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### The mythic species *Issus analis* Brullé, 1833 (Hemiptera, Fulgoroidea, Issidae): still an enigmatic taxon

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One Issidae specimen stored in Paris museum historical collections is reported as holotype of *Issus analis* Brullé, 1833. From the original description, which is confirmed by study of this specimen, the species is moved to the genus *Zopherisca* Emeljanov, 2001 under a new combination *Zopherisca analis* (Brullé, 1833), comb. n. Date of description is discussed and modified from 1832 to 1833 accordingly. Unfortunately being a female as type specimen, the species remains quite enigmatic until some molecular analysis could be undertaken on this old material.

**Key words:** taxonomy, new combination, Issidae, *Zopherisca*, Greece.

*Issus analis* Brullé, 1833 (Hemiptera: Fulgoroidea: Issidae) is one of these few mythic planthopper species described on a single female specimen which was neither studied and neither collected since its description. Even the type seems to be lost. What is really *Issus analis* Brullé, 1833?

Auguste Brullé (1809–1873) described this taxon after a female collected in “les environs de Mistra” (Brullé, 1833) which is southern part of Peloponnesus in Greece during the Morea expedition (Expédition de Morée) in 1829 done by French army under direction of colonel Bory de Saint-Vincent (Desmarest, 1873). Since the original description, nobody revised the taxonomic position of this species except L. Melichar (1906) who erroneously placed it in synonymy under *Issus tendinosus* Spinola, 1839, a species described six years later after Brullé's one. This was corrected later by Z.P. Metcalf (1958) although he missed to check the exact date of publication of the results which took place between 1832 and 1836 (Sherborn & Woodward, 1901).

We have found in the Puton's historical collection deposited in the Museum national d'Histoire naturelle, Paris, a female specimen (MNHN (EH) 23126) which corresponds precisely to the drawing published by A. Brullé – this specimen has fore wings not connected completely along their claval areas exactly as it is showed on the Brullé's drawing (Figs 1, 2). This specimen has no label under it except the indication by Puton in the box, that it is *I. analis* Brullé from Greece.

Although we could not find anymore evidence, this unique female specimen is recognized as the holotype of *Issus analis*.

Already, L. Melichar (1906) pointed out the close relationships of *I. tendinosus*—currently *Zopherisca tendinosa* (Spinola, 1839) and *I. analis*. According to Brullé's drawing (1834, Pl. 31, fig. 9) and study of the specimen we confirm this observation and we transfer *Issus analis* to the genus *Zopherisca* Emeljanov, 2001 to which *I. tendinosus* was assigned as a type species (Emeljanov, 2001). The specimen from Puton's collection as well as the specimen on Brullé's drawing (except the features of face and hind wing not visible on the drawing) correspond to the following generic characters of *Zopherisca* (Emeljanov, 2001; Gnezdilov et al., 2014, figs 53 d–f): metope wide, with distinct and complete sublateral carinae joint below its upper margin; coryphe transverse—twice as wide as long; fore wing without hypocoastal plate, venation pattern—R 2 M 3 CuA 1; hind wings well developed almost as long as fore wings. In addition to these features dense dark brown dots or spots on fore wings and face may be mentioned as well.



**FIGURE 1.** *Issus analis* Brullé (after the plate issued in 1834).





**FIGURE 2.** *Zopherisca analis* (Brullé), specimen from the Puton Collection in MNHN, dorsal view.

## Genus *Zopherisca* Emeljanov, 2001

Type species: *Issus tendinosus* Spinola, 1839.

### *Zopherisca analis* (Brullé, 1833), comb. n.

*Issus analis* Brullé, 1833: 107 & 1834, pl. XXXI, fig. 9.

Interestingly, A. Brullé in his book even gave some ecological indications about this species “Au mois de Juin sur les arbres...” (Brullé, 1833) and actually the members of the genus *Zopherisca* Emeljanov do occur on *Quercus coccifera* L. in Greece as it was observed for *Z. penelopae* (Dlabola, 1974) (Gnezdilov, 2015).

The whole work of "Expédition scientifique de Morée" started to appear in 1832 and was finished in 1836. In his catalogue Z.P. Metcalf (1958) kept the first year 1832. However, according to Sherborn & Woodward (1901), text description and plate figure were published separately. Text description of *Issus analis* is on page 107 and 108, which are part of livraison 14. According to these authors livraisons 1–16 of text were out by June 1833, and only doubtfully in October 1832. Plate XXXI was published later, in 1834. Accordingly, date of description of the species should be therefore changed to 1833.

The genus *Zopherisca* Emeljanov, 2001 (Issidae) is endemic to Balkan Peninsula (Gnezdilov & Drosopoulos, 2006; Gnezdilov et al., 2014). It comprises currently three species: *Z. tendinosa* (Spinola, 1839), *Z. penelopae* (Dlabola, 1974), and *Z. skaloula* Gnezdilov et Drosopoulos, 2006. According to recent revision of the genus (Gnezdilov & Drosopoulos, 2006) *Z. tendinosa* is distributed in Croatia, Southern Bulgaria, and Northwestern Greece, *Z. penelopae* is known from Peloponnesus and Southeastern part of continental Greece (Attika Province) (Dlabola, 1974), and *Z. skaloula* – from Southeastern Greece, including Peloponnesus.

As *Issus analis* was described from a female without good specific characters generally supported by the male genitalia, and if it does not represent a distinct species from one of these three species mentioned above, one of the two of them also known from Peloponnesus might represent therefore a junior synonym of *I. analis*. In the future, molecular analysis by comparison of the type specimen of *I. analis* with these three species might help to solve this issue.

In conclusion, although the type specimen has been identified, the mythic species *Issus analis* Brullé, 1833 still remains an enigmatic taxon.

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