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First information about leaf beetles common in agrocenoses of the southern aral sea region and ITS environs

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Abstract
In the agrocenoses of Turtkul, Beruny, Ellikkala, Amudarya regions of the Southern Aral Sea region, 23 species of leaf beetles were identified, as well as 11 species of Alticinaesubfamily, 4 species of Chrysomelinae, Galerucinae subfamilies, and 3 species of Cryptocephalinae subfamily.

Keywords: Insects, Coleoptera, Chrysomelidae, subfamily, species, fauna, taxonomy, ecology, agrocenosis, plant, tree, seedling, xerophyll

Introduction

The family of leaf beetles (Coleoptera: Chrysomelidae) is the largest in the family of coleoptera insects (Insecta: Coleoptera) and is widespread in almost all climatic regions - from tropical and subtropical regions to the vast expanses of Western Siberia. Some species prefer to live near bodies of water, in densely grassy mountainous areas, in forests, in desert and semi-desert areas. Other species have always attracted researchers as rare agricultural pests [1, 3, 4, 6].

Leaf beetles (Chrysomelidae) are second only to long-nosed beetles (Staphylinidae) in the number of species and include more than 50,000 species belonging to 2,500 genera [4]. In Russia and neighboring countries there are about 1500 species, in Siberia about 400, in Central Asia and the CIS countries about 2000, in Uzbekistan about 240 [1].

The first information about the beetle fauna of Central Asia was provided by G. I. Fischer-Veldheim (1820-1828), E. A. Eversman (1830-1840), V. F. Oshanin (1844-1845), A. P. Fedchenko (1868 -1871), who studied in detail more than 500 hardy insects, of which about 200 were leaf beetles [1, 6]. G. G. Yakobson (1920-1930) studied the morphology of leaf beetles [14], D. A. Oglobin (1934-1936) studied the systematics, biology and ecology of leaf beetles [10].

I. K. Lopatin, K. Z. Kulenova [8], P. V. Romantsov [12], I. I. Temreshev, B. G. Valieva [13] studied about leaf beetles in Kazakhstan and neighboring regions [13] About leaf beetles in Uzbekistan and neighboring regions were studied by Ts. G. Bronshtein [3], G. A. Avanesova [1], I. K. Lopatin [6], N. A. Rakhimberdieva [11], a number of scientific works were published, but there areno specific information about leaf beetles in the Southern Aral region.

Therefore, we were faced with the task of studying the landscape distribution, species composition, and taxonomy, trophic relationships with plants, ecological characteristics and zoogeography of leaf beetles in the Southern Aral Sea region.

Materials and methods of research

In 2021-2023, research was regularly carried out in the agrocenoses of Turtkul, Beruny, Ellikkala, Amudarya regions of the Southern Aral Sea and its environs in the spring, summer and autumn seasons. While collecting materials, generally accepted entomological methods were used [1, 3, 4, 5, 7, 9, 10, 15]. During the research, about 800 leaf beetles were collected and their systematic status was analyzed. As a result of the research, 23 species of leaf beetles were identified. Qualifiers were used to identify leaf beetle species [2, 6].

Research results

As a result of the research, it was established that in the agrocenoses of Turtkul, Beruni, Ellikkala, Amudarya regions of the Southern Aral Sea region and their environs, 23 leaf beetles belonging to 13 genera and 4 subfamilies are common figure 1.

During the research, 10 species of ground beetles (Alticinae) belonging to 4 genera were identified. In terms of species diversity, representatives of the genus Phyleotreta dominated, 4 species were recorded.

The dominant species were *Phyleotreta atra*, *Phyleotreta nemorum*, *Phyleotreta vittula*, *Haltica suvorovi*, *Chaetocnema tibialis*, *Chaetocnema hortensis*, while *Phyleotreta praticola* was found in small numbers. It has been established that species of this genus feed mainly on herbaceous plants of the cabbage family (Figure 1, 2).

