

## Two new petrophilous micronetine genera, *Agyphantes* gen. n. and *Lidia* gen. n. (Araneae, Linyphiidae, Micronetinae), from the eastern Palearctic with descriptions of two new species

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### Summary

Two new micronetine genera of the family Linyphiidae are described: *Agyphantes* gen. n. (type species *Agyphantes sakhalinensis* sp. n.) and *Lidia* gen. n. (type species *Lidia tarabaevi* sp. n.). Each genus comprises two species: *Agyphantes sakhalinensis* sp. n. (from Sakhalin Island, Russia) and *A. sajanensis* (Eskov & Marusik, 1994) comb. n., ex *Lepthyphantes* (from Western Sayan Mts., Russia); and *Lidia tarabaevi* sp. n. (from Kazakhstan) and *L. molesta* (Tanasevitch, 1989) comb. n., ex *Troglohyphantes* (from Kyrgyzstan). The male of *A. sajanensis* is described for the first time. All these species are petrophilous, living under large boulders within screes.

### Introduction

The present paper is devoted to the study of four petrophilous spiders, namely *Agyphantes sakhalinensis* gen. n., sp. n. (from Sakhalin Is., Russia), *A. sajanensis* (Eskov & Marusik, 1994), ex *Lepthyphantes* (from Western Sayan Mts., Russia), *Lidia tarabaevi* gen. n., sp. n. (from south-eastern Kazakhstan), and *L. molesta* (Tanasevitch, 1989), ex *Troglohyphantes* (from Kyrgyzstan). All these species live under large boulders within screes. Because of their mode of living they have very long and relatively thin legs. On the other hand, as these species are not true troglobionts they have prominent colour patterns and normally developed eyes in contrast to true cave dwellers, which are usually pale and have more or less reduced eyes.

Abbreviations used in the text: CL=carapace length; TL=total length; JWC=Jörg Wunderlich collection; MZT=Zoological Museum, University of Turku, Finland; ZMMU=Zoological Museum of Moscow State University, Russia. All measurements are in millimetres.

### Descriptions of new genera and species

#### Genus *Agyphantes* new genus

*Type species:* *Agyphantes sakhalinensis* sp. n. from Sakhalin Is., Russia.

*Etymology:* The generic name is derived from the genera *Agyneta* Hull, 1911 and *Lepthyphantes* Menge, 1866. Gender masculine.

*Species included:* *Agyphantes sakhalinensis* sp. n. and *Lepthyphantes sajanensis* Eskov & Marusik, 1994.

*Diagnosis:* Dark, fairly large species (TL=3.05–4.25, CL=1.45–1.73) with distinct whitish dorsal pattern on abdomen, and legs armed with numerous spines. Distinguished from all other micronetines with movable scape (= *Lepthyphantes-Agyneta* clade of Saaristo & Tanasevitch, 2000: 256), by having the bursa copulatrix considerably shifted proximally along the scapus to match the long distance between the embolus proper and the tip of the embolus (Figs. 10, 12, 18, 21). The males of the new genus can be easily distinguished from all other Siberian micronetines by the strongly modified cymbium with several basidorsal outgrowths as in *Troglohyphantes* Joseph, 1881, and the females by the massive scape widest at its middle and furnished with characteristic transverse wrinkles.

*Description:* Large (TL=3.05–4.25, CL=1.45–1.73), dark coloured species; carapace and appendages dark brown, sternum blackish, abdomen grey with distinctive dirty white dorsal pattern (Fig. 1). Legs long and slender, well armed with spines. TmI 0.18; no trichobothrium on metatarsus IV. Male chelicerae of somewhat lighter build than those of female and armed with fewer teeth. Both sexes with well developed cheliceral stridulatory organs.

*Male palp:* Patella somewhat elevated apicodorsally, bearing two long spines. Cymbium with several conical proximal outgrowths. Pocket-system of paracymbium (Saaristo & Tanasevitch, 1996: fig. 2B) considerably modified: posterior pocket more or less reduced, separated from proximal part of paracymbium by a deep notch and with its outer edge notably swollen; anterior and apical pockets fused together, forming a continuous groove. Pit hook long and slender, sharply pointed. Radix rather straight, anterior end forming a blunt ended, ventrally turning hook; small, elongated Fickert's gland inside radix. Lamella characteristica and terminal apophysis fused together along a common line. Lamellar part strongly chitinised. Terminal apophysis consisting of two parts roughly as in the genus *Agyneta*. Overall structure of embolus resembles that of *Agyneta* species (Saaristo, 1973: figs. 43–47), but the embolus proper has turned to point ventrally and the distance between it and the tip of the embolus has also increased compared with the situation found in *Agyneta* species.

