

Two new erigonine spiders (Aranei: Linyphiidae) from mountains of South Siberia

Два новых вида пауков-эригонин (Aranei: Linyphiidae) из гор Южной Сибири

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КЛЮЧЕВЫЕ СЛОВА: таксономия, *Concavocephalus*, *Hilaira*, пауки, линифиды, новые виды, Тува, Монголия.

ABSTRACT: Two new erigonine spiders from Tuva (*Concavocephalus eskovi* sp.n.) and Mongolia (*Hilaira banini* sp.n.) are described and three species redescribed: *Concavocephalus rubens* Eskov, 1989, *Hilaira jamalensis* Eskov, 1981 and *H. glacialis* (Thorell, 1872). The new species belongs to early monobasic genus (type species *C. rubens*). New *Hilaira* species belongs to *glacialis*-group and closely related to *H. jamalensis*.

РЕЗЮМЕ: Описано два новых вида пауков-эригонин из Тувы (*Concavocephalus eskovi* sp.n.) и Монголии (*Hilaira banini* sp.n.), а три вида переописаны: *Concavocephalus rubens* Eskov, 1989, *Hilaira jamalensis* Eskov, 1981 и *H. glacialis* (Thorell, 1872). Первый вид принадлежит к роду ранее считавшемуся монотипичным (типовой вид *C. rubens*). Новый вид рода *Hilaira* входит в группу видов *glacialis* и близок к *H. jamalensis*.

This work continues our studies on east Palaearctic linyphiids [cf. Marusik & Tanasevitch, 1998], and devoted to description of two new species and redescription of their sibling species. One of new species belongs to the genus *Concavocephalus* early treated as monobasic. New *Hilaira* species from Mongolia belonging to *glacialis*-group extends the known range of this taxon.

Material and methods

The following abbreviations have been used in the text: ATC — Andrei Tanasevitch, private collection, IBPN — Institute of Biological Problems of the North (Magadan, Russia), ISE — Institute for Systematics and Ecology of Animals (Novosibirsk, Russia), USNM — National Museum of Natural History, Smithsonian Institution (Washington, D.C.), ZMMU — Zoological Museum of the Moscow State University (Moscow, Russia), ZMUT — Zoological Museum, University of Turku (Finland).

The chaetotaxy formula such as 1.1.1.1 refers to the number of dorsal spines on tibia I–IV, respectively. TmI — position of the trichobothrium on tibia I. The sequence of leg segments in measurement data is as follows: femur + patella + tibia + metatarsus + tarsus. All measurements are given hereinafter in mm.

Type material has been shared between the following collections: ZMMU (holotypes and part of paratypes), ISE, ZMUT, IBPN, USNM and ATC.

Species description

Concavocephalus eskovi sp.n.

Figs 1–4, 9–11, Map 1.

