

THREE NEW SPECIES OF *SCHOENGASTIA*
(ACARI: TROMBICULIDAE) FROM PAPUA NEW GUINEA
RODENTS WITH A KEY TO *SCHOENGASTIA* SPECIES
REPORTED FROM NEW GUINEA¹

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Abstract. Three new species, *Schoengastia roselli*, *Schoengastia tricoxalae* and *Schoengastia plumosa*, are described from Papua New Guinea rodents. A key to the 11 species of *Schoengastia* reported from New Guinea is given.

Species of *Schoengastia* Oudemans, 1910, parasitize a wide variety of reptiles, birds and mammals, and have frequently been implicated as causative agents of scrub-itch (Nadchatram & Gentry 1964, Womersley 1952). The type-species, *Schoengastia vandersandei* Oudemans, 1905, was originally described from specimens attacking man in West Irian New Guinea. Subsequently, 11 of the 20 species assigned to the genus were recovered from man or blackplates on ground surface. Goff (in press) described an additional species from a skink, providing the first record of a *Schoengastia* species from Australia. With the description of 3 new species below, the number of species in the genus is increased to 24, 11 of which are reported from New Guinea. As noted by Audy (1954), *Schoengastia* includes only Old World species, with most occurring in tropical regions.

All measurements are given in micrometres of the holotypes, followed by the means and ranges of type-series given in parentheses. Terminology follows Brennan & Goff (1977). Holotypes are in the collection of Bishop Museum, Honolulu, Hawaii (BISHOP), and paratypes there and in the collection of the U.S. National Museum of Natural History (chigger collection currently housed at Bishop Museum).

***Schoengastia roselli* Goff, new species**

FIG. 1

Type data. Holotype (BISHOP 11,505) and 9 paratypes from PNG: NEW GUINEA (NE): Morobe Distr, Mt Kaindi, 1900 m, moss forest, ex Variable Spiny Rat, *Rattus ruber* ♂ (BBM-NG: 97665) taken 20.VIII.1969 by A.B. & S. Mirza.

Description of species. Larva. *Idiosoma.* Measuring 210 × 180 in unengorged specimen. Eyes 2/2, anterior larger, on ocular plate. 1 pair of humeral setae measuring 53-62; 40 dorsal body setae, measuring 36-45, arranged 8-10-10-8-4; 2 pairs of sternal setae, anterior 49-50, posterior 29-36; 28 preanal setae, 29-35; 16 postanal setae, 25-31; total body setae 90. *Gnathosoma.* Palpal setal formula B/B/NNB/7BS; palpal claw 2-pronged; galeala N; cheliceral blade (63-66) with 1 ventral and 13-15 recurved dorsal teeth. *Scutum.* Moderately punctate with shallowly biconcave anterior margin; posterior margin deep behind PL bases.

