The first record of *Holoterpna pruinosata* (Staudinger, 1897) (Geometridae) from Ukraine

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Abstract. The first record of the rare European geometrid moth *Holoterpna pruinosata* (Staudinger, 1897) for the fauna of the Ukraine is presented. Immature stages and adults are figured.

Introduction

Holoterpna pruinosata (Staudinger, 1897) was recorded from northeasternmost Italy, Slovenia, Turkey, Lebanon, and Israel (Hausmann 2001). The species was found by the authors in two localities in eastern Crimea (Fig. 1). Since it is absent from the recent list of Ukrainian Geometridae (Kostjuk 2004) and neither listed for that country in the database of European Lepidoptera (Karsholt & Nieukerken [eds] 2012), we report it as new for the fauna of the Ukraine.

Material and Methods

Ukraine, Crimea, 2 km NW of Staryy Krym, Agarmysh Mt., 600 m, steppefied rocky south-facing slope, 31.vii.2009, Savchuk & Kajgorodova leg., 12 final instar larvae; 2 viii.2010, Savchuk leg., several dozens of final instar larvae; 31.vii.2011, Savchuk leg., more than a hundred larvae of different, mainly early instars. Ukraine, Crimea, 5 km N of Krasnokamenka, Frenk-Mezer Mt., 660 m, 3.viii.2009, Kajgorodova leg., steppefied rocky hilltop, 3 final instar larvae.

Collected larvae were reared on the natural host plant, but under artificial conditions. Ova were obtained from reared adults, which produced additional larvae. Identification was carried out using external features of adults.

Results and discussion

During faunistic surveys in 2009, we discovered two populations of the rare geometrid moth *Holoterpna pruinosata* (Staudinger, 1897) on an extensive xerophytic south-eastern hillside of Agarmysh Mt. and on a moderately-sized bare hilltop of Frenk-Mezer Mt. Both localities are situated in south-eastern Crimea, the distance between them is approximately 10 km.

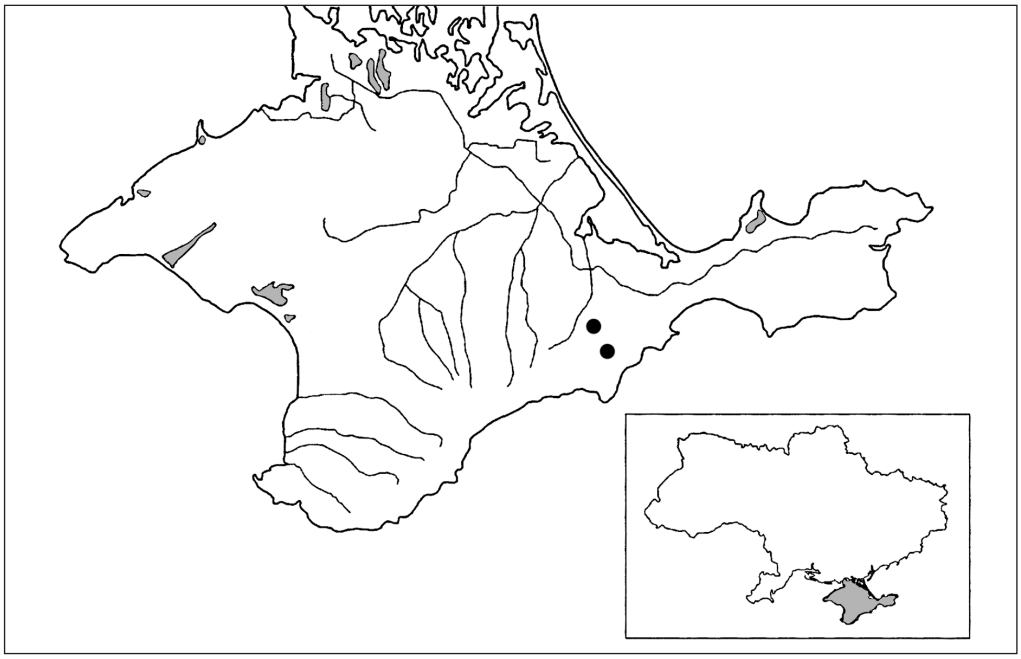

Fig. 1. Distribution of *Holoterpna pruinosata* (Staudinger, 1897) in the Crimea.

From 2010 to 2012 we conducted further research on the phenology and life history of this species. For that purpose the Agarmysh population was studied because it is more easily accessible.