C. rubens: Eskov, Marusik, 1994: 71 (part).

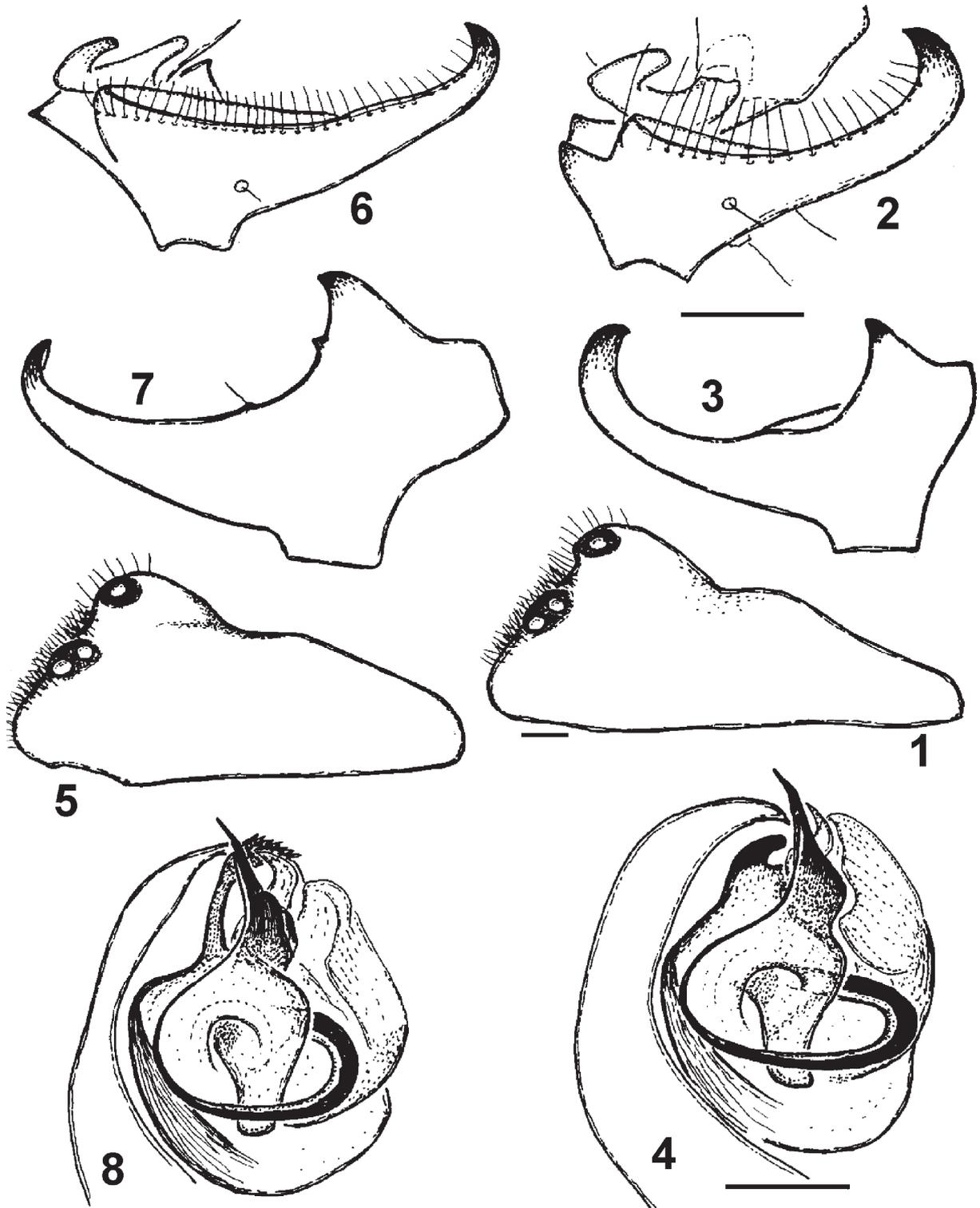
Concavocephalus sp. 1 (cf. *rubens*): Logunov et al., 1998: 134.

Concavocephalus sp.: Marusik et al., 2000: 44.

Material. Holotype ♂ (ZMMU), RUSSIA, TUVA, East Tannu-Ola Mt. Range, ca 20 km NW of Khol'-Oozhu Village, 50°50'N 94°19'E, 2175 m, mountain *Larix*-moss-stony forest-tundra, 8–16.VI.1995 (D.V. Logunov, Yu.M. Marusik). Paratypes: 8 ♂♂, 6 ♀♀ (ZMMU, ATC), together with holotype; 8 ♂♂ 2 ♀♀ (ISE, USNM), ca. 15 km NW of Khol'-Oozhu Village, 50°47'N 94°19'E, 2000–2100 m, *Rhododendron* & *Larix* taiga, 8–16.VI.1995 (D.V. Logunov, Yu.M. Marusik).

