A new species of *Incestophantes* Tanasevitch, 1992 from the high mountains of the Caucasus Major (Arachnida: Aranei: Linyphiidae)

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**C. Otto, A.V. Tanasevitch**

A new species, *Incestophantes shetekaurii* sp.n., is described from the high mountains of the Caucasus Major (Georgia, 2500 m a.s.l.). This new species is similar to the European-West Siberian *I. crucifer* (Menge, 1866) and to the Crimean *I. australis* Gnelitsa, 2009, but differs noticeably in the details of the genitalia in both sexes. The generic position of *Bolyphantes lagodekhensis* (Tanasevitch, 1990), and its differences to *I. shetekaurii* sp.n., is briefly discussed and illustrated.

**Introduction**

The family Linyphiidae Blackwall, 1859 is a species-rich taxon with a worldwide distribution. Currently 4,497 valid species in 590 genera are known worldwide and more than half of these species (2,428) are distributed in the Palearctic [Tanasevitch, 2014; World Spider Catalog, 2014] — making this the most important zoogeographic region for linyphiid diversity [van Helsdingen, 1984; Marusik & Koponen 2002]. In the Caucasus Ecoregion the Linyphiidae are represented by 186 species, ranking first in species number above Gnaphosidae (127 species) and Lycosidae (111 species) [Otto, 2014]. Within the genus *Incestophantes* Tanasevitch, 1992, only *I. amotus* (Tanasevitch, 1990) has been recorded in the Caucasus Ecoregion so far [Otto, 2014].
Figs 1–6. *Incestophantes shetekaurii* sp.n., copulatory organs and habitus (paratype: 1–2, 3a, 4–5; holotype: 3b, 6): 1 — left palp; 2a — embolus at 50X (stereomicroscope); 2b — embolus at 200X (transmitted light); 3a,b — terminal apophysis; 4 — paracymbium; 5 — embolic division; 6a, 6b — habitus, dorsal and lateral view, respectively.

Рис. 1–6. *Incestophantes shetekaurii* sp.n., внешний вид и копулятивные органы (паратип: 1–2, 3а, 4–5; голотип: 3б, 6): 1 — левая пальпа; 2а — эмбол, 50-кратное увеличение (стереомикроскоп); 2б — эмбол, 200-кратное увеличение (в проходящем свете); 3а,б — терминальная апофиза; 4 — парацимбium; 5 — эмболеоидный отдел; 6а, 6б — внешний вид, вид сверху и сбоку, соответственно.
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Figs 7–11. *Incestophantes shetekaurii* sp.n., copulatory organs and habitus (paratype): 7a — epigyne, ventral view; 7b — distal margin of epigyne, ventro-caudal view; 8, 9 — epigyne, dorsal and lateral view, respectively; 10 — epigyne, lateral view (left wall and left part of PMP removed); 11a, 11b — habitus, dorsal and lateral view, respectively.

Akhieli, on the northern foot of Chimgisklde Ridge (= Kidgans Ridge), 42.62173°N 44.87330°E, 2500 m a.s.l., alpine zone, rock slide, under slate rock near snow patches, 22.VII.2013, leg. S. Otto.

**PARATYPES.** 1 ♂, 14 ♀ (ZMB 48661), collected together with holotype.


**ETYMOLOGY.** The specific name is given in honor of the Georgian botanist Prof. Dr. Shamil Shetekauri and his family, who during the last decade have generously supported the first pioneering arachnological research in the mountainous regions of Khevsureti; noun.

**DESCRIPTION.** Male (measurements of paratype in brackets). Habitus like Fig. 6. Total length 2.61 (2.29), carapace length 1.20 (1.09), carapace width 0.93 (0.81). Carapace color dark yellow; eyes with a black fringe. Chelicerae length 0.56 (0.46), same color as carapace, unmodified, its basal part with fine stridulation file. Anterior cheliceral margin with two larger teeth in proximal position near the tip of the fangs and one denticle near the fang; posterior cheliceral margin with two denticles near the fang. Legs same color as carapace, distant segments lighter, TmI range 0.18 (0.18). Length of leg segments and chaetotaxy shown in Table 1. Abdomen light gray with dark gray pattern, heart region somewhat brighter. Abdomen length 1.39 (1.26). Venter dark gray. Spinnerets yellow and tinged with black. Palp (Figs 1–5): Patella with a long pointed spine without denticles, cymbium with a posterodorsal outgrowth (Fig. 1). Distal part of paracymbium with a club-shaped median process and a thin sclerotized distal process with a U-shaped profile (Figs 1, 4). Paracymbium with one well-developed proximate tooth and
Figs 12, 13. *Bolyphantes lagodekhensis* (Tanasevitch, 1990), ♀ copulatory organs: 12 — epigyne (dorsal view); 13 — epigyne, lateral view (left wall and left part of PMP removed), after Otto, Tanasevitch [2010]. In detail drawings, stretcher, pseudoscape and distal part of scapus are filled with black.


