

SYSTEMATICS, MORPHOLOGY AND PHYSIOLOGY

Revision of *Cataulax* Spinola, with *Architas* Distant as a New
Synonymy (Heteroptera: Pentatomidae: Discocephalini)¹JOCÉLIA GRAZIA^{2,3}, LUIZ A. CAMPOS² AND MIRIAM BECKER^{2,3}¹Contribution # 357 of the Departamento de Zoologia, UFRGS.²Departamento de Zoologia, Universidade Federal do Rio Grande do Sul,
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An. Soc. Entomol. Brasil 29(3): 475-488 (2000)Revisão de *Cataulax* Spinola, com *Architas* Distant como Nova Sinonímia
(Heteroptera: Pentatomidae: Discocephalini)

RESUMO - Cinco espécies são reconhecidas para o gênero *Cataulax* Spinola, 1837: *Cataulax eximius* (Stål, 1860), *Cataulax froeschneri*, sp. n., *Cataulax pudens* (Distant, 1889), *Cataulax radians*, sp. n. e *Cataulax subtiliterconspersus* sp. n. *Cataulax pudens* é transferida de *Architas* Distant, 1889, aqui considerado sinônimo júnior de *Cataulax*. *Cataulax annulicornis* Walker, 1868, *Cataulax punctipes* Walker, 1868 e *Cataulax subvittatus* Walker, 1868 são consideradas *incertae sedis*.

PALAVRAS-CHAVE: Insecta, Discocephalinae, espécie nova, taxonomia.

ABSTRACT - Five species are here recognized for the genus *Cataulax* Spinola, 1837: *Cataulax eximius* (Stål, 1860), *Cataulax froeschneri*, n. sp., *Cataulax pudens* (Distant 1889), *Cataulax radians*, n. sp. and *Cataulax subtiliterconspersus*, n. sp. *Cataulax pudens* is transferred from *Architas* Distant, 1889, here considered a junior synonym of *Cataulax*. *Cataulax annulicornis* Walker, 1868, *Cataulax punctipes* Walker, 1868 and *Cataulax subvittatus* Walker, 1868 are considered *incertae sedis*.

KEY WORDS: Insecta, Discocephalinae, new species, taxonomy.

The genus *Cataulax* was described by Spinola (1837). So far, the species belonging to *Cataulax* have been known only from the original descriptions except for Stål's (1872) comments on *Cataulax eximius* Walker, 1868 and *Cataulax subvittatus* Walker, 1868 but he did not mention the remaining species de-

scribed by Walker (1868), *Cataulax annulicornis* and *Cataulax punctipes*. Lethierry & Severin (1893) listed *C. eximius*, *C. subvittatus*, *C. annulicornis*, *C. punctipes* and *Cataulax decoloratus* Walker, 1868 in their catalogue. Besides the species cited in Lethierry & Severin's (1893) catalogue, ex-

cept *C. decoloratus*, Kirkaldy (1909) added *Cataulax varicornis* (Walker, 1867) in his catalogue.

Stål (1860) described the genus *Hypata* for *Hypata eximia*, from Rio de Janeiro, Brazil. Stål (1872) pointed out *Hypata* as a junior synonym of *Cataulax*.

The genus *Architas* was described by Distant (1889) for *Architas pudens*, from Panama. The original description remained so far the only reference to it, except for its inclusion in Kirkaldy's (1909) catalogue.

Distant (1899) considered *C. decoloratus* Walker, 1868 a junior synonym of *Pentatoma varicornis* Walker, 1867 which he transferred to *Cataulax*. Ruckes (manuscript) considered these species congeneric with *Ablaptus* Stål, 1864. A note concerning these species can be found in Becker & Grazia (1997).

The remaining species described by Walker (1868) for this genus such as *C. punctipes*, *C. annulicornis* and *C. subvittatus* were considered here as *incertae sedis*. According to the original descriptions the types of the first two species were deposited in the "National Museum at Melbourne", and the type of the third species in the "British Museum (Bates Collection)". The types of *C. annulicornis* and *C. punctipes* were not found at the Museum of Victoria (formerly National Museum of Victoria) according to the information of Ms. Catriona McPhee, Assistant Curator, Entomology. The type of *C. subvittatus* was not found at the National Museum, London, according to Mrs. Janet Margerison-Knight, formerly Curator of the collection. Furthermore, Walker's descriptions of these species do not permit to place them correctly.

Material and Methods

For the revision of the genus *Cataulax* the authors had the opportunity to study a fairly large sample of specimens obtained from entomological collections of Brazil and abroad, as follows: American Museum of Natural History, New York, USA (AMNH); California Academy of Sciences, San Francisco, USA

(CAS); Departamento de Zoologia, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil (DZRS); Fundação Instituto Oswaldo Cruz, Rio de Janeiro, Brazil (IOC); Instituto Nacional de Pesquisas da Amazônia, Manaus, Brazil (INPA); Museo de Historia Natural La Salle, Caracas, Venezuela, (MHNC); Museu Nacional, Rio de Janeiro, Brazil (MNRJ); Museu Paraense Emílio Goeldi, Belém, Brazil, (MPEG); Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (MZSP); Museu de Zoologia J. S. Moure, Universidade Federal do Paraná, Brazil (UFPR); National Museum of Natural History, Washington D.C., USA (USNM); National Museum of Natural History, London, England (BMNH).

Measurements are given in millimeters, and were obtained as in Becker & Grazia (1989). The pygophores, and females genital plates were illustrated in dry condition; *phal-lus*, and females ectodermal genital ducts were studied after boiling in KOH 10% and staining in Congo Red. The terminology of Dupuis (1970) is adopted for genital structures.

Results and Discussion

Cataulax Spinola, 1837

Cataulax Spinola, 1837: 339; Dallas, 1851: 16; Stål, 1867: 500; Lethierry & Severin, 1893: 85; Kirkaldy, 1909: 216.

