

**On the presence of *Pagiphora annulata* (Brullé, 1832)  
in Hungary (Cicadomorpha: Cicadidae)**

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**Abstract** – Adult males and females of *Pagiphora annulata* (BRULLÉ, 1832) were collected at Apáti-hegy, Tihany Peninsula in Hungary. The species has a Mediterranean distribution. Although there has been few records from the Carpathian Basin, presence of this species in Hungary was uncertain. In this study new data of *P. annulata* are given from Hungary and the previous records are also discussed. With 2 figures.

**Key words** – *Pagiphora annulata*, Cicadidae, Tibicininae, Apáti-hegy, Tihany Peninsula, Hungary.

## INTRODUCTION

*Pagiphora annulata* (BRULLÉ, 1832) was described from Greece (NAST 1987). The species belongs to the subfamily Tibicininae within the family Cicadidae (HOLZINGER *et al.* 2003). In the Palaeartic checklist (NAST 1972) *P. annulata* was reported from the Balkan Peninsula, Turkey (Anatolia), North Africa and also from Slovakia.

In the comprehensive checklist “Fauna Regni Hungariae” (HORVÁTH 1897) the species is listed as *Cicadetta annulata* with locality “Dunaszoros”, outside the present borders of Hungary. SOÓS (1956) listed another locality, “Pilismarót”, a village in present-day Hungary.

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In the Palaearctic checklist of NAST (1972), this record was neglected, and concerning the distribution of the species, the following countries are mentioned: Albania, Algeria, Bulgaria, Czechoslovakia (Slovakia), Greece, Tunisia, Turkey (Anatolia), Yugoslavia. In the checklist of the Auchenorrhyncha species of Europe (NAST 1987), *P. annulata* is listed from Albania, Bulgaria, the former Czechoslovakia, Greece and the former Yugoslavia. SCHEDL (2000) referred to the record of SOÓS (1956) and listed the species from Hungary.

In the monograph of Central European Auchenorrhyncha (HOLZINGER *et al.* 2003) only a single locality of *P. annulata* is given from Central Europe, from the southernmost part of Slovakia. In the recent checklist of the Auchenorrhyncha fauna of Hungary, the record of SOÓS (1956) from “Pilismarót” was considered doubtful and the species was not listed (GYÖRFFY *et al.* 2009). The present study contains a new record of the species from Hungary, and discusses previous data.

## MATERIAL AND METHODS

Collecting was carried out between 25–27 June in 2010 in Tihany Peninsula, in Hungary, at the event “Summer camp of the Hungarian Entomological Society 2010”. The collected material was identified following the key given in the monograph of Central European Auchenorrhyncha (HOLZINGER *et al.* 2003). The specimens are deposited in the Hemiptera Collection of the Hungarian Natural History Museum (HNHM) and in the first authors’ collection.

## RESULTS AND DISCUSSION

*Records in Hungary* – SOÓS (1956) listed *P. annulata* with remarks: “II. Pilismarót /Szépliget, VII., 1 q/. VI. Dunaszoros /nach 5, p. 53/”. “Dunaszoros” referred to the data of HORVÁTH (1897). This locality refers to “Vaskapu”, the Iron Gates (Portile de Fier in Romanian and Đerdapska klisura in Serbian), a gorge on the Danube River at the Romanian-Serbian border, south from the border of present-day Hungary. The other locality, “Pilismarót” is a village in Pest county, Northern Hungary, at the river Danube on the northern side of Visegrád Mountains.

