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REDESCRIPTION OF THE TYPE SPECIES OF *CYNORTA* (ARACHNIDA, OPILIONES, COSMETIDAE)

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ABSTRACT. *Cynorta conspersa* (Perty 1833), the type species of *Cynorta* Koch 1839, is redescribed, based on abundant material from the lower Amazon basin, Brazil. A neotype is designated for this species and the species *Cynorta mayi* Mello-Leitão 1931 is herein considered a junior subjective synonym. Genital morphology of the species is described for the first time. An effort has been made to detect diagnostic characters for the genus *Cynorta*, which was used in many different senses in the past and includes a large number of unrelated Neotropical species.

RESUMEN. Es redescrita *Cynorta conspersa* (Perty 1833), especie tipo del género, con base en abundante material proveniente de la cuenca del bajo Amazonas de Brasil. Es designado un neotipo para esta especie y la especie *Cynorta mayi* Mello-Leitão 1931 es considerada como su sinónimo junior subjetivo. La morfología genital es descrita por primera vez. Ha sido hecho un esfuerzo para detectar caracteres diagnósticos del género *Cynorta*, el cual fue usado en el pasado con muchos significados diferentes, incluyendo un gran número de especies neotropicales no relacionadas.

Keywords: Neotropics, Brazil, taxonomy, new synonymy

The family Cosmetidae Koch 1839, with more than 700 nominal species, is the second most diverse of Opiliones suborder Laniatores Thorell 1876 (Kury 2003). It is distributed in the Neotropics, with the greatest abundance in Central America and the Caribbean, stretching as far north as southern U.S.A. There are also many species in the Andean realm and the lowland Amazonian rainforest. The present state of cosmetid systematics is unsatisfactory, the genera being defined by a combination of area armature and tarsal counts. The high percentage of monotypic genera in the faulty Roewerian system (e.g., Roewer 1923) has been counteracted by the recognition of large meaningless genera (Goodnight & Goodnight 1953), an equally ineffective approach to their taxonomy.

Perty (1833) described the genus *Cosmetus* with many species of Cosmetidae from Brazil, among them *Cosmetus conspersus* Perty 1833 from "Brazil." Koch (1839) was the first to narrow down the occurrence of the species from Pará, creating the genus *Cynorta* to accommodate some of Perty's species, including *C. conspersus*, *C. marginalis* Banks 1909, *C. posticata* Banks 1909, *C. dentipes* F.O. Pickard-Cambridge 1904, *C. geayi* Roewer 1912, *C. sulphurata* Roewer 1912, *C. sigillata* Roewer 1912, *C. flavoclathrata* Simon 1879, *C. vestita* Roewer 1912, *C. v-album* Simon 1879, *C. fraterna* Banks 1909, *C. albiornata* Roewer 1912, *C. scripta* Simon 1879, *C. calcarbasalis* Roewer 1912, *C. calcarapicalis* Roewer 1912 and *C. juncta* (Gervais in Walckenaer 1844), all from localities in the Antilles, Brazil, Costa Rica, Cuba, Ecuador, French Guyana, Guatemala, Guyana, and Suriname. Much later, Pickard-Cambridge (1904) designated *Cosmetus conspersus* as the type species of *Cynorta*. Mello-Leitão (1931) described *Cynorta mayi* from "Pará," but did not compare it with *C. conspersa*. The only literature records for *Cosmetus conspersus*, all