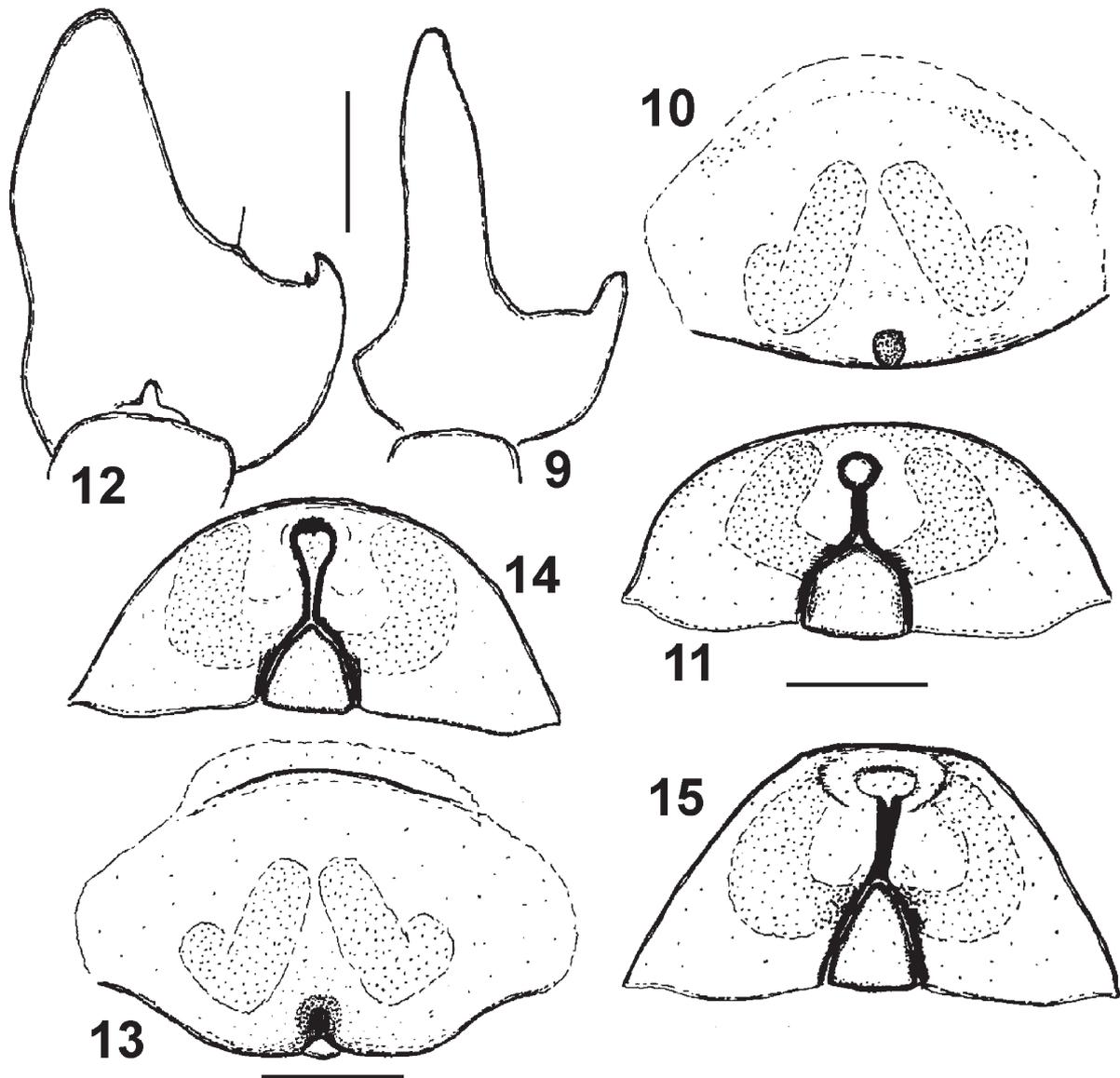
ETYMOLOGY. The species is named in honor of our friend and colleague Kirill Yu. Eskov, Moscow.

DESCRIPTION. Male. Total length — 2.35. Carapace (Fig. 1) 1.01 long, 0.83 wide, dirty brown-yellow. Modified: cephalic pat elevated carried PME, clypeus oblique, frontal part of carapace covered with dense short erected thin hairs. Chelicerae yellow-brown, 0.35 long; anterior margin with two relatively large teeth and one small tooth. Sternum dirty brown with lighter center. Legs yellow-brown. Leg I 2.69 long (0.80 + 0.28 + 0.68 + 0.58 + 0.35), IV — 2.88 long (0.80 + 0.25 + 0.75 + 0.73 + 0.35). Tarsus I slightly swollen. Chaetotaxy 1.1.1.1. Spines short, thin, poorly visible. TmI — 0.86. Palp as in Figs 2–4, 9. Palpal tibia modified, with long dorsal apophysis hooked on the top; retrolateral margin of apophysis with row of short erected hairs. Frontal part of tegulum membranous and semitransparent. Paracymbium



Figs. 1-8. Males of *Concavocephalus eskovi* sp.n. (1-4) and *C. rubens* (5-8). 1, 5 — carapace, lateral view; 2, 6 — palpal tibia retrolaterally; 3, 7 — palpal tibia prolaterally; 4, 8 — bulbus, ventral view.

