

**MATERIALS TO STUDY SPECIES COMPOSITION, LIFE FORMS
AND FOOD SPECIALIZATION OF HEMIPTERA (HEMIPTERA)
SYRDARYA-TURKESTAN REGIONAL NATURE PARK**

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Targeted faunal studies of Heteroptera in the Turkestan region were initiated by Esenbekova P. A. and employees of the SRPP “Syrdarya-Turkestan”, but the species composition, the economic value of bed bugs in southern Kazakhstan has not been studied enough, which causes the need for regional ecological and faunal studies, semi-Coleoptera, in particular the Turkestan region, is a unique region for ecological and entomological studies, as it is characterized by a wide variety of invertebrates. The development of cadastre and monitoring of entomocomplexes of specially protected natural areas – the regional natural Park Syrdarya-Turkestan-is relevant. The importance of studying the entomofauna of protected natural areas has been repeatedly emphasized in the national scientific press (Temreshev I.I., Kazenas V.L., Childebaev M.K., Isenova G.D., Kozhabaeva G. E., 2015, etc.). The preliminary studies conducted by the authors in the species composition of semi-Coleoptera, as well as in their life forms and food specialization showed the following results: as a result of research, 65 species of bedbugs belonging to 17 families were identified; the largest number of species are Pentatomidae (21.5%), Lygaeidae (13.8%), Miridae (12.3%), Rhopalidae and Coreidae (9.2% each). In such families as Naucoridae, Pleidae, Gerridae, Stenocephalidae revealed one species; life forms dominated by a group of chortobionts and the number of species and the number of presents in her collections; trophic groups of semi-Coleoptera are represented as follows: phytophages (in General, more than 76.9% of the known number of species), zoophages (18.4%), species with mixed type of nutrition (4.7%).

Keywords: Hemiptera, species composition, food specialty, vital form

The basis of the fauna of semi-winged Kazakhstan are terrestrial herbivorous species. They feed on the juices of plants, mainly their generative organs and seeds. Some of the ground bugs, as well as most of the water bugs and all the water meters are predators, they suck out various insects, their larvae and eggs, mites, etc.

Among the many plant-eating bugs pests of agriculture and forestry. Some herbivorous bugs are carriers of viral diseases of plants. Some bugs that live in the water are harmful to fisheries, sucking caviar and fish fry.

Many predatory bedbugs are useful because they destroy aphids, ticks, caterpillars, larvae of beetles harmful to agriculture and forestry, etc.

Bedbugs are common all over the world, there are about 30 thousand species, United in 50 families.

There are 35 families, more than 1200 species in Kazakhstan. Among the bedbugs there are many large and brightly colored species; most species have a close relationship with certain biotopes, many lead an open lifestyle and are sensitive to the state of the environment.

All this makes many bedbugs suitable for use as indicator species in monitoring and assessing the status of various aquatic and terrestrial ecosystems. There are especially many such species in the families Pentatomidae, Lygaeidae, Coreidae, Reduviidae and Scutelleridae. Since bed bugs can cause significant harm to agricultural plants, it is necessary to constantly monitor the status of populations of the most harmful species. [1]

The creation of the “Syrdarya – Turkestan regional natural Park” is associated with such an important task as the preservation of biodiversity of living organisms within it.

One of the stages in solving this problem is the inventory of flora and fauna of the natural Park, which will create a basis for monitoring studies.

For the Syrdarya – Turkestan regional natural Park consisting of three branches, a more detailed study of the entomofauna is relevant.

P.A. Essenbekova (Institute of Zoology of KN MES RK) and employees of “Syrdarya-Turkestan grpp” conducted a great work on the study of fauna of semi-winged (Heteroptera) “Syrdarya-Turkestan State Regional natural Park”.