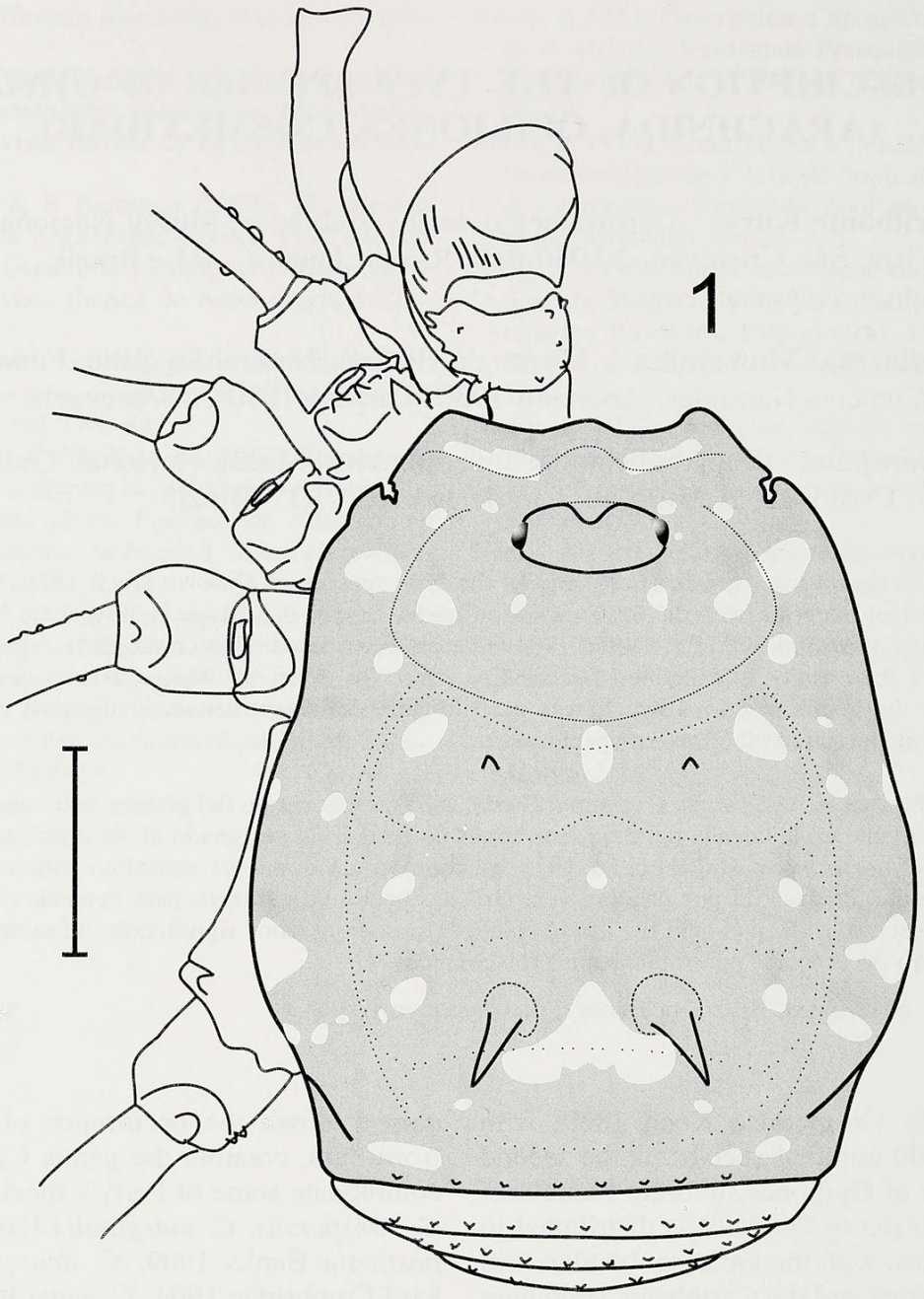


Figure 1.—*Cynorta conspersa* (Perty 1833), male neotype (MNRJ 6098) from Brazil, habitus: Dorsal view. Scale bar = 1 mm.

in the Pará state near the mouth of the Amazon River, are Cametá, at Rio Tocantins (Sørensen 1932), Belém and Tucuruí (Kury 2003).

Goodnight & Goodnight (1953), in an influential paper, using the then dominant concept of considering only tarsal segmentation to define Opiliones genera, synonymized a great number of genera of Cosmetidae into only three: *Vonones* Simon 1879, *Cynorta* Koch 1839, and *Paecilaema* Koch 1839. Most of those synonymies were disclaimed by Kury (2003); but, even so, *Cynorta* is still the largest genus of Cosmetidae, with 154 species (22% of the diversity of the family) and is the type of the subfamily Cynortinae Mello-Leitão 1933, which is currently under the synonymy of Cosmetinae.

The type material of *C. conspersa* is long lost (Roewer 1923), but we were able to examine the four syntypes of *C. mayi* in the Museu Nacional, Universidade Federal do Rio de Janeiro, Brazil, which were compared with the descriptions and redescriptions in the literature. As a result, we here designate a lectotype from the syntypes of *C. mayi* and a neotype

