On the erigonine genera Hubertella Platnick, 1989 and Oia Wunderlich, 1973 in the Himalayas (Aranei: Linyphiidae), with descriptions of two new species

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ABSTRACT. The main somatic and genital diagnostic characters are summarized for the Himalayan genus Hubertella Platnick, 1989 and the Palaearctic East Asian genus Oia Wunderlich, 1973. Two new species, Hubertella montana sp.n. and Oia kathmandu sp.n., are described from Nepal. Both species are most similar to their Himalayan congeners, i.e. H. thankurensis (Wunderlich, 1983) and O. sororia Wunderlich, 1973, respectively, but are clearly distinguished by the structural details of the genitalia. A new diagnostic drawing of the palpal structure is provided for H. thankurensis for comparative purposes, based on the holotype.

Introduction

The monotypic genus Hubertia Georgescu, 1977 had been established for the Nepalese H. orientalis Georgescu, 1977 by Georgescu [1977], until that generic name, being preoccupied, was replaced with Hubertella Platnick, 1989 [Platnick, 1989]. In addition to the type species, the genus contains another Nepalese species, H. thankurensis (Wunderlich, 1983).

The genus Oia Wunderlich, 1973 was erected for the Nepalese O. sororia Wunderlich, 1973, with the Japanese Cornicularia imadatei Oi, 1964 joining it as a new transfer [Wunderlich, 1973]. Later, another species, Oia breviprocessia Song et Li, 2010, was described from the Henan Province, China by Song & Li [2010].

A recent study of material from the Himalayas of Nepal has revealed a couple of new species, one each in Hubertella and Oia. Their descriptions are the subject of the present paper.

Material and methods

This paper is based on the spider material taken by J. Martens, W. Schawaller and A. Ausobsky in India and Nepal, now kept in the Senckenberg Museum, Frankfurt am Main, Germany (SMF). Sample numbers are 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 pictures. 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., 2.2.1.1, which refers to the number of dorsal spines on tibiae I–IV. Scale lines in the figures correspond to 0.1 mm unless indicated otherwise. The terminology of copulatory organs mainly follows that of Merrett [1963], Hormiga [2000] and Crosby & Bishop [1925].

The following abbreviations are used in the text and figures: a.s.l. — above sea level; DSA — distal suprategular apophysis sensu Hormiga [2000]; E — embolus; ED — embolic division; EP — embolus proper; Mt — metatarsus; R — radix; MT — median tooth of DSA; TmI — position of trichobothrium on metatarsus I; TP — tailpiece sensu Crosby & Bishop [1925]. Note: the tailpiece is a proximal, worm-shaped part of the radix.

**Remarks.** The genus belongs to the subfamily Erigoninae and is characterized by the following combination of somatic and genital characters:

1) presence of a head elevation on the male carapace;
2) male carapace with a head elevation;
3) chaetotaxy formula: 2.2.1.1; each metatarsus with a trichobothrium, TmI 0.8–0.9;
4) a strongly modified male palpal tibia;
5) a very large median membrane, which holds and protects the distal part of the embolus;
6) a long and coiled embolus with a worm-shaped tailpiece.

**Species Included:** *H. orientalis*, *H. thankurensis* (Wunderlich, 1983) and a new species from Nepal described below.

**Distribution.** Known only from the Nepal Himalayas.

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**Hubertella Platnick, 1989**

The generic name is a nom.n. for *Hubertia* Georgescu, 1977, praecocc.

Type species: *Hubertia orientalis* Georgescu, 1977, by original designation and monotypy.

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**Hubertella montana** sp.n.

Figs 1–3, 7–10.

HOLOTYPE ♂ (SMF), NEPAL, Kathmandu Valley, Mt Phulchoki, 2475–2700 m a.s.l., *Quercus semecac*, 19.III.1980, leg. J. Martens & A. Ausobsky [No. 107].
Figs 7–13. Details of palpal structure of Hubertella montana sp.n., ♂ holotype (7–10), ♂ paratype (11, 12), and H. thankurensis (Wunderlich, 1983), ♂ holotype (13). 7, 8 — right palp, retrolateral and prolateral views, respectively; 9–11 — palpal tibia: 9 — dorsal view, 10–11 — prolateral and retrolateral views, respectively; 12 — embolus, partly; 13 — distal suprategular apophysis and median membrane.

