

## Two new species of the family Linyphiidae from the Himalayas (Arachnida: Aranei)<sup>1</sup>

### Два новых вида семейства Linyphiidae из Гималаев (Arachnida: Aranei)

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КЛЮЧЕВЫЕ СЛОВА: таксономия, пауки, *Agyneta*, *Erigone*, Азия, Индия, Непал, горы.

ABSTRACT. Two new species of the family Linyphiidae are described from the Himalayas: *Agyneta himalaya* sp.n. from Nepal and *Erigone jammu* sp.n. from India. The new *Agyneta* Hull, 1911 seems to be most similar to the Siberian arcto-boreo-montane *A. ripariensis* Tanasevitch, 1984, and to the Nepalense *A. jiriensis* Wunderlich, 1983. The new *Erigone* Audouin, 1826 resembles the Palearctic arcto-alpine *E. remota* L. Koch, 1869 and the nival *E. lata* Song et Li, 2008, the latter species described from the Hengduan Mts, China. Both new species are clearly distinguished from their most similar congeners by the structural details of the genitalia.

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РЕЗЮМЕ. Из Гималаев описаны два новых вида пауков семейства Linyphiidae: *Agyneta himalaya* sp.n. из Непала и *Erigone jammu* sp.n. из Индии. Новый вид *Agyneta* Hull, 1911 близок к сибирскому аркто-борео-монтанному *A. ripariensis* Tanasevitch, 1984 и непальскому *A. jiriensis* Wunderlich, 1983. Новый вид *Erigone* Audouin, 1826 имеет явные черты сходства с палеарктическим аркто-альпийским *E. remota* L. Koch, 1869 и нивальным *E. lata* Song et Li, 2008, описанному из Сино-Тибетских гор, Китай. Оба новых вида хорошо отличаются от наиболее близких представителей своего рода деталями строения гениталий.

