

Spiders of the genus *Cryphoea* Thorell, 1870 (Aranei: Cybaeidae) in the Caucasus

Пауки рода *Cryphoea* Thorell, 1870 (Aranei: Cybaeidae) на Кавказе

Alexander V. Ponomarev¹, Kirill G. Mikhailov²

А.В. Пономарёв¹, К.Г. Михайлов²

¹ Federal Research Centre the Southern Scientific Centre of the Russian Academy of Sciences, Chekhov str., 41, Rostov-on-Don 344006 Russia.

² Zoological Museum, Moscow Lomonosov State University, Bolshaya Nikitskaya Str. 2, Moscow 125009 Russia.

¹ Федеральный исследовательский центр Южный научный центр Российской академии наук, пр. Чехова, 41, Ростов-на-Дону 344006 Россия.

² Зоологический музей МГУ, ул. Большая Никитская, 2, Москва 125009 Россия.

Alexander Ponomarev ponomarev1952@mail.ru ORCID 0000-0001-7448-0383

Kirill Mikhailov mikhailov2000@gmail.com ORCID 0000-0001-3304-5470

KEY WORDS: Araneae, Cybaeidae, new species, distribution, Russia, Georgia, Azerbaidjan.

КЛЮЧЕВЫЕ СЛОВА: Araneae, Cybaeidae, новый вид, распространение, Россия, Грузия, Азербайджан.

ABSTRACT. Two species of *Cryphoea* Thorell, 1870 are reported from the Caucasus, one of which is described as new: viz., *C. alexeevi* sp.n. (♀, North Ossetia). The female of *C. thaleri* Wunderlich, 1995 is described for the first time, and the occurrence of this species in the Caucasus is confirmed. The genus *Cryphoea* has been recorded from Georgia for the first time.

How to cite this paper: Ponomarev A.V., Mikhailov K.G. 2025. Spiders of the genus *Cryphoea* Thorell, 1870 (Aranei: Cybaeidae) (Aranei: Cybaeidae) in the Caucasus // Arthropoda Selecta. Vol.34. No.4. P.604–610. doi: 10.15298/arthsel.34.4.12

РЕЗЮМЕ. Приведены данные о находках двух видов рода *Cryphoea* Thorell, 1870 на Кавказе, из которых один вид описан как новый, а именно *C. alexeevi* sp.n. (♀, Северная Осетия). Впервые описана самка *C. thaleri* Wunderlich, 1995; подтверждено обитание этого вида на Кавказе. Род *Cryphoea* впервые отмечается на территории Грузии.

Introduction

The genus *Cryphoea* Thorell, 1870 includes 13 valid species in the world fauna [WSC, 2025], of which seven species and one subspecies have been reported from Europe, mainly from mountain forests [Nentwig *et al.*, 2025]. The only revision of European *Cryphoea* has been undertaken by Thaler [1978] who revised the Alpine species. In total, four species and one subspecies have been reported from the Alps: *C. brignolii* Thaler, 1980, *C. lichenum* L. Koch, 1876, *C. lichenum nigerrima* Thaler, 1978, *C. nivalis* Schenkel, 1919, and *C. silvicola* (C.L. Koch, 1834) [Thaler, 1978, 1980]. The Carpathians harbor the endemic species *C. carpathica* Herman, 1879. The species *C. pirini* (Drensky, 1921) is known from the Pirin Mt Range in Bulgaria [Drensky, 1921]. Wunderlich

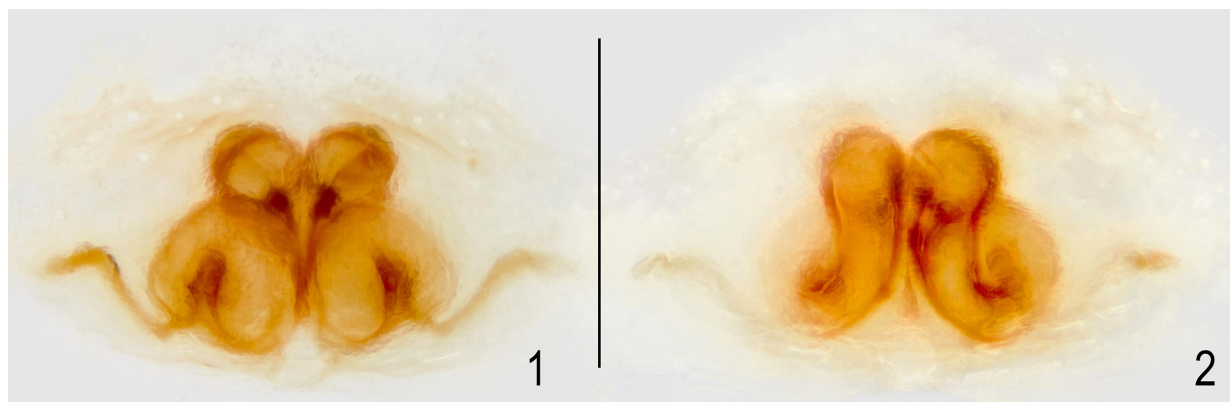
[1995] described *C. thaleri* Wunderlich, 1995 from Turkey. Two species have been found in the Caucasus: *C. silvicola* (C.L. Koch, 1834) from Ingushetia, Chechnya [Minoransky *et al.*, 1984] and Karachay-Cherkessia [Martynovchenko, Mikhailov, 2014]; and *C. thaleri* Wunderlich, 1995 from Adygea, Kabardino-Balkaria, Krasnodar Krai [Marusik, Guseinov, 2003; Ponomarev *et al.*, 2012; Ponomarev, Chumachenko, 2014] and North Ossetia [Ponomarev, Komarov, 2013]. Marusik & Guseinov [2003: 34] reported on the female of *Cryphoea* sp. from Azerbaijan, indicating its close relationship to *C. thaleri*, which at that time was known from the male only. In our opinion, there assumption was correct, being supported by new materials. Examination of the newly collected material at our disposal (see below) has shown that all of the above references from the Caucasus are to be referred to *C. thaleri*. In addition, there is one female that belongs to a new species.

