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INDICATOR CHARACTERISTIC OF THE INSTECT FAUNA IN THE BIOECOLOGICAL CHANGES OF THE SOUTHERN PRIARALIYA

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ABSTRACT

In this article, the problems of development of modern technology of pest control, indicator properties, monitoring of insects in bioecological changes in the natural ecosystem of Southern Priaralia and the implementation of ecological preventive measures of protection against them are highlighted.

KEY WORDS: ***South Priaralya, insects, natural ecosystem, bioecological, indicator, pests, chemical preparations, monitoring, prevention.***

INTRODUCTION

We all know that biocenotic and ecosystemic changes in the world depend mainly on natural and anthropogenic factors. Today, negative processes taking place in natural landscapes due to bioecological global climate changes and strong anthropogenic influences have a serious impact on animal biodiversity. At this point, bioecological changes in natural ecosystems, mainly due to their negative impact on the insect world, are causing unprecedented harm to the world community.

The global climate changes taking place in the world, the anthropogenic development of natural ecosystems and the development of urbanization lead to the adaptation of representatives of the entomofauna to anthropogenically developed territories and an increase in the degree of their damage. Especially in connection with bioecological changes in the Southern Aral Sea region, an increase in the scale of xylophagous insects adapted to the arid ecosystem in the natural forest ecosystem and anthropogenic areas of the entomofauna cause serious damage to wood-building materials. [4; 5; 6].

In connection with bioecological changes in the natural ecosystem, the indicator characteristics of the general entomofauna of the coast of the Southern Aral Sea have been determined, the emergence of new terrestrial pests and the disappearance of historical species are observed. Here, in order to determine the diversity of xylophagus insects in natural ecosystems and anthropogenic transformed territories, it is necessary to assess the damage caused to gardens, housing estates, administrative buildings, cultural and strategic facilities, as well as improve the methods of controlling certain types of pests common in our nature, is of great scientific importance.

MATERIALS AND METHODS

The necessary materials (insects) for the research work were collected during the years 2015-2022 in the natural conditions of Southern Priaralia - from the area around the present-day Aral Sea of the Republic of Karakalpakstan, from the North-Eastern part of the Ustyurt Plain, and from the Koyi Amudarya State Biosphere Reserve for comparable work.

Expeditionary researches were carried out in the field experiments, and mainly indicator properties of insects were studied in the watery, swampy places of the Aral Sea 150-180 kilometers from the city of Moynaq and in the bioecological system of the area.

Within the framework of expeditionary research, short-term trips were organized in certain areas, geographical

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points of places were determined, and most importantly, work was carried out to place the collected insect species in entomological mattresses. Also, the faunistic encounter and indicator properties of insects were studied based on the expedition method in the natural ecosystem.

More than 2,000 samples of insects found on plants around the Aral Sea today were collected and attention was paid to the main 3 dominant pest species. Isoptera (Brullé, 1832) from insects collected in research works; Hodotermitidae, Lepidoptera (Linnaeus, 1758); Sphingidae, Hymenoptera (Linnaeus, 1758); Apidae, Coleoptera (Linnaeus, 1758); Carabidae, Scarabaeidae, Elateridae, Histeridae, Tenebrionidae, Scolytidae, Formicidae, Orthoptera (Latreille, 1793); Tettigonioidea, Mantoptera (Linnaeus, 1758); Many representatives of the Mantidae family were found and the main dominant species were studied.

In the study of the bioindicator properties of insects in the conditions of the South Aral Sea, their population ecology, evolutionary adaptation mechanism, adaptation to the area based on the living laws of the community of biocenoses, monitoring level and dominance were clarified. The species composition of the insect collection was also studied in laboratory conditions based on the methods of general entomological, ecological, microbiological, physiological[1; 2],, systematic analysis, fauna, bioecology and developmental phases[3].

RESULTS AND DISCUSSION

To date, research work has been carried out to study the distribution and levels of occurrence of insects in the natural ecosystem of the Southern Aral Sea. Insect samples were taken mainly at a distance of 5000 m from the water area of the Aral Sea and their occurrence in desert plants was studied. Natural ecosystem biotope desert plants include sedge-Alhagi pseudalhagi, yulgun-Tamarix hispida, white head-Karelinia caspia, frankincense-Peganum harmala, reed-Scirpus affinis, salsola collina, white salsify-Chenopodium album, jiyda-Elaeagnus angustifolia, gledichiya-Gleditschia We witnessed the gathering of insects in the stem and under the stem of triacanthos, turanga-Populus euphratica, saxowul-Haloxylon aphyllum, chestnut-Aesculus hippocastanum, jaw-jaw-Capsella bursa pastoris, and sophora janonica plants (table-1).

As a result of the study, it was established that Isoptera (Brullé, 1832); *Hodotermitidae, Anacanthotermes ahngerianus and Coleoptera (Linnaeus, 1758); Formicidae, Camponotus lameerei* nest on the ground at a height of 20-25 cm.

