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Rapid expansion of *Neofriseria kuznetzovae* BIDZILYA, 2002 in Poland (Lepidoptera: Gelechiidae) follows the invasive sorrel plant *Rumex confertus* WILLD.

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Abstract: *Neofriseria kuznetzovae* has recently been discovered in eastern Poland. The species quickly expands its distribution range along Bug River. Its host plant is an invasive sorrel – *Rumex confertus*. Further expansion is expected along river system in Polish lowland. Preimaginal stages and life history are briefly described and illustrated together with photographs of the genitalia of both sexes.

Key words: Lepidoptera, Gelechiinae, *Neofriseria*, preimaginal stages, biology, range expansion, invasive plant, Poland.

INTRODUCTION

In recent decades there is evidenced expansion of distribution ranges of many Lepidoptera species. One of the main reasons is climate warming, but also an introduction of invasive species from remote parts of the world should be taken into account. A good example here is box tree moth – *Cydalima perspectalis* (WALKER, 1859) (MALLY & NUSS 2010). Spread of alien plants is frequently followed by species living on them. It also concerns the recently found member of the Gelechiidae family – *Neofriseria kuznetzovae* BIDZILYA, 2002. The species was described on the basis of specimens collected in the Altai Mts., but also was found in western Siberia, Moldova and Ukraine (BIDZILYA 2002). It is a newcomer in the Polish fauna, and its occurrence was stated for the first time in 2017 in eastern Poland along Bug River valley at the border with Ukraine and Belarus. In the following years the expansion of the species was evident and its presence was recorded in many other localities.

From Poland there are known two related species from this genus – *Neofriseria peliella* (TREITSCHKE, 1835) and *N. singula* (STAUDINGER, 1876). They were discussed in an earlier

paper (BUSZKO & BENGTTSSON 1992). The moths of *N. kuznetzovae* are much darker than the former ones – dark brown or blackish, and in the site of outer fascia there are small yellow spots at the costal and sometimes at the hind margin of forewing (Fig. 1).



Fig. 1. ♂, FB89 Stare Stulno, e.l. 14.06.2023, J. Buszko leg.; larva 29.05.2023, *Rumex confertus* WILLD. (photo J. Buszko).

MATERIAL AND METHODS

Material studied was obtained by various methods. Most specimens were reared from larvae found on their host plants. Some moths were also attracted to light. Larvae were reared in regularly aerated plastic containers where the plants were frequently changed. Collected and reared specimens were spread and genitalia slides were made following general methods used for Microlepidoptera (BUSZKO & RYNARZEWSKI 2018). The collected material numbers 62 specimens which are deposited in authors' collections.

Records of the occurrence of *N. kuznetzovae* were obtained from the following localities according to years and UTM codes: **2017**: FC71 Orchówek. **2022**: FB89 Stare Stulno, **2023**: FB87 Brzeźno, FB88 Wola Uhruska, FB97 Dorohusk, FC39 Zabuże, FC70 Okuninka, FC80 Wołczyny, FD10 Drohiczyn, FD30 Mielnik. **2024**: FB69 Hańsk, FB78 Łukówek, FB79 Kosyń, FC60 Kołaczce.

PREIMAGINAL STAGES AND BIOLOGY

Larva dark brown, body surface matt, anal part of the body with pale spot. Head blackish-brown, shiny. Prothoracal plate black, shiny with pale frontal margin and very narrow dorsal line. Thoracic legs of the body color. (Fig. 2). Pupa yellowish brown (Fig. 3).

Eggs are laid on the lower surface of the leaf of the host plant. Larvae remains under white spinning on underside of the leaf, occasionally also on its upper surface (Figs. 4, 5). Among the white spinning the black particles of faeces are visible. Infested leaves in places



Figs. 2–5. *Neofriseria kuznetzovae*: 2 – full grown larva, 3 – pupa, 4, 5 – larval feeding traces on leaves of *Rumex confertus* WILLD. (photos J. Buszko).

