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NORMAN I. PLATNICK¹ AND NICOLAS PAZ S.²

ABSTRACT

The *magnus* group of *Cryptocellus* is characterized by the presence of a straight and massive accessory piece of the male tarsal process, and includes five species restricted to northwestern South America. One new species, *Cryptocellus narino*, is

described from northwestern Colombia. A hypothesis of interrelationships for the five species and a revised key to the South American species of *Cryptocellus* are presented.

INTRODUCTION

This paper, the third in a series on the arachnid order Ricinulei, supplements previous studies of the South American representatives of the group (Platnick and Shadab, 1976, 1977) by defining the *Cryptocellus magnus* species group, investigating the interrelationships of its members, and describing a new species from northwestern Colombia. The new species brings to 12 the number of recognizable ricinuleid taxa from South America (table 1); two nominal species are not included in this total. One, *Cryptocellus manni* Ewing (1929), has been shown to be a synonym of *C. magnus* by Platnick and Shadab (1976); the other, *Cryptocellus leleupi* Cooreman (1977), described on the basis of a protonymph from Oriente, Ecuador, will (like the Central American nymphs described by Ewing, 1929) remain a *nomen dubium* until topotypical adult specimens become available.

Although Cooreman's description of the nymphal specimen provides useful information, there is little to be gained by naming such specimens; other nymphs from Ecuador are in various collections, but it is not possible to judge their conspecificity with *C. leleupi*. Cooreman's discussion contains numerous inaccurate statements seemingly due to unawareness of the literature on the order published subsequently to Beck and Schubart's (1968) "revision" of *Cryptocellus*. This literature (including such papers as Pollock, 1967; Kennaugh, 1968; Coronado, 1970; Mitchell, 1970; Gertsch, 1971, 1978; Pittard and Mitchell, 1972; Cooke, 1972; Cooke and Shadab, 1973; Dumitrescu and Juvara-Bals, 1973, 1977a, 1977b; Brignoli, 1974; Tuxen, 1974; Marquez and Conconi, 1974; Legg, 1976a, 1976b, 1977a, 1977b, 1978; and Armas, 1977) has added as much to our

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TABLE 1
Diagnosable South American *Cryptocellus*

Species	Original Description	Locality	Adults Known		Depository
<i>foedus</i>	Westwood (1874)	"Amazon," Brazil	—	1 ♀	HDO
<i>simonis</i>	Hansen and Sørensen (1904)	Pará, Brazil	1 ♂	—	MNHN
			3 ♂	3 ♀	NMS
<i>magnus</i>	Ewing (1929)	Magdalena, Colombia	—	1 ♀	USNM
			1 ♂	9 ♀	AMNH
<i>pseudocellatus</i>	Roewer (1952)	Cajamarca, Peru	—	1 ♀	NMS
<i>lampeli</i>	Cooke (1967)	Mazaruni-Potaro, Guyana	1 ♂	1 ♀	HDO
			13 ♂	17 ♀	AMNH
<i>albosquamatus</i>	Cooke (1967)	Mazaruni-Potaro, Guyana	—	1 ♀	HDO
<i>glenoides</i>	Cooke and Shadab (1973)	Valle del Cauca, Colombia	1 ♂	—	AMNH
			—	1 ♀	MCZ
<i>bordoni</i>	(Dumitrescu and Juvara-Bals, 1977a)	Zulia, Venezuela	1 ♂	3 ♀	ISER
<i>whitticki</i>	Platnick and Shadab (1977)	Rupununi, Guyana	1 ♂	—	BMNH
<i>becki</i>	Platnick and Shadab (1977)	Amazonas, Brazil	2 ♂	2 ♀	NMS
<i>peckorum</i>	Platnick and Shadab (1977)	Amazonas, Colombia	3 ♂	—	MCZ
<i>narino</i>	Platnick and Paz, new species	Antioquia, Colombia	1 ♂	1 ♀	AMNH

knowledge of Ricinulei as was available prior to the last decade.

