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TO THE FAUNA OF THE SPIDERS (ARACHNIDA, ARANEI) OF THE GREEN BELT OF THE CITY OF ASTANA

Abstract. As a result of the research, 50 species and 41 genera of spiders (Arachnida, Aranei) belonging to 16 families were marked in the green plantations of the vicinity of Astana.

Dominating by diversity in the green belt of Astana family Araneidae - 8 species and 8 genera. It is followed by the Salticidae family (6 genera and 6 species) and Thomisidae (6 genera and 8 species), then Theridiidae (4 genera and 6 species), Lycosidae and Philodromidae (each of them 3 genera and 4 species).

Other families (Pisauridae, Dyctinidae, Clubionidae, Miturgidae, Sparassidae and Tetragnatidae) are represented by 1 genera and 1 species. On the number prevailed Araneidae (52,2 %), Thomisidae (18,3 %), Theridiidae (7,2 %) and Salticidae (5,4 %), Oxyopidae (5,2 %), Miturgidae (4,2 %), Linyphiidae (3,8 %) and Philodromidae (3,7 %). The share of other species was about 1%. Dominated by number of them: *Heriaeus melloteei* Simon, 1886, *Xysticus striatipes* C.L. Koch, 1870, *Xysticus ninnii* Thorell 1872, *Heliophanus dampfi* Schenkel, 1923,*Evarcha arcuata* (Clerck, 1757), *Oxyopes heterophthalmus* Latreille, 1804, *Araneus diadematus* (Clerck, 1758), *Neoscona adianta* (Walckenaer, 1802), *Aculepeira ceropegia* (Walckenaer, 1802), *Larinioides patagiatus* (Clerck, 1757), *Theridion impressum* (C.L. Koch, 1881), *Philodromus histrio* (Latreille, 1819), *Philodromus cespitum* (Walckenaer, 1802), *Microlinyphia pusilla* (Sundevall, 1830), *Cheiracanthium pennyi* O. P. Cambridge 1873.

The main Hymenoptera pests of green plantations from the families of Tentredinidae and Cimbicidae were most commonly fell into the trap networks of Araneus diadematus (Clerck, 1758) and Larinioides patagiatus (Clerck, 1757) from the Araneidae family. In general, the fauna of the spiders of the green belt of Astana is poorer in comparison with the natural biotopes.This explanation still insufficient knowledge, depletion of many species occurring in natural conditions, or the settlement have not occurred in sufficient quantity. In addition, the variety and number of arachnofauna have a large negative treatment effect of chemical pesticides against pests of trees and blood-sucking insects, which are regularly held in the green zone and its surroundings.

Key words: spiders, Arachnida, Aranei, fauna, green belt, Astana, Kazakhstan.

Introduction. Spiders (Aranei) are a number of arthropods, the second in a number of known representatives in the class of arachnids (Arachnida). Commonly almost everywhere. In fossil deposits known from the carbon period. Almost all representatives are obligate predators that feed on insects or other small animals.

Central American spider-racer *Bagheera kiplingi* Peckhamet Peckham, 1896, eating green parts of acacias is only one known exception. Many species catch prey with the help of a web. After catching prey, the spider kills it with poison and inject digestive juices, and after some time sucking the resulting nutrient solution. The squad includes 43678 modern species of 3898 genera and 112 families, and 1100 of fossil species. In the fauna of Kazakhstan there were found 981 species of spiders from 42 families. Given the size of the country's territory and the diversity of its natural conditions, this number of species is 60% of their real diversity in Kazakhstan. Spiders are one of the economical important groups of invertebrate's animals in large quantities exterminating a variety of pests of agriculture and forestry. The role of spiders is very great in both fields in gardens and vineyards, where they eat orthopterans, beetles, butterfly-leaf rollers, fly wormers, springtails, aphids, bug-turtles and other insects. Important is the fact that spiders

destroy pests, not only on the land, but also on different tiers of vegetation. Also they massively eat blood-sucking insects-carriers of infectious diseases of humans and domestic animals, and domestic pests - cockroaches, flies, etc. On the other hand, entomophages and pollinators (dragonflies, lacewing, wasps, hoverflies, bees, wasps, ants, etc.) often become victims of the spiders and a variety of beneficial insects. For this reason, the study of the arachnofauna of various agro- and urbocenoses is one of the compulsory tasks in the study of their biodiversity, which is confirmed by publications in the edition of near and far abroad. In addition, spiders can be used as a model species to study the state of the environment, for example, to assess toxic effects of pesticides on the biocenosis and its individual components. Spider venom is the raw material for the production of hypnotic and sedative drugs. For their reception, some species of spiders are artificially bred abroad. The possible use of spider venom for medical purposes for the treatment of cardiac arrhythmia, Alzheimer's disease, stroke and other diseases, was investigated. In addition, it is considered promising to develop on the basis of spider venom environmentally safe preparations to protect plants from pests [1-27, 32].

