

Review of the spider genus *Zora* C.L. Koch, 1847 (Aranei: Miturgidae) of Ciscaucasia and the Russian Caucasus. New data on the fauna and distribution, with material from neighbouring regions

Обзор пауков рода *Zora* C.L. Koch, 1847 (Aranei: Miturgidae) Предкавказья и Российского Кавказа. Новые данные по фауне и распространении с привлечением материала по соседним регионам

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КЛЮЧЕВЫЕ СЛОВА: Arachnida, Araneae, новые виды, новые находки, юг европейской России.

ABSTRACT. Twelve species of *Zora* C.L. Koch, 1847 are reported from Ciscaucasia and the Russian Caucasus, three of which are described as new: viz., *Z. alexeevi* sp.n. (♂♀, North Ossetia and Ingushetia), *Z. caucasia* sp.n. (♂♀, Adygea, Karachay-Cherkessia, North Ossetia), and *Z. dagestana* sp.n. (♂, Dagestan). The occurrence of *Z. alpina* Kulczyński, 1915 in the Caucasus is confirmed. The information on distribution of *Z. armillata* Simon, 1878, *Z. manicata* Simon, 1878, *Z. nemoralis* (Blackwall, 1861), *Z. pardalis* Simon, 1878 and *Z. silvestris* Kulczyński, 1897 in Ciscaucasia and the Russian Caucasus is clarified. In addition, *Z. osetica* Ponomarev, 2021 is recorded from the fauna of South Ossetia for the first time, and *Z. parallela* Simon, 1878 is first recorded from the Caucasus. An identification key to males of the Caucasian *Zora* species is provided.

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РЕЗЮМЕ. Приводятся данные о находках 12 видов *Zora* C.L. Koch, 1847 в Предкавказье и на Российском Кавказе, из которых три описаны как новые, а именно: *Z. alexeevi* sp.n. (♂♀, Северная Осетия и Ингушетия), *Z. caucasia* sp.n. (♂♀, Адыгея, Карачаево-Черкесия, Северная Осетия), и *Z. dagestana* sp.n. (♂, Дагестан). Подтверждено обитание *Z. alpina* Kulczyński, 1915 на Кавказе. Уточнена информация о распространении *Z. armillata* Simon, 1878, *Z.*

manicata Simon, 1878, *Z. nemoralis* (Blackwall, 1861), *Z. pardalis* Simon, 1878 и *Z. silvestris* Kulczyński, 1897 на территории Предкавказья и Российского Кавказа. Кроме того, для фауны Южной Осетии впервые отмечена *Z. osetica* Ponomarev, 2021, а для Кавказа — *Z. parallela* Simon, 1878. Дан ключ для определения самцов кавказских *Zora*.

Introduction

The world diversity of the genus *Zora* C.L. Koch, 1847 accounts for 19 species [WSC, 2024], of which 13 have been recorded from Europe, including the Caucasus. A total of eight species have been described/recorded from Ciscaucasia (=Hither Caucasus) and the Caucasus [Nentwig *et al.*, 2024]. The primary range of *Zora* covers the Palaearctic Region, outside of which only two species have been known from North America: *Z. hespera* Corey et Mott, 1991 and *Z. pumila* (Hentz, 1850) [WSC, 2024].

In the last 20 years, four new *Zora* species have been described: e.g., *Z. acuminata* Zhu et Zhang, 2006 from China; *Z. huseynovi* Zamani et Marusik, 2017 from Iran; *Z. osetica* Ponomarev, 2021 from North Ossetia; and *Z. manicatoides* Wunderlich, 2023 from Portugal. Data on the contemporary distribution and taxonomy of *Zora* have been summarised in faunistic papers [Miller, 1947; Komenov, 2014; Martynovchenko, Mikhailov, 2014; Aakra *et al.*, 2016], those (re)describing individual species [Mazzoleni *et al.*, 2016; Zamani, Marusik, 2017; Ponomarev *et al.*, 2021, Wunderlich, 2023], regional checklists and catalogues [Blagoev, 2002; Mikhailov, 2013; Polchaninova, Prokopenko, 2013; Ponomarev, 2022], and identification manuals [Heimer, Nentwig, 1991]. Regional revisions

of *Zora* are absent to date, except for the single paper by Urones [2005] devoted to a review of the genus in the Iberian Peninsula. The aforesaid emphasises the need for detailed regional studies of *Zora*.

In the present work, all the *Zora* collection materials at our disposal from Ciscaucasia, the Caucasus Major and some neighbouring regions have been examined and critically evaluated. To date, the following eight species, mostly of a European origin, have been known from this region: *Z. alpina* Kulczyński, 1915; *Z. armillata* Simon, 1878; *Z. manicata* Simon, 1878; *Z. nemoralis* (Blackwall, 1861); *Z. osetica* Ponomarev in Ponomarev, Alekseev, Komarov et Shmatko, 2021; *Z. pardalis* Simon, 1878; *Z. silvestris* Kulczyński, 1897; and *Z. spinimana* (Sundevall, 1832). This paper presents new data based on both a detailed literature review and original studies.

Material and methods

The studied material was collected by A.V. Ponomarev (AP) from Adygea, Krasnodar Territory, Rostov Region, and by K.G. Mikhailov (KM) from North Ossetia. Besides, we have used numerous spider collections from Rostov Region, Krasnodar and Stavropol Territories, Karachay-Cherkessia, North Ossetia, Ingushetia, Dagestan, as well as Abkhazia, Georgia, South Ossetia, which were collected by the following colleagues: S.K. Alekseev (Kalug; SA); M.A. Aliev (MA), S.V. Alieva (SVA), G.N. Khabiev (GK), A.Kh. Khalidov (AKh), Z.A. Shavlukov (ZS) (Makhachkala); Yu.A. Chumachenko (YC) (Maykop); M.Yu. Bakanov (MB), K.B. Gongalsky (KG), F.A. Martynovchenko (FM) (Moscow); A.P. Evsyukov (AE), P.P. Ivliev (PI), E.A. Khachikov (EK), D.D. Khismetdinova (DK), Z.G. Prishutova (ZP), I.V. Shokhin (IS), V.Yu. Smatko (VS), E.N. Terskov (ET), A.S. Tsvetkov (AT) (Rostov-on-Don); V.F. Kobzar (VK) (Krasnodar); T.V. Khanov (TK) (Stavropol); Yu.E. Komarov (YK), N. Shevchenko (NSh) (Alagir); V.V. Slyusarev (VVS) (Groznyi); V.O. Kozminykh (VOK) (Perm).

The specimens examined or cited have been shared between the Zoological Museum of the Moscow State University, Moscow, Russia (ZMMU, curator: K.G. Mikhailov) and the personal collection of A.V. Ponomarev (PC, Russia, Rostov Region, Razdorskaya Vil.). Some paratypes have also been deposited in the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia (ZISP; curator: D.V. Logunov).

The photographs were taken at the Southern Scientific Center of the Russian Academy of Sciences (Rostov-on-Don, Russia) using a photosystem made by V.Yu. Shmatko based on a C1Y4.2 microscope (for photographing palps) and a Carl Zeiss LUMIPAN microscope (for photographing epigyne) and a Sony Alpha ILCE-6000 camera.

The morphological terminology follows Zamani, Marusik [2017]. The following abbreviations are used: ALE — anterior lateral eyes; AME — anterior median eyes; PLE — posterior lateral eyes; PME — posterior median eyes; RTA — retrolateral tibial apophysis.

Systematic part

Zora C.L. Koch, 1847

TYPE SPECIES: *Lycaena spinimana* Sundevall, 1833, by original designation.

DEFINITION. Small to medium-sized spiders (3–6 mm). Carapace narrowed anteriorly, with longitudinal alternating

light and dark stripes (Figs 6, 7, 15, 20, 24, 30, 35, 43, 47, 50, 55). Eyes are arranged in two curved rows, with the posterior row strongly curved, giving the impression of three eye rows. The eyes of the posterior row larger than the eyes of the anterior row. Legs moderately long and stout with numerous ventral spines arranged in two rows, especially numerous on tibiae. Tibiae I–II with 6–9 pairs of ventral spines, metatarsi with 2–3 pairs. Sternum oval, slightly longer than wide, often with dark marginal spots. Abdomen oval, elongated, with irregular pattern of dark patches and stripes on light background. In males, venter with a characteristic tuft of dark hairs in front of spinnerets, arranged perpendicular to its surface. Male palpal tibia with a short RTA. Epigyne weakly sclerotised, with a small depression anteriorly. *Zora* species live on the ground, often in litter, do not weave webs.

Species survey

Zora alexeevi sp.n.

Figs 1–7.

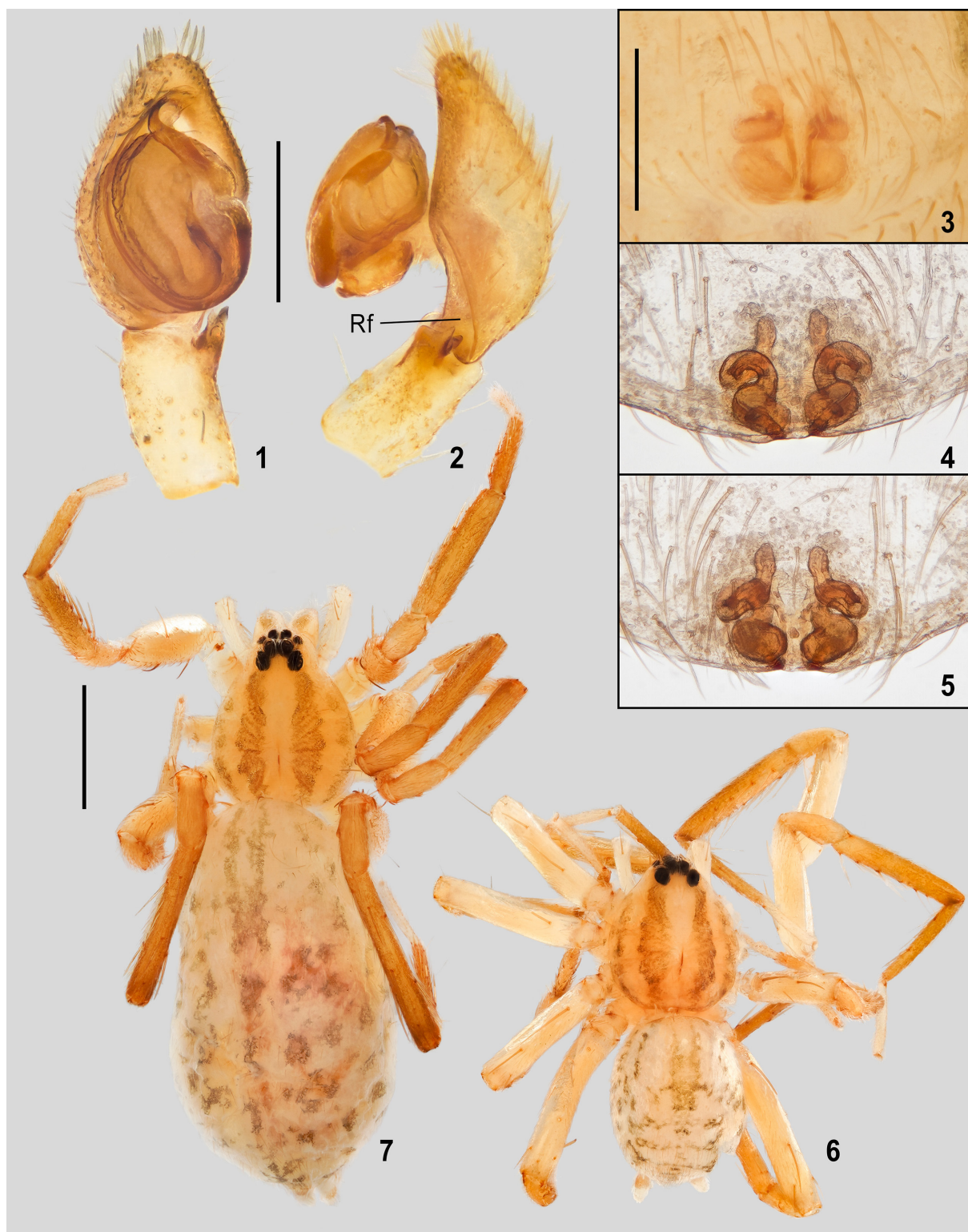
MATERIAL. HOLOTYPE ♂ (ZMMU), Russia, **North Ossetia**, Ardon River basin, left side of Alagir Gorge, between Unal and Zintsar Vil., 42.879444°N / 44.149698°E, SSW slope, 1100 m a.s.l., limestone screes with hoary sage (*Salvia canescens*), 18.05–11.06.1985, SA. — PARATYPES: **North Ossetia**: 2 ♀♀ (ZMMU), Ardon River basin, left side of Alagir Gorge between Unal and Zintsar Vil., 42.879444°N / 44.149698°E, SSW slope, 1100 m a.s.l., limestone screes with hoary sage (*Salvia canescens*), 9–27.07.1985, SA; 1 ♂ (PC), Alagir Distr., Sardon-Unal basin, 1 km NW of Zintsar Vil., 42.889954°N / 44.155309°E, mountain steppe, 1324 m a.s.l., 16.06.2023, YK. **Ingushetia**: 1 ♀ (ZISP), Dzheyrakh Distr., nr Furtoug Vil., arid basin, 42.824924° N / 43.959972° E, mountain xerophytous vegetation with tragacanth (*Astragalus*) formation, 1018 m a.s.l., 24.07.2024, ET.

DIAGNOSIS. The new species is most similar to *Z. manicata*, but differs in lighter body colouration (cf. Figs 6–7 and 35), the bifurcated RTA, the absence of dense thick hairs on male coxae IV, the oval receptaculæ and the longer and more loopingly convolute insemination ducts (cf. Figs 3–5 and 31–34).

DESCRIPTION. Male (holotype). Body 2.88 mm long. Carapace: 1.38 mm long, 1.12 mm wide. Eye sizes and interdistances: ALE 0.06 mm, AME 0.085 mm, PLE 0.14 mm, PME 0.085 mm, AME – AME 0.01 mm, PME – PME 0.03 mm, PLE – PLE 0.14 mm. Sternum 0.75 mm long, 0.67 mm wide. Measurements of leg I segments: femur 1.32 mm, patella 0.55 mm, tibia 1.25 mm, metatarsus 0.95 mm, tarsus 0.62 mm. General appearance as shown in Fig. 6. Body light brown. Carapace with alternating light and dark longitudinal stripes: yellow median stripe wide, which is wider than light brown longitudinal median stripes; lateral light brown stripes narrow, discontinuous. Longitudinal median light brown stripes extend from PLEs, reaching the posterior carapace edge. Median groove distinct. Sternum, maxillae and labium yellow. Abdomen dorsally light beige, with a poorly-marked light brown longitudinal stripe in its anterior half and elongated light brown spots arranged in three concentric rows. Femora and tarsi, palps light beige; patella, tibiae and metatarsi light brown. Metatarsi I–II ventrally with two pairs of spines.

