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A NEW SPECIES OF *CARORITA* (ARANEAE, LINYPHIIDAE) FROM UKRAINE, WITH A REDESCRIPTION OF THE TYPE SPECIES OF THE GENUS

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A New Species of *Carorita* (Araneae, Linyphiidae) from Ukraine, with a Redescription of the Type Species of the Genus. Gnelitsa, V. A. — *Carorita limnaea* (Crossby & Bishop, 1927), the type species of the genus, is redescribed, and a new species *Carorita podiliensa* **sp. n.** from Ukraine is described.

Key words: Aranei, Erigoninae, *Carorita*, Podillia, Ukraine.

Introduction

Carorita Duffey & Merrett, 1963 is a small erigonine genus embracing only two species: *C. limnaea* (Crossby & Bishop, 1927) and *C. sibirica* Tanasevitch, 2006. The former species is Circumholarctic and the latter occurs in the eastern Palaearctic: from West Siberia to the Maritime Province (Table 4; Fig. 14, *a*, *b,* here and further figures and tables see in the Appendix). Possibly a new *Carorita* species (undescribed so far) was found on the Moneron Island (Marusik & Crawford, 2006) (Table 4; Fig. 14, *b*).

A single *Carorita* male was collected in the northeastern Ukraine. Later, two specimens were found in the southwestern Ukraine. The identity of the Ukrainian *Carorita* was unclear due to the existing geographic variation of *C. limnaea*. The goal of this paper was to redescribe *C. limnaea* and assess its variation as well as the description of new species found in Ukraine. The comparison of *Carorita* from Ukraine with *C. limnaea* from distant localities such as Canada, Colorado (USA), Finland, and West Siberia (Russia) revealed the following: (a) *Carorita* males from two

regions of Ukraine are very similar to each other; (b) Ukrainian spiders bear some resemblance to *C. sibirica* Tanasevitch, 2006; (c) Ukrainian spiders differ from all the *C. limnaea* we examined as well as from *C. sibirica*.

This paper provides a redescription of *C. limnaea* (Crossby & Bishop, 1927) based on the holotype from Colorado (USA), as well as examination of the specimens from Canada, Finland, and Russia. The Ukrainian *Carorita* is described as a new species.

Material and Methods

Specimens from Ukraine were collected by the author using a handheld suction sampler. Identification was made with a binocular microscope MBS-10; drawings were made using a camera lucida.

The holotype specimen from the USA (American Museum of Natural History) was redescribed to compare with the spiders from Ukraine. To evaluate the variability extent of *C. limnaea* and to compare it with the specimens from the type territory, the specimens from Canada (Pierre Paquin collection), Finland and Russian Altai (Zoological Museum University of Turku, Finland) were examined:

CANADA, Quebec, Bale-James (Jamésie), 122 km NE La Sarre: 3 ♂, 3 ♀ (PPC), 49.5739° N, 78.0263° W, Black Spruce, mosses on ground, Berlese extraction, 9.09.1999 (P. Paquin, N. Dupérré), Figs 2, 9, 15, 23–25, 40–41, 46–47, 52–53, 62, 67–68, 73.

FINLAND, Turku, Kärsämäki, Pomponrahka: 3 ♂, 2 ♀ (ZMUT), 60.5016° N, 22.2656° E, bog, 30.08.1967 (M. I. Saaristo), Figs 3, 10, 16, 26–28, 42–43, 48–49, 54–55, 63, 69–70, 74, 76.

RUSSIA, the label "SW Altai, Kuragan korpi [dark old forest — Finn.]" (AE 261), ♂ (ZMUT), 50.1194° N, 86.1844° E, dark old forest, 08–26.07.1983 (H. Hippa), Figs 4, 11, 17, 29–31, 56–57, 64, 77.

Additional data on *C. limnaea* morphology was adopted from Moritz (1973).

The names of palp parts, their abbreviations and epigyne structures follow Merrett (1963), Hormiga (2000) and Zujko-Miller (1999): ARP — anterior radical process, C — cymbium, CDC — copulatory duct capsule, DP — dorsal plate of epigyne, E — embolus, EM — embolic membrane, Fe — femur, Mt — metatarsus, P — paracymbium, Pt — patella, R — radix, SPT — suprategulum, ST — subtegulum, T — tegulum, Ta — tarsus, Ti — tibia, TP — radical tailpiece.

Other abbreviations.

Palpal parts: ARP — anterior process of radix, CBO — outgrowth of the basal edge of cymbium, MPP — middle part of paracymbium, PDP — paracymbial distal part, PPP — paracymbial proximal part, PBC — cut of the paracymbium back edge, PTi — palpal tibia, TLBP — lower back part of tegulum.

Abbreviations of depositories:

AMNH — American Museum of Natural History, New York, USA;

PPC — Pierre Paquin personal collection;

SIZK — I. I. Schmalhausen Institute of Zoology, Kyiv, Ukraine;

VGC — Valery Gnelitsa personal collection;

ZMUT — Zoological Museum, University of Turku, Finland.

Maps were made in Simple Mappr (http://www.simplemappr.net). All measurements are in millimetres.

Species survey

Carorita limnaea (Crosby & Bishop, 1927)

Figs 1, *a*; 3, *a*, *b*; 5, *a*; 7, *a, b, c*; 9, *a*

Oedothorax limnaeus Crosby & Bishop, 1927: 149, pl. 16, f. 11–14 (Dmf).

Carorita limnaea: Duffey & Merrett, 1963: 575, f. 1–8 (Tmf from *Oedothorax*); Holm, 1968 a: 188, f. 10–11 (mf); Moritz, 1973: 186, f. 11–18 (mf); Locket et al., 1974: 93, f. 56A–C (mf); Palmgren, 1976: 44, f. 14.1–3 (mf); Millidge, 1977: 40, f. 158 (m); Roberts, 1987: 108, f. 53d (mf); Heimer & Nentwig, 1991: 124, f. 353 (mf); Zujko-Miller, 1999: 49, f. 8–9 (mf); Song et al., 1999: 160, f. 89A–B (f); Paquin & Dupérré, 2003: 90, f. 792–795 (mf); Tanasevitch, 2006: 147, f. 33–37, 44, 46 (m); Lemke, 2019 a: 49, f. 3 (m).

Carorita limnaeus: Fei et al., 1994: 47, f. 1–2 (f).

Holotype ♂: USA, Colorado, Pingree Park, Larimer County, in moss by pond, 40.5686° N, –105.5960° W, 20.08.1924 (C. R. Crosby) (AMNH); paratype ♀, same data.

Description. Male. Total length 1.30. Carapace: 0.67 long, 0.50 wide; pale brown-yellow. Sternum: 0.36 long, 0.35 wide, caudally extended between coxae IV, pale grey-yellow with some darker margin. Posterior median eyes a diameter apart, suffused with black. Chelicerae anterior margin with 4 teeth: second proximal tooth is longest; frontal surface near anterior margin bears noticeable tubercle with spine at tip; stridulating files distinct. Abdomen uniformly grey. Chaetotaxy 2–2–1–1, position of metatarsal trichobothrium: I — 0.36, II — 0.36, III — 0.29.

Length measurements

Leg	Fe	Pt	Ti	Mt	Ta	Total
I	0.46	0.17	0.39	0.32	0.31	1.65
II	0.40	0.17	0.32	0.29	0.27	1.45
III	0.34	0.15	0.26	0.26	0.23	1.24
IV	0.45	0.15	0.39	0.34	0.26	1.59

Palp as in Figs 1, *a*; 3, *a*, *b*; 5, *a*; 7, *a*, *b*, *c*.

Palpal tibia oval in dorsal view (Fig. 7, *a*) looks narrow dorsal-laterally (Fig. 7, *b*). The tooth on latero-apical part of palpal tibia pointed down-frontally (lateral view, Fig. 1, *a*) and laterally (dorsal and dorso-lateral views, Fig. 7, *b*, *c*). Palpal tibia with one prolateral and no retrolateral trichobothrium.

Cymbium with long outgrowth (CBO) (Fig. 3, *a*, *b*) at the basal part of its mesal edge somewhat widened at the cutted end (Fig. 5, *a*).

Hook like paracymbium may be divided into three regions: proximal, middle, and terminal parts. I propose to treat the rounded cut of the paracymbium back edge (PBC) (Fig. 1, *a*) as the end of proximal and the beginning of the middle part of paracymbium (MPP). Paracymbium proximal part with almost parallel margins (Figs 1, *a*; 7, *c*); its middle part (MPP) strongly protruded backward (Fig. 1, *a*).

The upper third frontal part of the tegulum with a group of notched structures (i) (Fig. 1, *a*), tegulum lower back part (TLBP) protruded and rounded (Fig. 3, *a*, *b*).

Radix (R) with tuberculated anterior process (ARP) and short, rounded tailpiece (TP) opposite base of embolus (Figs 3, *a*, *b*; 5, *a*). Anterior process bears a tooth-like outgrowth (ii) to which the embolic membrane connects (Fig. 3, *a*, *b*). Long narrow embolus curved gradually counterclockwise (Fig. 3, *a*, *b*).

Comment: Zujko-Miller (1999) assertion about pro- and retrolateral trichobothria on palpal tibia was not confirmed. A small dorsal tubercle with a thin spine was possibly treated as retrolateral trichobothrium (Fig. 7, *a*, *b*, *c*).

