

A new Nemesiid spider (Arachnida, Araneae) from the Ryukyu Archipelago, Japan

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ABSTRACT

KEY WORDS

Araneae,
Nemesiidae,
new species,
Ryukyu Islands,
Japan.

Sinopesa kumensis n. sp. (Arachnida, Araneae, Nemesiidae) is described from Kume-jima, an island West of Okinawa, Japan. Its male embolus is cork-screw-shaped, the female receptacula bilobed. Compared to *S. maculata* Raven & Schwendinger, 1995 and *S. guangxi* Raven & Schwendinger, 1995 from South-East Asia, the median spinnerets are present. For this reason the diagnosis of the genus *Sinopesa* requires emendation.

RÉSUMÉ

MOTS CLÉS

Araneae,
Nemesiidae,
nouvelle espèce,
îles de Riukiu,
Japon.

Une nouvelle araignée nemesiide (Arachnida, Araneae) des îles de Riukiu, Japon. *Sinopesa kumensis* n. sp. (Arachnida, Araneae, Nemesiidae) est décrite de Kume-jima, une île à l'Ouest d'Okinawa (Japon). L'embolus du mâle est en forme de tire-bouchon, les réceptacles de la femelle sont bilobés. En comparaison avec *S. maculata* Raven & Schwendinger, 1995 et *S. guangxi* Raven & Schwendinger, 1995, les filières médianes sont présentes. En conséquence, la diagnose du genre *Sinopesa* est émendée.

INTRODUCTION

From the viewpoint of biogeography, mygalomorph spiders are of special interest, because, with a few exceptions, spiderlings do not balloon. Therefore, this group reflects very well original areas of distribution. Nevertheless, many species of Mygalomorphae are rare or they live well-hidden. This may be one reason that our knowledge lags well behind that of other spiders.

Reference specimens are deposited in the collections of the Muséum national d'Histoire naturelle in Paris (MNHN), the National Science Museum in Tokyo (NSMT) and the Zoological Museum Berlin (Naturkundemuseum der Humboldt-Universität) (ZMB).

ABBREVIATIONS

ame	anterior median eyes;
ale	anterior lateral eyes;
mt	metatarsus;
ple	posterior lateral eyes;
pls	posterior lateral spinnerets;
pme	posterior median eyes;
pms	posterior median spinnerets;
ta	tarsus.

The leg formula compares the length of different legs, beginning with the fourth one as the longest.

SYSTEMATICS

Family NEMESIIDAE Simon, 1889

TYPE SPECIES. — *Nemesia cellicola* Savigny & Audouin, 1827.

Genus *Sinopesa* Raven & Schwendinger, 1995

EMENDED DIAGNOSIS. — From Raven & Schwendinger, 1995. *Sinopesa* is close to *Entypesa* Simon, 1902, but it lacks a serrula; the male palpal tarsus is short, the distal part of the embolus corkscrew-shaped, metatarsus I modified. Posterior median spinnerets may be present or they are entirely reduced. Differs from *Hermacha* Simon, 1889 by lack of metatarsal preening combs.

Sinopesa kumensis n. sp.
(Figs 2-5)

TYPE MATERIAL. — **Aara-dake**. Nakazato-son, Kumejima, West of southern Okinawa, Ryukyu Islands,

Japan, 21.III.1997, leg. M. Shimojana, holotype ♂, and paratype ♂ (MNHN AR 10680, ZMB 30683).

Gushikawa village. Kume-jima, West of southern Okinawa, Ryukyu Islands, 22.III.1997, leg. M. Shimojana, 3 ♀ ♀, paratypes from Yaja gama cave (limestone) (MNHN AR 10680, NSMT Ar 4513, ZMB 30684).

ETYMOLOGY. — Adjective derived from the island's name Kume-jima.

DISTRIBUTION. — Known only from Kume-jima, West of southern Okinawa (Fig. 1). Specimens were collected under stones in a subtropical wood and in a limestone cave. In spite of intensive search the species was not found on other islands of the Ryukyu Archipelago.

DIAGNOSIS. — Carapace without eye tubercle, eyes close to anterior margin of carapace. Subcentral fovea, transverse, short, straight. Pedipalpal coxae with three to five short, thick spines (cuspules) in anterior position, labium lacking such spines. Close to previously described species of *Sinopesa* in having short male pedipalpal tarsus, metatarsus I modified (sigmoid, narrowed at base) and lacking serrula at pedipalpal coxae (maxillae), but different by presence of posterior median spinnerets.

