

Two new species of the genus *Erigone* Audouin, 1826 from the Pamir-Alay and Tian Shan mountains, Middle Asia (Arachnida: Aranei)

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ABSTRACT. Two new species, *Erigone darvaz* sp.n. (♂, ♀) and *E. naryn* sp.n. (♂), are described from the mountains of Middle Asia: Pamir-Alay Mts, Tajikistan and Tian Shan Mts, Kyrgyzstan, respectively. *Erigone darvaz* sp.n. is similar to both, the Siberian *E. hypoarctica* Eskov, 1989 and the Himalayan *E. jammu* Tanasevitch, 2018, but readily differs in the structures of the genitalia in both sexes. *Erigone naryn* sp.n. resembles *E. darvaz* sp.n., and is distinguished by the shapes of the palpal tibia and radical apophyses of the embolic division.

How to cite this article: Tanasevitch A.V. 2026. Two new species of the genus *Erigone* Audouin, 1826 from the Pamir-Alay and Tian Shan mountains, Middle Asia (Arachnida: Aranei) // Invert. Zool. Vol.23. No.3. P.446–452. doi: 10.15298/invertzool.23.3.06

KEY WORDS: taxonomy, Erigoninae, mountain fauna.

Два новых вида рода *Erigone* Audouin, 1826 из гор Памиро-Алая и Тянь-Шаня, Средняя Азия (Arachnida: Aranei)

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РЕЗЮМЕ. Два новых вида, *Erigone darvaz* sp.n. (♂, ♀) и *E. naryn* sp.n. (♂), описаны из гор Средней Азии, соответственно из Памиро-Алая (Таджикистан) и Тянь-Шаня (Кыргызстан). *Erigone darvaz* sp.n. наиболее близок к сибирскому *E. hypoarctica* Eskov, 1989 и гималайскому *E. jammu* Tanasevitch, 2018, от которых отличается строением гениталий обоих полов. *Erigone naryn* sp.n. напоминает *E. darvaz* sp.n. и характеризуется формой голени пальпы и отростков радика эмболического отдела.

Как цитировать эту статью: Tanasevitch A.V. 2026. Two new species of the genus *Erigone* Audouin, 1826 from the Pamir-Alay and Tian Shan mountains, Middle Asia (Arachnida: Aranei) // Invert. Zool. Vol.23. No.3. P.446–452. doi: 10.15298/invertzool.23.3.06

КЛЮЧЕВЫЕ СЛОВА: таксономия, Erigoninae, горная фауна.

Introduction

Middle Asia (*sensu* Cowan, 2007) lies within the territory of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan and Xinjiang (north-west China) and includes two major mountain systems: the Pamir-Alay and the Tian Shan.

Four species of the genus *Erigone* Audouin, 1826 are known from the mountains of Middle Asia: *E. atra* Blackwall, 1833, *E. dentipalpis* (Wider, 1834), and *E. remota* L. Koch, 1869 from Pamir-Alay and Tian Shan, and *E. sinensis* Schenkel, 1936 from Tian Shan. All these species show rather wide distributional patterns: viz., the Holarctic *E. atra* and *E. dentipalpis*, the Palearctic *E. remota*, and the south-eastern Palearctic *E. sinensis*. So far, no new *Erigone* species has been described from the mountains of Middle Asia. Several presumable local endemics have been described from the neighbouring Himalayas in Central Asia: *E. acuta* Tanasevitch, 2021 (Tanasevitch, 2021) and *E. nepalensis* Wunderlich, 1983 from Nepal (Wunderlich, 1983), *E. rohtangensis* Tikader, 1981 from Himachal Pradesh, India (Tikader, 1981), as well as *E. jammu* Tanasevitch, 2018 from Jammu and Kashmir, India (Tanasevitch, 2018).

Two new species of *Erigone* collected from the mountains of Tajikistan and Kyrgyzstan have been found in unsorted spider collections of the Zoological Museum of Moscow State University (ZMMU). Their description is the subject of this paper.