Рис. 1-8. Детали строения самцов *Concavocephalus eskovi* sp.n. (1-4) и *C. rubens* (5-8). 1, 5 — карапакс (вид сбоку); 2, 6 — голень пальпы, ретролатерально; 3, 7 — голень пальпы, пролатерально; 4, 8 — бульбус, вид снизу.



Figs. 9–15. *Concavocephalus eskovi* sp.n. (9–11) and *C. rubens* (12–15). 9, 12 — palpal tibia, dorsal view; 10, 13 — epigyne, ventral view; 11, 14, 15 — epigyne, posterior view.

Рис. 9–15. Детали строения *Concavocephalus eskovi* sp.n. (9–11) и *C. rubens* (12–15). 9, 12 — голень пальпы, вид сверху; 10, 13 — эпигина, вид снизу; 11, 14, 15 — эпигина, вид сзади.

small, unmodified. Prolateral tibial apophysis without denticles. Suprategular apophysis short, swollen distally. Median membrane transparent, weakly sclerotized. Frontal apophysis of radix narrow, thin and sharply pointed. Abdomen 1.33 long, 0.85 wide, dark grey.

Female. Total length — 2.75. Carapace 1.15 long, 0.90 wide. Chelicerae 0.40 long. Leg I 2.81 long (0.83 + 0.30 + 0.73 + 0.60 + 0.35), IV — 3.19 long (0.90 + 0.28 + 0.85 + 0.78 + 0.38). Tm I — 0.90. Abdomen 1.93 long, 1.40 wide. Epigyne as in Figs 10–11, distinctly extended above ventrum of abdomen, median plate pentagonal. Body and leg coloration, armor of chelicerae, chaetotaxy as in male.

DIAGNOSIS. The new species is closely related to Siberian *C. rubens* Eskov, 1989, from which can be distinguished by the structure of copulatory organs. Males of new species differ from a single congener by: thinner dorsal tibial apophy-

sis (Figs 9, 13) and shorter and swallowed suprategular apophysis (Figs 4, 8). Females of *C. eskovi* sp.n. and *C. rubens* can be separated by the shape and width of the median plate: pentagonal and wide in *C. eskovi* sp.n. and triangular and relatively narrow in *C. rubens*.

DISTRIBUTION. Tuva only.

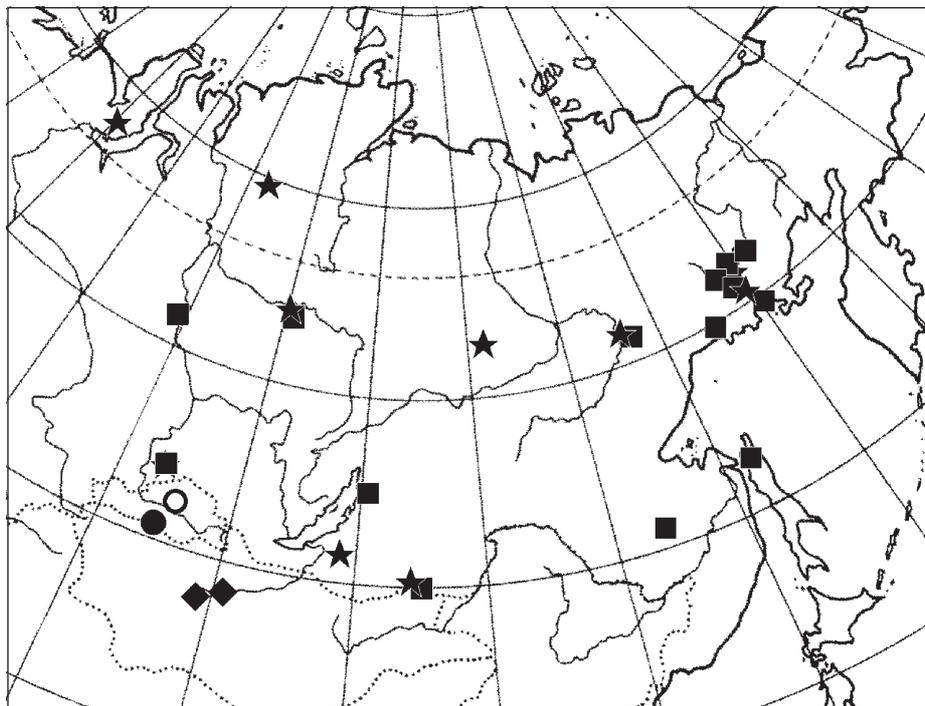
Concavocephalus rubens Eskov, 1989
Figs 5–8, 12–15. Map 1.