DESCRIPTION

Holotype male

Carapace 3.7 mm long, 3.1 mm broad, opisthosoma 3.5 mm long, 2.0 mm broad. Anterior prosomal (cephalic) region sloping, no eye tubercle (Fig. 2A). Margin of carapace with fringe of weak bristles (Fig. 2B). Fovea subcentral with straight furrow, both ridges slightly recurved. Cervical grooves and radial furrows evident (Fig. 2B). Ocular area rectangular, anterior row slightly recurved, posterior row almost straight. Ratio of ame: ale: pme: ple = 10: 11: 8: 6. Ocular area with some bristles, three long bristles in front of ame (Fig. 2E).

Chelicera. Basal segment without rastellum, cheliceral teeth only present on median side with nine macroteeth and two to three denticles positioned lateral to two most basal teeth (Fig. 2D). Basal segment in median region devoid of hairs, on dorsal surface with many stiff, long bristles. Pedipalpal coxae longer than wide, shape rectangular with four short, strong cones (cuspules) at inner corner, posterior angle with slightly round projection. Labium wider than long, lacking short, strong

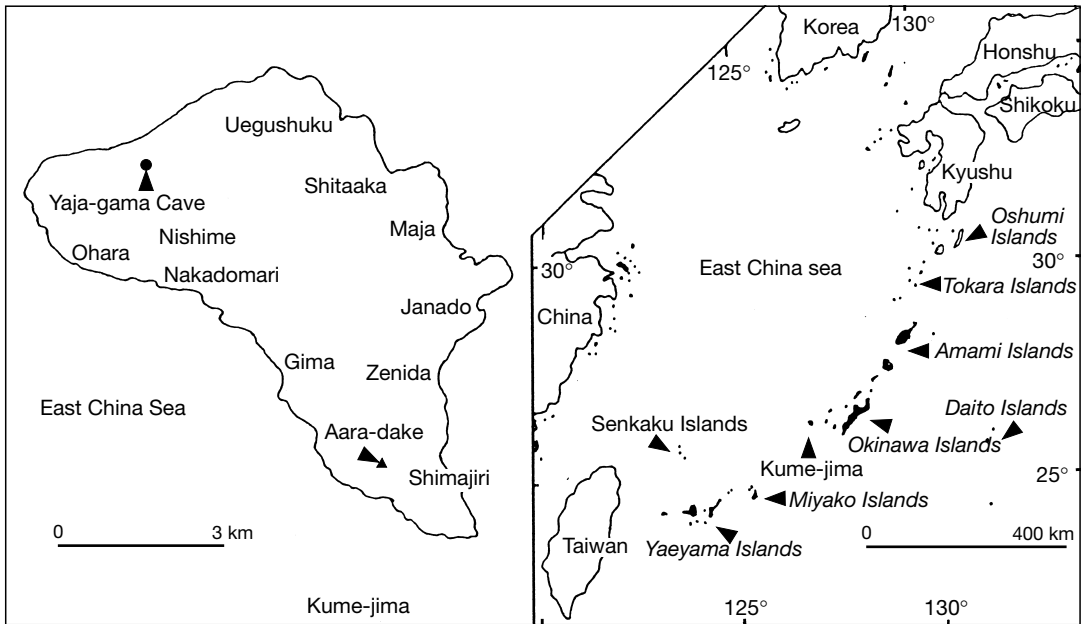


FIG. 1. — Map of Kume-jima and the Ryukyu Islands.

cones (cusps), anterior margin with few long bristles, subbasal part with several short hairs (Fig. 2C). Labiosternal suture as distinct groove. Sternum with eight sigilla: first pair large, semi-circular; six marginal sigilla oval; posterior ones large, opposing coxae III. Sternal surface slightly raised, bristles with increasing length marginally.

Pedipalp. Tibia with two spines on dorsal side, median stout, long spine, and short spine distally. On ventral side with two stout, long spines, one distal, one proximal. Retrolateral side with only one short apical spine, three long spines prolaterally, one ventro-prolateral longitudinal row of three spines. Eight (retrolateral) and nine (prolateral) trichobothria in two straight rows on both flanks, length of hairs increasing distally.