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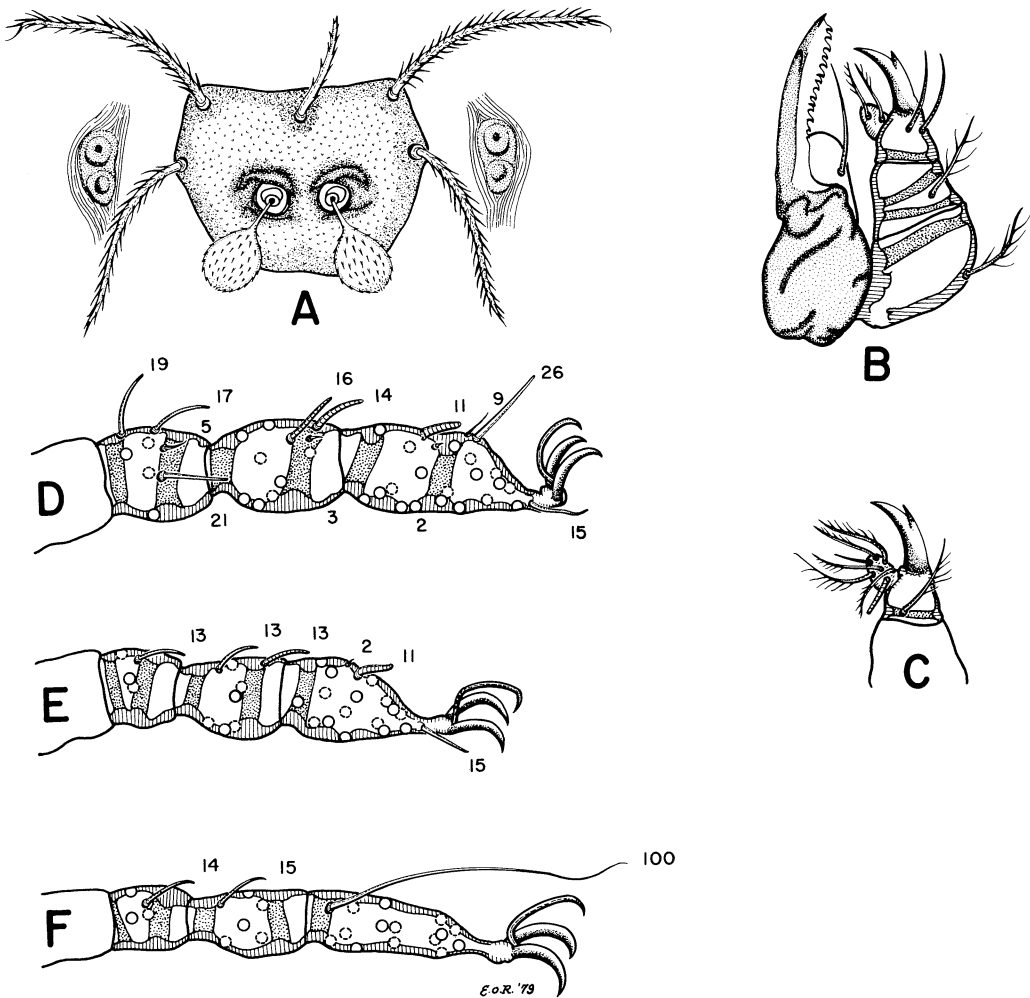


FIG. 1. Larva of *Schoengastia roselli*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurement in micrometres) and bases of branched setae; E, leg II, as above; F, leg III, as above.

with shallow median concavity; AM base in line with AL bases; SB posterior to PL bases; $AL > PL > AM$; sensilla capitate, head with fine setules; PW/SD 1.16–1.33. Scutal measurements: AW 60 (61, 53–65); PW 71 (73, 66–75); SB 19 (21, 19–23); ASB 33 (35, 32–38); PSB 24 (23, 19–25); AP 18 (19, 18–22); AM 40 (38, 32–40); AL 84 (79, 70–85); PL 67 (67, 63–72); sens. 32×16 –17. *Legs*. All 7-segmented, terminating in a pair of claws and a clawlike empodium. Onychotriches absent. IP 750–845. *Leg I*: 260–310; coxa with 1 branched seta (1B); trochanter 1B; basifemur 1B; telofemur 5B; genu 4B, 3 genualae, microgenuala; tibia 8B, 2 tibialae, microtibialae; tarsus (61×24) 20B, tarsala (12–13), microtarsala, subterminala, para-subterminala, pretarsala. *Leg II*: 220–250; coxa 1B; trochanter 1B; basifemur 2B; telofemur 4B; genu 3B, genuala; tibia 6B, 2 tibialae; tarsus (48×23) 15B, tarsala (11), microtarsala, pretarsala. *Leg III*: 270–285; coxa 1B; trochanter 1B; basifemur 2B; telofemur 3B; genu 3B, genuala; tibia 6B, tibiala; tarsus (64×18) 14B, mastitarsala (105–108).

Remarks. *Schoengastia roselli* is similar to *S. whartoni* Womersley, 1952, from which it may be separated by the arrangement of dorsal body setae (8-10-10-8-4 in *S. roselli* and 8-8-6-6-4 in *S. whartoni*) and number of preanal and postanal setae (28 preanal, 16 postanal setae in *S. roselli* and 14-16 preanal, 6-8 postanal setae in *S. whartoni*). Number of dorsal body setae also serves to separate *S. roselli* from *S. taylori* Womersley, 1952 (40 dorsal body setae in *S. roselli* and 78-80 in *S. taylori*).

