



***Halocosa* gen. n., a new genus of Lycosidae (Araneae) from the Palaeartic, with a redescription of *H. cereipes* (L. Koch, 1878)**

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Abstract

A new wolf-spider genus, *Halocosa* **gen. n.** (Lycosidae Sundevall, 1833), is described. *Evippa apsheronica* Marusik, Guseinov et Koponen, 2003 is synonymized with *Lycosa cereipes* L. Koch, 1878. Three new combinations are proposed: *Halocosa cereipes* (L. Koch, 1878) **comb. n.** (ex *Lycosa*), *H. hatanensis* **comb. n.** (ex *Pardosa*) and *H. jartica* **comb. n.** (ex *Pardosa*). Neotype of *Lycosa cereipes* is designated.

Key words: Aranei, new combination, neotype, saline habitats, steppe zone

Introduction

The genus *Evippa* Simon, 1882 includes 38 valid species, primarily distributed from Africa and the south Palaeartic Region. Twenty species are known from both sexes, four species are known from males only and fourteen species from females only (World Spider Catalog 2019). *Evippa*, as well as *Xerolycosa* Dahl, 1908, belongs to the subfamily Evippinae Zyuzin, 1985. The genus has been reviewed for both the Afrotropical and Palaeartic Regions (Alderweireldt 1991; Marusik *et al.* 2003).

Representatives of the newly erected genus *Halocosa* **gen. n.** were hitherto described in the genera *Evippa* (*E. apsheronica* Marusik, Guseinov et Koponen, 2003 from Azerbaijan), *Lycosa* Sundevall, 1833 (*L. cereipes* L. Koch, 1878 from Turkmenistan, later transferred by Roewer (1955) to *Pirata* Sundevall, 1833) and *Pardosa* C.L. Koch, 1847 (*P. hatanensis* Urita, Tang et Song, 1993 and *P. jartica* Urita, Tang et Song, 1993, both from Inner Mongolia, China). Based on the latero-median origin of the embolus that is situated in a shallow and wide depression, *Halocosa* **gen. n.** is to be assigned to the subfamily Lycosinae Sundevall, 1833 (*sensu* Zyuzin 1985); see below for further details.

The aims of the present paper are (1) to describe a new genus, *Halocosa* **gen. n.**, (2) to illustrate and redescribe *Pirata cereipes* **comb. n.**, (3) to synonymize *E. apsheronica* with *P. cereipes*, and (4) to propose three new taxonomic combinations: *H. cereipes* **comb. n.**, *H. hatanensis* **comb. n.** and *H. jartica* **comb. n.**

Material and methods

The specimens used in this study have been borrowed from or deposited in the following museums (curator names are in parentheses):

ISEA	Institute of Systematic and Ecology of Animals SB RAS (ISEA), Novosibirsk, Russia (G.N. Azarkina)
MHNG	Museum d'histoire naturelle, Genève, Switzerland (P. Schwendinger)
MMUE	The Manchester Museum, University of Manchester, UK (D. V. Logunov)

PCNP	Personal collection of N.Y. Polchaninova (Kharkiv, Ukraine)
PSU	Perm State University, Perm, Russia (S.L. Esyunin)
ZMB	Museum für Naturkunde, Berlin, Germany (J. Dunlop)
ZMMU	Zoological Museum of the Moscow State University, Moscow, Russia (K.G. Mikhailov).

Comparative material. *Evippa brevicymbium* Alredweireldt et Jocqué, 2017: 1♂ 2♀ (MMUE, G7603.10) UAE, Fujairah, Wadi Wurayah National Park, 25°23'23.0"N, 56°18'22.0"E, 100 m a.s.l., 21–30.03.2017 (A.V. Abramov).

Evippa jocquei Alderweireldt, 1991 (Figs 11–14, 19–25): 3♂ 1♀ (MMUE, G7603.9) UAE, Fujairah, c. 6 km N of Manamah, 25°22'59.8"N, 56°01'12.7"E, 30.03.2017 (A.V. Abramov).

Arctosa leopardus (Sundevall, 1833) (Figs 9–10): 1♂ (ISEA, 001.3479) Russia, Mari El Republic, Yal'chik Lake, c. 56°00'N, 48°24'E, 06–07.1988 (V. Matveev).

A total of 75 specimens belonging to four species have been examined. Specimens were studied in 70% ethanol and their coloration refers to that of the preserved specimens. All drawings were made with the aid of a reticular eyepiece attached to an MBS–10 stereomicroscope. Photographs were taken with a Canon EOS 550D camera attached to a Zeiss Stemi 2000 stereomicroscope. The epigynes were detached and macerated in 20% KOH solution overnight. Photographs of living specimens and habitats were taken with a Canon EOS 550D camera. SEM microphotographs were taken with SEM Hitachi TM–1000. Palps and epigynes were dried, and then mounted on an adhesive specimen stub.

The drawings were edited in Adobe Photoshop. The terminology follows Zyuzin (1993), Logunov (2010) and Trilikauskas & Azarkina (2014). Abbreviations used in the text are as follows: AG, accessory glands; ALE, anterior lateral eyes; AME, anterior median eyes; EA, epigynal atrium; Em, embolus; FD, fertilization ducts; R, receptacula; S, septum; Se, synembolus; SP, septal pedicel; Ta, terminal apophysis; TgA, tegular apophysis; Tg, tegulum; ap, apical; d, dorsal; p, prolateral; r, retrolateral; v, ventral; EW, epigynal wings. All measurements are in millimeters. For leg spination the system adopted is that used by Ono (1988). The distributional map was compiled using the online mapping software SimpleMapp (Shorthouse 2010).

Taxonomy

Halocosa gen. n.

Type species. *Lycosa cereipes* L. Koch, 1878

Etymology. The generic name refers to saline habitats of members of the new genus, a derivate of the Latinized Greek word “*halo*—“salt”, and “*-cosa*” a common ending of Lycosidae genera. Gender masculine.

Diagnosis. *Halocosa* gen. n. belongs to the subfamily Lycosinae Sundevall, 1833 (*sensu* Zyuzin 1985). It differs from other genera of this subfamily in the following characters: (1) tegular apophysis triangular, narrowing apically, its apical part is bifurcated and has a groove (it seems that TgA is rolled up—Figs 3, 5); (2) TgA is situated retrolatero-ventrally, ⌋-shaped (as seen from retrolateral view of left palp—Figs 3, 27, 29, 31); (3) synembolus is connected with terminal apophysis by a membrane (Figs 8, 37–39); (4) spermathecae with long, tube-shaped accessory glands widening apically (Fig 49); (5) septum and septal pedicel wide, epigyne apically with a wide epigynal atrium, which is bordered laterally by epigynal “wings” (Fig. 41); and (6) the upper part of the copulatory ducts swollen, forming a loop (Fig. 49).

Description. Medium to large spiders, with body length ranging from 6.40 to 9.80 mm in males and 8.40 to 12.60 mm in females. Sexes are similar in general body shape and coloration. Carapace low, without a transverse depression that is typical of *Evippa* (cf. Figs 13, arrowed and 17 for *Evippa jocquei* Alderweireldt, 1991 and *H. cereipes* respectively). Carapace coloration of *Halocosa* gen. n. is similar to that of some *Arctosa* species (e.g. Lugetti & Tongiorgi 1965, fig. I.1 and Fig. 9): *pars thoracica* medially with a butterfly-shaped patch and a W-shaped yellow patch in distal part of *pars cephalica* (Fig. 15).

Eyes in three rows. The second row as wide as the first one, AME 1.5 times as big as ALE (Fig. 16); in *Evippa* the second eye row is wider than the first one, and AME twice as big as ALE (Fig. 12); in *Arctosa* the width of the first and second eye rows is identical, and AME=ALE (Fig. 10).

Tibia I with 6 (3 pairs) ventral spines, metatarsus I with 5 ventral spines, tarsal claws of legs I–II of usual length, with eight teeth, those of legs III–IV long, with 10 teeth and long pretarsal hairs, tarsus without pseudo-articulation (Fig. 18). In *Evippa*, the number of ventral spines on tibia I—10 (5 pairs) or more, tarsal claws long, with numerous teeth (from 7 in *E. brevicymbium* to 14 in *E. jocquei*), tarsus with pseudo-articulation (Alderweireldt 1991, p. 360, fig. 3, and Fig. 14).