Among the dozen recognizable South American ricinuleids is a group of five species which seem to be interrelated as shown in figure 1 (as indicated by the numbered characters discussed below). The group as a whole is united by the presence of a straight and massive accessory piece of the male tarsal process (character 1; this has been illustrated for *Cryptocellus glenoides* by Cooke and Shadab (1973, fig. 37); for *C. magnus* by Platnick and Shadab (1976, figs. 13, 15); for *Cryptocellus bordoni* by Dumitrescu and Juvara-Bals (1977a, figs. 9, 10); and for *Cryptocellus narino* in the present paper (figs. 10, 11). The other known species of *Cryptocellus* have accessory pieces that are curved and small (see, for example, Cooke and Shadab, 1973, figs. 36, 38). Outgroup comparison with the only other Recent ricinuleid genus, *Ricinoides* (see, for example, Tuxen, 1974, fig. 17c), indicates that the massive accessory piece is a derived character. Males of *Cryptocellus pseudocellatus* are unknown but have been predicted to have a massive accessory piece (Platnick and Shadab, 1977, p. 3).

Among the group thus defined, four of the species are united by the presence of peculiar

deep cuticular pits containing round flattened tubercles on the carapace, cucullus, and abdomen of both sexes (character 2); these have been illustrated for *C. magnus* by Platnick and Shadab (1976, figs. 1, 2, 4, 5); for *C. bordoni* by Dumitrescu and Juvara-Bals (1977a, figs. 1, 5); and for *C. narino* in the present paper (figs. 3-6). In the other known species of *Cryptocellus* and *Ricinoides* the pits are absent and the tubercles arise from the cuticular surface (as in Legg, 1976a, plate 1), so the presence of pits is regarded as a shared derived character.

Among the group thus defined, three of the species are united by the presence of elongated and elevated tubercles on the distal half of the palpal tibia in both sexes (character 3); these have been illustrated for *C. magnus* by Platnick and Shadab (1976, figs. 8, 9) and for *C. bordoni* by Dumitrescu and Juvara-Bals (1977a, fig. 2). In other ricinuleids tubercles on the palpal tibia are either absent or of the same rounded type found elsewhere on the body.

Finally, among the group thus defined, *C. magnus* and *C. bordoni* seem to be sister species as they share an enlarged ventral lobe on the distal end of the accessory piece of the male tarsal process (character 4; cf. Platnick and Shadab, 1976, figs. 13, 15; Dumitrescu and

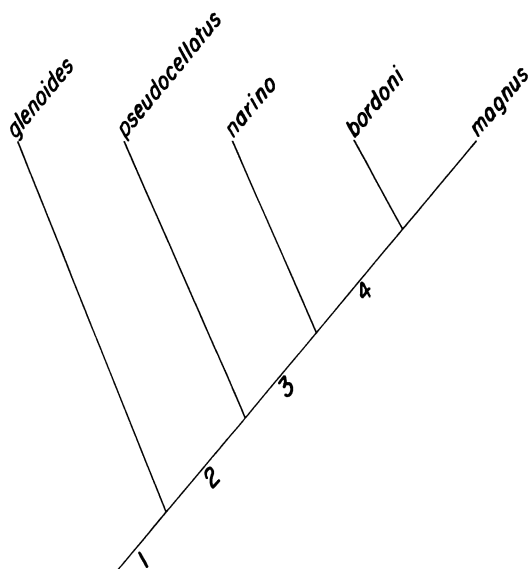


FIG. 1. Cladogram of the *Cryptocellus magnus* group; numbers refer to characters discussed in Introduction.

Juvara-Bals, 1977a, figs. 9, 10) not found in *C. narino* or other ricinuleids.

The five species of the *Cryptocellus magnus* group form a geographically compact cluster (fig. 2) restricted to northwestern South America and isolated from the remaining South American forms (all from the Amazonian region; Platnick and Shadab, 1977, fig. 58). It is not yet possible to identify the sister taxon of the *magnus* group, or even to determine whether the *magnus* group is more closely related to the other South American or to Central America species.