In this paper, the results of the study of our material on the genus *Cryphoea* from different regions of the Caucasus are presented.

Material and methods

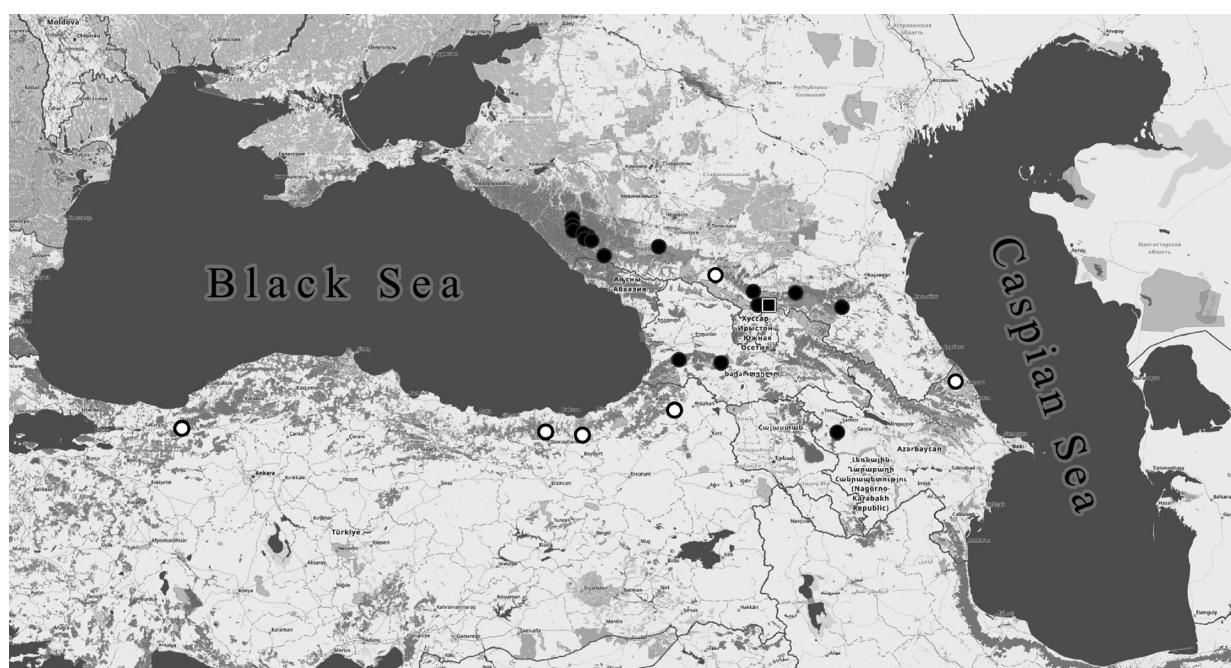
The material studied was collected by A.V. Ponomarev (AP) from Adygea and Krasnodar Krai and by K.G. Mikhailov (KM) from Adygea and North Ossetia. Besides, numerous spider collections from Krasnodar Krai, Adygea, Karachay-Cherkessia, North Ossetia, Ingushetia, Chechnya, as well as Georgia and Azerbaijan, have been incorporated. These collections have been assembled by the following colleagues: S.K. Alekseev (SA) (Kaluga); Yu.A. Chumachenko (YC) (Maikop); S.I. Golovatch (SG) (Moscow); Yu.E. Komarov (YK) and N. Shevchenko (NS) (both Alagir); I.S. Turbanov (IT) (Borok, Yaroslavl Oblast); V.V. Slyusarev (VS) (Grozny); D.D. Volkova (DV) (Rostov-on-Don), R.V. Zuev (RZ) (Stavropol), Jochen Martens (JM) (Mainz, Germany).

The specimens examined or cited have been shared between the Zoological Museum of the Moscow State University,



Figs 1–2. *Cryphoea alexeevi* sp.n. Dissected epigyne, ventral view (1); vulva, dorsal view (2). Scale bar: 0.25 mm

Рис. 1–2. *Cryphoea alexeevi* sp.n. Вырезанная эпигина, вид снизу (1); вульва, вид сверху (2). Масштаб: 0,25 мм.



Map. Distribution of the *Cryphoea* species: *C. alexeevi* sp.n. (square), *C. thaleri*, literary data, after Brignoli, 1978; Wunderlich, 1995; Marusik, Guseinov, 2003 (open circle), *C. thaleri*, present data (filled circle).

Карта. Распространение видов *Cryphoea*: *C. alexeevi* sp.n. (квадрат), *C. thaleri*, литературные данные, по Brignoli, 1978; Wunderlich, 1995; Marusik, Guseinov, 2003 (незакрашенный кружок), *C. thaleri*, новые данные (закрашенный кружок).

