Cucullia fraterna Butler, 1878 (LEPIDOPTERA, NOCTUIDAE) – A NEW SPECIES IN THE FAUNA OF THE REPUBLIC OF MOLDOVA

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Abstract. The paper presents *Cucullia fraterna* Butler, 1878 (Lepidoptera, Noctuidae) – a new species in the fauna of the Republic of Moldova, collected in the "Cobîleni" natural reserve (Orhei district, Republic of Moldova). So, the number of *Cucullia* species identified on the territory of the Republic of Moldova reached 24.

Keywords: *Cucullia*, Noctuidae, Lepidoptera, Republic of Moldova, Orhei district.

Rezumat. *Cucullia fraterna* Butler, 1878 (Lepidoptera, Noctuidae) – specie nouă în fauna Republicii Moldova. Lucrarea prezintă specia *Cucullia fraterna* Butler, 1878 (Lepidoptera, Noctuidae) – nouă pentru fauna Republicii Moldova, semnalată în Rezervația Naturală „Cobîleni" (raionul Orhei). Astfel, numărul speciilor din genul *Cucullia* identificate pe teritoriul Republicii Moldova a ajuns la 24.

Cuvinte cheie: *Cucullia*, Noctuidae, Lepidoptera, Republica Moldova, raionul Orhei.

INTRODUCTION

420 species of Noctuidae were recorded in the Republic of Moldova, taxonomically beloging to 170 genres and 14 subfamilies (ŢUGULEA & DERJANSCHI, 2015; ŢUGULEA C., 2018). The Cuculiinae subfamily records 23 species beloging to the *Cucullia* genus. This genus includes medium and large waist species with a wingspan of 24-60 mm. A distinctive characteristic of Lepidoptera from this genus are the long and narrow wings. The antennae of most species are filiform. The head is small and covered with thick hair. The forehead is smooth, without concretions or extensions. The head and chest shells are made of hair or extension of the scales, shaping various formations on the forehead and trunk. The colors of the wings are dark, predominantly shades of gray or brown with different lines on the front wing that make a difference between the species. The caterpillars are hairless but intensely colored. The Noctuidae from this genus prefer steppe areas (RAKOSY, 1996).

The *Cucullia fraterna* Butler is mentioned for the first time from Europe by KOSTROWICKI (1956) in northwest Ukraine, Podolije. Later, in HARTIG & HEINICKE (1973) this species was not mentioned for Europe. KLYUCHKO (1991) repeated the previous report from Podolije without referring to the source of information and reported the species as new for Ukraine. Also, *Cuculia fraterna* was found in Romania in 1992 (RÁKOSY, 1996).

Morphologically, *Cucullia fraterna* was similar to *Cucullia lactucae* (Denis & Schiffermuller, 1775), which differs from it mainly by the wide dark fascia from the postdiscal area to the inner margin of the hindwings. A similar fascia, wide at the costa and narrow in the anal angle is present and at *Cucullia chamomillae* (Denis & Schiffermuller, 1775), but the ground colour of the hindwings, the pattern of the forewing, and the dorsal crest of the abdomen are completely different. Another difference between *C. fraterna* and *C. lactucae* is found in the fringes of the hindwing which are brownish in the latter. In *C. fraterna*, small black sagittal spots can be found subterminally between the ends of the veins; in *C. lactucae* subterminally between the veins the area has a white centre without black spots. The specimens of *C. fraterna* have genitalia completely different from *C. chamomillae*, but similar to those of *C. lactucae*. The main differences in the valvae of *C. lactucae* and *C. fraterna* are in the harp and in the shape of the cucullus (BESHKOV & VISSILEV, 1995).

The two similar species*, Cucullia lactucae* and *Cucullia chamomilae* are mentioned for the first time in the fauna of the Republic of Moldova in 1929 (MILLER & ZUBOVSCHI, 1929).

MATERIALS AND METHODS

The research was conducted during the vegetation period of 2016 in the "Cobîleni" Natural Reserve (47°29′58′′N, 29°02′18′′E) situated near Lopatna village (Orhei district) on the right bank of the Dniester River. The "Cobîleni" Reserve is a natural forest area with a surface of 33.5 ha. It belongs to the Susleni forestry (Fig. 1).

According to the geomorphological regionalization of the Republic of Moldova, the Reserve is located on the west Dniester's hills and its terraces. It is characterized by an altitude of 250-300 m and vertical fragmentation.

The Reserve includes landscapes of flooded meadows, mixed forests and limestone rocks. The rock forest, specific to the steep slopes of the Dniester valley, is dominated by *Quercus robur* and *Fraxinus excelsior*. The steep sections in the middle of the Reserve, which are exposed to the east, contain *Stipa pulcherrima, Amygdalus nana, Rhamnus cathartica, Thalictrum minus, Silene fabaria,* etc.

There are also ephemeral and ephemeroid plants growing under the shade of the trees – *Convallaria majalis, Anemone ranunculoides, Ficaria verna*, but especially of rare species: *Fritillaria montana, Lunaria annua* and *Galanthus nivalis*.

Numerous species of ferns, mosses, lichens (*Cladonia pyxidata, C. fimbriata,* etc.) and some angiosperms are growing on the limestone rocks in the Dniester valley, which, combined, create a mosaic, similar to that of the mountainous areas (BEGU & BEGU, 2005).

