

Sphyracephala europaea sp. n. (Diptera: Diopsidae)
from Hungary represents a family new to Europe*

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***Sphyracephala europaea* sp. n. (Diptera: Diopsidae) from Hungary represents a family new to Europe** – *Sphyracephala europaea* L. Papp et Földvári, sp. n., is described from Szeged, Hungary. The adults were caught on their overwintering sites. The morphological features and those of the genitalia are described in comparison to those of *Sphyracephala brevicornis* Say (Nearctic) and *S. babadjanidesi* Zaitzev (Armenia). With 13 figures.

The diopsids or stalk-eyed flies are mostly a tropical–subtropical group of 13 genera and c. 160 known species (for reviews see Shillito 1971, Steyskal 1972, Peterson 1987 and Feijen 1989). There is only the genus *Sphyracephala* Say, 1828, occurring in the Palaearctic region with three known species in the Palaearctic areas: *S. beccarii* Rondani, 1873, an Afrotropical species with one questionable record from Algeria, *S. babadjanidesi* Zaitzev, 1919 from Transcaucasia (Armenia) and *S. nigrimana* Loew, 1873 from the Amur region (Far East Russia and Manchuria). The only (or the last) revision of the Palaearctic species was given by Hennig (1941).

Recently, Ohara (1993) reported *Sphyracephala detrahens* (Walker, 1860) (formerly *Pseudodiopsis*, syn. *cothurnata* Bigot, 1874) from South Japan (Ryukyu Islands) and published figures on its male and female genitalia. Feijen (1989) in his monograph gave a key to genera and an annotated list of known genera and species. Otherwise there is no other modern paper on the Palaearctic species. We must note (or rather, to confess) that the family was mistakenly left out from the *Catalogue of Palaearctic Diptera* (cf. Soós and Papp 1984, Vols 9 and 10). The senior author of this paper is not free of the responsibility of this fault. Actually the editors of the *Catalogue* followed the famous “*Opre-delitel' nasekomykh evropejskoj chasti SSSR*”, wherein the family Diopsidae was not included, since Armenia, the type-locality of *Sphyracephala babadjanidesi*, or the Far East Russia, the type-locality of *S. nigrimana*, are not in Europe. There is no explanation though, why they did not recognise the Lindner's series with Hennig's (1941) excellent diopsid chapter.

On the 15th of October 1996, one of the authors of this paper, P. Paulovics was to make overwintering holes for bats in the high bank of the Maros river, near its estuary to the Tisza river at Szeged. During his work on the wall, he observed small flies sitting on and flying along the wall. He saw several hundreds of those flies, which were sitting mainly at the entrance of small holes in the wall made by hymenopterans, and he caught one just to know what they are. That female specimen was identified and so we returned to the site on the 26th of April, 1997. The *Sphyracephala* specimens – though less nu-

* This paper is regarded as one of the first results in the project “Large blank spots in the Diptera fauna of Hungary”.

merous than in October – have still stayed at their overwintering sites. Seventeen specimens were collected on the wall during that day. We repeated collecting on the 18th of May on the wall, near the river bank and on other parts of its inundation area, and we caught more than 20,000 dipterous specimens but there was no *Sphyracephala* among them. It is a matter of course, we will continue collectings in that site in order to know the other elements of the bionomics of this unique species.

***Sphyracephala europaea* L. Papp et Földvári, sp. n.**

Measurements in mm: body length 3.48 (holotype male), 3.10–3.50 (paratype males), 3.375–4.05 (paratype females); wing length 3.13 (holotype), 2.75–3.20 (paratype males), 3.05–3.65 (paratype females); wing width 1.025, 0.88–1.05, 0.93–1.13; width of head at widest 2.20, 1.903–2.20, 1.703–2.15.

Head bicolorous: frons (postfrons), vertex and occiput (including eyestalks) shining black though covered with dense grey microtrichia, facial plate, cheeks and genae yellow, ventral surface of eyestalks with a narrow dark band down to peristomium (since ptilinal suture is only horizontal, a separation of face, cheeks and genae is imaginary). Thorax and abdomen shining black but mostly covered with medium long grey microtrichia, which are removable by rubbing; bare patches on ventral half of anepisternum and anterodorsal part of katepisternum and a smaller one on meron.