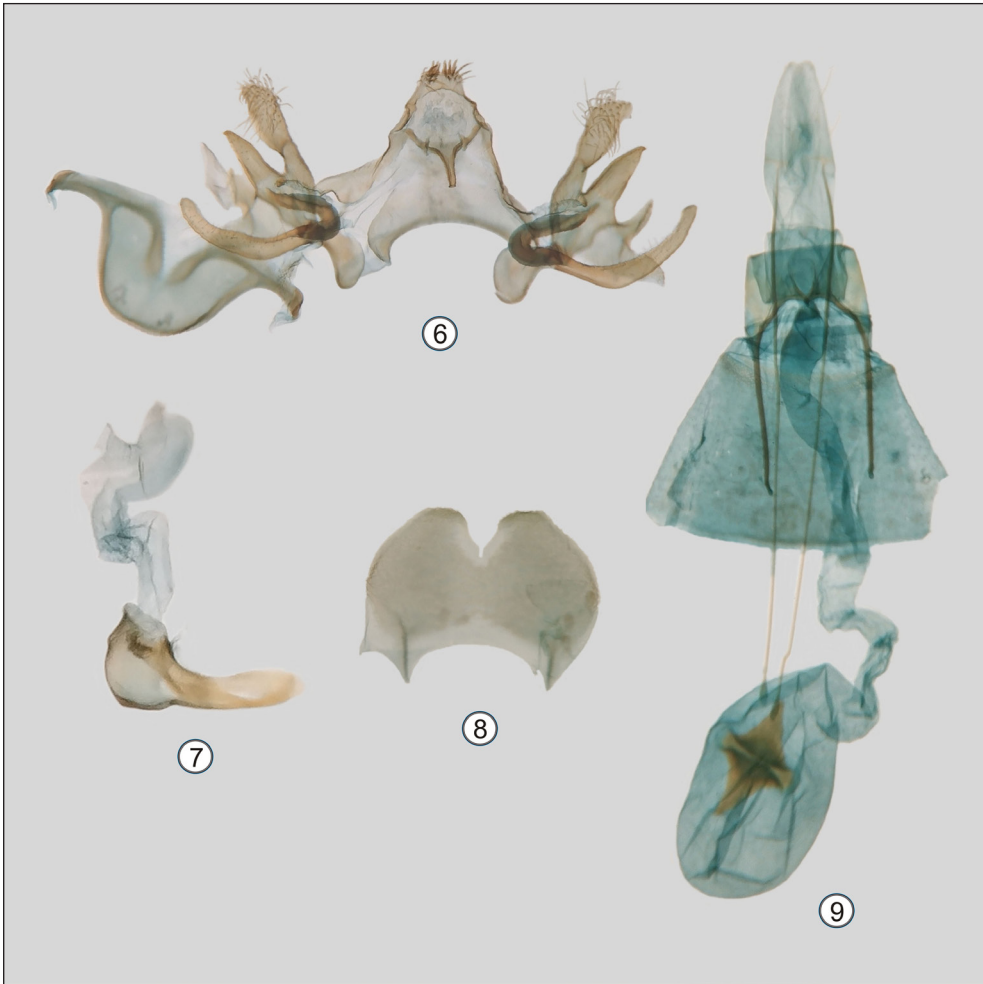
of larvae feeding are usually slightly contorted. Pupation occurs in a feeding place in a slight whitish cocoon. Feeding traces are easily seen and it is a best method to detect the occurrence of the species. The main food plant in Poland is *Rumex confertus* WILLD. It is regarded an invasive plant originating from south-eastern Europe and western Asia (TOKARSKA-GUZIŁ *et al.* 2012). Occasionally, feeding was found on other sorrel species like *Rumex obtusifolius* L. and in drier places on *R. crispus* L. Larvae were encountered from the early May to mid-July and moths were collected from the end of June to the end of August. Late adult records may indicate the possibility of the appearance of a second generation.

The typical habitats for the species are flooded muddy river banks densely grown by its host plant. In drier places situated over flooded plains it is encountered only occasionally.

REMARKS

Neofriseria is a small genus with ten described species and one subspecies, and a few undescribed species, all of which are distributed in the Palaearctic region (OK unpublished),

The male genitalia of *Neofriseria* species are rather complex (Figs. 6–8) with sternum IX having four pairs of gonopods. Despite this, there are only small differences between the species. This is especially true for *N. peliella* and *N. singula*, but also for *N. kuznetzovae* and *N. caucasicella* SÄTLER, 1960, especially in the female genitalia (Fig. 9), for differences see BIDZILYA (2002). Because of these similarities *N. kuznetzovae* was overlooked in the book on European Gelechiidae by HUEMER & KARSHOLT (1999). Adults of *N. kuznetzovae* can be separated from *N. caucasicella* by having almost black forewings, whereas those of the latter are reddish brown.