This species is named in honor of Eddie O. Rosell, Department of Entomology, Bishop Museum.

Schoengastia tricoxalae Goff, new species

FIG. 2

Type data. Holotype (BISHOP 11,506) and 1 paratype from PNG: NEW GUINEA (NE): West Sepik Distr, NE of Telefomin, 2425 m, moss forest, ex 3 Moss Forest Rats, *Rattus niobe* (2♂, 1♀) (BBM-NG: 98356-58) taken 29.I.1970 by A.B. Mirza. 2 paratypes same data as above, ex 2 *R. niobe* (♂) taken 28.I.1970; 1 paratype as above, ex 1 *R. niobe* (♂) taken 1.II.1970.

Description of species. Larvae. *Idiosoma.* Measuring 315 × 260 in partially engorged specimen. Eyes 2/2, anterior larger, on ocular plate. 1 pair of humeral setae, measuring 72-74; approximately 166 dorsal body setae, measuring 44-55, arranged in irregular rows; 1 pair of sternal setae between bases of coxae I, 61-63; 76 preanal setae, 42-48; 36 postanal setae, 45-53; total body setae approximately 282. *Gnathosoma.* Palpal setal formula B/B/BBB/7BS; palpal claw 2-pronged; galeala N; cheliceral blade (82-84) with 1 ventral and 15 dorsal recurved teeth. *Scutum.* Moderately punctate with shallowly biconcave anterior margin; posterior margin deeply rounded posterior to PL bases; AM base slightly posterior to AL bases; SB posterior to PL bases; AL > PL > AM; sensilla capitate, head with fine setules; PW/SD 1.35-140. Scutal measurements: AW 73 (71, 70-73), PW 91 (92, 90-95); SB 21 (26, 21-31); ASB 40 (41, 39-44); PSB 27 (26, 23-28); AP 17 (18, 17-22); AM 70 (61, 53-70); AL 110 (114, 108-120); PL 85 (83, 78-87); sens. 41 × 18 (39 × 17, 37-41 × 17-18). *Legs.* All 7-segmented, terminating in a pair of claws and a clawlike empodium. Onychotriches absent. IP 1126-1169. *Leg I:* 374-388; coxa 1B; trochanter 1B; basifemur 1B; telofemur 5B; genu 4B, 3 genualae, microgenuala; tibia 8B, 2 tibialae, microtibiala; tarsus (90 × 31) 21B, tarsala (19), microtarsala, subterminala, parasubterminala, pretarsala. *Leg II:* 347-366; coxa 1B; trochanter 1B; basifemur 2B; telofemur 4B; genu 3B, genuala; tibia 6B, 2 tibialae; tarsus (75 × 28) 16B, tarsala (20), microtarsala, pretarsala. *Leg III:* 405-415; coxa 3-4B; trochanter 1B; basifemur 2B; telofemur 3B; genu 3B, genuala; tibia 6B, tibiala; tarsus (104 × 24) 14B, mastitarsala (87-95).

Remarks. *Schoengastia tricoxalae* is similar to *S. brennani* Goff, 1977 in having all palpal setae branched and 3 genualae I but differs in having a greater number of body setae (approximately 282 for *S. tricoxalae* and 138 for *S. brennani*) and 3-4 branched setae on coxa III (unisetose in *S. brennani*). The character of a multisetose coxa III also serves to separate *S. tricoxalae* from all other *Schoengastia* species in New Guinea. Parasitope was listed as ear tragus in field notes. Color of idiosoma is unknown.

Schoengastia plumosa Goff, new species

FIG. 3

Type data. Holotype (BISHOP 11,507) and 16 paratypes from PNG: NEW GUINEA (NE): West Sepik Distr, NE of Telefomin, 2425 m, moss forest, ex 3 *Rattus niobe* (BBM-NG: 98356-98358), taken 29.I.1970 by A.B. Mirza.

