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A tropical invader, *Coleosoma floridanum*, spotted for the first time in Slovakia and the Czech Republic (Araneae, Theridiidae)

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Abstract. The pantropical theridiid spider *Coleosoma floridanum* Banks, 1900 was recorded for the first time in Slovakia and in the Czech Republic. Both sexes and juveniles were collected in some numbers in heated greenhouses with high humidity. A description and photographs of the species are provided.

Keywords: botanical garden, comb-footed spider, faunistics, first record, greenhouse, introduced species

The small genus *Coleosoma* consists of nine tropical species distributed mostly in the Indo-Malayan ecozone (Platnick 2012). Except for the largest species, *C. matinikum* Barrion & Litsinger, 1995 – known only from males, with a total length of ca. 4.8 mm – the remaining species are of small size (ca. 2 mm). They are thus easily accidently imported to other countries on plants carried by ships. Despite this fact, only *C. floridanum* has so far spread to Europe. This species is commonly found in packages arriving from tropics, thus it has been exported over the globe and may be expected to occur in any sort of tropical greenhouse. The type locality for *C. floridanum* is situated in Florida; the species was also found on many islands in the Caribbean, inferring that the Neotropical region is probably its place of origin. However, some authors pointed out that the Oriental region should be considered instead due to the presence of its related species there (Levi 1967, Spoczynska 1969).

Species of this genus have a distinct sexual dimorphism. Females have a basically oval abdomen, in some species protruding as a tubercle above the spinnerets (*C. acutiventer* (Keyserling, 1884), *C. blandum* O. P.-Cambridge, 1882).

Methods

Specimens were collected in the greenhouses of botanical gardens in Bratislava, Brno and Prague. They were collected predominantly (ca. 90 %) on the underside of plant leaves; some of them (ca. 10 %) were extracted from soil samples using Tullgren funnels. They were identified using Nentwig et al. (2012) and compared to the original description (Banks 1900) and to the other species of the genus through the detailed description and figures provided by several authors, e.g. Bryant (1940, 1944), Levi (1959), Barrion & Litsinger (1995) and Saaristo (2006).

Microphotographs were made using EOS Utility software and a digital camera (Canon EOS 1100D) connected to a Zeiss Stemi 2000-C stereomicroscope. Microslides of epigynes were photographed using a Leica ICC50 camera connected to a Leica DM1000 stereomicroscope using LAS EZ 1.8.0. Digital images were combined using CombineZP image stacking software. Description of the species is based on all mature specimens obtained in Slovakia. All measurements are in millimeters, and were obtained using AxioVision 4.8.2; M = median, x = arithmetic mean. Material is deposited in 70 % ethanol in the collections of the first and the last author.

Results and discussion

Coleosoma floridanum Banks, 1900

The species has been described under various names; a list of junior synonyms is given below. Many of them were recognized by Levi (1959), although he also pointed out that there should be further synonyms within the genus *Theridion*.

Theridion interruptum Banks, 1908: 205, fig. 9 (described ♀). (Bryant 1944)

Bathyphantes semicincta Banks, 1914: 640 (undefined sex). (Levi 1972)

Lithyphantes oophorus Petrunkevitch, 1930: 170, fig. 8–9 (described ♀). (Levi 1959)

Theridion delebile Petrunkevitch, 1930: 206, fig. 53–56 (described ♀). (Levi 1959)

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Theridion rapanae Berland, 1942: 15, fig. 6a–f (described ♂♀). (Levi 1959)
Theridium albovittatum Caporiacco, 1955: 334, fig. 25a–c (described ♀). (Levi 1959)
Theridion aleipata Marples, 1955: 483, pl. 58, fig. 9, 13, 19 (described ♂♀). (Levi 1959)
Coleosoma saispotum Barrion & Litsinger, 1995: 432, fig. 258a–l (described ♂). (Knoflach 1999)
Theridion antheae Barrion & Litsinger, 1995: 447, fig. 268a–d (described ♀). (Knoflach 1999)
For the full list of references, see Platnick (2012).

Material examined

SLOVAKIA: 1♂ (22.XI.2012); 13♀♀, 2♂♂, 3subad♂♂, 5juv (12.XII.2012) Bratislava, greenhouse, Botanical Garden of the Comenius University (average temperature 26 °C), 48°8'49.2"N; 17°4'20.97"E, 148 m a.s.l. (grid square 7868, Fig. 1); leg. J. Christophoryová, M. Holecová, K. Krajčovičová & A. Šestáková.
CZECH REPUBLIC: 1♂, 25♀♀, 16juv (21.XI.2006) Brno, greenhouse, Botanical Garden and Arboretum of Mendel University (average temperature 26 °C), 49°12'57"N, 16°36'52"E, 245 m a.s.l. (grid square 6765, Fig. 1), leg. S. Korenko, E. Líznarová & L. Sentenská.
1♂ (3.IV.2012) Prague, greenhouse, Prague Botanical Garden (average temperature 26 °C/23 °C – day / night) 50°07'20"N, 14°24'50"E, 248 m a.s.l. (grid square 5852, Fig. 1), leg. S. Korenko & B. Korenková.