Palpal organ. Bulbus lengthy oval; embolus strongly corkscrew-shaped, twisted, in cross-section flattened, tip acute, without conductor (Fig. 3A, B). Cymbium on apical side with four short, stout spines on apical part.

Legs. Formula 4123 (Table 1). Tarsi of all legs with three claws. Paired claws with two rows of

uniform teeth, six to seven on each margin (Fig. 2F). Length of teeth increasing distally, short tooth (denticle) proximal. Inferior claw bare. Scopula present on ta I (Fig. 3C, E), mt I distally, ta II, mt II distally, although thin.

— Leg I: tibia weakly incrassate, with median row of three large spines on ventral side and one pair of smaller spines ventroproximally (Fig. 3D). Proximal part of prolateral side with two small spines. Dorsal and retrolateral sides devoid of spines. Two regular rows of trichobothria on dorsal side of tibia, their hairs increasing in length in distal direction (1:14) (Fig. 3E). Metatarsus ventrally in basal half slightly excavated, with one small spine ventrodistally. Single row of trichobothria on dorsal surface (hair length as in tibia, but 1:8) and proximally on retrolateral side. Tarsus devoid of spines, slightly thickened distally and row of trichobothria diverging distally. Tarsal lateral scopula reaching from middle to apical part, ventral scopula number of hairs decreasing from distal to proximal side (Fig. 3E).

— Leg II (Fig. 4A-D): tibia with nine spines (shorter and weaker than on other legs), five on ventral

