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CONFIRMATION OF THE PRESENCE OF THE SPECIES *CIXIDIA PILATOI* (D'URSO & GUGLIELMINO, 1995) (FULGOROMORPHA: ACHILIDAE) IN THE REPUBLIC OF MOLDOVA

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Summary. This paper presents the information about the species *Cixidia pilatoi* (D'Urso & Guglielmino, 1995), that was detected in Brînzeni commune, Edineț district in 2021-2022. It was described at the first time in 1995 from the Italian peninsula. Another species of this genus, *Cixidia marginicollis* (Spinola, 1839), was previously indicated for the cicada fauna of the Republic of Moldova. After a revision made in 1995, the authors D'Urso & Guglielmino revealed that *C. marginicollis* is spred only in Sicily, while the statementes made before that year may be related to the species *C. pilatoi.*

Keywords: *cicada, Cixidia pilatoi, description, biology, ecology*

Introduction. Achilidae Stal, 1866 is one of the small families of the infraorder Fulgoromorpha. It is currently counting 161 genera distributed in 13 tribes. The representatives of this family are gathered in 3 subfamilies: Achilinae Stal, 1866, Apatesoninae Metcalf, 1938 and Myconinae Fennah, 1950.

The family Achilidae is one of the oldest families lying near the basal stock of recent Fulgoroidea (Hemiptera: Fulgoromorpha), but with still unresolved taxonomic problems. The significant contribution to the study of Achilidae tribes' relationships, unfortunately lacking fossil data, was presented by Emeljanov (1992). That work also had the description of the new species and genera.

The representatives of the family are currently present in wide latitudinal gradient on all continents apart from Antarctica, more speciose in tropical and subtropical zones of the northern hemisphere. This cicadas are terrestrial insects that are obligatory phytophagous by the feeding type. They are phloem feeders

on both gymnosperms: Cupressales and Pinales, and angiosperms: Asparagales, Asterales, Boraginales, Fabales, Rosales, Vitales. Nymphs are believed to be cryptic fungi feeders, however there was not enough carried out the researches on this topic. The majority of species of family are polyphagous, but many achilids prefer feeding on species of a single plant family [3, 6, 12].

Usually flattened dorsoventrally. Head strongly or moderately projecting forward. Forewings with wide membrane projecting backwards; at rest, membranes of both wings strongly overlying each other. Ovipositor of female of raking up-kneading type. Larvae mycetophagous, occuring on dead rotten wood of tree stumps and felt trunks [2].

The achilid genus *Cixidia* Fieber, 1866 is considered difficult and one that is need of revision. At present, it is known about 38 species of cicadas of this genus. [4]. There was mentioned one genus with two species, *Cixidia (Elidiptera) lapponica* (Zetterstedt, 1828) and *Cixidia (Elidiptera) marginicollis* (Spinola, 1839), for the fauna of the former USSR [6].

According to the database of Fauna Europaea, it is known 7 species: *C. confinis* (Zetterstedt, 1828), *C. genei* (Spinola, 1839), *C. lapponica* (Zetterstedt, 1828), *C. marginicollis* (Spinola, 1839), *C. parnassia* (Stal, 1859), *C. pilatoi* (D'Urso & Guglielmino, 1995), *C. sikaniae* (D'Urso & Guglielmino, 1995). The species *C. pilatoi* is mentioned as doubtfully present for the Republic of Moldova [8].

This paper is about the one of the species of this genus, *Cixidia pilatoi.* It is given the information about the systematic positions, historical account, distribution, short description, and biology of the species, which was found on the territory of the Republic of Moldova in July 2021 and 2022 years.

Materials and methods. Cicada *Cixidia pilatoi* was collected by using ultraviolet light traps, which was placed in the northwestern part of the Republic of Moldova at the Scientific Station of the Institute of Zoology in Brînzeni commune, Edineț district (48°05′03′′ N, 27°10′32′′E).

The collected specimens were laid out on cotton pads and later was studied and determined in laboratory conditions. The collected male aedeagus was removed to accurately determine the species. The genital segments of examined specimens were macerated in 10% KOH and were studied on microscope MBS-10. The pictures were taken of the general appearance of adults as well as the genital apparatus of males. The genital preparations are

stored in microvioles with glicerine, and pinned on an entomological pin with corresponding species.

The collected material is stored in the Museum of Entomology of the Institute of Zoology, USM. The material determintion was made using keys for Europe (Emeljanov, 1964), Far East (Anufriev& Emeljanov, 1988) and the articles with species description and genus revisions (D'Urso & Guglielmino, 1995).

