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## First new fossil plant bugs of the genus *Psallops* Usinger, 1946 (Hemiptera: Heteroptera, Miridae, Psallopinae) from the Eocene Baltic amber

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The extinct members of the Psallopinae are important for classifying and understanding the relationships among the closely related mirid groups Isometopinae, Psallopinae (sensu Schuh, 1976) and Cylapinae. These subfamilies are considered to be the most primitive sister groups among mirids and their taxonomical composition, geographical distribution and life history are still poorly known. Extant Psallopinae appear to live on tree trunks and bark. For instance, the species *Psallops myiocephalus* Yas. from Japan is only known from an oak *Quercus acutissima* (Yasunaga, 1999). The 14 extant species of this genus have been described from Old World tropics, subtropics and warm temperate regions: Micronesia (Guam, Marian and Caroline Islands), Saudi Arabia, Nigeria, Ghana, Congo, Singapore, South Africa, Japan, China, Taiwan and Thailand (Usinger, 1946; Carvalho, 1956; Linnavuori & Alamy, 1986; Schuh, 1995; Yasunaga, 1999; Lin, 2004, 2006; Yasunaga & Yamada, 2010; Herczek & Popov, 2014).

The extinct genus *Psallops* is represented by only two fossil species: *P. eocenicus* sp. n. and *P. bitterfeldi* sp. n. in Eocene Baltic amber and one more species (*P. popovi* Hercz.) is so far only known from Miocene Dominican amber (Herczek, 2011). It was recognized that two undescribed fossil species could belong to the recent genus *Psallops*, characterized by enlarged eyes covering the greater part of the head, the antennae placed at the inner side of the eyes, the trapezoid pronotum and crumpled hemelytral membrane (see also discussion for new species). Schuh (1976) has also correctly pointed out that the position of the genus *Psallops* had always been problematical and all of its characters showed a greater variation than had previously thought (Schuh & Schwartz, 1984).

In recent years the number of known fossil Psallopinae (exclusively from Baltic amber) has increased considerably and currently they are represented by the following taxa: *Isometopsallops schuhi* Herczek & Popov, 1992; *Epigonomiris skalski* Herczek & Popov, 1998; *Cylapopsallops kerzhneri* Popov & Herczek, 2006; *Epigonopsallops groehni* Herczek & Popov, 2007; *Isometopsallops prokopi* Vernoux, Garrouste & Nel, 2010; and *Psallops popovi* Herczek 2011 from Dominican amber. Among them, *Isometopsallops prokopi* Vernoux, Garrouste & Nel is the oldest known psallopinae Miridae from the Lowermost Eocene French (Oise) amber (Vernoux *et al.* 2010).

A recent paper by Wolski and Henry (2015) reevaluated the position of the extant genus *Isometocoris* within the Psallopinae as well as the status of the subfamily. In this paper the authors provided evidence for transferring *Isometocoris* to the subfamily Cylapinae and they also proposed to reduce Psallopinae to a tribe within Cylapinae. A proposal of including Psallopinae into Cylapinae in the rank of tribe requires a deeper analysis. A clear autapomorphy of Psallopinae, which is a strong dorso-ventral development of eyes that reach to gula and smoothly blend into curvature of the head (eyes are not globular, do not distinctly protrude outwards and do not raise above vertex) and also different from Cylapinae number of meta-femoral trichobotria (Schuh, 1975, 1976; Gorczyca *et al.*, 2003, 2004; Yasunaga *et al.*, 2010), distinguish Psallopinae from Cylapinae. At the present stage it cannot be ruled out that the similarity, that gave the basis for connecting Psallopinae and Cylapinae, which are: 2-segmented tarsi, claws with subapical tooth and setiform parempodia (Schuh, 1976; Herczek & Popov, 2010, 2013, 2014) have feature of convergence and do not reflect a real relationship between discussed groups. Therefore, the authors of the presented paper support subfamily status of Psallopinae.

### Material and methods

All of the species that are designated in this study are deposited in the Museum of the Earth Polish Academy of Science