The green belt of the Republic of Kazakhstan in Astana is an artificial biocenosis, while not possessing sufficient stability. To maintain it in an equilibrium state, it is necessary to have among its components all groups of natural regulators of pests, among which spiders occupy far from the last place. However, a special study of the species composition of spiders and their economic significance has not been carried out previously. On this basis, the study of arachnofauna of green belt of Astana is an important task of science in our country

Material and methods. The work was prepared on the basis of collection and observations by Zh. Bolat and N.S.Mukhamadiyev made in the 2015-2017 in the green areas around the city of Astana in the framework of the project "Development and implementation of innovative environmentally friendly technologies of plant protection". In addition, personal collections of I.I. Temreshev and A.Yu. Pokrovsky from these places made in 2012-2014 and 2017 were used. The material was determined by N. Zh. Ashikbayev and I.I. Temreshev. The material stored in LLP "Kazakh Research Institute of Plant Protection and Quarantine named after J. Zhiembaev" of the Ministry of agriculture of Kazakhstan. Astana when performing one of the subtasks of the project focused on the entomophages of pests of the green belt of Astana were studied among which spiders play an important role. The material was collected according to the existing classical methods [30-32]. To determine the types and details about their bio-ecological characteristics there were used sources from the bibliography [22, 24-29, 32]. The authors are grateful to A.Yu. Pokrovsky for providing fees and N. Zh. Ashikbayev for help in determining the material.

Results of the research. During the surveys in green areas around the capital of the Republic of Kazakhstan, Astana, the material was collected on spiders belonging to several families. The list of detected spiders is given below (table).

Class Arachnida - Arachnids
Squad Aranei - Spiders
Family Lycosidae - Wolf spiders

Alopecosa solitaria (Herman, 1876).
Pardosa agrestis (Westring, 1861).
Pardosa hortensis (Thorell, 1872).
Trochosa ruricola (De Geer, 1778).

Family Gnaphosidae - Gnaphosides

Micaria pygmaea Kroneberg, 1875.
*Zelotes*sp.

Family Pisauridae - Wandering spiders

Pisaura mirabilis (Clerck, 1757).

Family Salticidae - Jumping spiders

Chalcoscirtus nigritus (Thorell, 1875).
Evarcha arcuata (Clerck, 1757).
Heliophanus dampfi Schenkel, 1923.
Pellenes tripunctatus (Walckenaer, 1802).

Phlegra fasciata (Hahn, 1826).
Sibianor aurocinctus (Ohlert, 1865).

Family Thomisidae- Crab spiders

Diaea suspiciosa O. P.-Cambridge, 1885.
Heriaeus melloteei Simon, 1886.
Misumena vatia (Clerck, 1757).
Ozyptila scabricula (Westring, 1851).
*Thomisus onustus*Walckenaer, 1805.
Xysticus striatipes C.L.Koch, 1870.
Xysticus cristatus (Clerck, 1757).
Xysticusninnii Thorell, 1872.

Family Oxyopidae - Spiders-lynx

Oxyopes heterophthalmus Latreille, 1804.
Oxyopes ramosus (Panzer, 1804).

Family Philodromidae - Spiders-philodromids, or isopods

Paratibellusob longius culus(Lucas, 1846).
Philodromus histrio (Latreille, 1819).
Philodromus cespitum (Walckenaer, 1802).
Tibellus oblongus (Walckenaer, 1802).

Family Dyctinidae - Diktinovye spiders-weavers

Dictyna arundinacea (Linnaeus, 1758).

Family Theridiidae - Spiders of the therids

Enoplognatha mordax (Thorell, 1875).
Neottiura bimaculata (Linnaeus, 1767).
Steatoda albomaculata (De Geer, 1778).
Theridion impressum (C.L. Koch, 1881).
Theridion innocuum (Thorell, 1875).
Theridion varians Hahn, 1833.

Family Agelenidae - funnel-web spiders

Agelena labyrinthica (Clerck, 1757).
Tegenaria domestica (Clerck, 1757).

Family Linyphiidae - Linyphedges, orline

Microlinyphia pusilla (Sundevall, 1830).
Erigoneatra Blackwall, 1833.

Family Araneidae - orb-weaving spiders

Aculepeira ceropegia (Walckenaer, 1802).
Araneus diadematus (Clerck, 1758).
Argiope bruennichi (Scopoli, 1772).
Euryopis saukea Levi, 1951.
Gibbaranea bituberculata (Walckenaer, 1802).
Hypsosinga sanguinea (C.L. Koch, 1844).
Larinioides patagiatus (Clerck, 1757).
Neoscona adianta (Walckenaer, 1802).

Family Clubionidae - Sack spiders

Clubiona diversa O.P.-Cambridge, 1862.

Family Miturgidae - Miturids, or stray spiders

Cheiracanthium pennyi O.P.-Cambridge, 1873.

Family Sparassidae - Hunters spiders, or giant sidearms

Micrommata virescens (Clerck, 1757).

Family Tetragnatidae - Tetragnathid, or gonocalycine spiders

*Tetragnatha*sp.

Some of the spider species found in the green belt of Astana are presented in pictures (figures 1-5).

Figure 1 –
Diaea suspiciosa O. P. - Cambridge, 1885

Figure 2 –
Oxyopes heterophthalmus Latreille, 1804

Figure 3 –
Philodromus cespitum(Walckenaer, 1802)

Figure 4 –
Araneus diadematus (Clerck, 1758)
with a sawfly caught

Figure 5 –
Larinioides patagiatus (Clerck, 1757)