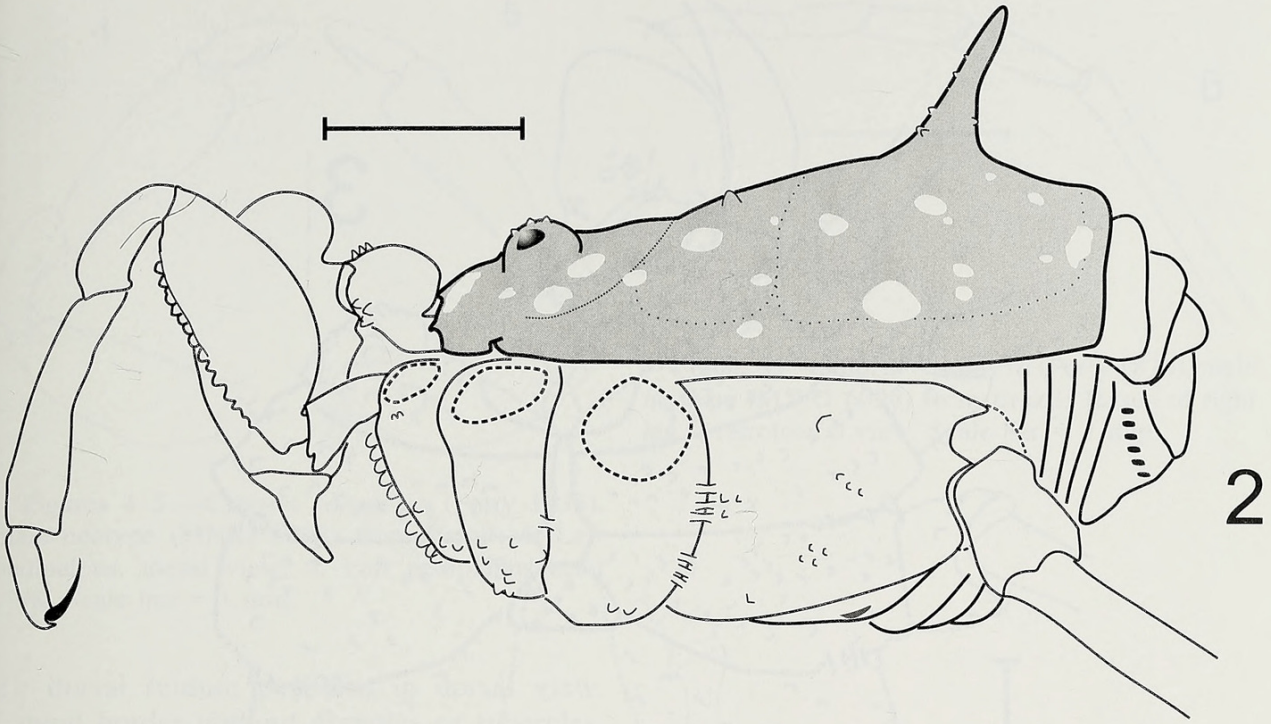


Figure 2.—*Cynorta conspersa* (Perty 1833), male neotype (MNRJ 6098) from Brazil, habitus: Lateral view. Scale bar = 1 mm.

for *C. conspersa*, to stabilize the concept of the species and consider both nominal species to be synonyms.

Abbreviations of depositories are: Museu Nacional, Universidade Federal do Rio de Janeiro, Brazil (MNRJ); Zoologische Staatssammlung München, Germany (ZSMC). All measurements are in mm. Coordinates are in decimal degrees.

SYSTEMATICS

Family Cosmetidae Koch 1839
Genus *Cynorta* Koch 1839

Type species.—*Cosmetus conspersus* Perty 1833, by subsequent designation of Pickard-Cambridge (1904).

Diagnosis.—Outline of the dorsal scutum of the beta type; chelicerae without strong sexual dimorphism, legs I–IV long, slender and unarmed, femur IV substraight; leg I with 6 to 7 tarsomeres; basitarsomeres of leg I of male much larger than distitarsomeres; tarsal claws of legs III–IV unpectinate; penis ventral plate subrectangular, as wide basally as distally, with lateral borders parallel and distal border slightly concave and 3 + 4 lateral setae.

Cynorta conspersa (Perty 1833)
Figs. 1–10

Cosmetus conspersus Perty 1833:203.

Cynorta conspersa (Perty): Koch 1839:21; Kury 2003:43.

Poecilæma conspersum (Perty): Sørensen 1932: 336.

Cynorta mayi Mello-Leitão 1931:116, fig. 2; Mello-Leitão 1932:444, suppl. fig. 5. NEW SYNONYMY.

Type specimens.—*Cosmetus conspersus*: BRAZIL: male holotype, without further locality data (ZSMC?), lost, not examined.

BRAZIL: *Pará:* male neotype (present designation), Tucuruí (3.6903°S, 49.7213°W), April 1981, A.C. Domingos (MNRJ 6098).

BRAZIL: *Pará: Cynorta mayi*: female lectotype (present designation), 3 female paralectotypes, without further locality data, E. May (MNRJ 1368).

Other material examined.—BRAZIL: *Pará:* 5 ♂, 11 ♀, 1 juvenile, Belém (1.3904°S, 48.4490°W), 11 June 1974, W. Roth (MNRJ 6175); 12 ♂, 30 ♀, Belém, Clonal Garden (1.4300°S, 48.4564°W), insecticide blast in cacao tree, 14–15 December 1976, Hilton et al. (MNRJ 17641); 2 ♂, Belém, Utinga