Female. Total length 1.30. Carapace: 0.69 long, 0.49 wide, colour as in male. Sternum: 0.38 long, 0.34 wide, caudally extended between coxae IV, colour as in male. Posterior median eyes (PME) a diameter apart, suffused with black. Chelicerae anterior margin with 5 teeth, second proximal tooth is longest; no conspicuous tubercle with spine on the frontal surface; stridulating files distinct. Abdomen unicolorous grey. Chaetotaxy 2–2–1–1, position of metatarsal trichobothria: I — 0.31, II — 0.34, III — 0.34.

Epigyne wide ventral plate directed caudally with evenly curved edge (Fig. 9, *a*).

Legs length

Leg	Fe	Pt	Ti	Mt	Ta	Total
I	0.46	0.17	0.32	0.28	0.27	1.50
II	0.42	0.15	0.28	0.25	0.25	1.35
III	0.37	0.15	0.23	0.24	0.22	1.21
IV	0.45	0.16	0.35	0.30	0.24	1.51

Morphological variation of *C. limnaea*

The variability of the specimens from Canada, Finland, Altai, and Germany (Moritz, 1973) was examined compared to the holotype specimen. Here are the features of *C. limnaea* sensu lato.

Body length: 1.10–1.40 male, 1.30–1.47 female. Consolidated range of deviation relatively to specimens from the type locality (variation range): -15.0% +7.6 % (male), 0% +13.0% (female).

Carapace length: 0.66–0.73 (male), 0.66–0.70 (female). Variation range: -1.5% +8.9% (male); -1.5% + 4.4% (female).

Carapace width: 0.43–0.50 (both sexes). Variation range: -1.5% 0% (male); -4.0% +4.0% (female).

Distance between posterior median eyes: 0.6–1 eye diameter (male); 0.8–1.1 eye diameter (female).

Chelicera anterior margin with 3–6 teeth (male), 4–6 teeth (female).

Chelicera posterior margin with 3–5 teeth (male), 3–6 teeth (female).

Stridulating lines of both sexes are well visible (no variation).

Sternum length: 0.36–0.41 (male), 0.32–0.38 (female). Variation range: 0% +14.7% (male); -16.0% 0% (female).

Sternum width: 0.32–0.39 (male), 0.34–0.35 (female). Variation range: -8.6% +11.0% (male); 0% +0.03% (female).

Sternum of both sexes caudally stretches between coxae IV (no variation).

Legs I–IV length (male): 1.62–1.77 (I), 1.45–1.64 (II), 1.22–1.36 (III), 1.59–1.79 (IV). Variation range: -1.8% +7.0% (I), 0% +11.5% (II), -1.5% +9.7% (III), 0% +12.6% (IV).

Legs I–IV length (female): 1.41–1.60 (I), 1.28–1.48 (II), 1.09–1.28 (III), 1.40–1.66 (IV). Variation range: -6.0% +6.6% (I), -5.2% +9.6 % (II), -9.9% +5.8 % (III), -7.3% + 9.9% (IV).

Position of metatarsus I–III trichobothria: male 0.29–0.36 (I), 0.31–0.37 (II), 0.28–0.33 (III), female 0.31–0.36 (I), 0.32–0.36 (II), 0.32–0.34 (III).

Distribution. Holarctic, finding sites in Eurasia see Table 3, 4; Fig. 14, *a*, *b*.

***Carorita podiliensa* sp. n.**

Figs 2, *a*, *b*; 4, *a*, *b*; 6, *a*, *b*; 8, *a*, *b*, *c*, *d*, *e*, *f*; 9, *g*, *h*; 10, *e*, *f*; 11, *g*, *h*, *i*, *j*; 12, *d*, *e*; 13, *e*, *f*, *i*; 14, *b*

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Material. **Type.** Holotype ♂: Ukraine: Vinnitsya Region, Peschanka District, 4 km NW from Peschanka settlement, "Knyazhe" natural landmark, open swampy place near small pond, in dark cavities between *Carex*, 48.2304° N, 28.8239° E, 22.10.2011 (V. A. Gnelitsa) (SIZK); paratype ♀, same data (VGC).

Non-type. Ukraine: Sumy Region, SW vicinity of Sumy city, ♂, 50.8630° N, 34.7276° E, Strelka River floodplain, tussock bog with *Alnus*, *Salix*, *Fragmites* and *Carex*, on ground, 14.05.1994 (V. A. Gnelitsa) (VGC).

Diagnosis. Male of the new species differs from that of *C. limnaea* by considerably larger body size, shape of palpal tibia, radix tailpiece and lower back part of tegulum (TLBP). Female differs from that of *C. limnaea* by body size and vulva structure.

Males of *C. podiliensa* **sp. n.** differs from *C. sibirica* by configuration of paracymbium and radix. Female differs from that of *C. sibirica* by vulva structure.

Etymology. The specific name is given according to the area (Podillia) to which Vinnitsya Region belongs, where almost all specimens were collected.

Description. Male. Total length 1.55. Carapace: 0.84 long, 0.59 wide; light grey-orange with darker margin, straight dorsally (Fig. 11, *g*). Sternum: 0.49 long, 0.45 wide, caudally extended between coxae IV, grey-orange with slightly darker margin. PME 0.8 diameter apart, suffused with black. Chelicerae anterior margin with 6 teeth: second proximal tooth longest, 4 distal teeth diminished gradually (Fig. 12, *e*); posterior margin with 5 small teeth; mastidion distinct, stridulating files good visible. Abdomen uniformly yellow-grey. Chaetotaxy 2–2–1–1, position of metatarsal trichobothria: I — 0.32, II — 0.31, III — 0.29.

Palp as in Figs 2, *b*; 4, *b*; 6, *b*; 8, *d*, *e*, *f*. Palpal tibia with prolateral and dorsal trichobothria Fig. 8, *d*, *e*, *f*. The tooth on the lateral-apical part of palpal tibia pointed frontally in lateral view (Fig. 8, *d*) and frontal-laterally in dorsal view (Fig. 8, *e*). "Heart"-shaped palpal tibia with a wide rounded cut frontally (Fig. 8, *e*).

Shortened outgrowth of cymbium (CBO) (Fig. 6, *b*) almost straight. Rounded cut of paracymbium back edge (PBC) almost unmarked (Fig. 2, *b*). Proximal part of paracymbium with rather parallel edges, backward directed protrusion of paracymbium middle part barely visible (Fig. 2, *b*). Tegular lower back part (TLBP) protruded significantly, oval-rounded if viewed ventrally (Fig. 4, *b*) and narrow if viewed mesially (Fig. 6, *b*). Radix with shortened smooth anterior process (ARP) and a short tailpiece (TP) (Fig. 6, *b*).

Length measurements

Leg	Fe	Pt	Ti	Mt	Ta	Total
I	0.62	0.23	0.54	0.48	0.36	2.23
II	0.57	0.22	0.46	0.43	0.34	2.02
III	0.46	0.20	0.35	0.37	0.28	1.66
IV	0.60	0.22	0.50	0.46	0.32	2.10

Female. Total length 1.85. Carapace: 0.91 long, 0.67 wide, light orange-grey, straight dorsally (Fig. 13, *f*). Sternum: 0.49 long, 0.46 wide, caudally extended between coxae IV, yellow-grey with slightly darker margin. PME 0.9 diameter apart, suffused with black. Chelicerae anterior margin with 5–6 teeth, second proximal tooth is longest, 3 distal teeth small (Fig. 13, *i*), posterior margin with 5 small teeth, no mastidion; stridulating files distinct. Abdomen uniformly dark grey. Chaetotaxy as that of male, position of metatarsal trichobothria: I — 0.30, II — 0.30, III — 0.26.

Epigyne (Fig. 9, *g*) like that of other *C. limnaea* and *C. sibirica* so cannot be distinguished with confidence. Vulva (Fig. 9, *h*) looks widened, relative parameters a:b:c (Fig. 9, *b*) 1.58:1.0:1.0. Copulatory ducts parallel. The anterior edge of copulatory duct capsules (CDC) almost approaches the line of the anterior edge of spermathecae (Fig. 9, *h*). Dorsal plate with rather straight distal and proximal edges and noticeable rounded sides (Fig. 10, *e*, *f*).

Length measurements

Leg	Fe	Pt	Ti	Mt	Ta	Total
I	0.69	0.25	0.62	0.56	0.40	2.52
II	0.62	0.22	0.52	0.50	0.36	2.22
III	0.53	0.21	0.40	0.44	0.29	1.87
IV	0.67	0.23	0.59	0.55	0.34	2.38

Morphological variation of *C. podiliensa* sp. n.

Body length: 1.55–1.69 (male), 1.85 (female). Consolidated range of deviation of *C. podiliensa* **sp. n.** compared to *C. limnaea* specimens from type locality (variation range): +19 +30% (male), 42% (female).

Carapace length: 0.84–0.90 (male), 0.91 (female). Variation range: +25 +34% (male); 36% (female).

Carapace width: 0.59–0.67 (male), 0.67 (female). Variation range: +18 +34% (male); 37% (female).

Chelicera anterior margin with 6 teeth (male), 5–6 teeth (female).

Chelicera posterior margin with 4–5 teeth (male), 5 teeth (female).

Sternum length: 0.49–0.50 (male), 0.49 (female). Variation range: +36 +39% (male), 29% (female).

Sternum width: 0.43–0.45 (male), 0.46 (female). Variation range: +23 +29% (male), 35% (female).

Sternum of both sexes caudally stretches between coxae IV (no variation).

Legs I–IV length (male): 2.22–2.40 (I), 2.0–2.20 (II), 1.66–1.76 (III), 2.10–2.25 (IV). Variation range: +35 +45% (I), +39 +52% (II), +34 +42% (III), +32 +42% (IV).