The authors obtained information on the biology and ecology of 25 species of bedbugs belonging to 8 families of the order of half-winged in the Arys region of South Kazakhstan region (now Turkestan region), among them species diversity stand out. Pentatomidae (7 species – 28%), Lygaeidae (5 species – 20%), Rhopalidae (4 species – 16%), Nabidae (3 species – 12%), in other families 1-2 species (4-8%) are known.

On the food relations among bugs are the predators, phytophagous bugs, and species with a mixed diet, it was Topalov – 4 types, soovitav – 2 species, the other species belonged to the phytophagous. [2]

Herbivorous species feed on the juices of plants, mainly their generative organs and seeds. Predators suck out various insects, their larvae and eggs, ticks. The fauna of Hemiptera

of the mountain Boraldai was mainly terrestrial species – 29 (87,8%), from marked water – 4 species (12.2 percent).

The family Pentatomidae – 9 species (27.3%), Rhopalidae – 4 species (12.1%) were distinguished by species diversity, and the remaining families were represented by 1-3 species [3,4]. Herbivorous species feed on the juices of plants, mainly their generative organs and seeds. Predators suck out various insects, their larvae and eggs, ticks. The fauna of Hemiptera of the mountain Boraldai was mainly terrestrial species – 29 (87,8%), from marked water – 4 species (12.2 percent).

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Materials and research methods

The material served as gathering of authors, 2018, the Survey was conducted by the routing method. Collection and study of insects were carried out by conventional methods. [5, 6]

From grassy plants, bushes and branches of trees bedbugs gathered net; species living on the surface of the soil, at the roots of plants, in the forest litter, under the bark of trees and various shelters, caught with an exhaustor or tweezers; water bugs collected water net.

Monographs by I.M. Kerzhner (1981), P.A. Esenbekova (2013) were used to determine the species composition of the semi-Coleoptera.

The types of stenobiont, eligibility and eurybiont depending on the latitude of adaptation to specific environmental conditions; phytophagous, zoophagy and soovitage the nature of the trophic relations; monophagy, oligophagy and polyphages on features of food specialization (Kulik, 1973; Asanova, Iskakov, 1977, Kerzhner, 1981; Stop, 1990; Balakhonov, 1998; Dugaev, 2000; these intellectual, 2013). [7,8,9]

Results of the research and discussion

In 2018, the study of semi-winged “Syrdarya – Turkestan regional natural Park” was continued by the authors, the results of partial processing fees included in the preliminary list of species, but most of the materials are in the process of processing.

The table presents the preliminary taxonomic composition of the families of semi-winged GRPP “Syrdarya-Turkestan”, their life forms and food specialization, which is based on the analysis of these literary sources, the study of the collection of the scientific Depart-

ment of GRPP and the primary processing of the authors' fees.

Below is a description of the main representatives of the most numerous families of semi-winged GRPP “Syrdarya-Turkestan”.

Family Pentatomidae – real shchitnik. A representative of the *Carpocoris fuscispinus* family (Boheman, 1851) is found in grassy meadows. Political herbaceous plants (*Verbascum*, *Achillea*, *Artemisia*, *Senecio*, *Carduus*, *Cirsium*, *Centaurea*, *Jurinea*, *Crepis*, *Salvia*, *Lepidium*, *Rumex*, *Malva*, *Poa*, *Festuca*, *Nuosavi* on other herbaceous plants.

The family Miridae – horseflies. Representatives of the family: *Stenodema calcarata* (Fallen, 1807). The species is mesophilous. Occurs on floodplain meadows, on cereals and sedge plants; potential pest of cereals; adults and *Adelphocoris lineolatus* (Goeze, 1778) overwinter – on meadow complex-colored, marsh and leguminous plants. Political with a large preference for legumes.

The Lygaeidae family are landers. The representatives of semesta – *Bianchiella sarmatica* Kiritshenko, 1926. Xerophile. Inhabits semi-desert, sandy steppe, on the Sands, among turfs (*Stipa capilata*); monovoltine species; overwinter as adults.