We are grateful to Dr. M. U. Shadab for supplying the illustrations. Depositories are abbreviated as follows: AMNH, American Museum of Natural History; BMNH, British Museum (Natural History); HDO, Hope Department of Entomology, Oxford University; ISER, Institut de Speologie "Emile Racovitza"; MCZ, Museum of Comparative Zoology, Harvard University; MNHN, Muséum National de Histoire Naturelle; NMS, Natur-Museum Senckenberg; USNM, National Museum of Natural History, Smithsonian Institution. All

measurements presented below are in millimeters.

REVISED KEY TO SOUTH AMERICAN *CRYPTOCELLUS*

1. Legs coated with large navicular setae (figs. 7, 9; Platnick and Shadab, 1977, figs. 7,8)2
Legs without navicular setae3
2. Spermathecae triangular (Platnick and Shadab, 1977, fig. 52); Guyana *albosquamatus*
Spermathecae elongate (fig. 8); Colombia
..... *narino*
3. Carapace with deep pits containing tubercles (figs. 3, 5; Platnick and Shadab, 1976, figs. 1, 5)4
Carapace without deep pits
couplet 4 of Platnick and Shadab (1977, p. 3)
4. Palpal tibia with elevated tubercles (Platnick and Shadab, 1976, figs. 8, 9)5
Palpal tibia without elevated tubercles; Peru
..... *pseudocellatus*
5. Body of male tarsal process with serrate tip (Dumitrescu and Juvara-Bals, 1977a, figs. 9, 10); Venezuela *bordoni*
Tip of body of male tarsal process not serrate (figs. 10, 11); Colombia *narino*

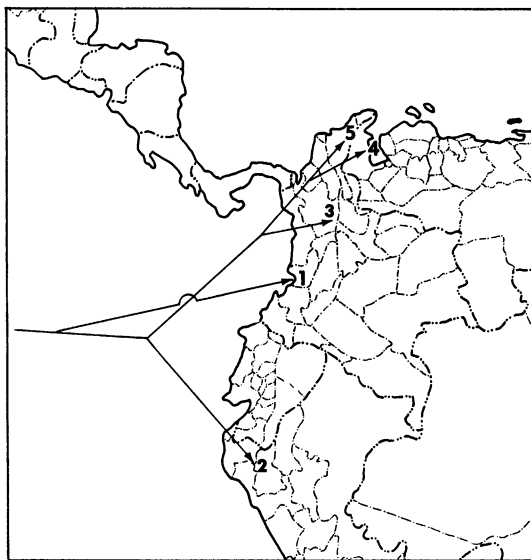


FIG. 2. Distribution of *Cryptocellus glenoides* (1), *C. pseudocellatus* (2), *C. narino* (3), *C. bordoni* (4), and *C. magnus* (5) in northwestern South America, with superimposed cladogram.