*Epigyne:* Strongly elevated, cone-shaped. Scapus massive, movable and turning inside the epigynal cavity immediately from its starting point, forming a full circle inside the epigynal cavity and ending close to its starting point. Apex of scapus somewhat cup-like, the lateral pockets lie inside the cup while the rather large stretcher protrudes posteriorly; whole element bent almost at a right angle in relation to downward running section of scapus. Bursa copulatrix or starting point of entrance grooves have shifted from proximity of lateral pockets anteriorly along scapus. Apical part of scapus with transverse wrinkles.

*Discussion:* As stated above the copulatory organs of *Agyphantes* are very similar to those of *Agyneta* species. To demonstrate the affinities between the two

genera the embolic division and apical part of the scape of *Agyneta subtilis* (O. Pickard-Cambridge, 1863) are also presented (Figs. 8–9 and 22). In the male copulatory organs the most striking differences are the fusion of the lamella characteristica and terminal apophysis as well as the long distance between the tip of the embolus and the embolus proper in *Agyphantes*.

***Agyphantes sajanensis* (Eskov & Marusik, 1994), comb. n.**  
(Figs. 1–6, 10–11, 16–18)

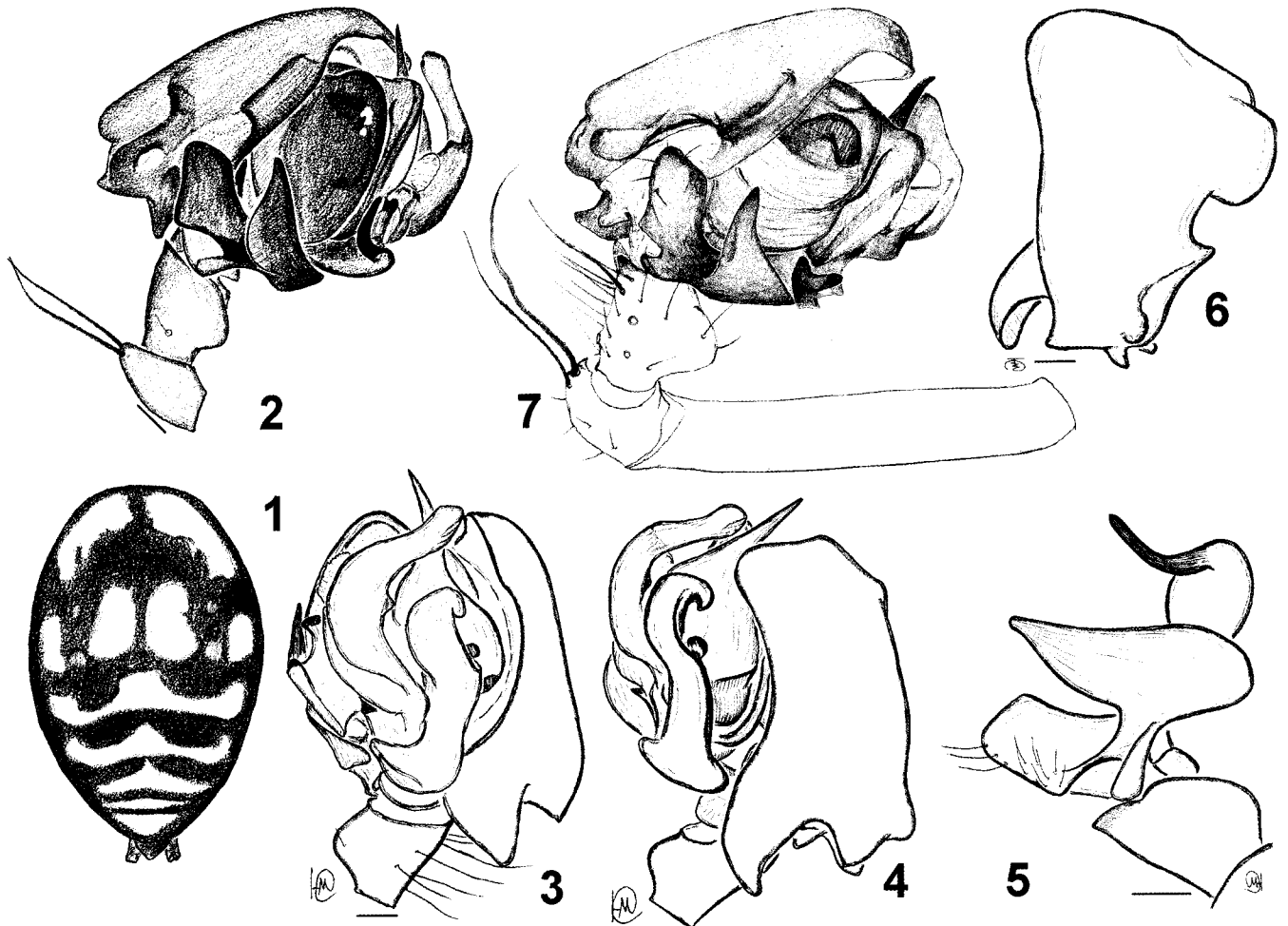
*Lepthyphantes sajanensis* Eskov & Marusik, 1994: 44, figs. 24–26 (D♀).  
*Lepthyphantes sajanensis*: Eskov, 1994: 65.