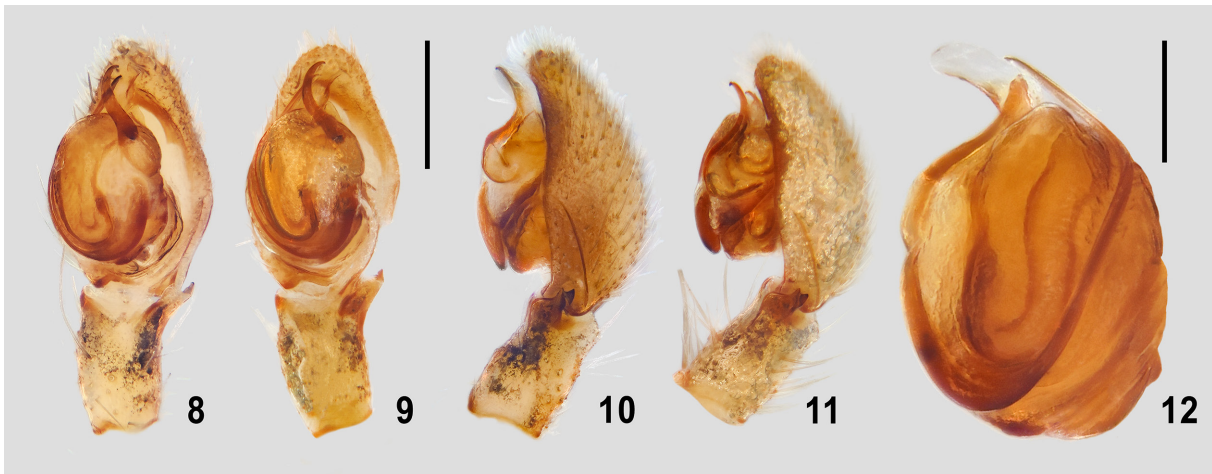
Palp as in Figs 1–2. RTA well-developed, bifurcated and wide at its base. Retrolateral cymbial fold narrow and long, its apical margin only slightly short of the middle of the retrolateral cymbial margin. The median apophysis base is shifted retrolaterally and situated at the distal part of the bulb; median apophysis directed towards prolateral part of cymbium and curved at its tip.

Female. Body 3.5–4.6 mm long. Carapace: 1.65 mm long, 1.25 mm wide. Body colouration as in the male. General appear-



Figs 1–7. *Zora alexeevi* sp.n. Male palp, ventral (1) and retrolateral (2) view; intact epigyne, ventral view (3); vulva, ventral (4) and dorsal (5) view; male habitus, dorsal view (6); female habitus, dorsal view (7). Rf – retrolateral cymbial fold. Scale bars: 1–5 — 0.25 mm; 6–7 — 1 mm.

Рис. 1–7. *Zora alexeevi* sp.n. Пальпа самца, вид снизу (1) и сбоку-сзади (2); необработанная эпигина, вид снизу (3); вульва, вид снизу (4) и сверху (5); внешний вид самца, вид сверху (6); внешний вид самки, вид сверху (7). Rf – ретролатеральная складка цимбиума. Масштаб: 1–5 — 0,25 мм; 6–7 — 1 мм.



Figs 8–12. *Zora caucasia* sp.n. Male palp, ventral (8, 9) and retrolateral (10, 11) view; bulbus, ventral-prolateral (12) view. Specimens: 8, 10 — Krasnodar Territory; 9, 11, 12 — North Ossetia. Scale bars: 8–11 — 0.25 mm; 12 — 1 mm.

Рис. 8–12. *Zora caucasia* sp.n. Пальпа самца, вид снизу (8, 9) и сбоку-сзади (10, 11); бульбус, вид снизу-спереди (12). Экземпляры: 8, 10 — из Краснодарского края; 9, 11, 12 — из Северной Осетии. Масштаб: 8–11 — 0,25 мм; 12 — 1 мм.

ance as in Fig. 7. Epigyne (Fig. 3) with a small, poorly visible groove. Receptacles oval, copulatory ducts loop-shaped in their middle parts (Figs 4–5).

ETYMOLOGY. The species is named after our colleague and friend S.K. Alekseev (Kaluga, Russia), who collected part of the type series.

DISTRIBUTION. Arid basins of the Central and Eastern Caucasus at the elevation range of 1000–1400 m a.s.l.

Zora caucasia sp.n.

Figs 8–17.

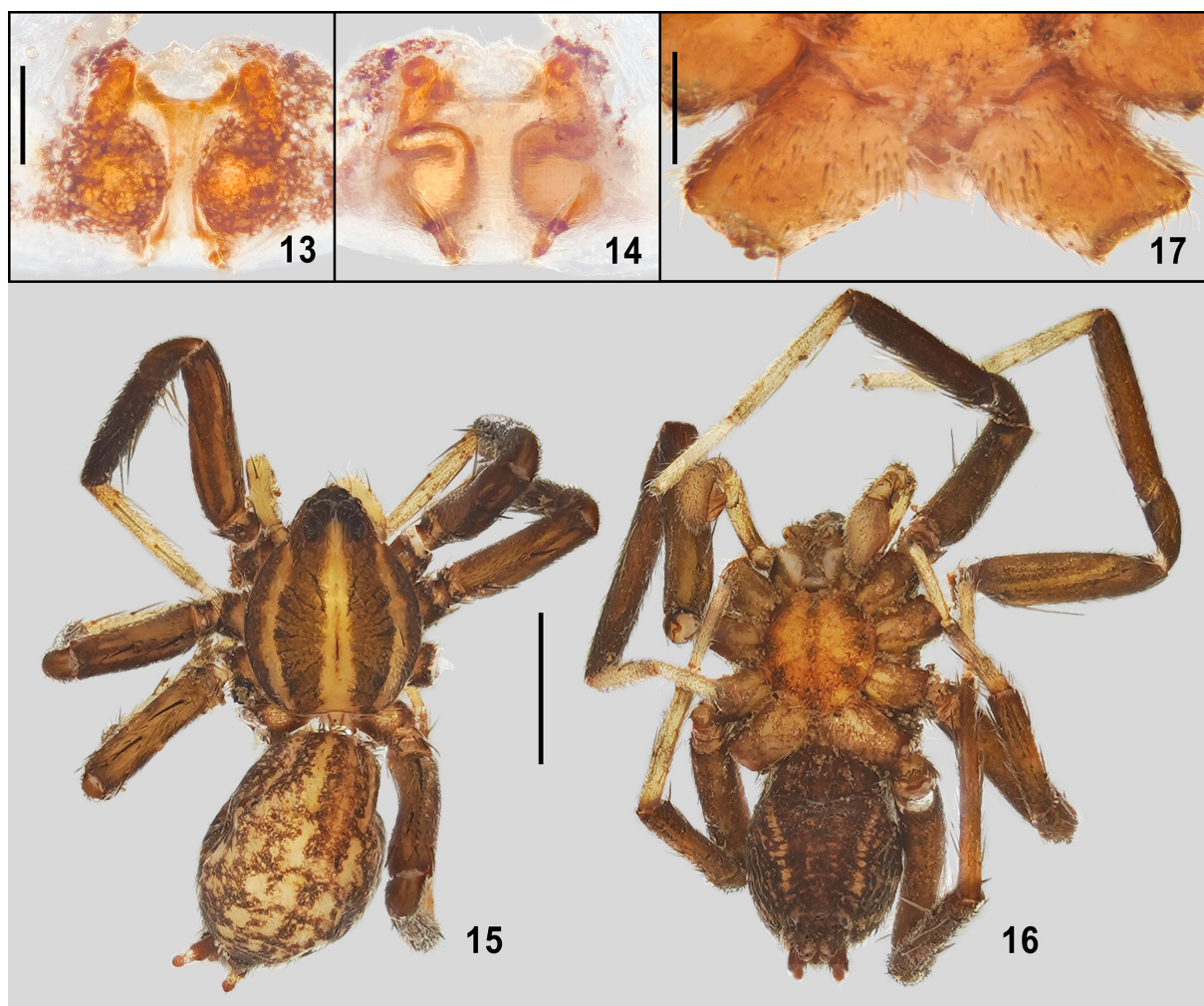
MATERIAL. HOLOTYPE ♂ (ZMMU), Russia, North Ossetia, Alagir Distr., nr Verkhny Tsey Vil., 42.801286°N / 43.933267°E, Tsei Gorge, 1780 m a. s. l., 1.08.1988, NSh. — PARATYPES: Adygeya: 2 ♂♂ (PC), Maykop Distr., Caucasian State Res., Abago Pasture, 43.937678°N / 40.227686°E, subalpine meadow, 1850 m a.s.l., 2.07–29.08.2009, YC; 1 ♂ (PC), Maykop Distr., Caucasian State Res., Lagonaki Plateau, 44.012107°N / 39.975649°E, 2013 m a.s.l., subalpine meadow, 16.07–8.08.2013, YC. Krasnodar Territory: 8 ♂♂ (PC), Mostovskiy Distr., E slope of Dzhusa Mt, 43.883889°N / 40.481389°E, subalpine meadow, 2005 m a.s.l., 6.07–4.09.2016, YC; 2 ♂♂ (ZISP), same locality and biotope, 29.07–4.09.2016, YC. Karachay-Cherkessia: 1 ♂ (PC), 7 km W of Teberda, 43.480362°N / 41.648618°E, Mukhu River, 2200 m a.s.l., 22.06.2010, PI; 1 ♂ (ZMMU), Teberdinsky Nature Reserve, Malaya Khatipara Mt, 43°44' N / 41°68' E, 2400 m a.s.l., bromegrass meadow with *Bromus variegatus*, *Festuca varia*, *Calamagrostis arundinacea*, etc., 22.07–8.08.2008, FM; 1 ♂ (ZMMU), same locality and biotope, 15–22.07.2009, FM; 2 ♂♂ (ZMMU), same locality and biotope, 6–29.07.2011, FM; 1 ♂ (ZMMU), same locality, rhododendron, 7–29.08.2008, FM; North Ossetia: 4 ♂♂ (ZMMU), Tsei Ridge, S slope, 3 km NE of Verkhny Tsei Vil., 42.824924°N / 43.959972°E, 2750 m a.s.l., subalpine meadow with *Festuca varia*, 8.06–20.07.1985, SA; 1 ♂ (ZMMU), Tsei Ridge, S slope, 3.5 km ENE of Verkhny Tsei Vil., 42.814246°N / 43.982140°E, overgrown 7-year-old burned forest in the place of xerophytic pine forest, 2300 m a.s.l., 16.05–8.06.1985, SA; 3 ♂♂ (ZMMU), same locality and biotope, 8.06–20.07.1985, SA; 1 ♂ (ZISP), Alagir Distr., nr Verkhny Tsei Vil., 42.801542°N / 43.939679°E, subalpine meadow, 1800 m a.s.l., 30.05.1988, NSh; 1 ♂ (ZISP), Alagir Distr., nr Nizhny Unal Vil., 42.854936°N / 44.144321°E, 1100 m a.s.l., mountain xerophytic vegetation with trragacanth (*Astragalus*), 21.07.1988, NSh; 1 ♂ (ZISP), Alagir Distr., nr ruins of Ksurt Vil., 42.876478°N / 44.110687°E, 1618 m a.s.l., burnt pine forest, 8.06.2023, YK; 1 ♂ (PC), same locality and biotope, 22.06.2023, YK; 1 ♀ (ZMMU), Ifraskyi Distr., nr Dzinaga Vil., 42.897270°N / 43.709907°E, juniper thickets, 1580 m a.s.l., 24.10.2015, YK; 1 ♂ (PC), 4.5 km NW

of Verkhny Zaramagh Vil., 42.711573°N / 43.908930°E, 2254 m a.s.l., bank of Zaramagdon River, 2–8.07.2015, MB; 1 ♂ (PC), Alagir Distr., nr Verkhny Zaramagh Vil., S slope of the Adaykom Gorge, 42.700198°N / 43.953576°E, wormwood-grass-forb meadow, 2025 m a.s.l., 3.06.2023, YK; 1 ♂ (PC), Alagir Distr., 1 km NW of Zintsar Vil., 42.889954°N / 44.155309°E, mountain steppe, 1324 m a.s.l., 16.06.2023, YK; 1 ♂ (PC), Alagir Distr., nr Tibsli Vil., 42.687158°N / 43.992592°E, slope of Narskoe Gorge, 1720 m a.s.l., mixed grassland, 28.07.2015, YK.

RECORDS. RUSSIA. North Ossetia: Verkhny Tsei [Ponomarev, Komarov, 2013: sub *Zora silvestris*, misidentified]. Adygeya: Abago [Ponomarev *et al.*, 2012: sub *Zora silvestris*, misidentification; Ponomarev, Chumachenko, 2014: sub *Zora silvestris*, misidentified]. Karachay-Cherkessia: Teberda State Reserve [Martynovchenko, Mikhailov, 2014: sub *Zora manicata*, misidentified].

DIAGNOSIS. In having two pairs of ventral spines on metatarsi I–II, *Z. caucasia* sp.n. is closer to *Z. alexeevi* sp.n., *Z. alpina*, *Z. manicata*, *Z. manicatoides*, *Z. osetica*, and *Z. silvestris* Kulczyński, 1897. From *Z. alexeevi* sp.n., males of the new species differ by the broad retrolateral cymbial fold and the uniformly curved median apophysis (cf. Figs 8–11 and 1–2). From *Z. alpina* and *Z. silvestris*, the males of *Z. caucasia* sp.n. can be distinguished by the body colouration (cf. Figs 15–16 and 6, 24, 55), the bicuspid RTA, and the relatively thin median apophysis (cf. Figs 8–11 and 21–22, 52–53). The females of *Z. caucasia* sp.n. differ from those of *Z. alpina* и *Z. silvestris* by the epigyne having a small, but distinct depression (twice as wide as long) in its anterior part (cf. Figs 13 and 23, 54). From *Z. manicata* and *Z. maicatoides*, males of the new species differ by the absence of a dense group of short thick bristles ventrally on coxae IV (cf. Fig. 17 with fig.100 in Wunderlich [2023]), whereas their females by the shape of epigynal depression and insemination ducts (cf. Figs 13–14, 31–34 with figs 105–106 in Wunderlich [2023]). The main difference of *Z. caucasia* sp.n. from the Caucasian *Z. osetica* is the position of the median apophysis in the apical part of bulbus, RTA bifurcated at its apex, and tibiaum colouration (cf. Figs 8–11, 15–16 and 41–43).