Diagnosis

The male can be easily distinguished from the other males of the genus by an oval and markedly narrower bulbus with a shorter semi-circular embolus – this is nearly circular in the other species – and by a projecting terminal apophysis. Unlike other species, the constriction of the male abdomen is indistinct. Females have a much simpler vulva with short ducts and a markedly wider atrium than those of other species.

Description

Male: Total length 1.67–1.94 (M = 1.73; x = 1.77), tibia + patella I 0.96–1.12 (M = 1.10; x = 1.06).

Males are ant-mimics. Carapace pale without markings, dark bordered. Sternum pale with dark narrow hem. Abdomen oval, more than twice as long as wide, with slight median constriction; anteriorly stridulating, sclerotized scutum protruding into blunt, bilobate projection over carapace, with two long setae; the scutum continues ventrally half the length of the abdomen. Colouration pale, distally black; dorsally in the middle with irregularly distributed white spots and two longitudinal black stripes. Legs long, thin, yellow; distal end of tibia IV black, in some specimens all other tibiae distally dark (Fig. 2). Bulbus oval, longer than wide; projecting strongly-sclerotized terminal apophysis; embolus filiform and semicircular (Fig. 4).

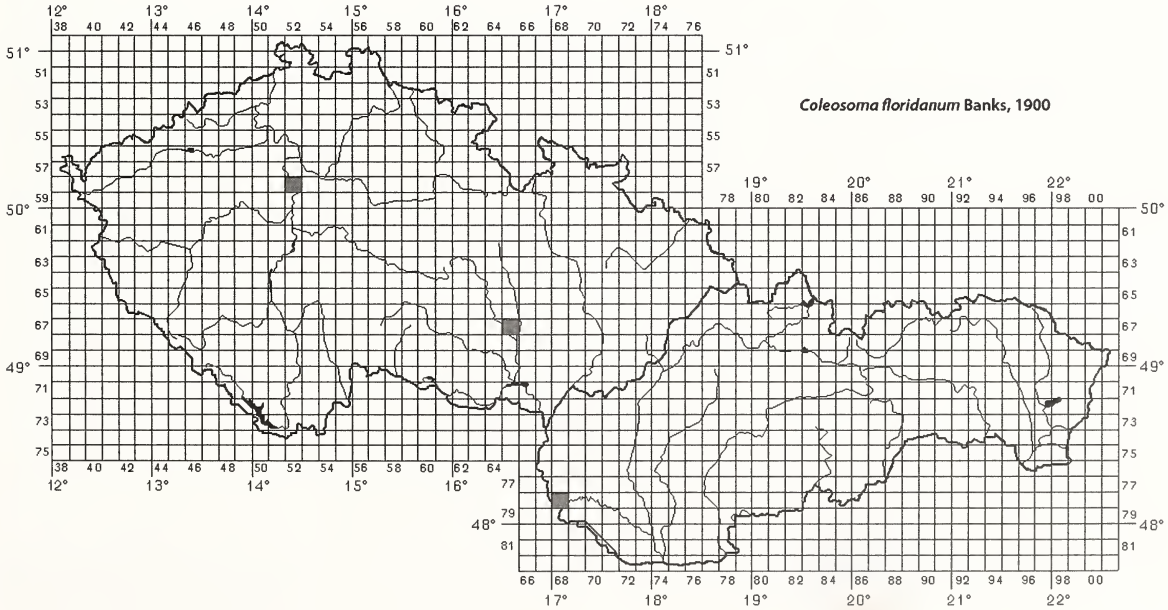

Fig. 1: Distribution map of *Coleosoma floridanum* in Slovakia and the Czech Republic.