In the Hemiptera collection of the Hungarian Natural History Museum, a male *P. annulata* is labelled with similar data: “Pilis Maróth Szépliget; 1901. jul.”; “Pagiphora annulata Br. det. Soós”. “Pilis Maróth” is the old grammatical form of Pilismarót, and this specimen was collected by SZÉPLIGETI in July as well. Although year of collecting was not given in the paper, and SOÓS (1956) reported a female individual, this latter is probably a

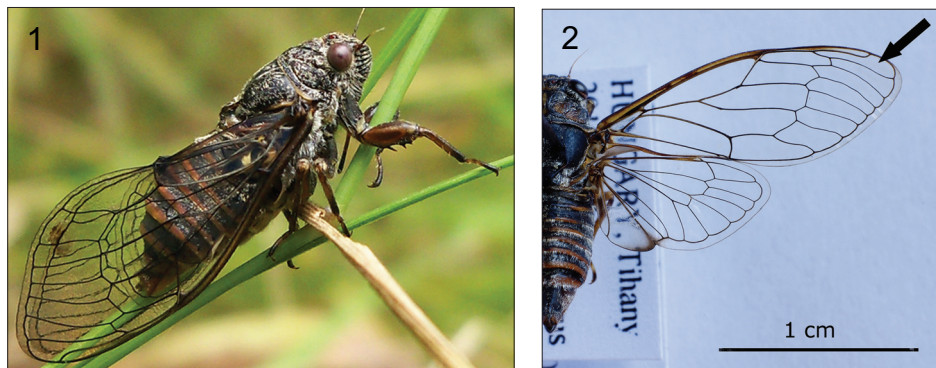
typographic error, and the paper referred to the above mentioned specimen, since this is the only individual of *P. annulata* with similar data at the Hemiptera Collection of the Hungarian Natural History Museum.

Nevertheless, the record listed by SOÓS (1956) is more than 100 years old, and based on this literature data of one individual it can not be deduced that the species is actually present in Hungary.

During our fieldwork, altogether 8 individuals (4 males and 4 females) of *P. annulata* were collected by the authors at Apáti-hegy, Tihany Peninsula on 26 June, 2010, in Veszprém county, Hungary (46°54'N, 17°51'E, elevation: 170–180 m a.s.l.). Since both males (Fig. 1) and females were collected and freshly moulted individuals were observed, this implies that the species has a stable population on the Tihany Peninsula. The species may also be present in other regions of Hungary, which possess similar, special, warm climatic conditions. According to SCHEDL (2000) the species is primarily distributed in the Mediterranean region, with relict populations in Central Europe. Unfortunately our knowledge on the biology of *P. annulata* is poor, development time and preferred host plants are unknown.

*Remarks* – Body length of the collected specimens (from top of head to tip of abdomen) is 13.5–15 mm (males) and 14–16.5 mm (females). Length of forewings is 14–16 mm (males) and 16–17.5 mm (females).

The head is short, triangular, slightly wider than pronotum. The body is brownish or blackish, with fine, sparsely dispersed, whitish hairs, which are denser behind the eyes and under the base of fore wings. Tymbal covers are absent. The abdomen of males is cylindrical, its sides are parallel until the 6<sup>th</sup> abdominal segment. In females ovipositor only slightly exceeds the abdomen.



**Figs 1–2.** *Pagiphora annulata* (BRULLÉ, 1832), 1 = male, the photo was taken at Apáti-hegy, Tihany Peninsula on the 26 June, 2010. 2 = right wings of a female individual of *Pagiphora annulata* (BRULLÉ, 1832). The arrow points at the spoon-shaped apical cell of the forewing, which is a distinct diagnostic feature of the species among Central European Cicadidae (photos by S. KOCZOR)

The forewing radius and media have a distinct common stem, which is basally separate from cubitus. The first apical cell of forewing is with a characteristic, spoon-like shape, this diagnostic feature is unique among the Cicadidae species of Central Europe (Fig. 2).

*Pagiphora annulata* is the fifth species of Cicadidae in Hungary. The other four are *Cicada orni* LINNAEUS, 1758, *Tibicina haematodes* (SCOPOLI, 1763), *Cicadetta montana* (SCOPOLI, 1772) and *Cicadivetta tibialis* (PANZER, 1788) (GYÖRFFY *et al.* 2009).

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