Material and methods

The present paper is based on the spider material kept in the Zoological Museum of the Moscow State University, Russia (ZMMU); one paratype will be deposited in the Zoological Institute, Russian Academy of Science, St Petersburg, Russia (ZISP). Specimens preserved in 70% ethanol were studied using an MBC-9 stereo microscope. Drawings were executed with a drawing apparatus; a Levenhuk C-800 PLUS digital camera was used for taking photographs. The chaetotaxy is given in a formula, e.g., 2.2.2.1, 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 in mm. Scale bars in the figures correspond to 0.1 mm unless indicated otherwise. The terminology of the structure of copulatory organs mainly follows Merrett (1963) and Tanasevitch (2018).

The following abbreviations are used in the text and figures: aep — anterior embolic process; a.s.l. — above sea level; co — column; d — duct; dp — dorsal plate; dsa — distal supratragular apophysis *sensu* Hormiga (2000); e — embolus; em — embolic membrane *sensu* Tanasevitch (2017), not *sensu* van Helsdingen (1986) and Hormiga (1994); ep — embolus proper *sensu* Saaristo (1971); mm — median membrane *sensu* van Helsdingen (1965), = embolic membrane *sensu* van Helsdingen (1986) and Hormiga (1994); mra — median radical apophysis of embolic division, = median tooth *sensu* Crosby, Bishop (1928); mrt — mesal radical tooth of embolic division, = mesal tooth *sensu* Crosby, Bishop (1928); pra — posterior radical apophysis of embolic division, = posterior tooth *sensu* Crosby, Bishop (1928); re — receptacle; rt — retrolateral tibial tooth; TmI — position of trichobothrium on metatarsus I; vp — ventral plate of epigyne.

Results

Class Arachnida Cuvier, 1812

Order Araneae Clerck, 1758

Family Linyphiidae Blackwall, 1859

Subfamily Erigoninae Emerton, 1882

Erigone darvaz sp.n.

Figures 1A–J, 2A–F.

HOLOTYPE ♂ (ZMMU), TAJIKISTAN, Pamir-Alay Mts, West Pamir Mts, Dorvaz (= Darvazsky) Mt. Ridge, Khoburabot Pass, 3200–3400 m a.s.l., 24.IX.1970, A. Konkov leg.

PARATYPES: 1 ♂, 1 ♀ (ZMMU), collected with the holotype.

COMPARATIVE MATERIAL. *Erigone hypoarctica* Eskov, 1989: 3 ♂♂, 5 ♀♀ (ZMMU), RUSSIA, Irkutsk Area, Lake Baikal, Bolshiye Koty Field Station, 51°54'N, 105°04'E, under stones on a brook bank, 15.VI.1988, A. Tanasevitch leg.; 1 ♀ (ZMMU), Novosibirsk Area, Kemerovo District, Kuznetskiy Alatau Nature Reserve, ca 16 km SW of Belogorsk, Kiya River, delta of Bezmyanka River delta, 54°54'N, 88°17'E, taiga, 14–17.VII.1994, S. Golovatch & A. Ryvkin leg.; 1 ♂, 2 ♀♀ (ZMMU), Altai Republic, Lake Teletskoye, Altaisky Nature Reserve, near Artybash, *Picea obovata*, *Abies sibirica*, *Pinus sibirica* taiga forest, 500–800 m a.s.l., 13–24.VII.1997, A. Tanasevitch & S. Golovatch leg.

NAME. The specific epithet is a noun in apposition taken from the old spelling of the '*terra typica*', the Darvaz Range, Tajikistan.