DESCRIPTION. Male (holotype). Body 3.25 mm long. Carapace: 1.5 mm long, 1.3 mm wide. Eye sizes and interdistances: ALE 0.075 mm, AME 0.1 mm, PLE 0.17 mm, PME 0.14 mm, AME – AME 0.025 mm, PME – PME 0.03 mm, PLE – PLE 0.22 mm. Sternum 0.9 mm long, 0.8 mm wide. Measurements of leg I segments: femur 1.4 mm, patella 0.67 mm, tibia 1.37 mm, metatarsus 1.22 mm, tarsus 0.75 mm. General appearance



Figs 13–17. *Zora caucasia* sp.n. Epigyne, ventral view (13); endogyne, dorsal view (14); male habitus dorsal (15) and ventral (16) view; male coxa IV, ventral view (17). Scale bars: 13–14 — 0.1 mm; 15–16 — 1 mm; 17 — 0.25 mm.

Рис. 13–17. *Zora caucasia* sp.n. Эпигина, вид снизу (13); эндогина, вид сверху (14); внешний вид самца, вид сверху (15) и снизу (16); тазики IV самца, вид снизу (17). Масштаб: 13–14 — 0,1 мм; 15–16 — 1 мм; 17 — 0,25 мм.

as in Figs 15–16. Body dark brown, but carapace with alternating light yellow and dark brown longitudinal stripes: yellow median stripe narrow significantly narrower brown longitudinal median stripes; lateral yellow and brown stripes significantly narrower than median one. Median groove distinct. Sternum yellow-brown, with a median broken brown stripe and lateral brown markings; basal half of labium brown, apical — yellow; maxillae retrolaterally dark brown, prolaterally yellow. Coxae ventrally yellow-brown. Abdomen: dorsum creamy, with the pattern of a longitudinal median brown stripe that posteriorly is broken up into separate patches, as well as numerous brown longitudinal and transverse spots forming a mesh-like pattern; venter brown. All femora, patellae, tibiae brown, metatarsi and tarsi I–III yellow; metatarsi IV brown, tarsi IV yellow. All femora with light longitudinal stripes. Palps yellow. Metatarsi I, II ventrally with two pairs of spines.

Palp as in Figs 8–11. RTA bifurcated, wide at its base. The retrolateral cymbial fold wide, its apical margin only slightly short of the middle of the retrolateral cymbial margin. Median apophysis base shifted retrolaterad and situated at the apical part of the bulb; median apophysis uniformly curved and directed towards the center of the cymbial apex. Conductor large, flat and rounded at its tip (Fig. 12).

Female. Body 4.12 mm long. Carapace: 1.75 mm long, 1.4 mm wide. Body coloration as in the male. Metatarsi and tarsi I–IV yellow-brown. Epigyne (Fig. 13) with a small distinct fovea in its anterior part which is twice as wide as long. Vulva (Fig. 14) with round receptacles; copulatory ducts bent in their middle part almost at the right angle.

ETYMOLOGY. The species name indicates its occurrence in the Caucasus; adjective.

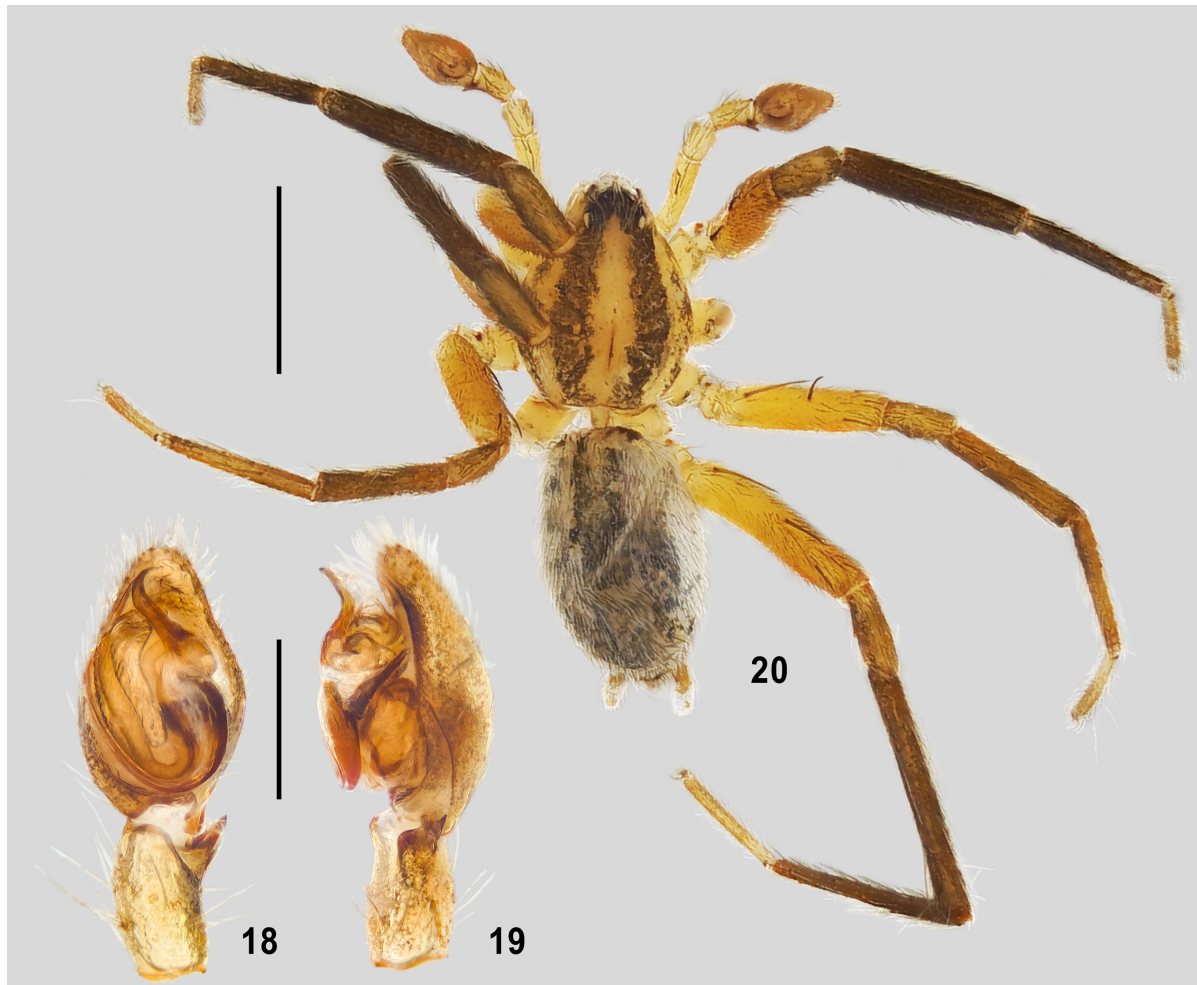
DISTRIBUTION. The West and Central Caucasus.

HABITAT. Mountain steppes, subalpine meadows, burnt-over lands at the elevation range of 1100–2750 m a.s.l.

Zora dagestana sp.n. Figs 18–20.

MATERIAL. HOLOTYPE ♂ (ZMMU), Russia, **Dagestan**, Kumtorkala Distr., 42.984872°N / 47.219000°E, N slope of the Narat-Tyube Ridge, 13.05.2018, MA. — PARATYPE: 1 ♂ (ZISP), **Dagestan**, Kumtorkala Distr., 42.984872°N / 47.219000°E, N slope of the Narat-Tyube Ridge, 29.05.2018, MA.

DIAGNOSIS. In having two pairs of spines on the metatarsi I–II, the absence of a group of thick bristles on coxae IV and the conformation of male palp, *Z. dagestana* sp.n. is close to



Figs 18–20. *Zora dagestana* sp.n. Male palp, ventral (18) and retrolateral (19) view; male habitus, dorsal view (20). Scale bars: 18–19 — 0.25 mm; 20 — 1 mm.

Рис. 18–20. *Zora dagestana* sp.n. Пальпа самца, вид снизу (18) и сбоку-сзади (19); внешний вид самца, вид сверху (20). Масштаб: 18–19 — 0,25 мм; 20 — 1 мм.

the Caucasian *Z. alexeevi* sp.n. and *Z. caucasia* sp.n. The new species differs from *Z. alexeevi* sp.n. in the significantly darker body colouration, the shape of RTA and the retrolateral cymbial fold (cf. Figs 18–19 and 1–2). *Z. dagestana* sp.n. differs from *Z. caucasia* sp.n. by leg colouration, the shape of RTA (viz., its dorsal branch longer than ventral one), and the sharply curved median apophysis in its apical part (cf. Figs 18–20 and 8–11, 15).

DESCRIPTION. Male (holotype). Body 2.75 mm long. Carapace: 1.3 mm long, 1.0 mm wide. Eye sizes and interdistances: ALE 0.07 mm, AME 0.1 mm, PLE 0.09 mm, PME 0.1 mm, AME – AME 0.01 mm, PME – PME 0.06 mm, PLE – PLE 0.25 mm. Sternum 0.72 mm long, 0.68 mm wide. Measurements of leg I segments: femur 1.3 mm, patella 0.43 mm, tibia 1.15 mm, metatarsus 0.85 mm, tarsus 0.62 mm. General appearance as in Fig. 20. Dark brown longitudinal medial stripes of carapace slightly narrower than yellow median stripe and wider than yellow lateral stripes; marginal dark stripes poorly developed, fragmentary. Median groove of carapace distinct. Sternum yellow, with median grey-brown longitudinal stripe and grey-brown lateral longitudinal stripes. Maxillae and labium dirty yellow, all coxae ventrally yellow. Abdomen: dorsum with a grey longitudinal median stripe in its anterior half and numerous grey spots on a light background; venter grey. All femora ventrally yellow, dorsally dark yellow; patellae I–IV

yellow-brown; tibiae and metatarsi I, II dark brown; tibiae III, IV brown; tarsi I–IV yellow; palpi yellow. Tibiae I, II ventrally with two pairs of spines.

Palp as in Figs 18–19. RTA small bifurcated, wide at its base: dorsal branch longer than ventral one and pointed anteriorly. Retrolateral cymbial fold wide, its apical margin short of the middle of the retrolateral cymbial margin. Median apophysis base shifted retrolaterad and situated at the distal part of the bulb; median apophysis directed towards the prolateral part of the cymbium and curved at its tip.

Female unknown.

Variations. In the paratype, lateral dark stripes on carapace are prominent.

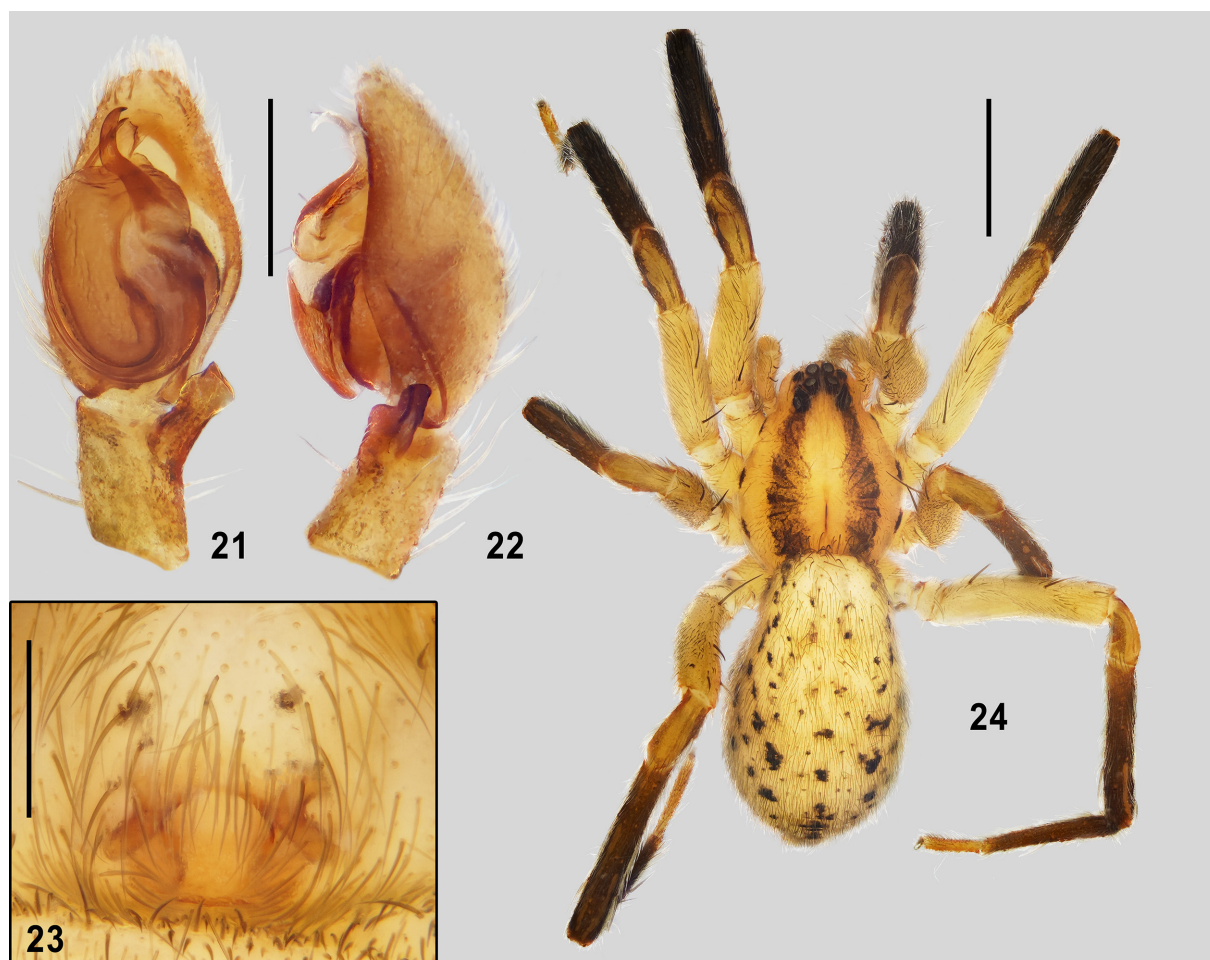
ETYMOLOGY. The species name indicates its occurrence in Dagestan; adjective.

DISTRIBUTION. Known only from the type locality in Dagestan (slope of the Narat-Tyube Ridge).

Zora alpina Kulczyński, 1915

Figs 21–24.

Zora alpina — Mazzoleni *et al.*, 2016: 446, figs 1–6, 9, 12–13 (♂♀). A complete reference list is given in WSC [2024].



Figs 21–24. *Zora alpina*. Male palp, ventral (21) and retrolateral (22) view; intact epigyne, ventral view (23); female habitus, dorsal view (24). Scale bars: 21–23 — 0.25 mm; 24 — 1 mm.

