

A new genus and two new species of linyphiid spiders (Arachnida: Araneae) from Vietnam

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Abstract. A new genus and two new species of linyphiid spiders are described from Vietnam. *Vietnagone*, new genus, is described to hold two species: *Vietnagone silvatica*, new species, designated as the type species, and *Vietnagone rugulosa* (Song & Li, 2010), new combination, ex *Gongylidium* Menge, 1868. The new genus is closely related to *Gongylidioides* Oi, 1960. The second new species described in this paper is *Nasoonaria pseudoembolica*, which is similar to *N. sinensis* Wunderlich & Song, 1995.

Key words. taxonomy, spiders, Linyphiidae, Erigoninae, Oriental Region, southeastern Asia

INTRODUCTION

At present, 19 valid linyphiid species from 17 genera in three subfamilies are known to occur in Vietnam (World Spider Catalog, 2019), the subfamily Erigoninae being represented by 12 species, Linyphiinae by five, and Micronetinae by only one species. A similar taxonomic diversity of the linyphiid spider fauna is observed in the neighboring Laos, 14 species belonging to Erigoninae, five to Linyphiinae, and only one to Micronetinae (World Spider Catalog, 2019). However, despite the similar counts of the known representatives of different subfamilies, the linyphiid faunas of Vietnam and Laos share only six species, this clearly showing the poor knowledge of the faunal lists of these two neighboring countries. The present paper provides descriptions of another new genus and two new species from Vietnam, which have been found in the collections of the Zoological Museum of the Moscow State University, Moscow, Russia (ZMMU) and in the Natural History Museum of Geneva (Muséum d'histoire naturelle de Genève, Switzerland, MHNG).

MATERIAL AND METHODS

This paper is based on material kept in the ZMMU and MHNG collections. Specimens preserved in 70% ethanol were studied using a MBS-9 stereo microscope. A Levenhuk C-800 digital camera was used for taking pictures. The terminology of copulatory organs mainly follows that of Merrett (1963), Hormiga (2000), and Tanasevitch (1998, 2015). The chaetotaxy is given in a formula, e.g., 2.2.1.1,

which refers to the number of dorsal spines on tibiae I–IV. The sequence of leg segment measurements is as follows: femur + patella + tibia + metatarsus + tarsus. All measurements are given in mm. All scale bars in the figures correspond to 0.1 mm, unless indicated otherwise. Figure numbers are given above the scale bars, the corresponding distance is indicated below.

The following abbreviations are used in the text and figures:

- a.s.l. — above sea-level
- C — convector sensu Tanasevitch (1998) = lamella sensu Merrett (1963) and Song & Li (2010)
- DAC — distal apophysis of convector sensu Tanasevitch (2015)
- DSA — distal suprategular apophysis sensu Hormiga (2000)
- E — embolus
- MBC — main body of convector
- MC — membranous part of convector
- MM — median membrane sensu van Helsdingen (1965) = embolic membrane sensu van Helsdingen (1986) and Hormiga (1994)
- PMP — posterior median plate
- R — radix
- RA — radical apophysis
- TmI — position of trichobothrium on metatarsus I

TAXONOMY

Order Araneae Clerck, 1757

Family Linyphiidae Blackwall, 1859

Subfamily Erigoninae Emerton, 1882

Vietnagone, new genus

Type species. *Vietnagone silvatica*, new species.

Etymology. The generic name is a combination of two words: “Vietna”, from part of the name of the country of origin of its type species, while the end part refers to the generic name *Erigone*; the gender is feminine.

Diagnosis. The genus contains erigonines with a total length of 1.50–1.78, which are characterised by the following combination of somatic and genital characters:

- 1) carapace unmodified in both sexes, cephalic pits absent (see Figs. 1, 2);
- 2) chelicerae strong, a mastidion absent;
- 3) chaetotaxy formula: 2.2.1.1; all metatarsi with a trichobothrium; TmI 0.39–0.44;
- 4) palpal tibia relatively large, modified (see Figs. 7–9);
- 5) median membrane strongly reduced (see Fig. 7);
- 6) distal supratרגular apophysis moderately developed (see Fig. 10);
- 7) radix small, convector present;
- 8) embolus whip-shaped, looped (see Fig. 11);
- 9) abdomen with a pattern in both sexes (see Figs. 1–3);
- 10) epigyne without a distinct cavity (see Figs. 3, 12).