Head extremely wide: widest among the known species of *Sphyracephala* (Figs 1, 3, see more below). Eyes small, vertically oval on long but thick eyestalks. Frons (postfrons) with two pairs of setae: accepting Peterson's (1987) interpretation, the medial pair is called upper orbital, the lateral pair is outer vertical.

Clypeus rather small (Figs 2, 3), shining black, proboscis short, very pale suctorial surface with numerous pseudotracheae. Antennae very small, yellow with a short (ca. 0.50 mm) bare subapical arista and a rounded 1st flagellomere.

Thorax similar to that of *Sphyracephala brevicornis* (for details see Peterson 1987) with a pair of strong posterior notopleurals, 1 pair of very long (somewhat posteriorly placed) supra-alar. Thoracic microchaetae white, only 1 (sagittal) row of acrostichals, scattered microchaetae on and posteriorly to postpronotum and on all other more anterior parts of thorax but only 1 pair of dorsocentral and intra-alar rows. Pleura without any characteristic setae. Scutellum short (0.26 mm on holotype), apical scutellars arise from c. 0.1 mm long apicolateral protuberances, scutellar bristles rather long, 0.62 mm on holotype. Laterotergite with a strong thick spiniform process.

Wing long, slender with comparatively large alula, basically almost transparent, veins brown, ochreous to light brown in some basal sections. Wing apex with a brown spot extending near to the end of R_{2+3} (Fig. 1); crossvein area also with a diffuse brown patch; this is distinctly smaller than in *Sphyracephala brevicornis*: mostly reaching only the middle of second radial cell, at most reaching R_{4+5} , and usually rather faint on the posterior lower edge of *dm-cu*. No darkenings on other areas of wings, in contrast to *Sphyracephala babadjanidesi* or *S. brevicornis*. Wings covered with evenly spaced, comparatively long trichia, without bare patches. Costa without any break, extending slightly over M_{1+2} , costal fringe fine, without any setae, but only hairs including basicosta. Subcosta complete, running close to R_1 and ending at a distal third of the section between humeral vein and R_1 end. R_{2+3} less sinuate than in *Sphyracephala brevicornis* (Fig. 1; cf. Fig. 2 of Peterson 1987), similarly to that of *S. babadjanidesi* Zaitzev, 1919. Intracross-

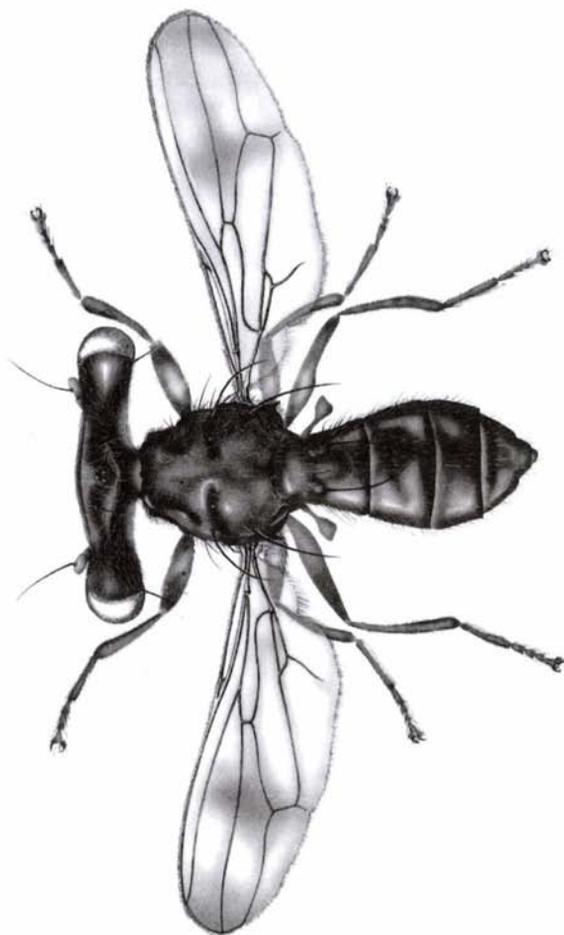
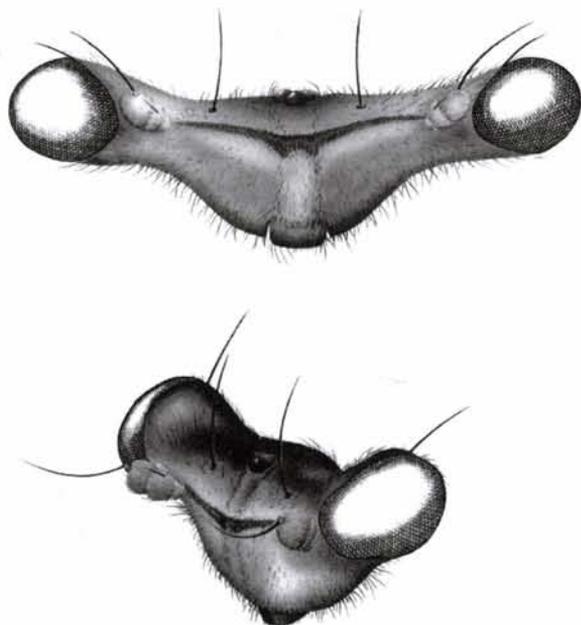