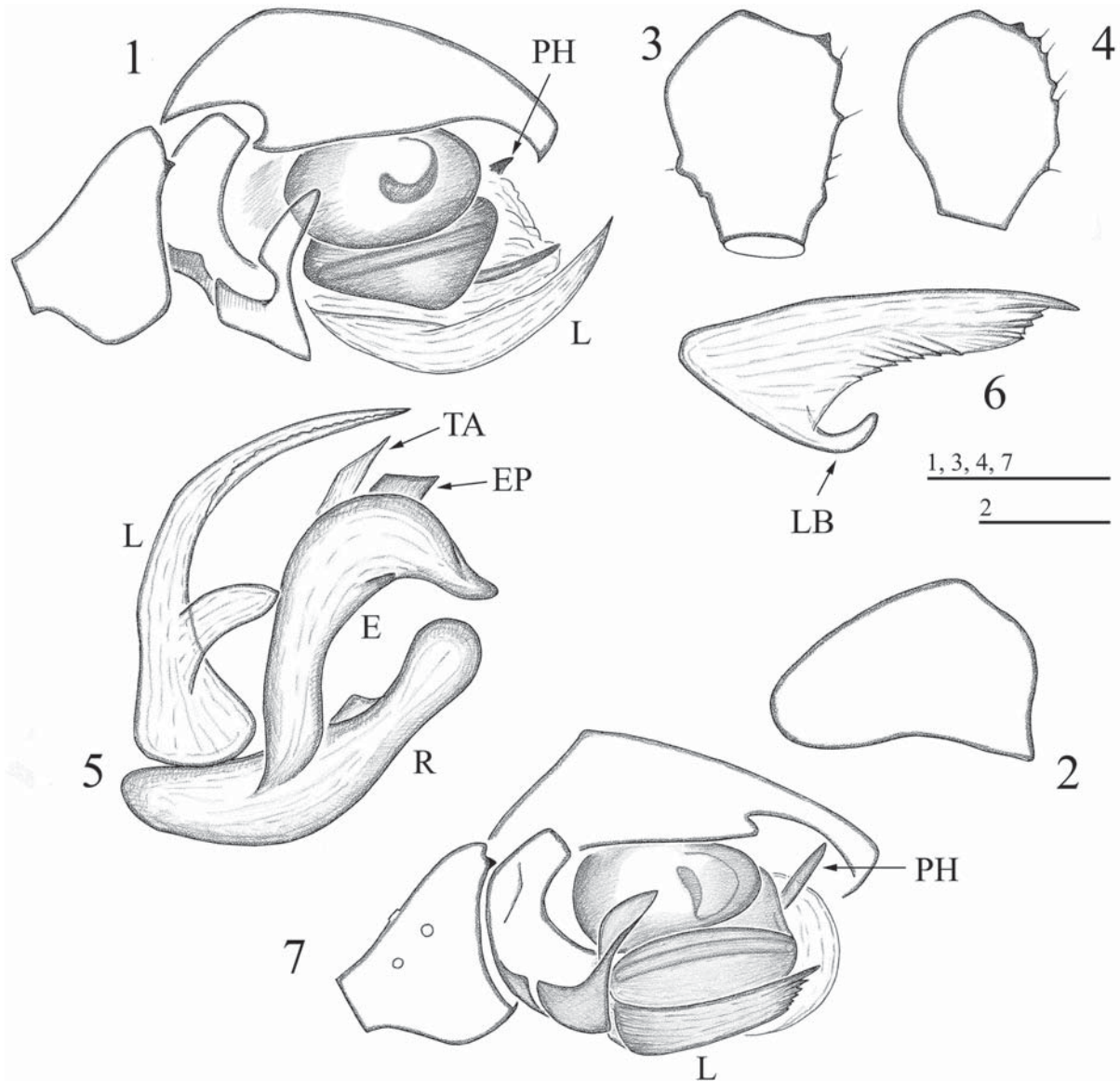
#### Introduction

At present, six and five species of the genera *Agyneta* Hull, 1911 and *Erigone* Audouin, 1826, respectively, have been recorded from the Himalayas: *A. bueko*

Wunderlich, 1983, *A. jiriensis* Wunderlich, 1983, *A. pseudofuscipalpis* Wunderlich, 1983 and *A. yulungiensis* Wunderlich, 1983 from Nepal [Wunderlich, 1983]; *A. pakistanica* Tanasevitch, 2011 and *A. nigripes* (Simon, 1884) from Pakistan [Tanasevitch, 2011]. All these species, except *A. nigripes*, have originally been described from the Himalayas. *Erigone dentipalpis* (Wider, 1834) is known from Karakorum, Pakistan [Caporiacco, 1935] and Kashmir, India [O. Pickard-Cambridge, 1885]; *E. nepalensis* Wunderlich, 1983 from Nepal [Wunderlich, 1983]; *E. prominens* Bösenberg et Strand, 1906 from Nepal [Wunderlich, 1928] and Pakistan [Tanasevitch, 2011]; *E. rohtangensis* Tikader, 1981 from Himachal Pradesh, India [Tikader, 1981]. *Erigone pseudovagans* Caporiacco, 1935, from Karakorum [Caporiacco, 1935], will be synonymized elsewhere [Tanasevitch, in preparation].

#### Material and methods

This paper is based on the spider material taken by J. Martens and W. Schawaller in India and Nepal, kept in the Senckenberg Museum, Frankfurt am Main, Germany (SMF). The sample number is given in square brackets. All specimens are preserved in 70% ethanol and studied using a MBS-9 stereo microscope. A Levenhuk C-800 digital camera was applied for taking some photographs. Images taken at multiple focal planes were combined with the help of Helicon Focus image stacking software, version 5.1. The sequence of leg segment measurements is as follows: femur + patella + tibia + metatarsus + tarsus. All measurements are given in millimeters. 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. Scale lines in the figures correspond to



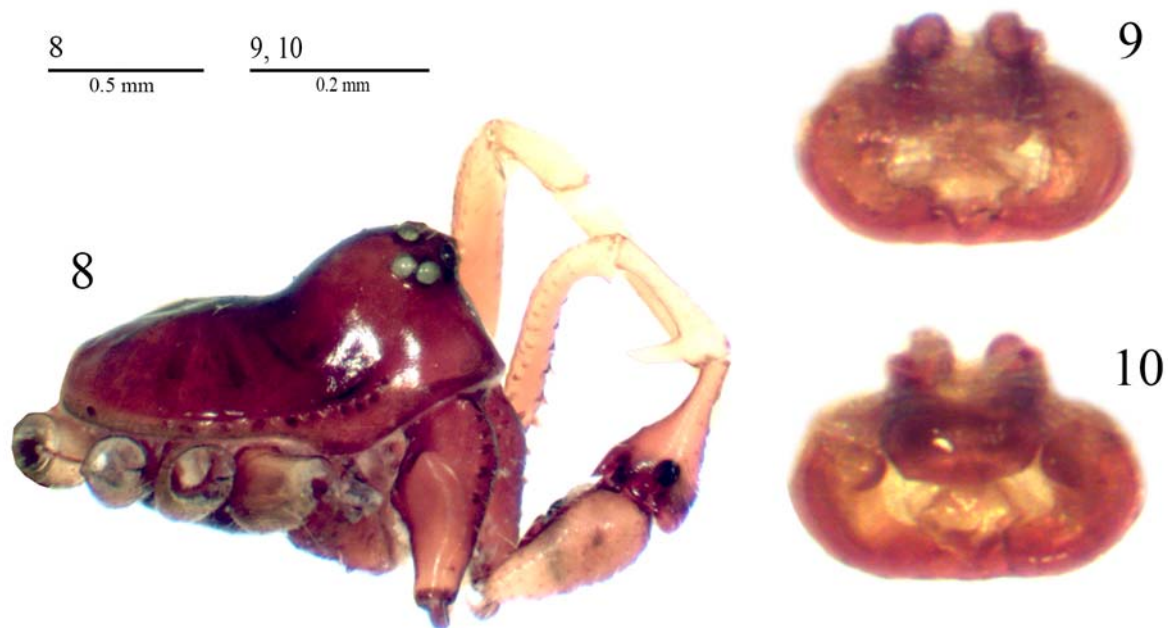
Figs 1–7. Details of palpal structure of *Agyneta himalaya* sp.n., paratype (1–6), holotype (7). 1, 7 — right palp: lamella characteristic in Fig. 1 slightly turned and displaced down, vs. that in Fig. 7 in normal position; 2 — cymbium, prolaterally; 3, 4 — tibia, dorsal views, different aspects; 5 — embolic division; 6 — lamella characteristic.