The areas with steppe vegetation hide endangered species such as *Zerynthia polyxena*, vulnerable as *Iphiclides podalirius* and *Euplagia quadripunctaria.*

The purpose of the study was to identify, for the first time, the faunal diversity of moths on the territory of the "Cobîleni" Natural Reserve. The systematic collection research has been carried out in different biotopes of the reserve: forest, forest edge, meadow and limestone canyons. The following methods were used: entomological bucket traps with strike flaps. The luminescent lamp of the trap is surrounded by three panels, against which the insects are hitting, attracted by the light. A funnel is installed under the lamp, mounted on a glass jar where solutions are found for immobilizing insects; we used gasoline. The entomological traps with white and ultraviolet light were located at a distance of 6 m from each other. The traps were installed in March and worked until September. The trap was connected to the electric current between 22^{00} and 2^{00} hours. The collection was carried out with a periodicity of two days per week.

The following lepidopterological keys were used to identify the entomological material: RAKOSY (1996), KLYUCHKO (2006) etc.

The species *Cucullia fraterna* was difficult to identify based on external morphology and its genital armature was studied. The immobilization solution has a negative impact on the exterior appearance. The material was determined using the MBS 10 stereo microscope. The images presented in this paper are original and have been taken with the "Leica" microscope camera of the Entomology Laboratory from the Institute of Zoology (Chișinău, Republic of Moldova).

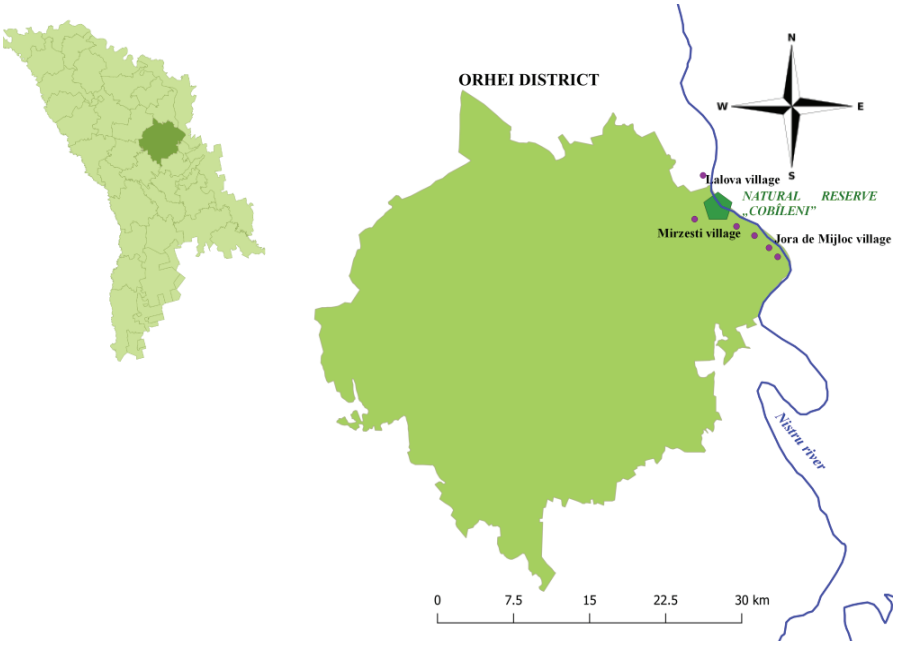

Figure 1. The layout of "Cobîleni" Natural Reserve in the Orhei district (http://www.undp.md).

RESULTS AND DISCUSSIONS

In the research period 3746 individuals of Noctuidae were collected and identified. In the white light trap, 1376 individuals were collected, and at the ultraviolet – 2370 individuals. As a result, 130 species were identified (ȚUGULEA, 2018).

We analysed 5 specimens of moths from the *Cucullia* genus collected on the Reserve and we identified 2 species: *Cucullia tanaceti* (Denis and Schiffermüller, 1775) and *Cucullia fraterna* Butler, 1878, of which the last one was not cited for the fauna of the Republic of Moldova (ȚUGULEA & DERJANSCHI, 2015). So, the number of *Cucullia* species identified on the territory of the Republic of Moldova reached 24. A brief description of the mentioned species is found below.

***Cucullia fraterna* Butler, 1878** (Fig. 2)

Synonyms: *Cucullia pustulata* Eversmann, 1842

Material collected: Lopatna, Orhei district, 18.07.2016 – 1 ♂ (ultraviolet trap).

Figure 2. Imago of *Cucullia fraterna,* ♂ (original).

Biology: The species develops a single generation per year. Butterflies can be observed in flight from June to August. In spring, larvae use as a source of nutrition different plants from the genres *Sonchus*, *Lactuca*, *Chrysanthemum* (RAKOSY, 1996).

Ecological preference: meso-thermophile habitats, according to KOSTROWICKI (1956) *C. fraterna* inhabits steppes and forest-steppes.

Geographical spread: East-European-Asian (from the Pacific coast, Japan, South Siberia, Ural territory to Ukraine) (RAKOSY, 1996).

Male genitalia (Fig. 3): uncus beak-shaped, moderately long and wide, tegument high and wide. Vinculum V-shaped, strong, with a slight incision. Fultura inferior a rounded plate. Valvae wide, elongate with well developed, elongate and pointed apically, saddle-like cucullus with right anal angle. Harp extremely short. Clavus very small. Aedeagus long and strong, slightly curved with two distal laminae, one big semidorsal and another semiventral. Vesica with three diverticula, one of them short with a large cornutus, a second turning backward with one large cornutus and dentiform crest, and a third which is sack-shaped, large and pointed.

Figure 3. *Cucullia fraterna* (♂), the genital armature with the detached aedeagus (original).

CONCLUSIONS

The species *Cucullia fraterna* Butler, 1878, identified as a new species for the fauna of the Republic of Moldova, complements the existing data about the spread of *Cucullia* Schrank, 1802 (Lepidoptera, Noctuidae) genera in Europe. The number of *Cucullia* species identified on the territory of the Republic of Moldova reached 24.

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