DESCRIPTION. Male holotype. Habitus as in Fig. 1A. Total length 3.00. Carapace modified, head drawn up rather abruptly as in Fig. 1B, 1.20 long, 1.00 wide, reddish brown, with numerous marginal

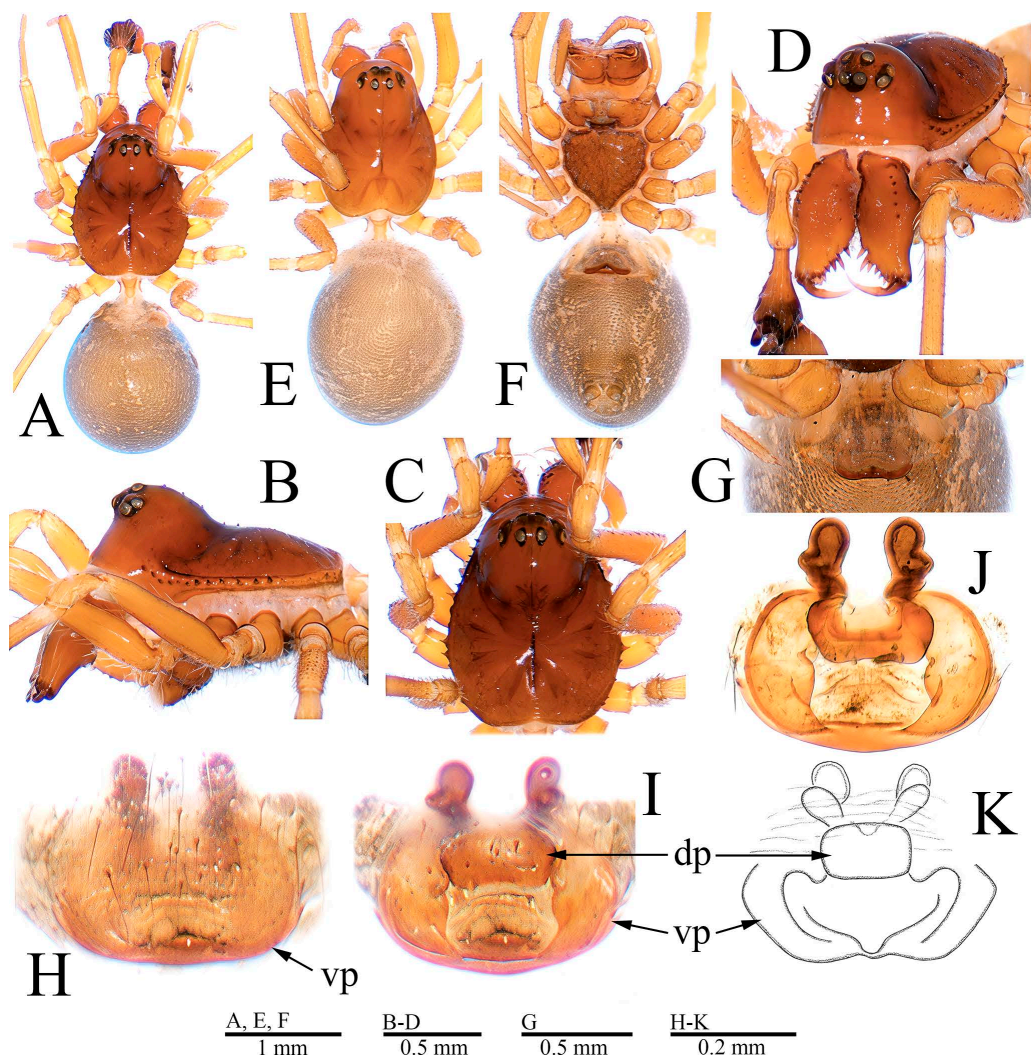


Fig. 1. *Erigone darvaz* sp.n., holotype male (A–D), paratype female (E–J), and *E. hypoarctica* Eskov, 1989, from Artybash, Altai Mts, after Tanasevitch (2013) (K). A, E — habitus, dorsal view; F — *ibid*, ventral view; B, C, D — prosoma, lateral, dorsal and frontolateral views, respectively; G — abdomen, partly, ventral view; H, I — epigyne, ventral and dorsal views, respectively; J, K — cleared epigyne, dorsal view.