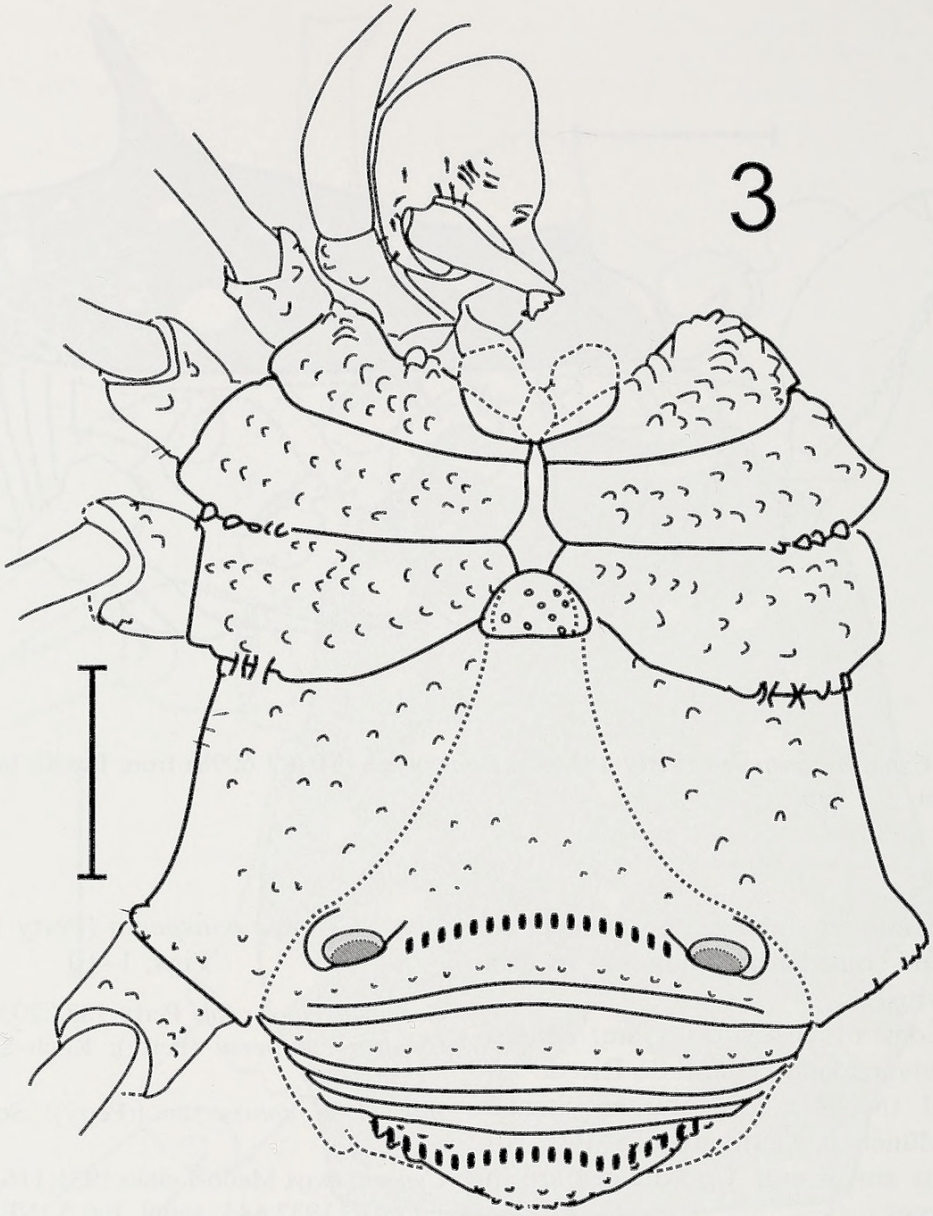
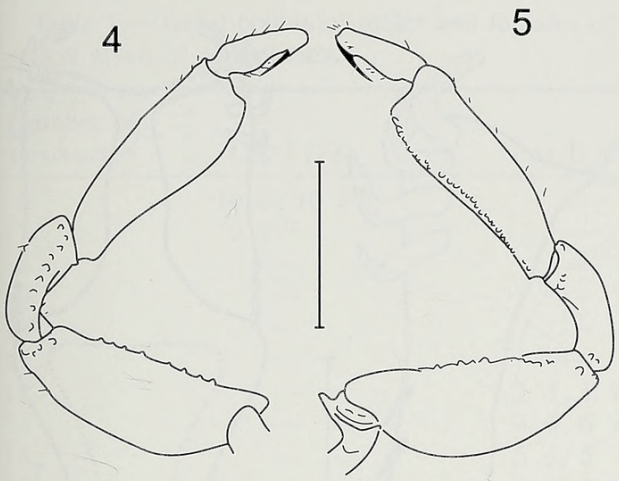


Figure 3.—Ventral view of *Cynorta conspersa* (Perty 1833), male neotype (MNRJ 6098) from Brazil. Scale bars = 1 mm.

(1.4558°S, 48.5044°W), J.C. Carvalho (MNRJ 5050); 31 ♂, 65 ♀, Tucuruí (3.6903°S, 49.7213°W), April 1981, A.C. Domingos (MNRJ 4560); 6 ♂, 13 ♀, 4 juveniles, Tucuruí (3.6903°S, 49.7213°W), 20 April 1982, W. Roth (MNRJ 6318).

Diagnosis.—Dorsal scutum pyriform with scutal areas obsolete, area I with one granule each side, III with a pair of spiniform large tubercles. Cheliceral sockets of carapace shallow, without laterofrontal projections. Cheliceral bulla marginated laterally and posteriorly by a row of tubercles, ectal most developed. Basal tarsal segments I of the male slightly swollen. Femur and tibia IV much elongate, straight and unarmed. Tarsal counts: 6–7 (3), 12–16 (3), 8–9, 9–11. Tarsal claws III–IV unpectinate. Penis: ventral plate with lateral borders straight and parallel, distal border concave, uncleft; with fourth distal curved setae cylindrical and flattened distally and three medial lateral setae; glans with a small ventro-distal projection, and dorsal process well developed; stylus with ventro-distal mat covered with very small pointed granulations.