C. rubens Eskov, 1989: 69, Figs. 1.1–7.

C. rubens: Eskov, 1994: 28.

C. rubens: Marusik et al., 2001: 91.

Material examined: RUSSIA: EVENKIA: holotype ♂ and paratypes 16 ♀♀ (ZMMU), Taimura River. (left tributary of Nizhnyaya Tunguska), Chambe River mouth, floodplain willow



Map 1. Distribution of *Concavocephalus eskovi* sp.n. ●, unchecked record ○; *Concavocephalus rubens* ■; *Hilaira banini* sp.n. ◆; *Hilaira jamalensis* ★.

Карта 1. Распространение *Concavocephalus eskovi* sp.n. ●, непроверенные данные ○; *Concavocephalus rubens* ■; *Hilaira banini* sp.n. ◆; *Hilaira jamalensis* ★.

stand, 16.VI 1982 (K.Yu. Eskov). MAGADAN Area: paratypes 1 ♂ 3 ♀♀ (ZMMU), Kolyma River upper flow 10 km up from Ventrenny Village, alder bushes with sphagnum along creek, 5.VIII 1984 (K.Yu. Eskov); 20♂♂ 17♀♀ (ZMMU, IBPN), Kolyma River upper flow, Sibit-Tyellakh River basin (left tributary of Kolyma), environs of Sibit-Tyellakh Village, 1983–1988 (Yu.M. Marusik); 3 ♂♂ 5 ♀♀ (IBPN), environs of Magadan, Dukcha River valley, VIII 1990 (Yu.M. Marusik). BURYATIA: 2♂♂ 5♀♀ (ZMUT), Kurumkan Dist., Djirga, birch forest, litter, 24.05.1996 (S.N. Danilov). SAKHALIN Isl.: paratypes 3 ♀♀ (ZMMU) Okha Distr., down flow of Ten'ga River, IV–V 1987 (A.M. Basarukin).

DESCRIPTION. Male. Total length 2.10–2.20. Carapace (Fig. 5): 1.00–1.07 long, 0.75–0.79 wide, from orange-brown to orange-yellow. Cephalic part modified: front with rostrum, scape covered with short dense hairs, PME placed on small elevation. Chelicerae orange. Sternum orange with dark margins. Leg I 2.27 long (0.68 + 0.23 + 0.55 + 0.48 + 0.33), IV — 2.57 long (0.73 + 0.23 + 0.65 + 0.63 + 0.33). TmI — 0.88. Abdomen from dark-grey to almost black. Palp as in Figs 6–8, 13, with long dorsal tibial apophysis hooked on the top, retrolateral margin of apophysis with row of short erected hairs. Prolateral tibial apophysis with small denticle. Supratergular apophysis long, widened and serrated on the top.

Female. Total length 2.25–2.78. Carapace 1.08–1.20 long, 0.80–0.85 wide. Leg I 2.56 long (0.82 + 0.23 + 0.63 + 0.55 + 0.33), IV — 2.97 long (0.90 + 0.23 + 0.78 + 0.73 + 0.33). Epigyne as in Figs 14–16, dark brown, distinctly extended above ventrum of abdomen, median plate triangle shaped, elongated. Body and leg coloration, chaetotaxy as in male.

DIAGNOSIS. See diagnosis of *C. eskovi* sp.n.

NOTE: Specimens from Sakhalin may belong to a separate species.

DISTRIBUTION. From Evenkia to the upper Kolyma, southward to Buryatia, North Sakhalin and Khabarovsk Prov.

[Eskov, 1994]. Previous records from Tuva [Eskov & Marusik, 1993] most probably correspond to *C. eskovi* sp.n.

Hilaira banini sp.n.

Figs 16–19, 22–25. Map 1.

Hilaira cf. *jamalensis* Eskov, 1981: Marusik & Logunov, 1998: 242.