Fig. 1. *Sphyracephala europaea* sp. n., paratype male, dorsal view

vein section 0.738, distal section of M_{1+2} 0.95, i.e., *rm* more basally placed than in *Sphyracephala brevicornis*; *dm-cu* 0.235, distal section of CuA_1 0.085, i.e., longer than in *S. brevicornis*. Cell cup narrow. A_1+CuA_2 vein ending halfway between base and wing margin. Halteres white or whitish yellow.

Legs medium long and slender, no dorsal preapicals. Colour yellow including fore coxae, but fore femur blackish in apical third and in a patch from the dorsal surface to medio-latero-ventrally in an oblique narrow band; mid femur blackish dorsally in its apical third and hind femur in its whole apical third. Fore tibiae always black (except for knees), mid and hind tibia all black up to a small yellow knee area, or, this dark colour of mid tibia ventrally and laterally divided by a dirty ochreous stripe. Fore basitarsus all black, dorsal surface of other fore tarsomeres dark grey, at most 5th tarsomere lighter. Fore leg raptorial: fore femur strongly swollen, length/width on the holotype 2.41, similar also in females: 2.44. Both sexes with a double row of ventral short black spines from apex to basal third. Fore tibia curved to match the swelling of femur. Fore femur

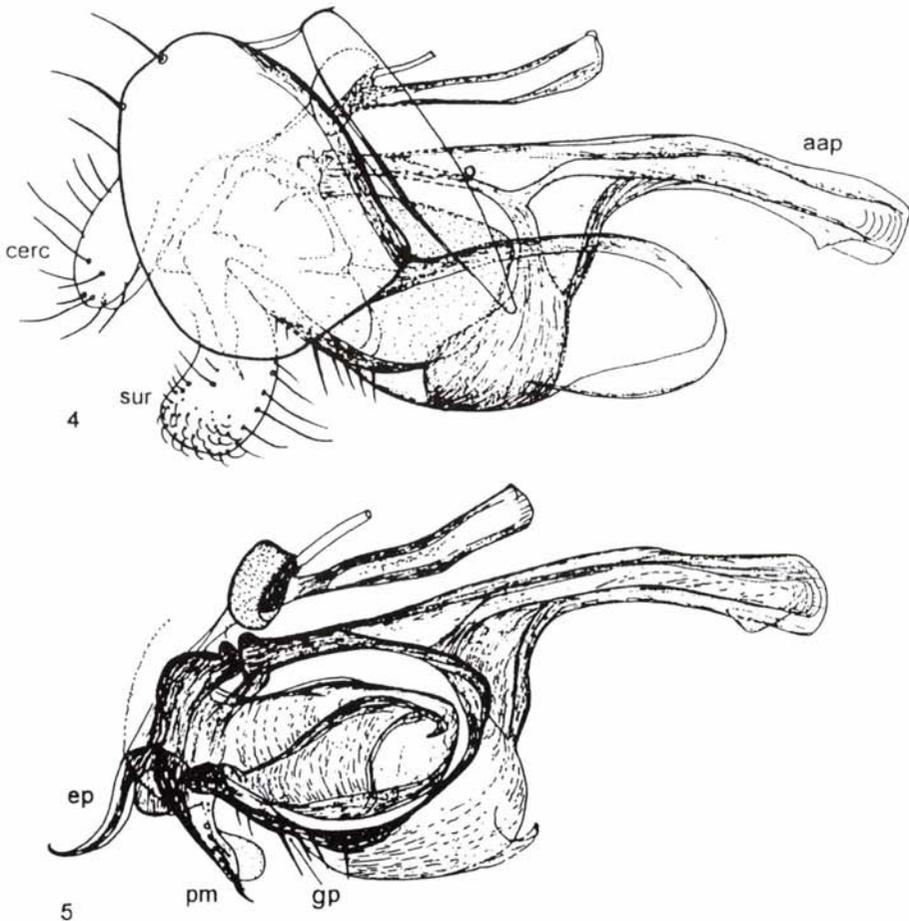


Figs 2–3. *Sphyracephala europaea* sp. n., paratype male, head: 2: oblique lateral-subdorsal view, 3: frontal view

both lateroventrally and medioventrally with 3 to 4 thin light long setae. Mid tibia with short ventroapical seta, mid and hind basitarsi each with 2 ventral (medio- and lateroventral) rows of very small black spines.

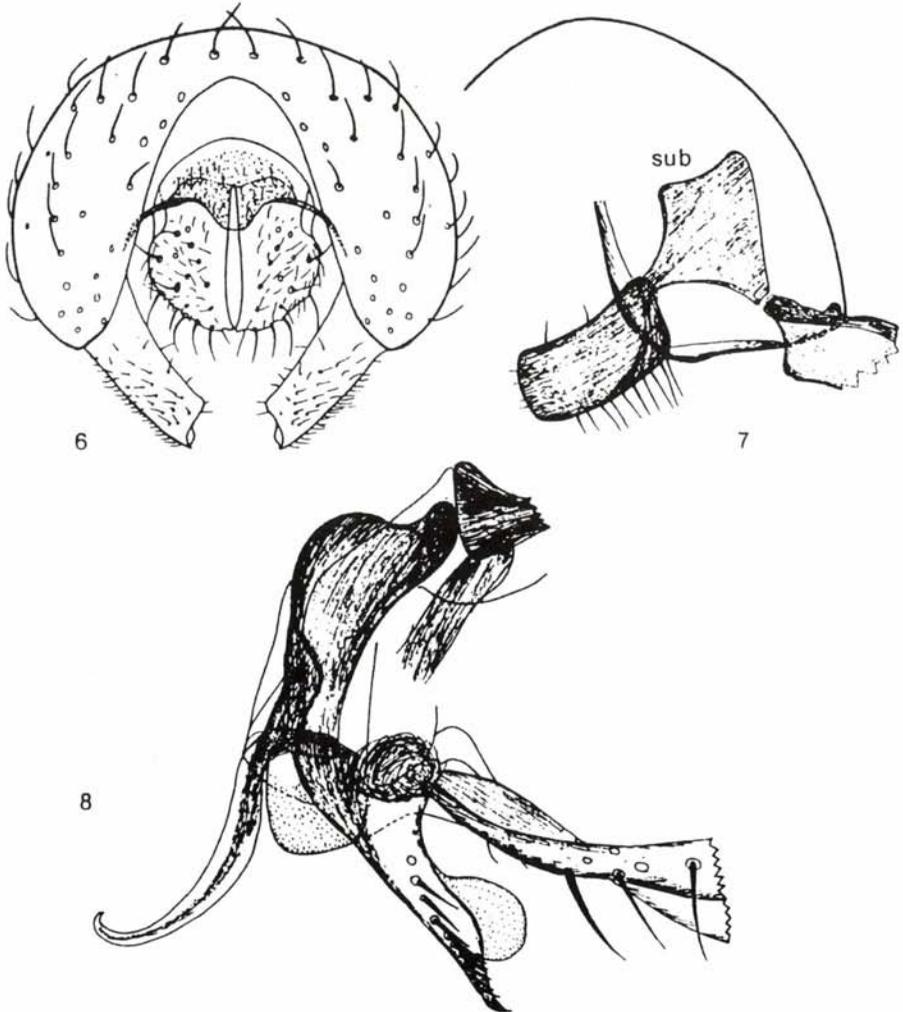
Abdomen dark shining and flat, only with grey microtomentum and whitish short hairs. Abdomen elongate, segments 1+2 longer than the rest of the abdomen.