Moscow, Russia (ZMMU, curator: K.G. Mikhailov) and the personal collection of A.V. Ponomarev (PC, Russia, Rostov Region, Razdorskaya Vil.). Some specimens 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 map is produced by using the online resource OpenStreetMap®, containing free data that are distributed by the OpenStreetMap Foundation (OSMF) via the Open Data Commons Open Database License (ODbL).

Species survey

Cryphoea alexeevi sp.n.

Figs 1–2, Map.

MATERIAL. HOLOTYPE ♀ (ZMMU), Russia, North Ossetia, Alagir Distr., Tsei Ridge, N macroslope nr Sadon-Khokh Mt., 42.826006°N / 43.918268°E, 3100 m a.s.l., moss-lichen wasteland, 19.07.1985, S.K. Alekseev.

DIAGNOSIS. The new species belongs to the *silvicola* species group *sensu* Thaler [1978] and is most similar to *C. nivalis* Schenkel, 1919 known from the Alps [Thaler, 1980], from which it differs in its very light, almost white body colouration, the absence of abdominal colour pattern, the smaller size, and the conformation of the epigyne and vulva (viz., the outer parts



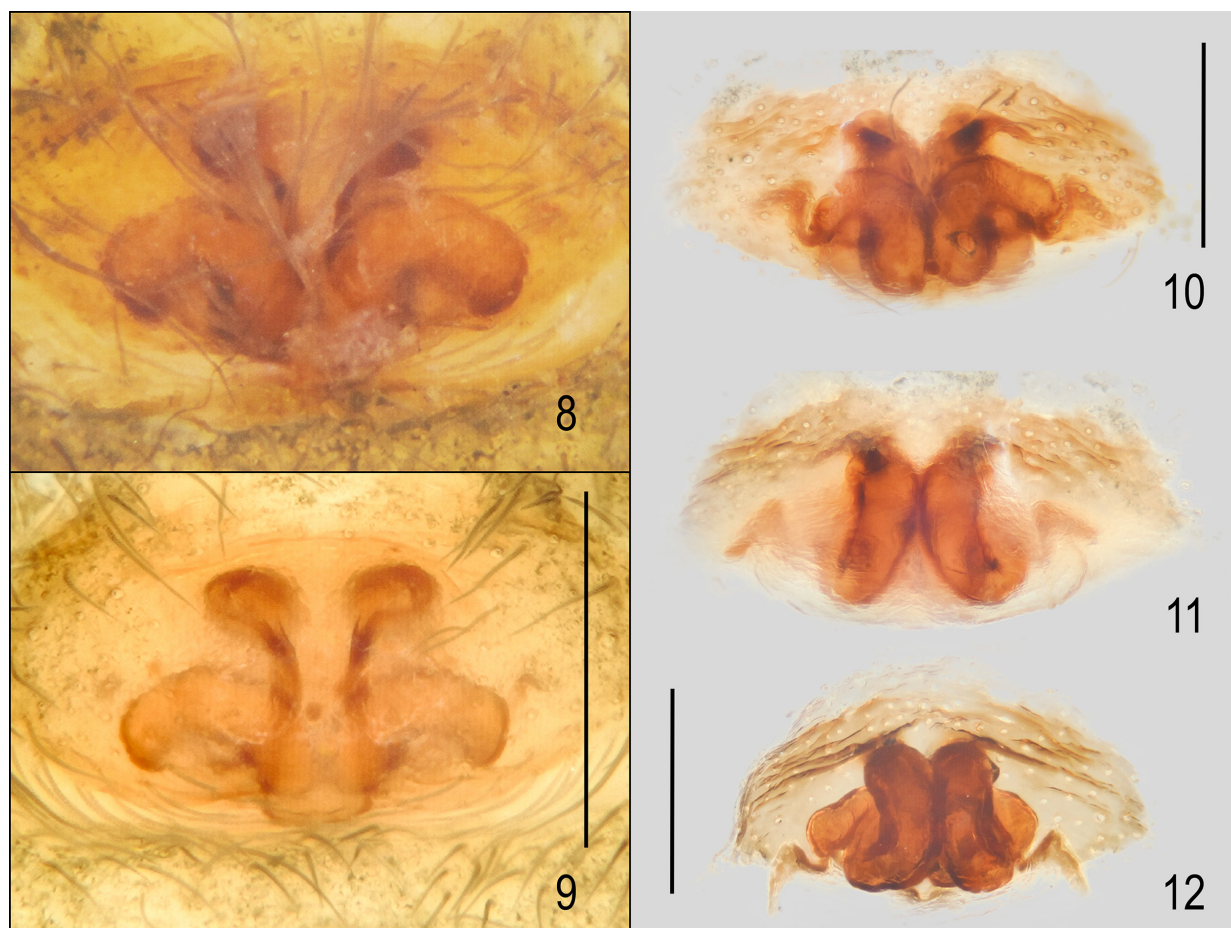
Figs 3–7. *Cryphoea thaleri* Wunderlich, 1995. Male palp (3–5); bulbus (6); male habitus (7). 3, 6 — ventral view; 4 — retrolateral view; 5, 7 — dorsal view. Scale bars: 3–6 — 0.25 mm; 7 — 1 mm.