Taxonomic remarks. Based on the male palp conformation and somatic characters (see items 2–4, 7 from the list above), the new genus is similar to *Gongylidioides* Oi, 1960, but distinguished by the unusual shape of the palpal tibia (Figs. 7–9 cf. Figs. 1G, 2H, 3H, 5G, 6G in Tu & Li, 2006), the peculiar structure of the convector, which in *Vietnagone*, new genus is divided into two parts (vs. unipartite in *Gongylidioides*, see Tu & Li, 2006, Song & Li, 2010), as well as by the structure of the epigyne, namely the fused lateral walls covering the epigynal cavity (vs. spaced lateral walls in *Gongylidioides*, Fig. 12 cf. Figs. 1H, 2I, 3I, 4C, 6H in Tu & Li, 2006).

Species included. The genus contains two species: *Vietnagone silvatica*, new species (the type species) and *V. rugulosa* (Song & Li, 2010), new combination, ex *Gongylidium* Menge, 1868.

Distribution. Southeastern Tibet (Song & Li, 2010) and northern Vietnam.

***Vietnagone silvatica*, new species**
(Figs. 1–3, 7–13)

Holotype male (MHNG), VIETNAM, Vinh Phuc Province, 1 km SE of Tam Dao, 21°26'49"N 105°39'06"E, 1,000–1,200 m a.s.l., evergreen forest, 13–14 May 2012, coll. P. Schwendinger & A. Schulz [VN-12/03c].

Paratype: 1 female (MHNG), collected together with the holotype.

Etymology. The specific epithet is a Latin adjective meaning “forest-dweller”.

Description. Male holotype. Total length 1.50. Carapace 0.73 long, 0.63 wide, unmodified, as shown in Fig. 1, greyish pale brown. Eyes slightly enlarged. Chelicerae 0.28 long. Legs yellow. Leg I 3.01 long (0.83+0.20+0.73+0.70+0.55); IV 2.98 long (0.83+0.20+0.75+0.75+0.45). Chaetotaxy: 2.2.1.1. Length of spines 1.5–2 diameters of leg segment. All metatarsi with a trichobothrium. TmI 0.39. Palp (Figs. 7–11): tibia with three apophyses: a retrolateral one wide and short, a dorsal apophysis long and narrow, a prolateral one fang-shaped. Distal part of paracymbium expanded, ending up with an uncus. Distal supratרגular apophysis wide, relatively short. Median membrane strongly reduced. Convector divided into two parts: one elongated, slightly curved, with a hook-shaped distal apophysis, the other swollen and membranous. Radix very small, embolus thin, relatively long, looped. Abdomen 0.80 long, 0.50 wide, dorsal pattern as in Fig. 1.

Female. Total length 1.78. Carapace 0.78 long, 0.58 wide, unmodified, as shown in Fig. 2. Chelicerae 0.35 long. Leg I 2.79 long (0.75+0.23+0.68+0.63+0.50); IV 2.84 long (0.78+0.23+0.70+0.68+0.45). Length of spines 1.5–2.5 diameters of leg segment. All metatarsi with a trichobothrium. TmI 0.44. Abdomen 1.13 long, 0.73 wide, dorsal pattern as in Fig. 2. Epigyne (Figs. 3, 12, 13): cavity of epigyne totally covered with fused lateral walls. Copulatory ducts of complex shape, extended forwards. Receptacles small and rounded. Body (Figs. 2, 3) and leg colouration, as well as chaetotaxy as in male.

Taxonomic remarks. See Remarks under *Vietnagone rugulosa* (Song & Li, 2010), new combination.