Legs I–IV length (female): 2.52 (I), 2.22 (II), 1.87 (III), 2.38 (IV). Variation range: 60% (I), 64% (II), 55% (III), 58% (IV).

Distance between posterior median eyes, stridulating lines and position of metatarsus I–III trichobothria of both sexes are the same as that of *C. limnaea*.

Discussion

Evaluating the variability of body length, carapace and sternum length–width, length of legs exerted two separate data sets according to which the specimens are assigned to two distinct groups (Table 1).

The first group (variation range in –16.0% +14.0% limits) includes the specimens of both sexes from Canada, Finland, Germany, Russia (Altai) and the USA (Table 1). The morphological features of genital structure (Table 2) support the separation of this group as well. Readily available images from the Spiders of Europe (2024) encourage me to place the spiders from the Great Britain and Sweden into the first group; this placement, however, is tentative due to a lack a full set of the relevant numerical data. This group includes all *C. limnaea* with their exhibited intraspecific variation.

Carorita podiliensa **sp. n.** as well as *C. sibirica* fall into the second group, in which the quantitative indices vary within +19% +68% range (Table 1). Male and female genital structure (Table 2) substantiates placing these spiders apart from *C. limnaea. C. podiliensa* **sp. n.** and *C. sibirica* are similar in body length, length and width of carapace, and length of the legs. Beside this, two species resemble each oth-

er in feeble marked tailpiece of radix, frontally directed tooth of male palpal tibia, wide cut of frontal edge of tibia. Copulatory duct capsule position of their females almost reaches or even slightly goes beyond the frontal line of receptacles.

C. podiliensa **sp. n.** differs from *C. sibirica* by paracymbium and embolic division in males. The females of these two species are so similar to each other in the shape of epigyne that they can be easily confused with one another when a male specimen is absent.

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Appendix

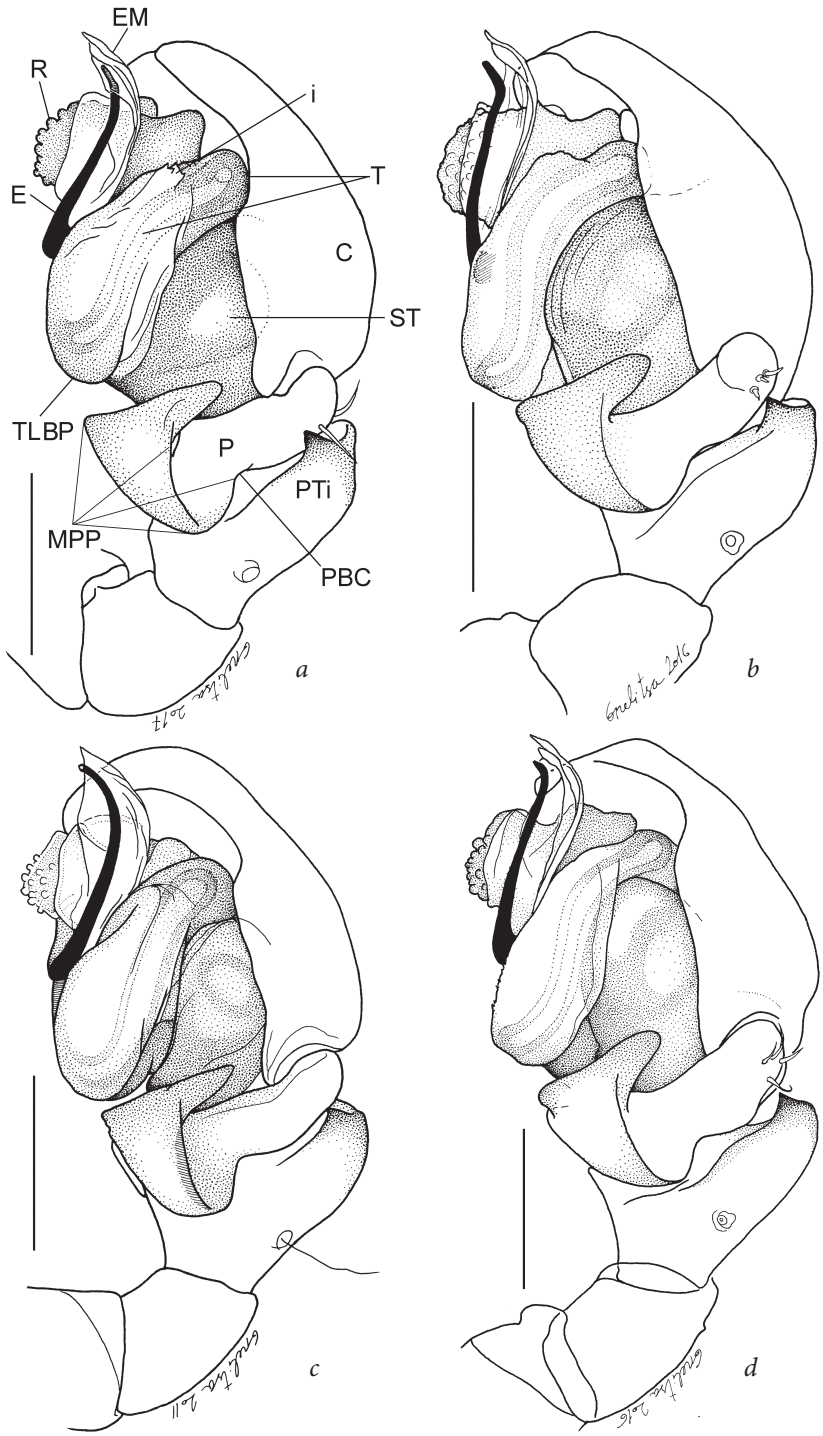

Fig. 1. *Carorita limnaea* male palp lateral, specimen from: *a* — USA (holotype), *b* — Canada, *c* —Finland, *d* — Altai (Russia). Scale = 0.1 mm

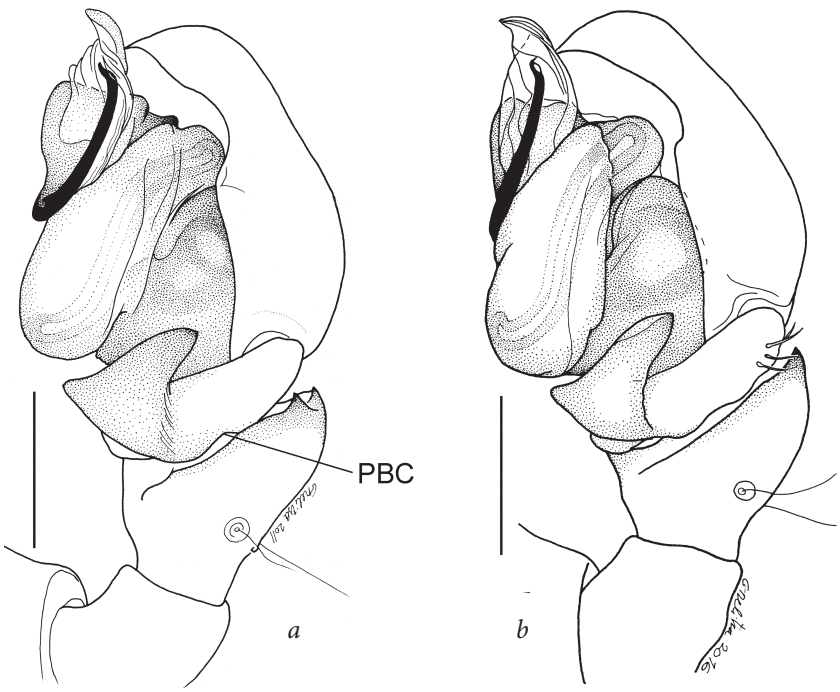

Fig. 2. *Carorita podiliensa* **sp. n.** male palp lateral, specimen from: *a* — NE Ukraine, *b* — SW Ukraine. Scale = 0.1 mm