Male 5th tergite only c. 1/3 the length of the 4th tergite. Preabdominal sternites large, nearly as broad as abdomen in both sexes.



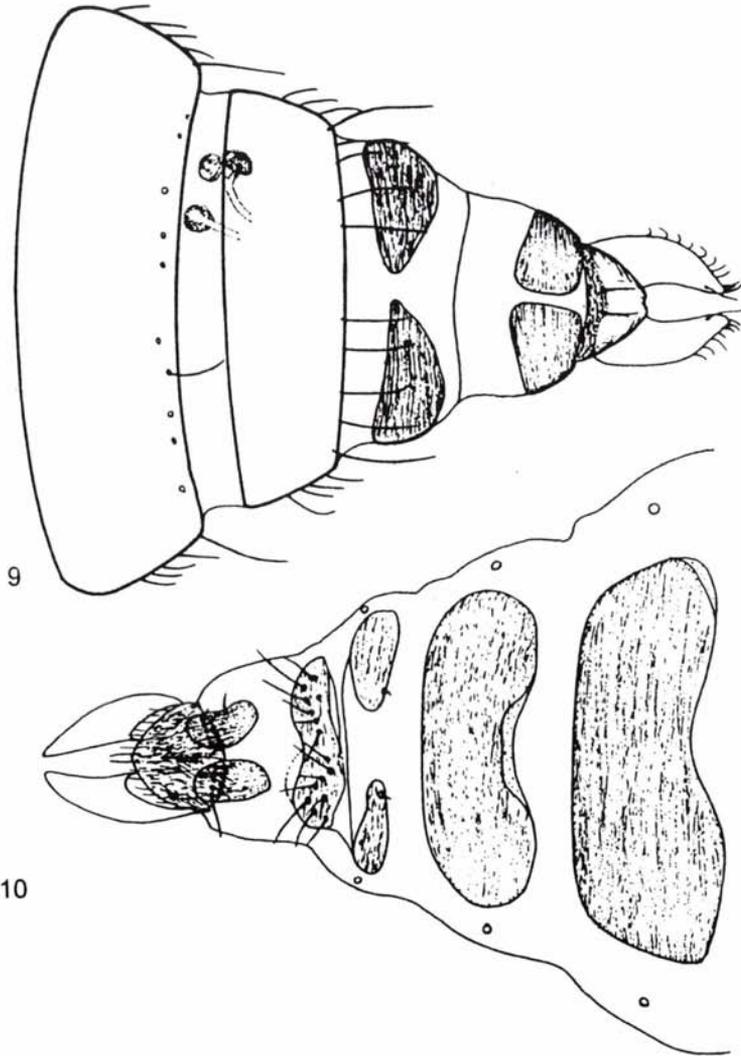
Figs 4–5. *Sphyracephala europaea* sp. n., paratype male. 4: male postabdomen with genitalia laterally, 5: genital complex in lateral view (aap: aedeagal apodeme, cerc: cercus, ep: epiphallus, gp: gonopod, pm: paramere, sur: surstylus)