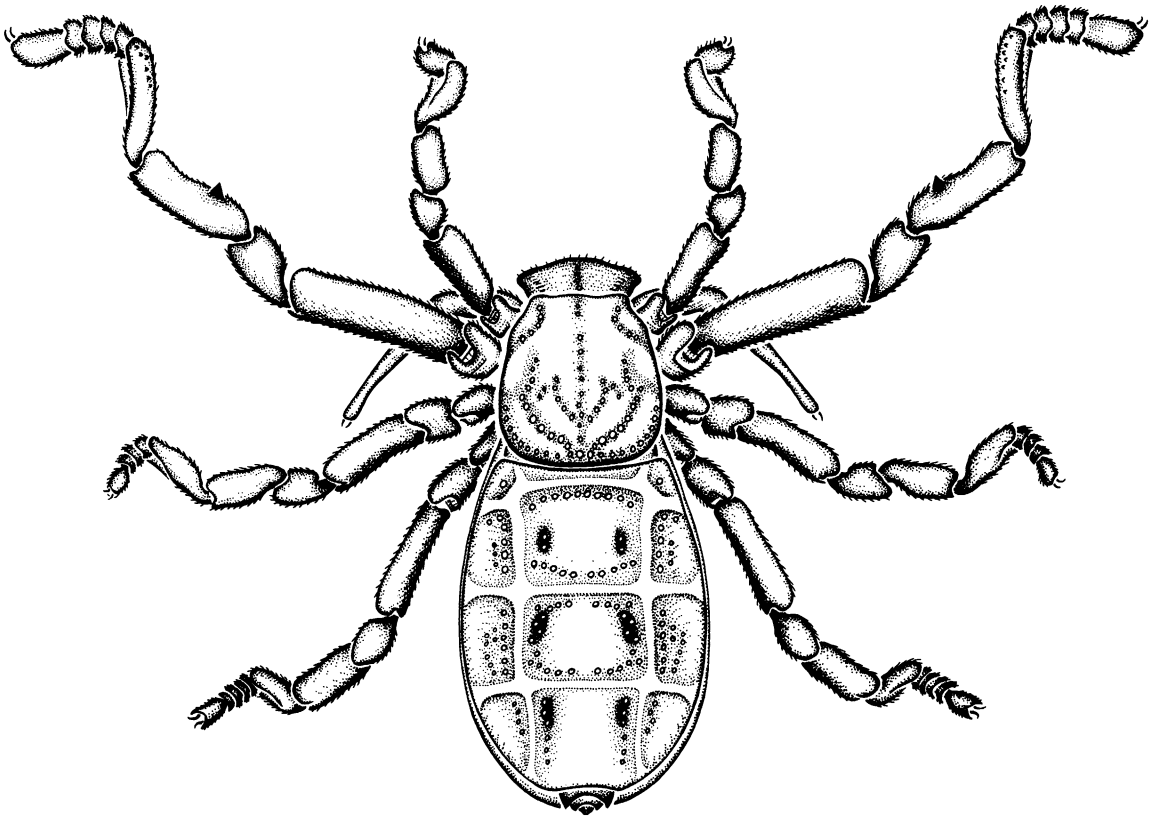


FIG. 3. *Cryptocellus narino*, new species, female, dorsal view.

***Cryptocellus narino*, new species**

Figures 3-11

Types: Male holotype taken from under decaying tree on cattle ranch at an elevation of 1540 m. at km. 122 of the highway leading from Medellín to Nariño, Antioquia, Colombia (September 23, 1975; N. Paz), and female paratype taken from under small trunk near small, fast-flowing stream on cattle ranch (Hacienda El Carmen) at an elevation of 1076 m. at San Rafael, Antioquia, Colombia (July 30, 1976; N. Paz), deposited in AMNH.

Etymology: The specific name is a noun in apposition taken from the type locality.

Diagnosis: *Cryptocellus narino* may be distinguished from all other known species of the

genus by the combined presence of navicular setae on the legs (as in Platnick and Shadab, 1977, figs: 7, 8) and cuticular pits on the carapace, cucullus, and abdomen (figs. 3-6).

Female: Total length 8.28. Carapace 2.81 long, 2.70 wide near middle of coxae III, where widest, uniformly dark brown except for translucent pale yellow areas near margins opposite coxae II; surface with few setae concentrated at margins, without raised tubercles, with deep pits containing tubercles arranged as follows: median longitudinal row of about 14 becoming deeper posteriorly; marginal rows of five anterior and six posterior at sides, and six on each side of posterior margin; long submarginal U-shaped row of about 12 on each side; short paramedian V-shaped row of five on