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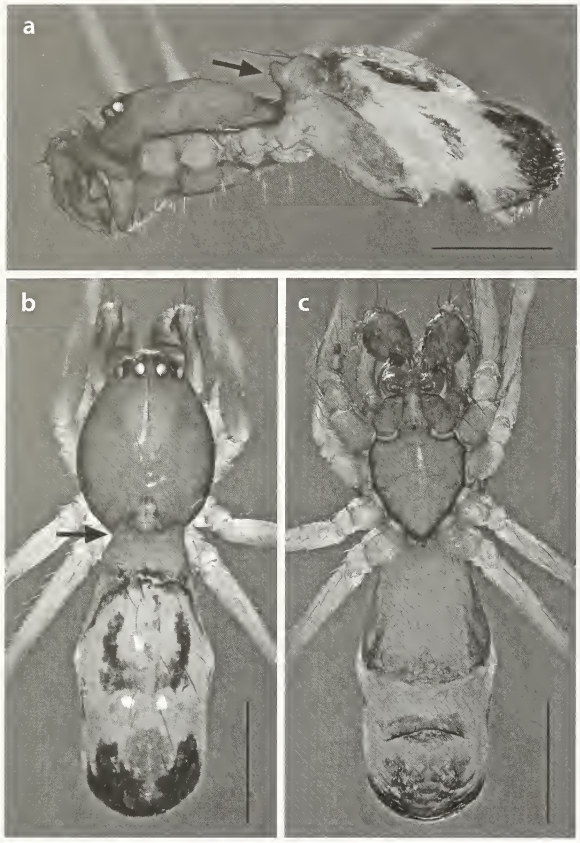

Fig. 2: Male habitus of *Coleosoma floridanum* from Slovakia. a) lateral, b) dorsal and c) ventral view. Arrows point to the bilobate sclerotization of the abdomen (Scale = 0.5 mm).

Female: Total length 1.34–1.87 (M = 1.62; x = 1.60), tibia + patella I 0.84–1.07 (M = 0.96; x = 0.96).

Female with similar colouration to the male, but paler. Abdomen globular, pale; dorsally with irregular white spots and two longitudinal interrupted stripes reaching spinnerets; ventrally transverse black spot above spinnerets. Legs yellow with dark distal end of femur and tibia, mostly visible on the first and fourth pair of legs (Fig. 3). Epigyne weakly sclerotized, semitransparent; wide, transverse epigynal atrium; spermathecae visible through cuticle, vulva with relatively short copulatory ducts (Fig. 5).

Records in Europe

In September 1964, specimens of *C. floridanum* were collected in Europe for the first time by Clark in the heated greenhouse of the Kew Botanical Garden in Britain. This record was published seventeen years later by Hillyard (1981). The first published record of the species in Europe is by Spoczynska (1969), who collected in the same greenhouse in Britain on the 14.IX.1966. Additional first records from other European countries are summarized in Tab. 1.

Tab. 1: Current distributions and the first records of *Coleosoma floridanum* in Europe.

State	Date of collection	Reference of the first record
Austria	29.VIII.1999	Knoflach (1999)
Czech Republic	21.XI.2006	present work
Finland	26.II.1990	Koponen (1990)
France	10.VIII.2006	Emerit & Ledoux (2008)
Germany	I.1995	Broen et al. (1998)
Great Britain	IX.1964	Hillyard (1981)
Slovakia	22.XI.2012	present work
Switzerland	19.III.1999	Knoflach (1999)
The Netherlands	8.II.1995	Helsdingen (1995 & pers. comm.)

Natural history

Coleosoma floridanum is a pantropical species. It seems to be native to the American tropics (especially the Caribbean biozone). It has also been recorded from Africa (Ghana, Togo, Seychelles), India, Polynesia, New Hebrides, Hawaii, Galapagos Isl., Taiwan, Japan and China (Levi 1967, Spoczynska 1969, Saaristo 1978, Tanikawa 1991, Knoflach 1999). European populations are strictly synanthropic, being recorded from highly humid and heated greenhouses (about 20–30 °C) where they can occur in high numbers (Saaristo 2006). Similarly to natural populations, they occupy analogous microhabitats such as crevices in walls and tree bark, under stones, beneath abandoned dry flowerpots and on vegetation (Cutler 1972, Platen & Broen 2005). Spoczynska (1969) observed tiny webs – no more than 8 mm in diameter – usually on the base of leaves; however she found the majority of specimens outside their webs. The egg sac (Fig. 3c) is attached to the spinnerets and guarded by the female until hatching; the few eggs (ca. 10–12) are sparsely wrapped in white threads (Knoflach 1999).

We observed numerous specimens under the leaves of plants. Some were between stones and under the flowerpots, and only few specimens were collected within the soil. Our records are thus consistent with known natural history patterns described by several authors (e.g. Levi 1967, Cutler 1972, Platen & Broen 2005, Harvey et al. 2002).