Nysius ericae ericae (Schilling, 1829). Xerophil, lives in dry places, well warmed by the sun with sparse vegetation, occurs on Compositae, Cruciferae, Rosaceae, Euphorbiaceae, Chenopodiaceae, and other herbaceous plants, feeding on seeds of plants, bivoltine; the adults overwinter.

Emblethis ciliatus Horvath, 1875. Meso-xerophile. Inhabits the steppe, semi-desert, floodplains, sandy steppe, on saline areas); gives 2-3 generations per year; wintering adults.

Family of hunters–Nabidae. *Nabisferus* (Linnaeus, 1758). Mesophilic species, confined mainly to the banks of rivers, lakes and springs. A predator feeding on flies, aphids, cicadas, bedbugs and other insects. It is the most useful species of semi-Coleoptera in agriculture.

The family Rhopalidae – maces. Representatives *Rhopalus subrufus* (Gmelin, 1790) the species is mesophilous. Found on mesophytous meadow vegetation in forest and steppe areas, meadows and forest edges, roadsides, margins of forests, slopes of ravines; political various herbaceous plants; bivoltine; the adults overwinter.

Corizus hyoscyami hyoscyami (Linnaeus, 1758). The species is mesophilous. Inhabits clearings, meadows and other open habitats with moderate moisture; the main food plants are: niger *Hyoscyamus*, *Tabacum*, *Ononis spinosa*, *Erodium*, is considered a pest of legumes; bivoltine; the adults overwinter. Widespread, mass species.

Preliminary taxonomic composition of the families of semi-rigid winged groups
 “Syrdaria-Turkestan”, their life forms and food specialization

Family	species	vital form	Food specialization
Nabidae	Nabis ferus	chortobiont	zoofag
	Nabispunctatus	chortobiont	zoofag
	Nabispallidus	dendrobiont	zoofag
Anthocoridae	Orius horvathi	chortobiont	zoofag
	Xylocoris modestus	herpetobiont	zoofag
Reduviidae	Oncocephalusplumicornis	epigeobionts	zoofag
	Rhynocoris iracundus	dendrochortobiont	zoofag
Rhopalidae	Rhopalusparumpunctatus	chortobiont	polifitofag
	Stictopleurus punctatonervosus	chortobiont	wide oligofitofag
	Corizus hyoscyami	chortobiont	polifitofag
	Brachycarenum tigrinus	eurychortobiont	polifitofag
chortobiontMiri- dae	Stenodemacalcarata	chortobiont	polifitofag
	Orthotylus eleagni	dendrobiont	зоофитофар
	Lyguspratensis	chortobiont	polifitofag
	Adelphocorislineolatus	chortobiont	polifitofag
	Nasocoriaephedrea	chortobiont	narrow oligofitofag
	Capsus cinctus	chortobiont	wide oligofitofag
	Trigonotylus caelestialium	chortobiont	wide oligofitofag
	Plagiognathus chrysantemi	chortobiont	polifitofag
Lygaeidae	Bianchiella sarmatica	herpetobiont	narrow oligofitofag
	Nysius ericae ericae	chortobiont	polifitofag
	Emblethis ciliatus	herpeto-chortobiont	polifitofag
	Lygaeus equestris	herpeto-chortobiont	polifitofag
	Spilostethuspandurus	herpetobiont	polifitofag
	Rhyparochromus vulgaris	herpeto-chortobiont	polifitofag
	Heterogaster affinis	chortobiont	wide oligofitofag
	Ischnocoris punctulatus	herpeto-chortobiont	narrow oligofitofag
	Heterogaster urticae	chortobiont	narrow oligofitofag
chortobiont Coreidae	Coriomeris scabrocornis	herpeto-chortobiont	wide oligofitofag
	Centrocoris volxemi	chortobiont	wide oligofitofag
	Coreusmarginatus	chortobiont	wide oligofitofag
	Syromastusrhombeus	chortobiont	polifitofag
	Enoplopscapha	chortobiont	polifitofag
	Coreus marginatus marginatus	chortobiont	wide oligofitofag
Pentatomidae	Carpocoris fuscispinus	chortobiont	polifitofag
	Carpocoris purpureipennis	chortobiont	polifitofag
	Carpocoris pudicus	chortobiont	polifitofag
	Aelia acuminata	chortobiont	wide oligofitofag
	Brachynema germari	chortobiont	polifitofag
	Codophila varia	chortobiont	polifitofag
	Anthemina lunulata	chortobiont	polifitofag
	Eurydema ornate	chortobiont	wide oligofitofag
	Carpocoris pudicus	chortobiont	полифитофар
	Graphosoma consimile	chortobiont	wide oligofitofag
	Codophila varia	chortobiont	полифитофар
	Graphosoma lineatum	chortobiont	wide oligofitofag
	Dolycorisbaccarum	eurychortobiont	polifitofag
	Eurydema oleracea	chortobiont	oligofitofag
Scutelleridae	Eurygasterintergriceps	chortobiont	wide oligofitofag
	Odontotarsuspurpureolineatus	chortobiont	polifitofag