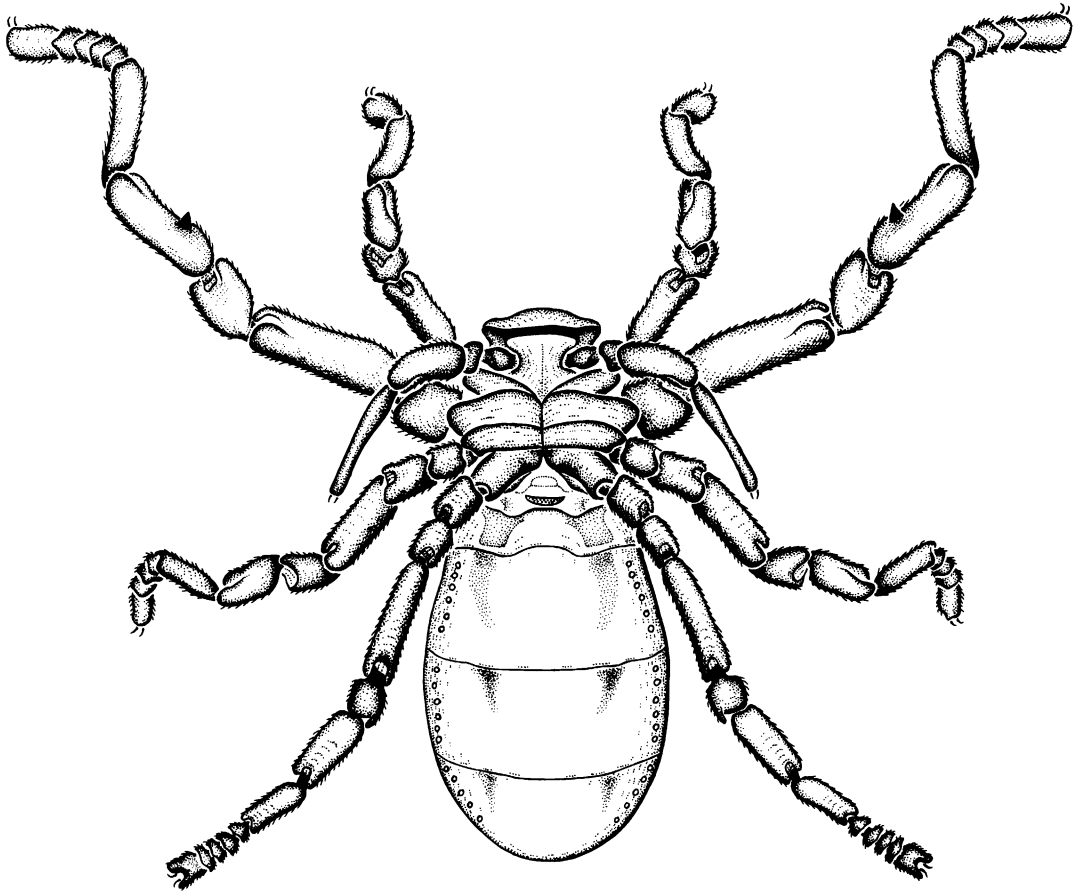


FIG. 4. *Cryptocellus narino*, new species, female, ventral view.

each side at center between submarginal and longitudinal rows. Cucullus 1.35 long, 2.02 wide, dark brown, with long white setae concentrated distally, about 10 tubercles at center of distal margin, median longitudinal and paired outwardly curved lateral rows of about five shallow pits, and slightly protuberant lateral lobes. Left chelicera: movable finger flattened posteriorly, slightly widened transversely, armed with seven teeth of which the most proximal is greatly enlarged, others reduced to denticles; fixed finger armed with six teeth of which most distal and most proximal are longest, third most proximal reduced to denticle. Sternal region with coxae I not meeting tri-

tosternum; coxae II meeting along their posterior three-quarters, their suture line about one and two-thirds as long as that of coxae III; coxae IV meeting anteriorly. Abdomen 5.51 long, 4.10 wide near front of tergite 12, where widest, coloration and setation as in carapace except for dark orange articular membranes and scattered navicular setae on tergite 13, all pleurites and pleurital membranes, sides of sternite 12, and most of sternite 13; raised tubercles restricted to transverse band on tergite 9; deep pits containing flattened tubercles arranged as follows: tergite 10, median plate none, lateral plates one at middle of inner margin; tergite 11, median plate 10 along anterior margin, 11 along