"*Lepthyphantes*" *sajanensis*: Logunov *et al.*, 1998: 135; Marusik *et al.*, 2000: 55, map 94.

**Material examined:** RUSSIA: Krasnoyarsk Prov., Yermakovski Dist., 10 km S of Oiskoye Lake, Olenya River, subalpine meadow, 27–28 June 1990, leg. D. V. Logunov & N. A. Gladkevitch [175], 1♀ (ZMMU, seems to be the holotype); Krasnoyarsk Prov., West Sayan, Oisky Pass, c. 1 km N of Oiskoye Lake, 52°51'N, 93°15'E, 1600–1700 m, mountain stony/moss tundra, 1♂ 2♀, 21 June 1995, leg. D. V. Logunov (MZT AM 0.431); Irkutsk Area, Bolshaya Osinovka River, env. of Baikalsk, 2♀, 21 July 1981, leg. S. Danilov (MZT AM 0.432).

**Diagnosis:** The male of *A. sajanensis* can be distinguished from its sibling species *A. sakhalinensis* sp. n. by the longer, curved, black extension of the lamella characteristica (Figs. 2, 5, 11, cf. 7, 13), not notably expanded apex of the embolus (Figs. 2–4 and 10–11, cf. 7, 12–13) and shape of the cymbial outgrowths (Figs. 2–4 and 6, cf. 7). The female of *A. sajanensis* has a wider epigyne; in ventral view its aperture is mostly filled by the distal part of the scape, with the stretcher only partly visible, and anterior edge of the aperture with a median notch, while the epigyne of *A. sakhalinensis* sp. n. protrudes more posteriorly so that virtually only the scape is visible in ventral view (Figs. 16–17, cf. 19–20). Also the scape of *A. sajanensis* is longer, almost parallel sided, and the stretcher is elongated and protruding, whereas the scape of *A. sakhalinensis* sp. n. is shorter, widest at the middle, strongly tapering apically, and the stretcher is triangular (Fig. 18, cf. 21).

**Description:** Large (TL=3.05–4.25, CL=1.45–1.73) dark species; carapace and appendages dark brown, sternum blackish, abdomen grey with distinctive dirty white dorsal pattern (Fig. 2). Legs long and slender, well armed with spines; Fe I: 1-2-0-0, II: 1-0-0-0, III–IV: 0-0-0-0; Ti I: 3-1-1-1+2, II: 3-1-0-0+1, III–IV: 2-0-0-0; Mt I: 2-0-0-0, II–III: 2-0-0-1, IV: 0(1)-1(0)-0-1. TmI 0.18;



Figs. 1–7: **1–6** *Agyphantes sajanensis* (Eskov & Marusik, 1994). **1** Abdomen, dorsal; **2** Male palp, retrolateral; **3** Male palp, ventral; **4** Male palp, mesal; **5** Paracymbium, tibia, and end of lamella characteristica, lateral; **6** Cymbium, dorsal. **7** *Agyphantes sakhalinensis* sp. n., male palp, retrolateral. Scale lines=0.1 mm.