Рис. 21–24. *Zora alpina*. Пальпа самца, вид снизу (21) и сбоку-сзади (22); необработанная эпигина, вид снизу (23); внешний вид самки, вид сверху (24). Масштаб: 21–23 — 0,25 мм; 24 — 1 мм.

MATERIAL. RUSSIA. Adygeya: 3 ♀♀ (PC), Maykop Distr., 15 km SE of Guseripl Vil., 43.894311°N / 40.260385°E, Caucasian Biosphere Reserve, Tybga Mt, subalpine meadow, 2150 m a.s.l., 24.08.2018, AP. **Karachay-Cherkessia:** 1 ♂ (ZMMU), Teberdinsky Nature Reserve, Malaya Khatipara Mt, 43°44' N / 41°68' E, 2400 m a.s.l., forb meadow with *Bromus variegates*, *Festuca varia*, *Calamagrostis arundinacea*, 22.07–8.08.2008, FM; 2 ♂♂, 2 ♀♀ (ZMMU), same locality, E slope, 2800 m a.s.l., alpine wasteland, 29.06–18.07.2008, FM; 1 ♂ (ZMMU), same locality and biotope, 18–27.07.2009, FM; 4 ♂♂ (ZMMU), same locality and biotope, 21.06–22.07.2011, FM; 1 ♂ (ZMMU), same locality, 2800 m a.s.l., forb fescue meadow with *Festuca varia*, 14–25.07.2009, FM. **North Ossetia:** 1 ♂ (ZMMU), Scalistyi Mt Ridge, W spur of Kariukhokh Mt Ridge, 42.857088°N / 44.222093°E, Khunrat-khokh Mt, 2300 m a.s.l., subalpine fescue meadow with *Festuca varia*, 12.07–21.08.1985, SA; 1 ♂ (ZMMU), Tsei Ridge, S slope, 5 km N of Verkhniy Tsei Vil., 42.850508°N / 43.931600°E, 3000 m a.s.l., alpine fescue meadow with *Festuca varia*, 18.07–15.08.1985, SA.

RECORDS. RUSSIA. Karachay-Cherkessia: Teberda State Reserve [Martynovchenko, Mikhailov, 2014].

DISTRIBUTION. Italy, Switzerland [Mazzoleni *et al.*, 2016], the Western and Central Caucasus [Martynovchenko, Mikhailov, 2014; present data].

HABITAT. In the Central Alps, the species is confined to open habitats, mainly above 2200 m a.s.l. [Mazzoleni *et al.*, 2016]. In the Western and Central Caucasus, it was found in

(sub)alpine meadows and heaths at the elevations from 2150 to 3000 m a.s.l. [Martynovchenko, Mikhailov, 2014; present data].

COMMENTS. The conformation of copulatory organs and body colouration of our specimens (Figs 21–24) correspond to the published description by Mazzoleni *et al.* [2016]. Yet, in the Caucasus, *Z. alpina* occurs in the conditions (the altitudinal range, habitat types) that are typical for the species in the Alps. Thus, the range of *Z. alpina* could be characterized as Alpine-Caucasian disjunctive.

Zora armillata Simon, 1878

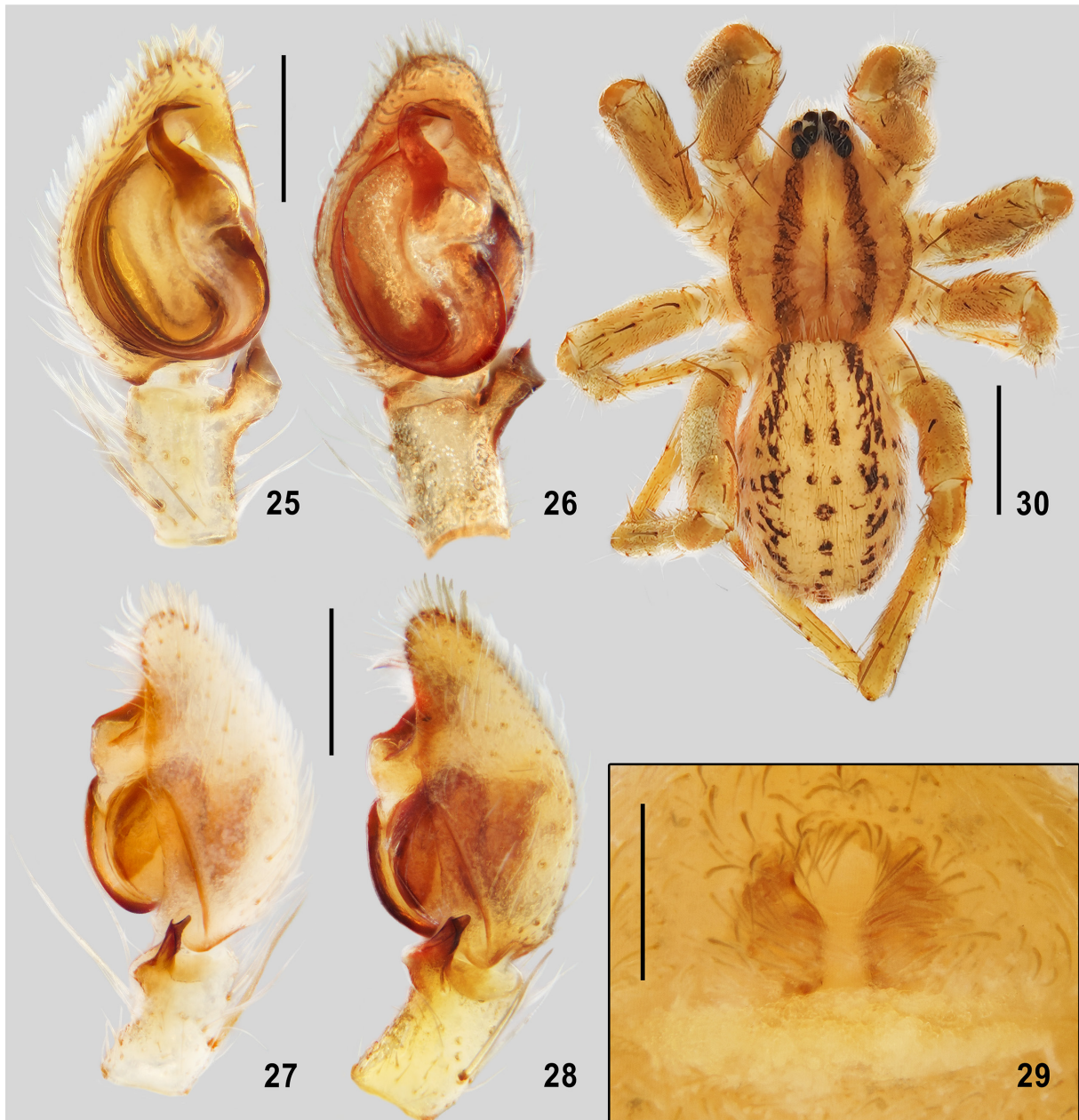
Figs 25–30.

Zora armillata — Heimer, Nentwig, 1991: 456, fig. 1200 (♂♀).

Zora armillata — Aakra *et al.*, 2016: 37, figs 32A, C, E, G (♂♀).

A complete reference list is given in WSC [2024].

MATERIAL. RUSSIA. Rostov Region: 1 ♂ (PC), Krasnosulinsky Distr., nr Shakhty, 47.73906°N / 40.08294°E, overgrown quarry, 86 m a.s.l., 18.05–22.06.2023, ET; 3 ♂♂ (PC), Ust-Donetskiy Distr., Razdorskaya Vil., 47.549352°N / 40.653214°E, Atamanskaya Gully, meadow, 7.06–7.07.2001, AP; 3 ♀♀ (ZISP), Neklinovskiy Distr., 7.5 km S of Sinyavskaya Vil., 47.211306°N / 39.248444°E, Don River Delta, 6–13.10.2014, PI; 1 ♀ (ZMMU), 1 ♀ (PC), same locality, 13.10.2014, PI; 4 ♀♀ (ZMMU), same locality, 15.12.2014, PI; 1 ♀ (PC),



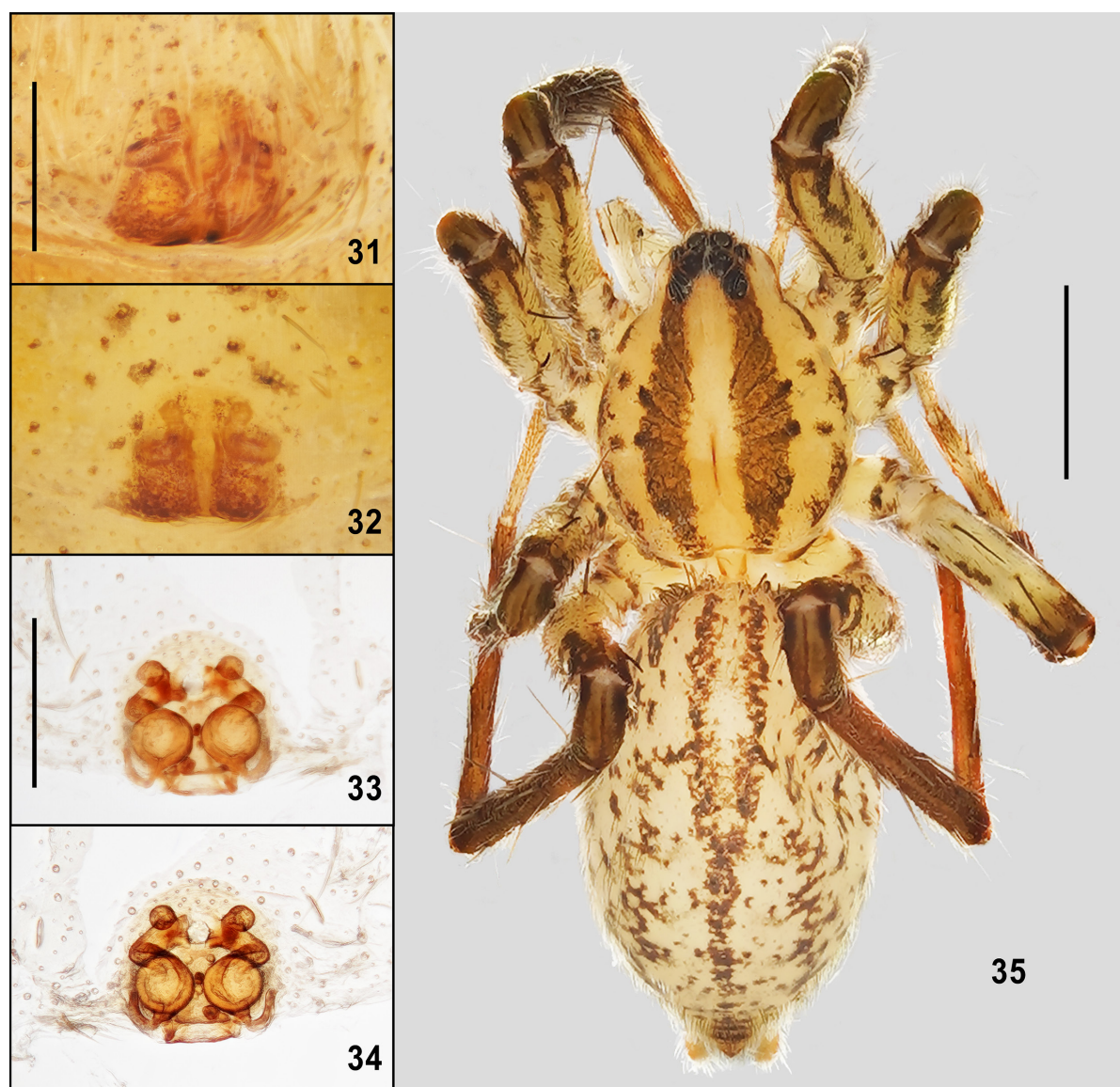
Figs 25–30. *Zora armillata*. Male palp, ventral (25, 26) and retrolateral (27, 28) view; intact epigyne, ventral view (29); female habitus, dorsal view (30). Scale bars: 25–29 — 0.25 mm; 30 — 1 mm.

Рис. 25–30. *Zora armillata*. Пальпа самца, вид снизу (25, 26) и сбоку-сзади (27, 28); необработанная эпигина, вид снизу (29); внешний вид самки, вид сверху (30). Масштаб: 25–29 — 0,25 мм; 30 — 1 мм.

Azov Distr., Stefanidinodar Vil., 47.029678°N / 39.164304°E, sandy shore of Taganrog Bay, brushwood vegetation, 17.05–14.06.2012, AP; 2 ♀♀ (PC), Azov Distr., 13 km NNW of Kagalnik Vil., Don River Delta, 47.195613°N / 39.250559°E, Kuterma Duct, 8.10.2014, PI; 1 ♀ (PC), Azov Distr., nr Topolki Vil., 47.212833°N / 39.338889°E, Don River Delta, 21.04.2014, PI; 1 ♂ (ZMMU), Azov Distr., Kagalnik Vil., 47.086442°N / 39.308687°E, wet meadow, 4.05.2010, AP; 1 ♂ (PC), Azov Distr., Rogozhkino Vil., 47.157855°N / 39.350890°E, Don River Delta, 8.12.2019, VS. **Krasnodar Territory:** 1 ♂ (PC), 18 km SW of Kushchevskaya Vil., 46.408157°N / 39.460238°E, meadow, 22.04.2004, AP; 1 ♀ (PC), same locality, forest plantation, 15–31.08.2004, AT. **Stavropol Territory:** 1 ♀ (PC), 45.368889°N / 41.710556°E, Izobilnyi, 5.07–15.08.2014, VOK. **North Ossetia:** 1 ♂ (PC), Mozdok Distr., Pavlodolskaya Vil., 43.711464°N / 44.461686°E, forb meadow, 6.05.2015, YK.

RECORDS. RUSSIA: Rostov Region: Razdorskaya [Ponomarev, Tsvetkova, 2003]; Rogozhkino [Ponomarev, Ivliev, 2010]; Kagalnik [Ponomarev, 2011]; Krymsky [Ponomarev, Lebedeva, 2014]; Rogozhkino, Sinyavskoe, Topolki [Ponomarev *et al.*, 2016]; Stefanidinodar [Ponomarev *et al.*, 2016: sub *Zora spinimana*, misidentified]. Stavropol Territory: Izobilnyi [Ponomarev *et al.*, 2017]. Krasnodar Territory: Kushchevskaya [Ponomarev, 2022]. North Ossetia: Pavlodolskaya [Ponomarev *et al.*, 2021].

DISTRIBUTION. Europe, Western Siberia, Kyrgyzstan [WSC, 2024]. Some records of *Z. armillata* from the Caucasus, viz. Abkhazia and Dagestan, are erroneous (see below). In the south of European Russia, the species is widespread along the



Figs 31–35. *Zora manicata*. Intact epigyne, ventral view (31, 32); vulva, ventral (33) and dorsal (34) view; female habitus, dorsal view (35). Specimens: 31, 33, 34 —Stavropol Territory; 32, 35 —North Ossetia. Scale bars: 31–34 — 0.25 mm; 35 — 1 mm.

