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Research Article

# New Data on Invasive Species of Lepidoptera in the Territory of the Republic Northern Ossetia-Alania

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## Abstract

Our researches were conducted since 1985 until present within inventory of Lepidoptera's fauna of the Republic Northern Ossetia-Alania (former North Ossetia Autonomous Soviet Socialist Republic) with use of the practical standards of field observations, collecting and cameral processing of entomological material. The purpose of researches was drawing up the annotated list of Lepidoptera of the republic with the indication of their biological and ecological features. A number of invasive species was as a result revealed.

Because of researches, 7 species of the Lepidoptera which are falling into to 7 genera from 6 families were revealed: Tortricidae, Gracillariidae, Gellechiidae, Crambidae, Noctuidae, Erebidae.

Most of them - 5 species are wreckers of wood and shrubby plantings, 1 species - garden plants, 1 - was targeted introduced in Stavropol Region adjoining on the republic for biological fight against an ambrosia and, most likely, got on the territory of North Ossetia from there.

Mass flashes of manifolding during our researches were noted only at two species: *Hyphantria cunea* (Drury, 1773) and *Cydalima perspectalis* (Walker, 1859).

***Keywords:*** *Invasive Species; Lepidoptera; Republic Northern Ossetia-Alania; Wreckers of Wood and Shrubby Plantings*

## Introduction

Since the end of the 19th century up to 1990 in the territory of the USSR, the new proved foreign species of an herbivorous insect became known on average each 22 months. Rapid expansion of interstate and intercontinental trade communications promoted strengthening of intensity of invasions. Since 1991 until present in the territory of the European Russia, one new species became known on average each 18 months. Moreover, throughout the eight-year period of new century - is narrower in 12 months. All of them without exception can be considered as wreckers of plants. Two main invasive streams are revealed: western and eastern [1].

The Republic Northern Ossetia-Alania is located in the territory of the Central part of the North Caucasus and East Ciscaucasia. In the north, it borders on Stavropol Region, in the east on the Chechen Republic and the Republic of Ingushetia, in the West on Kabardino-Balkar Republic, in the south - on a crest of Greater Caucasus Range, on the Republic Georgia. The considerable ruggedness of a relief and height of ridges promote fast change of natural belts from the foothills to highlands. The mountain woods, subalpine and Alpine meadows and a snow and glacial belt replace apart 120 km from the north to the south of a belt of the steppe and the forest-steppe. Zonation type - East North Caucasian (semi-desert). Such variety of an environment in the small territory in 18 thousand sq.km, theoretically can promote naturalization of rather large number of alien elements here. some sketchy data were obtained earlier [2].

## Purpose of Study

The purpose of the research was identification of moths and butterflies (Lepidoptera) - invasive species in the territory of the Republic Northern Ossetia-Alania.

## Materials and Methods

### The study area

The research was conducted in Republic North Ossetia-Alania and Russian Federation from 1985 to 2018 from March to November months.

The border of study area is shown on geographical schematic map (Figure 1).

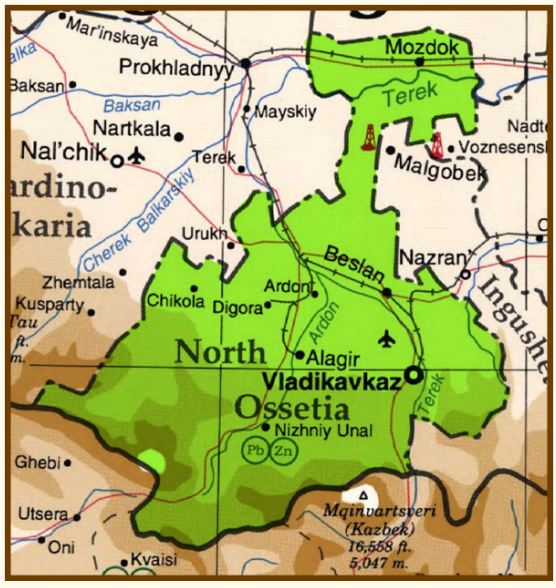


***Figure 1:*** *Study area it is highlighted green in the color.*

**Materials and equipment:** References (see the List of references), camera digital (Sony DSH-H300), air entomological nets, killing jars, setting boards, pins, tweezers, etc., a binocular microscope of MBS-1.