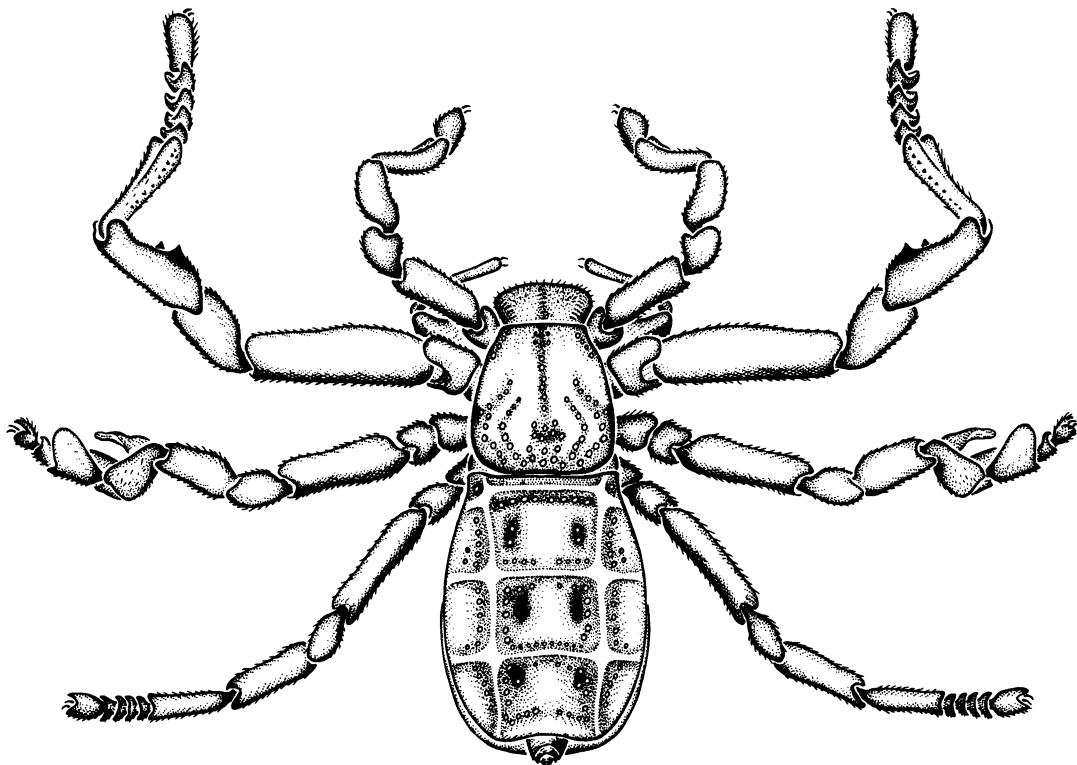


FIG. 5. *Cryptocellus narino*, new species, male, dorsal view.

posterior margin, lateral plates five along inner margin and about four submarginal; tergite 12, median plate eight along anterior margin, eight along posterior margin, lateral plates six along inner margin and about five tiny submarginal; tergite 13, median plate two on each side along anterior margin, about eight scattered posteriorly, lateral plates about four along inner margin; median plates of tergites 11-13 with outwardly curved longitudinal depressions along lateral margins, corresponding sternites with depressions in similar positions; median plates of tergites 11-13 wider than long; sternites with about six shallow pits along lateral margins. Pygidium without notch in posterior dorsal or ventral margin of basal segment. Palpal coxae and second trochanters dark red, other segments red; coxae and trochanters with few scattered tubercles; coxae each with two thick white setae posteriorly along inner mar-

gin; distal half of tibiae covered with elongate elevated tubercles. Leg formula 2431. Legs dark reddish brown with tarsi lightest, coated with navicular setae but with few tubercles scattered on coxae, trochanters, and ventral surfaces of tibia and metatarsus II; tibia II with enlarged prolateroventral tubercle projecting anteriorly at about one-third its length. Measurements:

	I	II	III	IV	Palp
Coxa	1.12	1.66	1.33	1.15	0.61
Trochanter I	0.70	0.98	0.85	0.97	0.58
Trochanter II	—	—	0.90	1.06	0.50
Femur	1.58	2.88	1.91	2.25	1.33
Patella	0.95	1.30	1.04	1.10	—
Tibia	1.22	2.20	1.30	1.40	2.02
Metatarsus	1.24	2.16	1.37	1.51	—
Tarsus	0.68	2.20	1.15	1.21	0.14
Total	7.49	13.38	9.85	10.65	5.18

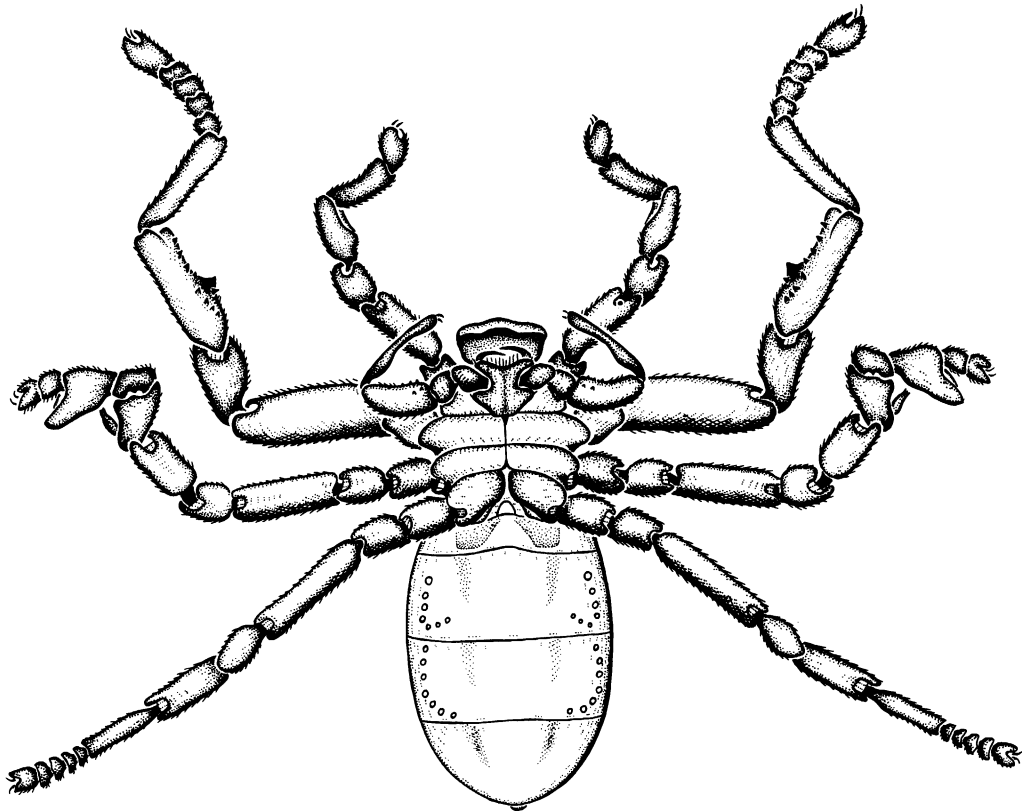


FIG. 6. *Cryptocellus narino*, new species, male, ventral view.

Second legs slightly widened; femur I about three times, femur II about four times as long as wide. Tarsal claws thin, evenly curved. Posterior genital lip and spermathecae as in figure 8.