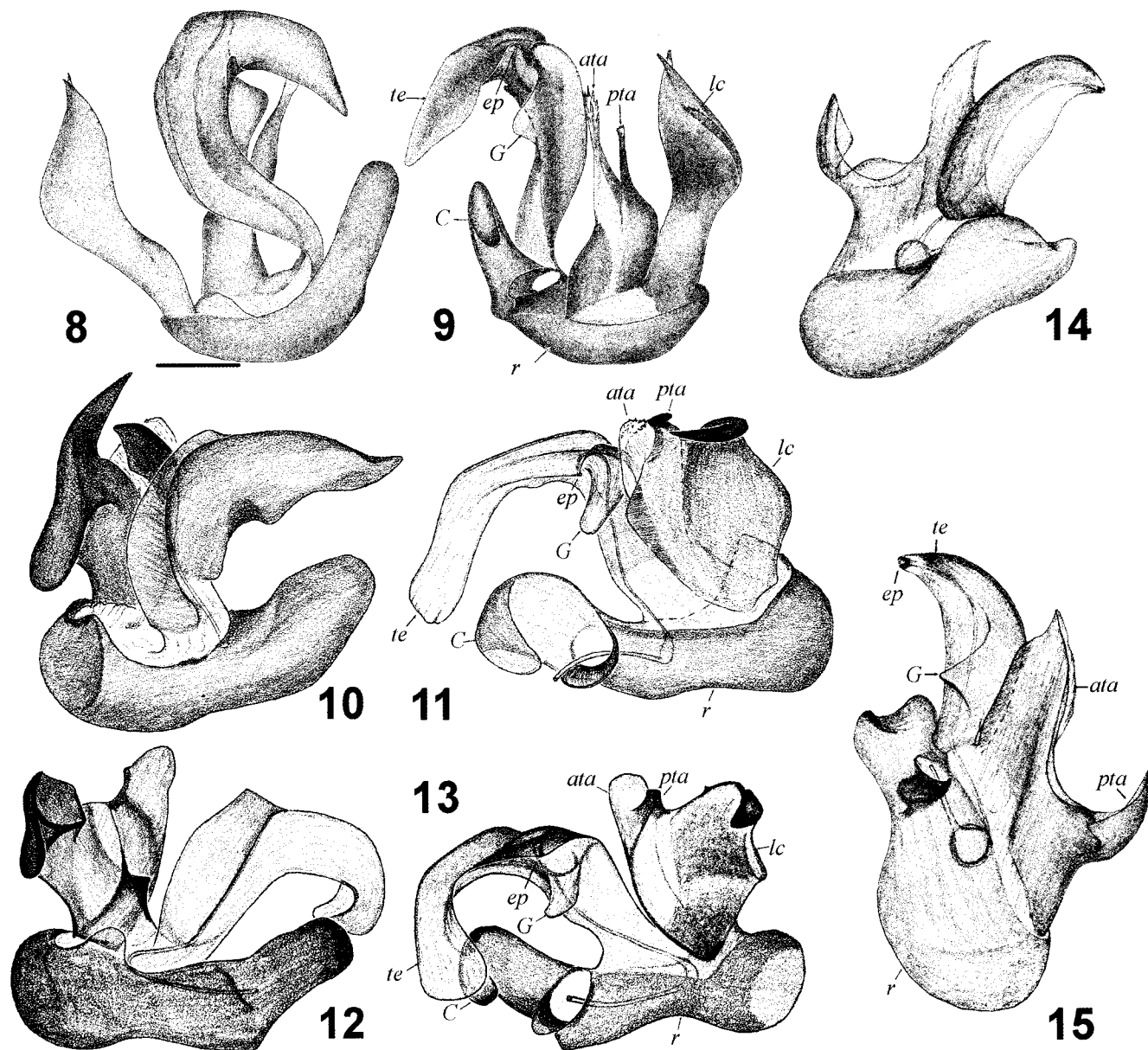
no trichobothrium on metatarsus IV. Male similar to female except slightly smaller with more slender legs and somewhat lighter build chelicerae. Female chelicerae with three promarginal and one large and three small, closely set retromarginal teeth; male chelicerae with one large promarginal tooth and a similar retromarginal one, also a very small denticle below promarginal tooth, and promarginal inner corner of paturon drawn into tooth-like extension. Both sexes with well developed cheliceral stridulatory organs. Leg measurements (male):

	Fe	Pa	Ti	Mt	Ta
I	2.58	0.50	2.55	2.60	1.33
II	2.38	0.53	2.45	2.43	1.30
III	1.93	0.39	1.73	1.80	0.93
IV	2.53	0.50	2.25	2.38	1.15

Male palp as in Figs. 1–6 and 10–11. Epigyne as in Figs. 16–18.

*Comments:* According to the original description (Eskov & Marusik, 1994), the holotype label is “Krasnoyarsk Prov., Ermakovo Dist., Oiski Pass, Olenya Rechka, subalpine meadow, (1600–1700 m alt.), 27–28.VII.1992 (leg. DL)”. A specimen with such a label was not found among the type material, and according to D. V. Logunov (pers. comm.) he was not in Ermakovo (=Yermakovski) District in 1992, but only in June 1990. Therefore it seems that the label of the holotype was erroneously attributed to July 1992, and in fact refers to 1990, and the correct label is given above in “Material examined”.

The inclusion of this species in *Lepthyphantes* was already questioned by Eskov & Marusik (1994).



Figs. 8–15: Embolic divisions. 8–9 *Agyneta subtilis* (O. Pickard-Cambridge, 1863). 8 Dorsal; 9 Ventral. 10–11 *Agyphantes sajanensis* (Eskov & Marusik, 1994). 10 Dorsal; 11 Ventral. 12–13 *Agyphantes sakhalinensis* sp. n. 12 Dorsal; 13 Ventral. 14–15 *Lidia tarabaei* sp. n. 14 Dorsal; 15 Ventral. Scale line=0.1 mm. Abbreviations: C=anterior hook of radix; G=ventral extension of embolus; ata=anterior part of terminal apophysis; ep=embolus proper; lc=lamella characteristica; pta=posterior part of terminal apophysis; r=radix; te=apex of embolus.

*Distribution:* Western Sayan Mts. and Cisbaikalia, Russia (Map 1).