Results and discussions. *Cixidia pilatoi* (D'Urso & Guglielmino, 1995).
Cixidia marginicollis auct.
Systematics. Family Achilidae Stal, 1866
Subfamily Achilinae Stal, 1866
Tribe Achilini Stal, 1866
Genus *Cixidia* Fieber, 1866

Material examined. Specimens of *C. pilatoi* were found in samples caught on ultravilet light traps in Brînzeni commune, Edineț district in July 2021 (06.7, 13.7, 16.7) and in July 2022 (05.7).

Historical account. *Cixidia marginicollis* was described by Spinola (1839) from material from Sicily as *Elidiptera marginicollis*. He illustrated the general appearence of the body, head and face. Metcalf (1948) placed this species in the genus *Epiptera* Metcalf. In 1959 Wagner described another species *Epiptera italica* from specimens collected on Mount Etna and reported a ♀ of the same species in Campania. In the key „Insects of the European part of the USSR" (1964), A. Emeljanov gives the description of two species of genus *Elidiptera*, and the species *Elidiptera marginicollis* indicates for the fauna of the Republic of Moldova.

In the work of Talitsky *et* al. (1966) it is given the information about the cicada *Elidiptera marginicollis* (Spinola, 1839). The specimens of cicada were found in the neighbourhood of the localities like Bender, Carmanovo and Hîncești in June 1958 (17.6) and June 1961 (02.6, 15.6, 22.6). The species is characterized as quite rare, which was found in bright clearings and edges, on *Quercus* sp. Anufriev (1969) redescribed the species and illustrated the ♂ genitalia without having seen the holotype, basing his description on specimens from the Republic of Moldova. (Material examined: Bendery, June 17, 1958, 2 specimens (Talitsky coll.); Baurchi, June 24, 1911, 1 specimen (Tshernavin coll.). Moreover, he stated that the genus *Epiptera* Metcalf, 1922 was a synonym of *Cixidia* Fieber, 1866. Following Anufriev's paper, Logvinenko

(1975) based identification of *C. marginicollis* on his redescription. The information about spread of the species *C. marginicollis* in Europe was given in the work of Nast (1987), where were mentioned the countries as: France, Austria, Hungary, Ukraine, Moldova, Romania, Bulgaria *et* al [1, 9, 10, 13].

After a few time, D'Urso V. and Guglielmino A. (1995) during the revision had been convinced that the area of distribution of the species *C. marginicollis* is limited to Sicily. From mainland Italy, they described the species *Cixidia pilatoi* (D'Urso & Guglielmino, 1995).as a new species, to which later were related the finds from the Southern and Central Europe, which for a long time were mistakenly called *C. marginicollis* (Spinola, 1839). Moreover, they compared the holtypes of *C. marginicollis* and *C.italica*. As a result, they did not show any significant differences, thus *C.italica* should be considered as a synonym of *C.marginicollis* [5].

Description. Cicada is reddish brown in colour with yellow specks. Dimensions of body ♂ 6.66- 8.53, ♀ 8.53-9.2 mm. Vertex trapezoidal, short, broader than long. Lateral carinae less elevated than *C. marginicollis*. Its face is shorter than the face of species *C. marginicollis*. Ocelli nearer to the eye than to the lateral margin of frons. There is a yelow spot on the top of the clavus. The hindwings are brownish-ochreous with darker veins. The legs are orche-brown. The abdominal segments are light brown to dark brown in color, with lighter posterior edges. (Fig. 1-3) [5, 9].



Fig. 1. *C. pilatoi*, dorsal view. (Photo: Grozdeva S.)



Fig. 2.Ventral view. (Photo: Grozdeva S.)



Fig. 3. Head lateral view. (Photo: Grozdeva S.)

Biology and ecology. The cicada most likely has one generation per year, it overwinters as larva. It is one of rare thermophilic species with expressed dendrophilia. It lives on hardwoods, trees and shrubs, prefers *Quercus* sp. Its imago can be found from the end of May till the middle of September [5, 9]. The nymphs feed on hyphae fungi in leaf litter. In the south of France, larvae of the 5th age were found on thin fungus-affected deadwood, which was lying on the ground, and was at the stage of severe decomposition [11].

Distribution. The distribution area of cicada is not yet studied completely. It is possible that finds, published under the name of *C. margicollis* in fact belong to the species *C. pilatoi.* Currently, the species is mentioned for the Mediterranean and the south part of Central Europe: southern France, Switzerland, Austria, Czech Republic, Serbia, Bosnia, Romania, Hungary, Bulgaria, Turkey (Anatolia) and possible Ukraine [11]. In the Republic of Moldova, in present, cicada was found only samples from Brînzeni commune.

Ecomonomical importance. The significance of the species *C. pilatoi* are poorly studied in conditions of the Republic of Moldova as well as abroad.

Conclusions. This paper is a confirmation of the spread of cicada *C pilatoi* of the territory of the Republic of Moldova. The studies on this direction will continue to fill in gaps concerning the biology and ecology of this species, as well as the identification of other speceis of this genus, if any.

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