Embolic division with terminal apophysis (Ta) and synembolus (Se) connected by a membrane, embolus long and thin, embolic base is situated latero-medially (Figs 6–8, 37–39); while in *Evippa*, Ta and Se are not connected by a membrane and embolic base is situated meso-apically (Figs 19, 22). Epigynal septum and septal pedicel wide, epigyne apically with a wide epigynal atrium (Fig. 41). The upper part of copulatory ducts swollen, forming a loop, spermathecae with long accessory glands widening apically (Fig. 49).

Composition. *Halocosa* **gen. n.** consists of three species, of which only *H. cereipes* **comb. n.** is known from both sexes. Two *Pardosa* species (*P. hatanensis* and *P. jartica*) described from Inner Mongolia (China) are here transferred to *Halocosa*. Although we failed to obtain and re-examine their type series, based on the original descriptions and illustrations (see Urita, Tang et Song 1993, figs 1–2), both species belong to the newly erected genus *Halocosa* **gen. n.**, based on general view of palp and shape of TgA in males, and shape of epigyne and spermathecae with long, tube-shaped accessory glands in females. The two species, *H. hatanensis* **comb.n.** and *H. jartica* **comb. n.**, remain known only from male and female, respectively. *H. jartica* **comb.n.** is highly likely to represent the female of *H. hatanensis* **comb.n.**, and the name *H. jartica* **comb.n.** could be synonymised with *H. hatanensis* **comb. n.** A formal synonymy is postponed until the type and additional material on both names have been (re)examined (to date we have been unable to borrow the types).

Distribution. Azerbaijan (Marusik *et al.* 2003); South Ukraine (Polchaninova 2001, 2012; Polchaninova & Prokopenko 2005, 2011, 2013, 2019); southern regions of European Russia (Ponomarev 2002, 2010; Ponomarev & Tsvetkov 2004; Ponomarev *et al.* 2008; Kuzmin 2014; Ponomarev & Abdurakhmanov 2014; Ponomarev & Prishutova 2017); steppe zone of south of Western Siberia (Fyodorov & Trilikauskas 2013; Mordkovich *et al.* 2015; Azarkina *et al.* 2018: 84), Kazakhstan (Bragina 2012; Ponomarev & Bragina 2015; Ponomarev *et al.* 2017); Turkmenistan (L. Koch 1878); Tajikistan; China (Inner Mongolia) (Urita, Tang et Song 1993, sub. *Pardosa hatanensis* and *P. jartica*) (Figure 72).

Habitats. The species occurs on (tidal) salt marshes along sea/lake shores, where spiders live in burrows made in sandy soil (Figs 68–71).

Halocosa cereipes (L. Koch, 1878) **comb. n.**

Figures 1–8, 15–18, 26–72

Lycosa cereipes L. Koch, 1878: 68, pl. 2, fig. 6 (D♂, ♂ holotype lost). A ♂ neotype is designated here.

Lycosa cereipes L. Koch, 1878: Polchaninova 2001: 149.

Pirata cereipes (L. Koch, 1878): Roewer 1955: 283; Ponomarev 2002: 98; Polchaninova & Prokopenko 2005: 276; Bragina 2012: 864.

Evippa apsheronica Marusik *et al.*, 2003: 52, figs 1–3 (D♀, not examined, ZMMU); Ponomarev & Tsvetkov 2004: 86, figs 1–2 (D♂, not examined, ZMMU); Ponomarev 2010: 111; Mikhailov 2013: 121; Kuzmin 2014: 56; Ponomarev & Abdurakhmanov 2014: 17; Ponomarev & Bragina 2015: 53; Ponomarev *et al.* 2017: 8; Ponomarev & Prishutova 2017: 64; Polchaninova & Prokopenko 2011: 119; 2019: 14. **Syn. Nov.**

“*Evippa*” *apsheronica*: Ponomarev *et al.* 2008: 171.

Evippa *aff. apsheronica*: Polchaninova 2012: 94; Polchaninova & Prokopenko 2013: 135.

Evippa sp.: Fyodorov & Trilikauskas 2013: 236; Mordkovich *et al.* 2015: 451; Azarkina *et al.* 2018: 84.

Type material. Neotype ♂ (ZMB/Arach49123) Balkan Welaýaty, Krasnovodsk [=Hazar] State Nature Reserve, shore of Caspian Sea, c. 40°00'N, 53°00'E, under stones, 3–7.11.1977 (N. Poplavko). Holotype ♀ and paratypes 3♀ of *Evippa apsheronica* (ZMMU, not examined) Azerbaijan, Apsheron Peninsula, Baku, near Ganly-Gyol Lake, 40°21.46'N, 49°48.36'E, 11.05.1999 (E.F. Guseinov).

Material examined. UKRAINE: 2♂ 1♀ (PCNP) Mykolaiv Region, Pokrovka Village, 46°29'N, 31°41'E, Black Sea Biosphere Reserve, bank of saline lake, 20.05.1987 (N.Y. Polchaninova). AZERBAIJAN: 1♂ 1♀ (ISEA, 001.7984) Baký Rayon, Gobustan [=Qobustan], bank of the Caspian Sea, c. 40°05'N, 49°24'E, 7.06.2010 (E.F. Huseynov). TURKMENISTAN: 2♂ 1♀ (ISEA, 001.8185) Daşoguz Welaýaty, Kaplankyr [=Gaplankyr] Nature Re-

serve, Sarykamysh [=Sarygamyş] depression, c. 41°34'N, 57°25'E, 29.05.1986 (O.S. Soyunov); 3♂ 1♀ (ISEA, 8299), 5♂ 1♀ (ISEA, 001.8301) same locality, flood-plain pitfall traps, 29.05.1986 (O.S. Soyunov); 1♀ (ISEA, 001.8300) same, 1.10.1985 (O.S. Soyunov); 1♂ (ISEA, 001.8186) same locality, spring 1987 (O.S. Soyunov); 5♂ 7♀ (ISEA, 001.8187) Lebap Province, the vicinity of Repetek Station, c. 38°33'N, 63°10'E, 22–23.04.1993 (A.A. Zyuzin); 1♂ 1♀ (ISEA, 001.8188) Mary Welaýaty, Badhyz State Nature Reserve, Er-Oylan-Duz [=Yeroilan-Duz] depression, c. 35°39'N, 61°47'E, 28.05.1977 (V.Ya. Fet); 1♂ (ISEA, 001.8189) same locality, 7.06.1977 (V.Ya. Fet). TAJIKISTAN: 1♀ (ISEA, 001.8302) Xatlon Viloyati, Nohiya-I Danghara, nr Sebiston, c. 38°14'N, 69°16'E, 4.05.1991 (S.V. Ovchinnikov). KAZAKHSTAN: 1♂ (ISEA, 001.8303) Almaty Region, Balkhash District, nr Bakanas, c. 44°48'N, 76°15'E, 11–13.05.1986 (A.A. Zyuzin). RUSSIA: 1♂ (ISEA, 001.7979), 3♀ (ISEA, 001.7983) Russia, Novosibirsk Area, Karasuk District, shore of Bol'shoe Solyonoe Lake, 53°43'N, 77°43'E, pitfall traps, 8–11.05.2013 (G.N. Azarkina); 1♀ (MHNG) same locality, hand collecting, 8.05.2013 (G.N. Azarkina); 1♂ (ISEA, 001.7982) same locality, hand collecting, 27.06.2014 (G.N. Azarkina); 7♂ 1♀ (ISEA, 001.7980, 001.7981), 3♂ 1♀ (PSU, 7668), 4♂ 1♀ (MMUE, G7599.1), 4♂ 1♀ (ZMMU, Ta-8012), 1♂ (MHNG), same area, shore of Maloe Solyonoe Lake, pitfall traps, 07–08.2011 (I.V. Fyodorov).