Рис. 1–7. Детали строения пальпы *Agyneta himalaya* sp.n., паратип (1–6), голотип (7). 1, 7 — правая пальпа: на Рис. 1 lamella characteristica слегка повёрнута и сдвинута вниз, на Рис. 7 lamella characteristica в нормальном положении; 2 — цимбиум, пролатерально; 3, 4 — голень, вид сверху, различные аспекты; 5 — эмболюсный отдел; 6 — lamella characteristica.

0.1 mm unless indicated otherwise. The terminology of copulatory organs mainly follows that of Merrett [1963], Saaristo [1971, 1973], Saaristo & Tanasevitch [1996], Tanasevitch [2017], etc.

The following abbreviations are used in the text and figures: a.s.l. — above sea level; Co — column; D — duct; DSA — distal suprategular 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]; L — lamella characteristic; LB — lower branch of lamella characteristic; LE —

lateral edge of epigyne; MeRT — mesal radical tooth of embolic division = mesal tooth sensu Crosby & Bishop [1928]; MM — median membrane sensu Helsdingen [1965] = embolic membrane sensu van Helsdingen [1986] and Hormiga [1994]; MRA — median radical apophysis of embolic division = median tooth sensu Crosby & Bishop [1928]; Mt — metatarsus; PH — pit hook sensu Saaristo [1973]; PMP — posterior median plate sensu Helsdingen et al. [1977] = dorsal plate, median plate, central capsule, *auct.*; PRA — posterior radical apophysis = posterior tooth sensu Crosby & Bishop [1928]; R — radix; Re — receptacle;



Figs 8–10. Photographs of male prosoma with left pedipalp (8) and epigyne (9, 10) of *Erigone jammu* sp.n. 8–10 — lateral, ventral and dorsal views, respectively.

Рис. 8–10. Фотографии головогруди самца с левой педипальпой (8) и эпигины (9, 10) *Erigone jammu* sp.n. 8–10 — вид сбоку, снизу и сверху, соответственно.

ReT — retrolateral tibial tooth; TmI — position of trichobothrium on metatarsus I.

## Descriptions

### *Agyneta himalaya* sp.n.

Figs 1–7.

HOLOTYPE: ♂ (SMF), NEPAL, Panchthar District, Dhorpar Kharka, *Rhododendron* & *Lathocarpus* forest, 2700 m a.s.l., 13–16.IV.1988, leg. J. Martens & W. Schawaller [No. 324].

PARATYPE: 1 ♂ (SMF), Taplejung District, Ladza Kharka in Ladza Khola NW of Walungchung Gola, 4100–4200 m a.s.l., dwarf *Rhododendron*, creeping *Juniperus*, 21–23.V.1988, leg. J. Martens & W. Schawaller [No. 383].

TYPE MATERIAL EXAMINED. *Agyneta jiriensis* Wunderlich, 1983, holotype ♂ (SMF, No. 31667). The type is now a fully faded male with a separated, almost transparent palp devoid of the embolic division.

NAME. The specific name is a noun in apposition, referring to provenance.