Рис. 3–7. *Cryphoea thaleri* Wunderlich, 1995. Пальпа самца (3–5); бульбус (6); внешний вид самца (7). 3, 6 — вид снизу; 4 — вид сбоку-сзади; 5, 7 — вид сверху. Масштаб: 3–6 — 0,25 мм; 7 — 1 мм.

of copulatory ducts not touching each other and the very long sclerotized fertilisation ducts).

DESCRIPTION. Female. Body 3.4 mm long. Carapace: 1.2 mm long, 0.90 mm wide. The whole body is light; carapace and legs being light yellow; carapace with poorly visible grey radial stripes extending from the medial furrow; chelicerae and pedipalps slightly lighter than legs; sternum, coxae, maxillae and labium light yellow, almost white. Abdomen is almost white, without any colour pattern. Tibia I ventrally with 4 prolateral and 3 retrolateral spines. Metatarsus I with 3 pairs of ventral-lateral spines.

Epigyne (Fig. 1) weakly sclerotised, with clearly visible vulva; copulatory openings slit- and crescent-shaped; lateral sclerotized ridges on the sides of the copulatory openings poorly marked. Outer (ventral) part of vulva (Fig. 1) as strongly curved copulatory ducts not touching each other; lateral parts of copulatory ducts somewhat thinner than their median parts; receptacles small, poorly marked; long sclerotized fertilisation ducts extend from the proximal tops of receptacles. Inner (dorsal) parts of copulatory ducts form a wide turn proximally / laterally onto the outer part of vulva (Fig. 2); proximal parts of copulatory ducts widely spaced from each other.



Figs 8–12. *Cryphoea thaleri* Wunderlich, 1995. Intact epigyne (8–9); dissected epigyne (10); vulva (11–12). 8–10 — ventral view; 11 — dorsal view; 12 — ventral-lateral view. Localities: 8, 10–12 — Adygeya; 9 — Chechnya. Scale bars: 0.25 mm.

Рис. 8–12. *Cryphoea thaleri* Wunderlich, 1995. Необработанная эпигина (8–9); вырезанная эпигина (10); вульва (11–12). 8–10 — вид снизу; 11 — вид сверху; 12 — вид сверху-сбоку. Местонахождения: 8, 10–12 — Адыгея; 9 — Чечня. Масштаб: 0,25 мм

Male unknown.

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

DISTRIBUTION. Only the type locality.

Cryphoea thaleri Wunderlich, 1995

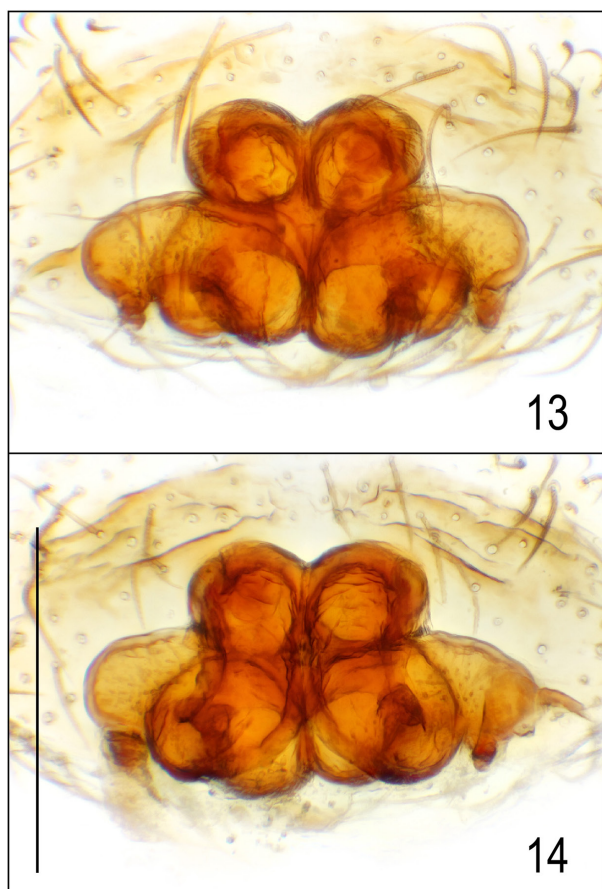
Figs 3–15, Map.

Cryphoea pirini — Brignoli, 1978: 508: fig. 72 (♀, misidentified).
Cryphoea brignolii Thaler, 1980: 402, figs 5–6 (♂, Turkey, misidentified).

Cryphoea thaleri Wunderlich, 1995: 719, figs 1–2 (♂).

MATERIAL. TÜRKIYE. **Northern Anatolia:** ♂ holotype: Senckenberg Museum, Frankfurt am Main (SMF), Germany (examined by A. V. Gromov, pers. comm.) **RUSSIA.** **Adygeya:** 6 ♀♀ (ZMMU), Maykop Distr., 8 km SE of Guzeripl Vil., Kavkazsky Nature Reserve, Abago Pasture, 43.947783°N / 40.210813°E, aspen-birch forest on the SW slope, 1790 m a.s.l., under bark and in lichen on tree trunks, 14.06.1991, KM; 5 ♂♂ (ZMMU), 6 ♂♂, 1 ♀ (ZISP), 33 ♂♂, 2 ♀♀ (PC), Maykop Distr., 7.8 km SE of Guzeripl Vil., Kavkazsky Nature Reserve, Abago Pasture, 43.949760°N / 40.208297°E, 1770 m a.s.l., maple forest, 4.06–2.07.2009, YC; 1 ♂ (PC), same locality and biotope, 2.07–3.08.2009, YC; 1 ♀ (PC), Maykop Distr., 9.5 km SE of Guzeripl Vil., Kavkazsky Nature Reserve, Abago Pasture, 43.944199°N / 40.211192°E, 1820 m a.s.l., subalpine meadow, 4.06–2.07.2009, YC; 1 ♂ (PC), Lagonaki Plateau, Instructorskaya rift at the pass, 44.009967°N / 39.985267°E,

