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NEW RECORDS OF ORB-WEAVING SPIDERS OF THE GENUS *CYCLOSA* MENGE 1866 (ARANEI: ARANEIDAE) FROM THE RUSSIAN FAR EAST

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Summary. The localities, illustrations and diagnostic characters for three species of the genus *Cyclosa* Menge, 1866 (Araneidae) are given. Two species, *C. ginnaga* Yaginuma, 1959 and *C. onoi* Tanikawa, 1992, are new for the fauna of Primorsky Krai, while *C. sedeculata* Karsch, 1879 is recorded from Russia for the first time.

Key words: orb-weaving spiders, fauna, new records, Primorsky Krai, Russia.

A. В. Тиунов, А. Л. Устинова. Новые находки пауков-кругопрядов рода *Cyclosa* Menge 1866 (Aranei: Araneidae) на Дальнем Востоке России // Дальневосточный энтомолог. 2025. N 516. С. 15-20.

Резюме. Для трех видов рода *Cyclosa* Menge, 1866 (Araneidae) приведены места находок, иллюстрации и диагностические признаки. Из них два вида (*C. ginnaga* Yaginuma, 1959 и *C. onoi* Tanikawa, 1992) являются новыми для фауны Приморского края, а *C. sedeculata* Karsch, 1879 впервые указывается для России.

INTRODUCTION

Spiders of the genus *Cyclosa* Menge, 1866 are small orb-weaving spiders: body length of males varies between 2 and 5 mm, body length of females is 3–9 mm. *Cyclosa* differs from other Araneidae by narrow head region, which is usually separated from the thoracic region by U-shaped groove. *Cyclosa* also can be distinguished from related genera by a position of posterior median eyes, which are almost touching (Levi, 1977). The coloration of the carapace varies from brown to dark-brown. Legs are yellow, pale brown or grey, with dark bands. Webs with vertical or spiral-shaped stabilimenta.

Currently genus *Cyclosa* includes 176 species distributed worldwide (World Spider Catalog, 2024). Twelve species are known from Russia, of them nine species recorded from the Russian Far East, namely *C. argenteoalba* Bösenberg et Strand, 1906, *C. atrata* Bösenberg et Strand, 1906, *C. ginnaga* Yaginuma, 1959, *C. hamulata* Tanikawa, 1992, *C. japonica* Bösenberg et Strand, 1906, *C. kumadai* Tanikawa, 1992, *C. monticola* Bösenberg et Strand, 1906, *C. okumae* Tanikawa, 1992, and *C. onoi* Tanikawa, 1992 (Mikhailov, 1997; Marusik & Koponen, 2000; Marusik *et al.*, 2007; Mikhailov, 2013; Trilikauskas & Sergeev, 2023; Vertyankin *et al.*, 2023). New data on *Cyclosa* species from Primorsky Krai are given below.

MATERIAL AND METHODS

Specimens examined were lent from the collection of the Institute of Systematics and Ecology of Animals Siberian Branch of RAS (ISEA SB RAS, Novosibirsk, curator G. Azarkina). Specimens of *C. oculata* for comparison with similar *C. onoi* were taken from the collection of Perm State University (PSU, curator S.L. Esyunin).

Photographs were taken with Olympus E-M10 Mark II digital camera, mounted on Altami SPM0880 microscope. Color images of genitalia were taken from Zeiss Imager.A2 microscope. Images were processed using CombineZP software. SEM images of genitalia were taken with a Hitachi TM3000 scanning electron microscope in the backscattered electron (BSE) mode. The terminology of the genitalia follows Levi (1977).

NEW RECORDS

Cyclosa ginnaga Yaginuma, 1959

Figs 1, 8

MATERIAL. Russia: Primorsky Krai, surroundings of the Lake Khanka, 18.VII 1968, 1♀, leg. F.Z. Popov.

DIAGNOSIS. Female. Habitus can vary greatly among individuals (Yaginuma, 1959; Tanikawa, 1992a; Zhu & Zhang, 2011; Kim & Lee, 2012). Our specimen has a brown carapace darker to margins, eye region and posterior edge of head region. Sternum with two symmetrical round white spots. Legs light brown with wide dark brown rings. Abdomen elongated with blunt tip. Distal lateral tubercles are almost absent. Dorsal coloration silver with black outline, 3 pairs of muscle points, one median dark spot at the anterior edge and 3 symmetrical lateral dark spots.

Epigyne as in Fig. 8. Scape is wide, long and parallel-sided, wrinkled, with obtuse end. Outer edges of lateral lamellae are evenly rounded, inner edges are closed from base to the middle point, and then diverge in an acute angle. Median plate medium-sized, triangle-shaped with almost straight top edge.

REMARKS. In the Russian Far East *C. ginnaga* may be confused with *C. atrata* and *C. hamulata* due to similar shape and coloration of abdomen. In *C. ginnaga* lateral lamellae of epigyne are closed until the middle and then diverge in an acute angle, edge not curved. Median plate is triangle-shaped, epigyne base is wider than high less than twice. Epigynes of *C. atrata* and *C. hamulata* differ by the concave median edges of lateral lamellae, pear-shaped median plate and by the shape of the epigyne base: it is twice wider than high.