*Agyphantes sakhalinensis* sp. n. (Figs. 7, 12–13, 19–21)

*Types:* Holotype ♂ together with 2 paratype ♀ and 4 juveniles: RUSSIA: Sakhalin Island, central part, Leonidovka River (right tributary of Poronai River), 30 m downstream from Ulyanovka River mouth, 49°15.092'N, 142°43.889'E, 4–5 August 2001, leg. Y. M. Marusik (ZMMU); 2 paratype ♀, same data (MZT AM 0.433 and JWC).

*Etymology:* The specific name is derived from the type locality, Sakhalin Island.

*Diagnosis:* See the previous species.

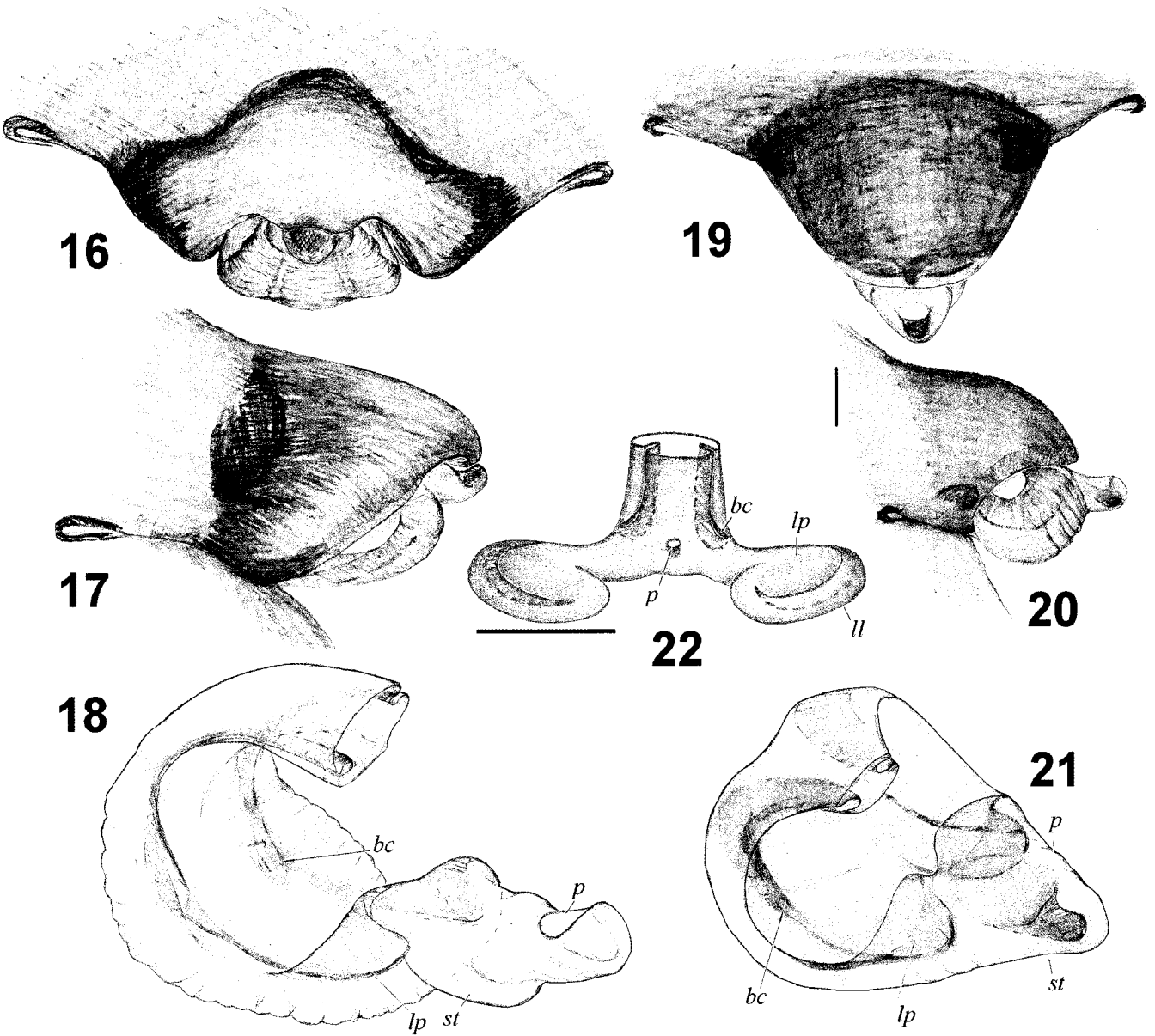
*Description:* Large (TL=3.1–3.55, CL=1.50–1.63). Somatic characters of *A. sakhalinensis* are essentially

similar to *A. sajanensis* except dentition of chelicerae: female chelicerae with three promarginal and 3–4 small, retromarginal teeth; male chelicerae with one large promarginal tooth and a similar retromarginal one, also a very small denticle below promarginal tooth, and promarginal inner corner of paturon drawn into tooth-like extension. Leg measurements (♀/♂):