Description of male neotype.—Measurements: dorsal scutum: carapace 1.45 long, 2.58 wide; abdominal scutum: 2.31 long, 3.26 wide; femora I–IV: 3.7, 9.3, 6.3, 10.1; tibiae I–IV: 2.6, 7.8, 3.2, 4.7. *Body dorsal (Figs. 1,*



Figures 4–5.—*Cynorta conspersa* (Perty 1833), male neotype (MNRJ 6098) from Brazil: 4. Left pedipalpus, mesal view; 5. Left pedipalpus ectal view. Scale bar = 1 mm.

2): dorsal scutum pyriform in dorsal view. Lateral border without granules or tubercles. Anterior margin with 2 sockets for the insertion of chelicerae, with 2 anterolateral projections. Eye mound located anteriorly on the carapace, low, wide (about 30 % of total length [TL]), with 3 dorsal granules each side. With 4 mesotergal areas with dorsal minute setae; I with 1 granule each side, II and IV unarmed; III with 2 long spiniform projections, straight with granules on its base. Posterior margin of dorsal scutum and free tergite I to III with a row of minute granules. *Body ventral (Fig. 3):* coxa I with a group of 6 anterior tubercles, 1 medial row of 8–9 tubercles, 1 posterior with 6 granules and 4 distal tubercles; II with a group of 4 anterior granules, 9 medial granules, 8–9 posterior granules and some small proximal granules between medial, posterior rows and 4 distal; III with a anterodistal row of 4 granules, a medial row of 6 granules, a posterior of 7 and 3 distal granules. Genital operculum with 2 lateroposterior small projections, and few setae circularly distributed. Stigmatic area with setae irregularly distributed. Free sternites with a row of small setiferous granules each. Anal operculum with some small granules. *Chelicera:* basichelicerite with 1 ectal row of irregularly placed tubercles and 1 mesal row of tubercles (distal larger). Bulla slightly hypertelic, movable finger with 1 basal tooth and 6–7 small distal teeth. *Pedipalpus (Figs. 4, 5):* coxa with 1 distal tubercle and 1 small ventral granule. Trochanter with 2 ventral tubercles (mesal

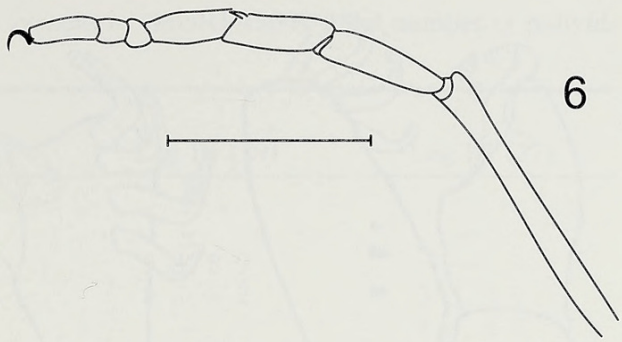


Figure 6.—*Cynorta conspersa* (Perty 1833), male neotype (MNRJ 6098) from Brazil: Tarsus of right leg I, retrolateral view. Scale bar = 1 mm.