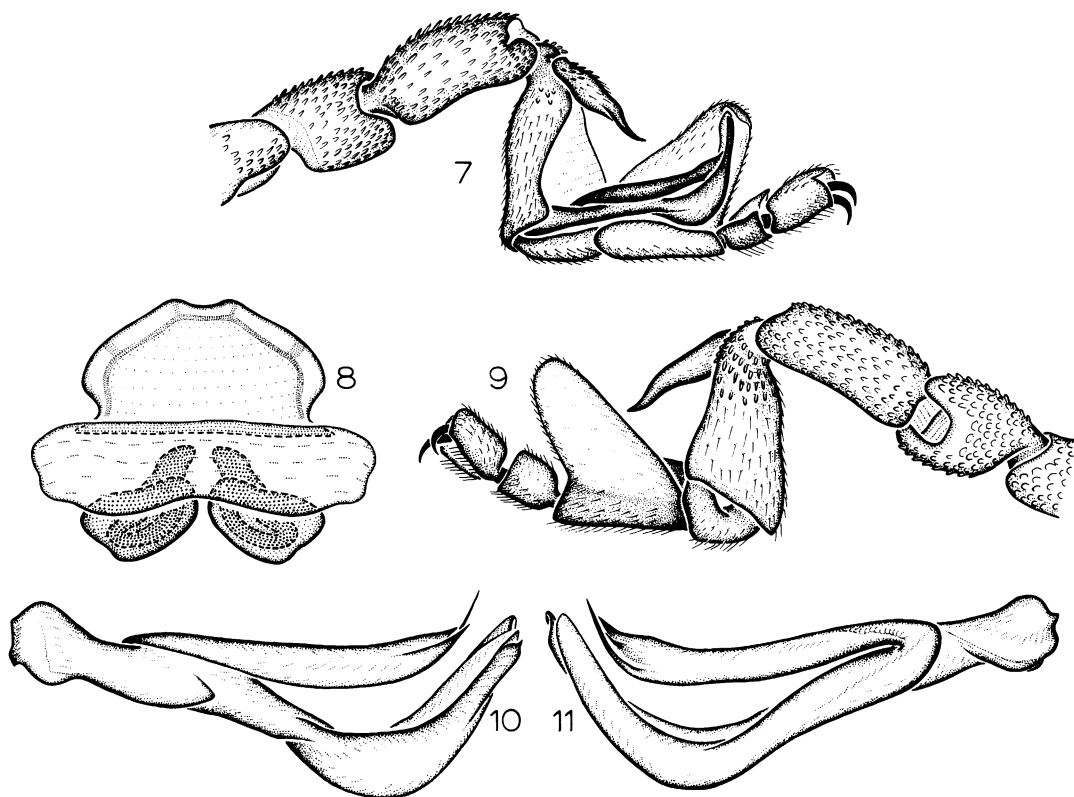
MALE: As in female, except for the following: total length 7.34. Carapace 2.56 long, 2.40 wide, surface with scattered navicular setae; pits distributed as in figure 5. Cucullus 1.19 long, 1.73 wide, distal margin with about six large tubercles. Teeth on cheliceral fixed finger subequal in length. Coxae IV not meeting anteriorly. Abdomen 4.75 long, 3.38 wide, with scattered navicular setae on all tergites and sternites; pits distributed as in figures 5, 6. Palpal femur with tubercles situated on large proximoventral swelling; palpal tibia compressed at middle to half its apical height, with compressed area opposing femoral swelling.

Leg formula 2341. Tibia II with enlarged pro-lateroventral and retrolateroventral tubercles. Measurements:

	I	II	III	IV	Palp
Coxa	0.90	1.46	1.25	0.97	0.61
Trochanter I	0.68	1.07	0.79	0.86	0.61
Trochanter II	—	—	0.90	0.94	0.50
Femur	1.55	2.95	2.02	2.20	1.15
Patella	0.82	1.44	1.03	0.97	—
Tibia	1.19	2.37	1.43	1.51	1.69
Metatarsus	1.44	2.25	1.44	1.38	—
Tarsus	0.72	2.27	2.27	1.49	0.18
Total	7.30	13.81	11.13	10.32	4.74

Metatarsus and tarsus III as in figures 7, 9; tarsal process as in figures 10, 11.

MATERIAL EXAMINED: Only the types from Antioquia, Colombia.



FIGS. 7-11. *Cryptocellus narino*, new species. 7. Male leg III, anterior view. 8. Female genital lip and spermathecae, posterior view. 9. Male leg III, posterior view. 10. Male copulatory apparatus, anterior view. 11. Male copulatory apparatus, posterior view.

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