

Additions to the owlet moth fauna (Lepidoptera: Noctuidae) of Croatia

Dodaci fauni sovica (Lepidoptera: Noctuidae) Hrvatske

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Abstract

Two Noctuidae species are reported as new members of the fauna of Croatia, *Amphipyra stix* Herrich-Schäffer, [1850] was recorded near Smrden grad in southern Dalmatia while *Lenisa geminipuncta* (Haworth, 1809) was recorded in Nature Park Kopački rit and northern part of Međimurje county. *Amphipyra cinnamomea* (Goeze, 1781) is reported as a second country record, from Bilje near Osijek, 106 years after the last record in Croatia. All three species can be considered rare, and probably endangered in the country, and their status should be assessed in the creation of any Red lists in the future.

Keywords: Apameinae, Xyleninae, *Lenisa geminipuncta*, *Amphipyra cinnamomea*, *Amphipyra stix*, distribution

Sažetak

Dvije vrste sovica (Noctuidae) po prvi puta su zabilježene u fauni Hrvatske *Amphipyra stix* Herrich-Schäffer, [1850] kod Smrden grada u južnoj Dalmaciji a *Lenisa geminipuncta* (Haworth, 1809) u Parku prirode Kopački rit i sjevernom dijelu Međimurske županije. *Amphipyra cinnamomea* (Goeze, 1781) zabilježena je drugi puta u državi, u Bilju kod Osijeka, 106 godina nakon zadnjeg nalaza u Hrvatskoj. Sve tri vrste mogu se smatrati rijetkima, a vjerojatno i ugroženima u zemlji, te bi njihov status trebalo procijeniti pri izradi eventualnih Crvenih popisa u budućnosti.

Ključne riječi: Amphipyrinae, Xyleninae, *Lenisa geminipuncta*, *Amphipyra cinnamomea*, *Amphipyra stix*, rasprostranjenost

Introduction

During the last decades, the surveys of moths in Croatia started to intensify, resulting in some previously completely unsurveyed areas to be explored (Gumhalter and Kučinić 2020; Koren 2022; Koren et al. 2015; Vignjević et al. 2010). This also resulted in the records of many new and interesting moth species new for the fauna of the country (Koren 2019, 2020, 2021; Koren and Gomboc 2015). Still, it seems that with every new survey additional species are being recorded, even in some of the well-surveyed families such as Noctuidae (Kučinić 1997). And while some new species are colonizing the country, like the olive-shaded bird-dropping moth, *Acontia candefacta* (Hubner, 1831) (Koren 2019) some seem to represent relicts from previously more widespread

wetlands like *Hydraecia osseola* (Staudinger, 1882) (Koren 2021) or overlooked mountain species like *Antitype suda* (Geyer, [1832]) (Mrnjavčić Vojvoda et al. 2014) or *Chersotis rectangula* ([Denis & Schiffermüller], 1775) (Koren and Gomboc 2015). Especially important are the border areas with other countries, which also in the past shown to contain immense biodiversity like the cases of the Podravina region (Kranjčev 1985) and Kupa River valley (Mladinov 1980, 1977). During the recent surveys of borderline areas of Croatia, three rare Noctuidae species have been recorded in the country, two for the first time and one for a second time, and their observations are discussed here.

Materials and methods

This survey was conducted in the period from 2021 to 2022 in Croatia. Two main light-trapping sources were used. The primary method was light tent pyramids consisting of a metal frame, and 15W UV lamps connected to a 12 V battery and covered with a white canvas. Six tent pyramids were used, distanced about ten meters apart. The second method was the usage of a 6W 12V Portable Heath Moth Trap which was left on site and then collected the following morning. Two to three Portable Heath Moth Traps were used per locality and night. The android application and digital platform Biologer were used to record field data during this research (Popović et al. 2020). The specimens were set, identified, and stored in the private collection Koren. For each record, the exact locality, coordinates, altitude, and dates are provided.

Results and Discussion

Two species new for the fauna of Croatia are reported: *Lenisa geminipuncta* (Haworth, 1809) and *Amphipyra stix* Herrich-Schäffer, [1850] and one very rare species, *Amphipyra cinnamomea* (Goeze, 1781), which has been recorded for the second time in Croatia (fig. 1). For each of them, the exact collecting data, as well as complementary notes, are provided.



Figure 1. Distribution of three newly recorded Noctuidae species in Croatia; *Lenisa geminipuncta* (green circles), *Amphipyra stix* (yellow circle) and *Amphipyra cinnamomea* (red circle).

***Lenisa geminipuncta* (Haworth, 1809)**

Examined material: Croatia, Međimurje county, Ferketinec, a forest at the banks of Mura river, 46.477864° N, 16.521053° E, 226 m a.s.l., 11.8.2021, 2♂; Croatia, Međimurje county, Pušćine, northern part at the edge of floodplain forest, 46.362939° N, 16.327453° E, 174 m, 10.8.2021, 1 ex; Croatia, Osječko-baranjska county, Nature park Kopački Rit, Zlatna greda, banks of Čarna stream, 45.707233° N, 18.869745° E, 81 m, 4.8.2022, 1♂.