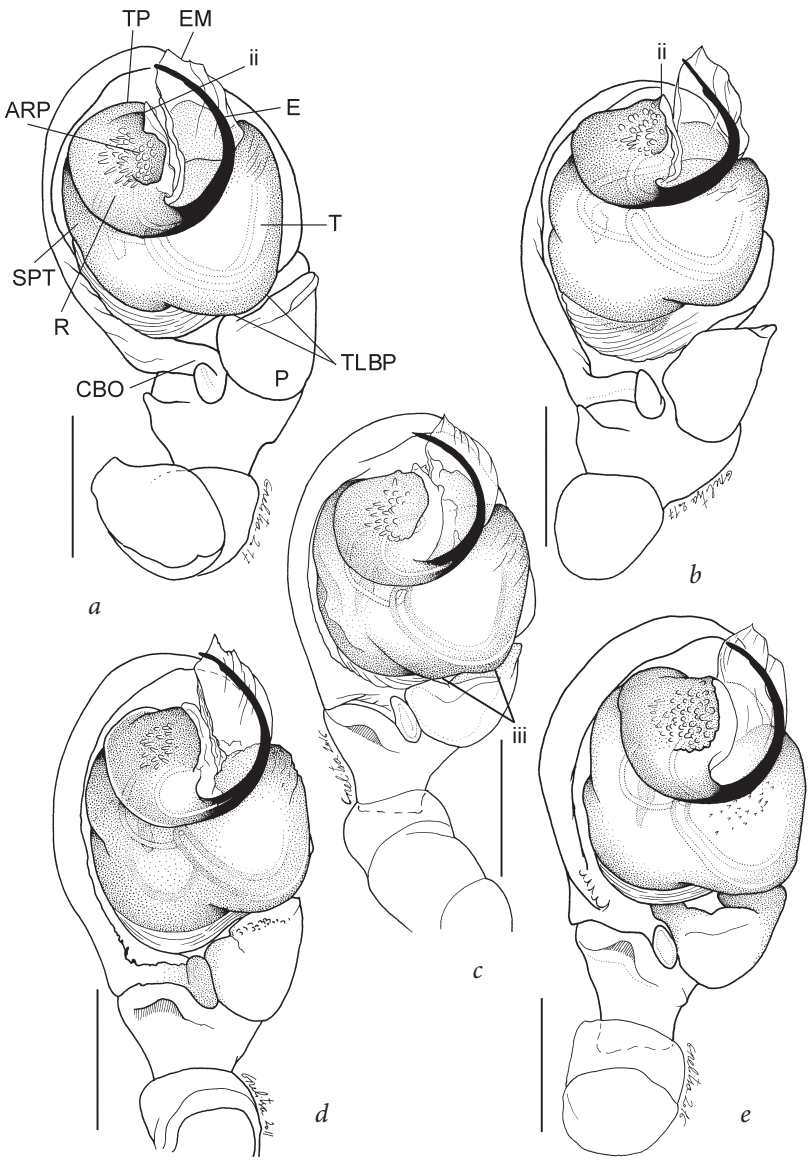

Fig. 3. *Carorita limnaea* male palp ventral–apical, specimen from: *a* — USA (holotype), *c* — Canada, *d* — Finland, *e* — Altai (Russia). *Carorita limnaea* male palp ventral: *b* — USA (holotype). Scale = 0.1 mm

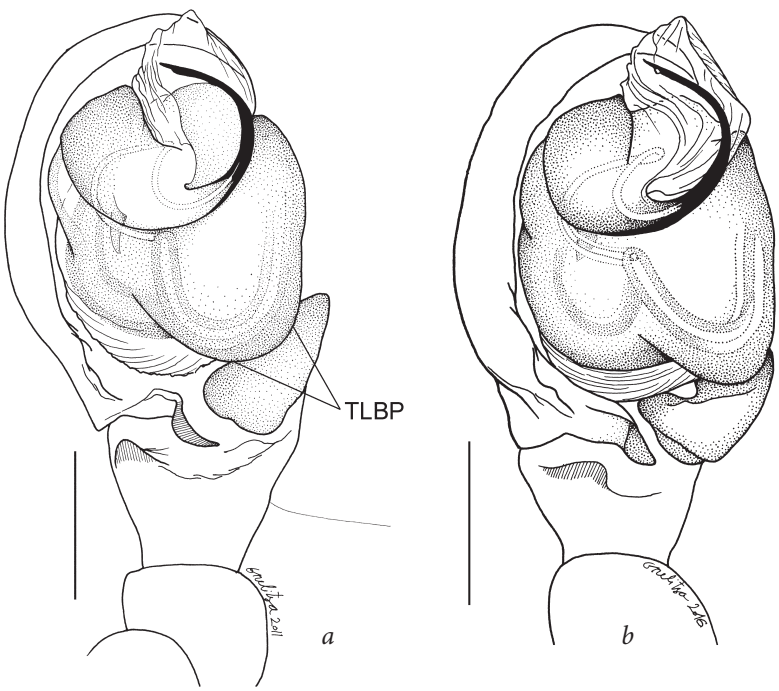

Fig. 4. *Carorita podiliensa* **sp. n.** male palp ventral–apical: *a* — NE Ukraine, *b* — SW Ukraine. Scale = 0.1 mm

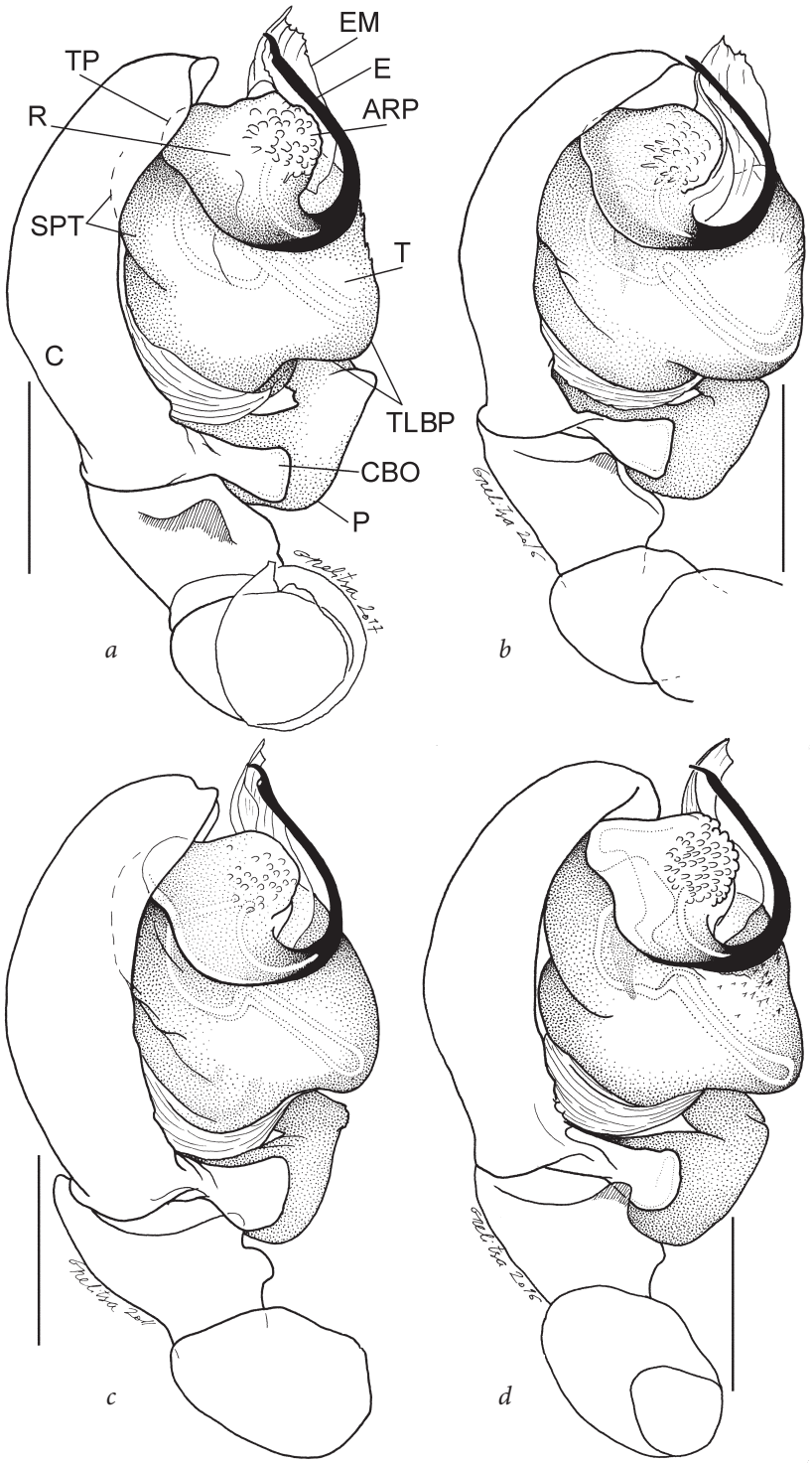

Fig. 5. *Carorita limnaea* male palp mesial: *a* — (holotype), *b* — Canada, *c* — Finland, *d* — Altai. Scale = 0.1 mm

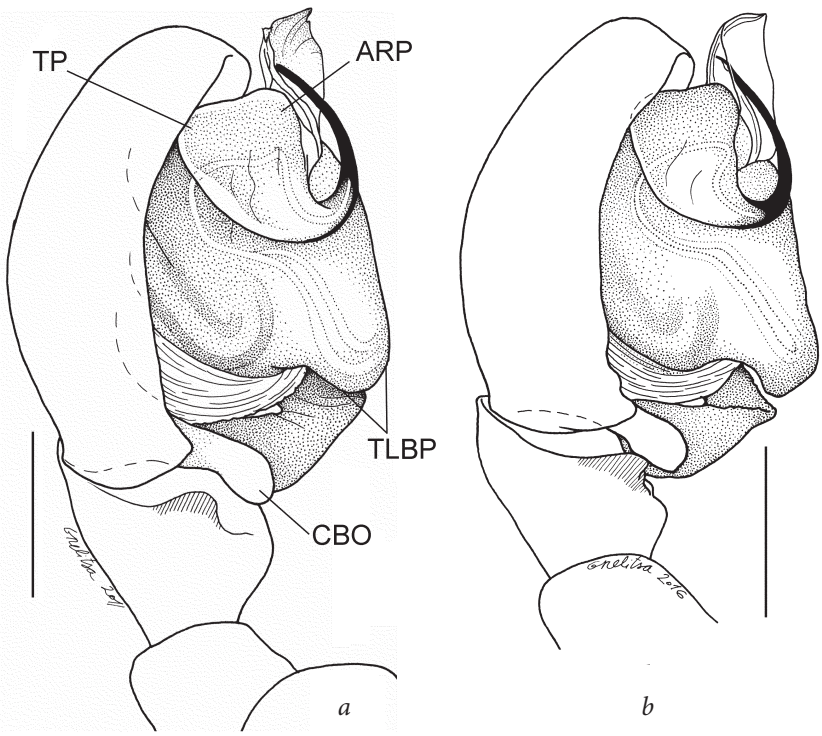

Fig. 6. *Carorita podiliensa* **sp. n.** male palp mesial: *a* — NE Ukraine, *b* — SW Ukraine. Scale = 0.1 mm