Fig. 14. Habitat of *Incestophantes shetekaurii* sp.n., Chimghisklde Ridge in Assa Valley, 22th July 2013, photo S. Otto. Specimens were found in rockslides next to the snow patches directly below the rock face.

a tooth-like hump in more distal position closer to the distal part of the paracymbium (Figs 1, 4). Terminal apophysis consisting of a lower branch with two basal wing-like structures and a thin, white and terminally fanned-out part as well as an elongated upper branch roughly consisting of two parallel blade-like structures with one to three points (Figs 1, 3, 5). Lamella characteristica wide and with a large laminar part bearing a transparent basal tooth-like lamella and three distal pointed projections, of which the largest median projection is oriented rectilinearly compared to the main orientation of the lamella characteristica and bears a thin transparent sail-like lamella in its terminal part (Fig. 5). Serrate part of embolus with a conspicuous shoulder (Fig. 2); thumb large, bipartite, one part rounded and one part bow-like. Embolic division like in Fig. 5.

Female. Habitus like Fig. 11. Total length 2.55±0.27, carapace length 1.06±0.07, carapace width 0.81±0.05. Carapace color and eyes as in the male. Chelicerae length 0.46 (n = 2), color, appearance and striation file as in the male. Anterior cheliceral margin with three large teeth; posterior cheliceral margin with four very small teeth near the fang. Leg color as in the male. TmI range 0.19±0.01. Length of leg segments and chaetotaxy file as in the male. Thumb large, bipartite, one part rounded and one part bow-like. Embolic division like in Fig. 5.

Table 1. Length of leg segments and chaetotaxy in males of *Incestophantes shetekaurii* sp.n.: holotype, paratype in brackets.

<table>
<thead>
<tr>
<th>Legs</th>
<th>Femur</th>
<th>Patella</th>
<th>Tibia</th>
<th>Metatarsus</th>
<th>Tarsus</th>
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</thead>
<tbody>
<tr>
<td>I: 6.33 (5.46)</td>
<td>1.54 (1.39)</td>
<td>0.37 (0.30)</td>
<td>1.74 (1.44)</td>
<td>1.74 (1.48)</td>
<td>0.94 (0.85)</td>
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<tr>
<td>II: 5.79 (4.92)</td>
<td>1.55 (1.30)</td>
<td>0.33 (0.31)</td>
<td>1.52 (1.26)</td>
<td>1.54 (1.30)</td>
<td>0.85 (0.76)</td>
</tr>
<tr>
<td>III: 4.50 (3.81)</td>
<td>1.26 (1.05)</td>
<td>0.30 (0.26)</td>
<td>1.13 (0.93)</td>
<td>1.18 (1.00)</td>
<td>0.63 (0.57)</td>
</tr>
<tr>
<td>IV: 5.98 (4.92)</td>
<td>1.57 (1.30)</td>
<td>0.30 (0.26)</td>
<td>1.57 (1.28)</td>
<td>1.67 (1.35)</td>
<td>0.87 (0.74)</td>
</tr>
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</table>

The new species is very similar to *I. crucifer* (Menge, 1866) but males of *I. shetekaurii* sp.n. differ from it by having non-serrate patellar setae; the shape of the distal part of the paracymbium; the shape of the lamella characteristica as well as the shape of the terminal apophysis. Females differ from *I. crucifer* by a wider and longer proscape, a more narrow distal part of the scape as well as more narrow branches of the posterior median plate (Figs 7, 8).

The new species also shows some affiliation to the recently described *Incestophantes australis* Gneletisa, 2009 from the Crimea, but differs from it in the shape of lamella characteristica, the terminal apophysis in the male, the posterior median plate and the wider proscape in the female. Perhaps both species — as well as the only conspecific species in the Caucasus Ecoregion, *I. ambuscatus* (Tanasevitch, 1990) — are the result of recent divergent evolutionary processes in the Crimea and Caucasus Major, which contributed greatly to the high proportion of endemic spider species in the high mountain ecosystems of the Caucasus [Chaladze et al., 2014].

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Table 1. Длина сегментов ног и хетотаксия самцов *Incestophantes shetekaurii* sp.n.: голотип, паратип в скобках.
Table 2. Length of leg segments and chaetotaxy in females of *Incestophantes shetekaurii* sp.n. (n=14, mean ± standard deviation).

<table>
<thead>
<tr>
<th>Legs</th>
<th>Femur</th>
<th>Patella</th>
<th>Tibia</th>
<th>Metatarsus</th>
<th>Tarsus</th>
</tr>
</thead>
<tbody>
<tr>
<td>I:</td>
<td>5.27±0.27</td>
<td>0.33±0.02</td>
<td>1.39±0.08</td>
<td>1.35±0.07</td>
<td>0.82±0.03</td>
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<tr>
<td>II:</td>
<td>4.81±0.35</td>
<td>0.31±0.04</td>
<td>1.23±0.15</td>
<td>1.24±0.09</td>
<td>0.74±0.04</td>
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<tr>
<td>III:</td>
<td>3.89±0.25</td>
<td>0.27±0.02</td>
<td>0.95±0.07</td>
<td>0.98±0.08</td>
<td>0.58±0.06</td>
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<tr>
<td>IV:</td>
<td>5.04±0.28</td>
<td>0.30±0.02</td>
<td>1.30±0.08</td>
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<td>0.75±0.02</td>
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Hentschel of the Friedrich Schiller University Jena (Germany) were so kind to tolerate arachnological research during their botanical field trip to Assa Valley. We are grateful to Christo Deltshev who kindly provided some of the literature. Jason Dunlop helped by commenting on the English.

References


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