Рис. 31–35. *Zora manicata*. Необработанная эпигина, вид снизу (31, 32); вульва, вид снизу (33) и сверху (34); внешний вид самки, вид сверху (35). Экземпляры: 31, 33, 34 — из Ставропольского края; 32, 35 — из Северной Осетии. Масштаб: 31–34 — 0,25 мм; 35 — 1 мм.

plains and foothills of Ciscaucasia at the elevations of up to 200 m a.s.l., inhabiting meadows, swampy areas, floodplains and river deltas.

COMMENTS. In general appearance and the conformation of male palp, *Z. armillata* is similar to *Z. spinimana*, but can be easily distinguished by the massive median process that is sharply curved at the tip, and the epigyne having the large prominent (cf. Figs 25–29 and 56–59).

Zora manicata Simon, 1878
Figs 31–35.

Zora manicata — Miller, 1947: 88, pl. XIV, figs 13–16 (♂♀).

Zora manicata — Mazzoleni *et al.*, 2016: 446, figs 7, 10 (♂).

A complete reference list is given in WSC [2024].

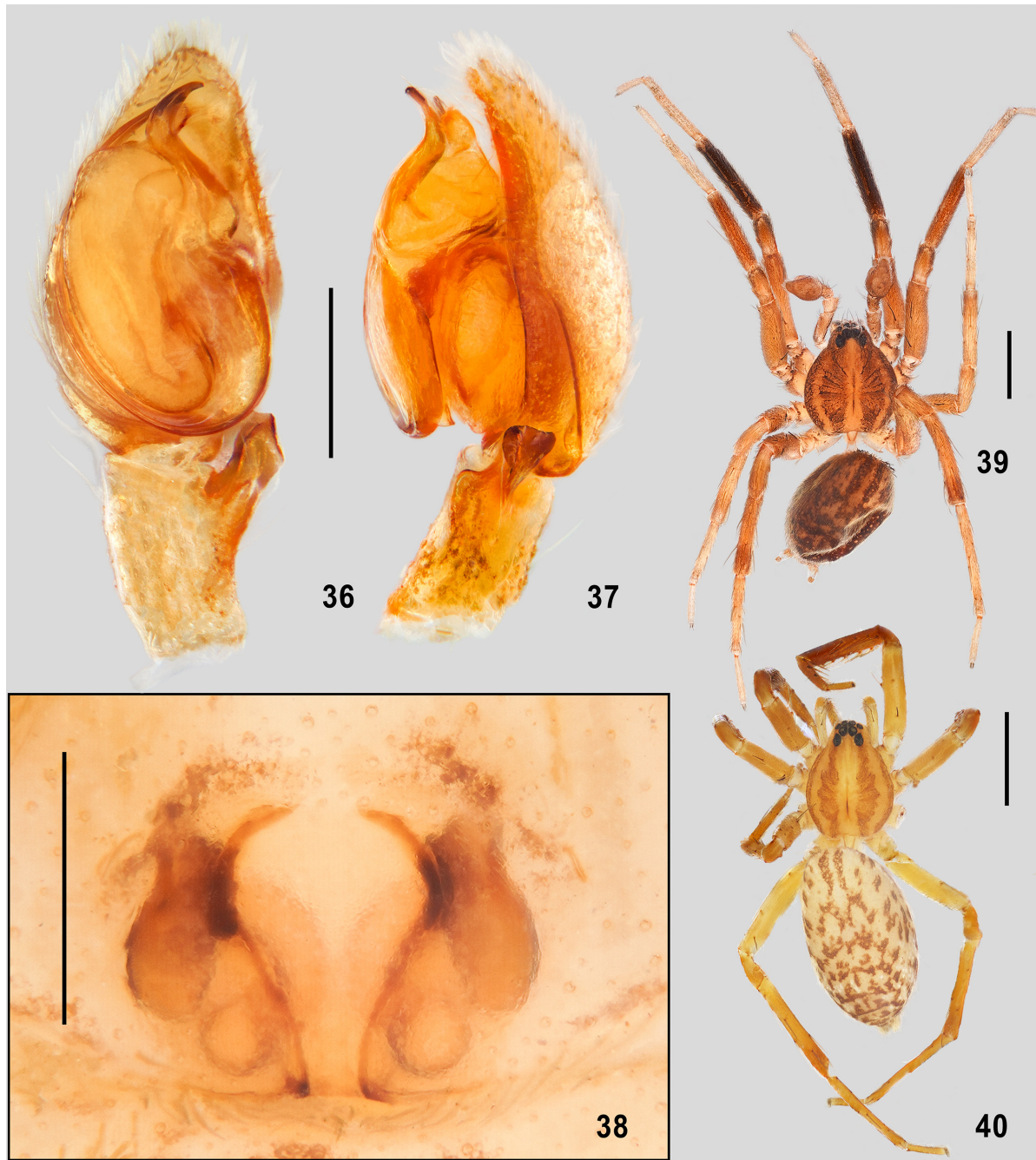
MATERIAL. RUSSIA. **Krasnodar Territory**: 2 ♀♀ (PC), Temryuk Distr., Primorskiy Vil., 45.255881°N / 36.903065°E, steppe, 7–10.06.2018, IS. **Stavropol Territory**: 1 ♀ (PC), Izobilnyi, 45.

371050°N / 41.733628°E, 200 m a.s.l., 9.07–8.08.2011, VOK; 1 ♀ (PC), same locality, 5.07–15.08.2014, VOK. **North Ossetia**: 1 ♀ (ZMMU), Kirovskiy Distr., nr Kardzhin Vil., 43.283309°N / 44.304403°E, 436 m a.s.l., meadow with the predominance of *Bothriochloa ischaemum*, 25.07.2023, YK.

RECORD. RUSSIA. Stavropol Territory: Isobilnyi [Ponomarev *et al.*, 2017: sub *Zora silvestris*, misidentified]; Krasnodar Territory: Primorskiy [Ponomarev *et al.*, 2018: sub *Zora spinimana*, misidentified].

DISTRIBUTION. Southern Europe, North Africa, Israel [Nentwig *et al.*, 2024; WSC, 2024]. The records from the Caucasus [Martynovchenko, Mikhailov, 2014; Ponomarev, Komarov, 2015] are erroneous (see above under *Z. caucasia* sp.n. and below under *Z. osetica*). The record of *Z. manicata* from Iran [Zamani *et al.*, 2018] was not illustrated and hence requires confirmation.

COMMENTS. In the south of European Russia, the species has been found only in the Ciscaucasia and at the



Figs 36–40. *Zora nemoralis*. Male palp, ventral (36) and retrolateral (37) view; intact epigyne, ventral view (38); male habitus, dorsal view (39); female habitus, dorsal view (40). Scale bars: 36–38 — 0.25 mm; 39–40 — 1 mm.

Рис. 36–40. *Zora nemoralis*. Пальпа самца, вид снизу (36) и сбоку-сзади (37); необработанная эпигина, вид снизу (38); внешний вид самца, вид сверху (39); внешний вид самки, вид сверху (40). Масштаб: 36–38 — 0,25 мм; 39–40 — 1 мм.

foothills of the Caucasus at the maximum altitude of 436 m a.s.l., where it inhabits steppe and meadow biotopes. On the Iberian Peninsula, it has been recorded from dry Mediterranean forests at the elevations of up to 1850 m a.s.l. [Urones, 2005]. However, Wunderlich [2023] pointed out that Urones [2005] listed two species (*Z. manicata* and *Z. manicatoides*) under the name *Z. manicata*. Thus, it is difficult to outline correctly the biotopic requirements of *Z. manicata* based on Urones data. In the Czech Republic (Mohelenská hadcová steppe), the species occurs in rocky steppe, being the most common species [Miller, 1947].

Zora nemoralis (Blackwall, 1861)
Figs 36–40.

Zora nemoralis — Miller, 1947: 88, pl.XIV, figs 5–8 (♂♀)

Zora nemoralis — Heimer, Nentwig, 1991: 456, fig. 1198 (♂♀)

A complete reference list is given in WSC [2024].

MATERIAL. RUSSIA. **Rostov Region**: 1 (PC), Millerovo Distr., Ternovoy Vil., 48.932331°N / 40.331809°E, forest, 25.07–15.08.2009, EK; 2 ♂♂, 2 ♀♀ (PC), Ust-Donetskii Distr., Razdorskaya Vil., 47.550362°N / 40.654189°E, tree line, 16.05.2001, AP; 1 ♀ (PC), Ust-Donetskyi Distr., Krymskyi Vil., Vlasova Gully, 47.694270°N /



Figs 41–43. *Zora osetica*. Male palp, ventral (41) and retrolateral (42) view; male habitus, dorsal view (43). Scale bars: 41–42 — 0.25 mm; 43 — 1 mm.

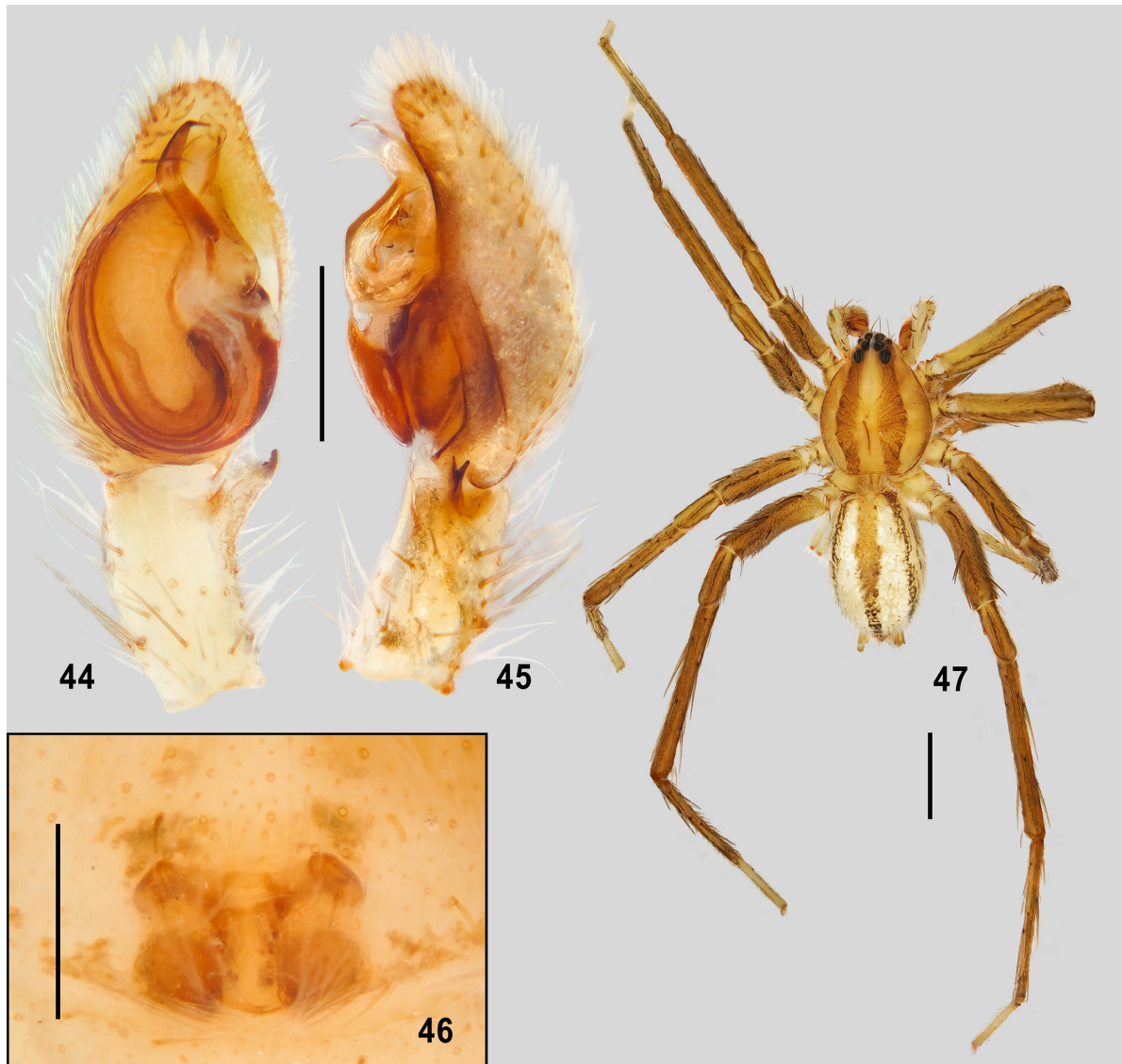
Рис. 41–43. *Zora osetica*. Пальпа самца, вид снизу (41) и сбоку-сзади (42); внешний вид самца, вид сверху (43). Масштаб: 41–42 — 0,25 мм; 43 — 1 мм.

