5–1.7 mm; there are slight difference in the brightness of the dorsal color but this is possibly an artifact either of age or preservation.

**Etymology.** The specific epithet refers to the bright coppery (*cupreus*) ring around (*cingo*) the perimeter (*latitudo*) of the darker coppery elytral disk.

**Specimens examined:** Holotype ♂ (BPBM 16,722) from FIJI: **Viti Levu**: Nandari-vatu (p) IX-10-38, 3700' (h)/ Beating Shrubbery (p)/ ECZimmerman Collector (p); 4 paratypes (1♂, 3♀): same data as holotype (BPBM, CLBC); 1 paratype (♀) FIJI: **Kadavu**: 0.25 km SW Solodamu Vlg. Moanakaka Bird Sanctuary, 4.Sep.–23.Oct.2004 Malaise 3, 60 m, S. Lau, 19.078°S, 178.121°E [FBA 511084] (FNIC).

**Fiji Distribution:** Kaduvu, Viti Levu.

**Comments.** This rather drab looking species was first collected in 1938 by Dr. E.C. Zimmerman and the specimens were at the BPBM awaiting further study. This is the species that I misidentified earlier (as *E. speculifer*) when I described *E. bicolor*. It can be distinguished from the Fijian congeners as indicated above in the key yet comes nearest to *E. castaneocupreus* sp. nov. and is separated from that species by character states discussed under than species below.

### *Endelus (Endelus) cupreocingulatus* Bellamy, sp. nov.

(Fig. 5)

**Description** of holotype (sex?). *Diagnosis.* Size (maximum length x width): 3.6 mm x 1.5 mm, widest opposite humeri; elongate ovoid, slender, flattened above, transversely convex; entire dorsal surface shining cupreous, ventral surface nitid black; varied surface sculpture on pronotum and elytra results in mostly in lateral portions having a frosted appearance; surface of head, pronotum and ventral surface very finely imbricate with irregular large, very shallow belt-buckle setae; elytra with varied surface sculpture forming pattern (Fig. 4), overall sparsely foveolate, each small fovea with single, stout, adpressed seta; median portion of disc mostly glabrous; remaining portions of disc punctulate-reticulate. *Head*: strongly, longitudinally depressed between two angulate projections that bear the eyes, when viewed from above, angle of frontovertex depression obtuse; anterior-most portion of longitudinal groove between eyes with one deep, circular pit; eyes relatively large, inner margins slightly diverging dorsally, without circumocular groove, but with four small deep pits on either side along inner margin around ventral portion of eye; frons with two small nearly transverse eleva-

tions above antennal cavities, on either side of pair of deep, circular pits; frontoclypeus narrowed between antennae, width less than that of antennal cavity, then widening strongly to very wide, partially ventrally declivous arcuate distal margin; antennal cavities each arcuate laterally, confluent with short, oblique genal depression to receive basal antennomeres in repose; antennae short, antennomere 1 slightly longer, partially recurved, slightly longer than 2, 2 slightly wider than 1, 3 and 4 shorter, more slender than 2, 4 shorter than 3, 5 triangularly serrate, 6 broadly triangular, 7-9 subequal, each much wider than long, subrectangular, 10 subequal to 9, 11 oblong. *Pronotum*: 2.05 times wider than longer, widest near midpoint of length; anterior margin slightly arcuate on either side of nearly evenly transverse median portion; posterior margin angularly bisinuate on either side of straight median prescutellar lobe; lateral margins evenly arcuate anterior to subobtuse lateroposterior angle, margin finely crenulate; disc flattened in posterior 2/3, anterior 1/3 slightly declivous anteriorly; lateral portion of disc moderately depressed before margin. *Scutellum*: nearly equilateral triangular, feebly longer than wide; anterior margin feebly concave; lateral margins moderately concave, posterior apex strongly acuminate. *Elytra*: 1.12 times wider than pronotum, widest opposite humeri; one slight broad depression on each elytron just beyond anterior margin, between humeri and suture; disc otherwise feebly transversely convex; sutural margin a slightly elevated costa; lateral margins narrowing very gradually posterior to humeri to about anterior 1/4 before widening slightly to midpoint then gradually narrowing to just anterior to apex, then slightly more straight before separately rounded apices; lateral margins carinate, entire until just before apex, then finely serrate. *Underside*: prosternum with anterior margin feebly concave, process broad, widening posterior to procoxae, apex broad, angularly convex apically; metacoxal plate strongly dilated along posterior margin; abdominal ventrite 1 longer than 2, 1+2 longer than 3+4+5; 4 and 5 subequal in length; 5 longer than 4; suture between 1 and 2 only vaguely visible; sutures between 2, 3, 4 and 5 feebly arcuate; 5 with premarginal groove along entire visible perimeter, apex broadly arcuately rounded. *Legs*: femora strongly fusiform, expanded to partially obscure flattened tibiae in repose; tarsi with tarsomeres 1-4 each very short, each with progressively longer ventral pulvillus; 5 elongate, slender, as long as 1-4 together; each claw with very feeble basal lobe. *Genitalia*: not dissected.