Remarks. The search for the holotype of *L. cereipes* in museums of Germany and Austria failed. It is very likely that the material collected by O. Schneider from the eastern shore of Caspian Sea used to be deposited in Museum für Tierkunde in Dresden, Germany (Martens 1876). This museum was destroyed during the bombardment on October 7th, 1944 (Reichert 1955), and therefore all the type material kept there before 1945 are to be considered lost (Muster 2003). We could recognize the species based on the original illustration of the male palp (Koch 1878: fig. 6) and on specimens collected near the type-locality in Turkmenistan. In order to stabilize the nomenclature of *Lycosa cereipes*, we have designated a male neotype collected from the type locality, Krasnovodsk [=Turkmenbashi] (Turkmenistan).

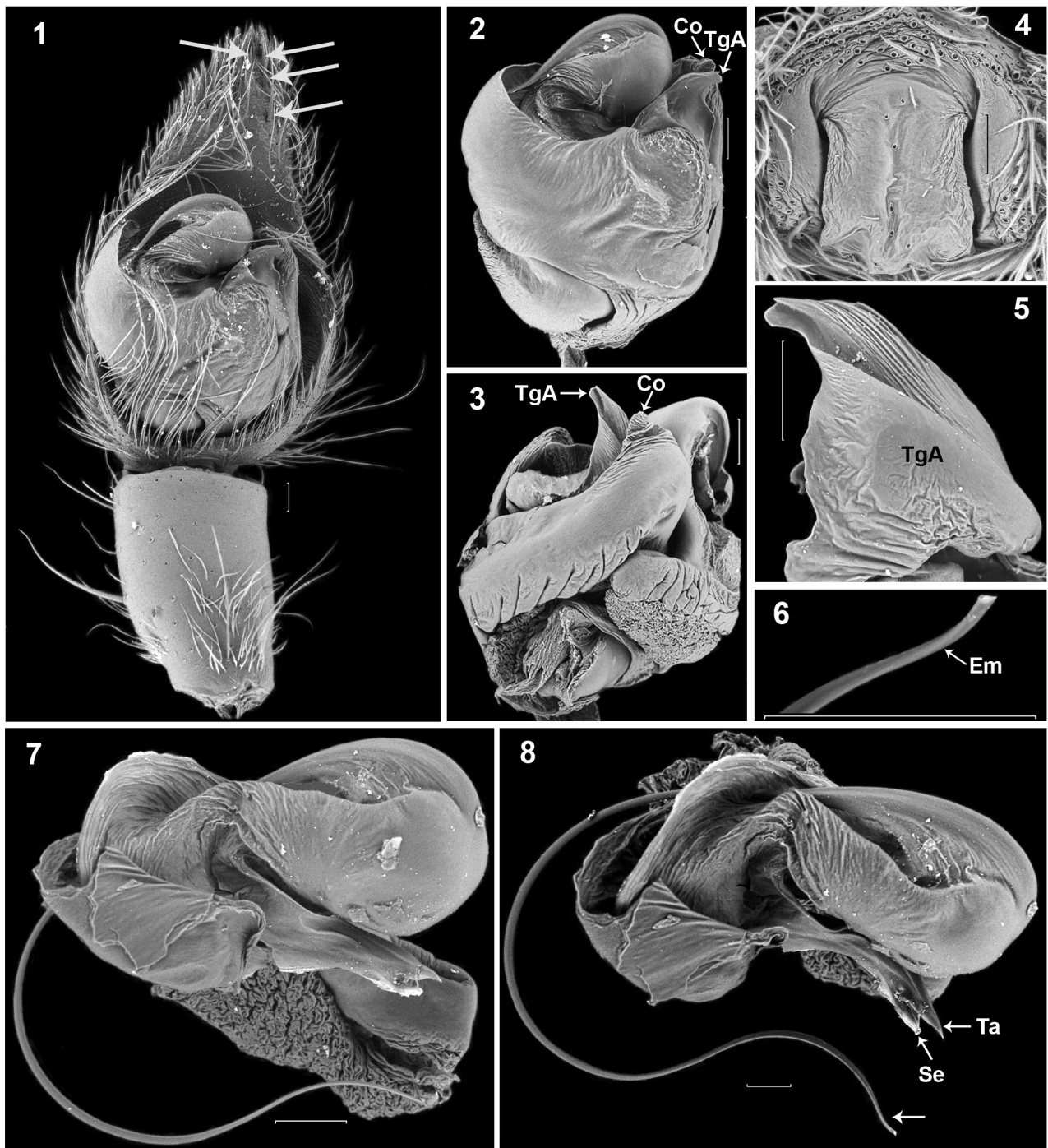
According to Ponomarev & Tsvetkov (2004: 87), *E. apsheronica* was mistakenly placed in the genus *Evippa*. Ponomarev *et al.* (2008) also argued that *Pirata cereipes* (L. Koch, 1878) from Turkmenistan could be a senior synonym of *E. apsheronica*. We have re-examined the available specimens of *E. apsheronica* from Ukraine and Azerbaijan and *P. cereipes* from Turkmenistan, Tajikistan, Kazakhstan, and *Evippa sp.* from the southern steppe zone of West Siberia, including those from the type locality (Turkmenbashi). The material studied has shown a strong variation of the copulatory organs in both sexes, both within and between populations (cf. Figs 32–33, 35–36, 41–46, 50–55). Morphologically, *P. cereipes* is identical to *E. apsheronica*, and hence both names are synonymized herein. *Lycosa cereipes* is also designated as the type species of a newly erected genus *Halocosa gen. n.*

Diagnosis. See generic diagnosis.

Description. *Male* (ISEA, bigger 001.8189, ISEA, 001.7979 smallest). Total length 6.40–9.80. Carapace 3.30–4.90 long, 2.90–3.80 wide. Opisthosoma 3.60–4.90 long, 2.70–2.90 wide. Eye diameter and interdistances: AME—0.25–0.30, ALE—0.15–0.20, PME—0.35–0.45, PLE—0.35–0.45; AME–AME—0.10–0.12, AME–ALE—0.05, PME–PME—0.25–0.30, PME–PLE—0.30–0.35. Clypeus height 0.12–0.15. Carapace brownish yellow, laterally with small yellow patches between coxae, thoracic part medially with a butterfly-shaped patch and a W-shaped yellow patch behind the ocular area (Figs 15, 62, 64, 66). Sternum grayish yellow. Labium brownish yellow, endites yellow, pale apically. Chelicerae brownish yellow. Opisthosoma ventrally yellow, dorsally brown, with scattered yellow patches. Anterior spinnerets brownish, posterior yellow. Book-lung cover yellow, genital area brownish. All legs yellow, with brown semi-rings on prolateral, dorsal and retrolateral sides. Pedipalps yellow, dorsally brown, cymbium brownish yellow. Palps as in Figs 1–8, 26–40; cymbium apically with a series of strong macrosetae (Fig. 1, arrowed); cymbium with long adpressed white setae, apically with short brownish setae; bulb slightly longer than wide (Figs 26, 29, 30, 32–36); tegular apophysis triangular, narrowing apically, its apical part bifurcated and with a groove (Figs 3, 5), the apophysis is situated retrolatero-ventrally and D-shaped (as seen from retrolateral view—Figs 3, 27, 29, 31); embolic division with a terminal apophysis that is connected with the synembolus by a membrane; embolus long and thin, its base is situated latero-medially (Figs 6–8, 37–39).