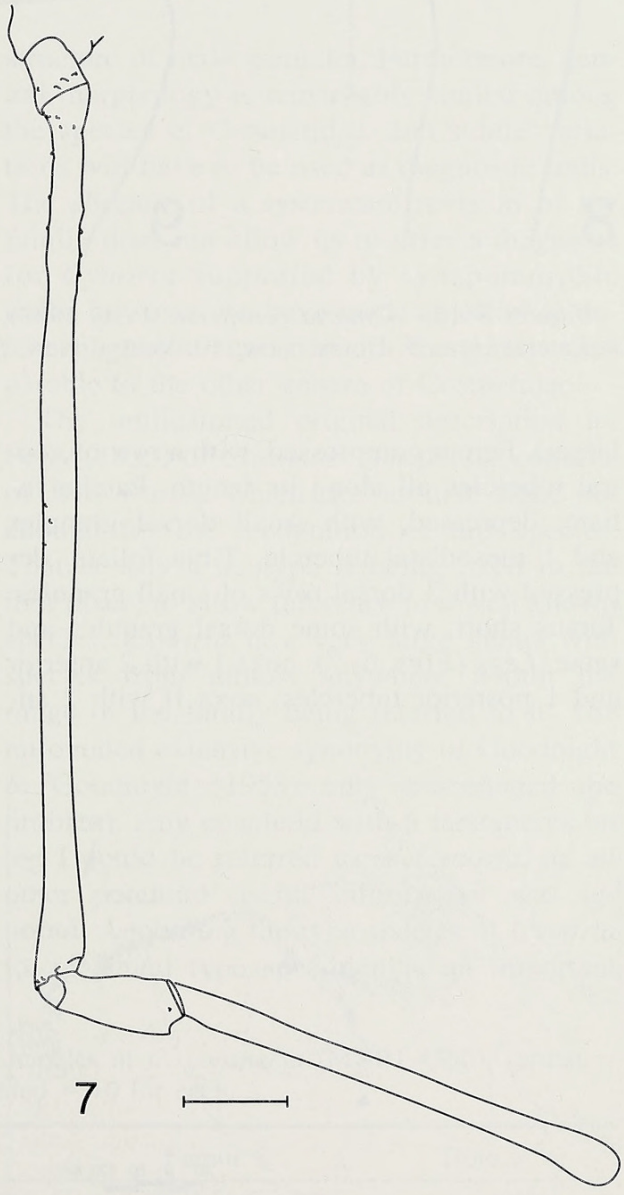
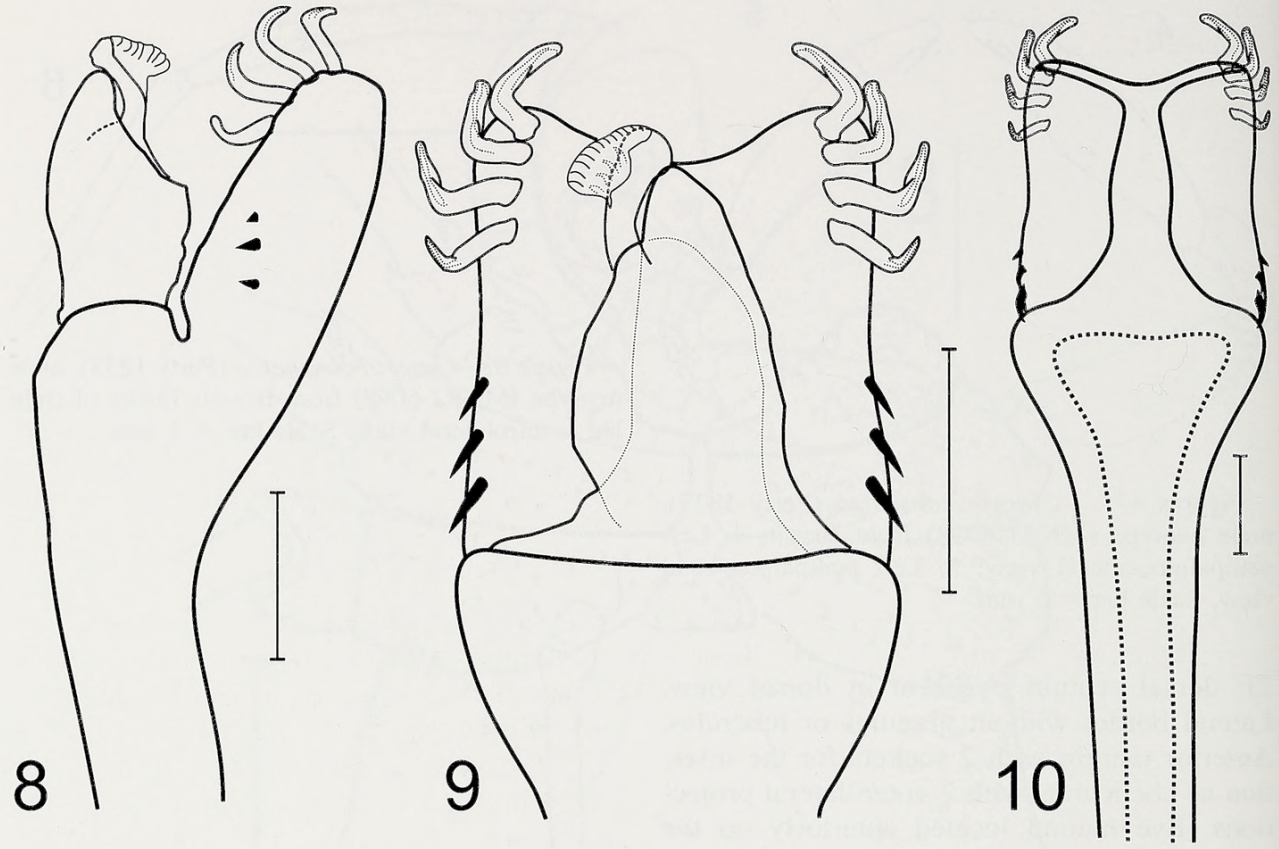


Figure 7.—*Cynorta conspersa* (Perty 1833), male neotype (MNRJ 6098) from Brazil: Left leg IV from trochanter to tibia, prolateral view. Scale bar = 1 mm.



Figures 8–10.—*Cynorta conspersa* (Perty 1833), male (MNRJ 4560) from Brazil, distal part of penis: 8. Lateral view; 9. Dorsal view; 10. Ventral view. Scale bars = 0.1 mm.

larger). Femur compressed, with a row of ventral tubercles all along its length. Patella foliate, depressed, with small dorsal granules and 1 mesodistal tubercle. Tibia foliate, depressed with 3 dorsal rows of small granules. Tarsus short, with some dorsal granules and setae. *Legs (Figs. 6, 7):* coxa I with 2 anterior and 1 posterior tubercles; coxa II with 2 anterior (dorsal larger) and 1 posterior fused with 1 of III; coxa III with 1 anterior fused with 1 of II; coxa IV with 3 dorsal tubercles, forming a common base. Trochanter I with 3 ventral tubercles; II with 2; III with 2 ventral and 2 retrolateral; IV with 2 retrolaterodistal granules and 1 prolaterodistal. Femora I–IV straight, with longitudinal row of very small granules and setae. Patella IV with 3 distal granules. Tibia IV slightly swollen distally. Metatarsus with 2 spiniform ventrodistal setae. Tarsi III and IV with 2 subparallel unpectinate claws, and tarsal process. Tarsal counts 7–6, ?–14, 9–9, 10–10. Distitarsi I–II with 3 articles each.