**Variation.** Two unsexed paratypes differ from holotype: size (maximum length x width): 3.4-3.5 mm x 1.3-1.4 mm; there are slight difference in the brightness of the dorsal color but this is possibly an artifact either of age or preservation.

Etymology. Named for the country of origin.

**Types:** Holotype (♂) from FIJI: **Viti Levu:** Ocean Pacific, Wainadoi. FJ-18 Malaise, 5.XI-24.XI.03, M. Irwin, E. Schlinger, M. Tokota'a, 18°10'S, 178°15'E, 40 m [FBA 050502]; 1 ♀ paratype (FNIC, FBA 050503) with same data except FBA 050502; 1 paratype (♀) FIJI: **Viti Levu:** 4 km WSW Colo-i-Suva Village, Mt. Nakobalevu, 372 m, 9-30.V.2003, Malaise 4, E. Schlinger, M. Tokota'a. 18.055°S, 178.424°E. [FBA 164010] (BPBM). Holotype to be deposited in FNIC.

**Fiji Distribution:** Viti Levu

**Comments.** This beautiful coppery species differs the other Fijian *Endelus* spp. with the bright coppery perimeter to the elytra.

*Endelus (Endelus) cupreoviridis* Bellamy, sp. nov.

(Fig. 6)

**Description** of ♂ holotype. *Diagnosis.* Size (maximum length x width): 3.7 mm x 1.4 mm, widest opposite humeri; elongate ovoid, slender, flattened above, transversely convex; vertex and pronotum shining red cupreous, elytra bright dark green with each large puncture on elytral disc the same color as the pronotum; surface of vertex and pronotum very finely rugulose-strigulate with large, very shallow belt-buckle setae; frons finely imbricate with sparse irregular punctures; elytra finely rugulose and punctulate, each shallow puncture with short, recumbent seta; ventral surface rugulose to fine-

ly imbricate and with large, shallow belt-buckle setae. *Head*: strongly, longitudinally depressed between two angulate projections that bear the eyes, when viewed from above, angle of frontovertex depression slightly obtuse; anterior-most portion of longitudinal groove between eyes with one deep, circular pit; eyes relatively large, inner margins slightly diverging dorsally, without circumocular groove, but with four small deep pits on either side along inner margin around ventral portion of eye; frons with two small nearly transverse elevations above antennal cavities, on either side of pair of deep, circular pits; frontoclypeus narrowed between antennae, width less than that of antennal cavity, then widening strongly to very wide, partially ventrally declivous distal clypeal margin; antennal cavities each arcuate laterally, confluent with short, oblique genal depression to receive basal antennomeres in repose; antennae short, antennomere 1 slightly longer, partially recurved, more robust than 2, 3 subequal to 2, but more slender, 4 shorter than 5, 6–10 serrate, triangularly to oblong laterally, 11 oblong. *Pronotum*: 2.08 times wider than longer, widest near midpoint of length; anterior margin slightly arcuate on either side of nearly evenly transverse median portion; posterior margin angularly bisinuate on either side of feebly emarginate median prescutellar lobe; lateral margins evenly arcuate anterior to nearly right angled lateroposterior angle, margin finely crenulate; disc flattened in posterior 2/3, anterior 1/3 slightly declivous anteriorly; lateral portion of disc slightly depressed before margin. *Scutellum*: elongate triangular, longer than wide; anterior margin feebly concave; lateral margins moderately concave, posterior apex strongly acuminate. *Elytra*: 1.13 times wider than pronotum, widest opposite humeri; one slight broad depression on each elytron just beyond anterior margin, between humeri and suture; disc otherwise feebly transversely convex; sutural margin a slightly elevated costa; lateral margins narrowing very gradually posterior to humeri to about anterior 1/4 before widening slightly to midpoint then gradually narrowing to just anterior to apex, then slightly more straight before separately rounded apices; lateral margins carinate, entire until just before apex, then finely serrate. *Underside*: prosternum with anterior margin feebly concave, process broad, widening posterior to procoxae, apex broad, angularly convex apically; metacoxal plate strongly dilated along posterior margin; abdominal ventrite 1 longer than 2, 1+2 longer than 3+4+5; 4 and 5 subequal in length; 5 longer than 4; suture between 1 and 2 only vaguely visible; sutures between 2, 3, 4 and 5 feebly arcuate; 5 with premarginal groove along entire visible perimeter, apex broadly arcuately rounded. *Legs*: femora strongly fusiform, expanded to partially obscure flattened tibiae in repose; tarsi with tarsomeres 1–4 each very short, each with progressively longer ventral pulvillus; 5 elongate, slender, as long as 1–4 together; each claw with angulate basal appendix. *Genitalia*: partially exerted, but not dissected.