40.7740206°E, Gully forest, 19.04–12.05.2014, AP; 1 ♀ (PC), same locality and biotope, 5.06.2014, AP; 2 ♂♂, 1 ♀ (PC), Ust-Donetskiy Distr., Krymskiy Vil., Savateevskaya Gully, 47.662411°N / 40.794856°E, gully forest, 8.05–10.06.2005, AP; 2 ♂♂ (ZMMU), same locality and biotope, 19.05–10.06.2005, AP; 4 ♂♂, 1 ♀ (PC), same locality and biotope, 30.05.2009, AP. **Adygeya:** 1 ♀ (PC), Maykop Distr., Nikel Vil., 44.178440°N / 40.158806°E, beech-hornbeam forest, 530 m a.s.l., 30.06.1972, AP; 3 ♂♂, 5 ♀♀ (PC), Maykop Distr., 5.5 km N of Kamenomostsky Vil., 44.3454°N / 40.18947°E, Polkovnitskaya Balka, 422 m a.s.l., oak forest with hornbeam, 4.06–16.08.2011, YC; 1 ♀ (ZISP), same locality and biotope, 29.07–16.08.2011, YC. **Krasnodar Territory:** 1 ♂ (PC), Anapa Distr., 2 km SE of Bolshoi Utrish Vil., 44.748653°N / 37.408607°E, 1–5.05.2008, EK; 2 ♀♀ (PC), same locality, 60 m a.s.l., beech forest, 10.06.2009, AP; 1 ♀ (PC), Gelendzhik, ‘Temnaya Shchel’ site, 44.414519°N / 38.252803°E, 08.2013, EK; 7 ♂♂, 4 ♀♀ (PC), Goryachiy Klyuch, ‘Ochakovo’ site, 44.602504°N / 39.128311°E, 240 m a.s.l., oak forest, 5.05–16.08.2011, VK; 1 ♂ (PC), Severskiy Distr., Afipskiy forestry, Kaluzhskoe, 44.769916°N / 39.007666°E, 80 m a.s.l., oak forest, 15–25.07.2011, VK; 3 ♀♀ (ZMMU), same locality and biotope, 26.07.2012, VK; 3 ♀♀ (PC), same locality and biotope, 12.07–2.08.2012, VK; 1 ♂, 1 ♀ (ZISP), Mostovskiy Distr., 21 km SSW of Psebay Vil., Kavkazskiy Nature Reserve, ‘Chernorechye’ cordon, 43.933463°N / 40.684389°E, 817 m a.s.l., glade of deciduous forest, 4–10.06.2017, AP; 3 ♂♂ (PC), Mostovskiy Distr., 22 km SSW of Psebay Vil., Kavkazskiy Nature Reserve, ‘Chernorechye’ cordon, 43.932717°N / 40.682463°E, left bank of the Urushten River, 840 m a.s.l., beech-hornbeam forest, along rocks, 6–15.06.2017, AP; 1 ♂ (PC), same locality, glade of deciduous forest, 10–15.06.2017, AP. **North Ossetia:** 1 ♂ (ZMMU), Kirovskiy Distr., Kabardino-Sunzhenskiy Ridge, between Kardzhin and Elkhotovo, 43.309369°N / 44.255583°E, SSE slope of a gully, 515 m a.s.l., old oak forest, 19.05–13.06.1985, SA; 2 ♂♂ (ZMMU), Kirovskiy Distr., Kabardino-Sunzhenskiy Ridge, 4 km NW of Kardzhin Vil., WSW slope of gully, 43.294386°N / 44.26245°E, young dogwood-oak forest, ~500 m a.s.l., 19.05–13.06.1985, SA; 3 ♂♂ (ZMMU), Ardon River basin, left side of the Alagir Gorge opposite of

Zintsar Vil., 42.885521°N / 44.157899°E, recovering oak forest, 1050 m a.s.l., 18.05–11.06.1985, SA; 4 ♀♀ (ZMMU), same locality and biotope, 9.07.1985, KM; 2 ♂♂ (ZMMU), same locality and biotope, 9–27.07.1985, SA; 2 ♂♂, 1 ♀ (ZMMU), Alagir Distr., Tsei Ridge, 5 km E of Verkhniy Tsei Vil., 42.793608°N / 43.993331°E, S slope, middle-aged oak forest, 1400 m a.s.l., 16.05–21.07.1985, SA; 1 ♂ (PC), Alagir Distr., Nizhniy Unal Vil., 42.848822°N / 44.143636°E, 1450 m a.s.l., pine forest, 15.06.1988, NSh. **Dagestan:** 1 ♂, 1 ♀ (PC), Kaytag-skiy Distr., Madzhalis Vil., 42.125758°N / 47.829458°E, 440 m a.s.l., 9.05.2009, SVA; 1 ♀ (PC), Kumtorkalinskiy Distr., N slope of the Narat-Tyube Ridge, 42.982338°N, 47.220630°E, 420 m a.s.l., 26.04.2012, GK. **SOUTH OSSETIA:** 1 ♂ (PC), nr Tskhinval, 42.247685°N / 43.956266°E, 960 m a.s.l., pine plantation, 23.07.2013, YK; 1 ♀ (PC), Tskhinval Distr., nr Atriskhev Vil., 42.2294012°N / 44.221538°E, 1285 m a.s.l., tall grasses, 20.06.2014, YK; 2 ♂♂ (PC), nr Tskhinval, 42.243747°N / 43.951214°E, 990 m a.s.l., oak forest, 11.07.2014, YK; 5 ♂♂ (PC), 5 ♂♂ (ZMMU), Tskhinval Distr., nr Atriskhev Vil., 42.243747°N / 43.951214°E, slope of the Malo-Liakhsvoe Gorge, 1233 m a.s.l., *Carpinus orientalis* forest, 3.10.2014, YK.

RECORDS. RUSSIA. Rostov Region: Razdorskaya [Ponomarev, Tsvetkova, 2003]; Krymskiy [Ponomarev, Lebedeva, 2014]; Olkhoviy Rog, Ternovoi [Ponomarev, 2022]. Adygeya: Krasnooktyabrskiy, Kuzhorskaya [Ponomarev, 2021]. Krasnodar Territory: Khosta [Spasskiy, 1937]; Starokorsunskaya [Seyfulina, 2008]; Kaluzhskaya [Kobzar *et al.*, 2012]; Bolshoi and Malyi Utrish [Ponomarev, Volkova, 2013]; Chernorechye [Ponomarev, Chumachenko, 2023]. Dagestan: Erpeli, Verkhnee Kazanishche, Verkhny Karanai [Ponomarev, Khalidov, 2007]; Madzhalis [Abdurakhmanov, Alieva, 2011]; Narat-Tyube [Ponomarev, 2022]. South Ossetia: Atriskhev, Tskhinval [Ponomarev, Komarov, 2015].

DISTRIBUTION. Palearctic [WSC, 2024]. In Ciscaucasia and the Caucasus, the species is common in ravines, floodplains and mountain forests.



Figs 44–47. *Zora parallela*. Male palp, ventral (44) and retrolateral (45) view; intact epigyne, ventral view (46); male habitus, dorsal view (47). Scale bars: 44–46 — 0.25 mm; 47 — 1 mm.

Рис. 44–47. *Zora parallela*. Пальпа самца, вид снизу (44) и сбоку-сзади (45); необработанная эпигина, вид снизу (46); внешний вид самца, вид сверху (47). Масштаб: 44–46 — 0,25 мм; 47 — 1 мм.

Zora osetica Ponomarev in Ponomarev, Alekseev,
Komarov et Shmatko, 2021
Figs 41–43.

Zora osetica Ponomarev, in Ponomarev *et al.*, 2021: 354, figs 11–13 (♂).

MATERIAL. RUSSIA. North Ossetia: 1 ♂ (PC, paratype), Mozdok Distr., nr Komarovo Vil., 43.738122°N / 44.791556°E, 130 m a.s.l., psammophyte forb-bunchgrass steppe, 20.06.1987, SA; 1 ♂ (ZMMU), Kirovsky Distr., 1.5 km N of Kardzhin Vil., 43.279125°N / 44.271461°E, S slope of gully, 450 m a.s.l., steppe with predominance of *Bothriochloa ischaemum*, 19.05–13.06.1985, SA. **SOUTH OSSETIA:** 1 ♂ (PC), Tskhinval Distr., nr Atsriskhev Vil., 42.291897°N / 44.218672°E, slope of the Malo-Liakhvskoe Gorge, 1227 m a.s.l., 29.06.2012, YK.

RECORDS. RUSSIA. North Ossetia: Kievskoe, Komarovo [Ponomarev *et al.*, 2021]. **South Ossetia:** Atsriskhev [Ponomarev, Komarov, 2015: sub *Zora manicata*, misidentified].

DISTRIBUTION. Foothill and low-mountain regions of North and South Ossetia.

Zora parallela Simon, 1878
Figs 44–47.

Zora parallela Simon, 1878: 323, pl. 16, fig. 9 (♂♀).

Zora parallela — Heimer, Nentwig, 1991: 454, fig. 1196 (♂♀).

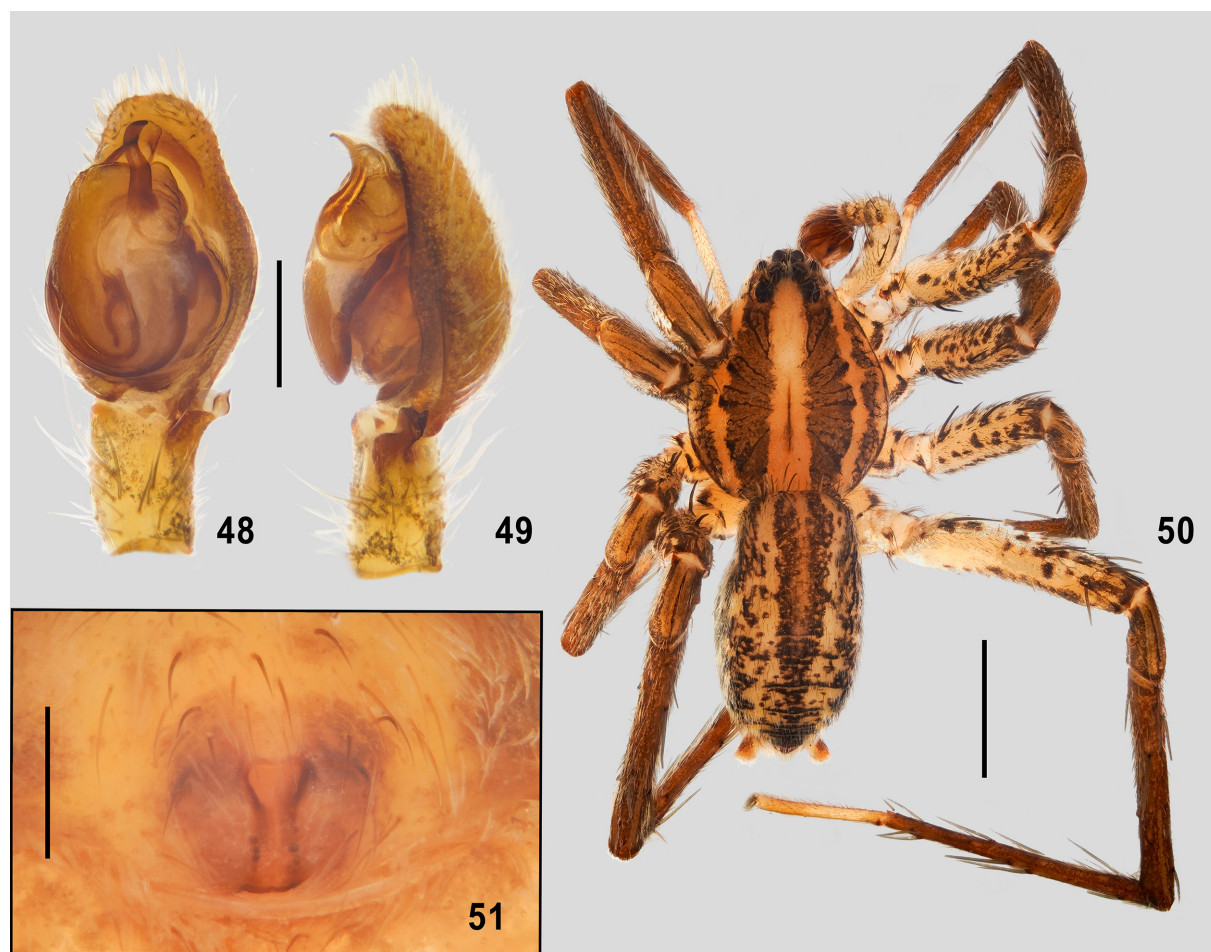
Zora parallela — Zamani, Marusik, 2017: 325, figs 6d–g (♂).

A complete reference list is given in WSC [2024].

MATERIAL. RUSSIA. Dagestan: 1 ♂, 1 ♀ (ZMMU), 1 ♂, 1 ♀ (PC) 5 km NW of Gunib Vil., ‘Verkhny Gunib’ Nature Park, 42.402596°N / 46.904385°E, 1910 m a.s.l., mixed forest, 06.2008, AKh.

RECORDS. RUSSIA. Dagestan: Verkhny Gunib [Ponomarev *et al.*, 2011: sub *Zora* sp.].

DISTRIBUTION. Northern, Western and Southern Europe [Nentwig *et al.*, 2024]; the species has also been recorded from the Black Sea area (Kherson Region) [Polchaninova, Prokopenko, 2019] and the Russian Far East (Bureinsky Nature Reserve) [Trilikauskas, 2007]. Mountainous Dagestan is the first record of *Z. parallela* in Ciscaucasia. Taking into account the records



Figs 48–51. *Zora pardalis*. Male palp, ventral (48) and retrolateral (49) view; male habitus, dorsal view (50); intact epigyne, ventral view (51). Scale bars: 48–49, 51 — 0.25 mm; 50 — 1 mm.

Рис. 48–51. *Zora pardalis*. Пальпа самца, вид снизу (48) и сбоку-сзади (49); внешний вид самца, вид сверху (50); необработанная эпигина, вид снизу (51). Масштаб: 48–49, 51 — 0,25 мм; 50 — 1 мм.

of the species in Dagestan and the Russian Far East, the range of *Z. parallela* can be characterised as Palearctic disjunctive.

COMMENTS. The conformation of the copulatory organs and the body colouration of our specimens (Figs 44–47) correspond to those given by Heimer & Nentwig [1991], Urones [2005], and Zamani & Marusik [2017].

Zora pardalis Simon, 1878

Figs 48–51.

Zora pardalis — Miller, 1947: 89, pl. XIV, f. 17 (♂).

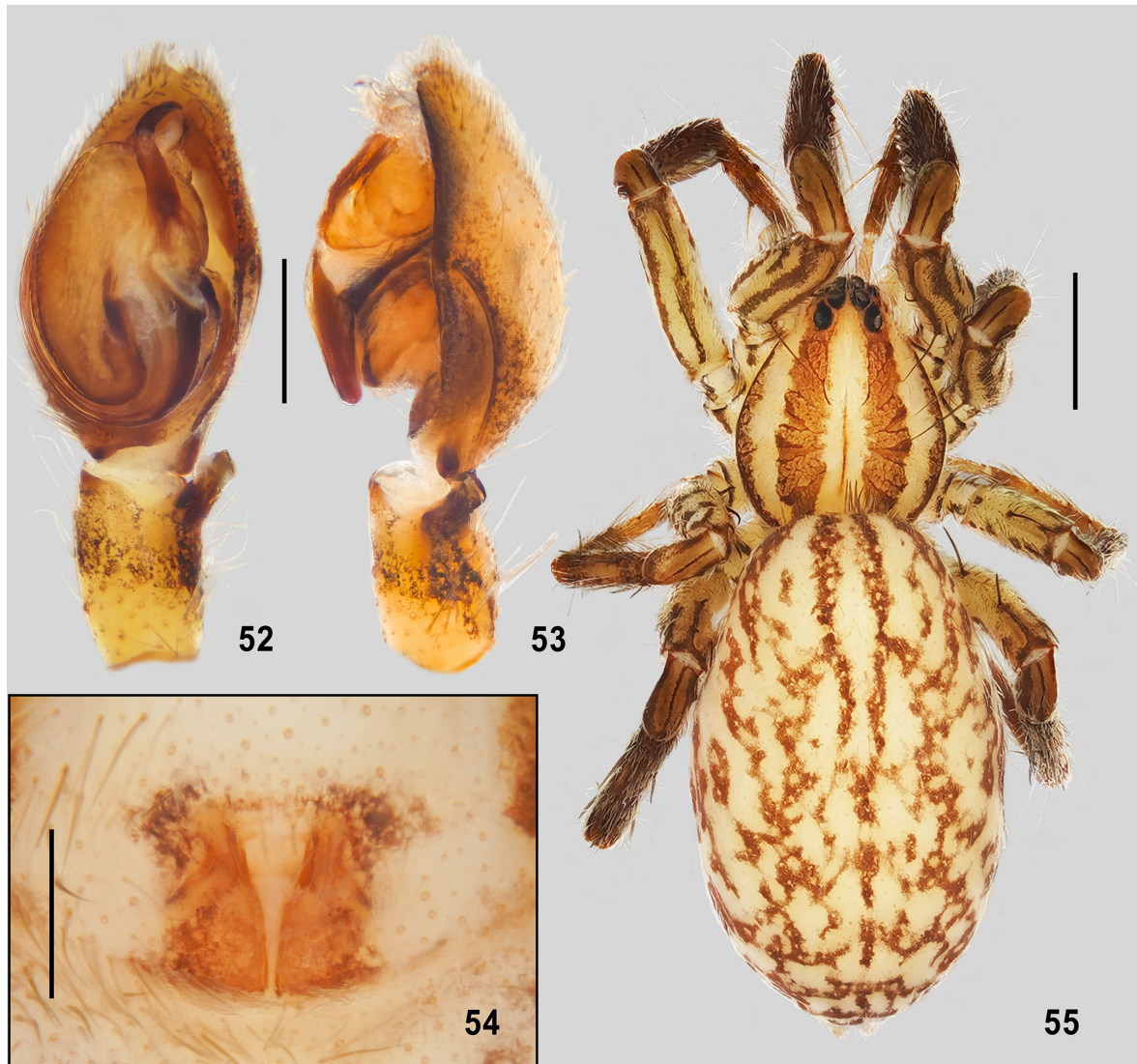
Zora pardalis — Heimer, Nentwig, 1991: 454, fig. 1195 (♀).