Hypata Stål, 1860: 15

Architas Distant, 1889: 323. NEW SYNONYMY

Type species: *Cataulax eximius* (Stål)

Diagnosis. Obovate; mesosternum tumid, in a median, elevated, broad calloused ridge; metasternum hexagonal, elevated into a thicket plate, apical margin emarginate; third abdominal segment with a median, flat tubercle which fits in apical emargination of the metasternum; rostrum with a minute intercalary segment between basal two segments.

Obovate; rather large, distinctly convex above, mildly so beneath; glossy to

semiglossy; head and anterior portion of the pronotum distinctly declivitous. Head shorter than the median pronotal length, roundly triangular about twice wide through eyes than long, anteocular margins feebly sinuate, jugae longer than clypeus and slightly overlapping apically, the apex rounded, entire. Antennae five segmented, thin, reaching, at least, basal third of scutellum. Pronotal transversely hexagonal, anterior margin no wider than head through the eyes; anterolateral margins straight, subcarinate, and very narrowly reflected; a minute, acute, anterior apical denticle on each side. Humeral angles obtusely rounded. Scutellum quite prominent attaining, at least, the seventh abdominal tergite; frena end at middle, margins mildly sinuate there. Hemelytra reaching the end of abdomen, corium subequal to, or slightly longer than scutellum; apical margin of membrane truncate in males, veins of membrane slightly raised, subparallel or convergent posteriorly. Connexivum narrowly exposed, apical angles rectilinear to subacute and very feebly produced. Bucculae feebly elevated, uniform in height, parallel; buccular canal relatively broad and shallow. Rostrum reaching beyond metacoxae, provided with a minute intercalary segment between the basal two segments; segment II arcuate, subequal to or slightly shorter than segments III and IV combined. Mesosternum distinctly tumid, its median area elevated into a thick, posteriorly widening, calloused ridge anteriorly convex, except in *C. eximius*. Metasternum hexagonal, slightly elevated into a flattish calloused plate, posterior margin excavated. Mesocoxae slightly more widely separated transversely than they are from each other longitudinally. Ostiolar peritreme barely elevated, attenuating laterally into a long, thin, thread-like ruga nearly reaching lateral margin of plate. Third abdominal sternite with a median broad and flat tubercle that fits into emargination of metasternum. Median abdominal furrow broad and shallow, reaching sixth sternite; small calloused yellow tubercles next to spiracles. Legs moderate in size, tibiae planosulcate above, terminal tarsal segment

subequal in length to basal two combined; femora and tibiae with numerous, widely spaced castaneous dots.

Male. Pygophore with postero-lateral angles expanded; internal borders of postero-lateral angles ending either in a lobe or in a denticle. Parameres stout, erect, simple or with branches. Proctiger opening ventrally; middle length with 1+1 process or carina convergent posteriorly. *Phallus*: articulatory apparatus with two pairs of dorsal connectives. Vesica with 1+1 or 2+2 dorsal basal processes. Conjunctiva present, with a 1+1 ventral, auricular process.

Female. Genital plates simple, smooth, much wider than long when taken together. Ectodermal genital ducts simple, chitinellipsen present.

Comments. Differential characters used by Distant (1889) to create the genus *Architas* are relatively minor, and, vary between species. Most of the characters conform to the requirements of the genus *Cataulax*, specially the genitalia of both sexes. The genera related to *Cataulax* have already been studied by the authors: *Sympiezorhincus* Spinola, 1837 was revised by Becker & Ruckes (1969), *Ablaptus* Stål, 1864 by Becker & Grazia (1989), *Agaclytus* Stål, 1864 by Becker & Grazia (1992) and *Uncinala* Ruckes, 1965 by Becker & Grazia (1995). The relationships among these genera can be found in these papers, and are extensively discussed in Becker & Grazia (1989, 1992). This is the first time that *Cataulax* is brought into the vicinity of these genera.

Key to the species of *Cataulax*

1. Scutellum uniformly finely and densely punctured *subtiliterconspersus* n. sp. Scutellum with punctures not uniform in size, distributed in lines or patches 2
2. Posterior margin of metasternum almost twice larger than anterior margin; median mesosternal plate almost flat *eximius* (Stål)

Posterior margin of metasternum almost as wide as anterior margin; median mesosternal plate conspicuously convex anteriorly 3
 3. Parameres with lobes and spines (Figs. 3B, 4B, 5B) *froeschneri* n. sp.
 Parameres simple 4
 4. Internal border of postero-lateral angles of pygophore with a lobe in a percurrent flange (Fig. 3C) *pudens* (Distant)
 Internal border of postero-lateral angles of pygophore with an obsolete denticle *radians* n. sp.

***Cataulax eximius* (Stål, 1860)**
 (Figs. 1, 2A, 3A, 4A, 5A, 6A-C, 7A, 8A)

Cataulax macraspis Spinola, 1837: 339 (not Perty); Dallas, 1851: 269.

Hypata eximia Stål, 1860: 16.

Cataulax eximius: Stål, 1872: 7; Lethierry & Severin, 1893: 85; Kirkaldy, 1909: 216.

Relatively large species; three to five pale, laevigate, longitudinal lines on head, intercalated with four subparallel rows of fine piceous punctures; eight small clusters of piceous punctures on pronotum, two at each humerus and four across crest of the disc, and three, more or less parallel longitudinal lines of fine punctures on exocorium, endocorium with patches of punctures (Fig. 1).

External apical angle of corium distinctly exceeding rounded apex of scutellum, clearly attaining or barely surpassing apical margin of the seventh tergite. Rostrum almost attaining apical margin of fifth sternite. Apical margin of metasternum broadly and shallowly sinuate, median abdominal tubercle correspondingly obtuse and broad.