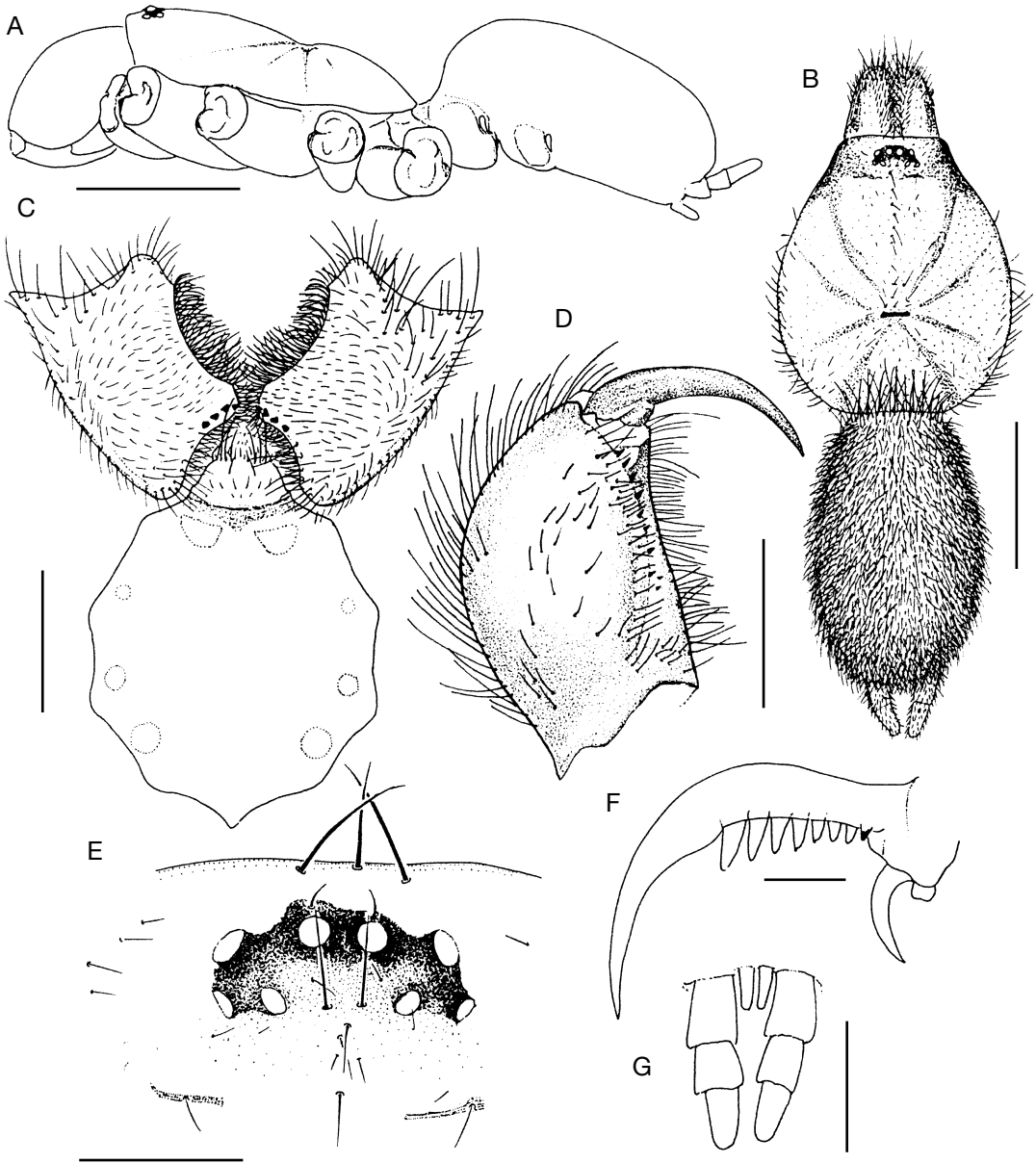


FIG. 2. — *Sinopsea kumensis*; **A**, lateral view, pedipalps, legs and hairs omitted; **B**, dorsal view, pedipalps and legs omitted; **C**, pedipalpal coxae (maxillae), labium and sternum, bristles on sternum omitted; **D**, left chelicera, mediad view; **E**, dorsal view of eyes; **F**, lateral view of superior and inferior tarsal claw; **G**, ventral view of spinnerets. Scale bars: A, B, 2 mm; C, D, G, 1 mm; E, 0.5 mm; F, 0.1 mm.

side, median row of three plus one paired spines distally. Median row of three spines prolaterally, one spine distally, in more ventral position. Mt with six spines, tarsus devoid of spines and pre-

ening comb. Arrangement of trichobothria similar to leg I.

— Legs III (Fig. 4E-H) and leg IV (Fig. 5A-D): no spines on tarsi, metatarsi without preening comb;