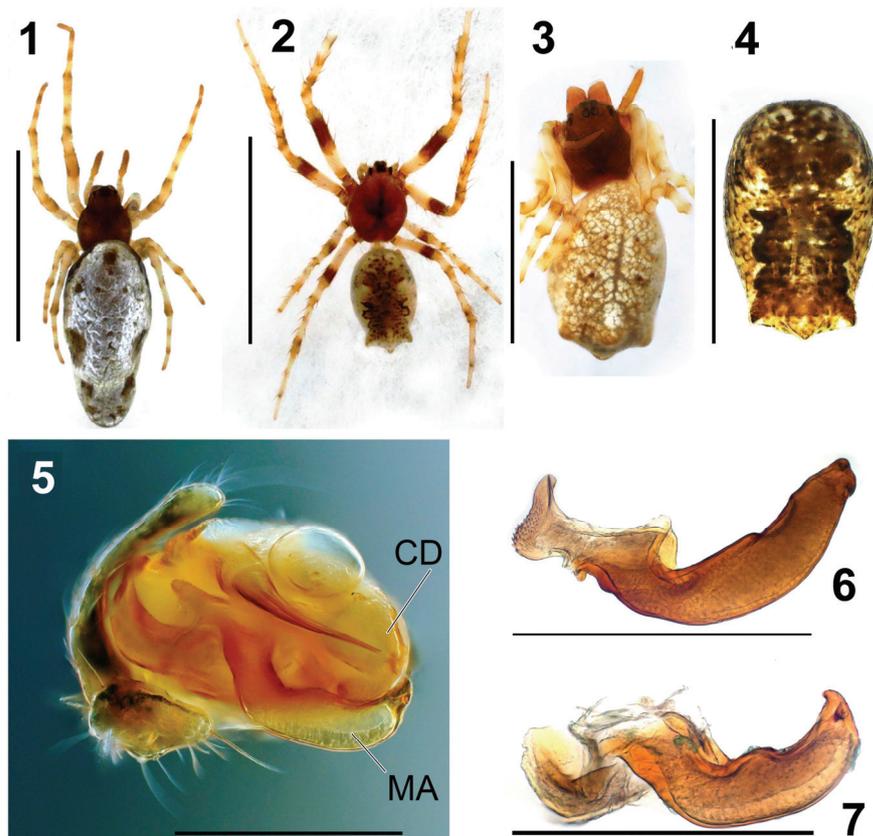
ECOLOGY. The species is found in mountainous areas in meadows and bushes (Zhu & Zhang, 2011; Kim & Lee, 2012). Stabilimentum of the web is located at the hub and shaped as an uneven white marking, resembling bird droppings in appearance and size. If extrinsic objects do not get into the web, the spider is well protected from bird attacks (Tan *et al.*, 2010).

DISTRIBUTION. Russia: Amurskaya Oblast (Trilikauskas & Sergeev, 2023), Primorsky Krai (new record). – Korea, Japan, Center and East China, Taiwan.

Cyclosa onoi Tanikawa, 1992

Figs 2, 5, 7, 10

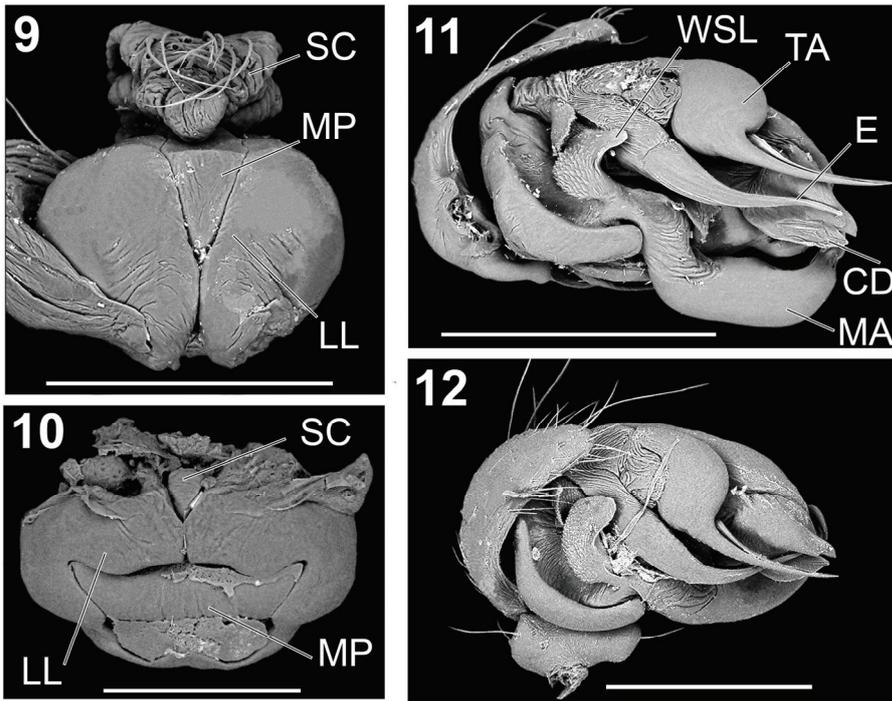
MATERIAL. Russia: Primorsky Krai, Shkotovsky District, Anisimovka village (= Kangauz railway station), 12.VII 1968, 1♂, leg. F.Z. Popov.