Male postabdomen with genitalia comparatively very small (Fig. 4). Synergosternite 7 + 8 narrow and weakly sclerotized, 7th spiracle just anterior to it. Epandrium semi-globular with medium long setae. Cerci comparatively small, no long seta on cercus (Figs 4, 6). Surstyli (Figs 4, 6, 7) rather caudal, broad also apically, shorter and broader

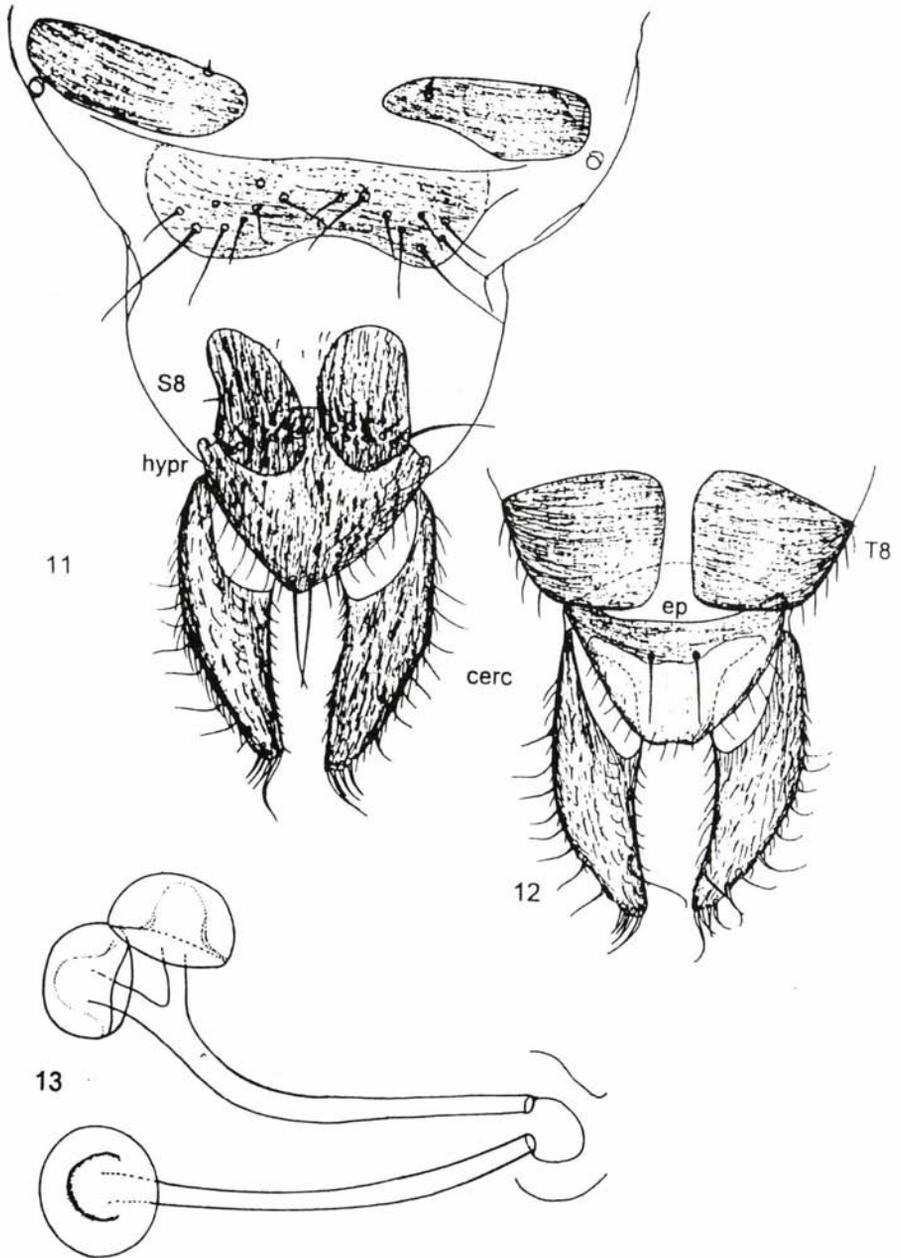


Figs 6–8. *Sphyracephala europaea* sp. n., paratype male. 6: epandrium, cerci and surstyli, caudal view; 7: epandrium and surstylus, inner view; 8: caudal parts of the genital complex laterally (sub: subepandrial sclerite)

than those of *Sphyracephala brevicornis*. Hypandrium as in congeners. Aedeagal apodeme long and robust, aedeagal guide similar, though larger than in *Sphyracephala*