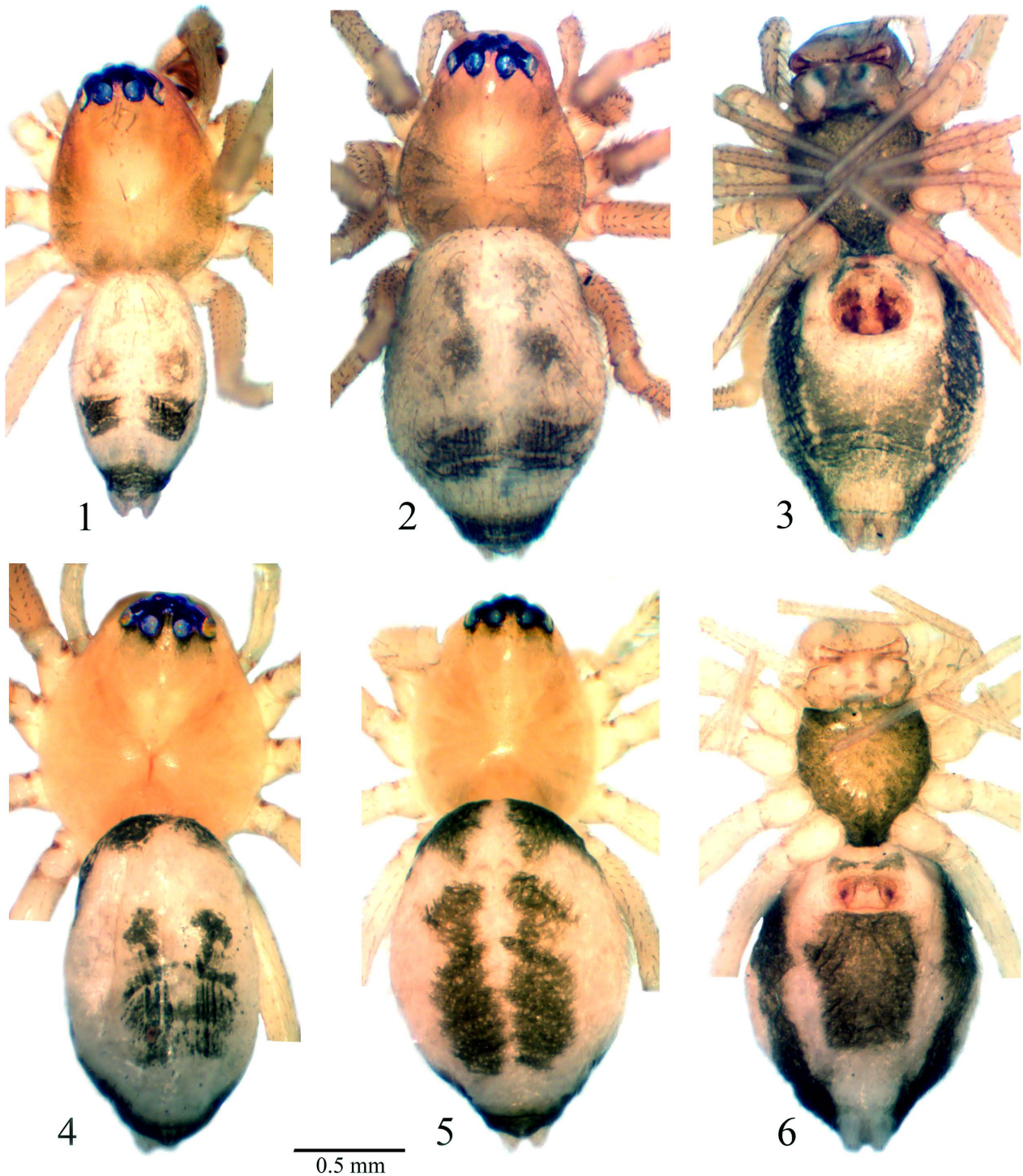
Distribution. So far known only from the type locality.