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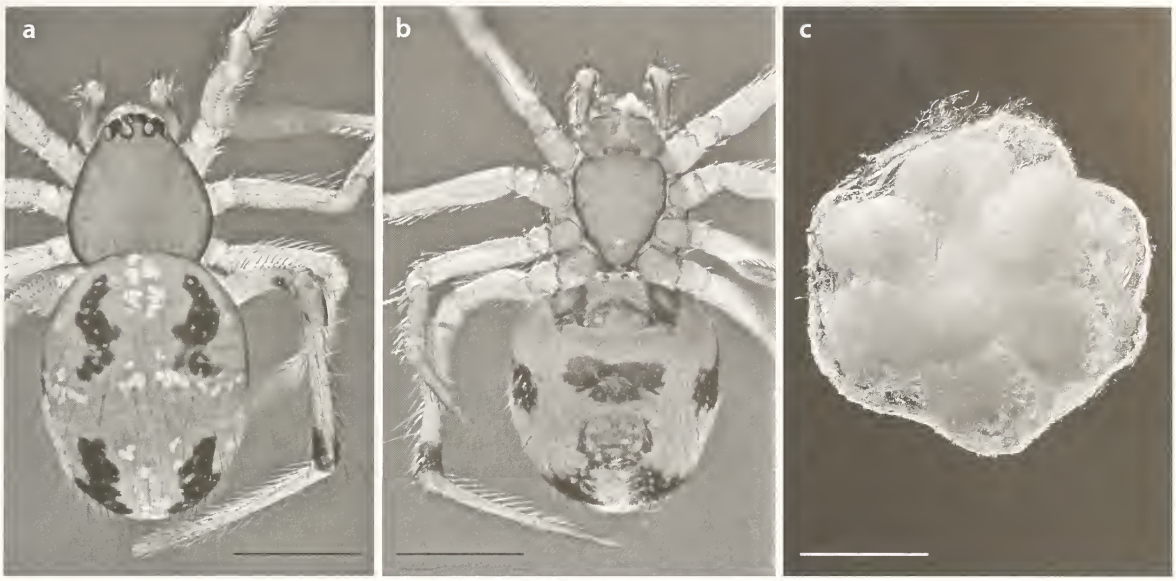

Fig. 3: Female habitus of *Coleosoma floridanum* from Slovakia, and its cocoon. a) dorsal and b) ventral view, c) cocoon (Scale = 0.5 mm).

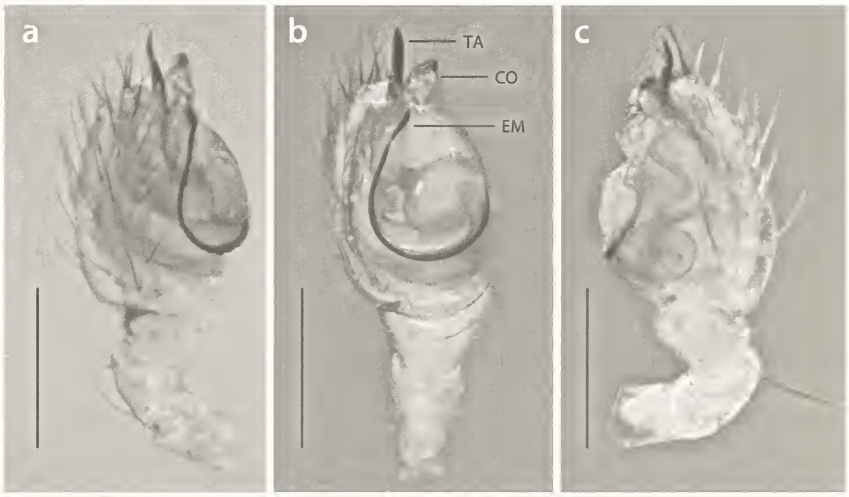

Fig. 4: Male palp of *Coleosoma floridanum* from Slovakia. a) prolateral, b) ventral and c) retrolateral view (Scale = 0.2 mm). CO = conductor; EM = embolus; TA = terminal apophysis.

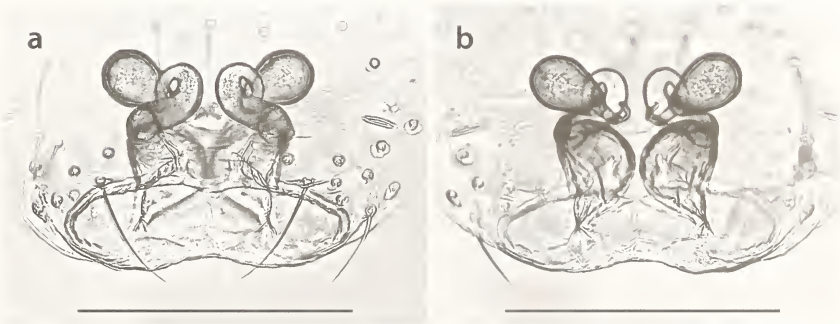

Fig. 5: Epigyne of *Coleosoma floridanum* from Slovakia. a) external and b) internal view (Scale = 0.2 mm).

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