Figs 9–10. *Sphyracephala europaea* sp. n., paratype female, postabdomen. 9: dorsal view, 10: postabdomen ventral view



Figs 11–13. *Sphyracephala europaea* sp. n., paratype female. 11: terminalia in higher magnification dorsally, 12: terminalia in higher magnification ventrally, 13: spermathecae (ep: epiproct, hydr: hypoproct, S: sternite, T: tergite)

brevicornis, compared to the epandrium (cf. Fig. 5 of Peterson 1987). Gonopods distinct, well sclerotized with rather long setae (Fig. 8). Aedeagus bulbous, hidden in the genital complex, parameres large, pointed apically with 9–10 apically directed spines, ejaculatory apodeme long with bulbous sperm pump at base. (We must note here that we think the large pointed paired process lateral to the phallosome to be parameres.) The small plates medial to parameres in the level of the epiphallus must belong to the phallosome. If so, Peterson (1987) misinterpreted them (cf. his Figs 4–5). There are a pair of thin, very long, apically upcurving processes, caudal to phallosome which we name as epiphallus here.

Female postabdomen (Figs 9–10) with very short 6th tergite and sternite, postabdomen partly retractible into preabdomen. Three spermathecae (Figs 13). Cerci comparatively large, much larger than those of *Sphyracephala brevicornis* (Figs 11, 12; cf. Fig. 3 of Peterson 1987).

Holotype male (HNHM): Hungary, Szeged, Maros-torok, magaspart [high bank], 1997. IV. 26., leg. Paulovics & Földvári.

Paratypes (all HNHM): 10 males, 7 females: same data; 1 female: *ibid.*, “Maros-torok”, 1996. X. 15., leg. Paulovics P. – “magaspart falán”.

Sphyracephala europaea sp. n. is the first known species of the genus and of the family Diopsidae in Europe. Its most closely related species is *Sphyracephala babadjanidesi* Zaitzev, 1919 from Armenia (Elizavetpol, later Kirovakan, now Gyandza). Though we have not had the possibility to compare our specimens to those of *Sphyracephala babadjanidesi*, there are features, which are unlikely that would have been incorrectly given in the description and figures of *S. babadjanidesi*. So, both description and figure say that fore basitarsus and tarsomeres are yellow in *Sphyracephala babadjanidesi*, contrasting those of *S. europaea*. No dark hue in r_1 cell of *Sphyracephala europaea*, contrary to *S. babadjanidesi*. The fore femur seems thicker in the new species. The width/length ratio of fore femur is 27/75 on the figure of *Sphyracephala babadjanidesi*, fore femur is definitely thicker in *S. europaea*. The head as broad or even broader than in *Sphyracephala babadjanidesi*: the ratio is different in the description and on the figures by Zaitzev: on his figure the ratio of the width of head and the length of body is 133/258, in his description this is 2.2–2.5/3.7–4.2. In *Sphyracephala europaea* this ratio is: 2.20/3.48, 1.903/3.10, 2.20/3.50 (males), 1.703/3.375 and 2.15/4.05 (females).

Based on the great differences in the shape of the head, in the pattern of the wings and in the details of male and female genitalia, we must regard the Nearctic species, *Sphyracephala brevicornis* Say, that of the Far East, *S. nigrimana* Loew, 1873, and the Oriental *S. hearseiana* (Westwood, 1845) as less closely related ones.

It is more interesting – for us it is a sign of his congenial thinking – that Hennig (1941) hypothesized the occurrence of *Sphyracephala* in South Europe including Hungary. In his Textfig. 4 he gave a map for the whole known distribution of the family in the World, and in the same map he depicted the “eiszeitlichen Refugien der diluvialen Waldflora und Fauna” based on a work of Reinig (1937), with the known distribution of the known species of *Sphyracephala*.

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