***Vietnagone rugulosa* (Song & Li, 2010), new combination**

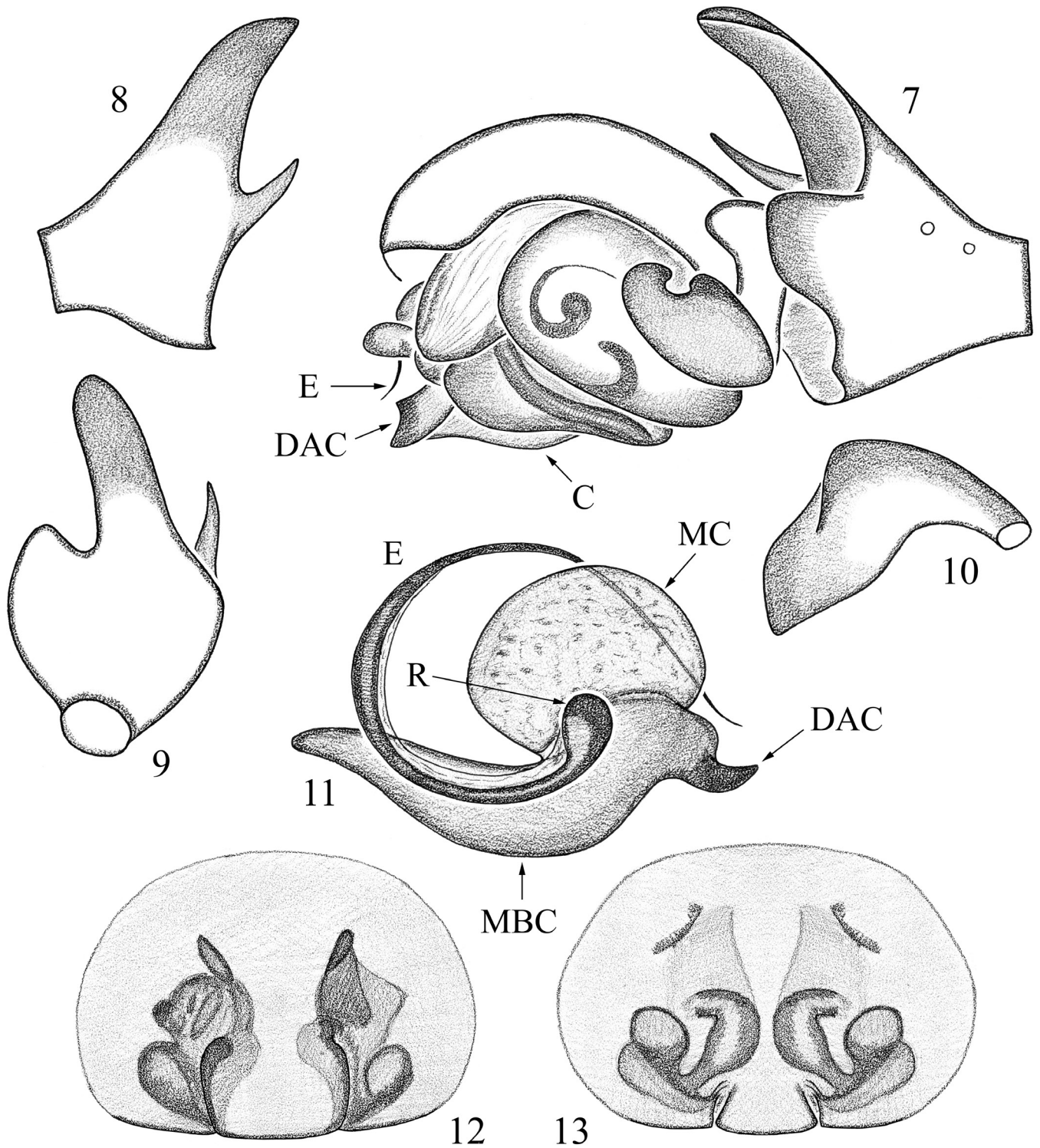
Gongylidium rugulosum Song & Li, 2010: 707, figs.18–39, male and female.

Remarks. *Vietnagone rugulosa* (Song & Li, 2010), new combination was originally described in *Gongylidium* Menge, 1868, from Bome and Nyingchi counties of Tibet (Song & Li, 2010). The structure of the palp, namely, the modified palpal tibia, the presence of a convector (in the original description referred to as “lamella”), the relatively short and looped embolus, as well as the same chaeto- and trichobothriotaxy, all support the assignment of *Gongylidium rugulosum* Song & Li, 2010 to *Vietnagone*, new genus. This species is similar to *V. silvatica*, new species, but differs by the shape of the palpal tibia in the male (Figs. 7–9 cf. Figs. 19–21 in Song & Li, 2010), as well as by the non-projecting epigyne, the much longer copulatory ducts and their arrangement (Figs. 12, 13 cf. Figs. 50–54, 56 in Song & Li, 2010).