DIAGNOSIS. The palp of the new species seems to be most similar to that of the Nepalese *A. jiriensis* Wunderlich, 1983, which was described based on a single male from Jiri District, Nepal. *Agyneta himalaya* sp.n. differs by the shape of the lamella characteristica and the presence of a short additional branch beginning from its base (LB in Fig. 6). Besides that, a median saddle-shaped depression of the carapace in the new species is less expressed than in *A. jiriensis*. The palp of *A. himalaya* sp.n. is also similar to that of the Siberian arcto-boreo-montane *A. ripariensis* Tanasevitch, 1984. The new species is distinguished by

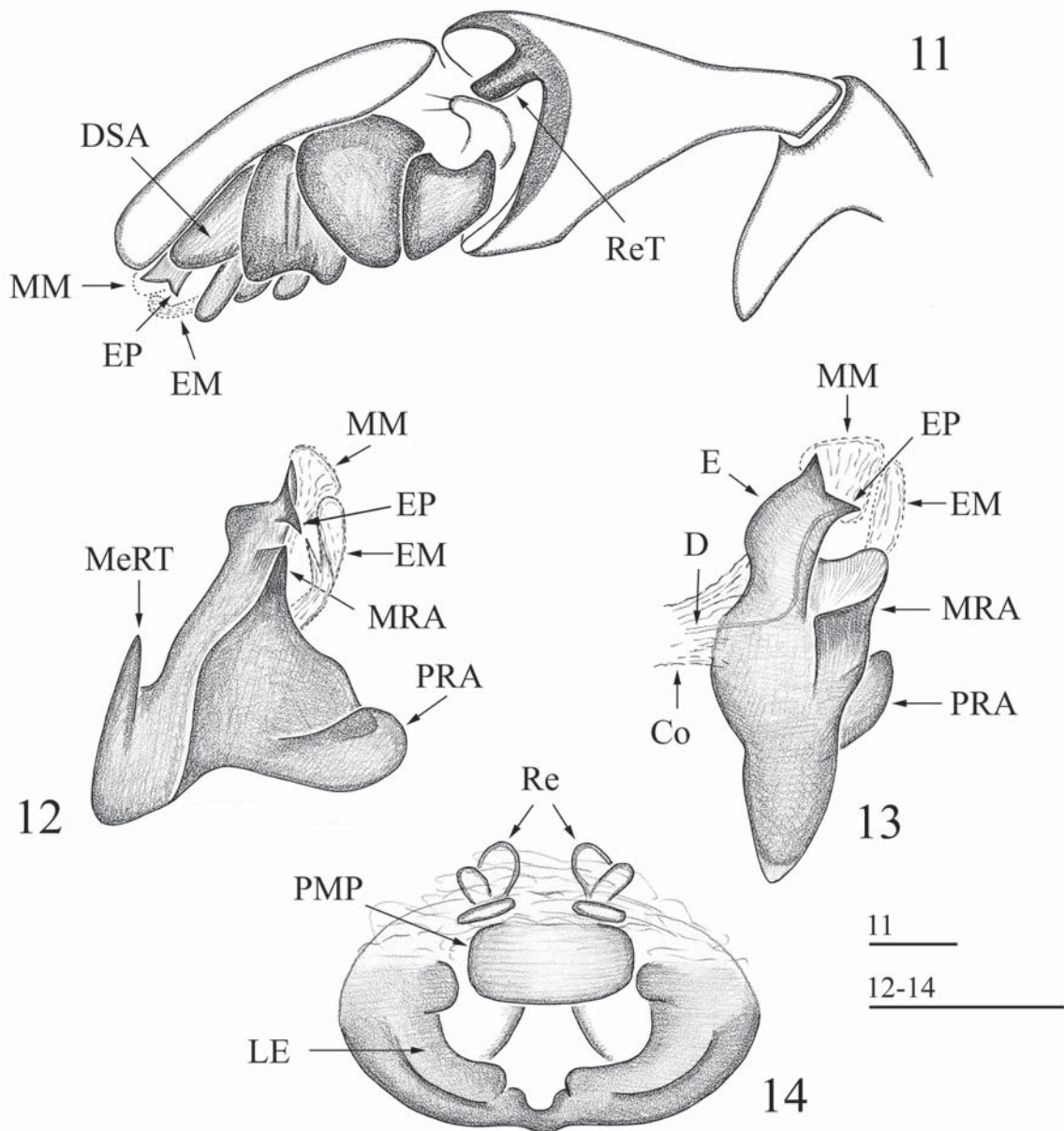
the absence of a tooth at the base of the embolus, as well as by the smaller dorso-retrolateral tooth on the palpal tibia. In addition, the palp of *A. himalaya* sp.n. bears some resemblance to that of *A. iranica* Tanasevitch, 2011, from Golestan, Iran [Tanasevitch, 2011], but the new species differs clearly by a straight apical tooth on the lamella characteristica (vs. claw-shaped), and by the absence of a tooth at the base of the embolus (vs. a large tooth).