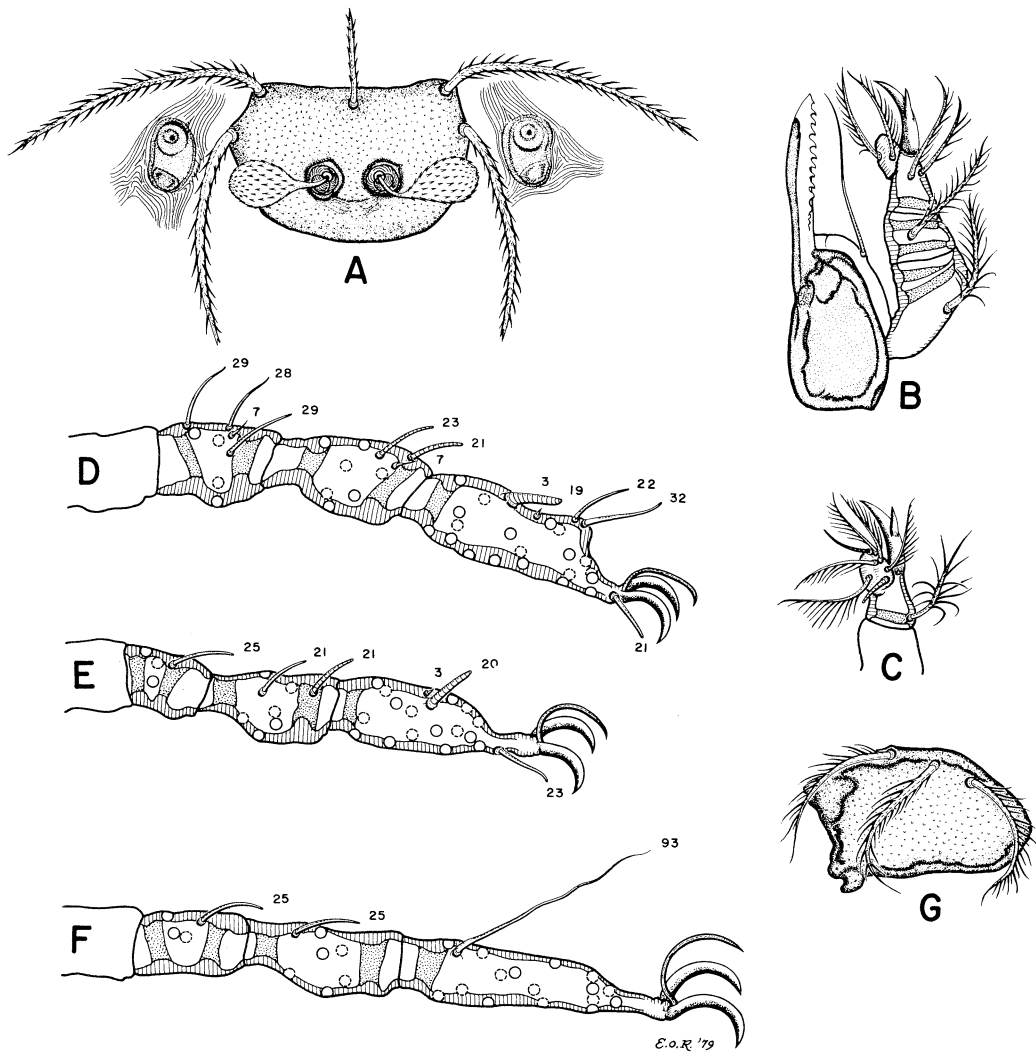


FIG. 2. Larva of *Schoengastia tricoxalae*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements in micrometres) and bases of branched setae; E, leg II, as above; F, leg III, as above; G, coxa III.