Male. Apical margin of membrane straight, three or four external veins of membrane subparallel, not convergent towards apical

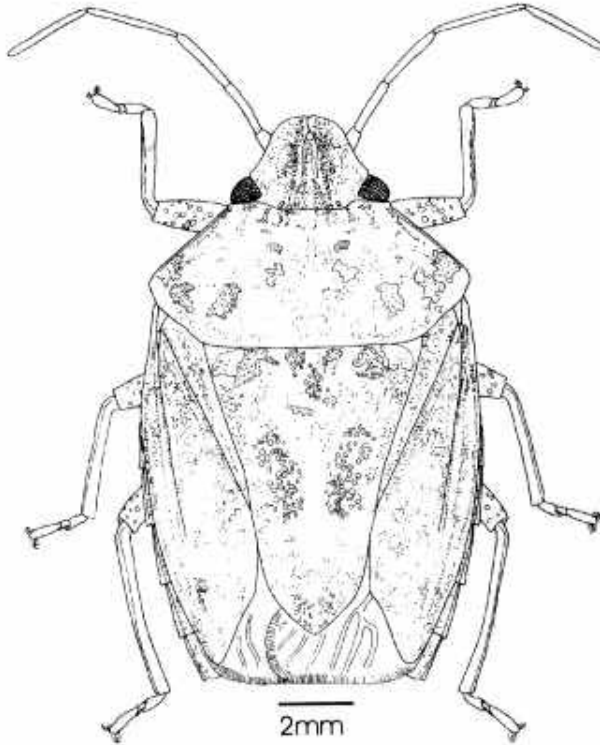


Figure 1. *Cataulax eximius* Stål, 1860.

margin (Fig. 2A).

Measurements (mm). Length of head 2.29(2.13-2.46); anteocular length 1.47(1.31-1.64); width of head 4.03(3.77-4.10);

Phallus: articulatory apparatus slender, basal plates narrow, *ponticulus transversalis* large, expanded, membranous; *processus capitati* not developed. Vesica with 2+2 dorsal proc-

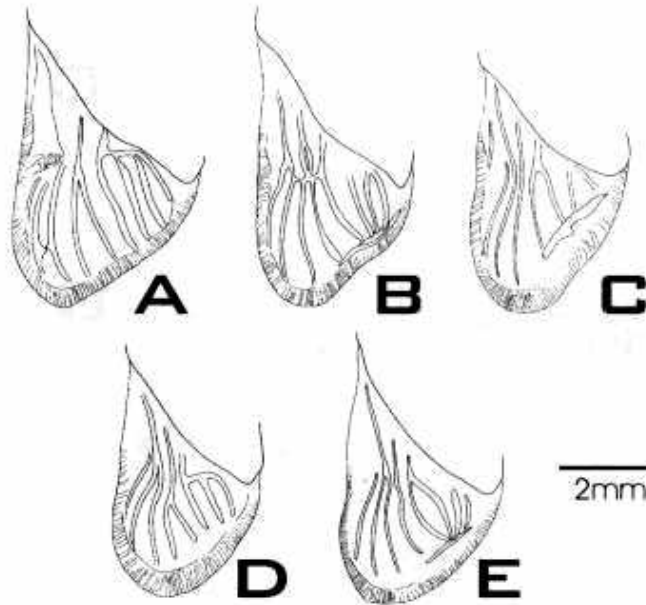


Figure 2. Male's hemelytral membrane. A) *C. eximius* Stål, 1860; B) *C. froeschneri*, n. sp.; C) *C. pudens* (Distant, 1889); D) *C. radians*, n. sp.; E) *C. subtiliterconspersus*, n. sp.

interocular width 2.62(2.46-2.68); interocelar width 1.18(1.14-1.31); length of antennal segments: I 0.85(0.82-0.98), II 1.50(1.31-1.64), III 1.70(1.64-1.80), IV 2.25(2.13-2.29), V 2.29; pronotal length 3.44(3.28-3.60); pronotal width 8.29(7.70-8.69); length of scutellum 7.54(7.05-8.03); width of scutellum 5.47(5.08-5.74); abdominal width 8.33(7.87-8.69); total length 13.28(12.79-13.61).

Postero-lateral angles of pygophore somewhat extended outwards, internal border carinate ventrally, denticle obvious. Parameres erect, spatulate, with strong ridges along external borders, obliquely truncate at apex surpassing postero-lateral angles of pygophore. Proctiger with 1+1 lateral process, at mid length, anteriorly directed. (Figs. 3A, 4A, 5A).

esses, the basal one as a mere projection, the second one forming arms embracing free portion of *ductus seminis distalis* (Fig. 6A-C).

Female. Measurements (mm). Length of head 2.39(2.29-2.46); anteocular length 1.50(1.47-1.64); width of head 4.03(3.93-4.01); interocular width 2.55(2.46-2.62); interocelar width 1.24(1.14-1.31); length of antennal segments: I 0.98, II 1.44(1.31-1.64), III 1.73(1.64-1.80), IV 2.32(2.29-2.46), V 2.37(2.29-2.46); pronotal length 3.57(3.44-3.77); pronotal width 8.49(8.03-8.85); length of scutellum 7.57(7.21-8.03); width of scutellum 5.57(5.08-5.74); abdominal width 8.42(8.03-8.69); total length 13.51(12.95-13.77).

