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Rare and endemic harvestmen (Opiliones, Arachnida) species from the Balkan Peninsula
I. On *Mediostoma stussineri* (SIMON 1885) (Nemastomatidae) – a new species and genus for the Bulgarian fauna

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A b s t r a c t : In the present paper the presence of *Mediostoma stussineri* (SIMON 1885) in the Bulgarian fauna is recorded for the first time. This species was hitherto known only from Greece, but after the author's opinion it is quite possible that it may be found in the European part of Turkey as well. Four new localities of *Mediostoma stussineri* from Greece, and two new localities of *Mediostoma humerale* (C.L. KOCH 1839), respectively from Greece and Albania, are recorded.

Based on the summarized data about the distribution of this Balkan endemic species, *Mediostoma stussineri* may be classified as related to stationary-type Pontomediterranean faunistic elements. Here, for the first time, detailed drawings and SEM-micrographs of the copulation organs of *Mediostoma humerale* and *M. stussineri* as well as SEM-micrographs of the sculpture and legs of the latter species are provided.

K e y w o r d s : harvestmen, Opiliones, *Mediostoma stussineri*, *Mediostoma humerale*, chorology, sculpture, genital morphology, Bulgaria, Greece, Albania.

Introduction

As a result of examination of opilionid material from South Bulgaria, the presence of the hitherto not found on the territory of Bulgaria *Mediostoma stussineri* (SIMON 1885) (Nemastomatidae), was ascertained. The Bulgarian opilionid fauna is relatively well investigated and is known to include 50 species (included in 28 genera and 6 families) (STAREGA 1976; JUBERTHIE 1991; BERON & MITOV 1996, MITOV 1994, 1995, 1997, 2001).

In a starting series of papers (including this one as the first contribution), I will present new chorological, morphological, biological, phenological, and ecological data that came together during the last few years of research, concerning the rare and endemic harvestmen species inhabiting the Balkan Peninsula. The first part of this series is dedicated to *Mediostoma stussineri* and presents new chorological and morphological data about this species.

Material and methods

The study is based upon materials from the arachnological collections of the author and of the National Natural History Museum, Sofia (MNHS).

The material was determined after ROEWER (1914), while the nomenclature follows GRUBER (1976) who, on the basis of the shape of penis and sculpture details, transfers *Nemastoma stussineri* SIMON 1885 into genus *Mediostoma* KRATOCHVIL 1958.

Altogether 3♂♂ and 7♀♀ *Mediostoma stussineri*, were examined, which were collected at the following localities: South Bulgaria: Eastern Rhodopi Mts.: Distr. Ivailovgrad, Village Siv Kladenets (UTM - MF 38), 100 m above sea level, Querceta frainetti forests with Mediterranean elements (after the classification in BONDEV 1991), shrubs, ruins, under stones, 24.IV.1996, P. STOEV, B. PETROV & B. BUROV leg. - 1♂ (L: 3.0 mm, W: 1.85 mm); Greece: Magnesia Peninsula, District Volos, loc. Palci (Balci), in the vicinity of an olive-tree forest, pitfall-traps filled with formalin, 05.XI.1995, leg. A. APOSTOLON - 2♂♂ (L: 2.55 mm, W: 1.55 mm; L: 3.4 mm, W: 2.25 mm), 1♀ (L: 2.85 mm, W: 2.0 mm); District Kavala, Village Zigos, cave "Mavri Trypa", 430 m a. s. l., clay, guano, under stones, 23.IX.2000, B. PETROV, P. STOEV & S. BESHKOV leg. - 2♀♀ (L: 2.75-3.0 mm, W: 1.70-1.75 mm); Chalkidike Peninsula, District Thessalonike, Village Petralona, cave "Spilja nycteridon", 10.X.1974, P. BERON & V. BESHKOV leg., (MNHS: inv. No 92) - 3♀♀ (L: 2.35-3.0 mm, W: 1.35-1.70 mm) (with/without eggs); District Drama, Village Xiropotamos, 10.IV.1993, leg. P. BERON, (MNHS: inv. No 379) - 1♀ (L: 3.9 mm, W: 1.85 mm).