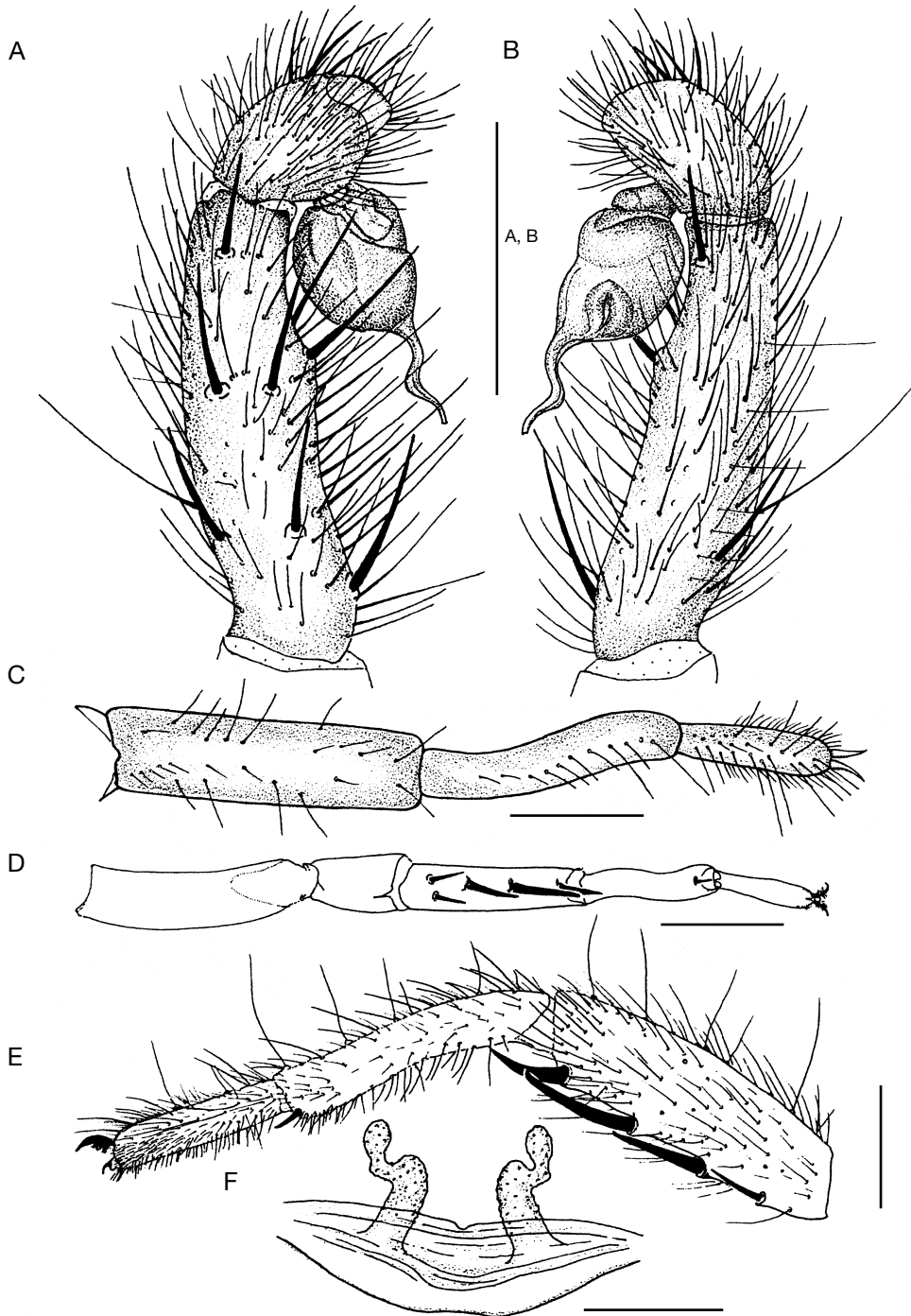


FIG. 3. — *Sinopesa kumensis*; **A-E**, male holotypus; **A**, prolateral view of left pedipalpus; **B**, retrolateral view of left pedipalpus; **C**, scopula and trichobothria of left leg I (dorsal view); **D**, left leg I (ventral view), hairs and scopula omitted; **E**, left leg I, tibia, metatarsus and tarsus; **F**, female receptacula. Scale bars: A-C, E, 1 mm; D, 2 mm; F, 0.5 mm.

TABLE 1. — Measurements in mm of appendages of male holotype (mm) of *Sinopesa kumensis* n. sp.

	Pedipalpus	I	II	III	IV
Femur	1.85	2.50	2.75	2.38	3.06
Patella	1.19	1.69	1.56	1.31	1.56
Tibia	1.50	2.25	2.00	1.56	2.50
Metatarsus	—	2.19	1.88	2.19	3.25
Tarsus	0.62	1.38	1.25	1.56	1.56

mt and tibia spinose; two rows of trichobothria as on dorsal side of tarsus, otherwise as in leg I; spines as illustrated.

Opisthosoma from dorsal side ovoid, with bristles and downy hairs, no marking on dorsal side. Four short spinnerets, apical segments of pls digitiform (Fig. 2A, G). Relative length of spinneret segments from base 23: 15: 23. Spigots small, number on each segment from base 8, 24, 21. Pms present, although small, spigots only distally. Aperture of booklungs are wide slits (Fig. 2A).

Coloration (living specimen). Carapace, pedipalps, legs, maxillae and sternum light brown. Fovea and claws blackish brown. Opisthosoma greyish black. Labium and spinnerets light grey.

Female paratype

Carapace 4.7 mm long, 4.0 mm broad, opisthosoma 4.5 mm long. Morphological characters of female (carapace, eyes, maxillae, labium, sternum, trichobothria and spinnerets) almost same as male. Receptaculum bilobed (Fig. 3F). Pedipalpal tarsus with scopula, its claw with single row of seven to ten retromarginal teeth. Tarsi and metatarsi of legs I and II with scopulae. At inner corner of pedipalpal coxae only three to five short, stout spines (cuspules), none on labium. Paired claws of all legs with two rows of teeth.

NATURAL HISTORY

Sinopesa kumensis n. sp. is quite rare and occurs in woods and in limestone caves. As it does not construct tubular webs or nests but roams around, it is more difficult to find than *Macrothele* species. The life cycle is still unknown.