**Variation.** One ♀ paratype differs from the holotype as follows: 3.9 mm x 1.4 mm, the red coppery color of the vertex and pronotum is brighter.

**Etymology.** The species name refers to the cupreous vertex and pronotum and the green elytra.

**Types:** Holotype ♂ from FIJI: **Taveuni**, 5.6 km SE Tavuki Village, Devo Peak, 1187 m, 11 Feb.–22 Mar.2005, Malaise 1, P. Vodo, 16.843°S, 179.960°W [FBA 511081]; Paratype ♀ from FIJI: **Taveuni**: Devo Forest Reserve, 3.I–10.I.2003, FJ-9 malaise, M. Irwin, E. Schlinger, M. Tokota'a, 179°59'E 16°50'S, 800 m [FBA 012084] (BPBM). Holotype to be deposited in FNIC.

**Fiji Distribution:** Taveuni Island.

**Comments.** This species is immediately distinguished from the other Fijian congeners due to the dorsal coloration.

*Endelus (Endelus) castaneocupreus* Bellamy, sp. nov.

(Fig. 7)

**Description** of holotype (♀). *Diagnosis.* Size (maximum length x width): 3.2 mm x 1.3 mm, widest opposite humeri; elongate ovoid, slender, flattened above, transversely convex; body black with