End table			
Family	species	vital form	Food specialization
Rhopalidae	<i>Corizus hyoscyami</i>	chortobiont	polifitofag
	<i>Brachycarenum tigrinus</i>	eurychortobiont	polifitofag
	<i>Chorosoma schillingii</i>	chortobiont	wide oligofitofag
	<i>Maccevetthus corsicus persicus</i>	chortobiont	polifitofag
	<i>Rhopalus subrufus</i>	chortobiont	polifitofag
	<i>Stictopleurus crassicornis</i>	chortobiont	polifitofag
Stenocephalidae	<i>Dicranocephalus agilis</i>	chortobiont	narrow oligofitofag
Notonectidae	<i>Notonectaglauca</i>	hidrobiont	zoofitofag
Pleidae	<i>Plea minutissima</i>	hidrobiont	zoofitofag
Naucoridae	<i>Ilyocoris cimicoides</i>	hidrobiont	zoofag
	<i>Nepa cinerea</i>	hidrobiont	zoofag
Nepidae	<i>Ranatra linearis</i>	hidrobiont	zoofag
	<i>Gerris odontogaster</i>	hidrobiont	zoofag
Pyrrhocoridae	<i>Pyrrhocoris apterus</i>	herpetobiont	zoofitofag
	<i>Gerris lacustris</i>	hidrobiont	zoofag

Family Coreidae – Crevice. Representatives – *Coriomeris scabrocornis scabrocornis* (Panzer, 1805). Lives on the surface of the soil in open habitats; in meadows, steppes, soils of different types, tends to sandy and clay; found on legumes and herbaceous plants of other families; gives up to 2 generations per year; wintering adults and larvae.

Coreus marginatus (Linnaeus, 1758). Plant-eating bug that lives on different plants. Adults are omnivorous, feed mainly on sorrel. Larvae on buckwheat. During the growing season gives one generation. It hibernates in the adult phase of the insect under plant litter.

Conclusion

The preliminary studies conducted by the authors in the species composition of semi-Coleoptera, as well as in their life forms and food specialization showed the following results:

- as a result of research, 65 species of bedbugs belonging to 17 families were identified;
- the largest number of species are Pentatomidae (21.5%), Lygaeidae (13.8%), Miridae (12.3%), Rhopalidae and Coreidae (9.2% each). In such families as Naucoridae, Pleidae, Gerridae, Stenocephalidae revealed one species;
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The obtained data on the taxonomic composition, ecology of semi-winged studied GRPP “Syrdarya-Turkestan” confirm the importance of this specially protected area in the conser-

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The obtained data on the taxonomic composition, ecology of semi-winged studied GRPP “Syrdarya-Turkestan” confirm the importance of this specially protected area in the conservation of biodiversity of semi-winged southern Kazakhstan.

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