Length of male leg segments (ISEA, 001.8187).

	femur	patella	tibia	metatarsus	tarsus	Total
I	3.30	1.55	2.70	2.95	2.00	12.50
II	3.10	1.45	2.45	2.75	1.90	11.65
III	3.10	1.35	2.35	3.10	1.75	11.65
IV	4.10	1.50	3.25	4.85	2.30	16.00

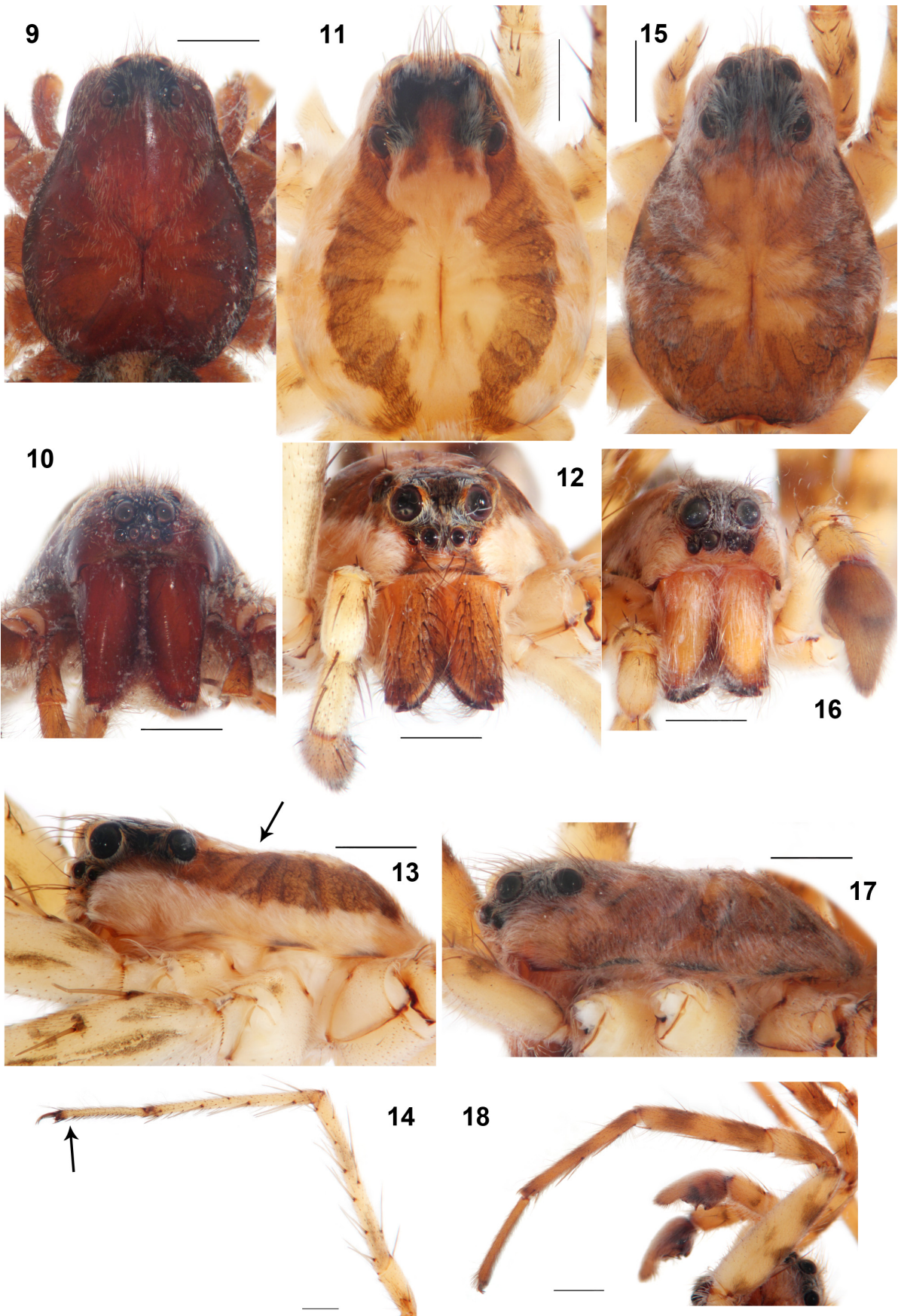


FIGURES 1–8. *Halocosa cereipes* **comb. n.** 1. male left palp, ventral view (ISEA, 001.7980); 2. bulb, ventral view; 3. ditto, retrolateral view; 4. epigyne, ventral view (ISEA, 001.7980); 5. tegular apophysis, retrolateral view; 6. Apex of embolus, ventral view; 7. embolic division, ventral view; 8. ditto, ventro-apical view. Scale bars: 0.1 mm.

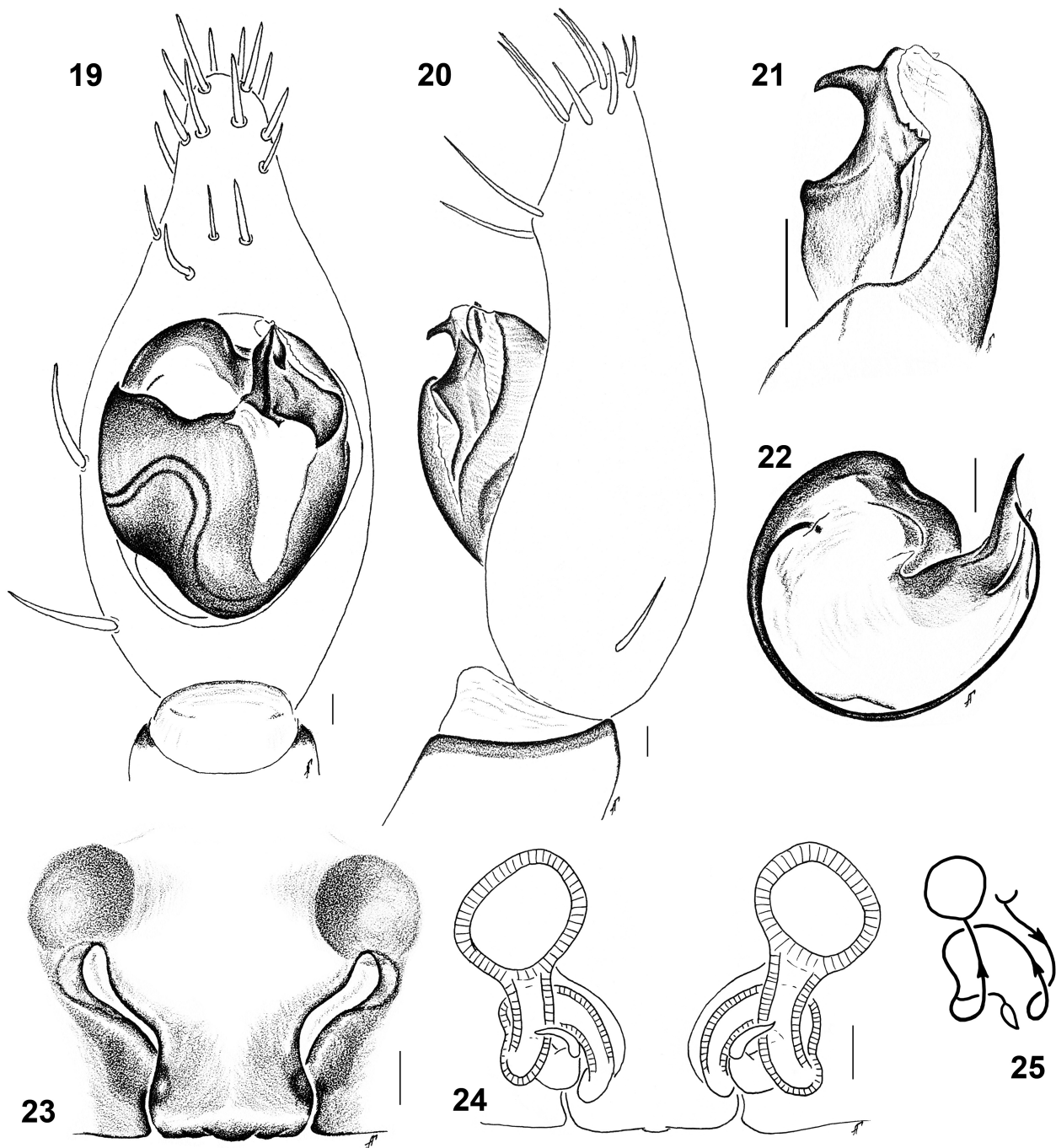
Male leg spination (ISEA, 001.8187).

	femur	patella	tibia	metatarsus
I	d1-1-1, p0-0-2 r1-0-1	d1-1ap, p1	d, p1-1, v2-2-0-2ap	p0-1-0-2ap, r0-0-1ap, v2-2-0-1ap
II	d1-1-1, p&r1-0-1	d1-1ap, p1	d, p1-1, v1-1-0-2ap	p1-1-0-2ap, r0-0-2ap, v2-2-0-1ap
III	d1-1-1, p&r1-0-1	d1-1ap, p&r1	d, p&r1-1, v2-1-0-2ap or 2-2-0-2ap*	d1-1, p&r1-1-2ap, v2-2-0-1ap
IV	d1-1-1, p1-0-1, r0-0-1	d1-1ap, p&r1	d, p&r1-1, v2-2-0-2ap	d1-1-0, p&r1-1-0-2ap, v1-2-0-2-1ap

(*) Differences in the spination (in the right and left tibiae) was found.