Zora pardalis — Urones, 2005: 14, figs 29–35 (♂♀)

A complete reference list is given in WSC [2024].

MATERIAL. RUSSIA. **Rostov Region**: 2 ♂♂, 1 ♀ (PC), Belokalitvinsk Distr., Ilyinka Vil., 48.514473°N / 41.067997°E, pine plantation, 14–26.05.2021, ET; 3 ♂♂ (ZMMU), same locality and biotope, 14–26.05.2021, ET; 1 ♀ (ZISP), Neklinovsky Distr., 1.5 km S of Bolshaya Neklinovka Vil., ‘Miussky Slope’ Natural Monument, 47.410250°N / 38.864452°E, forest, 13.07.2010, AP; 2 ♂♂, 1 ♀ (PC), nr Shakhty City, 47.746696°N / 40.087431°E, Malinki Park, 14–15.06.2020, ET, IS; 1 ♀ (ZISP), same locality and biotope, 21.06–20.07.2021, ET, IS; 1 ♂ (ZMMU), 1 ♂ (PC), Bagaevsky Distr., 47.26963°N / 40.26665°E, 3 km N of Manychskaya Vil., floodplain forest, 27.05.2022, VS; 3 ♂♂ (PC), Ust-Donetskiy Distr., nr Razdorskaya Vil., 47.562950°N / 40.668286°E, sandy plot, 15–30.04.2000, AP; 1 ♀ (PC), same local-

ity, forb meadow, 14.05.2000, AP; 2 ♀♀ (ZMMU), same locality and biotope, 16.05.2001, AP; 2 ♂♂, 1 ♀ (ZMMU), Ust-Donetskiy Distr., nr Razdorskaya Vil., 47.522827°N / 40.620899°E, Pukhlyakovskie slopes, steppe meadow, 3.05–2.06.2003, AP; 2 ♀♀ (PC), same locality, steppe, 25.04.2004, AP; 1 ♂ (PC), same locality, gully bottom, bushy meadow, 3.05.2004, AP; 2 ♂♂, 1 ♀ (PC), same locality, 25.04–10.05.2004, AP; 2 ♀♀ (PC), Ust-Donetskiy Distr., Razdorskaya Vil., Atamanskaya Gully, 47.549262°N / 40.653246°E, meadow, 19.05–9.07.2000, AP; 1 ♀ (PC), same locality and biotope, 13–17.08.2001, AP; 1 ♂, 1 ♀ (PC), same locality and biotope, 21.04.2002, AP; 6 ♂♂, 5 ♀♀ (ZMMU), Ust-Donetskiy Distr., Razdorskaya Vil., Atamanskaya Gully, 47.550263°N / 40.655423°E, forest line, 20.05–18.09.2001, AP; 1 ♀ (ZMMU), Ust-Donetskiy Distr., Razdorskaya Vil., Atamanskaya Gully edge, 47.550871°N / 40.653484°E, steppe, 4.04.2020, AP; 1 ♀ (PC), Ust-Donetskiy Distr., nr Krymskiy Vil., Savateevskaya Gully, 47.662357°N / 40.793856°E, meadow, 25.04–2.05.2005, AP; 7 ♂♂, 1 ♀ (ZISP), same locality, 25.04–26.06.2005, AP; 1 ♂ (ZMMU), Ust-Donetskiy Distr., nr Krymskiy Vil., Vlasova Gully, 47.692631°N / 40.741640°E, glade of gully forest, 19.04–12.05.2014, AP; 5 ♂♂ (PC), same locality and biotope, 12.05–5.06.2014, AP; 1 ♂ (PC), Ust-Donetskiy Distr., nr Krymskiy Vil., Vlasova Gully, 47.694338°N / 40.740233°E, gully forest, 12.05–5.06.2014, AP; 5 ♂♂, 1 ♀ (PC), Ust-Donetskiy Distr., Konygin Vil., 47.58883°N / 40.71700°E, 21.06.2022, IS, ET; 1 ♂ (PC), Zernograd Distr., nr Srednie Khoroli Vil., 46.947164°N / 40.472688°E, forest line, 20–25.06.2011, AP; 1 ♀ (PC), Orlovskii Distr., nr Kamyshvka Vil., 46.643993°N / 42.605484°E, sandy steppe, 27.06.2009, AP; 2 ♂♂ (PC), Orlovskii Distr., Rostovsky Nature Reserve, 46.531972°N / 42.863659°E, 7.05.2004, ZP. **Stavropol Territory**: 1 ♂ (PC), Ap-



Figs 52–55. *Zora silvestris*. Male palp, ventral (52) and retrolateral (53) view; intact epigyne, ventral view (54); female habitus, dorsal view (55). Scale bars: 52–54 — 0.25 mm; 55 — 1 mm.

Рис. 52–55. *Zora silvestris*. Пальпа самца, вид снизу (52) и сбоку-сзади (53); необработанная эпигина, вид снизу (54); внешний вид самки, вид сверху (55). Масштаб: 52–54 — 0,25 мм; 55 — 1 мм.

anasenkovsky Distr., Manychskoe Vil., 46.114441°N / 43.140726°E, steppe, 25–30.05.2005, TK. **North Ossetia:** 1 ♂, 2 ♀♀ (PC), 10 km ESE of Mozdok, nr Oktyabrskoye Vil., 130 m a.s.l., 43.697719°N / 44.786208°E, rich herb bunchgrasses steppe, 12.05–20.06.1987, SA; 1 juv. (ZMMU), Kabardino-Sunzhensky Ridge, between of Kardzhin and Elkhotovo Vil., 43.318129°N, 44.275914°E, 680 m a.s.l., Zeka Hill, S slope, *Stipa*-forb steppe, 3–16.11.1985, SA. **Dagestan:** 1 ♂ (PC), Kumtorkalinsky Distr., Sarykum Sand Dune, 43.005978°N, 47.237971°E, 15.04–15.05.2010, MA, AK, ZS; 3 ♂♂ (ZISP), same locality, 15.04–5.05.2010, MA, AK, ZS; 1 ♂ (PC), Kumtorkalinsky Distr., N slope of the Narat-Tyube Ridge, 42.982338°N, 47.220630°E, 420 m a.s.l., 26.04.2012, GK.

RECORDS. Rostov Region: Novocherkassk [Spassky, 1912]; Razdorskaya [Ponomarev, Tsvetkova, 2003; Ponomarev, 2017]; Rostovsky Nature Reserve [Ponomarev, Tsvetkov, 2004a]; Krymskiy [Ponomarev, Lebedeva, 2014; Ponomarev, 2017]; Bolshaya Neklinovka, Kamyshevka, Krasny Sulin, Manych, Srednie Khoroli [Ponomarev, 2022]. Stavropol Territory: Manychskoe [Ponomarev *et al.*, 2017]. North Ossetia: Oktyabrskoe [Ponomarev *et al.*, 2021]. Dagestan: Sarykum sand dune [Ponomarev, Abdurakhmanov, 2014].

DISTRIBUTION. Southern, Central, Eastern Europe [Nentwig *et al.*, 2024], Georgia [Otto, 2022].

COMMENTS. A xerophilous species, widespread in steppes and semi-deserts of the south of European Russia, penetrating into the steppe areas of the lowland foothills of the Caucasus. It is clearly distinguished from other *Zora* species, particularly from the common *Z. nemoralis*, by the conformation of copulatory organs (*viz.*, the weakly bent median apophysis and the small epigynal depression) and the body colouration (*viz.*, the presence of numerous grey-brown patches on leg femora) (*cf.* Figs 36–40 and 48–51).

Zora silvestris Kulczyński, 1897
Figs 52–55.

Zora silvestris Kulczyński in Chyzer et Kulczyński, 1897: 250, pl. 10, fig. 13 (♂♀).

Zora silvestris — Heimer, Nentwig, 1991: 454, fig. 1193 (♂♀).

Zora silvestris — Mazzoleni *et al.*, 2016: 446, figs 8, 11 (♂).



Figs 56–60. *Zora spinimana*. Male palp, ventral (56, 57) and retrolateral (58) view; intact epigyne, ventral view (59); male coxa IV, ventral view (60). Specimens: 56, 58–60 —Krasnodar Territory; 57 —Dagestan. Scale bars: 0.25 mm.

Рис. 56–60. *Zora spinimana*. Пальпа самца, вид снизу (56, 57) и сбоку-сзади (58); необработанная эпигина, вид снизу (59); тазики IV самца, вид снизу (60). Экземпляры: 56, 58–60 — из Краснодарского края; 57 — из Дагестана. Масштаб: 0,25 мм.

A complete reference list is given in WSC [2024].

MATERIAL. RUSSIA. Krasnodar Territory: 1 ♀ (PC), Mostovskiy Distr., 22 km SSW of Psebay Vil., Kavkazskiy Nature Reserve, ‘Chernorechye’ cordon, 43.932717°N / 40.682463°E, left bank of Urushten River, 840 m a.s.l., beech-hornbeam forest, along rocks, 4–7.06.2017, AP. **Karachay-Cherkessia:** 1 ♂ (PC), Teberda Vil., 43.418070°N / 41.725135°E, 1400 m a.s.l., forest, 21.06–22.07.2011, EK. **North Ossetia:** 1 ♀ (ZMMU), Irafskiy Distr., nr Kubus Mt, 42.897722°N / 43.605422°E, 1720 m a.s.l., 10.08.2010, DK, AE.

RECORDS. RUSSIA. North Ossetia: Kubus Mt [Ponomarev, Komarov, 2013; present data]. Krasnodar Territory: ‘Chernorechye’ cordon [Ponomarev, Chumachenko, 2023; present data].

DISTRIBUTION. Europe, the Caucasus, Turkmenistan [WSC, 2024].

COMMENTS. The species is rare in the region and can be found only in low-mountain and mid-mountain regions of the West and Central Caucasus at the elevations lower than 1800 m a.s.l. where it occurs in forests.

Zora spinimana (Sundevall, 1832)

Figs 56–60.

Zora spinimana — Miller, 1947: 87, pl. XIV, fig. 1–4 (♂♀).

Zora spinimana — Heimer, Nentwig, 1991: 456, fig. 1199 (♂♀).

Zora spinimana — Aakra *et al.*, 2016: 38, fig. 32B,D,F,H (♂♀).

A complete reference list is given in WSC [2024].

MATERIAL. RUSSIA. Rostov Region: 1 ♀ (ZISP), Millerovskiy Distr. Ternovoy Vil., 48.928934°N / 40.347346°E, 6–18.07.2013, EK; 6 ♂♂, 2 ♀♀ (PC), Belokalitvinsky Distr., Ilinka Vil., 48.524339°N / 41.063883°E, forest, 14.05–20.07.2021, ET, IS; 1 ♀ (PC), Ust-Donetskii Distr., Razdorskaya Vil., 47.554349°N / 40.667290°E, wet meadow, 12.05.2000, AP; 1 ♂, 1 ♀ (PC), Ust-Donetskii Distr., Razdorskaya Vil., 47.550362°N / 40.654189°E, forest line, 7.06–10.08.2001, AP; 1 ♂ (ZISP), Ust-Donetskii Distr., Razdorskaya Vil., 47.546914°N / 40.651291°E, gully forest, 3.10.2008, AP; 2 ♂♂ 1 ♀ (PC), Ust-Donetskii Distr., 9 km N of Razdorskaya Vil., Medvezhya Gully, 47.621192°N / 40.688063°E, gully forest, 17.04.2002, AP; 1 ♀ (PC),