This is an easily recognizable species (fig. 2) due to its rounded forewings with uniformly dark chocolate-brown coloration and two tiny white dots on its forewing (Zilli et al. 2005). It has a Holo-Mediterranean distribution, including the European parts of the Mediterranean, central and northern Europe, as well as parts of the Near East (Zilli et al. 2005). Still, its distribution is far from continuous in Europe, and it is connected to lowland marshes and coastal areas (Zilli et al. 2005). The only mention of this species in Croatia originates from Vukotinović (1879). This is an important work, being one of the first papers about Lepidoptera written in the Croatian language, but full of mistakes and wrong identification. As the collection on which that paper is based has not been conserved, the lists of species mentioned in it cannot be taken as correct (Vukotinović 1879). During this survey, the species has been recorded at three localities, close to the Drava river, Međimurje county, and Kopački rit. This indicates that this species is probably more widespread across the border area with Hungary, around the mentioned river. It inhabits extensive reed beds and small reed patches around ponds, riversides, and fens (Skinner 2009) which is in accordance with the observations from Croatia.

While these records indicate that the species has a wider distribution in the region than it was previously assumed, its habitats are very endangered. With some rare examples of larger wetlands such as Nature Park Kopački rit, most of the surroundings around continental rivers like Drava, once surrounded by swamps and floodplain forests, are now reduced to narrow tree patches along the watercourses. Still, it seems that this is still enough for this species to survive in Croatia, but the question is for how long. An interesting fact to note is that the species has not been recorded in the Podravina region, located between Međimurje and Kopački rit, despite long-term and intensive surveys which resulted in the records of many wetland species (Kranjčev 1985).



Figure 2. *Lenisa geminipuncta* (Haworth, 1809) from Nature park Kopački rit. (Photo T. Koren)

***Amphipyra stix* Herrich-Schäffer, [1850]**

Examined material: Croatia, Dubrovačko-neretvanska county, Slivno Ravno, ruins of Smrden grad, edge of maquis, 42.951018° N, 17.566503° E, 3.8.2022, 1♂.

This is one of the smallest members of the genus *Amphipyra* with a wingspan between 29–35 mm. It is an easily recognizable species (fig. 3) with almost black forewings and with a lighter, usually beige subterminal area. It has a Mediterranean-Asiatic distribution. In Europe, it is present in scattered populations in eastern Serbia, Northern Macedonia, Romania, Bulgaria, Albania, and Greece (Fibiger et al. 2007). In Croatia, it was recorded at the edge of maquis around the abandoned medieval town Smrden grad. A single specimen arrived on light tents around 23.30h. This species in general inhabits open rocky areas with low plants (Fibiger et al. 2007), a habitat located around Smrden grad. Adults fly from late June to the beginning of September. The food plants are still unknown. The closest known populations to the one discovered in Croatia have only recently been discovered in Montenegro (Beshkov and Nahirnić 2020).



Figure 3. *Amphipyra stix* Herrich-Schäffer, [1850] from Smrden grad (Photo T. Koren)

***Amphipyra cinnamomea* (Goeze, 1781)**

Examined material: Croatia, Osječko-baranjska county, Bilje, banks of Biljsko lake, 45.590872, 18.741327, 2.10.2022, 1♂.

Literature records: Moš. ul. (Zagreb) 26. III. 1917. (coll. Badovinac) (Kučinić & Hrašovec, 1999)

This is a larger moth with a wingspan between 45–51 mm (fig. 4). The sex dimorphism is evident in antennae, as the male antennae are fasciculate and those of females are filiform. While it is rather similar to some other congeneric species like *Amphipyra pyramidea* (Linnaeus, 1758) and *Amphipyra berbera* Rungs, 1949, it can be recognized by the longitudinal dark brownish streak dividing the forewing and the brownish dorsal part of the same wing (Fibiger et al. 2007).

This species had formerly a Euro-Asiatic distribution but is now in Europe limited to the Mediterranean area as the populations north of the Alps are considered extinct (Fibiger et al. 2007, Tóth et al. 2022). The closest recent records to the one in Croatia originate from Hungary where the species has been recorded very close to the state border (Tóth

et al. 2022). In general, Hungary is the country with the most recent records in Europe so it is most probable that the specimen recorded in Croatia is a part of that population (Tóth et al. 2022). Recent records exist also for Serbia where it was also recorded on bait at Kupinovo and Progar localities by Zoran Boživić (Lepiforum e.V. 2021). In Croatia, it was recorded at the banks of Biljsko lake, between Osijek and Bilje. A single specimen was observed feeding on a mix of the vine, vinegar, and sugar, at around 23.30h. The locality is under strong anthropogenic pressure as it is used for recreational sites and swimming and fishing activity. Still, it contains several dozen large willow and poplar trees. This is in line with the known habitat, mainly park-like areas where the primary food plant, poplar, is present (Fibiger et al. 2007). As the imagoes are rarely recorded, and in small numbers (Fibiger et al. 2007), it is extremely difficult to assume the distribution of this species in Croatia. So far, this is the second record of this species in Croatia, after the specimen recorded in Zagreb in 1917 (Kučinić & Hrašovec 1999). With the known trends of the decline of this species in some European countries like Germany (Wachlin and Bolz 2012) and Switzerland (Luginbühl 2015), it is possible to assume that this species is also endangered in Croatia and should be assessed in any future Red lists.



Figure 4. *Amphipyra cinnamomea* (Goeze, 1781) from Bilje (Photo T. Koren)

Conclusions

This work contributes to the owlet moth fauna of Croatia with the record of two previously unrecorded and one very rare species. All three species can be regarded as rare or even endangered in the country, due to the scarcity of their habitat or the generally small number of records within these parts of Europe. And while these records still represent only faunistic curiosities, they will in the future surely contribute to a better understanding of the species' status and distribution and in the end, the creation of Red lists. Essential data for each species present in a country is the exact locality where their population occurs. Only in this way, concrete conservation actions could be planned in the future.

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