beech-fir forest, 1725 m a.s.l., 3.06–20.07.2013, YC; 3 ♀♀ (ZISP), Lagonaki Plateau, Instructorskaya rift at the pass, crooked birch forest, 44.016082°N / 39.986852°E, 1930 m a.s.l., 18.07.2016, AP; 1 ♀ (PC), Lagonaki Upland, Azishsky Pass, 44.077694°N / 40.011306°E, beech-fir forest, 1800 m a.s.l., 26.08–23.09.2013, YC; 1 ♀ (PC), Lagonaki Upland, Azishsky Pass, 44.076071°N / 40.006358°E, 1634 m a.s.l., slope to Kurdzhips River, in trunk of a dead tree, 22.07.2014, AP; 5 ♀♀ (PC), same locality, litter, 14–24.07.2015, AP; 4 ♀♀ (PC), Lagonaki Plateau, Kamennoe More Mt Ridge, crooked birch forest, 44.049134°N / 40.028026°E, 1904 m a.s.l., 17–23.07.2015, AP; 1 ♀ (PC), Lagonaki Plateau, Blyam locality, overgrazed subalpine meadow nr firn basin, 44.013402°N / 39.959267°E, 2136 m a.s.l., 9–30.07.2016, AP; 1 ♀ (PC), same locality, 44.012190°N / 39.960406°E, 2200 m a.s.l., scree along firn basin, 9–14.07.2016, AP; 1 ♂, 1 ♀ (PC), Maykop Distr., 25 km ESE of Guzeripl Vil., 43.869167°N / 40.383611°E, E slope of Aspidnyi Mt Ridge, 30.09.2015, YC; 1 ♂, 4 ♀♀ (PC), Maykop Distr., 15 km SE of Guzeripl Vil., Kavkazsky Nature Reserve, Tybga Mt., 43.898960°N / 40.272634°E, 2000 m a.s.l., birch forest 11–19.08.2018, AP; 1 ♀ (PC), Maykop Distr., 15 km SE of Guzeripl Vil., Kavkazsky Nature Reserve, nr Tybga Mt., 43.902451°N / 40.270212°E, 1875 m a.s.l., bank of Bezymenka River, among stones, 12.08.2018, AP; 3 ♂♂, 3 ♀♀ (ZISP), 4 ♂♂, 3 ♀♀ (PC), same locality, bank of Bezymenka River, glade of birch forest, 22.08.2018, AP. **Krasnodar Krai:** 2 ♀♀ (PC), Apsheronsk Distr., Mesmay Vil., 44.215861°N / 39.913442°E, 559 m a.s.l., Guam Gorge, 27.07.2010, DV; 1 ♀ (PC), Mostovsky Distr., 35 km SW of Psebay Vil., Kavkazsky Nature Reserve, nr Dzhuga meteorostation, slope of Dzhuga Mt to Urushten River valley, 43.886944°N / 40.483056°E, 1946 m a.s.l., fir forest, 26.08.2015, YC; 2 ♀♀ (PC), Mostovsky Distr., 21 km SSW



Figs 13–15. *Cryphoea thaleri* Wunderlich, 1995. Vulva after maceration (13–14); female habitus (15). Scale bars: 13–14 — 0.25 mm; 15 — 1 mm.

Рис. 13–15. *Cryphoea thaleri* Wunderlich, 1995. Вульва после мацерации (13–14); внешний вид самки (15). 13 — вид снизу; 14–15 — вид сверху. Масштаб: 13–14 — 0,25 мм; 15 — 1 мм.