teeth different in size, as in Fig. 1C. Chelicerae 0.75 long, anterolaterally with a row of denticles, as in Fig. 1D; outer margin with 5–6 teeth, inner with 2–3 small teeth. Legs pale reddish brown. Leg I, 3.35 long ($0.95 + 0.30 + 0.80 + 0.75 + 0.55$), IV, 3.35 long ($0.95 + 0.30 + 0.85 + 0.75 + 0.50$). Chaetotaxy 2.2.2.1. TmI 0.51. Metatarsi IV without trichobothrium. Palp (Fig. 2A–F): tibia with a distinct, small ventral denticle, and a blunt retrolateral tibial tooth. Distal lobe of paracymbium heavily sclerotized. Distal supratetral apophysis relatively long, rounded api-

cally. Median radical apophysis of embolic division poorly marked, posterior radical apophysis relatively long, thick, pointed distally. Anterior embolic process short, pointed. Abdomen as in Fig. 1A, 1.50 long, 1.20 wide, pale grey.

Female. Habitus as in Fig. 1E, F. Total length 2.90. Carapace unmodified, 1.15 long, 0.85 wide, reddish brown, marginal teeth absent. Chelicerae 0.55 long, anterolaterally with a row of denticles, outer margin with 5 teeth, inner with 2 small teeth. Legs pale reddish brown. Leg I, 2.90 long ($0.80 + 0.35 + 0.70 +$