COMMENTS

With the continuing description of new genera and new species of mygalomorph spiders from various parts of Asia (Hu & Li 1986; Shimojana & Haupt 1998; Song *et al.* 1983; Zhu & Mao 1983; Zonstein 1987), we have to accept the fact that Asian Mygalomorphae in general are not well-known. This largely depends on a more or less occasional collecting. Systematic ecological studies are still scarce and often concentrate on certain agricultural biotops like paddy fields.

So far, no nemesiid spiders have been reported from Japan or Taiwan (Cheng 1996; Chikuni 1989; Kayashima 1943; Li 1964; Yaginuma 1986; Zhu & Okuma 1975-1976). The only recent description which comes close to our material is from southern China (Guangxi province) and from Thailand (Raven & Schwendinger 1995). This fact reminds us the Pleistocene land connection of the Ryukyus to the Asian continent.

On the basis of lacking median spinnerets and the lack of serrula, a new genus *Sinopesa* was created for these species, but as other morphological characters are so close between *Sinopesa kumensis* and the two *Sinopesa* species *S. maculata* and *S. guangxi*, this requires emendation of the diagnosis of *Sinopesa*. The posteriormedian spinnerets of *S. kumensis* are obviously in the stage of reduction, as there are only terminal spigots. The same situation one finds in other mygalomorph spiders, and it also reminds us reduction stages of postmedian spinnerets in mesothelids as described by Yoshikura (1955) and Haupt (1979), although Mesothelae are in a separate lineage.