of Psebay Vil., Kavkazsky Nature Reserve, 1 km W of 'Chernorechye' Cordon, 43.932543°N / 40.671268°E, right bank of Urushten River, 852 m a.s.l., along rocks, 8–14.06.2017, AP; 1 ♀ (PC), Mostovskiy Distr., 26 km SSW of Psebay Vil., Kavkazsky Nature Reserve, trail between 'Chernorechye' Cordon and Armovka Mt., 1852 m a.s.l., upper border of birch forest, 43.890583°N / 40.663217°E, 6.07.2022 YC; 1 ♂, 5 ♀♀ (ZMMU), Mostovskiy Distr., 31 km S of Bagovskaya Vil., Kavkazsky Nature Reserve, Meshok tract, 43.8878°N / 40.5541°E, 2010 m a.s.l., birch forest, 28.09.2022, YC. **Karachay-Cherkessia:** 1 ♀ (PC), Urupskiy Distr., Kavkazsky Nature Reserve, Imeretinskaya Valley, lower camp, 43.647303°N / 40.735964°E, 1950 m a.s.l., 6.06.2024, YC. **North Ossetia:** 1 ♂ (ZMMU), Alagir Distr., Skalistyi Ridge, W spur of Kariukhokh Mt., 42.883174°N / 44.191962°E, birch forest, 2000 m a.s.l., 2.06–12.07.1985, SA; 1 ♀ (ZMMU), same locality and biotope, 12.07–21.08.1985, SA; 1 ♀ (ZMMU), Alagir Distr., Skalistyi Ridge, W spur of Kariukhokh Mt., 42.883174°N / 44.191962°E, birch forest, 2000 m a.s.l., 15.07.1985, KM; 1 ♀ (ZMMU), Alagir Distr., Skalistyi Ridge, W spur of Kariukhokh Mt., 42.849577°N / 44.227068°E, 2500 m a.s.l., thicket with *Rhododendron* sp. and *Dryas caucasica*, 9.10–2.11.1985, SA; 1 ♀ (PC), Skalistyi Mt Ridge, Kariukhokh Mt., 2600 m a.s.l., 27–28.05.2014, MB; 1 ♂ (PC), Alagir Distr., 1 km E of Buron Vil., 42.792632°N / 44.020607°E, North Ossetian Nature Reserve, right side of Lower Labagom Gorge, pine forest, 1769 m a.s.l., 30.09.2012, YK; 1 ♂ (PC), Alagir Distr., Nizhniy Unal Vil., 42.848822°N / 44.143636°E, 1450 m a.s.l., pine forest, 20.04.1988, NS; 1 ♂, 3 ♀♀ (PC), Alagir Distr., Tsey Gorge, nr Verkhniy Tsey Vil., 42.804920°N / 43.930833°E, 1920 m a.s.l., beech forest, under bark, 27.10.2015, MB. **Ingushetia:** 1 ♀ (PC), Sunzha Distr., environs of Verkhniy Alkun Vil., right bank of Fortanga River, 42.969377°N / 45.069860°E, 840 m a.s.l., beech-hornbeam forest, 7.07.1977, VS. **Chechen Republic:** 2 ♀♀ (PC), Vedeno Distr.,

W part of Andiysky Mt Ridge, 42.743161°N / 46.091162°E, 1750 m a.s.l., subalpine meadow, 28.07.1977, VS; 1 ♀ (PC), Vedeno Distr., 2 km SW of Makazhoy Vil., 42.732556°N / 46.042056°E, Ansalta River canyon, 1400 m a.s.l., hazel-hornbeam forest, in litter, 13.04.2024, IT, RZ. **GEORGIA:** 3 ♀♀ (ZMMU), Chokhatauri Distr., nr Bakhmaro, 40 km SSE of Nabeglavi, 1550–1700 m a.s.l., Abies, Picea, Fagus, 8.06.1981, SG & JM; 2 ♀♀ (ZMMU), S of Bakuriani, Pinus & Fagus forest, 1750 m a.s.l., litter, logs, 13.05.1983, SG; 1 ♀ (ZMMU), S of Bakuriani, Takaro Pass, 2100 m a.s.l., Betula sparse forest at upper forest border, 13.05.1983, SG. **AZERBAIDJAN:** 1 ♀ (ZMMU), Göy-Göl Reserve, 3–4.05.1983, SG.

RECORDS. RUSSIA. Ingushetia: Verkhniy Alkun [Minoransky *et al.*, 1984: sub. *Cryphoea silvicola*, misidentified]. Chechnya: W part of Andiysky Ridge [Minoransky *et al.*, 1984: sub *Cryphoea silvicola*, misidentified]. Kabardino-Balkaria: Adylsu [Marusik, Guseinov, 2003]. Adygeya: Abago [Ponomarev *et al.*, 2012; Ponomarev, Chumachenko, 2014]. North Ossetia: Buron [Ponomarev, Komarov, 2013: sub *Cryphoea* cf. *thaleri*]. Karachay-Cherkessia: Teberda State Reserve [Martynovchenko, Mikhailov, 2014: sub *Cryphoea silvicola*, misidentified]. Krasnodar Krai: Chernorechye [Ponomarev, Chumachenko, 2023]. **AZERBAIDJAN:** Dogguzul [Marusik, Guseinov, 2003: sub *Cryphoea* sp.].

DIAGNOSIS: see Wunderlich [1995].

DESCRIPTION OF SPECIMENS FROM THE CAUCASUS.

Male. Body (Fig. 7) 2.4–2.80 mm long. Carapace: 1.25–1.4 mm long, 1.05–1.1 mm wide, yellow-brown, with poorly

marked radial and median gray stripes. Sternum dirty yellow, legs yellow or sometimes with inconspicuous gray spots on femora and tibiae. Prosoma markedly narrowed anteriorly. Opisthosoma grayish yellow dorsally, with light, herringbone-shaped spots in the posterior half. Chelicerae with five small retromarginal teeth and three promarginal teeth. Tibia I ventrally with 4 prolateral and 3 retrolateral spines. Metatarsus I with 3 pairs of ventral-lateral spines. Palp as in Figs 3–5. Palpal tibia with three apophyses: retrolateral one like a wing-like extension directed towards the medial one. Bulbus (Fig. 6) has a long embolus, retrolaterally with a thin median apophysis.