Description of species. Larva. *Idiosoma*. Measuring 250×200 in unengorged specimen. Eyes 2/2, anterior larger, on ocular plate. 1 pair of humeral setae, measuring 73–78; 70–76 dorsal body setae, measuring 32–75, anterior setae longest, arranged in irregular rows beginning 12(10)-20(16)-14(18)+26-30; 2 pairs of sternal setae, anterior 51–56, posterior 40–46; 26–32 preanal setae, 35–40; 20–22 postanal setae, 28–38; total body setae 122–142. *Gnathosoma*. Palpal setal formula B/B/NNB/7BS; palpal claw 2-pronged; galeala N; cheliceral blade (69–74) with 1 ventral and 12–15 dorsal teeth. *Scutum*. Moderately punctate, with sinuous anterior margin; posterior margin deeply rounded behind PL bases; AM base slightly posterior to AL base; SB posterior to PL bases; AL > PL > AM; sensilla capitate, head with fine setules; PW/SD = 1.21–1.45. Scutal measurements: AW 65 (65, 63–70); PW 86 (88, 86–92); SB 25 (23, 20–28); ASB

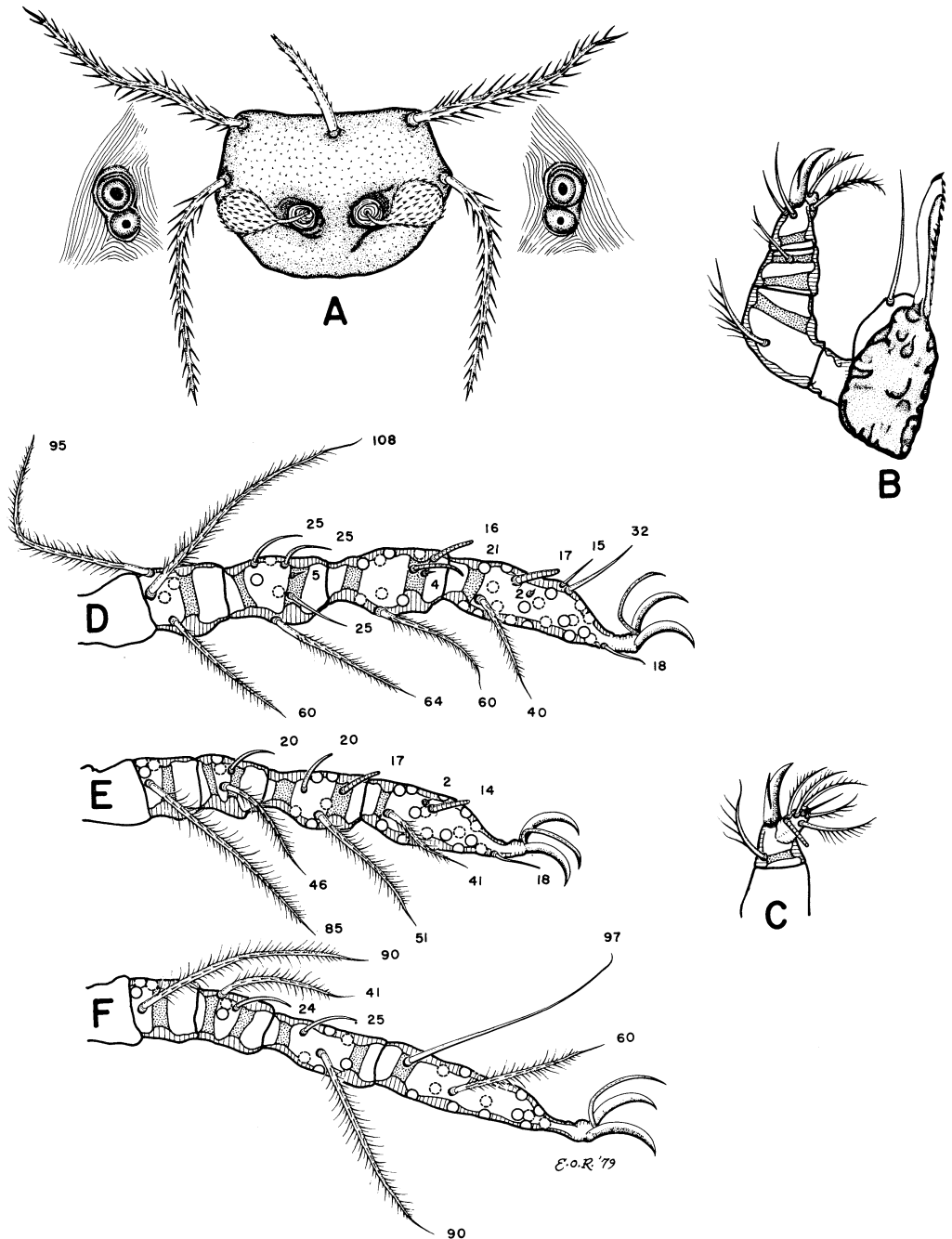


FIG. 3. Larva of *Schoengastia plumosa*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements in micrometres) and bases of branched setae; E, leg II, as above; F, leg III, as above.