The practical standards of field observations [3] were applied during the research.

For achievement of the purpose of this research, the following tasks were carried out:

1) Field and cameral researches on routes were conducted;
2) The taxonomical structure was created and the list of the established species was made.

## Results and Discussion

A number of invasive species was as a result revealed also it is presented on the picture (Figure 2).

***1)*** ***Grapholita molesta*** **(Busck, 1916) - East fir seed moth** (Figure 2.1): A native area - East Asia (China, Korea). On the catalog of Lepidoptera of Russia [4], east fir seed moth is widespread in Northern Ossetia-Alania. Habitats are landings of fruit crops (a peach, a quince, pear, plum, etc). One of the most dangerous and economically significant wreckers of fruit crops.

2) ***Cameraria ohridella* (Deschka et Dimic, 1986) - Chestnut mining moth or the Ohrid miner** (Figure 2.2): A native area - Macedonia. Distribution coincides with places of disembarkation of different types of chestnuts. Can meet and damage maples and maiden grapes [5].
3) ***Phyllonorycter issikii* (Kumata, 1963) - Lime leaf miner** (Figure 2.3): A native area - Japan, Korea, Russia (Primorsky Region) [6]. In North Ossetia, it is noted since 2012. Distribution coincides with growth places of different types of lindens, both in cultural, and in natural plantings which do caterpillars of butterfly's damage.
4) ***Phthorimaea operculella* (Zeller, 1873) - Potato tuber moth or Tobacco split worm** (Figure 2.4): A native area - South America (Andes) [7]. In North Ossetia, it is noted since 2006. Distribution corresponds to places of growth and storage of cultural and wild solanaceous plants, which are damaged by caterpillars of a butterfly.
5) ***Cydalima perspectalis* (Walker, 1859) - Box pyralid** (Figure 2.5): A native area - India, Taiwan, Korea, Japan, Russia (Primorsky Krai). In North Ossetia, it is for the first time noted in 2015 [2]. Habitats are landings of a box evergreen, an ash-tree ordinary and green. Destroys decorative landings of a box.
6) ***Acontia candefacta* (Hübner, 1813) - Olive-shaded bird-dropping moth** (Figure 2.6): A native area - North America (Canada) [8]. In North Ossetia, it is for the first time noted in 2017. Single specimens are met in places of common ragweed (*Ambrosia artemisiifolia* L.) growth in the Mozdok and Kirov districts of the republic. Preceding adult stages in the conditions of the republic are not investigated.
7) ***Hyphantria cunea* (Drury, 1773) - Fall webworm** (Figure 2.7): A native area - North America (from Canada to Mexico). In North Ossetia, it is noted since 1996. From now on butterflies widely extended across the territory of the republic. Form mass congestions of caterpillars in the web nests damaging about 250 species of wood, shrubby, and grassy plants [9].


***Figure 2:*** *Invasive species of Lepidoptera.*

Because of our researches, 7 species of the Lepidoptera which are falling into to 7 genera from 6 families were revealed: Tortricidae, Gracillariidae, Gellechiidae, Crambidae, Noctuidae, Erebidae.

Most of them - 5 species are wreckers of wood and shrubby plantings, 1 species - garden plants, 1 - was targeted introduced in Stavropol Region adjoining on the republic for biological fight against a common ragweed (*Ambrosia artemisiifolia* L.) and, most likely, got on the territory of North Ossetia from there.

Mass flashes of manifolding during our researches were noted only at two species: *Hyphantria cunea* (Drury, 1773) and *Cydalima perspectalis* (Walker, 1859).

## Conclusion

This received because of the research data is the first step on the way to drawing up the list of invasive insects of the republic. The problem of invasive species widely is on the agenda, not only Russia, but also many other countries of the world and researches in this direction will be continued. Researches on deeper studying of biological and ecological features of already revealed species and control of a condition of their populations will be also continued.

## Conflict of Interest

There is no any financial interest or the conflict of interests exists.

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