Female. Body (Fig. 15) 2.7–3.15 mm long. Carapace: 1.25–1.45 mm long, 0.95–1.0 mm wide. Body colouration darker than in the male, abdomen with a well-defined light colour pattern. Epigyne (Figs 8–10) weakly sclerotised, with clearly visible vulva; copulatory openings slit- and crescent-shaped, situated in the upper part of epigyne (Fig. 9). Outer (ventral) part of vulva slightly curved, with bean-shaped copulatory ducts (Figs 8–10). Receptacles prominent, situated at the end of outer copulatory ducts (Figs 10, 12); fertilisation ducts sclerotized, long, and curved in the shape of inverted V. Inner (dorsal) parts of copulatory ducts slightly curved, forming a small proximal / lateral turn toward outer part of vulva (Figs 11, 12).

DISTRIBUTION (Map). NW and NE Anatoly [Brignoli, 1978; Wunderlich, 1995]; the Caucasus: mountain forests and subalpine meadows at the altitudes of 560–2600 m a.s.l., from Adygea and Krasnodar Krai of Russia to Azerbaijan. It is the first *Cryphoea* record from Georgia.

COMMENTS. Based on a study of 18 females, Brignoli [1978] reported the previously described from Bulgaria *C. pirini* [Drensky, 1921] from north-eastern Turkey, but mentioned some differences in the conformation of vulva in Turkish specimens. When describing *C. brignolii* from both sexes from the southern Alps, Thaler [1980] argued that the Turkish females identified by Brignoli as *C. pirini* should in fact belong to *C. brignolii*. Yet, Thaler mentioned some differences in the male palp structure between specimens from Anatolia and the southern Alps. Later, Wunderlich [1995] concluded that these differences would be significant and described a new species, *C. thaleri*, based on the males from Turkey. A comparison of our material with the holotype and Wunderlich's description of *C. thaleri* has shown that the Caucasian specimens are identical to the Turkish ones, whereas the vulva of the females from our collection (Figs 13, 14) collected together with the males of *C. thaleri* is identical to that of the Turkish females described by Brignoli [1978: fig. 72] as *C. pirini*. Therefore, it is safe to conclude that Brignoli's females are to be conspecific with the male of *C. thaleri*.

Discussion

Based on a detailed study of European (mainly Alpine) *Cryphoea*, Thaler [1980] concluded that taxonomic position of the genus requires further clarification. Yet, Wunderlich [1995] noted that the species rank of several *Cryphoea* species remains unclear. The discovery of two *Cryphoea* species in the Caucasus, one of which turned out to be new, as well as the exclusion of *C. silvicola* from the Caucasian fauna, have confirmed the conclusions by Thaler and Wunderlich.

The ranges of *Cryphoea* species known from Europe, except for *C. silvicola*, are limited to mountainous regions. Three species and one subspecies (*C. brignolii*, *C. lichenum*, *C. lichenum nigerrima*, and *C. nivalis*) are known from the Alps; *C. pirini* only from the Pirin Moun-

tains (Bulgaria). In contrast to these species, the range of *C. thaleri* is considerably larger, covering mountainous regions of northern Anatolia, from the Abant-Silselesi Range in the west to Artvin Province in the east, as well as mountains of both the Caucasus Major and Minor, from Adygea and Krasnodar Krai (Russia) in the west to Northern Azerbaijan in the east (see Map), and at the altitude gradient 560–2600 m a.s.l. The second species — *Cryphoea alexeevi* sp. n. — has been found in the Caucasus on the Tsei Mt Ridge (North Ossetia) and is close to the alpine *C. nivalis* described from the Bernese and Rhaetian Alps at the altitudes of 3000–3400 m a.s.l. [Schenkel, 1919] and also known from the Dolomite Alps at the altitude of 2740 m a.s.l. [Zingerle, 2000]. An additional record of a single female from South Tyrol at the altitudes of 1200–1990 m a.s.l. [Hansen, Vanin, 2004], in our opinion, requires verification. The Caucasian *C. alexeevi* sp.n. was found at the altitude of 3100 m a.s.l., confirming its high-mountain range similar to that of *C. nivalis* one. Thus, in the Caucasus as in the Alps, the genus *Cryphoea* is distributed from the forest to the alpine belt.

Yet, Thaler [1980] suggested that if glacial events did indeed have a significant impact on speciation processes within the genus, then one would expect to see new local forms of *Cryphoea* appearing in the fairly large and isolated mountain ranges of the Western Palearctic. The present study has revealed that the Caucasus in fact harbours a local high-mountain species *C. alexeevi* sp.n. and the second species *C. thaleri* that displays a vast range covering Asia Minor (northern Anatolia) mountains and the Caucasus. The distribution pattern of *C. thaleri* can be explained, in our opinion, by the absence of European-Siberian *C. silvicola* in the Caucasus and Anatolia (the reference of *C. silvicola* for southeastern Anatolia, Mardin Province [Roewer, 1959] is most likely to be erroneous). This is why *C. thaleri* was able to colonize vast areas of the southern Black Sea Region and the Caucasus, including niches that are characteristic of *C. silvicola*, i.e. low-mountain forests.

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.

Acknowledgements. The authors would like to thank all colleagues who participated in collecting the material studied, as well as anonymous reviewers for their valuable comments and suggestions. The authors are grateful to V.Yu. Shmatko (Southern Scientific Center of the Russian Academy of Sciences) for taking the digital photographs used. We are grateful to A.V. Gromov (Germany) for comparison of the holotype of *C. thaleri* with our specimens and providing us with relevant photos of the holotype. The research program of A.V. Ponomarev was carried out within the framework of the implementation of the State Assignment of the Southern Scientific Center of the Russian Academy of Sciences, state registration number of the project 125011200139-7. The work of K.G. Mikhailov was conducted under the state assignment of the Lomonosov Moscow State University.