Figs. 6–9. Genitalia of *Neofriseria kuznetzovae*; 6 – male genitalia, 7 – aedeagus, 8 – ventral plate, 9 – female genitalia (photos J. Buszko).

FAUNISTIC COMMENTS

Considering the preferred habitats and ways of migration as well as the wide distribution of *Rumex confertus* further expansion of *N. kuznetzovae* along main Polish rivers northwards and westwards can be expected. The process will be carefully monitored during the next years.

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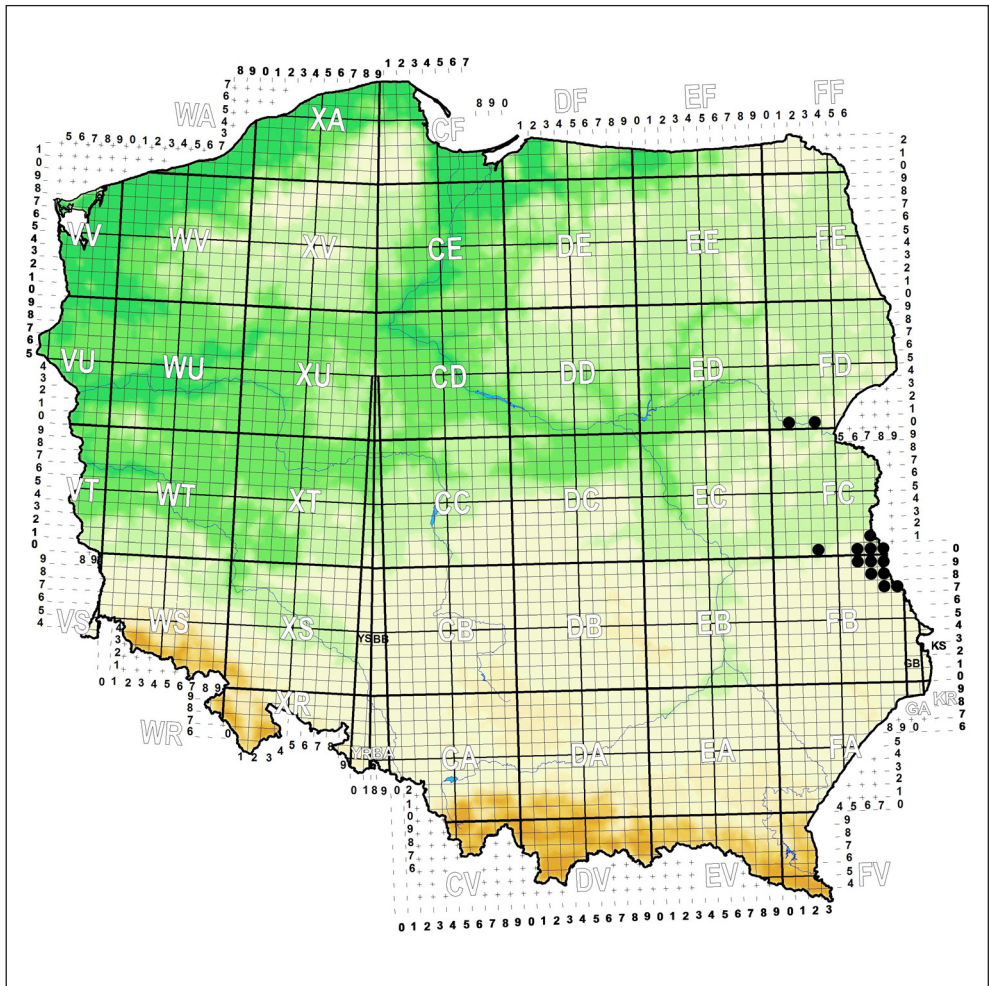


Fig. 10. Distribution of *Neofriseria kuznetzovae* in Poland.

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