The genitalia of *Mediostoma stussineri* were compared to these of *Mediostoma humerale* (C.L. KOCH 1839) (2 specimens: 1♂ (L: 2.15 mm, W: 1.35 mm) - Albania, Sarande, District, Ionian Coast, Village Borshi (Borsh), under stones, 05.V.1994, leg. P. STOEV; 1♀ (L: 2.8 mm, W: 1.75 mm) (with eggs) - Greece, Peloponnesos Peninsula, Laconie, Village Mystras, 18.VIII.1983, P. BERON & V. BESHKOV leg., (MNHS: inv. No 267)).

The ovipositors of 2♀♀ *Mediostoma stussineri* (from Village Xiropotamos and Cave "Spilja nycteridon") and 1♀ *Mediostoma humerale* were clarified by submersing them into 12 % KOH for 48 hours.

The Scanning Electron Microscope (SEM)-micrographs were prepared on a Philips 515 SEM (10-20 kV; secondary electrons-mode). The scanned specimen (1♂ *Mediostoma stussineri* (Greece: loc. Palci)) and penises (of 1♂ *M. stussineri* (Bulgaria) and 1♂ *M. humerale* (Albania)) were covered with a 300-400 Å gold layer.

Abbreviations used: L = body length; MNHS = National Museum of Natural History, Sofia; inv. No = museum inventory number; W = width of prosoma.

Results and discussion

Among the harvestmen materials from South Bulgaria and Greece, kept in the collections of the author and of MNHS, 10 specimens of *Mediostoma stussineri* (SIMON 1885) (Fig. 2-3), were found. So, one more species was added to the Bulgarian Opilionid fauna list and the listed below localities from Greece are also new.

Taking into consideration the chorological data about *Mediostoma humerale* (ROEWER

1914, 1917, 1923, 1951; GRUBER 1976; RAMBLA 1976; MITOV 2000), the listed localities of this species from both Greece and Albania are also new.

Chorological and zoogeographical notes

Until now, *Mediostoma stussineri* was known only from 10 localities in Greece (e. g. Thessalia: Mt. Ossa: "Vracho am Ossa", cave in Kokkino (SIMON 1885; ROEWER 1914, 1917, 1923, 1927, 1951); Island Thasos (Rachoni, Kalirachi, Panagia); continental Northern Greece (Distr. Thessalonike: in the region of Chortiates and Rentina; Distr. Xanthe: in the region of Mandra; Distr. Evros: in the region of Makri and Esimi)) (GRUBER 1978) and Crete Island: Lakkos (ROEWER 1927, 1951) (see Fig. 1). According to GRUBER (1978) the record on Crete Island needs to be confirmed.

In view of the newest (and north most) locality where *Mediostoma stussineri* was found (Eastern Rhodopi Mts., Bulgaria) and the Greece locality (Evros), the discovery of this species in the European part of Turkey is highly possible.

It seems most probable, that *Mediostoma stussineri* has reached the territory of Bulgaria through the Valley of Maritza River, along which many Mediterranean and Submediterranean species succeed to spread into the country (KITANOV 1983; GRUEV & KUZMANOV 1994). The orographic peculiarities of the Eastern Rhodopi Mountains (being only slightly hilly, with an average altitude of only 330 meters) and the transitional-Mediterranean climate (GEORGIEV 1991) in this region, have probably also facilitated the survival and spread of this species into these northern zones of its range.

Summarizing the distributional data available so far, it seems reasonable to categorize this species as a Pontomediterranean faunistic element of stationary type (sensu DE LATTIN 1949, 1967) (without taking into consideration the confirmation-needing record from Crete Island (see above)).

Genital morphology

Here the penis and receptaculum seminis of *Mediostoma stussineri* and *M. humerale* are shown for the first time (Fig. 2-13). The penis of *Mediostoma stussineri* (specimen from Bulgaria) is 1.85 mm long (Fig. 2), and of 1♂ from Volos - 2.06 mm. At the base of glans penis there are two transparent wings with relatively shallow pockets which upper margins are serrate (Fig. 3, 7, 8). Glans penis (Fig. 3, 6-8) is symmetrical and dorso-ventrally compressed. At the tip, laterally from the stylus, it bears two spines, placed on a wide base. Glans penis is armored and bears dorsally, laterally, and ventrally few short thorns. The stylus is relatively broad, arch-like curved and with a wide opening anteriorly. The length of stylus is 12 µm, its width - 4 µm.

For comparative purposes, the penis apical part of *Mediostoma humerale* is shown on Figs. 9, 10.