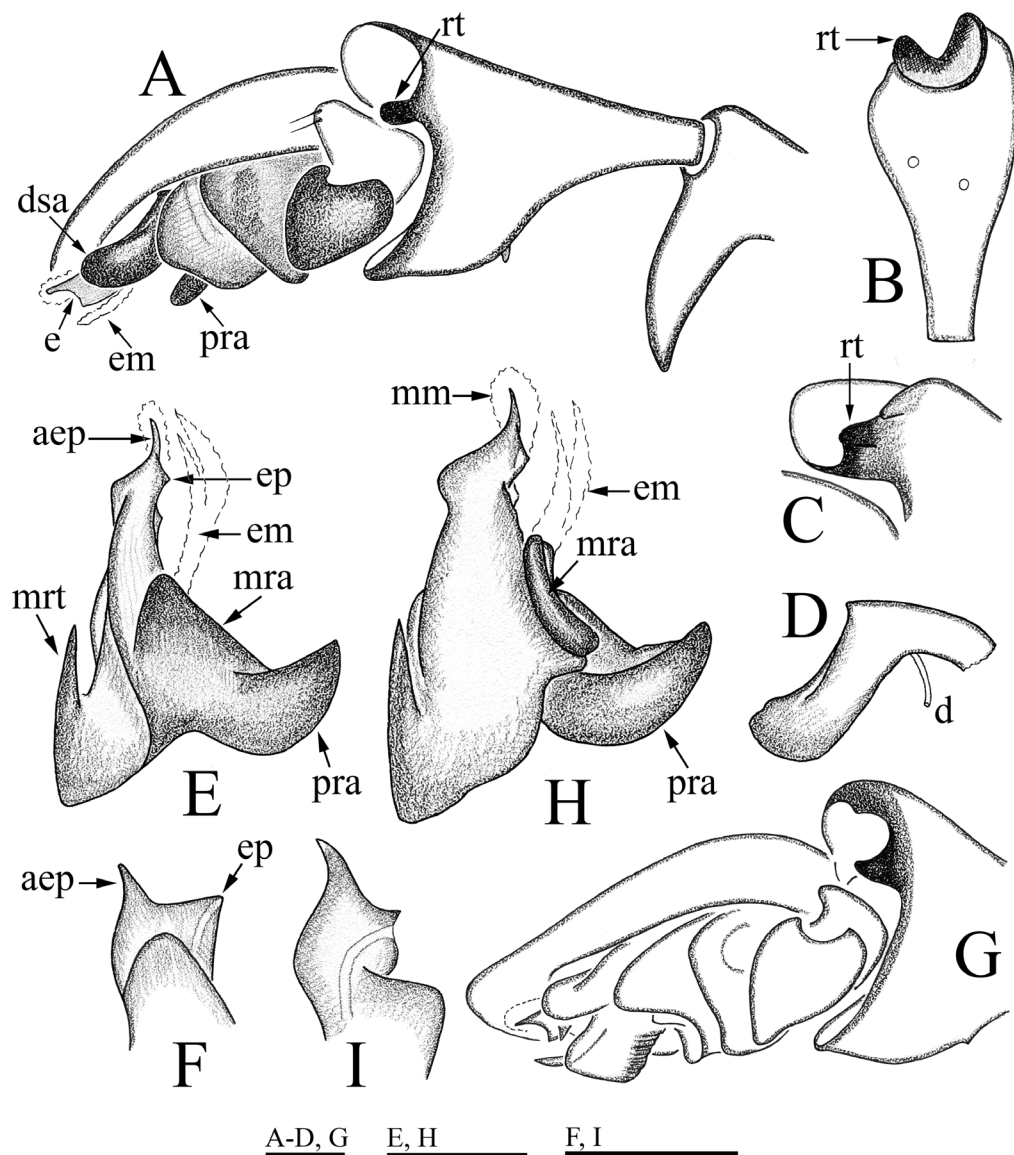


Fig. 2. Details of palpal structure of *Erigone darvaz* sp.n., paratype (A–F), and *E. hypoarctica* Eskov, 1989, from Artybash, Altai Mts (G–I), G — after Tanasevitch (2013). A, G — left palp, retrolateral view; B — palpal tibia, dorsal view; C — distal part of palpal tibia, ventro-retrolateral view; D — distal suprategular apophysis; E, H — embolic division; F, I — distal part of embolus.

0.60 + 0.45), IV 2.95 long (0.85 + 0.30 + 0.70 + 0.70 + 0.40). TmI 0.51. Abdomen as in Fig. 1E, F, 1.55 long, 1.15 wide, pale grey. Epigyne (Fig. 1H–J) wider than length, posterior edge of dorsal plate slightly concave, posterior edge of ventral plate prominent. Receptacles been-shaped.

TAXONOMIC REMARKS. The new species is very similar to the Siberian *E. hypoarctica*. The

male differs in the shape of a retrolateral tooth on the palpal tibia (Fig. 2A cf. Fig. 2G) and some traits of the embolic division: viz., the shape of median radical apophysis (Fig. 2E cf. Fig. 2H) and embolus (Fig. 2F cf. Fig. 2I). The female differs in the shape of dorsal and ventral plates (Fig. 1J cf. Fig. 1K). *Erigone darvaz* sp.n. is also similar to *E. jammu* known from Jammu and Kashmir, India (Tanasevitch, 2018). The male of