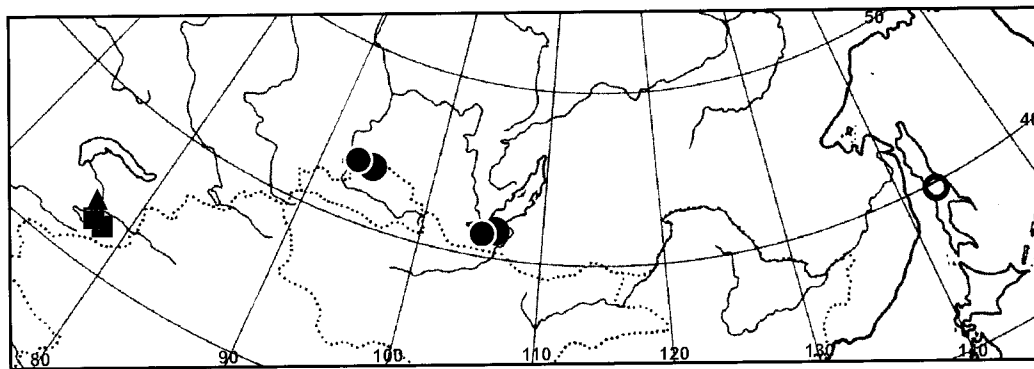
	Fe	Pa	Ti	Mt	Ta
I	2.80/2.85	0.50/0.50	3.10/2.85	2.90/2.65	1.35/1.40
II	2.65/2.50	0.45/0.50	2.65/2.70	2.60/2.35	1.35/1.25
III	2.05/2.20	0.35/0.45	1.85/1.85	1.85/1.80	0.95/0.95
IV	2.60/2.75	0.45/0.45	2.55/2.60	2.50/2.30	1.10/1.15

Male palp as in Figs. 7 and 12–13. Epigyne as in Figs. 19–21.

*Distribution:* Known only from the type locality on Sakhalin Island (Map 1).



Figs. 16–22: **16–18** *Agyphantes sajanensis* (Eskov & Marusik, 1994). **16** Epigyne, ventral; **17** Epigyne, lateral; **18** Scape, dextralateral. **19–21** *Agyphantes sakhalinensis* sp. n. **19** Epigyne, ventral; **20** Epigyne, lateral; **21** Scape, dextralateral. **22** *Agyneta subtilis* (O. Pickard-Cambridge, 1863), scape, apical part, ventral. Scale lines=0.1 mm. Abbreviations: bc=bursa copulatrix; ll=lateral lobe of epigyne; lp=pocket of lateral lobe; p=stretcher pit; st=stretcher.



Map 1. Distribution of *Lidia tarabaevi* sp. n. (triangle), *L. molesta* (Tanasevitch) (squares), *Agyphantes sajanensis* (Eskov & Marusik) (closed circles) and *A. sakhalinensis* sp. n. (open circle).

### Genus *Lidia* new genus

*Type species:* *Lidia tarabaevi* sp. n. from Kazakhstan.

*Etymology:* Named for Lidia Saaristo, the mother of the first author.

*Species included:* *Lidia tarabaevi* sp. n. and *Troglohyphantes molesta* Tanasevitch, 1989.

*Diagnosis:* In some respects the new genus is reminiscent of the genus *Troglohyphantes* Joseph, 1882, but the males can be readily distinguished by the broad, truncate pit hook and the females by the short, semi-circular scape with a spacious pit between the lateral pockets.

*Description:* Rather larger (TL=2.9–4.1, CL=1.23–1.80), relatively pale species. Carapace yellow-brownish, with one median and two marginal grey stripes. Sternum grey-brownish. Legs yellowish with dark annulations. Legs long and slender, well armed with spines. Female palp with long macrosetae (up to 0.5); macroseta on patella longer than on tibia. Chelicerae of female armed with 3 promarginal and 5 small retromarginal teeth, those of male with 3 pro- and 3 retromarginal teeth. Both sexes with well developed cheliceral stridulatory organs.

*Male palp:* Patella with small, conical apicodorsal elevation bearing one long macroseta. Anterior and apical pockets of paracymbium fused together, forming characteristically bent free end of paracymbium. Pit hook broad, of uniform breadth, ending transversely. Radix relatively broad, anteriorly notched. Fickert's gland rather large, spherical. Lamella characteristic missing. Terminal apophysis large, consisting of two parts as in *Agyneta*. Overall structure of embolus resembles that of *Troglohyphantes* species (Deeleman-Reinhold, 1978: e.g. fig. 41h), both being characterised by the transfer of the embolus proper ahead of the tip of the embolus.