Рис. 7–13. Детали строения пальпы Hubertella montana sp.n., ♂ голотип (7–10), ♂ паратип (11, 12), и H. thankurensis (Wunderlich, 1983), ♂ голотип (13). 7, 8 — правая пальпа, ретролатерально и пролатерально, соответственно; 9–11 — голень пальпы: 9 — вид сверху, 10 — пролатерально, 11 — ретролатерально; 12 — эмболус (часть); 13 — дистальная супратегулярная апофиза и медиальная мембрана.
PARATYPE ♂ (SMF), Tapleung District, upper Tamur Valley, side valley, broadleaved forest, bamboo, near stream, 2450 m a.s.l., 19.V.1988; leg. J. Martens & W. Schawaller [No. 376].

TYPE MATERIAL EXAMINED: *Hubertia thankurensis* Wunderlich, 1983, ♂ holotype (SMF, No. 31710), NEPAL, Dhaulagiri, 26–27.V.1973, leg. J. Martens.

NAME. The specific name is a Latin adjective meaning a “mountain dweller”.

DIAGNOSIS. The new species is most similar to *H. thankurensis*, known from Dhaulagiri (3350 m a.s.l.), Nepal [Wunderlich, 1983], but is clearly distinguished by the bifurcated distal part of the palpal tibia (vs. pointed).

DESCRIPTION. Male holotype. Total length 1.93. Carapace modified, 0.88 long, 0.68 wide, greyish pale brown. Head part of carapace elevated as shown in Figs 1–3. Sulei small, round. Chelicerae 0.30 long, mastidion absent. Legs pale yellow. Leg I, 2.67 long (0.70 + 0.23 + 0.68 + 0.38), IV, 3.01 long (0.85 + 0.23 + 0.73 + 0.75 + 0.45). Chaetotaxy 2.2.1.1, spines very short, barely visible. Each metatarsus with a trichobothrium. TmI 0.90. Palp (Figs 7–10): tibia elongated, bifid distally, with a pointed outgrowth retrolaterally. Paracymbium relatively small, L-shaped. Distal suprategular apophysis relatively short, narrow, its medi- 

VARIABILITY. The paratype is distinguished from the holotype by the shape of the head elevation of the carapace (Fig. 1 cf. Fig. 3), something that is quite common among linyphiids. The shape of the distal part of the palpal tibia is also slightly different: its apical branches are shorter and serrated in the paratype, vs. longer and more smooth in the holotype (Fig. 7 cf. Fig. 11). In view of high-level variability in isolated mountain populations, I consider these differences as reflecting infraspecific variations, either individual or populational.

Female unknown.

DISTRIBUTION. Known from the Kathmandu massif and the Tapleung District, Nepal.

*Oia* Wunderlich, 1973

Type species: *O. sororia* Wunderlich, 1973, by original designation.

REMARKS. The genus belongs to the subfamily Ergininae and is characterized by the following combination of somatic and genital characters:

1) rather small linyphiids, total length 1.10–1.60 mm; 2) carapace prominent behind ocular area in both sexes, ocular area compact; 3) chaetotaxy formula: 0.0.0.0 (tibial spines completely reduced) or 1.1.1.1; 4) Mt–III each with a trichobothrium; TmI 0.43–0.65: 5) a strongly modified male palpal tibia carrying a special seta; 6) a well-developed distal suprategular apophysis; 7) a very small embolus proper; 8) a small ventral plate, short copulatory ducts, sub-spherical receptacles.

SPECIES INCLUDED: *Oia breviprocessia* Song et Li, 2010 (China), *O. imadatei* (Oi, 1964) (Japan), *O. sororia* Wunderlich, 1973 (Nepal), and a new species from Nepal described below.

DISTRIBUTION. The genus shows a typical East-Asian Palaearctic distribution pattern.

*Oia kathmandu* sp.n.

Figs 4–6, 14–18.