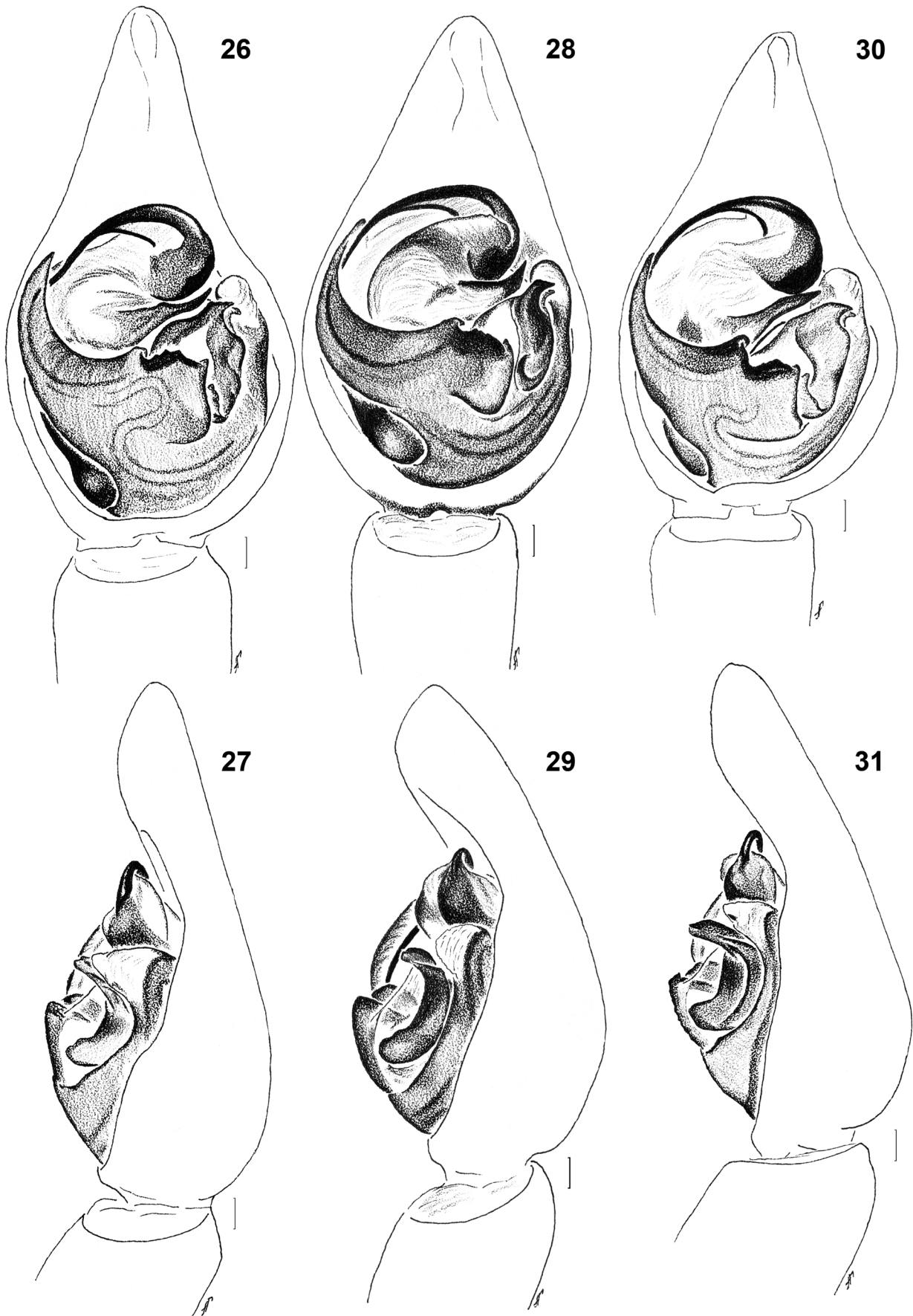


FIGURES 9–18. *Arctosa leopardus* (9–10), *Evippa jocquei* (11–14) and *Halocosa cereipes* **comb. n.** (15–18) 9, 11, 15 male carapace, dorsal view; 10, 12, 16 male “face”; 13, 17 male carapace, lateral view; 14, 18 male first leg, retrolateral view. Scale bars: 1 mm.

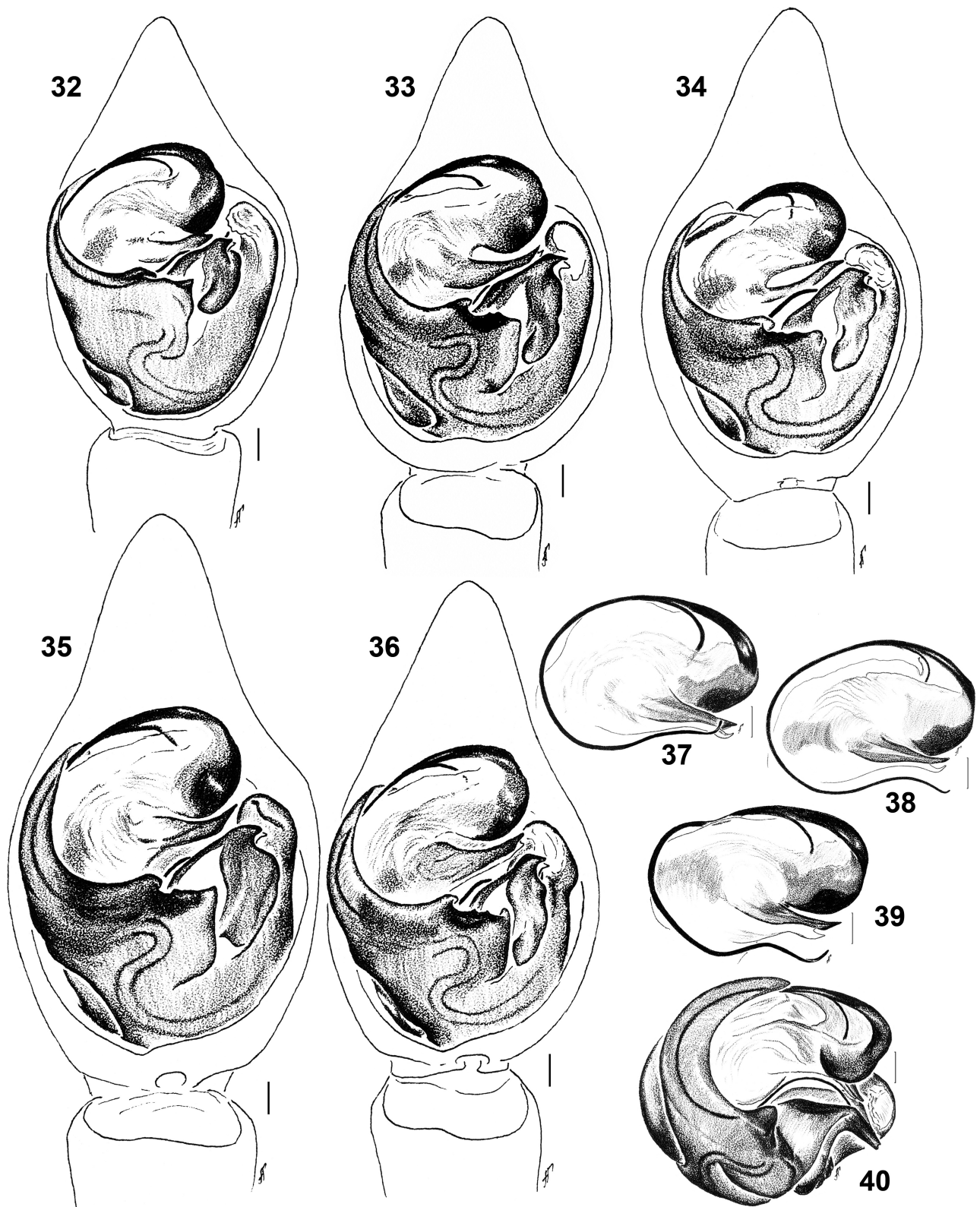


FIGURES 19–25. *Evippa jocquei* 19. male left palp, ventral view; 20. ditto, retrolateral view; 21. tegular apophysis, retrolateral view; 22. terminal part with embolus, ventral view; 23. epigyne, ventral view; 24. vulva, dorsal view; 25. scheme of insemination duct. Scale bars: 0.1 mm.