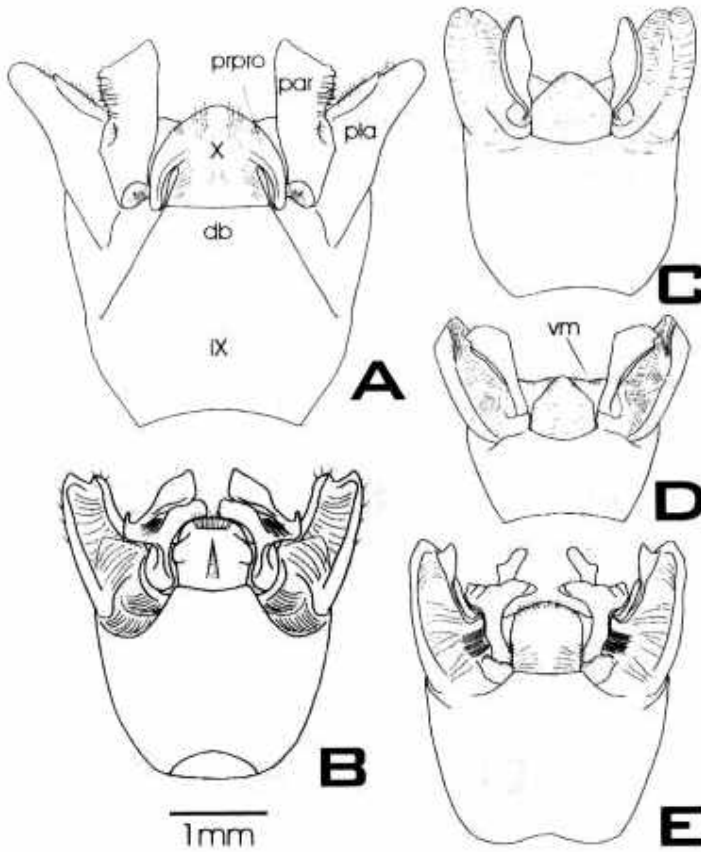


Figure 3. Pygophore, dorsal view. A) *C. eximius* Stål, 1860; B) *C. froeschneri*, n. sp.; C) *C. pudens* (Distant, 1889); D) *C. radians*, n. sp.; E) *C. subtiliterconspersus*, n. sp. (db = dorsal border, pla = postero-lateral angles, par = parameres, prpro = process of proctiger, vm = ventral margin, IX = 9th abdominal segment, X = 10th abdominal segment).

Gonocoxites 8 much wider than long, sutural borders rectilinear, adjoining each other; distal border smoothly rounded. Laterotergites 9 simple not surpassing transverse band connecting laterotergites 8 dorsally. Posterior border of laterotergites 8 smoothly rounded (Fig. 7A). Esclerotized area of gonocoxites 9 thin, almost inconspicuous, limits between gonocoxites 9 and gonapophyses 9 not clear. Orificium receptaculi surrounded by a conical, simple thickening of vaginal intima, chitinellipsen at each side of its base. *Capsula seminalis* simple, globose (Fig. 8A).

Type. Female deposited at Natural History Museum, Stockholm.

Material Examined. Brazil: *Minas Gerais*: male, female, Pedra Azul, I/1971, F. M. Oliveira (AMNH); female, Cambuquira, II/1942, H. S. Lopes (IOC); *Espírito Santo*: male, Guarapari, XI/1961, M. Alvarenga (UFPR); female, Santa Teresa, XII/03/1964, C. Elias (UFPR); *Rio de Janeiro*: male, Manguinhos, Rio de Janeiro, XII/20/1913, A. Lutz (IOC); female, Rio de Janeiro, 1936 (DZRS); male, Corcovado, idem, 1954, Zajciv (MNRJ); female, idem, XI/25/1952,

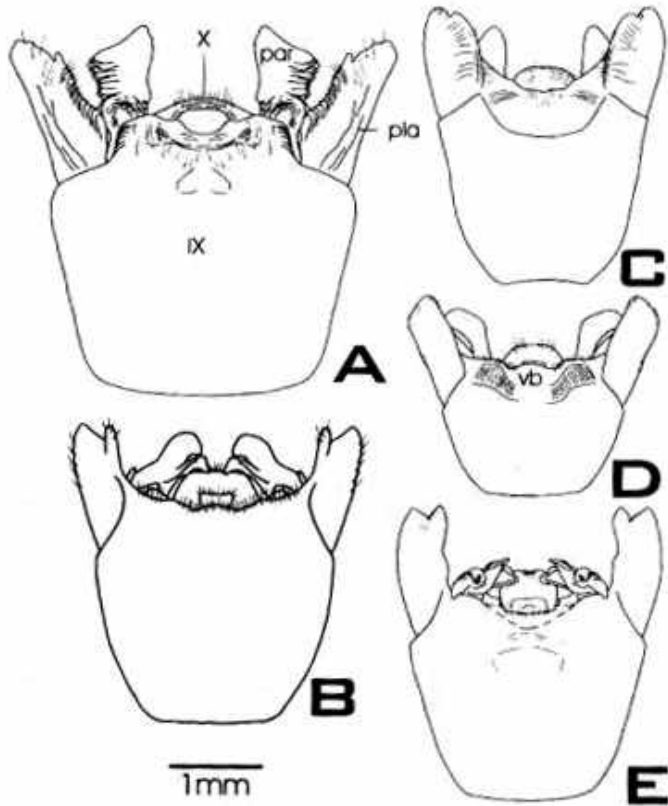


Figure 4. Pygophore, ventral view. A) *C. eximius* Stål, 1860; B) *C. froeschneri*, n. sp.; C) *C. pudens* (Distant, 1889); D) *C. radians*, n. sp.; E) *C. subtiliterconsersus*, n. sp. (pla = postero-lateral angles, par = parameres, vb = ventral border, IX = 9th abdominal segment, X = 10th abdominal segment).

idem; female, idem, VIII/1965, Alvarenga & Seabra (IOC); female, Japuhya, Angra dos Reis, IV/17/1942, H. Travassos, (MCN 1709); female, Serra de Petrópolis, II/1933 L. Travassos (DZRS); male, Tinguá, Nova Iguaçu, XII/01/1959, J. Evang. (DZRS); male, Conceição do Macabú, IX/1978, M. Alvarenga (DZRS); male, Represa Rio Grande, I/1972, M. Alvarenga & F. M. Oliveira (AMNH); male, idem [Guanabara], vii-ix/1969, F. M. Oliveira (AMNH) male, female, idem, III/02/1967, M. Oliveira (UFPR); São Paulo: female, Ilha de São Sebastião, I/1959 (DZRS); female, Ilha dos

Búzios X/16-XI/4/1963, Exp. Dep. Zool. (MZSP); Paraná: female, Morretes [IAPAR], I/06/185, CIIF [light], (UFPR); female, Antonina, Reserva Sapitanduva, X/31/1986, PROFAUPAR [light] (UFPR); Santa Catarina: male, Joinville, VIII/1956, Dirings (MCN1706); female, Corupá, XII/1953, A. Maller (DZRS); female, idem, III/1956, A. Maller (UFPR); male, no data.