References

- Brignoli P.M. 1978. Ragni di Turchia V. Specie nuove o interessanti, cavernicole ed epigee, di varie famiglie (Araneae) // *Revue suisse de Zoologie*. T.85. Fasc.3. P.461–541. DOI: 10.1002/mmzn.19710470203
- Drensky P. 1921. Contribution à l'étude des araignées de la Macédoine or et de Pirine Planina // *Spisanié na Beulgarskata Akademia na Naoukite*. Bd.23. No11. P.1–80.
- Hansen H., Vanin S. 2004. Contributo alla conoscenza della fauna araneologica dell'arco alpino sud-orientale // *Bollettino del Museo Civico di Storia Naturale di Venezia*. Vol.55. P. 87–95.
- Martynovchenko F.A., Mikhailov K.G. 2014. [Spiders (Aranei) of Teberda State Reserve: fauna and biotopic distribution] // *Euroasian Entomological Journal*. Vol.13. No.4. P.355–371 [in Russian, with English summary].
- Marusik Yu.M., Guseinov E.F. 2003. Spiders (Arachnida: Aranei) of Azerbaijan. 1. New family and genus records // *Arthropoda Selecta*. Vol.12. No.1. P.29–46.
- Minoransky V.A., Ponomarev A.V., Slyusarev V.V., Gramotenko V.P. 1984. [To the spider (Aranei) fauna of Checheno-Ingushetia] // *Izvestiya Severo-Kavkazskogo nauchnogo tsentra vysshei shkoly. Estestvennye nauki*. Vyp.4. P.76–81 [in Russian].
- Nentwig W., Blick T., Bosmans R., Hänggi A., Kropf C., Stäubli A. 2025. *Spinnen Europas*. Version 08.2025. Available at: <https://www.araneae.nmbe.ch> (accessed 15 August 2025). DOI: 10.24436/1
- Ponomarev A.V., Chumachenko Yu.A. 2014. [Spiders (Aranei) in hepetobiont mesofauna of the Northwest Caucasus] // *Yugh Ros-sii: ekologiya, razvitie*. No.2. P.95–101 [in Russian, with English summary].
- Ponomarev A.V., Chumachenko Yu.A. 2023. [New data on spiders (Aranei) of the Caucasus Nature Reserve. Spiders of the Cordon Chernorechye (Krasnodar Krai, Russia)] // *Polevoi Zhurnal Biologa*. Vol.5. No.3. P.298–323 [in Russian, with English summary]. DOI: 10.52575/2712-9047-2023-5-3-298-323
- Ponomarev A.V., Komarov Yu.E. 2013. [A preliminary summary of material on the spider fauna (Aranei) of North Ossetia-Alania] // *Trudy Severo-Ossetinskogo gosudarstvennogo prirodnogo zapovednika*. Vyp.2. P.76–111 [in Russian].
- Ponomarev A.V., Kovblyuk N.M., Chumachenko Yu.A., Volkova D.D. 2012. [Preliminary data on the spider fauna (Aranei) of the Republic of Adygea] // *Sotsial'no-gumanitarnye i ekologicheskie problemy razvitiya sovremennoy Adygei: sbornik nauchnykh statey*. Rostov-on-Don: Yuzhnyi nauchnyi tsentr RAN. P.447–481 [in Russian].
- Roewer C.F. 1959. Die Araneae, Solifuga und Opiliones der Sammlungen des Herrn Dr. K. Lindberg aus Griechenland, Creta, Anatolien, Iran und Indien // *Göteborgs Kungl. Vetenskaps- och Vitterhets-Samhälles Handlingar*. Bd.8. H.4. S.3–47.
- Schenkel E. 1919. Araneae // E. Handschin (Hrsg.) *Beiträge zur Kenntnis der Wirbellosen terrestrischen Nivalfauna der schweizerischen Hochgebirge*. Liestal. S.72–87.
- Thaler K. 1978. Die Gattung *Cryphoea* in den Alpen (Arachnida, Aranei, Agelenidae) // *Zoologischer Anzeiger*. Bd.200. H.5/6. S.334–346.
- Thaler K. 1980. *Cryphoea brignolii* n. sp., eine weitere Reliktart der Südalpen – mit Arten-Schlüssel und Versuch eines Kladogramms (Arachnida: Aranei: Agelenidae) // *Zoologischer Anzeiger* Bd.204. H.5/6. S.400–408.
- World Spider Catalog. 2025. Version 26. Available at: <http://wsc.nmbe.ch> (accessed 10 September 2025). DOI: 10.24436/2
- Wunderlich J. 1995. Beschreibung einer bisher unbekannten Art der Gattung *Cryphoea* Thorell 1870 aus der Türkei (Arachnida: Araneae: Dictynoidea: ?Dictynidae) // *Beiträge zur Araneologie*. Bd.4 (für 1994). S.719–721.
- Zingerle V. 2000. Zoocenosi di Ragni e Opilioni nelle Dolomiti sudoccidentali (Parco Naturale Paneveggio-Pale di S. Martino, Italia) (Araneae, Opiliones) // *Studi Trentini di Science Naturali, Acta Biologica*. Vol.75 (for 1998). P.87–107.

Responsible editor D.V. Logunov