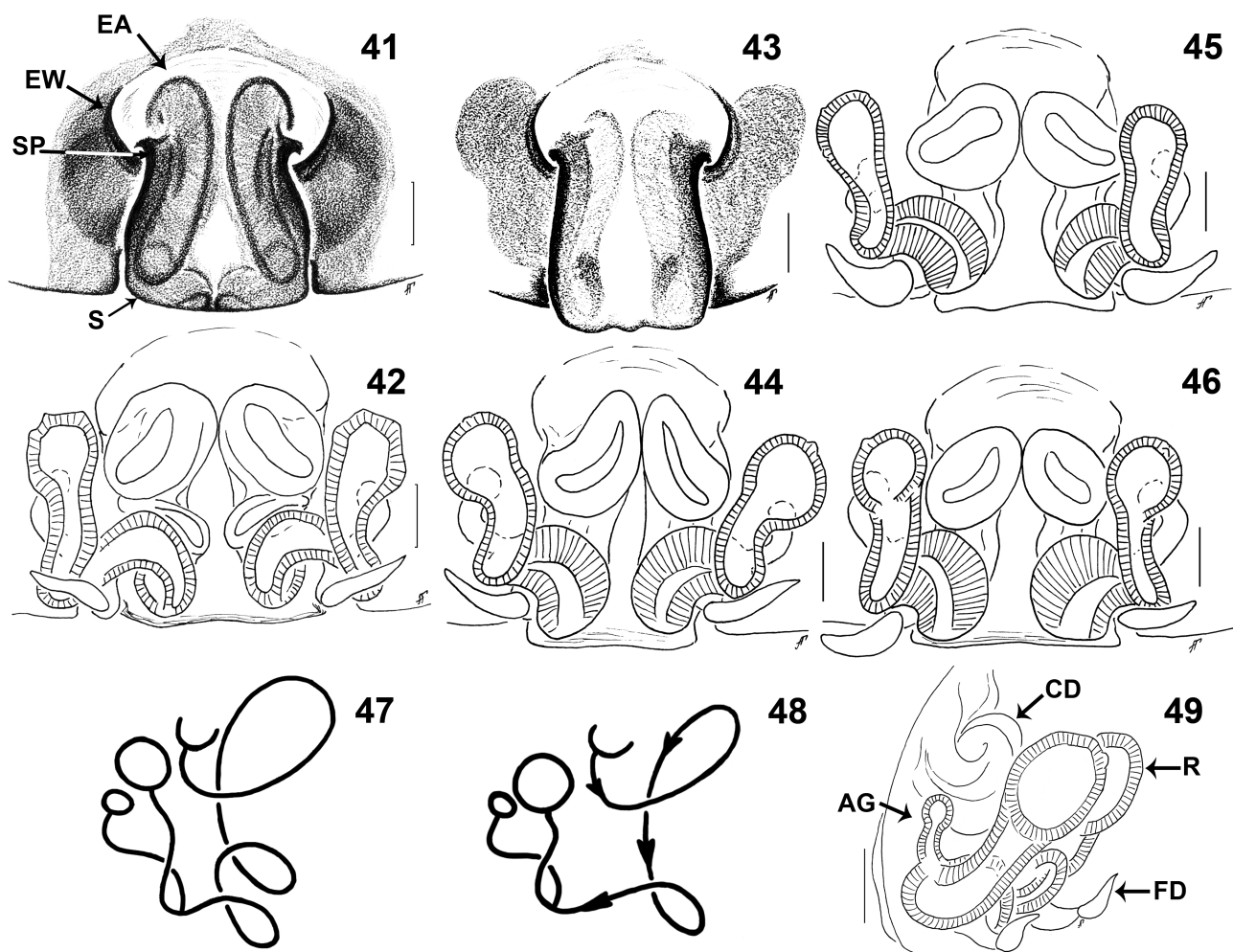
Female (ISEA, bigger 001.8189, ISEA, 001.8187 smallest). Total length 9.20–12.60. Carapace 4.40–5.10 long, 3.15–4.80 wide. Opisthosoma 4.80–7.50 long. Eye diameter and interdistances: AME—0.20–0.30, ALE—0.15–0.25, PME—0.35–0.40, PLE—0.35–0.40; AME–AME—0.12, AME–ALE—0.05, PME–PME—0.30–0.40, PME–PLE—0.35–0.40. Clypeus height 0.10–0.12. Coloration as in the male (Figs 63, 65, 67). Epigyne, dorsal and ventral view as in Figs 41–61; epigynal septum and septal pedicel wide, epigyne apically with a wide epigynal atrium (Fig. 41); the upper part of copulatory ducts swollen, forming a loop; spermathecae with long accessory glands widening apically (Fig. 49).



FIGURES 26–31. *Halocosa cereipes* **comb. n.** 26, 28, 30. male left palp, ventral view (26; 27, 29, 31. ditto, retrolateral view. 26–27 ISEA, 001.7984; 28–29 neotype ZMB/Arach49123; 30–31 ISEA, 001.7979. Scale bars: 0.1 mm.



FIGURES 32–40. *Halocosa cereipes* **comb. n.** 32–36. male left palp, ventral view (32–33 ISEA 001.8186 and ISEA 001.8185, 34 ISEA 001.8303, 34–35 ISEA 001.8188 and ISEA 001.8189); 37–39. terminal part with embolus, ventral view (37 neotype ZMB/Arach49123, 38 ISEA, 001.8187, 39 ISEA, 001.7984); 40. bulbus, apical view (ISEA, 001.7979). Scale bars: 0.1 mm.



FIGURES 41–49. *Halocosa cereipes* **comb. n.** 41, 43. epigyne, ventral view (ISEA, 001.7983 and PSU, 7668); 42, 44–46. vulva, dorsal view (42, 45–46 ISEA, 001.7983, 44 PSU, 7668); 47–48. scheme of insemination duct; 49. vulva, lateral view (ISEA, 001.7980). Scale bars: 0.1 mm.