Comments. This species is the largest one and as *C. froeschneri* and *C. subtiliterconsersus* has lobed and spined parameres. It can be distinguished from them by the pattern of the

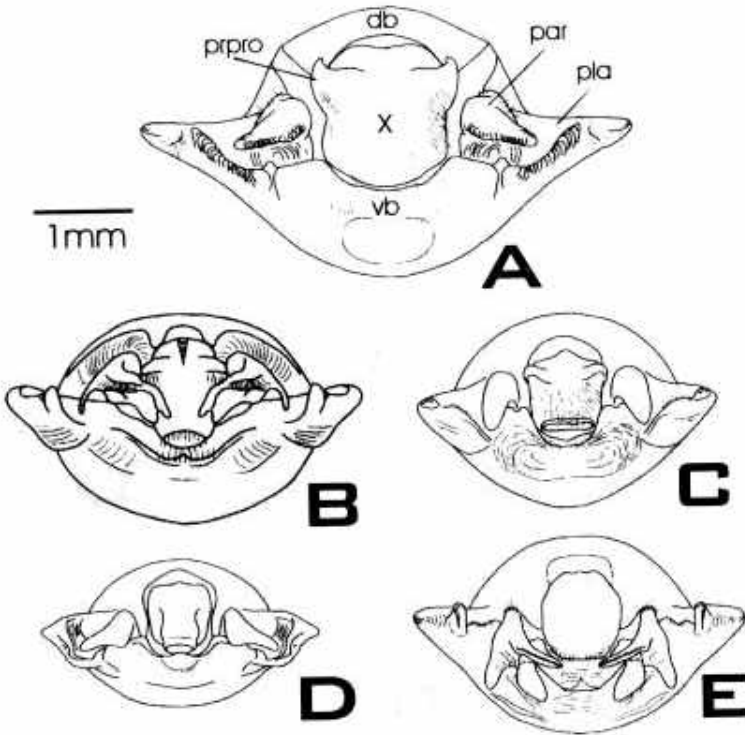


Figure 5. Pygophore, posterior view. A) *C. eximius* Stål, 1860; B) *C. froeschneri*, n. sp.; C) *C. pudens* (Distant, 1889); D) *C. radians*, n. sp.; E) *C. subtiliterconsersus*, n. sp. (db = dorsal border, pla = postero-lateral angles, par = parameres, prpro = process of proctiger, vb = ventral border, X = 10th abdominal segment).

membrane venation; in the last two species three or four external veins are convergent to a darker peg.

***Cataulax froeschneri*, n. sp.**
(Figs. 2B, 3B, 4B, 5B)

Obovate, glossy above, semiglossy to matter beneath. Punctures fuscous to ferruginous, coarser above.

Head with punctures along 2+2 longitudinal bands, one bordering the jugae, another internal, partially covering clypeus. Pronotum with six, posteriorly divergent, bands of fuscous punctures, much as in *C. radians*, the two inner bands continuous with ones on head,

emphasizing radiating pattern; a single row of fuscous punctures just inside the narrowly carinate anterolateral margin; many fine ferruginous punctures interspersed with coarser fuscous ones. Punctures of scutellum fuscous and irregularly distributed, not arranged in bands, along basal portion forming four darker patches. Hemelytra densely punctured with two oblique clusters of denser punctures on endocorium; punctures on exocorium arranged in three, parallel, longitudinal lines, with intervening, narrow laevigate bands, much as in *C. eximius*. Apex of scutellum subtriangular. Punctures of connexivum arranged in two vague longitudinal rows intercalated by a narrow laevigate band; antero-

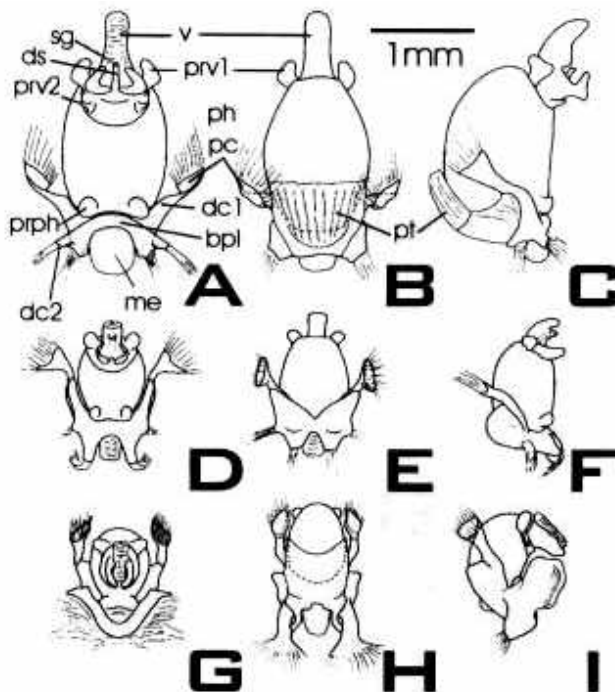


Figure 6. *Phallus*, dorsal, ventral, and lateral views respectively for each species. A-C) *C. eximius* Stål, 1860; D-F) *C. pudens* (Distant, 1889); G-I) *C. subtiliterconspersus*, n. sp. (bpl = basal plate, dc1 = dorsal connectives 1, dc2 = dorsal connectives 2, ds = ductus seminis distalis, me = membrablase, pc = processus capitati, ph = phallosome, prph = processus phallosomae, prv1 = processus vesicae 1, prv2 = processus vesicae 2, pt = ponticulus transversalis, sg = second gonopore, v = vesica).

lateral angles of segments narrowly infuscated. Rostrum surpassing middle of fourth abdominal sternite. Median mesosternal plate conspicuously convex anteriorly. Posterior margin of metasternum almost as wide as anterior margin. Median abdominal furrow very shallow.