DESCRIPTION. Male holotype. Dark-coloured specimen. Total length 1.65 (paratype 1.58). Carapace 0.75 long, 0.60 wide, blackish brown. Median saddle-shaped depression of carapace indistinct. Chelicerae 0.30 long, weak. Legs grey-brown. Leg I, 2.36 long (0.60 + 0.20 + 0.58 + 0.53 + 0.45); IV, 2.40 long (0.68 + 0.18 + 0.63 + 0.53 + 0.38). Chaetotaxy: each tibia with two spines, a prolateral spine on tibia I absent. Metatarsus I–III with a trichobothrium. TmI, 0.27. Palp (Figs 1–7): tibia short, with a small apical denticle retrolaterally. Cymbium without distinct conical elevation. Paracymbium simple, anterior pocket larger than posterior one. Main branch of lamella characteristica a long, apically pointed ribbon; lower branch short, narrow, slightly curved. Embolus without teeth basally. Abdomen 0.95 long, 0.75 wide, dark grey, almost black.

Female unknown.

DISTRIBUTION. Known from the highlands of the Himalayas in the Panchthar and Taplejung districts of Nepal.

*Erigone jammu* sp.n.



Figs 11–14. Details of palpal and epigynal structure of *Erigone jammu* sp.n. 11 — left palp; 12, 13 — embolus, different aspects; 14 — epigyne, dorsal view.

Рис. 11–14. Детали строения пальпы и эпигины *Erigone jammu* sp.n. 11 — левая пальпа; 12, 13 — эмболюсный отдел, различные аспекты; 14 — эпигина, вид сверху.

#### Figs 8–14.

HOLOTYPE: ♂ (SMF, labeled as *Erigone* sp. by K. Thaler), INDIA, Jammu and Kashmir State, Leh District, Shey, 2.VI.1976, leg. J. Martens.

PARATYPES: 1 ♂, 1 ♀ (separated epigyne only) (SMF, labeled as *Erigone* sp. by K. Thaler), collected together with holotype.

NAME. The species name is a noun in apposition, referring to provenance.

DIAGNOSIS. The new species is most similar to the Palearctic arcto-alpine *E. remota* L. Koch, 1869 and the nival *E. lata* Song et Li, 2008, the latter species

described from the Hengduan Mts, China. *Erigone jammu* sp.n. can easily be distinguished from both above congeners by the longer, solid, retrolateral tooth on the palpal tibia (vs. shorter and bifid); by the shorter posterior radical apophysis, and the poorly-expressed median apophysis in the embolus. The female of *E. jammu* sp.n. differs from these two species by the convoluted receptacles and the wider lateral edges of the epigyne. The new species also resembles *E. rohtangensis* Tikader, 1981, this being known from the high altitudes in Himachal Pradesh, India [Tikader, 1981], but differs by the longer retrolateral tibial tooth, the

narrower posterior median plate of the epigyne, as well as by the receptacles inclined to each other (vs. diverging).

**DESCRIPTION.** Male paratype. Total length 2.55. Carapace modified as shown in Fig. 8; 1.18 long, 0.90 wide, reddish brown, with teeth at its edge. Chelicerae strong, 0.63. long, with 5–6 teeth on its anterolateral surface, mastidion absent. Legs pale brown. Leg I, 3.10 long (0.85 + 0.30 + 0.75 + 0.70 + 0.50), IV, 2.98 long (0.80 + 0.25 + 0.75 + 0.70 + 0.48). Chaetotaxy 2.2.2.1, length of spines 1–1.5 diameters of segment. TmI, 0.40. Metatarsus IV without trichobothrium. Palp (Figs 11–13): patella with a ventro-apical, conical, slightly curved outgrowth. Palpal tibia elongated, with a retro-lateral tooth apically. Paracymbium with a well-developed distal part. Distal suprategular apophysis relatively long and wide, rounded distally. Radix with three radical extentions: posterior radical apophysis short, thick, rounded; mesal radical tooth strong, stylet-shaped; median radical apophysis slightly curved, pocket-shaped. Embolic membrane relatively short, slightly curved. Embolus proper small, dentiform. Abdomen 0.90 long, 0.63 wide, dark grey.

**Female.** Epigyne only available. Epigyne (Figs 9, 10, 14) wide, oval, with wide lateral edges. Posterior median plate wide and short. Receptacles small, inclined to each other.

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