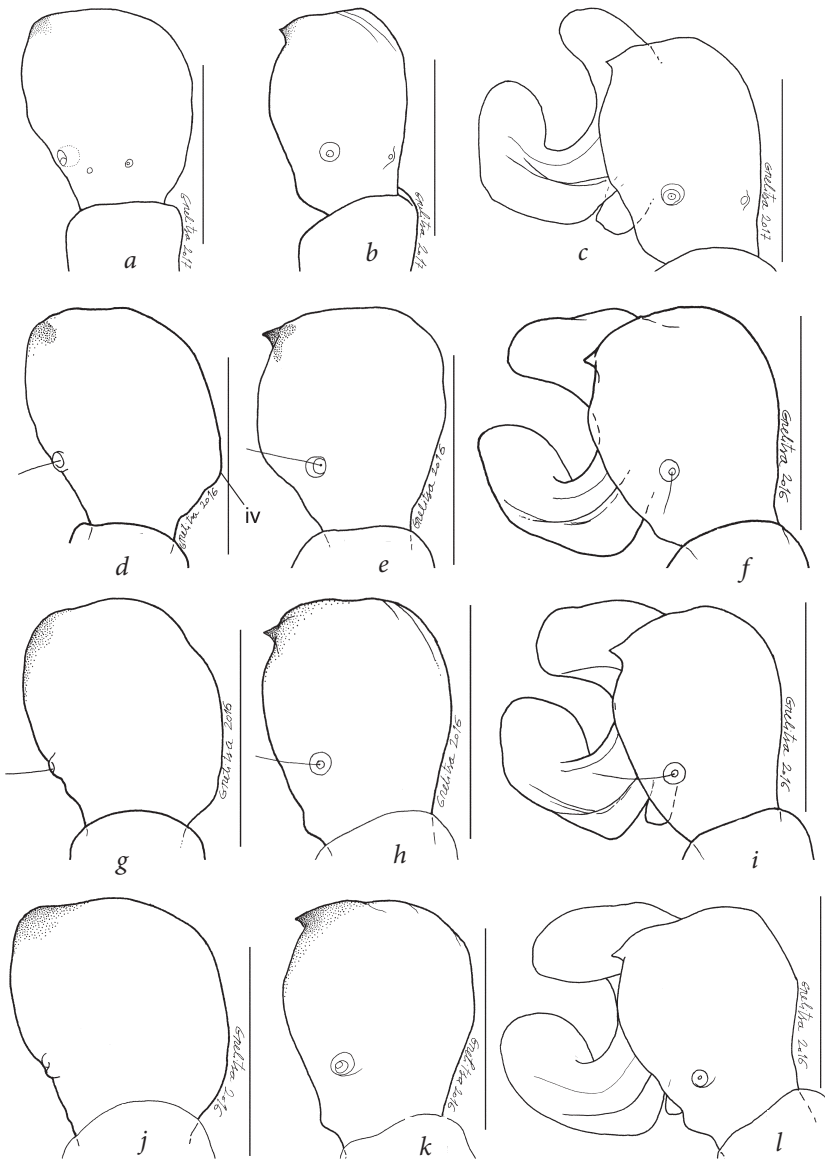

Fig. 7. *Carorita limnaea* male palpal tibia: USA (holotype): *a* — dorsal, *b* — lateral; *c* — tibia + cymbium dorsal–lateral; Canada: *d* — dorsal, *e* — lateral, *f* — tibia + cymbium dorsal–lateral; Finland: *g* — dorsal, *h* — lateral, *i* — tibia + cymbium dorsal–lateral; Altai (Russia): *j* — dorsal, *k* — lateral, *l* —tibia + cymbium dorsal–lateral. Scale = 0.1 mm

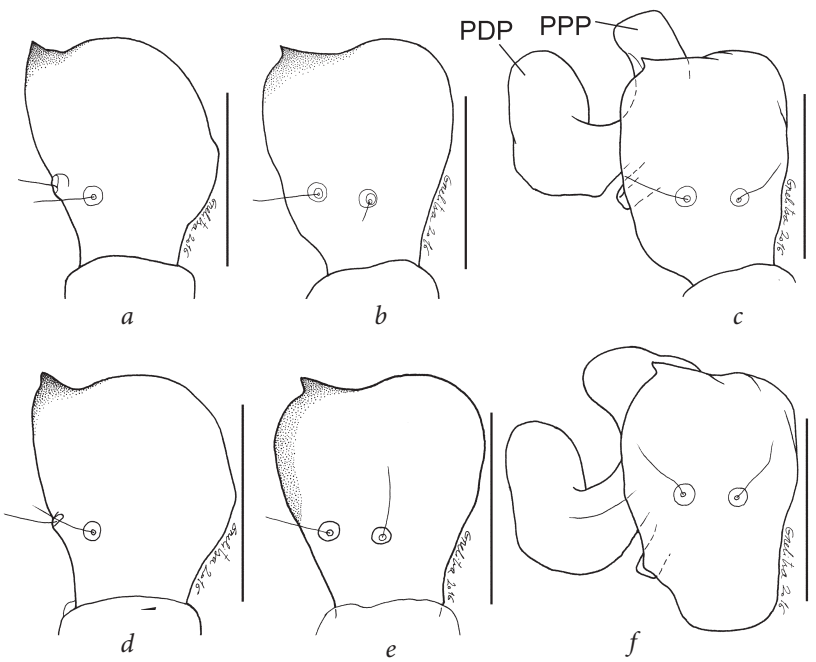

Fig. 8. *Carorita podiliensa* **sp. n.** male palpal tibia: NE Ukraine: *a* — dorsal, *b* — lateral, *c* — tibia + cymbium dorsal–lateral, SW Ukraine: *d* — dorsal, *e* — lateral, *f* — tibia + cymbium dorsal–lateral. Scale = 0.1 mm

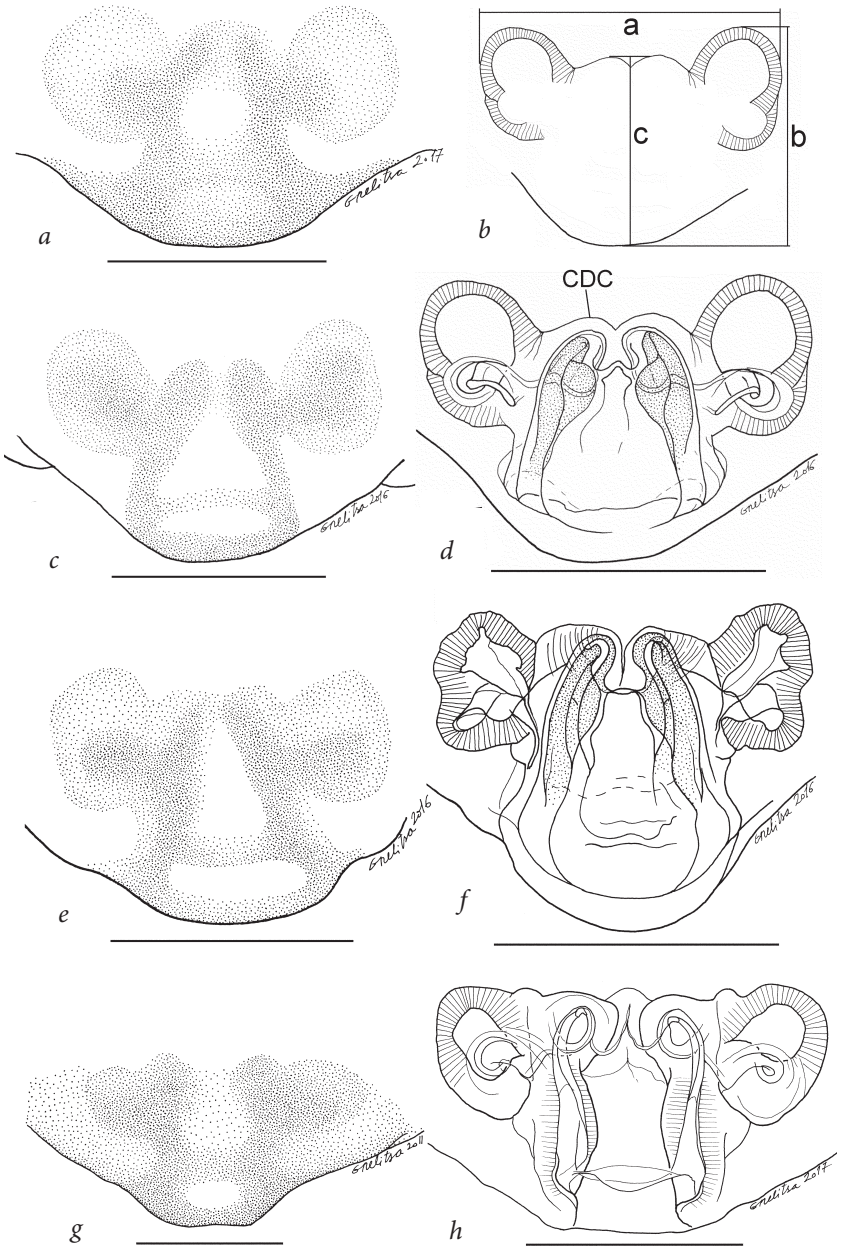

Fig. 9. Epigyne vental: *Carorita limnaea*: *a* — USA (paratype); *c* — Canada, *e* — Finland; *Carorita podiliensa* **sp. n.**: (*g*–*h*) — SW Ukraine. Vulva: *Carorita limnaea*: *b*, *d* — Canada, *f* — Finland; *Carorita podiliensa* **sp. n.**: *h* — SW Ukraine. Scale = 0.1 mm