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Table 1.
Remote encounter and bioindicator characteristics of insects in the biotopes of the Aral Sea, which have changed from wet to dry today

№	Insect types	Remote sensing of insects on land after seawater				Bioindexing feature
		500 m	1000 m	2000 m	3000 m	
		alive / dead	alive / dead	alive / dead	alive / dead	alive / dead
1	*Anacanthotermes ahngerianus*	22,1±0,8 / 16,1±0,4	38,6±1,0 / 9,1±0,2	40,7±1,1 / 6,3±0,2	42,1±1,5 / 4,2±0,2	35,8±1,1 / 8,9±0,1
2	*Hyles centralasiae*	28,0±0,9 / 25,1±0,7	35,1±0,9 / 23,2±0,5	42,4±1,3 / 11,0±0,2	46,5±1,6 / -	38,0±1,1 / 14,8±0,3
3	*Antophora sp.*	22,0±0,5 / 18,3±0,4	27,1±0,6 / 14,1±0,3	28,0±0,8 / 12,1±0,2	25,5±0,6 / 9,2±0,2	25,6±0,6 / 13,4±0,2
4	*Megacephala euphratica*	11,2±0,2 / 20,3±0,3	14,0±0,3 / 17,1±0,3	16,1±0,4 / 9,2±0,2	20,0±0,4 / -	15,3±0,3 / 11,6±0,2
5	*Oryctes punctipennis*	12,1±0,2 / 22,5±0,4	13,0±0,2 / 15,0±0,3	16,2±0,4 / 7,1±0,2	22,2±0,5 / -	15,8±0,3 / 11,1±0,2
6	*Platycleis intermedia*	32,1±1,0 / 28,1±0,9	37,3±1,1 / 22,1±0,2	39,1±1,1 / -	43,4±1,6 / -	37,9±1,2 / 12,5±0,2
7	*Severinia turcomaniae*	8,2±0,1 / 12,1±0,2	12,1±0,1 / 9,0±0,1	15,2±0,3 / -	18,0±0,5 / -	13,3±0,2 / 5,2±0,1
8	*Camponotus lameerei*	25,2±0,8 / 22,0±0,4	40,1±1,1 / 12,0±0,2	42,0±1,2 / 7,1±0,1	45,5±1,3 / 3,1±0,1	38,2±1,1 / 11,0±0,2

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In the study of bioindicator properties and in the natural ecosystem, the average number of living organisms of Anacanthotermes ahngerianus was 35.8±1.1; umershik 8.9±0.1; Camponotus lameerei 38.2±1.1/11.0±0.2; takje pereponchatokrylye (Linnaeus, 1758); Apidae, Antophora sp. 25.6±0.6/13.4±0.2; And in the result, it was established that the high level of solemnity in the lake negatively affects the active development of the insects.

CONCLUSIONS

In general, it is clarified that an increase in salinity in external environmental factors in a natural ecosystem primarily has a negative impact on insects, which, this, in turn, makes it clear that insects act as bioindicators in nature with their high sensitivity characteristics.

REFERENCES

1. *Weiser J. Microbiological methods of pest control. - Moscow, 1972. -630 p.*
2. *Nurmuratov T. Insects and rodents living in the pastures of the deserts of South-Eastern Kazakhstan. - Almaty: Publishing house "Konzhyk", 1998. - 288 p.*
3. *Izhevskii S.S., Nikitskii N.B., Volkov O.G., Dolgin M.M. An illustrated reference book of xylophagous pests of forests and timber in the Russian Federation. - Tula: Grif and K, 2005. -220 p.*
4. *Ganieva Z.A., Kholmatov B.R., Karimov F., Zhuginisov T.I., Mirzaeva G.S. Habitat Plants and Foraging Preferences in Termites of The Genus Anacanthotermes // International journal of scientific & technology research (IJSTR), India. 2019, Vol. 8, Iss. 11, pp. 2863-2870. (#40, ResearchGate, IF=0.28; #3, Scopus SC=0.25).*
5. *Zhuginisov T.I., Lebedeva N.I., Ganieva Z.A., Kaniyazov S.J., Mirzaeva G.S. Xylophagous insects in the dead wood of Uzbekistan // Journal "EPRAInternational Journal of Research and Development (IJRD)". –USA, Beltsville, 2019. Vol. 4, - No. 10. - P. 149-154. (SJIF: 6.260).*
6. *Ganieva Z. A., Kholmatov B. R., Akhmedov V., Zhuginisov T. I., Mirzaeva G. S., Mansurkhodjaeva M. Selection of feed substrate in the manufacture of antitermite baits. International Journal of Agriculture, Environment and Bioresearch Vol. 5, no. 05; 2020., ISSN: 2456-8643., pp. 102-114.*