Distribution. Known from southeastern Tibet (Song & Li, 2010).



Figs. 1–6. Habitus of *Vietmagone silvatica*, new species (1–3) and *Nasoonaria pseudoembolica*, new species (4–6). 1, 4, male holotype; 2, 3, 5, 6, female paratype; 1, 2, 4, 5, dorsal view; 3, 6, ventral view.



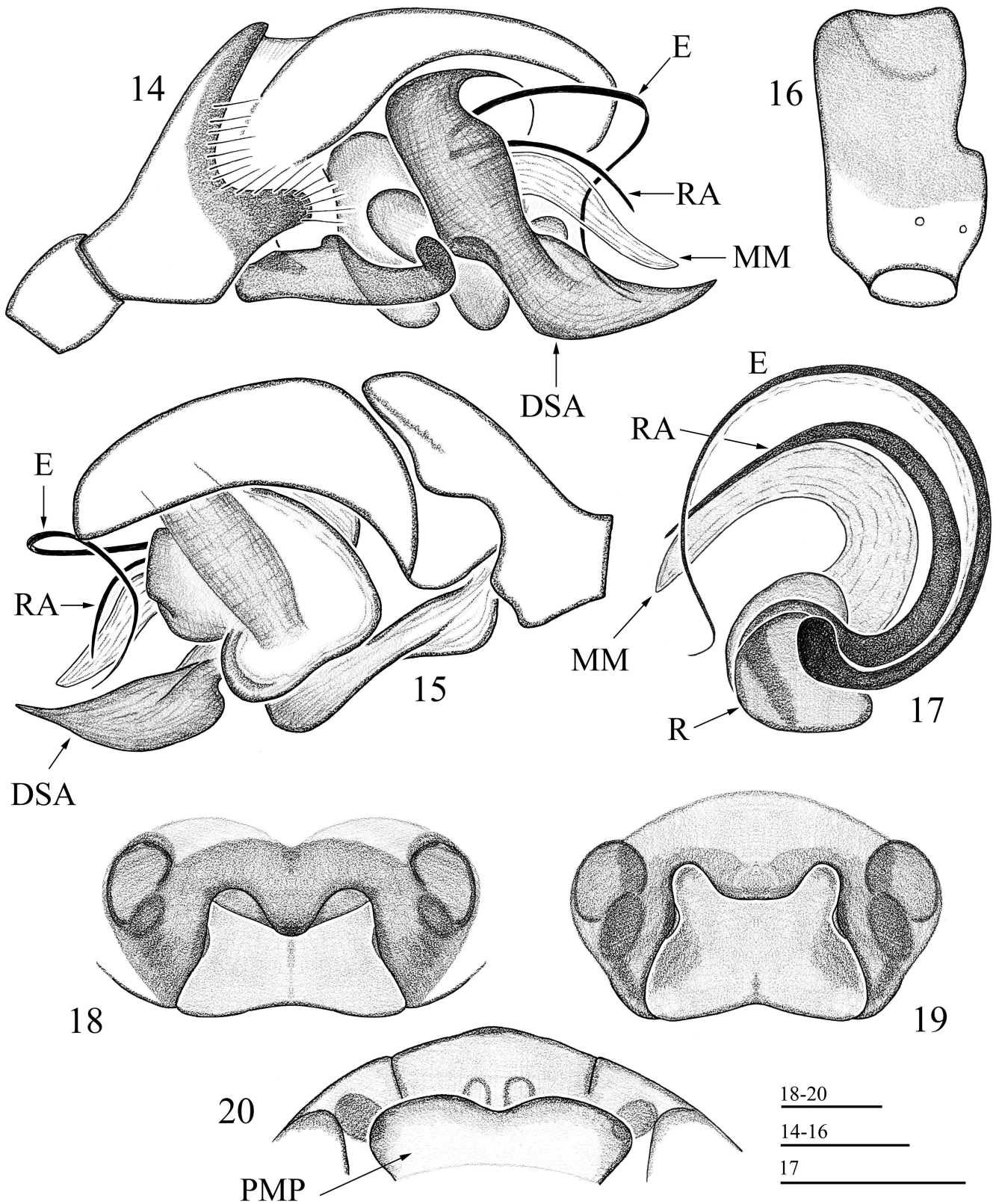
11

7

8-10

12-13

Figs. 7–13. Details of palpal and epigynal structure of *Vietnagone silvatica*, new species. 7–10, male holotype; 12, 13, female paratype. 7, left palp, retrolateral view; 8, 9, palpal tibia, prolateral and dorsal views, respectively; 10, distal suprategular apophysis, lateral view; 11, embolic division; 12, 13, epigyne, ventral and dorsal views, respectively.



Figs. 14–20. Details of palpal and epigynal structure of *Nasoonaria pseudoembolica*, new species. 14–17, male holotype; 18–20, female paratype. 14, 15, right palp, retrolateral and prolateral views, respectively; 16, palpal tibia, dorsal view; 17, embolic division; 18, 19, epigyne, ventral views, different aspects; 20, epigyne, dorsal view.

Nasoonaria Wunderlich & Song, 1995

Type species. *Nasoonaria sinensis* Wunderlich & Song, 1995, by original designation and monotypy.

Nasoonaria pseudoembolica, new species
(Figs. 4–6, 14–20)

Holotype male (ZMMU), VIETNAM, Dong Nai Province, Ma Da forest [= rung Ma Da], from soil sample, 20 May 1995, coll. T.K. Sergeeva.

Paratype: 1 female (ZMMU), collected together with the holotype.

Etymology. The specific epithet is a Latin adjective referring to the presence of an embolic-like process [= radical apophysis] in the embolic division.

Diagnosis. The new species is diagnosed by the presence of an embolus-like radical apophysis in the embolic division and by the characteristic shape of the epigynal cavity.