In *Mediostoma stussineri* the truncus penis is cylindrical (Fig. 2), and strongly swollen above both basal lobes. The whole penis is brown; the distal parts of both ellipsoidal lobes of the truncus-base are dark-brown, and the proximal ones are transparent and colorless. Elongate, brownish spots may be observed in glans penis too – these are the places where the tendons hold on.

The lengths of the two measured ovipositors are 1.2 mm (specimen from Village Xiropotamos) and 1.075 mm (specimen from cave "Spilja nycteridon"). The ovipositor bears long spines (Fig. 14) which are 58-121 µm long (mean = 93.2 µm, n = 10). Receptaculum seminis (Fig. 11-12) is pyriform, between 48 and 64 µm long, and the maximum diameter varies between 17.5 and 25.5 µm (mean = 21.5 µm, n = 4). While the ovipositor is not completely clarified by the potassium hydroxide, dark granules may be observed in the receptacula seminis (Fig. 11). In comparison, receptaculum seminis in *Mediostoma humerale* (Fig. 13) is shorter (length between 41.5 and 43.1 µm), and the widest parts of the ampullae are almost spherical (maximum diameter is 28.7-30.3 µm), unlike the situation in *Mediostoma stussineri*, where these are egg-shaped.

The armament of scutum magnum and the structure of the penis are very similar in both genus *Pyza* STAREGA 1976 (see GRUBER 1979) and genus *Mediostoma* KRATOCHVÍL 1958 and it may be suggested that this is due to close phylogenetical relationships between these two genera.

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Zusammenfassung

Die Weberknechtart *Mediostoma stussineri* (SIMON 1885), die bisher nur aus Griechenland bekannt war, wird erstmals aus Bulgarien gemeldet. Somit wird auch die Gattung *Mediostoma* zum ersten Mal für die bulgarische Weberknecht-Fauna angefürt. Es werden 4 weitere neue Fundorte dieser Art aus Griechenland angegeben, sowohl auch 2 neue Fundorte von *Mediostoma humerale* (C.L. KOCH 1839), bzw. aus Griechenland und Albanien.

Anhand der zusammengefassten Verbreitungsdaten von *Mediostoma stussineri*, kann diese Art als pontomediterranisches faunistisches Element (stationärer Typ) eingestuft werden. In der vorliegenden Arbeit werden erstmals genitalmorphologische Daten über *Mediostoma humerale* und *M. stussineri* angegeben, als auch morphologische Details des Körpers und der Beine der letzten Art.

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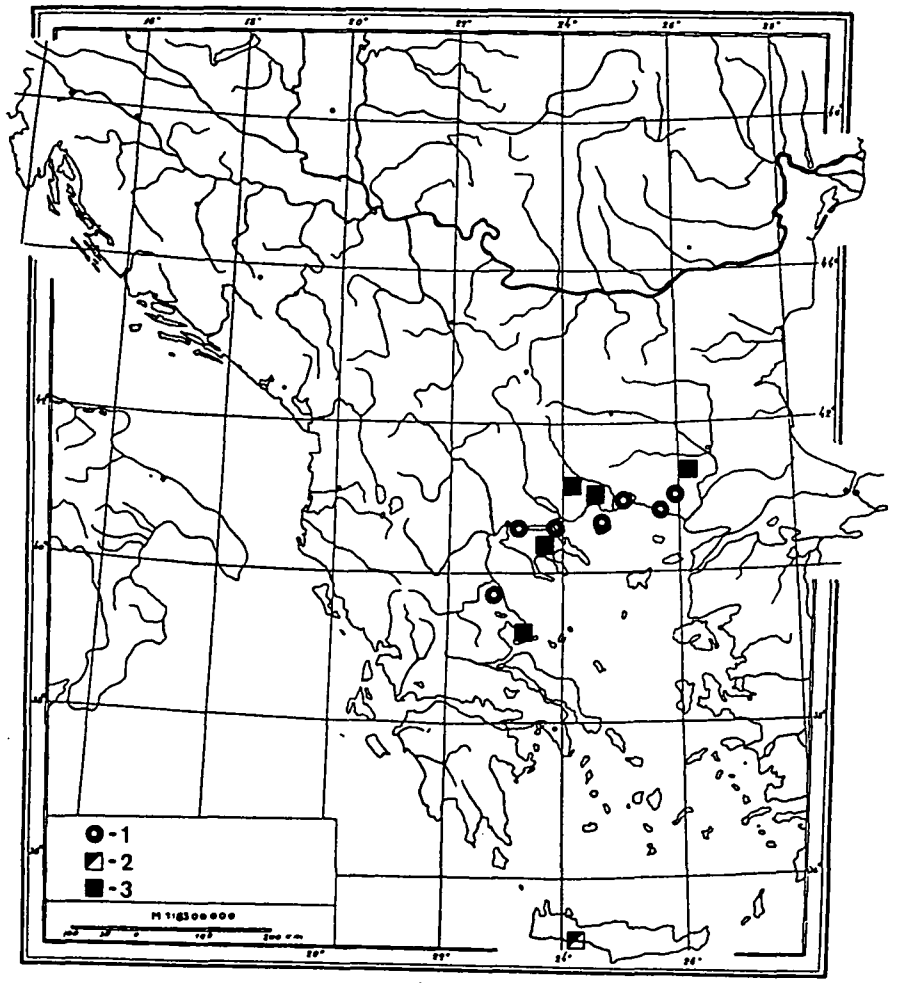

