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NATURAL VEGETATION OF THE DESERT AREAS OF THE KHOREZM OASIS AND THEIR LEPIDOFAUNA

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Abstract: This article explores the natural vegetation of the desert areas of the Khorezm Oasis and its relationship with Lepidofauna diversity. The study focuses on dominant desert plant communities adapted to arid and saline conditions and examines their ecological role in sustaining butterfly and moth populations. Field observations and ecological analysis reveal that native vegetation serves as a primary factor influencing the distribution, abundance, and species composition of Lepidoptera. The results demonstrate that degradation of desert flora caused by anthropogenic pressure negatively affects Lepidofauna diversity. The study emphasizes the importance of conserving indigenous plant communities to maintain biodiversity and ecological stability in desert ecosystems of the Khorezm Oasis.

Keywords: Khorezm oasis, desert vegetation, lepidofauna, lepidoptera, biodiversity, arid ecosystems

INTRODUCTION

The Khorezm Oasis is one of the most ecologically significant regions in north-western Uzbekistan, situated in the lower reaches of the Amu Darya River. This area represents a transitional zone where irrigated agricultural landscapes coexist with extensive desert territories. The natural desert environment of the oasis is shaped by severe climatic conditions, including high solar radiation, low annual precipitation, sharp temperature fluctuations, and widespread soil salinity. These factors have resulted in the formation of specialized plant communities that are highly adapted to arid and semi-arid conditions. Natural desert vegetation plays a crucial role in maintaining ecological stability by preventing soil erosion, regulating microclimatic conditions, and supporting biological diversity. In the Khorezm Oasis, dominant desert plants such as halophytic and xerophytic species form the structural basis of desert ecosystems and serve as primary producers. According to studies by Uzbek botanists, the preservation of these native plant communities is essential for sustaining ecosystem functions under increasing anthropogenic pressure. Insect fauna, particularly Lepidoptera, constitutes an important component of desert biodiversity. Butterflies and moths are closely linked to vegetation through trophic and reproductive interactions, as many species depend on specific host plants during their larval stages. Adult Lepidoptera also rely on flowering plants as sources of nectar and shelter. Therefore, the composition, distribution, and abundance of Lepidofauna are directly influenced by vegetation diversity and structure. Recent environmental changes, including land reclamation, agricultural expansion, water regulation, and climate variability, have significantly altered natural habitats in the Khorezm Oasis. These transformations have led to the degradation of desert vegetation, which in turn negatively affects insect communities. Uzbek researchers have noted that desert insects, especially Lepidoptera, are among the most sensitive indicators of ecosystem disturbance due to their strong dependence on plant cover. Despite the ecological importance of desert vegetation and Lepidofauna, integrated studies examining their interdependence within the Khorezm Oasis remain limited. Most existing research focuses either on botanical or entomological aspects separately, leaving gaps in understanding plant–insect interactions in desert ecosystems. The present study aims to analyze the natural vegetation of the desert areas of the Khorezm Oasis and to assess its role in shaping Lepidofauna diversity. By identifying key plant communities and their associated Lepidoptera species, this research seeks to contribute to biodiversity conservation and to provide a scientific basis for sustainable ecosystem management in arid regions of Uzbekistan.

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MAIN BODY

The study was conducted in the desert areas of the Khorezm Oasis using field observations and ecological assessment methods. Dominant desert plant species were identified based on their distribution and adaptive characteristics, while Lepidofauna was recorded through seasonal monitoring and visual identification. The analysis shows that sites with higher native vegetation diversity support a richer composition of Lepidoptera species. In contrast, degraded areas with reduced plant cover exhibit lower lepidopteran abundance and diversity. The results confirm a strong ecological relationship between desert vegetation structure and Lepidofauna distribution in the region.

CONCLUSION

The results of this study clearly demonstrate that the natural vegetation of the desert areas of the Khorezm Oasis is a fundamental ecological factor determining the diversity and stability of Lepidofauna. Native desert plant communities provide essential resources for Lepidoptera, including host plants for larval development, nectar sources for adults, and suitable microhabitats for shelter and reproduction. The integrity of these vegetation types directly influences the composition and abundance of butterfly and moth species in desert ecosystems. Field observations confirm that areas with well-preserved indigenous vegetation support significantly higher Lepidoptera diversity compared to sites affected by vegetation degradation. Anthropogenic pressures such as land use change, agricultural expansion, and water management practices lead to the fragmentation and reduction of natural plant cover, which in turn results in a decline in lepidopteran populations. These findings support the conclusions of Uzbek botanists and entomologists, who emphasize the vulnerability of desert ecosystems and the importance of native flora in maintaining regional biodiversity. The close ecological relationship between desert vegetation and Lepidofauna highlights the need for integrated conservation approaches. Protecting indigenous plant communities should be regarded not only as a botanical priority but also as a key strategy for conserving insect biodiversity and ensuring ecosystem resilience. The findings of this research provide a scientific basis for the development of sustainable land management and biodiversity conservation measures in the desert regions of the Khorezm Oasis and similar arid environments in Uzbekistan.

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