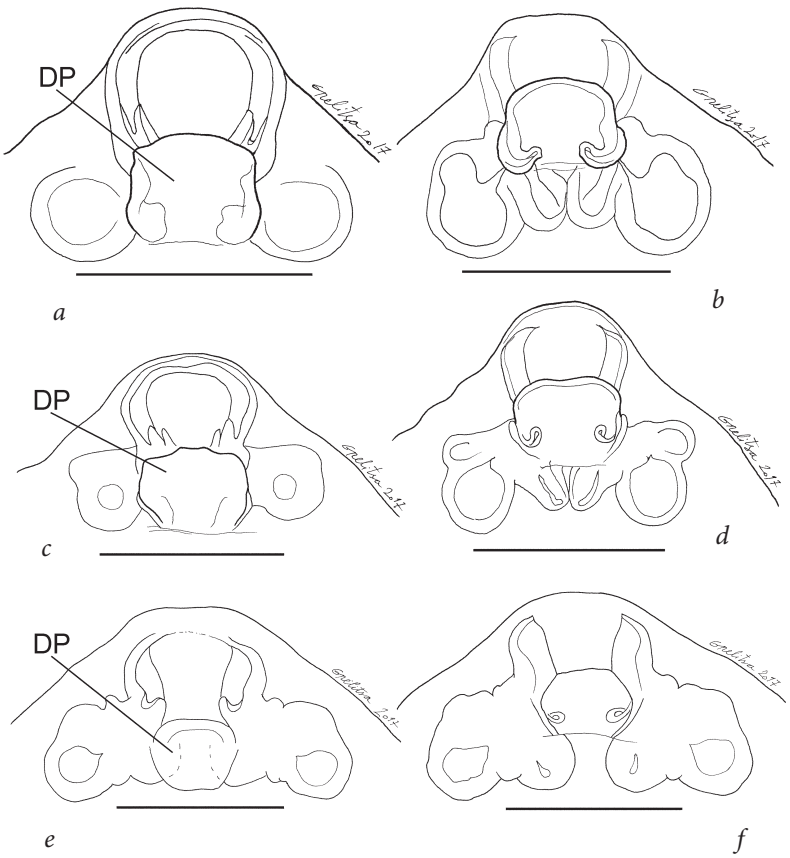

Fig. 10. Epigyne dorsal–caudal: *Carorita limnaea*: *a* — Canada, *c* — Finland; *Carorita podiliensa* **sp. n.**: *e* — SW Ukraine. Epigyne dorsal: *Carorita limnaea*: *b* — Canada, *d* — Finland. *Carorita podiliensa* **sp. n.**: *f* — SE Ukraine. Scale = 0.1 mm

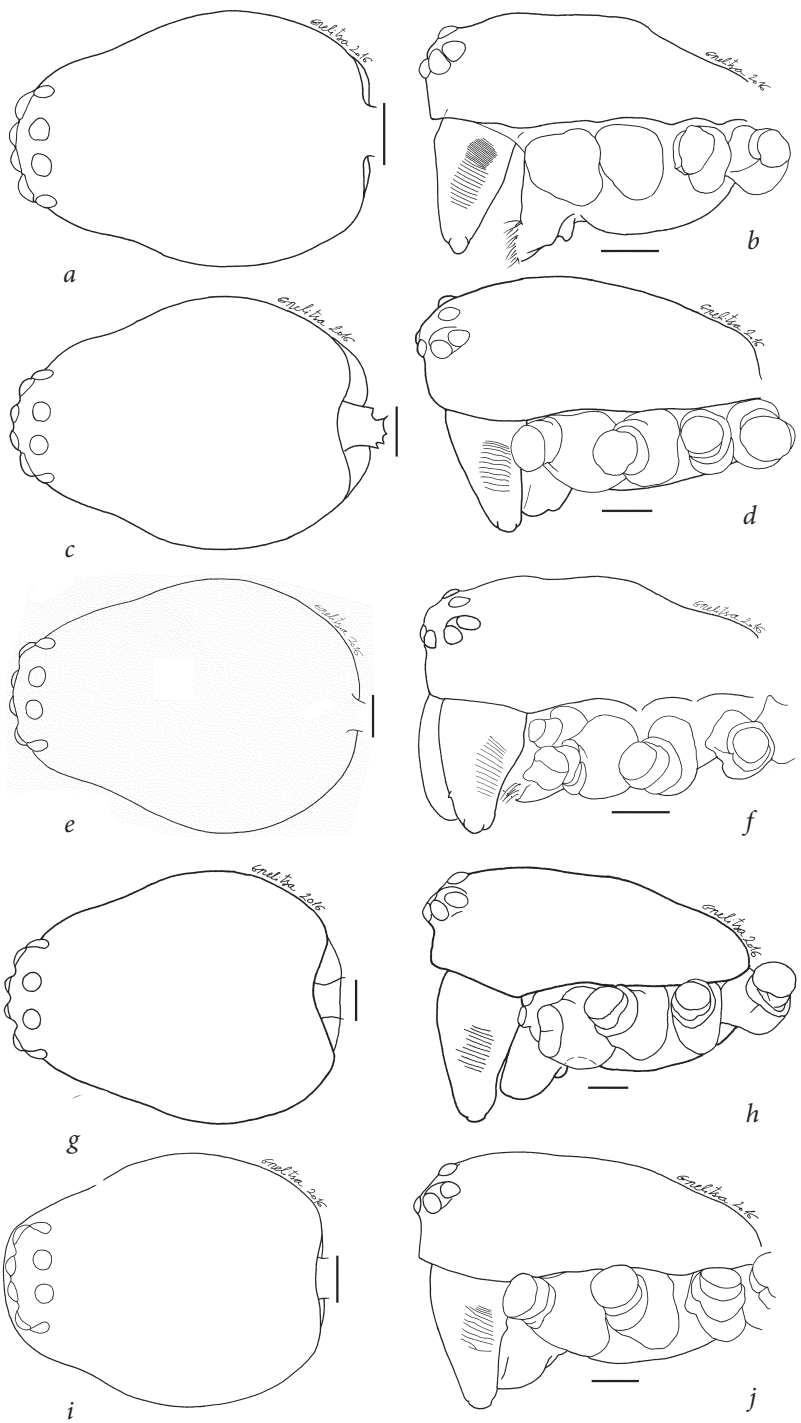

Fig. 11. Male: carapace dorsal: *Carorita limnaea*: *a* — Canada, *c* — Finland, *e* — Altai (Russia); *Carorita podiliensa* **sp. n.**: *g* — NE Ukraine, *i* — SW Ukraine. Carapace lateral: *Carorita limnaea*: *b* — Canada, *d* — Finland, *f* — Altai (Russia); *Carorita podiliensa* **sp. n.**: *h* — NE Ukraine, *j* — SW Ukraine. Scale = 0.1 mm

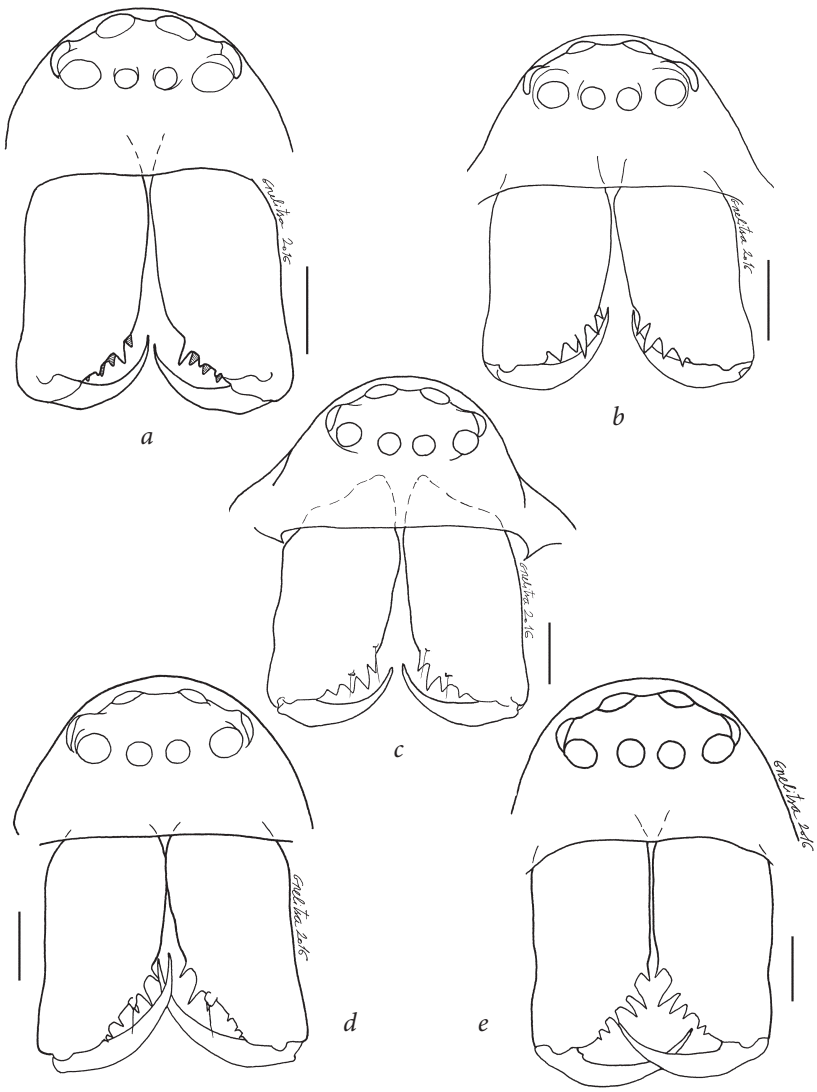

Fig. 12. Male carapace frontal: *Carorita limnaea*: *a* — Canada, *b* — Finland, *c* — Altai (Russia); *Carorita podiliensa* **sp. n.**: *d* — NE Ukraine, *e* — SW Ukraine. Scale = 0.1 mm