Fig. 1: Distribution map of *Mediostoma stussineri* (SIMON 1885): 1 – sure localities (literature data), 2 – doubtful localities (literature data), 3 – new localities.

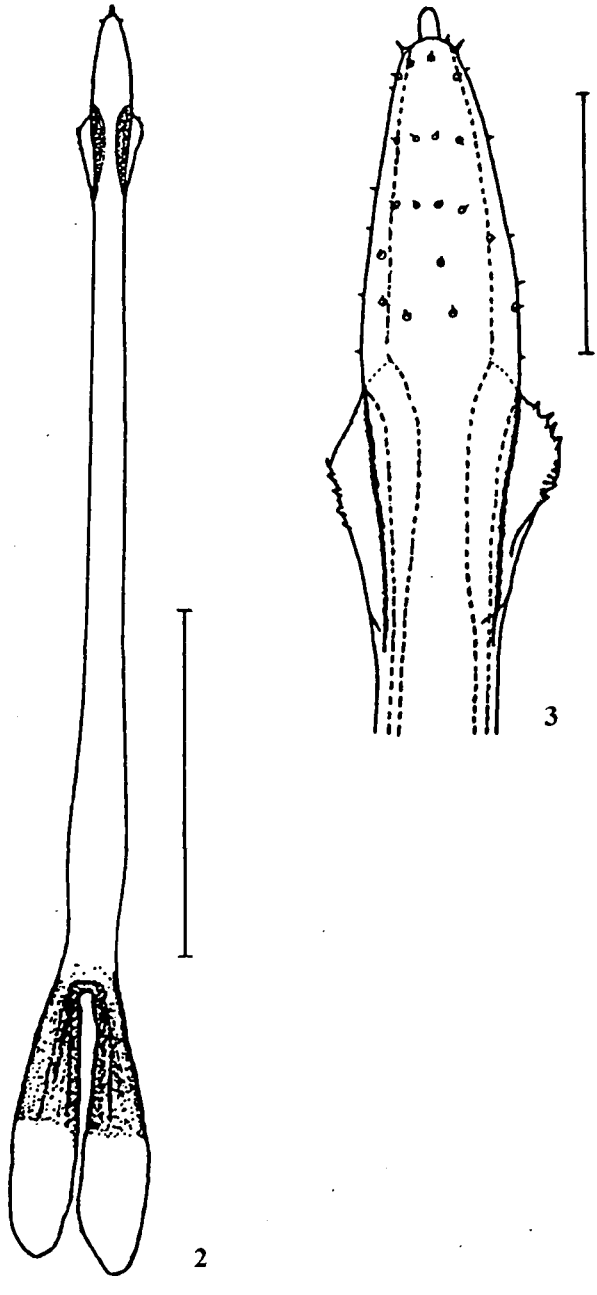

Fig. 2, 3: *Mediostoma stussineri* (1♂: Bulgaria: Village Siv Kladenets): **2** – penis, dorsal. Punctated areas are the dark-brown zones, scale line = 0.5 mm; **3** – penis, apical part, dorsal, scale line = 100 µm.