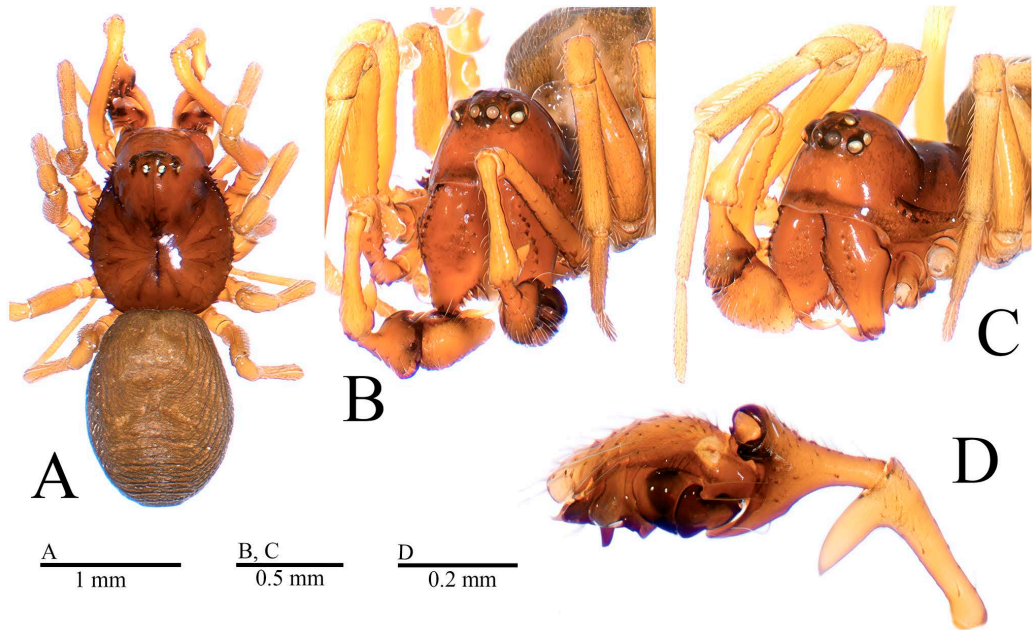


Fig. 3. Male of *Erigone naryn* sp.n., holotype (A, B), and paratype (C, D). A — habitus, dorsal view; B, C — prosoma, frontolateral view; D — left palp.

the new species differs in the shorter retrolateral tibial tooth situated on the posterior radical apophysis, as well as in the thin and long anterior embolic process (Figs 2A, E, F cf. figs 11, 12 in Tanasevitch (2018)). The female is lacking a small prominence at the posterior edge of the ventral plate of epigyne (Figs 1J cf. fig. 14 in Tanasevitch (2018)).

DISTRIBUTION. Only known from the type locality, Khoburabot Pass, Tajikistan.

Erigone naryn sp.n.

Figs 3, 4.

HOLOTYPE ♂ (ZMMU), KYRGYZSTAN, Inner Tian Shan Mts, Naryn-Too Mt. Ridge, Naryn Nature Reserve, 2400–2800 m a.s.l., 15.VIII.1988, S. Ovtchinnikov leg.

PARATYPES: 1 ♂ (ZMMU), ♂ (ZISP), collected with the holotype.

NAME. The specific name is a noun in apposition taken from the ‘*terra typica*’, the Naryn Nature Reserve, Kyrgyzstan.

DESCRIPTION. Male holotype. Habitus as in Fig. 3A. Total length 2.80. Carapace modified, head drawn up rather abruptly, 1.30 long, 1.00 wide, dark reddish brown, with numerous marginal teeth different in size, as in Fig. 3A. Chelicerae 0.70 long, anterolaterally with a row of denticles, as in Fig. 3C; outer margin with 4–5 teeth, inner with 2 small teeth. Legs pale reddish brown. Leg I, 3.05 long ($0.85 + 0.30 +$

$0.75 + 0.70 + 0.45$), IV, 3.20 long ($0.85 + 0.30 + 0.80 + 0.75 + 0.50$). Chaetotaxy 2.2.2.1. TmI 0.47. Metatarsi IV without trichobothrium. Palp (Fig. 3D; 4): tibia without a distinct ventral denticle, only with a sharp knob. Retrolateral tibial tooth blunt. Distal lobe of paracymbium highly sclerotized. Distal suprategular apophysis relatively long, slightly pointed apically. Median radical apophysis of embolic division relatively short as seen in ventro-retrolateral view (Fig. 4E); posterior radical apophysis relatively long, slender and curved. Anterior embolic process short, pointed.

Female unknown.

TAXONOMIC REMARKS. The new species seems to be similar to *E. darvaz* sp.n., but differs in the presence of a large hollow at the distal part of the palpal tibia (see in dorsal view; Fig. 2B cf. Fig. 4B), and especially in the shape of apophyses of the embolic division (Fig. 2E cf. Figs 4E, F).