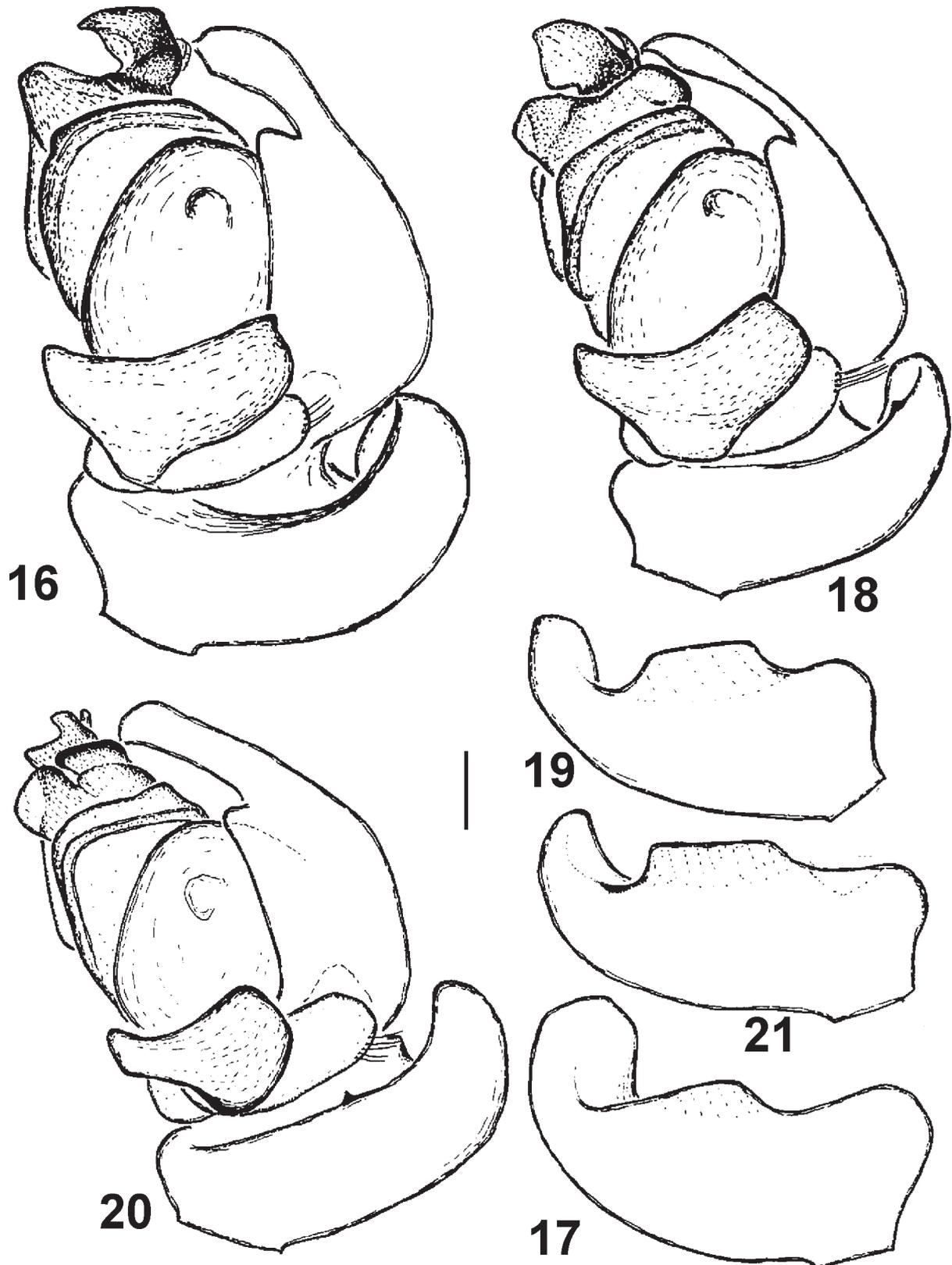
Material. Holotype ♂ (ZMMU), MONGOLIA, BAYAN-KHONGOR Aimak, Gurvanbulag Somon, Khokh-Nuur (Lake), 47°32'N 98°32'E, 2800–3000m, 7–10.VI.1997, (Yu.M. Marusik). Paratypes: 16 ♀♀ (ZMMU), together with holotype; 14 ♀♀ (USNM, ISE, IBPN) ARCHANGAI Aimak, Ondrer-Ulaan, Tsakhir, Chulut gorge, 48°07'N 100°22'E, 2100 m, 10–13.VI.1997 (Yu.M. Marusik).

ETYMOLOGY. The species is named after friend of the first author and his partner in Mongolian expedition, Dmitry Banin, Seattle.