Figs 1–7. Females of *Cyclosa ginnaga* (1), *C. sedeculata* (3), *C. oculata* (4) and males of *C. onoi* (2, 5, 7), *C. oculata* (6). 1–4 – habitus, dorsal viw; 5 – palp, prolateral viw; 6, 7 – median apophysis. Abbreviations: CD – conductor; MA – median apophysis. Scale bars: 5 mm (2–5), 500 um (6–8).

DIAGNOSIS. Habitus of our specimen (Fig. 2) well agrees with original description of this species (Tanikawa, 1992b). Palp as in Figs. 5, 10. Median apophysis of male palp (Fig. 7) basally has wing-shaped lamella. Distally median apophysis bent and bifurcated, while teeth are closely spaced or the bifurcation is not clear (Tanikawa, 1992b). Terminal apophysis has wide base and narrow distal part, which form a furrow. Embolus basally wide and slightly narrows along entire length. Embolus has two bends – in the middle and closer to the end. Distal part of conductor is rather wide and round, with narrow notch at the tip.

REMARKS. Males of *C. onoi* differ from *C. oculata* by roundish shape of palpal conductor as well as the shape of median apophysis, smooth and rounded in *C. oculata* (Figs 6, 11) and more abrupt and angular in *C. onoi* (Figs 5, 7, 10). Palpal median apophysis of *C. onoi* basally has only a wing-shaped lamella, whereas *C. oculata* has a digitiform appendix along with a wing-shaped lamella (Tanikawa, 1992b). During comparison of specimens of these species, we found that this trait cannot be considered as absolutely reliable, because appearance of these structures depends on an observation angle.



Figs 8–11. SEM graphs of the ventral view of epigynes of *Cyclosa ginnaga* (8) and *C. sedeculata* (9), prolateral view of male palp of *C. onoi* (10) and *C. oculata* (11). Abbreviations: SC – epigynal scape; MP – median plate of epigyne; LL – lateral lamella of epigyne; WSL – wing-shaped lamella of palpal median apophysis; TA – terminal apophysis; E – embolus; CD – conductor; MA – median apophysis. Scale bars: 300 μ m (8), 200 μ m (9), 500 μ m (10, 11).

ECOLOGY. Species inhabits mountainous areas (Song *et al.*, 1999).

DISTRIBUTION. Russia: Sakhalinskaya Oblast (Vertyanin *et al.*, 2023), Primorsky Krai (new record). – East China, Japan (Tanikawa, 1992b; Zhu & Zhang, 2011; Yin *et al.*, 2012), Korea (Lee *et al.*, 2022).

***Cyclosa sedeculata* Karsch, 1879**

Figs 3, 9

MATERIAL. Russia: Primorsky Krai, Nadezhdinsk District, 5–12 km of Vinevitino railway station, the Malaya El'duga River (M. Ananievka), 8–9.VI 1994, 1♀, leg. V.V. Dubatolov.

DIAGNOSIS. Female habitus (Fig. 3). Coloration of different specimens can vary. Our specimen has a light coloration as in Tanikawa (1992a). Carapace brown, head region arched. Legs in alcohol milk white with narrow dark ring. Abdomen oval with 4 distal humps. 4 dorsal muscle points form a trapezoid. Abdomen coloration light brown with white and brown patches, which fade and lose their shape in alcohol.

Epigyne as in Fig. 9, oval-shaped, scape short and wide with two rows of small seta at the middle. Lateral lamellae closing together above median plate, which is surrounded by lateral lamellae and has a butterfly shape.

REMARKS. In Russia this species may be confused with *C. monticola* and *C. oculata* by the shape of the abdomen, but females are easily distinguished by a very short and wide scape of epigynum.

ECOLOGY. Webs with vertical stabilimenta are built on trees in dimly lit places (Baba & Tanikawa, 2015).

DISTRIBUTION. Russia (new record): Primorsky Krai; Korea, China, Japan (Tanikawa, 1992b; Zhu & Zhang, 2011; Yin *et al.*, 2012).

CONCLUSION

Number of recorded from Primorsky Krai species of the family Araneidae has been increased from 39 to 42 species (Marusik & Koponen, 2000; Marusik, 2009; Šestáková *et al.*, 2014; Simonov, 2015a, 2015b; Mikhailov & Temereva, 2015; Marusik *et al.*, 2015; Fomichev & Omelko, 2024; present paper).

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