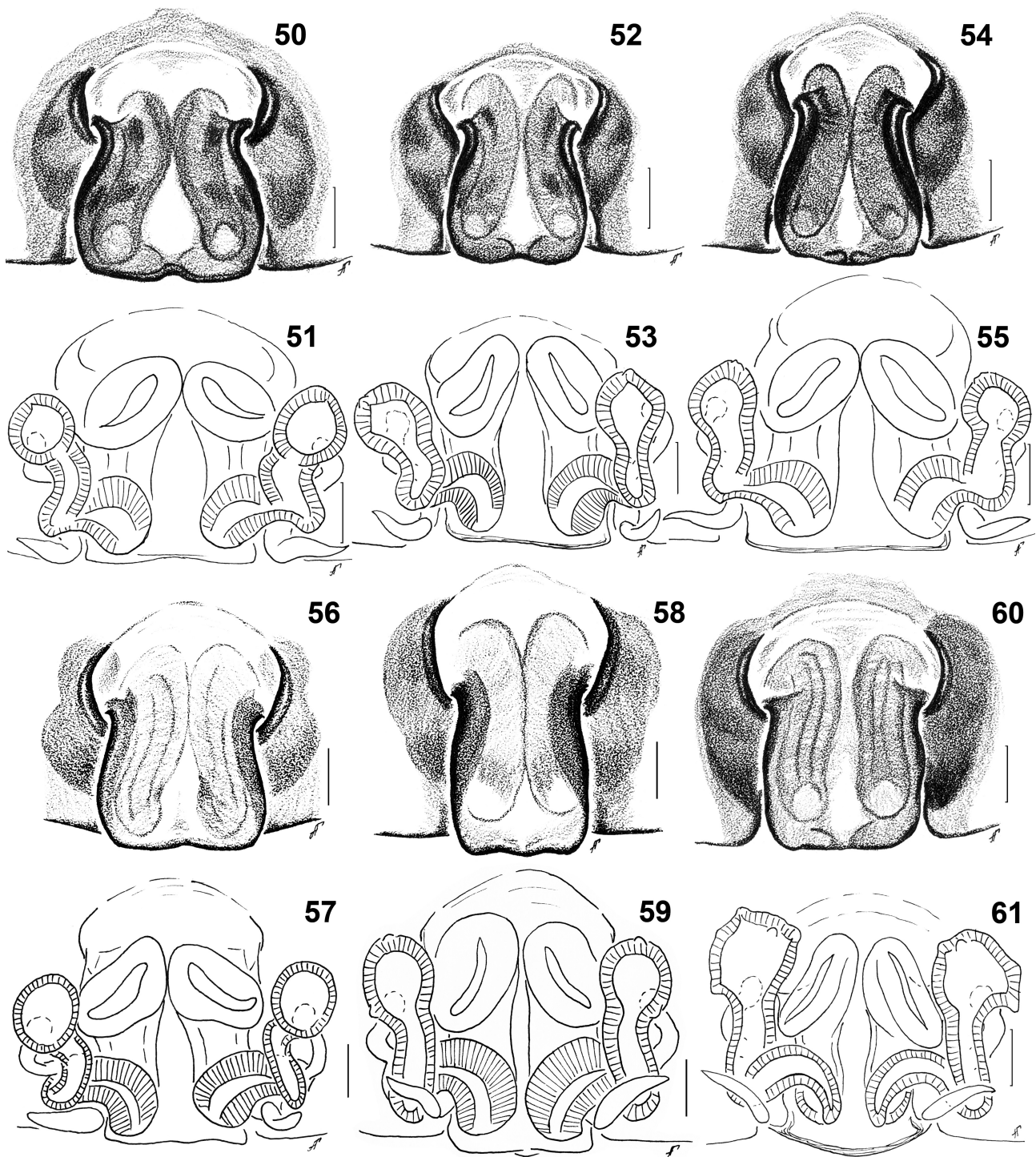
Length of female leg segments (ISEA, 001.8187).

	femur	patella	tibia	metatarsus	tarsus	Total
I	3.30	1.50	2.60	2.60	1.90	11.90
II	3.20	1.50	2.30	2.50	1.75	11.25
III	3.20	1.50	2.25	3.20	1.90	12.05
IV	4.25	1.70	3.40	5.10	2.20	16.65

Female leg spination (ISEA, 001.8187).

	femur	patella	tibia	metatarsus
I	d1–1–1, p0–0–2	d1–1ap, p1	d, p1–1, v2–2–0–2ap	p0–1–0–2ap, r0–0–1ap, v2–2–0–1ap
II	d1–1–1, p&r1–0–1	d1–1ap, p1	d, p1–1, v1–1–0–2ap	p1–1–0–2ap, r0–0–2ap, v2–2–0–1ap
III	d1–1–1, p&r1–0–1	d1–1ap, p&r1	d, p&r1–1, v2–1–0–2ap	d1–1, p&r1–1–0–2ap, v2–2–0–1ap
IV	d1–1–1, p1–0–1, r0–0–1	d1–1ap, p&r1	d, p&r1–1, v1–2–0–2–1ap	d1–1–0, p&r1–1–0–2ap, v1–2–0–2–1ap

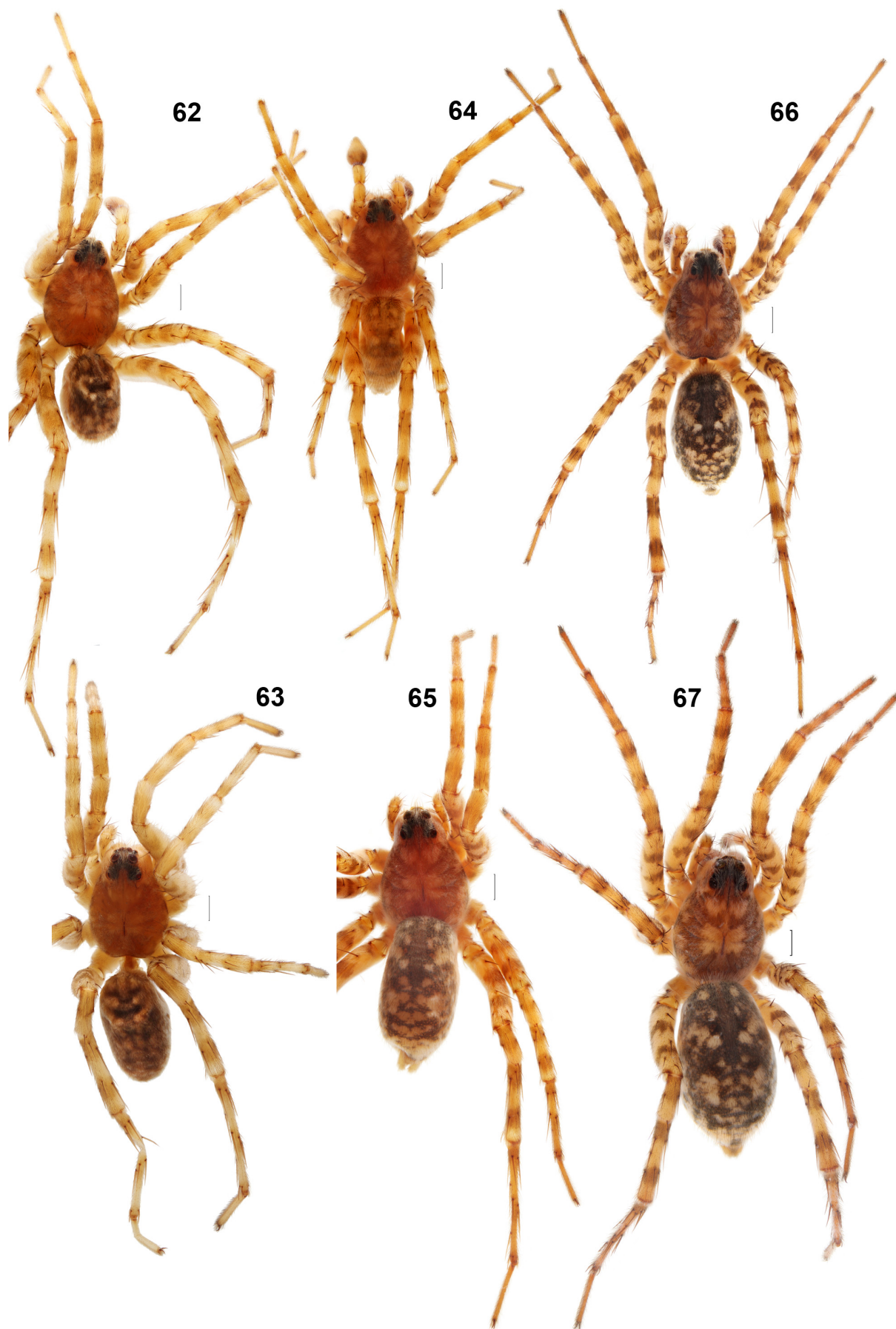
Distribution. From Ukraine to the steppe zone of south of Western Siberia, southward to south Turkmenistan (Fig. 72).



FIGURES 50–61. *Halocosa cereipes* **comb. n.** 50, 52, 54, 56, 58, 60. epigyne, ventral view; 51, 53, 55, 57, 59, 61. vulva, dorsal view. 50–55 ISEA, 001.8187, 56–57 ISEA, 001.8302, 58–59 ISEA, 001.8300, 60–61 ISEA, 001.7984. Scale bars: 0.1 mm.