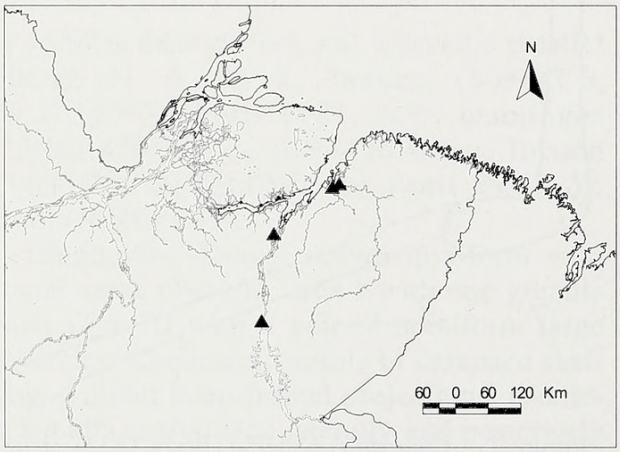


Figure 11.—Lower Amazon basin, showing distribution of *Cynorta conspersa* (black triangles) in the Brazilian State of Pará.

Female: very similar to male. Small variation in number of granules in rows of legs I–IV. Chelicerae slightly smaller.

Variation: Range of tarsal counts and length femur-tibia I–IV are given in Tables 1 and 2 respectively.

Remarks.—The type series of *C. mayi* consists of typical members of what we call *C. conspersa*, and there are no differential characters in the description by Mello-Leitão

Table 1.—Tarsal counts of males and females of *C. conspersa* (MNRJ 4560). Total number of individuals is given in parentheses.

Number of tarsomeres	Leg I (22)	Leg II (32)	Leg III (29)	Leg IV (27)
6	10 ♂, 10 ♀	—	—	—
7	2 ♀	—	—	—
8	—	—	5 ♂, 8 ♀	—
9	—	—	8 ♂, 8 ♀	3 ♂, 5 ♀
10	—	—	—	8 ♂, 8 ♀
11	—	—	—	2 ♂, 1 ♀
12	—	1 ♂, 1 ♀	—	—
13	—	3 ♂, 6 ♀	—	—
14	—	5 ♂, 5 ♀	—	—
15	—	5 ♂, 4 ♀	—	—
16	—	2 ♂	—	—

(1931) supporting his hypothesis of two different sympatric species. We are able to recognize only one "sprinkled" (Latin conspersus) species of *Cynorta* and conclude he just overlooked *C. conspersa* when he created *C. mayi*.

Distribution.—This species is known from Brazil, including Pará (Roewer 1912), Cametá, at Rio Tocantins (Sørensen 1932), Belém (Kury 2003); Tucuruí (Kury 2003), WWF Biome 01 (Tropical & Subtropical Moist Broadleaf Forests), WWF Ecoregions NT0170 (Tocantins-Araguaia-Maranhão moist forests) and NT0180 (Xingu-Tocantins-Araguaia moist forests).

DISCUSSION

The present concept of larger genera of Cosmetidae such as *Cynorta* is useless because it includes many unrelated species based only on tarsal counts and armature of tergal areas, which have been disclaimed in the recent past as superficial traits, subject to numerous independent acquisitions (e.g., Kury 1989). Past authors consistently ignored valuable morphological information to create generic diagnoses and never explored the structure of male genitalia. Furthermore, genital morphology is remarkably similar among the species of Cosmetidae, and subtle variations will have to be used as diagnostic traits. The absence of a systematic revision of the family does not allow us to offer a diagnosis for *Cynorta* supported by synapomorphic traits; however, we have made an effort to detect diagnostic characters for the genus comparable to the other genera of Cosmetidae.

The unillustrated original description by Perty (1833) of *Cosmetus conspersus* consists of five words, which are at first sight not enough for the recognition of this species. That is why a neotype is being fixed in the first place, to allow reference to a well known species. *Cynorta* is a very large genus with species from almost anywhere within the range of the family being referred to it. The unfounded extensive synonymy of Goodnight & Goodnight (1953) only exacerbated the problem. Any cosmetid with 6 tarsomeres on leg I could be referred to as *Cynorta*, as all other potential useful information was ignored. Anchoring the type species of *Cynorta* to an actual type specimen is an important

Table 2.—Appendage measurements of males and females of *C. conspersa* (MNRJ 4560), format = mean (standard deviation). Number of specimens counted = 10 for each.