Description. Male holotype. Total length 2.03. Carapace 0.90 long, 0.75 wide, unmodified, as shown in Fig. 4, yellow to pale brown. Chelicerae 0.35 long, a mastidion absent. Legs yellow. Leg I 3.51 long (0.93+0.28+0.95+0.75+0.60); IV 3.41 long (0.90+0.28+0.88+0.85+0.50). Chaetotaxy: 2.2.1.1. Length of spines 1.5–2.5 diameters of leg segment. All metatarsi with a trichobothrium. TmI 0.64. Palp (Figs. 14–17): tibia wide, elongated, with a retrolateral obtuse outgrowth. Prolateral edge of tibia undulate. Paracymbium L-shaped, with a long and narrow distal part, uncinately apically. Distal supratragular apophysis hypertrophied, falcate. Median membrane relatively narrow and long, tongue-shaped. Embolic division with a small and partly membranous radix. Embolus thin, long, whip-shaped; a dark, falcate, embolus-like, radical apophysis starting at base of embolus. Abdomen 1.13 long, 0.65 wide, dorsal pattern as in Fig. 4.

Female. Total length 2.00. Carapace 0.75 long, 0.68 wide, unmodified, as shown in Fig. 5. Chelicerae 0.33 long, a mastidion absent. Leg I 2.93 long (0.80+0.25+0.75+0.63+0.50); IV 3.11 long (0.88+0.23+0.75+0.75+0.50). All metatarsi with a trichobothrium. TmI 0.64. Abdomen 1.25 long, 0.83 wide, dorsal pattern as in Fig. 5. Epigyne (Figs. 6, 18–20): epigynal cavity shallow, trapeziform, its lateral walls slightly concave, anterior part of cavity with a prominence. Posterior median plate [= dorsal plate] short and wide, with a hollow at posterior edge. Receptacles bean-shaped. Body (Figs. 5, 6) and leg colouration, as well as chaetotaxy as in male.

Taxonomic remarks. The species is similar to *Nasoonaria sinensis* Wunderlich & Song, 1995, but can be distinguished by the simple male palpal tibia (vs. strongly modified in *N. sinensis*), the presence of an embolus-like process in the embolic division, and by the presence of an epigynal cavity in the female (vs. absent in *N. sinensis*).

Distribution. So far known only from the type locality in southern Vietnam.

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