*Epigyne:* Aperture of epigyne wide and shallow, mostly covered by distal part of scape (Figs. 25, 31). Relatively short scape starts well inside epigynal cavity, following curvature of cavity wall. Lateral lobes large and deep, containing bursa copulatrix. Stretcher much reduced; pit large and wide, corresponding to shape of pit hook.

*Discussion:* Especially the male copulatory organs of this genus are in certain respects reminiscent of *Troglohyphantes* and apparently this is why Tanasevitch (1989)

described his *molesta* in that genus. However, closer examination of the two genera reveals that they differ in several respects. First, the cymbium of the new genus lacks the posterodorsal elevations so characteristic of *Troglohyphantes*. Secondly, the pit hook of *Troglohyphantes* is long and tapers evenly to a sharp point while that of the new genus is broad and truncate. Accordingly the female epigyne of *Troglohyphantes* is furnished with a well-defined stretcher with a small pit, whereas the stretcher of the new genus is reduced and the pit conspicuously wide. The lamella characteristic has been lost in both genera and the terminal apophysis of *Troglohyphantes* is also much reduced in size but otherwise very complicated. The terminal apophysis of the new genus is of the presumed basic type consisting of anterior and posterior parts; the apex of the anterior part is also, as usual, transparent and furnished with tiny, finger-like outgrowths. Both genera are characterised by a sickle-shaped embolus with apical embolus proper. The scape of *Troglohyphantes* is S-shaped and much longer than that of the new genus which has a short, semicircular scape originating well inside the epigynal cavity. Finally, *Troglohyphantes* lacks a Fickert's gland but the new genus has a large, spherical gland inside the radix.

### *Lidia tarabaevi* sp. n. (Figs. 14–15, 29–33)

*Types:* Holotype ♂ from KAZAKHSTAN: Alma-Ata Area, Chilik District, National Reserve Park near Orman 10 km from Talgar, 1300 m a.s.l., river valley, under large boulders, 24 April 1990, leg. M. Saaristo (MZT AM 750A). Paratypes: 1♂ 3♀ 4juvs, same data (MZT AM 750B); 1♂ 1♀, same data (ZMMU); 1♂ 1juv., same data (MZT AM 749).

*Etymology:* Named for our late friend and colleague Chingis Tarabaev.

*Diagnosis:* Close to *L. molesta* but smaller (*L. molesta* CL=1.65–1.80). The males of the two species can be distinguished by the shape of the terminal apophyses; *L. molesta* has its outer branch truncate while *L. tarabaevi* sp. n. has a pointed outer branch (Figs. 23–24, cf. 29–30). The females are easily separated by the structure of the epigyne (Figs. 25–28, cf. 31–33); in ventral view the apical part of the scape of *L. molesta* is almost rectangular while that of *L. tarabaevi* sp. n.

is pentagonal. Also the posterior median plate of *L. molesta* is wider and shorter; width/length ratio of *L. molesta*=8, that of *L. tarabaevi* sp. n.=5.

**Description:** Rather large (TL=2.9–3.7, CL=1.23–1.46), relatively pale species. Carapace yellow-brownish, with one median and two marginal grey stripes. Sternum grey-brownish. Legs yellowish with dark annulations. Legs long and slender, well armed with spines; Fe I: 0-2-0-0, Fe II–IV: 0-0-0-0; Ti I: 2-3-3-4, II: 2-2-3-4, III: 2-2-2-2, IV: 2-1-2-2; Mt I: 1-1-1-1, II: ?, III: 1-1-1-0, IV: 1-1-1-0. Palpus of female with long macrosetae (up to 0.5); macroseta on patella longer than on tibia. Chelicerae of female with 3 promarginal and 5 very small retromarginal teeth, those of male with 3 pro- and 3 retromarginal teeth. Both sexes with well developed cheliceral stridulatory organs. Leg measurements (♀♂).

	Fe	Pa	Ti	Mt	Ta
I	3.2/2.9	0.6/0.4	3.0/3.2	2.7/2.9	1.6/1.8
II	2.6/2.5	0.6/0.38	2.7/2.55	2.5/2.5	1.4/1.5
III	2.2/2.0	0.45/0.33	1.9/1.8	1.9/1.75	1.0/1.0
IV	2.75/2.5	0.5/0.4	2.5/2.3	2.5/2.3	1.1/1.2