Male. Apical margin of membrane distinctly sinuate at middle, with a short transversal submarginal sulcus; four external veins convergent to a darker peg external to the sulcus (Fig. 2B).

Measurements (mm). Length of head 1.96; anteocular length 1.31; width of head 3.60; interocular width 2.29; interocular width 1.14; length of antennal segments: I 0.65, II 1.31, III 1.31, IV 2.13, V 2.13; pronotal length 2.62;

pronotal width 7.54; length of scutellum 6.72; width of scutellum 5.41; abdominal width 7.05; total length 11.97.

Lobe of internal border of postero-lateral angles of pygophore well produced. Proctiger with 1+1 carina at mid length, converging posteriorly. Parameres three branched, the external one, the smallest, acute; internal one curved over proctiger; distal one, the largest, flaplike (Figs. 3B, 4B, 5B).

Female. unknown.

Type-material. Holotype male, Brazil, Mato Grosso, Cáceres IV/03/1985, C. Elias leg. (UFPR).

Etymology. This species is dedicated to Dr.

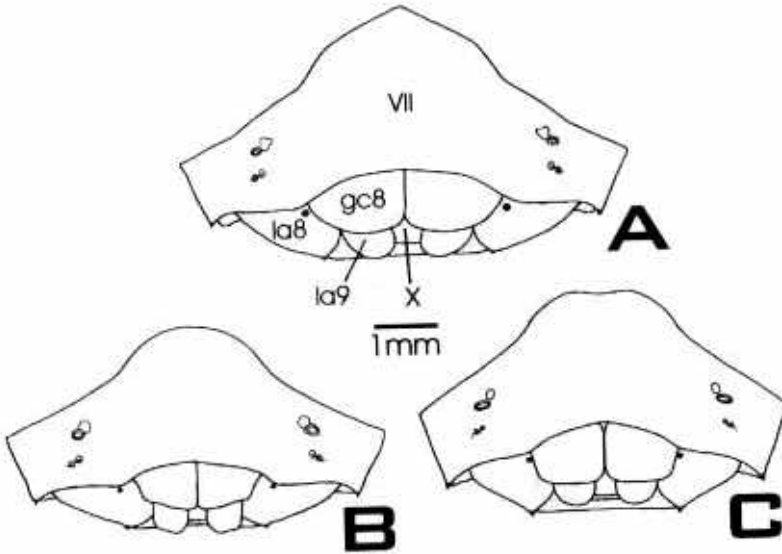


Figure 7. Female genital plates. A) *C. eximius* Stål, 1860; B) *C. pudens* (Distant, 1889); C) *C. subtiliterconspersus*, n. sp. (gc8 = gonocoxites 8, la8 = laterotergites 8, la9 = laterotergites 9, VII = 7th abdominal segment, X = 10th abdominal segment).

Richard C. Froeschner for his contribution to the knowledge of the Heteroptera.

Comments. By the structure of the parameres and the pattern of the membrane venation this species is similar to *C. subtiliterconspersus*; the presence of bands of fuscous punctures on head and pronotum and arranged in four darkest patches along basal portion of scutellum distinguish *C. froeschneri* from *C. subtiliterconspersus* in which the punctures do not form bands or patches.

***Cataulax pudens* (Distant, 1889)**
(Figs. 2C, 3C, 4C, 5C, 6D-F, 7B, 8B)

Architas pudens Distant, 1889: 323; Lethierry & Severin, 1893: 85; Kirkaldy, 1909: 216.
NEW COMBINATION

Distinctly shorter, and less densely punctured than in *C. eximius*, but sometimes punctuation is arranged in longitudinal lines or in patches as in that species. Apex of scutellum

subtriangular. Corium hardly longer than scutellum. Rostrum clearly surpassing the middle of the fourth abdominal sternite. Posterior margin of metasternum almost as wide as anterior margin; median mesosternal plate conspicuously convex anteriorly.

Male. Apical margin of hemelytral membrane slightly truncate and feebly sinuate, veins subparallel, ending well before apical margin (Fig. 2C).

Measurements (mm). Length of head 1.84(1.80-1.96); anteocular length 1.22(1.14-1.31); width of head 3.68(3.60-3.77); interocular width 2.12(1.96-2.29); interocelar width 1.06(0.98-1.14); length of antennal segments: I 0.65, II 1.26(1.14-1.31), III 1.26(1.14-1.31), IV 1.88(1.80-1.96), V 1.96; pronotal length 3.03(2.95-3.11); pronotal width 7.54(7.38-7.70); length of scutellum 6.59(6.39-6.88); width of scutellum 5.08; abdominal width 7.21(7.05-7.38); total length 11.43(11.15-12.13).