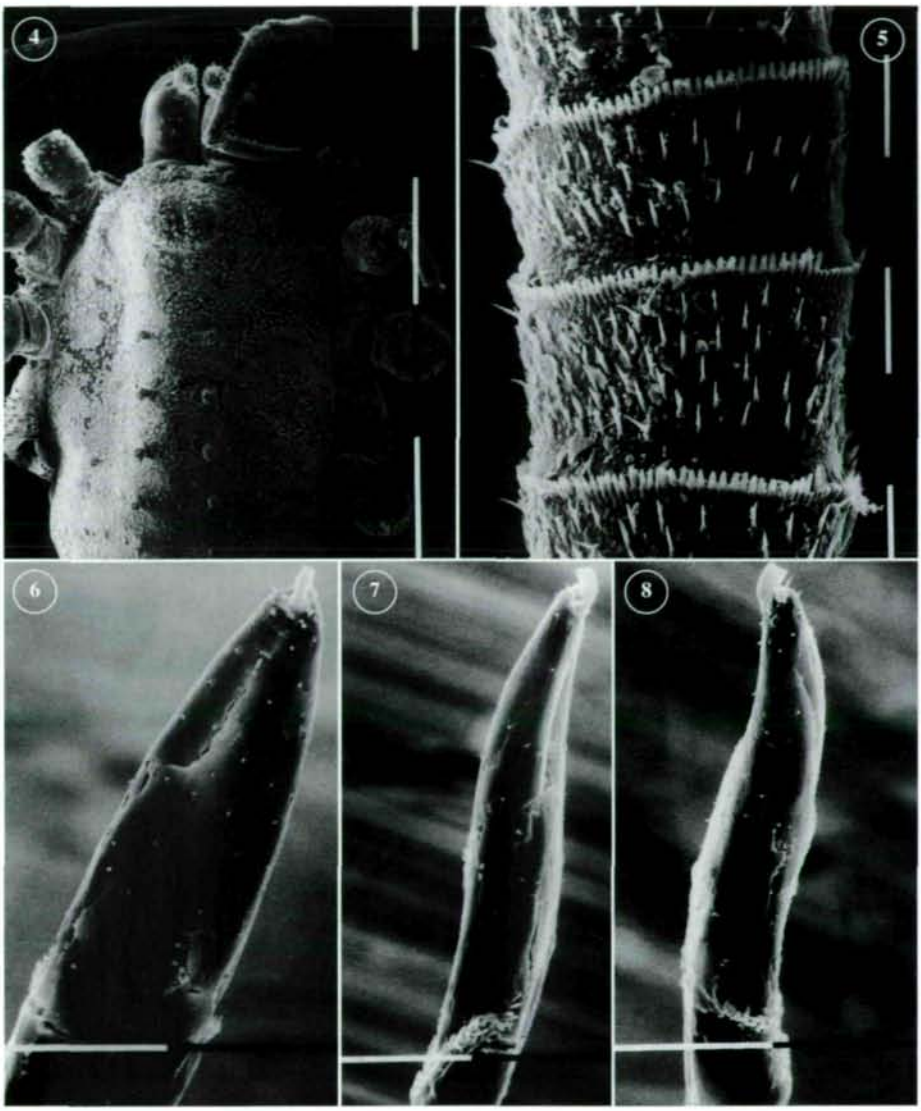

Fig. 4, 5: *Mediostoma stussineri* (1♂: Greece: loc. Palci): **4** – dorsal (left pedipalp and legs removed). ×25 (SEM), scale line = 1 mm; **5** – femur sculpture of leg I (middle part), lateral. ×200 (SEM), scale line = 100 µm.

Fig. 6-8: *Mediostoma stussineri* (1♂: Bulgaria: Village Siv Kladenets): penis, apical part: **6** – ventral. ×503, scale line = 50 µm; **7** – lateral view from right. ×442, scale line = 50 µm; **8** – lateral view from left. ×500, Scale line = 50 µm.