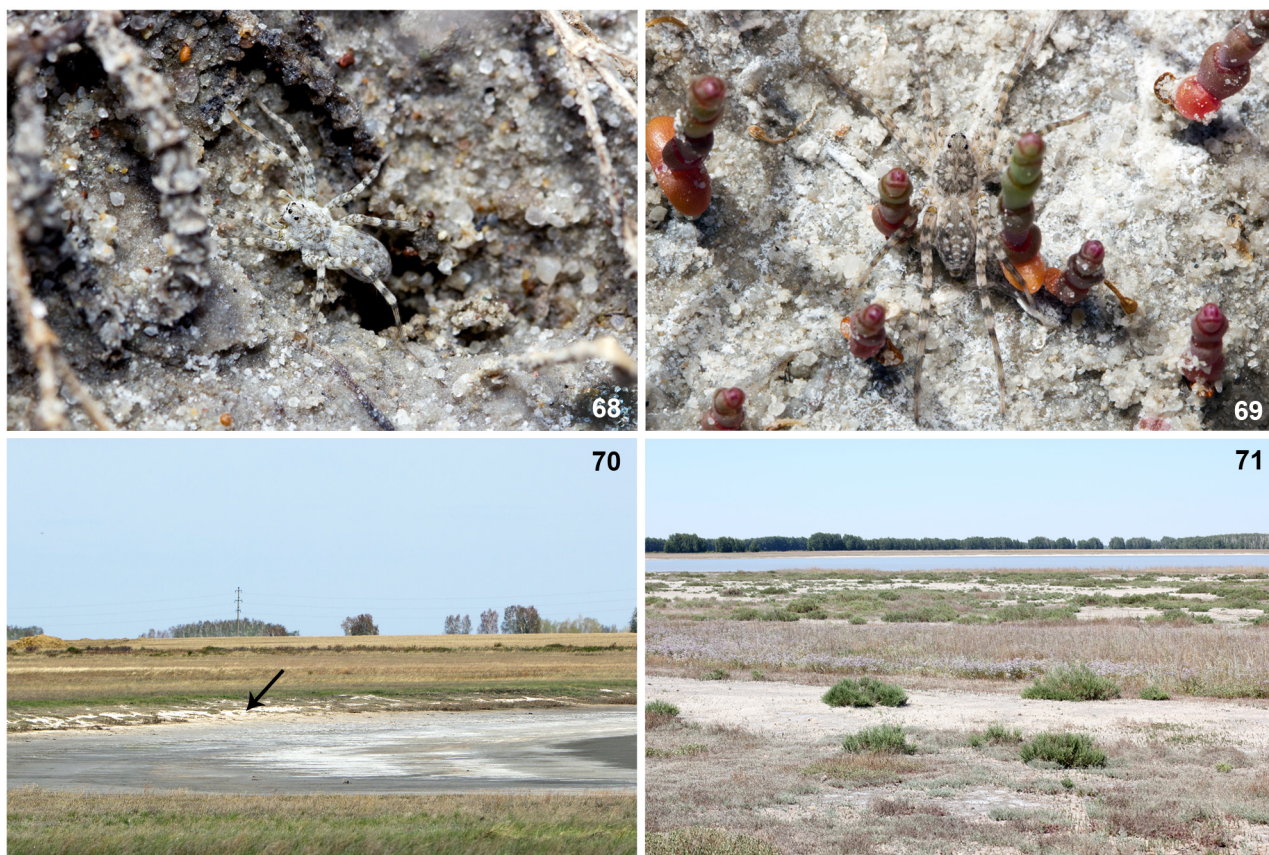
Discussion

Halocosa cereipes has an unusual range which can be classified as Euro-Middle Asian subarid one. Its western border lies in Mykolaiv Area of Ukraine and the north-eastern one in the south-west regions of Novosibirsk Area of Russia (Fig. 72). Such range is associated with the species' preference for salt marshes, which, according to the classification by Petrov (1973), represent a kind of saline intercontinental desert. Similar range types were described



FIGURES 62–67. *Halocosa cereipes* **comb. n.** 62, 64, 66. male habitus, dorsal view; 63, 65, 67. female habitus, dorsal view. 62–63 ISEA, 001.7984, 64–65 ISEA, 001.8187, 66–67 ISEA, 001.7979 and ISEA, 001.7983. Scale bars: 1 mm.

for some halophilic ground beetles, for instance *Dyschirius rufimanus* Fleischer, 1898 (Fedorenko 1996: sub. *Daschirioides rufimanus*), which is distributed from the Caucasus in the west to Transbaikalia and apparently NE China in the east, and also recorded from the shores of saline lakes in Novosibirsk Area (Dudko & Lyubchanskii 2002). *Tachys lenkoranus* Csiki, 1928, another beetle species, was hitherto known from Greece in the west to Middle Asia in the east, and was recently found in Novosibirsk Area (Dudko *et al.* 2018).



FIGURES 68–71. *Halocosa cereipes* **comb. n.** in Novosibirsk Area 68. female near retreat; 69. female in typical habitat, sand shaft with sparse sprouts of *S. perennans*; 70–71. habitats of *Halocosa cereipes* **comb. n.** near Bol'shoe Solyonoe Lake (70 tidal and meadow salt marshes, places of retreats are arrowed, 71 saline desert with *Halocnemum strilobilaceum*).

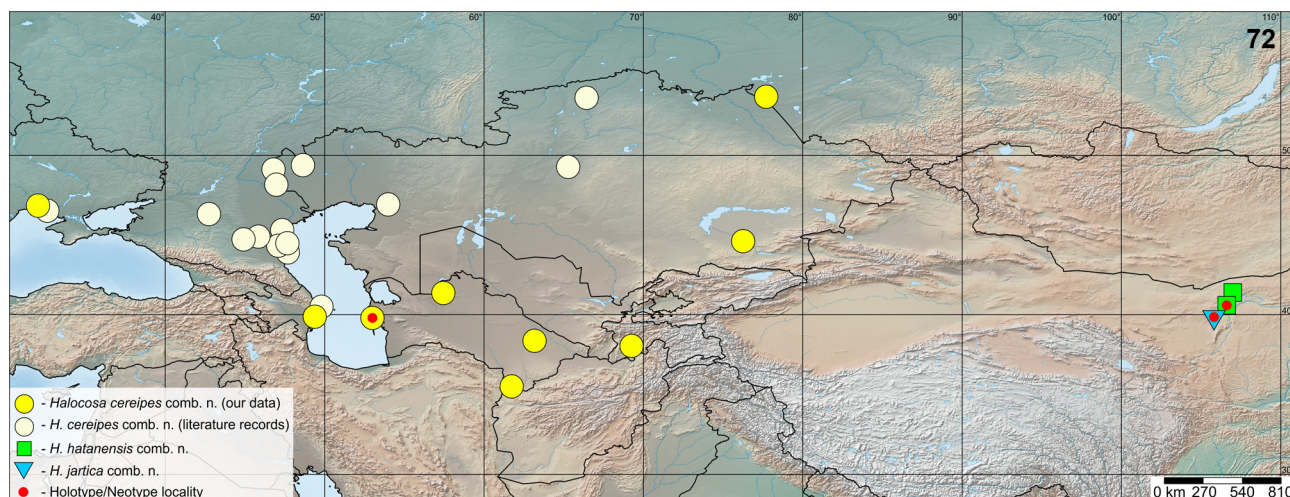


FIGURE 72. Geographic distribution records of three *Halocosa* **gen. n.** Type localities marked with red dots.

In 2013–2018, we surveyed shores of many saline lakes in Novosibirsk Area (Karasuk District) of Russia, and Akmola (Korgalzhyn District) and Karagandy (Nura District) Areas of Kazakhstan. *H. cereipes* was found in the shores of Maloe and Bolshoe Solenoe lakes in Novosibirsk Area only. We explored six habitats with different

degrees of salinity (0.6 to 6.8%), which could be classified as five desert and one meadow landscapes. Based on pitfall trapping, the highest dynamic density of *H. cereipes* was observed in the meadow salt marsh with clumps of *Salicornia perennans* Will., 1797 and in the saline desert with *Halocnemum strilobilaceum* (Pall.) Bieb., 1819 (Fig. 71) (Fyodorov & Trilikauskas 2013). A visual inspection of shores around Maloe and Bolshoe Solenoe lakes in 2013–2018 also revealed that *H. cereipes* prefers making its burrows in sand along the border between tidal and meadow salt marshes (Fig. 68). The border looks like a small sand shaft with sparse sprouts of *S. perennans* (Fig. 69). It is likely that the species prefers this habitat due to the presence of softer/looser soil and stronger salt washout in the spring and during rainy periods. The substrate around other lakes explored was more solid, with a large admixture of clay and strong salinization, which probably hampered the construction of burrows.

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