40 (39, 37-44); PSB 23 (27, 25-29); AP 25 (27, 25-29); AM 52 (45, 41-52); AL 89 (94, 85-99); PL 85 (87, 81-93); sens. 38×19 (37×17 , $35-39 \times 16-19$). *Legs.* All 7-segmented, terminating in a pair of claws and a clawlike empodium. Onychotriches absent. IP 918-952. *Leg I:* 315-321, coxa 1B; trochanter 1B; basifemur 1B; telofemur 5B (3 exceptionally elongate, 60-116, plumose); genu 4B (1 elongate, 60-64, plumose), 3 genualae, microgenuala; tibia 8B (1 elongate, 60-67, plumose), 2 tibialae, microtibiala; tarsus (75×23) 21B (1 elongate, 40, plumose), tarsala (15-17), microtarsala, subterminala, parasubterminala, pretarsala. *Leg II:* 278-293; coxa 1B; trochanter 1B; basifemur 2B; telofemur 4B (1 exceptionally elongate, 85-124, plumose); genu 3B (1 elongate, 46, plumose), genuala; tibia 6B (1 elongate, 51-55, plumose), 2 tibialae; tarsus (62×23) 16B (1 elongate, 41, plumose), tarsala (14-16), microtarsala, pretarsala. *Leg III:* 85×19 ; coxa 1B; trochanter 1B; basifemur 2B; telofemur 3B (1 exceptionally elongate, 90-110, plumose); genu 3B (1 elongate, 41, plumose), genuala; tibia 6B (1 elongate, 90, plumose), tibiala; tarsus (85×19) 14B (1 elongate, 60, plumose), nude mastitarsala (94-97).

Remarks. *Schoengastia plumosa* is similar to *S. taylori* in palpal setal formula, scutal dimensions and number of body setae but differs in having exceptionally elongate, plumose setae on legs. These plumose leg setae serve to separate *S. plumosa* from all other New Guinea *Schoengastia* species. This species was recovered from the ear of 3 specimens of the Moss-forest Rat, *Rattus niobe*. *Schoengastia tricoxalae* was also present in this collection.

KEY TO NEW GUINEA *Schoengastia* LARVAE

1. Palpal claw 3-pronged 2
Palpal claw 2-pronged 3
2. 26 dorsal body setae arranged 8-6-6-4-2; AL > PL **philipi** Womersley & Kohls, 1947
38 dorsal body setae arranged 12-8-4-6-4-2-2; PL > AL **jamesi** Gunther, 1939
3. 3 genualae I 4
2 genualae I **diannae** Goff, 1977
4. Palpal setal formula B/B/BBB/7BS 5
Palpal setal formula B/B/NNB/7BS 6
5. Coxa III unisetose **brennani** Goff, 1977
Coxa III with 3-4 B **tricoxalae**, n. sp.
6. 34 dorsal body setae (39-45 μ m), arranged 8-8-6-6-4 **whartoni** Womersley, 1952
More than 34 dorsal body setae 7
7. 38-40 dorsal body setae 8
More than 48 dorsal body setae 9
8. 28 preanal setae (29-35 μ m); 16 postanal setae (25-31 μ m) **roselli**, n. sp.
16 preanal setae (24-26 μ m); 6-8 postanal setae (27-31 μ m) **schuffneri** (Walch, 1923)
9. 48-52 dorsal body setae (33-41 μ m), arranged 10-8(10)-7-10-6-6-4-2(4); SB in line with PL bases **vandersandei** (Oudemans, 1905)
More than 70 dorsal body setae; SB posterior to PL bases 10
10. Telofemora I-III with 1-3 elongate (95-124 μ m), plumose setae **plumosa**, n. sp.
Telofemora I-III lacking such setae **taylori** Gunther, 1940

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