Appendage	Femur ♂	Tibia ♂	Femur ♀	Tibia ♀
Leg I	4.31 (0.34)	2.51 (0.28)	4.21 (0.34)	2.53 (0.28)
Leg II	10.16 (0.84)	8.27 (0.44)	9.09 (0.49)	7.29 (0.48)
Leg III	6.21 (1.17)	3.36 (0.21)	5.86 (0.32)	3.03 (0.18)
Leg IV	9.43 (0.71)	4.89 (0.30)	8.45 (0.50)	4.43 (0.28)

step to secure the concept of this important genus.

On the bright side, the intermediate sprinkled pattern of yellowish-white (contrasting with the wide patterns or the sprayed patterns of all other species in Amazonia) on the dorsal scutum allows ready identification of this species, even without more refined morphological details in the old descriptions and redescriptions. This can be seen in Koch and Roewer's redescriptions of the species. Furthermore, locality data match well for our *C. conspersa*. Spix and von Martius collected twice (25 July to 21 August 1819 and 16 April to 13 June 1820) in Belém during the 1817–1820 expedition, which ultimately yielded the specimens described by Perty that match the known occurrence of our material.

In the comparison of *C. conspersa* with other *Cynorta*, tarsal counts are useless. Of the dozens of nominal species currently in *Cynorta*, those with heavy legs III–IV and strong cheliceral dimorphism (such as *C. refracta* Mello-Leitão, 1940) may be immediately discarded and will probably even be removed from this genus. Other *Cynorta* have wide white patterns on the scutum (or more rarely a sprayed, dust-like pattern) while *C. conspersa* has an intermediate pattern of small (but not dust-like) spots.

Out of the seven other *Cynorta* species described from Pará, six—*C. albanalis* Roewer, 1947; *C. albicurvata* Roewer, 1947; *C. albipicta* Roewer, 1947; *C. coxaepunctata* Roewer, 1947, *C. ramulata* Roewer, 1947 and *C. variegata* Roewer, 1947—are from the same locality, Santarém, and seemingly very close to each other. They show a general morphology similar to *C. conspersa*, with delicate legs and chelicerae but they possess a dorsal pattern of white markings forming elongate Ys and ribs. *Cynorta juruensis* (Mello-Leitão, 1923) has an extremely elongate body, and probably belongs to an undescribed Amazonian genus.

A most useful character that we plan to use in the comparison among genera in Cosmetidae is the outline of the dorsal scutum. Preliminary work on the family allowed us to detect four basic types of scutum outline (Fig. 12) that we here call: alpha, beta, gamma, and delta. The types can be shortly characterized as follows.

Type alpha: scutum subrectangular with laterals convex, forming two well-marked constrictions (examples *Ambatoiella*, *Erginulus*, *Flirtea*, *Rhaucus*).

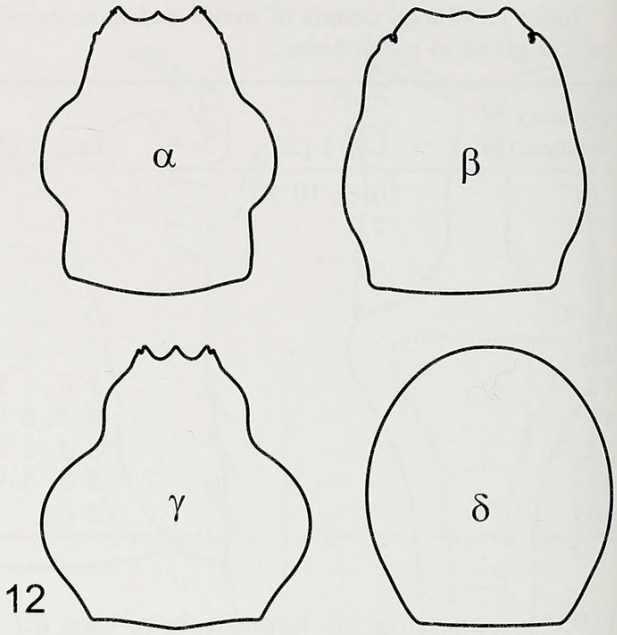


Figure 12.—Basic types of outline of dorsal scutum in Cosmetidae. Type alpha: scutum subrectangular with laterals convex, forming two well marked constrictions (examples *Ambatoiella*, *Erginulus*, *Flirtea*, *Rhaucus*). Type beta: both constrictions attenuate and posterior constriction displaced posteriorly (examples *Cosmetus*, *Cynorta*, *Metavononoides*, *Paecilaema*, *Vonones*). Type gamma: convexity of scutum much wider and displaced posteriorly, with posterior constriction almost absent and anterior constriction well marked (example *Metalibitia*). Type delta: loss of all constrictions of scutum (examples *Discosomaticus*, *Sibambea*).

Type beta: both constrictions attenuate and posterior constriction displaced posteriorly (examples *Cosmetus*, *Cynorta*, *Metavononoides*, *Paecilaema*, *Vonones*).

Type gamma: convexity of scutum much wider and displaced posteriorly, with posterior constriction almost absent and anterior constriction well marked (example *Metalibitia*).

Type delta: loss of all constrictions of scutum (examples *Discosomaticus*, *Sibambea*).

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