DESCRIPTION. Male. Deformed carapace only. Chelicerae 0.73 long. Anterior margin with 5 teeth. Palp as in Figs 16–17, 22–23. Palpal tibia with elongate dorsal part (apophysis?). Retrolateral tibial margin without denticles, prolateral margin without concavity in apical part.

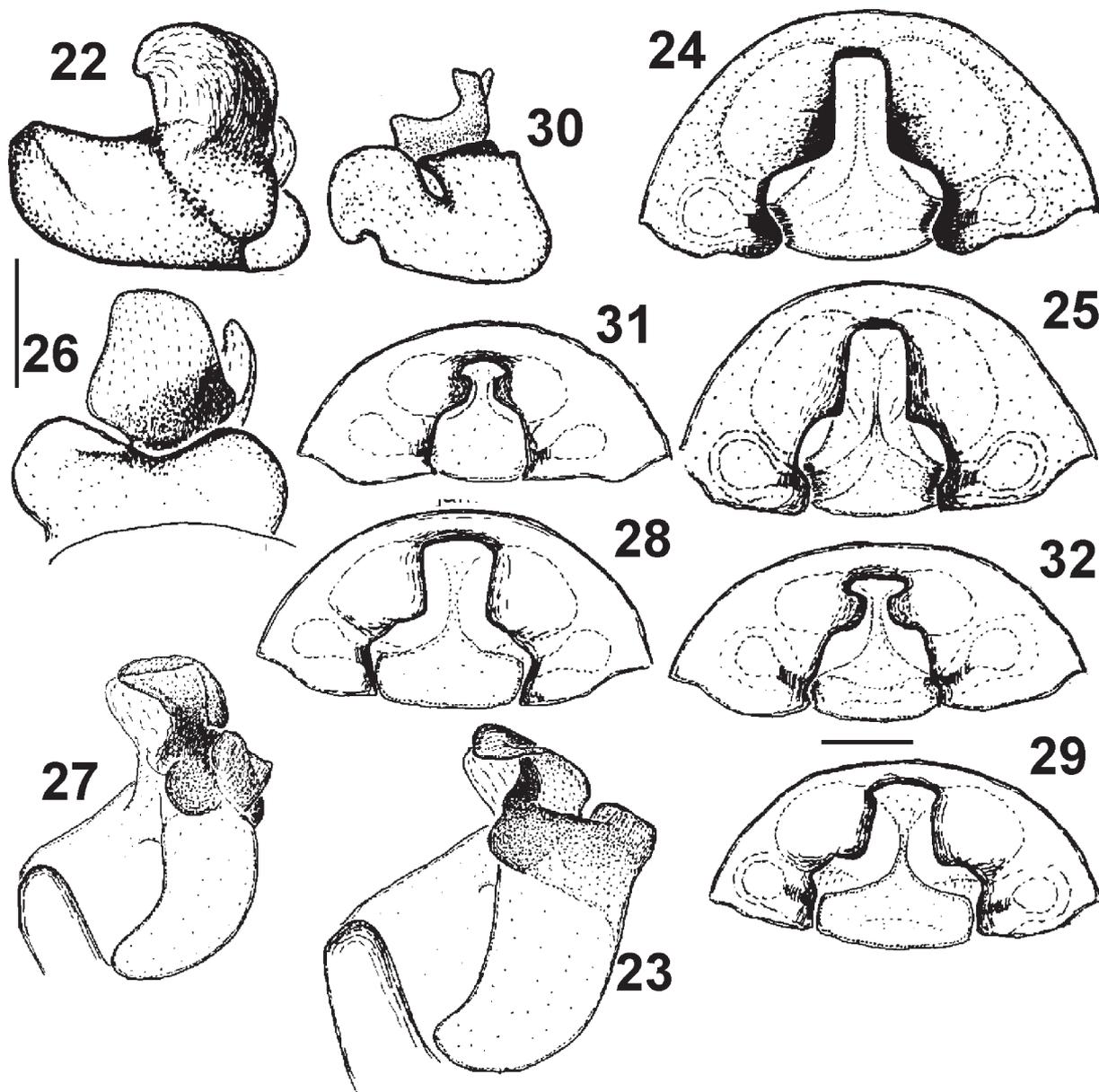
Female. Total length — 2.45. Carapace 1.50 long, 1.03 wide, greish-brown. Chelicerae 0.78 long. Leg I 3.36 long (0.95 + 0.40 + 0.80 + 0.63 + 0.58), IV — 3.74 long (1.08 + 0.38 + 0.95 + 0.80 + 0.53). Tm I — 0.90. Abdomen 2.05 long, 1.25 wide, dark grey. Epigyne as in Figs 24–25, apical portion of epigynal opening with long and parallel margins, width/length ratio — 1.85–1.88.