The Agarmysh Mountain represents an approximately 6 km long ridge, stretching from northeast towards southwest, with a maximum elevation of 722 m. The northern slope is covered by deciduous woodland, the southern slope includes extensive patches of xerophytic, open habitats. The vegetation of the latter is dominated by *Poa sterilis* Bieb., *Bromopsis cappadocica* (Boiss. et Bal.) Holub, *Cleistogenes serotina* (L.) Keng, *Asphodeline taurica* (Pall. ex Bieb.) Kunth, *Anthyllis biebersteiniana* Popl., *Sideritis catillaris* Juz., *Salvia scabiosifolia* Lam. s.l., *Ferulago galbanifera* (Mill.) Koch, *Artemisia caucasica* Willd., *Cerastium tauricum* Spreng., *Cerastium glutinosum* Fries, *Holosteum umbellatum* L., *Coronilla scorpioides* (L.) Koch, *Muscari neglectum* Guss., *Gagea* spp. and *Ornithogalum* spp. (Kamenskikh 2011).

Under natural conditions all larvae were found among the fruits of *Ferulago galbanifera* (Mill.) W.D.J. Koch (Apiaceae) (Fig. 2). The adult larva is short and plump, greenish-yellow, with a reddish head. Ventral side without pattern, dorsally with 10 brown transverse fasciae, the four outer ones significantly less pronounced than the rest. In captivity the larvae were reared on the natural host plant; apart from that, they successfully accepted generative parts of *Foeniculum vulgare* Mill. (Apiaceae). The larva attaches itself to the host plant's peduncles with its prolegs and feeds on nearby flower buds, flowers and developing fruits. At rest it takes up a characteristic curved position (Fig. 3). In captivity the larval development from hatching from egg to completion of feeding took 20 days. For pupation the larva builds, among leaf litter or in

Fig. 2. *Ferulago galbanifera* (Mill.) W.D.J. Koch (Apiaceae), larval host plant.

the soil, a yellow, loose, reticulate cocoon. Pupation takes place two days after the completion of the cocoon; no larval aestivation was observed.

Male pupae are 11 – 13 mm long, those of females 14 – 16 mm, ochreous with dark speckling, most conspicuous on the wing shafts (Fig. 4). The cremaster bears a row of eight hooked setae (Fig. 5). Pupae overwinter, many do so twice. In captivity we observed one case of development without a diapause with the adult emerging shortly after pupation. In that case the pupal stage lasted for 14 days.

Emergence of moths from pupae that overwintered in captivity took place between May 18 and July 2. However, judging from the larval records in nature, we assume that the natural flight period takes place during the second half of July.

Fig. 3 – 5. *Holoterpna pruinosata* (Staudinger, 1897), Crimea, 2 km NW of Staryy Krym, Agarmysh Mt., 600 m, 31.vii.2009. **3.** Final-instar larva; **4.** Pupa; **5.** Cremaster of pupa.

Moths emerge during the afternoon with males starting to actively fly in the evening of the same day, looking for females and mating with them. Oviposition starts two days after mating. Ova are glabrate, oval, yellow, and deposited either singly or in groups on the shoots and flower buds of the host plant. Egg development takes five days.

Figs 6, 7. *Holoterpna pruinosata* (Staudinger, 1897), Crimea, 2 km NW of Staryy Krym, Agarmysh Mt., 600 m. **6.** Ex larva, ♂, 24.vi.2012. **7.** Ex larva, ♀, 20.vi.2012.

Adults are aphagous, in captivity their lifespan is between two and seven days. Forewing length is 10–14 mm in males, 14–18 mm in females. Ground colour of head, pronotum, legs, abdomen and wing upper side is plain bluish-green (Figs 6, 7); in some individuals the hindwings are paler coloured than the forewings. Forewing costal margin and antennal shaft are white. Underside of both fore- and hindwings is bluish-green, gradually becoming paler towards the anal margin, which is almost white. Proboscis is reduced.

Our records significantly expand the known distribution of *H. pruinosata* both in Europe and globally. Since the species was reported for Europe as 'highly endangered, perhaps near extinction' (Hausmann 2001) our records may also be of interest to those working on nature conservation.

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References

Hausmann, A. 2001. Introduction. Archiearinae, Orthostixinae, Desmobathrinae, Alsophilinae, Geometrinae. Pp. 1–282. – *In*: A. Hausmann (ed.), The Geometrid Moths of Europe **1**. – Apollo Books, Stenstrup.

Kamenskikh, L. N. 2011. Flora and vegetation of the Agarmysh ridge. – Bulleten' Glavnogo Botanicheskogo Sada **195**: 91–129. [In Russian.]

Karsholt O. & E. J. van Nieukerken (eds) 2012. Fauna Europaea: Lepidoptera. – Fauna Europaea, version 2.5, http://www.faunaeur.org. Accessed 15 June 2013.

Kostjuk, I. Yu. 2004. Modern state of study of Geometridae (Lepidoptera) in Ukraine: preliminary list and new records. – Proceedings of the Zoological Museum of Kiev Taras Shevchenko National University, Vol. **2**: 93–109. [In Ukrainian].