DISTRIBUTION. Only known from the type locality, the Naryn Nature Reserve, Kyrgyzstan.

Compliance with ethical standards

CONFLICT OF INTERESTS: The author declares that he has no conflict of interest.

Acknowledgements. I am deeply grateful to Kirill G. Mikhailov (Moscow, Russia) for providing me with an opportunity to study the arachnological collections under his care. Thanks also go to Dmitri V. Logunov (St Petersburg, Russia) for kindly checking the English of the final draft.

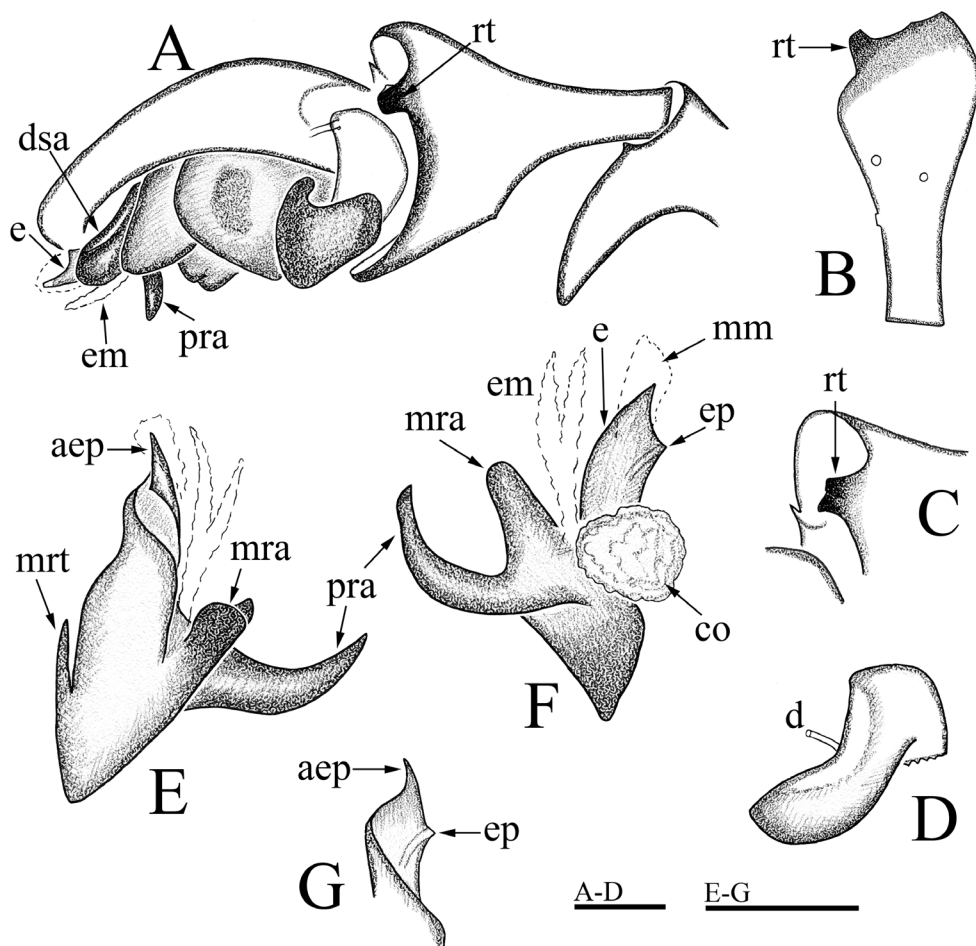


Fig. 4. Details of palpal structure of *Erigone naryn* sp. n., paratype. A — left palp, retrolateral view; B — palpal tibia, dorsal view; C — distal part of left palp, ventro-retrolateral view; D — distal suprategular apophysis; E, F — embolic division, ventro-retrolateral and ventro-prolateral views, respectively; G — distal part of embolus.

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Responsible editor K.G. Mikhailov