Pygophore sub-rectangular; lobe of internal border of postero-lateral angles in a

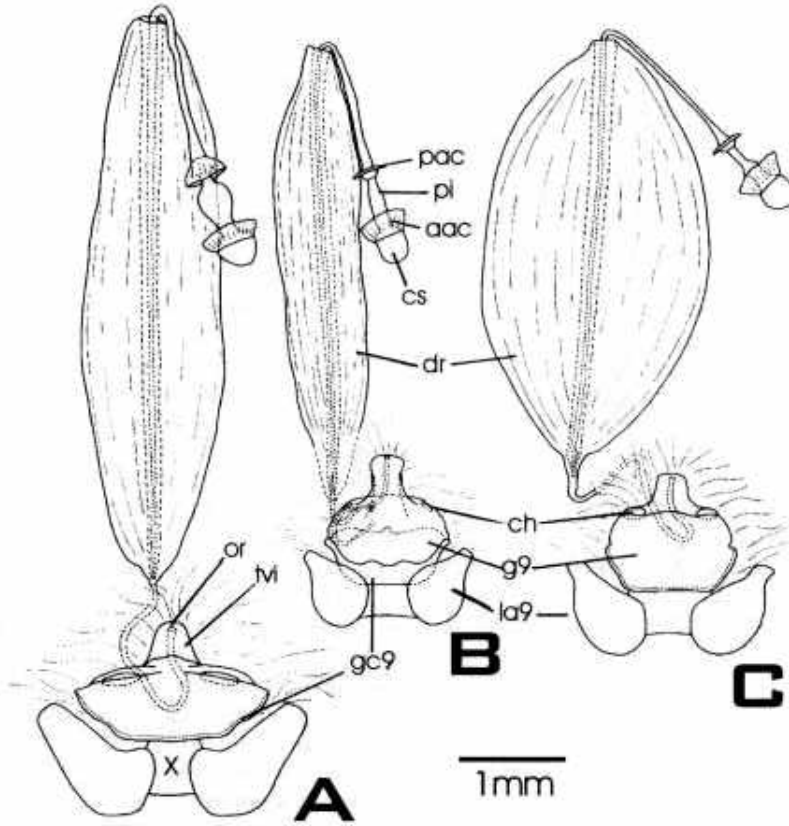


Figure 8. Female genital plates and ectodermal genital ducts. A) *C. eximius* Stål, 1860; B) *C. pudens* (Distant, 1889); C) *C. subtiliterconspersus*, n. sp. (aac = anterior anular crest, ch = chitinellipsen, cs = capsula seminalis, dr = ductus receptaculi, g9 = gonapophyses 9, gc9 = gonoxites 9, la9 = laterotergites 9, or = orificium receptaculi, pac = posterior anular crest, pi = pars intermedialis, tvi = thickening of vaginal intima, X = 10th abdominal segment).

percurrent flange. Parameres simple, depressed, elongate-oval in outline (Figs. 3C, 4C, 5C). Proctiger with 1+1 carina at mid length, converging posteriorly. *Phallus*: articulatory apparatus stout, wider than *phallotheca*; *processus capitati* slender. Vesica with 1+1 dorsal process at base, *processus vesicae* shallow, collar like; *ductus seminis distalis* totally included in vesica (Figs. 6D-F).

Female. Measurements (mm). Length of head 2.18(1.96-2.29); anteocular length 1.26(1.14-1.31); width of head 3.83(3.60-4.10);

interocular width 2.36(2.29-2.46); interocelar width 1.23(1.14-1.39); length of antennal segments: I 0.65, II 1.44(1.31-1.47), III 1.27(1.14-1.31), IV 2.07(1.88-2.29), V 2.00(1.88-2.13); pronotal length 3.37(3.11-3.60); pronotal width 7.79(7.38-8.20); length of scutellum 6.75(6.39-7.05); width of scutellum 5.05(4.92-5.24); abdominal width 7.38(6.72-8.03); total length 12.59(11.80-13.61).

Gonocoxites 8 wider than long, sutural borders rectilinear, adjoining each other; distal border angulate. Laterotergites 9 simple, just

surpassing transverse band connecting laterotergites 8 dorsally. Posterior borders of laterotergites 8 smoothly rounded (Fig. 7B). Anterior border of gonocoxites 9 concave, posterior border almost rectilinear; gonapophyses 9 with 1+1 thickenings near anterior limits. Orificium receptaculi surrounded by a conical, simple thickening of vaginal intima, chitinellipsen at each side of its base. *Capsula seminalis* simple, globose (Fig. 8B).

Type. Holotype female deposited at BMNH examined. Type locality: Volcan de Chiriqui, 2-3000ft, Panamá.

Material Examined. Panama: *Canal Zone*: male, female, Barro Colorado Island, V/24/1957, F. Schrader (AMNH); male, female, idem, IV/24/1962, H. Ruckes (AMNH); female, idem, VII/18/1956, C. W. & M. E. Rettenmeyer (SEM); female, idem, V/10-17/1964, WD & SS Duckworth (USNM); *San Jose*: male, Pearl Island, V/25/1944, Morrison JPE, collected at light (USNM); *Porto Belo*: female, IV/17/1912 (AMNH); *Gatum Lake*: male, Tres Rios Plantation, IX/04/1931, TOZschokke, E. P. Van Duzee Collection (AMNH); Venezuela: *Zulia*: female, Caimera, Sierra de Perija, IV/11/1960 (MHNS).

Comments. Similar to *C. radians* by having simple parameres and membrane with subparalell veins ending well before apical margin. In *C. pudens* the apical margin of hemelytral membrane is slightly truncate and feebly sinuate but in *C. radians* it is straight.

***Cataulax radians*, n. sp.
(Figs. 2D, 3D, 4D, 5D)**

Obovate, glossy above, semiglossy to matter beneath; reddish fulvous; punctures fuscous to ferruginous, coarser above.