opaque cupreous reflections on frontovertex, pronotum, around lateral and distal portions of elytra; ventral surface nitid black with no cupreous reflections; surface of head and pronotum very finely rugose imbricate with irregular large, very shallow belt-buckle setae; elytral surface finely imbricate and sparsely foveolate, each small fovea with single, stout, adpressed seta; ventral surface with broad, scalloped imbrications and without any visible vestiture at high magnification. *Head*: strongly, longitudinally depressed between two angulate projections that bear the eyes, when viewed from above, angle of frontovertex depression obtuse; anterior-most portion of longitudinal groove between eyes with one deep, circular pit; eyes relatively large, inner margins slightly diverging dorsally, without circumocular groove, but with four small deep pits on either side along inner margin around ventral portion of eye; frons with two small nearly transverse elevations above antennal cavities, on either side of pair of deep, circular pits; frontoclypeus narrowed between antennae, width less than that of antennal cavity, then widening strongly to very wide, partially ventrally declivous straight distal margin; antennal cavities each arcuate laterally, confluent with short, oblique genal depression to receive basal antennomeres in repose; antennae short, antennomere 1 slightly longer, partially recurved, slightly longer than 2, 2 slightly wider than 1, 3 and 4 shorter, more slender than 2, 4 shorter than 3, 5 expanded distally, slightly longer than 4, 6 broadly triangular, 7–9 subequal, each much wider than long, subrectangular, 10 subequal to 9, 11 oblong. *Pronotum*: 2.17 times wider than longer, widest near posterior 1/3 of length; anterior margin slightly arcuate on either side of nearly evenly transverse median portion; posterior margin bisinuate on either side of feebly concave median prescutellar lobe; lateral margins evenly arcuate from posterior 1/3 to anterior margin, slightly concave from obtuse lateroposterior angle to posterior 1/3; margin finely crenulate; disc flattened in posterior 2/3, anterior 1/3 feebly declivous anteriorly; lateral portion of disc strongly depressed before margin. *Scutellum*: nearly equilateral triangular, only slightly longer than wide; anterior margin feebly convex; lateral margins moderately concave, apex acuminate. *Elytra*: 1.01 times wider than pronotum, widest opposite humeri; one slight broad depression on each elytron just inside anterior margin, between humeri and suture; humeri moderately elevated, oblique; disc otherwise feebly transversely convex; sutural margin a slightly elevated costa; lateral margins narrowing gradually posterior to humeri to about anterior 1/4 before widening slightly to midpoint then gradually narrowing to just anterior to separately rounded apices; lateral margins carinate, entire to apicolateral angle then finely serrate. *Underside*: prosternum with anterior margin feebly concave, process broad, widening posterior to procoxae, apex broad, angularly convex apically; metacoxal plate strongly dilated along posterior margin; abdominal ventrite 1 longer than 2, 1+2 longer than 3+4+5; 4 and 5 subequal in length; 5 longer than 4; suture between 1 and 2 only vaguely visible; sutures between 2, 3, 4 and 5 feebly arcuate; 5 with premarginal groove along entire visible perimeter, apex arcuately rounded. *Legs*: femora strongly fusiform, expanded to partially obscure flattened tibiae in repose; tarsi with tarsomeres 1–4 each very short, each with progressively longer ventral pulvillus; 5 elongate, slender, as long as 1–4 together; each claw with stout basal appendix. *Genitalia*: not dissected.

**Variation.** Only known from the holotype.

**Etymology.** The specific epithet refers to the dorsal coloration, a mixture of shades of chestnut-brown (*castaneus*) and coppery (*cupreous*).

**Types:** Holotype (♀) from FIJI: **Vanua Levu:** Batigere Range, 6 km NW Kilaka Village, 98 m, 28.VI.–21.VII.2004, Malaise 5, E. Schlinger, M. Tokota'a, 16.807°S, 178.991°E [FBA 145966]. Holotype to be deposited in FNIC.

**Fiji Distribution:** Vanua Levu.

**Comments.** This new species comes nearest to *E. fijiensis*, sp. nov., but differs in the general body proportion being more robust than *E. fijiensis*, sp. nov. and the dorsal coloration and pattern are very different. *E. castaneocupreus*, sp. nov. is only known from Vanua Levu while *E. fijiensis*, sp. nov. is known from Viti Levu and Kadavu.

## ACKNOWLEDGMENTS

I first thank Neal Evenhuis, BPBM for including me in the beetle constituency of the Fiji Arthropod project; Al Samuelson, Chris Reid, Steve Lingafelter and Moala Tokota'a for the interesting and entertaining two week field trip companionship in November 2005; again to Al for so many favors over the years; to Dr. Svatopluk Bílý, National Museum, Prague, Czech Republic for confirming the identification of *Aphanisticus cochinchinae* ssp. *seminulum*; to Dr. T. Deuve, Isabelle Bruneau de Miré, Museum National d'Histoire Naturelle, Paris, France for sending the type of *Endelus speculifer*; to Scott Kinnee of the PPDC lab of Cdfa in Sacramento for his help with the illustrations used herein; to Shepherd Myers, BPBM Entomology for locating and making the loan of additional specimens used herein and for use in future papers on the Fijian Buprestidae; and to the Fiji Government (Ministries of Forestry and Environment) for their continued support of the project.