HOLOTYPE ♂ (SMF), NEPAL, Tapleung District, Omje Kharka, NW Yamputhin, natural mixed broadleaved forest, 2300–2500 m a.s.l., 1–6.V.1988, leg. J. Martens & W. Schawaller [No. 356].

PARATYPES: 1 ♂, 14 ♀ (SMF), 1 ♂, 3 ♀ (ZMMU), collected together with holotype; 16 ♀ (SMF), Tapleung District, above Yamputhin, left bank of Kabeli Khola, open forest, bushes, 1800–2000 m a.s.l., 27–29.IV.1988, leg. J. Martens & W. Schawaller [No. 352]; 1 ♂, 1 ♀ (SMF), Kathmandu District, Kathmandu Valley, Mt Phulchoki, 2475–2700 m a.s.l., *Quercus semec- cu*, 19.III.1980, leg. J. Martens & A. Ausobsky [No. 107].

NEW MATERIAL EXAMINED: *O. sororia*, 1 ♂, 2 ♀, paratypes (SMF, No. 283283), NEPAL, Takkhola District, Nabrikot, 2700 m a.s.l., 5–13.XI.1969, leg. J. Martens.

ACKNOWLEDGEMENTS. I am grateful to Jochen Martens (Mainz, Germany) for providing the material he collected during his expeditions in the Himalayas, to Peter Jäger and Julia Altmann (SMF), who supplied me with the types under their care. I also thank Sergei I. Golovatch (Moscow) who kindly checked the English of an advanced draft.

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

DIAGNOSIS. The new species is the largest among the known congeners and is most similar to the other Nepalese *O. sororia* Wunderlich, 1973, but clearly differs by the shape of the distal part of the palpal tibia (which in particu- lar is much narrower), by the broad distal suprategular apophysis, which is claw-shaped apically, as well as by the rectangular, subquadrate epigynal plate in the female (vs. triangular).

DESCRIPTION. Male holotype. Total length 1.60. Carapace 0.73 long, 0.53 wide, prominent behind a very compact ocular area as shown in Fig. 4; pale brown, with a narrow grey margin. Sulei absent. Chelicerae 0.30 long, mastidion absent. Legs pale yellow. Leg I, 1.54 long (0.43 + 0.18 + 0.35 + 0.30 + 0.28), IV, 1.61 long (0.48 + 0.15 + 0.40 + 0.30 + 0.28). Chaetotaxy 0.0.0.0 (tibial spines totally reduced). Metatarsi I–III each with a trichobothrium. TmI 0.43. Palp (Figs 14–17): patella elongated and broadened distally. Tibia with an apical, slightly curved outgrowth and a narrow, finger-like apophysis retrolaterally. Paracymbium small, hook-shaped. Distal suprategular apophysis broad, claw-shaped apically, its median tooth stylized. Embol- lic division with a broad and flat radix and a short, indistinct embolus proper. Abdomen 0.90 long, 0.63 wide, grey.

Female. Total length 1.60. Carapace less prominent behind ocular area as shown in Fig. 4; pale brown, with a narrow grey margin. Sulei absent. Chelicerae 0.30 long, mastidion absent. Legs pale yellow. Leg I, 1.38 long (0.40 + 0.15 + 0.35 + 0.25 + 0.23), IV, 1.56 long (0.50 + 0.15 + 0.38 + 0.28 + 0.25). Tibial spines reduced. TmI 0.62. Abdomen 0.88 long, 0.60 wide. Epigyne (Figs 5, 6, 18): epigynal plate rectangular, subquadrate, copulatory ducts very short. Receptacles subospherial or bean-shaped. Body and leg coloration, and chaetotaxy as in male.

DISTRIBUTION. Known from the Kathmandu, Mustang and Tapleung districts, Nepal.
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Figs 14–18. Details of palpal structure and epigyne of Oia kathmandu sp.n., ♀ (14–17) & ♂ (18), paratypes from Omje Kharka. 14 — right palp, retrolateral view; 15 — patella and tibia, prolateral view; 16 — distal suprategular apophysis; 17 — embolic division; 18 — epigyne, ventral view.

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Responsible editor K.G. Mikhailov