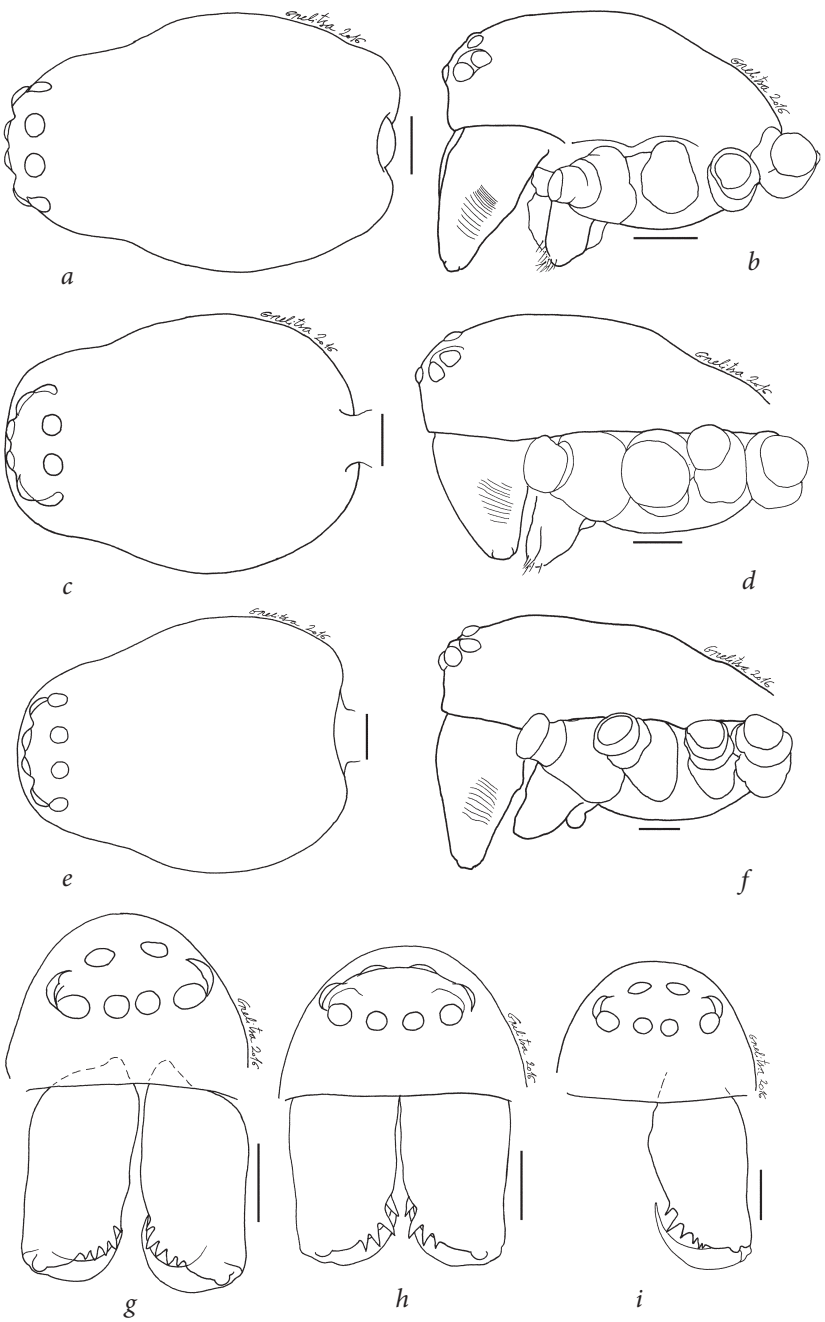

Fig. 13. Female carapace dorsal: *Carorita limnaea*: *a* — Canada, *c* — Finland; *Carorita podiliensa* **sp. n.**: *e* — SE Ukraine. Carapace lateral: *Carorita limnaea*: *b* — Canada, *d* — Finland; *Carorita podiliensa* **sp. n.**: *f* — SE Ukraine. Carapace frontal: *Carorita limnaea*: *g* — Canada, *h* — Finland; *Carorita podiliensa* **sp. n.**: *i* — SE Ukraine

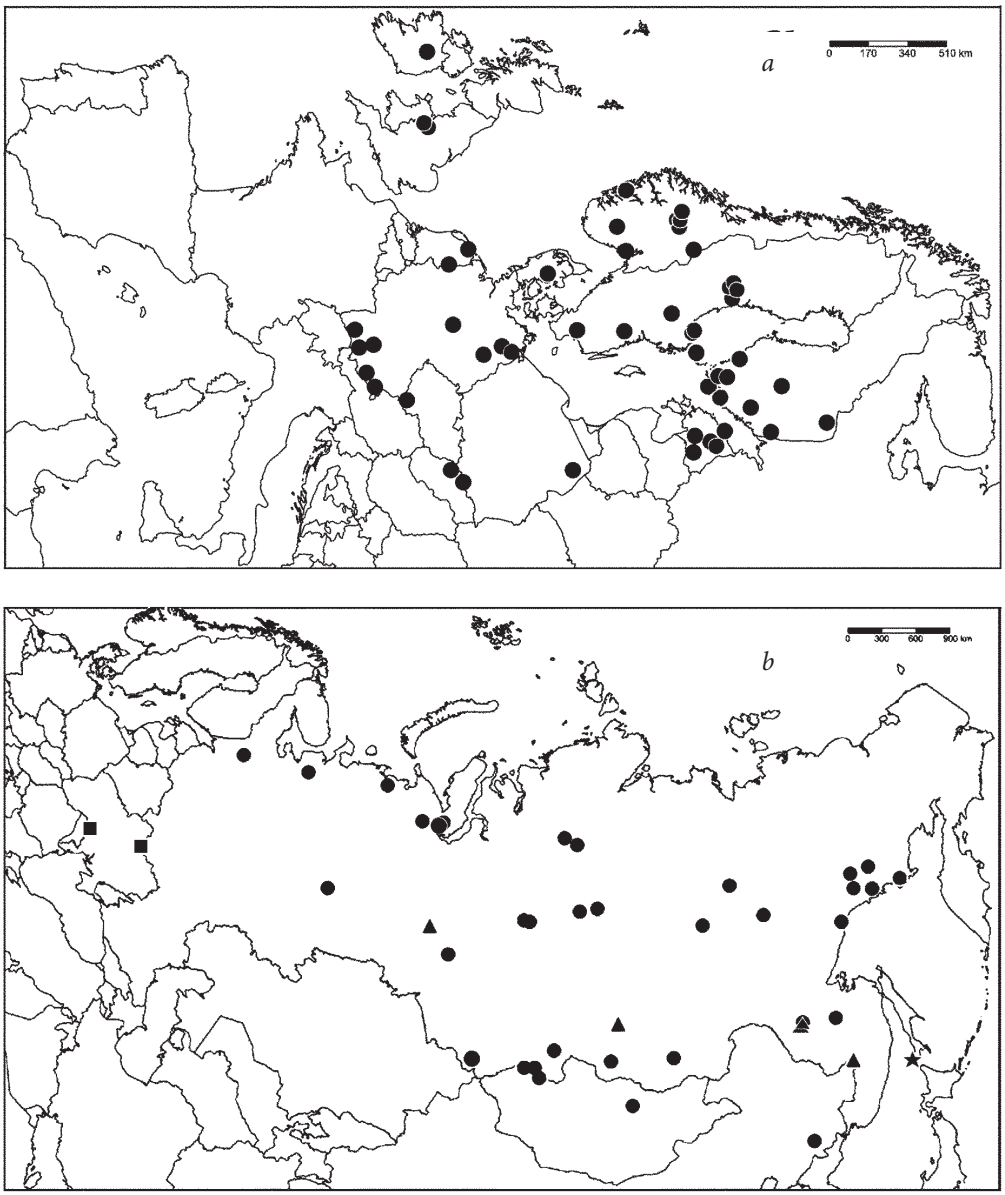

Fig. 14. Distribution of *Carorita* species in the Palaearctic: *C. limnaea* (circle), *C. sibirica* (triangle), *C. podiliensa* **sp. n.** (square), *Carorita* sp. (star): *a* — localities in Europe (except Ukraine and the European part of Russia), *b* — localities in Ukraine, Russia, Mongolia, and China

Table 1. **Variation range of characters of *C. limnaea*, *C. podiliensa* sp. n. and *C. sibirica***