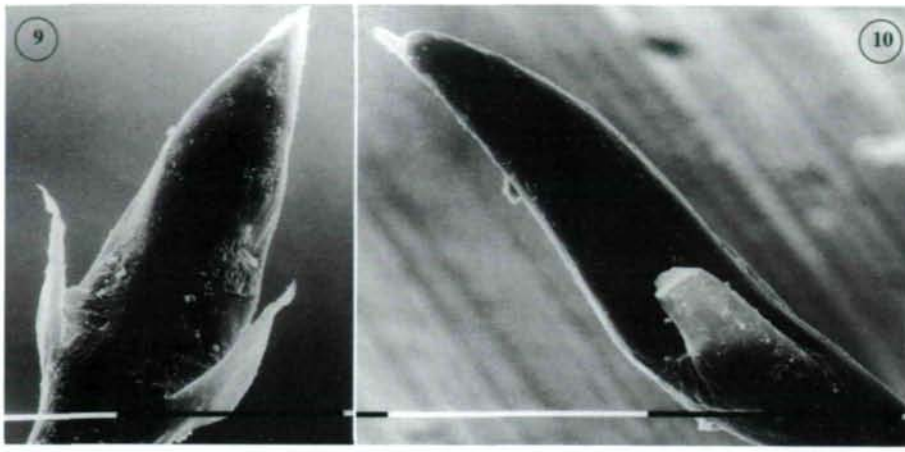

Fig. 9, 10: *Mediostoma humerale* (1♂: Albania: Village Borshi): penis, apical part: **9** – dorsal. ×442, scale line (black) = 100 µm; **10** – lateral view from left. ×503, scale line = 100 µm.

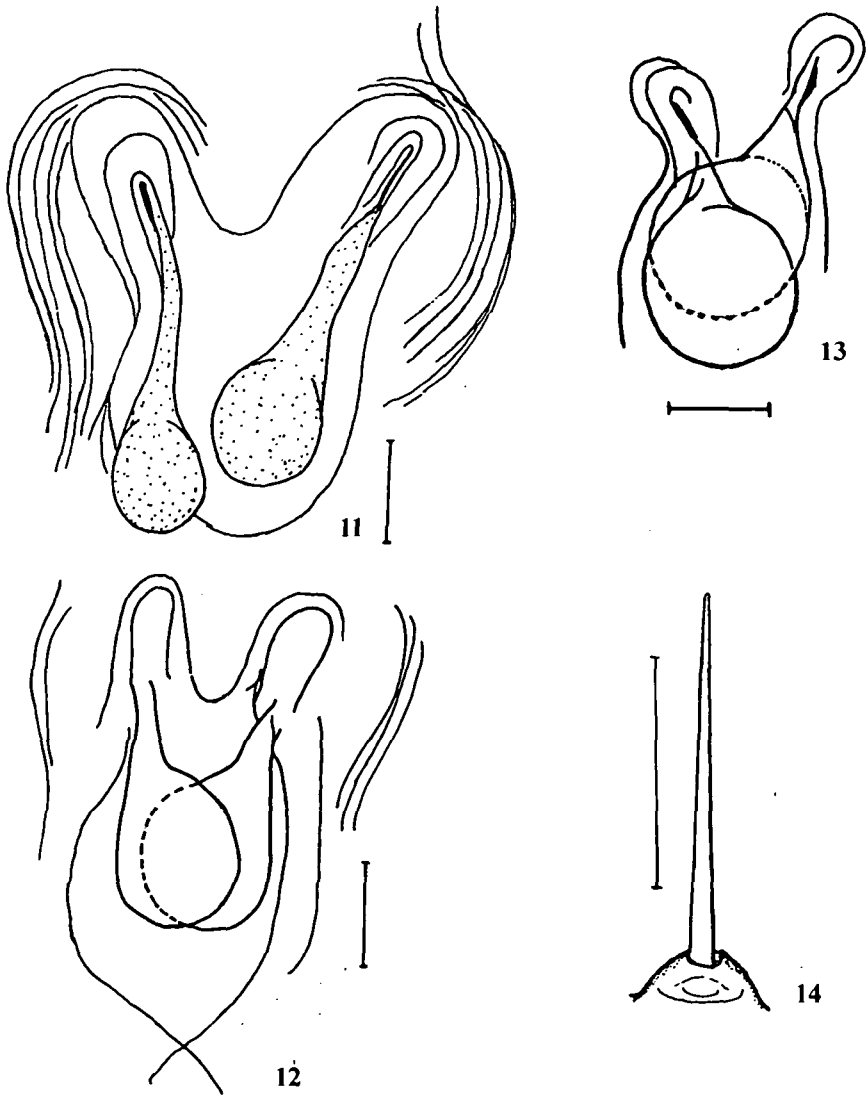

Fig. 11-13: Receptaculum seminis: **11** – *Mediostoma stussineri*, ♀ Greece: Village Xiropotamos; **12** – *M. stussineri*, ♀ Greece: Cave "Spilja nycteridon"; **13** – *M. humerale*, ♀ Greece: Village Mystras, scale lines = 20 µm. **Fig. 14**: Ovipositor spine of *Mediostoma stussineri*, scale line = 50 µm.