DIAGNOSIS. The new species belongs to *glacialis*-group *sensu* Eskov [1981] and most closely related to *H. jamalensis* Eskov, 1981 from which it can be easily separated by copu-



Figs. 16–21. Palpes of *Hilaira banini* sp.n (16–17), *H. jamalensis* (18–19) and *H. glacialis* (20–21). 16, 18, 20 — retrolateral view; 17, 19, 21 — palpal tibia, prolateral view.

Рис. 16–21. Детали строения палпы самцов of *Hilaira banini* sp.n (16–17), *H. jamalensis* (18–19) и *H. glacialis* (20–21). 16, 18, 20 — ретролатерально; 17, 19, 21 — голень палпы, пролатерально.



Figs. 22–32. *Hilaira banini* sp.n (22–25), *H. jamalensis* (26–29) and *H. glacialis* (30–32). 22, 26, 30 — bulbus, apical portion, retrolateral view; 23, 27 — embolic division, ventral view; 24–25, 28–29, 31–32 — epigyne, posterior view.

Рис. 22–32. Детали строения *Hilaira banini* sp.n (22–25), *H. jamalensis* (26–29) и *H. glacialis* (30–32). 22, 26, 30 — кончик бульбуса, ретролатерально; 23, 27 — эмболюсный отдел, вид снизу; 24–25, 28–29, 31–32 — эпигина, вид сзади.

latory organs. Male of *H. banini* sp.n. lacks denticle on the retrolateral margin of tibial apophysis (Figs 16, 17), as well as concavity on prolateral tibial margin (Figs 17). Two related species can be also separated by the shape of embolic division (Figs 23, 27). Females of new species has more high epigyne (width/length ratio 1.85–1.88) and different shape of epigynal opening (Figs 24–25, 28–29). *H. banini* sp.n. well differs from *H. glacialis* (cf. Figs. 20–21, 30–32).

HABITATS. Moist (cold) screes 2800–3000 m, moss in mountain tundras 2800 m and larch (*Larix sibirica*) forest with moss and few willows.

DISTRIBUTION. Highlands of Central Mongolia.

Hilaira jamalensis Eskov, 1981

Figs 18–19, 26–29, Map 1.

Hilaira jamalensis Eskov, 1981: 1488, figs. 2.1–4.

Material examined: **RUSSIA**, MAGADAN Area: 3 ♂♂ 6 ♀♀ (IBPN), Kolyma River upper flow, Sibit-Tyellakh River basin (left tributary of Kolyma), environs of Sibit-Tyellakh Village, 1983–1988 (Yu.M. Marusik).

DESCRIPTION. Male. Total length — 3.00–3.25. Carapace 1.28–1.35 long, 1.00–1.03 yellow-brown. Chelicerae dark yellow 0.35 long; anterior margin with 5 big teeth, while posterior with 4 very small teeth. Legs yellow-brown. Leg I 3.31 long (1.00 + 0.33 + 0.75 + 0.55 + 0.68), IV — 3.63 long

(1.00 + 0.33 + 0.95 + 0.75 + 0.60). Chaetotaxy 3.2.2.2. Tm I — 0.68. Palp as in Figs 18-19, 26-27. Palpal tibia with elongate dorsal part (apophysis). Retrolateral tibial margin with tooth (spine) in apical portion, prolateral margin with distinct concavity in apical part. Abdomen light grey, 1.50–1.75 long, 1.23–1.25 wide.

Female. Total length — 2.60–3.15. Carapace 1.30–1.35 long, 0.88–0.90 wide. Body coloration, spination as in male. Leg I 3.13 long (0.95 + 0.30 + 0.73 + 0.60 + 0.55), IV — 3.40 long (0.95 + 0.30 + 0.90 + 0.75 + 0.50). Abdomen 1.63–1.75 long, 0.95–1.13 wide. Epigyne as in Figs 28–29, width/length ratio — 2.14.

DIAGNOSIS. See diagnosis in *H. banini* sp.n.

DISTRIBUTION. From Yamal Peninsula southward to Tuva and Baikal and eastward to Magadan Area [Eskov, 1994].

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