Character	Sex	Comparative variation range of spiders		
		C. limnaea Great Britain, Canada, Finland, Germany, Russia (Altai), USA	*C. podiliensa* sp. n. Ukraine	*C. sibirica* Russia
Body length	Male	–15.0 % +7.6%	+19.0 % +30.0%	+50%
	Female	0% +13.0%	+42.0 %	+56%
Carapace length	Male	–1.5% +7.6%	+25.0% +34.0%	+24%
	Female	–1.5% +4.4% Great Britain, Germany, Russia (Altai) — no data	+36.0 %	+30%
Carapace width	Male	–1.5% +12.0%	+18.0% +34.0%	+20%
	Female	–4.0% +4.0% Great Britain, Russia (Altai) — no data	+37.0%	+29%
Sternum length	Male	0% +14.7% Great Britain, Germany — no data	+36.0% +39.0%	no data
	Female	–16.0% –0% Great Britain, Germany — no data	+29.0%	no data
Sternum width	Male	–8.6% +11% Great Britain, Germany — no data	+23.0% +29.0%	no data
	Female	0% +3.0% Great Britain, Germany, Russia (Altai) — no data	+35.0%	no data
Legs length	Male	–1.8% + 7.0% (I) 0% + 11.5% (II) –1.5% + 9.7% (III) 0% +12.6 % (IV)	+45.0% (I) +39.0% + 52.0% (II) +34.0% + 42.0% (III) +32.0% + 41.5% (IV)	+37% (I) no data (II) no data (III) +33% (IV)
	Female	–6.0 % +6.6% (I) –5.2 % +9.6% (II) –10.0 % +5.8% (III) –7.3 + 10.0 % (IV) Great Britain, Russia (Altai) — no data	+68% (I) +64.0% (II) +54.5% (III) +57.6% (IV)	+65% (I) no data (II) no data (III) +48% (IV)

Table 2. **Features of copulatory organs of *C. limnaea*, *C. podiliensa* sp. n. and *C. sibirica***

No	Male palp	*C. limnaea* USA, Canada, Germany, Finland, Russia (Altai)	*C. podiliensa* sp. n. Ukraine	*C. sibirica* Russia
1	Outgrowth of mesal edge of the cymbium basal part	Straight elongated widened at the end	Slightly bent not widened at the end	No data
2	Middle part of paracymbium (MPP)	strongly protruded backward	not or just a weakly protruded	Strongly protruded backward
3	Anterior process of radix (ARP)	Tuberculated	Smooth	No data
4	Tailpiece of radix (TP)	pronounced rounded, shortened	feeble marked	Feeble marked
5	Tegulum lower back part (TLBP)	wide rounded, not stretched backward	Rather narrow distinctly extended backward	No data
6	Palpal tibia tooth	Invisible (dorsal view), laterally directed (lateral view)	Frontal directed (dorsal view), frontal–lateral directed (lateral view)	Frontal directed (dorsal view), frontal–lateral directed (lateral view)
7	Palpal tibia trichobothrium	One	Two	Two
8	Palpal tibia frontal edge with	No cut	Wide cut	Wide cut
		Vulva		
9	Copulatory duct capsule (CDC) position	Evidently behind frontal line of receptacles	Almost reach the frontal line	Slightly goes forward the frontal line
10	Copulatory ducts	Draw together anteriorly	Parallel	No data

Table 3. ***Carorita limnaea*** **distribution in Eurasia (Russia excluded)**

No	Country	Sites	Records	Coordinates	Basis of Record
1	Great Britain	2	20	53.0455° N, 2.4437° W 52.9242° N, 2.7644° W	Spider and Harvestman Recording Scheme website.
2	Sweden	8	24	56.3000° N, 14.2000° E 58.0000° N, 15.7000° E 60.4000° N, 18.1000° E 60.5000° N, 18.0000° E 62.4000° N, 17.0000° E 62.6000° N, 16.1000° E 62.7000° N, 15.9000°E 62.7000°N, 16.5000° E	Global Biodiversity Information Facility
3	Norway	9	10	59.3000° N, 8.1000° E 59.3000° N, 10.1000° E 60.0000° N, 16.0000° E 60.1000° N, 5.6000° E 61.6000° N, 9.2000° E 61.6000° N, 9.8000° E 61.7000° N, 9.3000° E 61.8000° N, 12.0000° E 61.9000° N, 8.7000° E	Global Biodiversity Information Facility
4	Estonia	5	6	58.1000° N, 26.2000° E 58.5000° N, 25.2000° E 58.9000° N, 26.2000° E 59.0000° N, 26.7000° E 59.6000° N, 26.1000° E	Global Biodiversity Information Facility
5	Czech Republic	1	2	48.8501° N, 13.9169° E	Czech Arachnological Society
6	Denmark	1	3	56.0625° N, 9.6272° E	Danish spiders
7	Finland	12	43	59.9528° N, 22.4357° E 60.1413° N, 23.6561° E 60.1832° N, 19.6417° E 60.7761° N, 22.5089° E 60.9612° N, 25.6318° E 61.1017° N, 28.1858° E 61.5591° N, 21.7651° E 62.4328° N, 25.4825° E 63.1053° N, 30.1865° E	Koponen et al. (2013)
8	Germany	14	17	47.9485° N, 8.7367° E 47.8521° N, 9.8404° E 48.4452° N, 9.9906° E 47.7621° N, 11.4256° E 47.8599° N, 12.4087° E 51.7528° N, 10.6058° E 52.4408° N, 13.1882° E 53.2583° N, 13.1495° E 53.5189° N, 13.7376° E	Nachweiskarten der Spinnentiere Deutschlands (Arachnida, Araneae, Opiliones, Pseudoscorpiones)
9	Ireland	2	2	53.5278° N, 7.4795° W	Helsdingen (1998)
10	Netherlands	3	No data	53.3562° N, 6.2124° E 52.4207° N, 6.7734° E	Tutelaers (2012)
11	Poland	2	3	53.5883° N, 22.8130° E 49.4591° N, 20.0380° E	Kupryjanowicz (1997) Cichocki, Rozwałka (2012)
12	Slovakia	1	1	49.2486° N, 19.0063° E	Svatoň (1998)
13	Mongolia (Ulan Bator)	1	1	48.1166° N, 106.9000° E	Marusik, Logunov (1998)
14	China (Jilin Province)	2	2	42.9267° N, 127.3085° E	Song et al. (1999) Li, Lin (2016)

Table 4. ***Carorita limnaea, C. sibirica*** **and** ***Carorita*** **sp. distribution (Russia)**

No	Country	Sites	Records	Coordinates	Basis of Record
			C. limnaea		
			European Part		
1	Karelia	1	1	61.7289° N, 33.4468° E	Uzenbaev (1987)
2	Russian Plain	2	2	67.8167° N, 56.1333° E	Tanasevitch, Koponen (2006)
3	Pinezhsky Reserve	1	1	64.6497° N, 43.0683° E	Tanasevitch, Nekhaeva (2014)
4	Polar Urals	1	1	66.9167° N, 65.6666° E	Koponen et al. (1997)
5	North Urals (South Jamal)	2	2	67.2510° N, 68.6966° E 67.5630° N, 69.4776° E	Eskov (1986) Tanasevitch (2006)
6	Middle Urals: (Baseghi Reserve)	1	1	58.5718° N, 57.8293° E	Esyunin (1991)
			Siberia		
7	Mirnoye Ecological Station	1	4	62.3616° N, 89.1345° E 62.3349° N, 90.1361° E	Eskov (1986) Marusik et al. (2001) Tanasevitch (2006)
8	Luginetsky Field Station	2	2	58.1613° N, 78.8611° E	Tanasevitch (2005 b)
9	Putorana Mountains	2	2	68.7125° N, 96.7498° E 69.1049° N, 94.0080° E	Eskov (1986) Tanasevitch (2006)
10	Evenkia (Kochechum River)	1	2	63.9675° N, 101.4845° E	Eskov (1986)
11	Evenkia (Taimura River)	1	1	63.6621° N, 98.4262° E	Eskov (1988)
12	Sokhondo reserve	1	1	51.8228° N, 112.4804° E	Eskov (1992) Logunov, Marusik (2004)
13	Tuva (Azas Reserve)	4	4	52.3770° N, 96.5524° E 50.6666° N, 92.9666° E 50.7833° N, 94.3167° E 50.0166° N, 95.0500° E	Eskov (1992) Marusik et al. (2000)
14	Marituy Field Station	1	2	51.7666° N, 104.1833° E	Tanasevitch (2007)
15	Altai	4	no data	50.0437° N, 86.1737° E	Marusik et al. (1996)
16	Yakutia	3	3	62.0828° N, 119.4091° E 64.6666° N, 125.5000° E 61.6955° N, 129.6865° E	Koponen, Marusik (1992) Marusik et al. (1993)
			Continental Far North-East (without Kamchatka)		
17	Northern Cisokhotia	4 no data	4 no data	58.8768°N, 140.8365°E 59.5375° N, 152.1519° E 60.0304° N, 147.5648° E 60.4926° N, 145.9198° E 61.8856° N, 147.4325° E 61.9439° N, 149.6739° E	Marusik et al. (1992) Marusik (2005)

Continied Table 4

No	Country	Sites	Records	Coordinates	Basis of Record
			Continental Southern Far East (Amur–Maritime area)		
18	Bureinsky Reserve	2	2	51.9399° N, 134.5986° E	Tanasevitch, Trilicauscas (2004) Tanasevitch (2006)
19	Norsky Reserve	1	1	52.4968° N, 130.2559° E	Tanasevitch (2005 a)
			C. sibirica		
			Siberia		
1	Yuganskiy Reserve	1	2	59.7500° N, 74.6500° E	Tanasevitch (2006)
			Continental Southern Far East (Amur–Maritime Area)		
2	Norsky Reserve	2	4	52.3333° N, 129.8500° E 52.4980° N, 130.2500° E	Tanasevitch (2006)
3	Lake Baikal	1	1	54.8000° N, 105.1333° E	
4	Bolshekhekhtsyrskiy Reserve	1	1	48.1833° N, 134.6833° E	
			Carorita sp.		
			Far East		
1	Moneron Island	1	3	46.2503° N, 141.2363° E	Marusik, Crawford (2006)