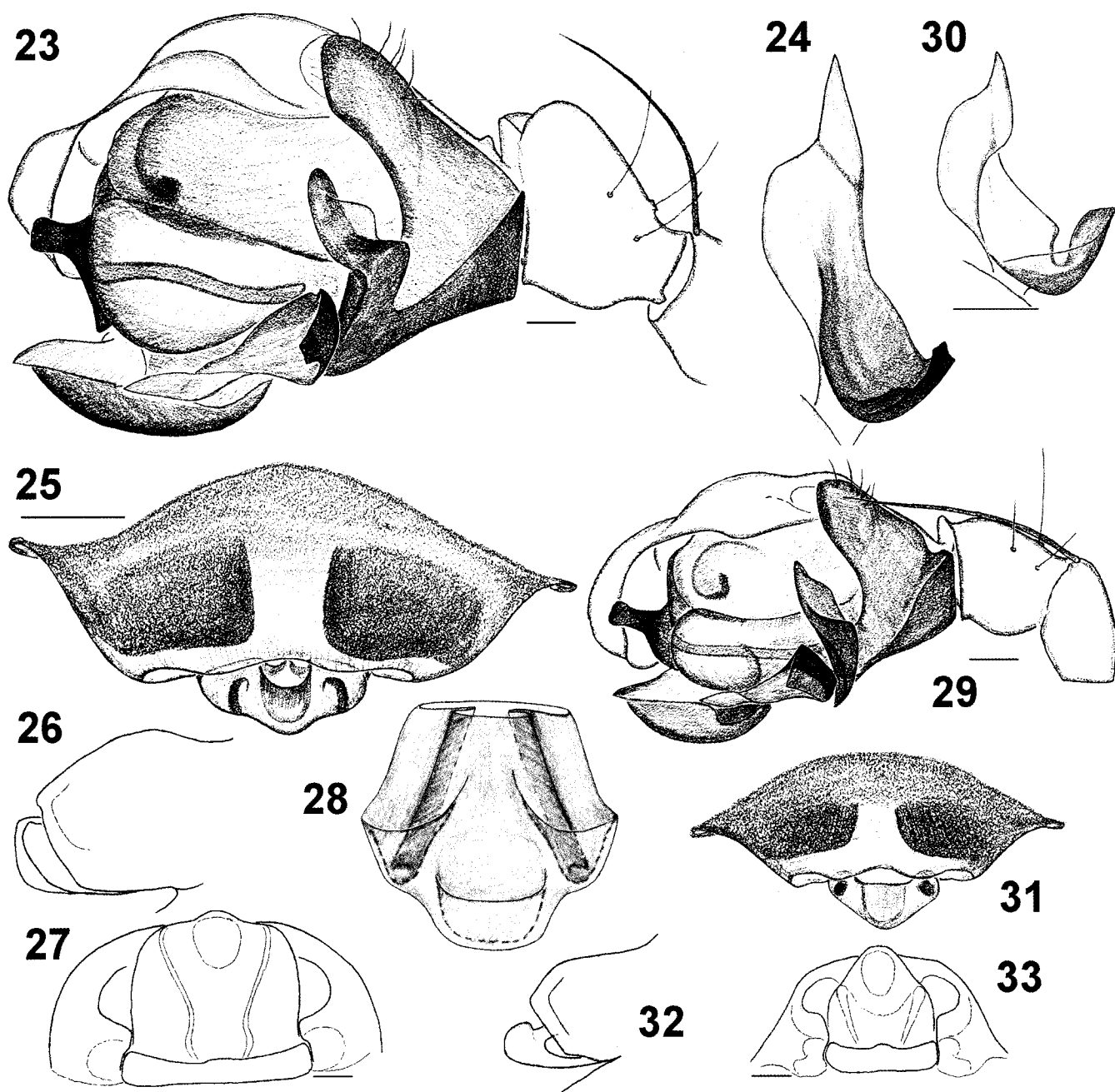
Male palp as in Figs. 14–15 and 29–30. Epigyne as in Figs. 31–33.

**Distribution:** Known only from the type locality (Map 1).

***Lidia molesta* (Tanasevitch, 1989), comb. n.** (Figs. 23–28)

*Troglohyphantes molestus* Tanasevitch, 1989: 122, figs. 103–107 (D ♂♀).

**Material examined:** KYRGYZSTAN: Terskey-Alatau Mt. Ridge, Koilyu Valley, 2800 m a.s.l., *Picea* forest, 1♂ 1♀



Figs. 23–33: 23–28 *Lidia molesta* (Tanasevitch, 1989). 23 Male palp, retrolateral; 24 Terminal apophysis, ventral; 25 Epigyne, ventral; 26 Epigyne, lateral; 27 Epigyne, dorsal; 28 Scape, ventral. 29–33 *Lidia tarabaevi* sp. n. 29 Male palp, retrolateral; 30 Terminal apophysis, ventral; 31 Epigyne, ventral; 32 Epigyne, lateral; 33 Epigyne, dorsal. Scale lines=0.1 mm.

(paratypes), 16 July 1983, leg. S. Ovtchinnikov (ZMMU).

*Diagnosis:* See the previous species.

*Description:* Well described by Tanasevitch (1989). Male palp as in Figs. 23–24. Epigyne as in Figs. 25–28.

*Distribution:* Terskey-Alatau Mt. Range, Kyrgyzstan (Map 1).

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