same locality and biotope, 11.05.2002, AP; 2 ♀♀ (PC), Ust-Donetskii Distr., Razdorskaya Vil., 47.550720°N / 40.691784°E, Porechny Island, floodplain forest, 22.06.2001, AP; 1 ♀ (PC), Ust-Donetskii Distr., Razdorskaya Vil., 47.550720°N / 40.691784°E, Porechny Island, oak grove, 11.08.2001, AP; 1 ♀ (PC), Us-Donetskii Vil., nr Krymskiy Vil., Savateevskaya Gully, 47.662357°N / 40.793856°E, gully forest, stream bank, 25.04.2005, AP; 6 ♂♂, 5 ♀♀ (PC), same locality, gully forest, 5.07–5.08.2005, AP; 8 ♂♂, 1 ♀ (ZMMU), Ust-Donetskii Distr., 3 km SW of Ust-Bystryanskaya Vil., 47.785533°N / 41.018473°E, floodplain forest, 21.06–3.08.2022, ET, IS. **Adygeya:** 2 ♂♂ (PC), Maykop Distr., 5.5 km N of Kamennomostsky Vil., 44.3454°N / 40.18947°E, Polkovnitskaya Balka, 422 m a.s.l., oak forest with hornbeam, 15.04–16.06.2011, YC; 1 ♂ (PC), Maykop Distr., Nikel Vil., 44.177733°N / 40.150656°E, 482 m a.s.l., 4–12.07.2014, EK; 11 ♂♂, 1 ♀ (PC), Maykop Distr., 3rd km of the road Guzeripl – Abago Pasture, 43.980008°N / 40.163413°E, 1000 m a.s.l., beech-fir forest, 05–10.2009, YC; 1 ♀ (PC), Kavkazsky Nature Reserve, Guzeripl Kordon, 43.995972°N / 40.140667°E, 700 m a.s.l., beech-fir forest, 21.08–24.09.2018, YC. **Krasnodar Territory:** 1 ♂, 2 ♀♀ (PC), Anapa Distr., 2 km SE of Bolshoi Utrish Vil., 44.748653°N / 37.408607°E, beech forest, 17–27.08.2006, EK; 1 ♂ (PC), same locality, 13–25.08.2008, EK; 2 ♂♂, 1 ♀ (PC), Seversky Distr., Afipsky Forestry, Kaluzhskoe, 44.769916°N / 39.007666°E, 80 m a.s.l., oak forest, 26.07.2012, VK; 2 ♂♂, (PC), Mostovsky Distr., 22 km SSW of Psebay Vil., Kavkazsky Nature Reserve, ‘Chernorechye’ cordon, 43.932717°N / 40.682463°E, left bank of the Urushten River, 840 m a.s.l., beech-hornbeam forest, along rocks, 4–15.06.2017, AP; 1 ♂, 1 ♀ (PC), same locality, in the litter along the rocks, 4.06.2017, AP; 1 ♂ (PC), same locality, glade of deciduous forest, 10–15.06.2017, AP; 1 ♀ (PC), same locality, right bank of the Urushten River, beech-hornbeam forest, 10.06.2017, AP; 2 ♀♀ (PC), Sochi, Khosta, Caucasian Reserve, yew-boxwood grove, 43.527580°N / 39.874127°E, 100 m a.s.l., 16.06–18.08.2021, YC; 1 ♂ (PC), Sochi, Adler, ‘Yuzhnye Culture’ dendrological Park, 26.05–16.06.2021, YC. **North Ossetia:** 3 ♂♂ (ZMMU), Kirovskiy Distr., Kabardino-Sunzhensky Ridge, between Kardzhin and Elkhotovo, 43.309369°N / 44.255583°E, SSE slope of gully, 515 m a.s.l., old oak forest, 19.05–13.06.1985, SA; 1 ♂, 1 ♀ (ZMMU), same locality and biotope, 4–30.07.1985, SA; 4 ♂♂, 2 ♀♀ (ZMMU), Kirovskiy Distr., Kabardino-Sunzhensky Ridge, between Kardzhin and Elkhotovo, 43.314262°N / 44.263070°E, oak forest, beech forest and mixed grass-feather grass steppe, 57–680 m a.s.l., 1–19.05.1985, SA; 2 ♀♀ (ZMMU), Kirovskiy Distr., Kabardino-Sunzhensky Ridge, 4 km NW of Kardzhin Vil., WSW slope of gully, 43.294386°N / 44.26245°E, young dogwood-oak forest, ~500 m a.s.l., 19.05–13.06.1985, SA; 3 ♂♂ (ZMMU), same locality and biotope, 13.06–4.07.1985, SA; 3 ♂♂, 3 ♀♀ (ZMMU), same locality and biotope, 30.07–24.08.1985, SA; 1 ♀ (ZMMU), same locality and biotope, 3–16.09.1985, SA; 1 ♂ (ZMMU), Alagir Distr., Tsei Ridge, 4 km E of Verkhniy Tsei Vil., S slope, 42.806816°N / 43.986343°E, pine forest with *Rhododendron luteum*, 2000 m a.s.l., 16.05–8.06.1985, SA; 1 ♀ (ZMMU), same locality and biotope, 8.06–21.07.1985, SA; 1 ♂ (PC), Alagir Distr., 2.5 km NE of Khataldon Vil., 43.049482°N / 44.379473°E, 618 m a.s.l., oak forest, 29.03.2020, YK. **Ingushetia:** 1 ♂, 3 ♀♀, Malgobek Distr., nr Voznesenskaya Vil., 43.55345°N / 44.7356°E, broadleaved forest, 6.10.1987, SA; 1 ♀ (PC), Sunzhenskiy Distr., nr Verkhniy Alkun Vil., 42.964672°N / 45.008805°E, beech forest, woodcut area, 817 m a.s.l., 14.07.1977, VVS. **Dagestan:** 1 ♀ (ZISP), 16 km SW of Makhachkala, 42.851422°N / 47.369280°E, Talginskoe Gorge, 365 m a.s.l., 10.2008, AKh; 4 ♂♂ (PC), Kazbekovskii Distr., nr Dylim Vil., 43.062259°N / 46.638525°E, hornbeam forest, 30.05.2018, MA; 1 ♂ (PC), Buinaksk Distr., 3 km E of Erpeli Vil., 42.806001°N / 47.022829°E, 692 m a.s.l., mixed forest, 17.10.2021, KG. **ABKHAZIA:** 1 ♀ (ZMMU), Gudauta Distr., 25 km N of Gudauta, Gunarkhva glade, 12–14.08.2004, PI. **SOUTH OSSETIA:** 1 ♀ (PC), Tskhinval Distr., nr Pris Vil., 42.232538°N / 43.991506°E, 1003 m a.s.l., pine plantation, 16.06.2013, YK; 1 ♂ (ZMMU), same locality and biotope, 25.10.2013, YK; 1 ♂, 2 ♀♀ (PC), nr Tskhinval, 42.247715°N / 43.956230°E, 960 m a.s.l., old pine afforestation, 14.06–23.07.2013, YK; 1 ♂ (PC), Tskhinval Distr., nr Atsriskhev Vil., 42.243747°N / 43.951214°E, slope of the Malo-Liakhvskoe Gorge, 1233 m a.s.l., *Carpinus orientalis* forest, 3.10.2014, YK; 3 ♂♂, 2 ♀♀ (ZISP), nr Tskhinval, 42.251275°N / 43.954987°E, 962 m a.s.l., pine forest, 11.07.2014, YK; 5 ♂♂, 4 ♀♀ (ZMMU), same locality and biotope, 2.10.2014, YK; 1 ♀ (ZISP), same locality and biotope, 18.11.2014, YK. **GEORGIA:** Imereti: 1 ♂ (PC), Sachkhere Distr., Korbouli Vil., 42.255722°N / 43.465306°E, 920 m a.s.l., 25.06.2018, PI.

RECORDS. RUSSIA. Rostov Region: Razdorskaya [Ponomarev, Tsvetkova, 2003; Ponomarev, Lebedeva, 2014], Veshenskaya [Ponomarev, Tsvetkov, 2004b]. Adygeya: Guzeripl [Ponomarev *et al.*, 2012; Ponomarev, Chumachenko, 2014]. Krasnodar Territory: Khosta [Spassky, 1937; Ponomarev, Chumachenko, 2019]; Bolshoi Utrish [Ponomarev, Mikhailov, 2007]; Starokorsunskaya [Seyfulina, 2008], Kaluzhskaya [Ponomarev, 2022]; Adler [Ponomarev *et al.*, 2022]; ‘Chernorechye’ cordon [Ponomarev, Chumachenko, 2023]. North Ossetia: Kievskoe [Ponomarev *et al.*, 2021]. Ingushetia: Verkhniy Alkun [Minoransky *et al.*, 1984]. Dagestan: Erpeli, Verkhnee Kazanishche [Ponomarev, Khalidov, 2007]; Erpeli, Verkhniy Karanai [Ponomarev, Khalidov, 2007: sub *Zora armillata*, misidentified]; Verkhniy Gunib [Ponomarev *et al.*, 2008: sub *Zora armillata*, misidentified]; Makhachkala, Talginskoe gorge [Ponomarev *et al.*, 2019]. **ABKHAZIA:** Gunarkhva [Kovblyuk *et al.*, 2011: sub *Zora armillata*, misidentified].

DISTRIBUTION. Palearctic [WSC, 2024]. In Ciscaucasia and the Caucasus, the species is common in ravine, floodplain and mountain forests, scarce in meadows.

KEY TO THE MALES OF THE CAUCASIAN *ZORA*

1. Metatarsi I–II with two pairs of bristles ventrally 2
- Metatarsi I–II with three pairs of bristles ventrally 8
2. Coxae IV with a dense group of short thick bristles ventrally (cf. fig. 1192.6 in Heimer, Nentwig [1991])
..... *Z. manicata*
- Coxae IV with regular sparse long bristles ventrally (Fig. 17) 3
3. Brown median longitudinal stripes of carapace notably wider than yellow lateral stripes (Figs 15, 20, 43) 4
- Brown median longitudinal stripes of carapace as wide as yellow lateral stripes (Figs 6, 24) 6
4. Leg femora light yellow, patellae, tibiae and metatarsi dark brown (Fig. 20); palpus as in Figs 18, 19
..... *Z. dagestana* sp.n.
- Leg femora brown (Figs 15, 43) 5
5. Leg tibiae brown, metatarsi and tarsi light yellow (Figs 15, 16); RTA bifurcated (Figs 10, 11); palpus as in Figs 8–11
..... *Z. caucasia* sp.n.
- Leg tibiae, metatarsi and tarsi light yellow (Fig. 43); RTA triangular (Fig. 42); palpus as in Fig. 41 *Z. osetica*
6. Marginal brown stripes on carapace prominent and continuous (Fig. 55); femora I–II with brownish longitudinal stripes and/or rows of spots; RTA tapered (Fig. 52)
..... *Z. silvestris*
- Marginal brown stripes on carapace interrupted (Fig. 6, 24); femora I–II without brownish longitudinal stripes and/or rows of spots (Fig. 6, 24) 7
7. Leg femora and tarsi light yellow, tibiae dark brown, almost black (Fig. 24); RTA rectangular (Fig. 22) *Z. alpina*
- All leg segments light yellow, tibiae and metatarsi slightly brownish distally (Fig. 6); RTA bifurcated (Figs 1, 2) ..
..... *Z. alexeevi* sp.n.
8. Brown median longitudinal stripes of carapace markedly wider than yellow lateral stripes (Figs 39, 50) 9
- Brown median longitudinal stripes of carapace as wide as, or usually thinner than yellow lateral stripes 10
9. Leg femora with numerous grayish brown spots, marginal brown stripes on carapace doubled, their inner line interrupted (Fig. 50); coxae IV with dense group of short thick bristles ventrally (cf. fig. 1195.6 in Heimer, Nentwig [1991]); palpus as in Figs 48, 49 *Z. pardalis*

- Leg femora unicoloured, without spots; marginal brown stripes on carapace singular, continuous (Fig. 39); palpus as in Figs 36, 37 *Z. nemoralis*
10. Dorsum with three distinct brownish longitudinal stripes, leg femora with brown longitudinal lines (Fig. 47); RTA deeply bifurcate, both processes of equal length (Fig. 45); palpus as in Fig. 44 *Z. parallela*
- Dorsum usually spotted, sometimes with a median longitudinal brown stripe becomes lighter and indistinct apically; leg femora without longitudinal lines or with vague light brown stripes; RTA slightly bifurcate, dorsal process longer than ventral one (Figs 27, 28, 58) 11
11. Leg femora unicoloured or with vague light brown stripes; coxae IV with a dense group of short thick bristles ventrally (Fig. 60); sternum monochrome yellow; median apophysis evenly curved (Figs 56, 57) *Z. spinimana*.
- Femora I–II monochromatic; coxae IV with regular sparse long bristles ventrally; sternum yellow, with marginal brown spots; median apophysis strongly bent apically (Figs 25, 26) *Z. armillata*.

Discussion

This paper presents new data on 12 *Zora* species found in Ciscaucasia and the Russian Caucasus, including the adjacent plain areas of the steppe zone of European Russia. Of these species, three — *Z. alexeevi* sp.n.6 *Z. caucasia* sp.n., *Z. dagestana* sp.n. — have been described as new to science. It is worth emphasising that all three species are quite close to each other and belong, alongside with *Z. alpina*, *Z. alpina*, *Z. manicata*, *Z. osetica* and *Z. silvestris*, to the species group that is characterised by the presence of two pairs of ventral spines on metatarsi I–II.

Of the species recorded in the region at hand, seven species occur in Ciscaucasia, including the Sunzhensky and Tersky Mt Ranges: viz., *Z. armillata*, *Z. dagestana* sp.n., *Z. manicata*, *Z. nemoralis*, *Z. osetica*, *Z. pardalis* and *Z. spinimana*; of them, *Z. armillata*, *Z. dagestana* sp.n., *Z. manicata*, *Z. osetica* and *Z. pardalis* have not been found in the Caucasus Major. However, two species have been recorded in eastern Transcaucasia at the elevations of 600–1200 m a.s.l.: viz., *Z. osetica* in South Ossetia (present data), and *Z. pardalis* in Georgia in the vicinity of Tbilisi and Manglisi [Otto, 2022].

In the Caucasus Major, seven *Zora* species have been found: viz., *Z. alexeevi* sp.n., *Z. caucasia* sp.n., *Z. alpina*, *Z. nemoralis*, *Z. parallela*, *Z. silvestris* and *Z. spinimana*. Based on the localities and biotopic preferences, *Z. alexeevi* sp.n. and *Z. caucasia* sp.n. are likely to be Caucasian endemics. *Zora alpina* is currently known only from the Central Alps and the Western and Central Caucasus and is confined to alpine meadows and heaths. Two species — *Z. nemoralis* and *Z. spinimana* — are widespread in the Palearctic Region, inhabiting mainly forest biotopes in Ciscaucasia and the Caucasus. *Zora silvestris* could be classified as a European-Caucasian forest species; yet, its record from Turkmenistan (Kopetdagh) [Mikhailov, Fet, 1986] requires verification. It is also possible that *Z. dagestana* sp.n. has hitherto been registered from the Caucasus under the name *Z. silvestris*, of which specimens are currently absent from the ZMMU. In our opinion, *Z. dagestana* sp.n., found on the northern slope of the Narat-

Tyube Mt Ridge, may also occur in the lowlands and midlands of the eastern slopes of the Caucasus, the Talysh Mountains, the northern slopes of the Elbrus Mts, as well as penetrate into Kopetdag. *Zora parallela* is known in Europe from plains to mid-mountains [Urones, 2005; Polchaninova, Prokopenko, 2013]; the site of discovery of the species in mountainous Dagestan at the elevation of 2000 m a.s.l. lies in the easternmost and highest limit of its European range.

To sum up, the same number of *Zora* species (12) has been found in Ciscaucasia and the Russian Caucasus as in the rest of Europe. Of the European species, *Z. distincta* Kulczyński, 1915, *Z. manicatooides*, *Z. palmgreni* Holm, 1945 and *Z. prespaensis* Drensky, 1929 are yet absent from the Caucasian fauna.

Compliance with ethical standards

CONFLICT OF INTEREST: The authors declare that they have no conflict of interest.

Ethical approval: No ethical issues were raised during our research.

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