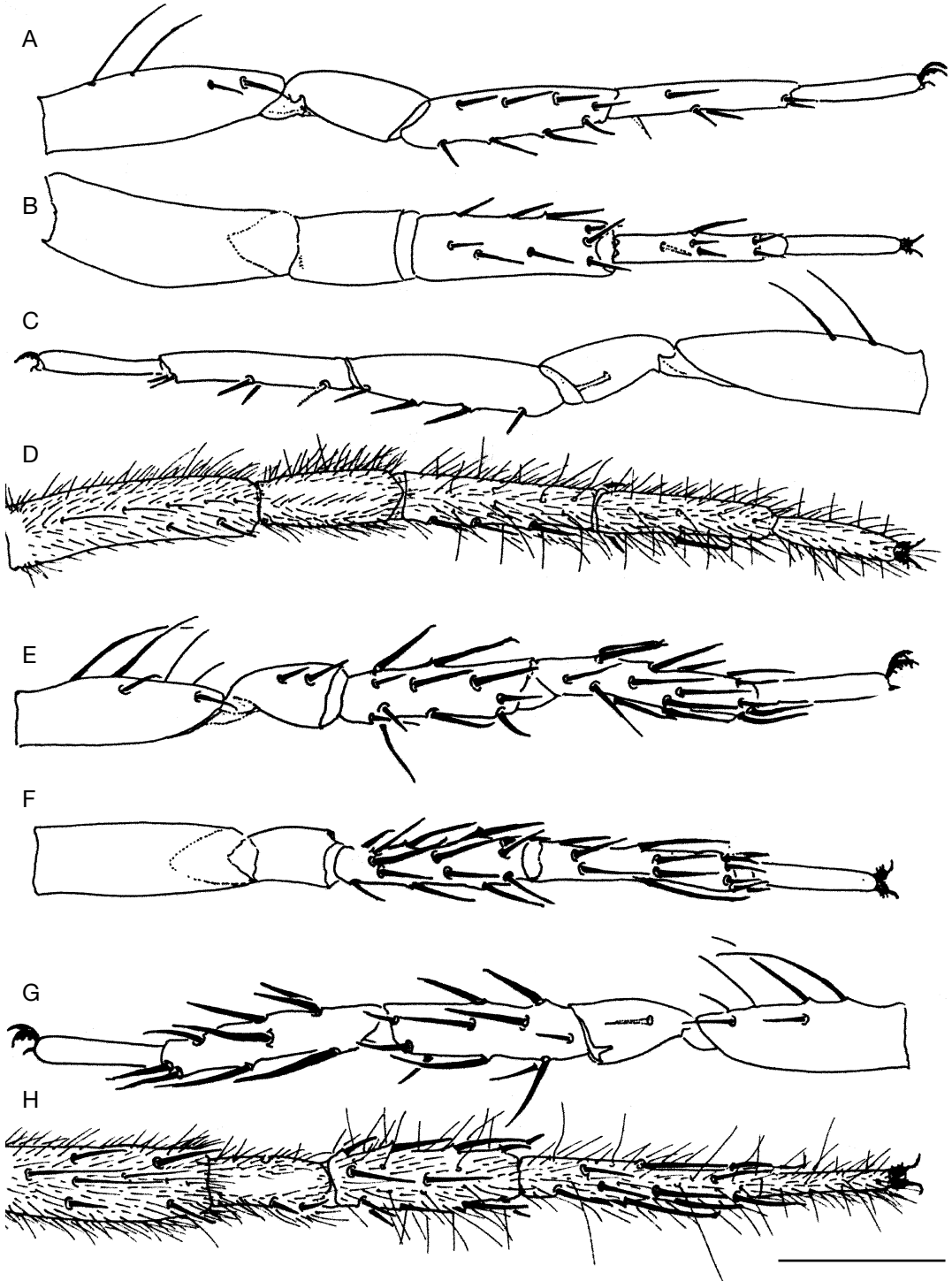


FIG. 4. — *Sinopesa kumensis*, male holotypus; **A-D**, male left leg II, hairs omitted in A-C; **A**, prolateral view; **B**, ventral view; **C**, retrolateral view; **D**, dorsal view; **E-H**, male left leg III, hairs omitted in E-G; **E**, prolateral view; **F**, ventral view; **G**, retrolateral view; **H**, dorsal view. Scale bar: 2 mm.

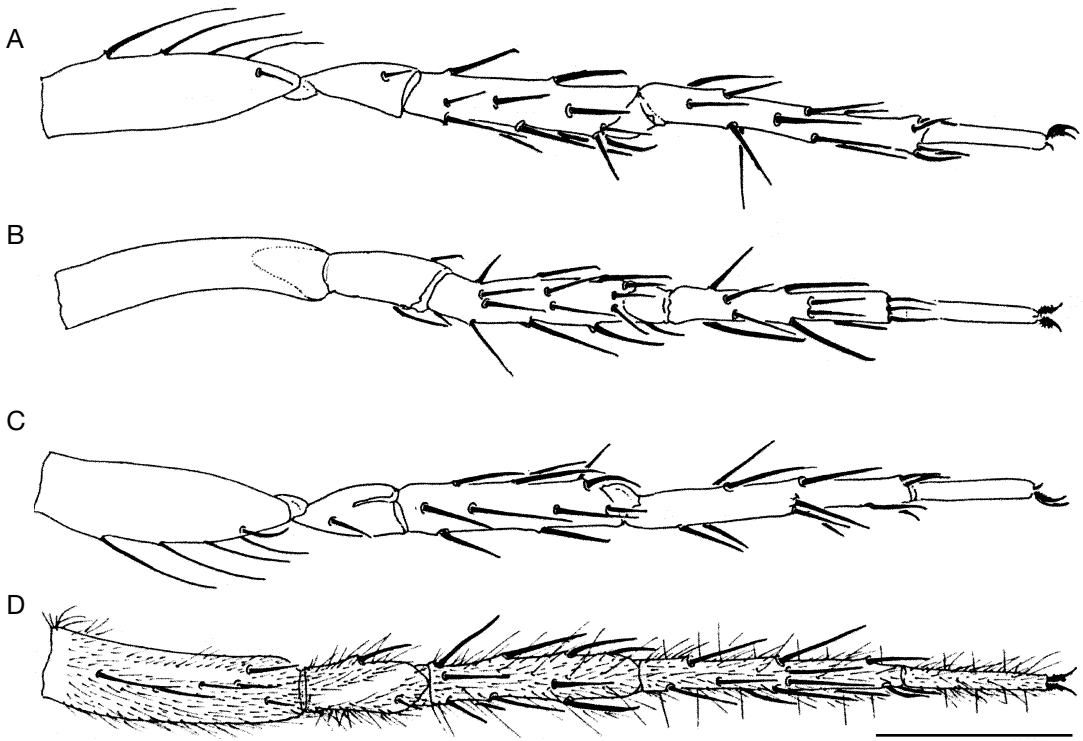


FIG. 5. — *Sinopesa kumensis*, male holotypus; **A-D**, male left leg IV, hairs omitted in A-C; **A**, prolateral view; **B**, ventral view; **C**, retro-lateral view; **D**, dorsal view. Scale bar: 2 mm.

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