## LITERATURE CITED

- Bellamy, C.L.** 1990. Two new species and notes on other Buprestidae from Fiji (Coleoptera). *Australian Entomological Magazine* **16**(4)[1989]: 87–92.
- . 2003. An illustrated summary of the higher classification of the superfamily Buprestoidea (Coleoptera). *Folia Heyrovskyana, Supplementum* **10**, 197 pp, 44 plates.
- . & **H.A. Hespenheide**. 1988. New species of *Paracylindromorphus* and *Taphrocerus* from South Africa, with comments on their relationships (Coleoptera: Buprestidae). *Journal of the Entomological Society of Southern Africa* **51**(2): 157–164.
- Bílý, S.** 1986. Descriptions of adult larvae of *Thrincopyge alacris* LeConte and *Aphanisticus cochinchinae seminulum* Obenberger (Coleoptera, Buprestidae), pp. 198–204. In: Ueno, S.I. (ed.), *Entomological Papers presented to Yoshihiko Kurosawa on the Occasion of his Retirement*. Coleopterist's Association of Japan, Tokyo.
- Brownlie, G.** 1977. The pteridophyte flora of Fiji. *Beihefte zur Nova Hedwigia* **55**: 1–397.
- Chang, V. & A.K. Oto.** 1984. A new insect pest of sugarcane found in Hawaii. *Annual Report of the Hawaiian Sugar Planters' Association* **1984**: 36–37.
- Cobos, A.** 1979. Revisión de la subfamilia Trachyinae a niveles supraespecificos (Coleoptera, Buprestidae). *Acta Entomologica Bohemoslovaca* **76**: 414–430.
- Deyrolle, H.** 1864. Description des buprestides de la Malaisie recueillis par M. Wallace. *Annales de la Société Entomologique de Belgique* **8**: 1–312. [English summary including keys in *Zoological Record* for 1865.]
- Heu, R.** 1987a. [Notes & Exhibitions]. *Aphanisticus* sp. *Proceedings of the Hawaiian Entomological Society* **27**[1986]: 2.
- . 1987b. [Notes & Exhibitions]. *Aphanisticus cochinchinae seminulum* Obenberger. *Proceedings of the Hawaiian Entomological Society* **27**[1986]: 7.
- Kalashian, M.Y.** 1997. New subgenus of *Endelus* (Coleoptera: Buprestidae) with description of three new species from Vietnam and China. *Folia Heyrovskyana* **5**(2): 73–81.
- Latreille, P.A.** 1829. *Les crustacés, les arachnides et les insectes, distribués en famille naturelles, ouvrage formant les tomes 4 et 5 de celui de M. le Baron Cuvier sur le*

- Règne animal*. Deuxième édition. Déterville, Paris. 27 + 584 pp.
- MacRae, T.C. & G.H. Nelson.** 2003. Distributional and biological notes on Buprestidae (Coleoptera) in North and Central America and the West Indies, with validation of one species. *The Coleopterists Bulletin* **57**(1): 57-70.
- Obenberger, J.** 1929. Insecta Baumiana I. 1. Buprestidae. *Acta Entomologica Musei Nationalis Pragae* **7**: 107–119.
- . 1937. Buprestidae 6. *Coleopterorum Catalogus* **13**(157): 1247–1714.
- Parham, J.W.** 1972. *Plants of the Fiji Islands*. Government of Fiji xv+462+xxix pp.
- Peck, S.B. & M.C. Thomas.** 1998. A distributional checklist of the beetles (Coleoptera) of Florida. *Arthropods of Florida and Neighboring Land Areas* **16**: i-viii + 1-180.
- Théry, A.** 1932. Contribution a l'étude des espèces du genre *Endelus* H. Deyr. (Coleopt. Buprestidae). *Novitates Entomologicae* **2**(2): 1-23.
- Wellso, S.G. & J.A. Jackman.** 1995. The first record of *Aphanisticus cochinchinae seminulum* Obenberger (Coleoptera: Buprestidae), a potential sugarcane pest in the Western Hemisphere. *The Coleopterists Bulletin* **49**(3): 287-288.
- , **G.V. Manley & J.A. Jackman.** 1976. Keys and notes on the Buprestidae (Coleoptera) of Michigan. *The Great Lakes Entomologist* **9**(1): 1-22.
- Westwood, J.O.** 1838. *Synopsis of the genera of British insects*, pp. 17–32 [part]. In his: *An introduction to the modern classification of insects, founded on the natural habits and corresponding organisations of the different families*. Volume 2 [part 3]. Longman, London. 587 pp. [The “Synopsis” was published in 6 parts (pp. 1–154) from 1838–1840].