Distribution of the punctures on head, pronotum and hemelytra as in *C. froeschneri*. Antennae missing. Apex of scutellum narrowly rounded (not subtriangular); punctures fuscous and arranged in four vague,

subparalell, longitudinal bands, which are evanescent posteriorly; central basal portion of disc obsolescently punctured. Corium hardly exceeding scutellum; membrane clear amber, with a large darker basal spot, veins brownish. Connexivum orange-ochraceous, punctures arranged in two longitudinal rows, a marginal one and a submarginal one with a narrow laevigate band between them; basal angles of segments narrowly and vaguely infuscated. Rostrum reaching middle of fourth abdominal sternite. Median mesosternal plate quite broad, conspicuously convex anteriorly. Posterior margin of metasternum almost as wide as anterior margin, obtusely sinuate, abdominal tubercle stout, obtuse. Median abdominal furrow very shallow.

Male. Apical margin of hemelytral membrane straight, veins subparalell ending well before apical margin. Apical margin of the seventh sternite shallowly and evenly arcuate across the width, less esclerotized there (Fig. 2D).

Measurements (mm). Length of head 1.64; anteocular length 1.14; width of head 3.28; interocular width 1.96; interocelar width 0.98; length of antennal segments: I 0.65, II-V missing; pronotal length 2.62; pronotal width 6.72; length of scutellum 5.74; width of scutellum 4.59; abdominal width 6.39; total length 10.66.

Cup-like part of pygophore wider than long. Postero-lateral angles directed outwards, concave along its inner surface, denticle of internal border obsolete. Proctiger with 1+1 carina at mid length, converging posteriorly. Parameres spatulate, simple, external apex notched (Figs. 3D, 4D, 5D). Female: unknown.

Type-material. Holotype male, PERU, Rio Santiago, XI/23/1924, H. Bassler (AMNH). Comments. Similar to *C. eximius*, *C. pudens* and *C. froeschneri* by the pattern of dorsal punctures forming bands and patches; it can be distinguished from them by the size, being the smallest one.

***Cataulax subtiliterconspersus* n. sp.**
(Figs. 2E, 3E, 4E, 5E, 6G-I, 7C, 8C)

Obovate, glossy, finely and densely punctured dorsad; punctures fuscous, vaguely arranged in lines. Shorter than *C. eximius*.

Scutellum with apex subtriangular, punctures uniformly distributed, not arranged in patches or lines. Corium hardly exceeding scutellum; membrane clear amber, with a darker basal spot, veins a little darker. Connexivum with a vague submarginal line of punctures; antero-lateral angles with darker punctures. Rostrum apparently attaining posterior margin of fourth abdominal sternite. Median mesosternal plate conspicuously convex anteriorly. Posterior margin of metasternum almost as wide as anterior margin. Median abdominal furrow shallow.

Male. Apical margin of membrane subtruncate, very feebly sinuate, three or four external veins convergent to an inconspicuous submarginal peg (Fig. 2E).

Measurements (mm). Length of head (1.80-2.13); anteocular length 1.31; width of head (3.6-4.1); interocular width 2.29; interocelar width 1.14; length of antennal segments: I 0.65, II 1.31, III 1.31, IV 1.96, V missing; pronotal length (2.78-3.11); pronotal width (7.38-7.70); length of scutellum (6.23-7.05); width of scutellum (4.75-5.41); abdominal width (6.88-7.21); total length (11.80-12.46).

Pygophore subrectangular. Denticle of internal border of postero-lateral angles large triangular. Three branches of paramere flaplike, the distal one at right angles with the external and internal ones (Figs. 3E, 4E, 5E). Carina of proctiger inconspicuous. *Phallus*: articulatory apparatus robust, expanded dorsad, *ponticulus transversalis* large; *processus capitati* slender. Vesica with 1+1 dorsal process at base, *processus vesicae* wide, collar like; *ductus seminis distalis* included in vesica. (Figs. 6G-I).

Female. Measurements (mm). Length of head (2.29-2.37); anteocular length (1.14-1.39);

width of head (3.77-4.10); interocular width (2.29-2.46); interocelar width (1.14-1.55); length of antennal segments: I 0.65, II (1.47-1.64), III 1.31, IV (2.13-2.29), V 2.21; pronotal length (3.28-3.44); pronotal width (7.70-8.20); length of scutellum (6.23-6.88); width of scutellum (5.08-5.41); abdominal width 6.88; total length (12.78-13.28).

Gonocoxites 8 not much wider than long, sutural borders rectilinear, adjoining each other except at base; distal border almost rectilinear. Laterotergites 9 simple, not reaching transverse band connecting laterotergites 8 dorsally. Posterior borders of laterotergites 8 smoothly rounded (Fig. 7C). Esclerotized area of gonocoxites 9 thin, almost inconspicuous, limits between gonocoxites 9 and gonapophyses 9 not clear. Orificium receptaculi surrounded by a conical, simple thickening of vaginal intima, chitinellipsen at each side of its base. *Capsula seminalis* simple, globose (Fig. 8C).

Type-material. Holotype male Brazil, *Roraima*, Rio Uraricoera, Ilha Maracá, XI/20-30/1987, J. A. Rafael, fogging (INPA). Paratypes: French Guyana: *Cayenne* male, E. P. Van Duzee Collection (CAS). Brazil: *Pará*: female, Tucuruí, Rio Trombetas, Ilha Tocantins, VII/31/1984, B. Mascarenhas (MPEG); *Amazonas*: female, Manaus, III-IV/1976, Montouchet & Burheim (DZRS).

Comments. This species can be distinguished from all others by the pattern of dorsal punctures.

Incertae Sedis

***Cataulax annulicornis* Walker, 1868**

Cataulax annulicornis Walker, 1868: 564; Lethierry & Severin, 1893: 85; Kirkaldy, 1909: 216.

***Cataulax punctipes* Walker, 1868**

Cataulax punctipes Walker, 1868: 565; Lethierry & Severin, 1893: 85; Kirkaldy, 1909: 216.

***Cataulax subvittatus* Walker, 1868**

Cataulax subvittatus Walker, 1868: 564; Stål, 1872: 7; Lethierry & Severin, 1893: 85; Kirkaldy, 1909: 216.

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