Fig 1: *Phyleotreta atra*

Fig 2: *Chaetocnema tibialis*

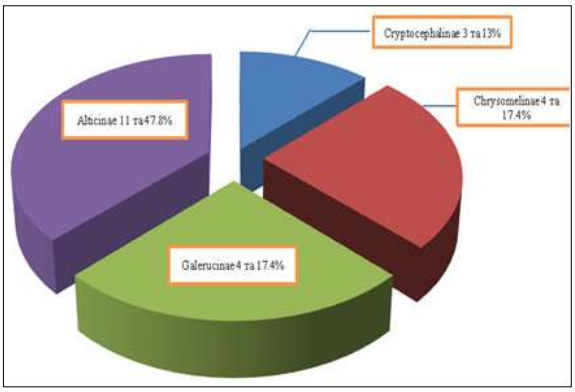

Fig 3: Species composition of leaf beetles in agrocenoses of the Southern Aral Sea region and its environs

Representatives of the genus Chaetocnema belong to the species of medium and small sizes. Also found in large numbers were 3 identified species of the genus *Chaetocnema tibialis, Chaetocnema hortensis, Chaetocnema breviuscula, Chaetocnema tibialis* is a mesoxerophilic species that feeds mainly on grasses of the sorghum family (white sorghum, alabuta). Chaetocnema hortensis is a small beetle, 1.6 mm long. This species feeds on wheatgrass leaves and is a major pest of meadows. *Chaetocnema breviuscula* feeds on herbaceous plants 1.5 mm long, the dominant species.

Representatives of the genus Haltica belong to medium and small species. These beetles are characterized by fast movement; most of them are active during the day and feed mainly on the leaves of woody plants.Among 3 identified species of the genus, *Haltica suvorovi* (leaf beetle of elf angustifolia) is the most common. This species is trophically associated with the elf angustifolia tree and is a consumer that feeds on leaves.

Haltica tamaricis is a common species that feeds on leaves with a diameter of 2.5-3.5 mm. *Haltica destricola glycyrrizae* D. (Licorice weevil) main food is the licorice plant, a beetle up to 4.25 mm long. In these regions, 2 species of the genus Longitarsus have been identified:

Longitarsus annchusae L., *Longitarsus pellucidus* Foudr. These species are common in fertile lands and feed mainly on ivy leaves.

Members of the beetle family Chrysomelinae are medium-sized beetles with an oval and convex body.

During the research, 4 species of Chrysomelinae beetles were identified, belonging to 4 genera. Among the species of the genus Shrysomela, *Melasoma populi* had the greatest abundance. *Chrysomela tremula* feeds on the leaves of all poplars. The main feature of this beetle is that when applied in its larval stage, it emits a scent by turning into an upside-down bulb. The maximum number of poplar leaf beetles can be found in late May and June. Their number can reach 120 in one poplar.

Chrysomela tremula is a yellow-red beetle that feeds on poplar and turanga leaves. It is the second most common herbivore. *Entomoscelis adonidis* and *Gastrophysa polygoni* are medium-sized beetles and are also the dominant species.

In these regions, 4 species belonging to 4 genera of the family Galerucinae were identified. *Agelastica alni* feeds on plum and birch leaves, the trunk of which is strongly convex. It comes first in family transmission. *Luperus hothopoda* (garden leaf beetle) is a black beetle 4-6 mm long. This species mainly feeds on the leaves of fruit trees. *Lochmaea capreae* is trophically related to willow and birch plants, and *Galerucella luteola* is a xerophilic species.

3 species have been recorded, belonging to 1 genus of the family Cryptocephalinae. All 3 identified species were found in large numbers. Among these species, *Cryptocephalus turangae* (turanga hidden head) is trophically related to the turanga,*Cryptocephalus arnoldii sogdianus*, and *Cryptocephalus undulates* species feed on yarrow leaves. Most beetles belonging to this group differ from each other in size and location of large orange-red black spots on the body.

Conclusion

As a result of the study and analysis of the collected material, it was established that 23 species of leaf beetles belonging to 13 genera and 4 subfamilies are common in the agrocenoses of this territory and its environs. The majority of identified species belong to the subfamily Alticinae (11 species, 47.8%), the least to the subfamily Cryptocephalinae (3 species, 13%), and 4 species each to the subfamilies Chrysomelinae and Galerucinae (17.4%), respectively.

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