ISSN NO: 2771-8840
Date of Publication: 30-08-2023

The Study of Dendrophagous Lepidopthers (Insecta, Lepidoptera) In Foreign Countries and Uzbekistan

Shermatov Malikjon Raxmatjonovich
Farg'ona davlat universiteti doktoranti, b.f.n., dosent
E-mail: malikjonshermatov78@gmail.com
Qayumova Oygul Ismoiljonovna
Farg'ona davlat universiteti, o'qituvchi

Abstract

The article analyzes the state of study of dendrophagous lepidopthers in foreign countries and Uzbekistan. According to the analysis, most of the research carried out in foreign countries are aimed at studying the impact of urbanization intensity in cities on the diversity of butterflies. It has been argued that the urbanization process is one of the most important threats to biodiversity. No specific studies have been conducted in Uzbekistan on dendrophagous lepidopthers cells.

Key words: Lepidoptera, cockroaches, butterflies, dendrophages, urbanization, parks, landscape, ecosystem, biodiversity.

Introduction. Green spaces are an integral part of urbanized areas. Trees reduce wind speeds, can reduce temperatures in cities from 2°C to 8°C [26]. At the same time, Parks and other green spaces have become living spaces for diverse animals. According to the United Nations (UN) "Sustainable Development Goals", more than 80% of terrestrial species of animals, including insects, live in forests [27].

Scientific research on the study of dendrophagous cockroaches is carried out at many research centers around the world (Açores University: Center for Ecology, Evolution and environmental changes, Portugal; University of Sheffield, England; RMIT University: Center for Urban Studies, Australia; Zoological Department of the University of Innsbruck, Austria; Academy of Sciences of the Czech Republic (ASCR), Czech Republic, Fujian University of Agriculture and forestry, China). From Uzbek scientists V.V.Yakhontov (1962), J.A.Azimov (1993), A.Yusupov (1998), A.Sheraliyev (2001), M.R.Shermatov (2010), Sh.T.Khojaev (2014), M.X.Bekchanov (2019), B.A.Suleymanov (2020), M.X.Bekchanova (2022).The results of Bekchanov (2023) ' s research into the study of lepidopthers insects show data on certain dendrophagous species. This article analyzes the study status of dendrophagous in foreign countries and Uzbekistan.

Analysis. The study of dendrophagous lepidopthers **insects in foreign countries:** Butterfly communities in the parks of newly built habitat themes in Tsukuba, central Japan, have been comparatively studied by Japanese researchers with the lepidopteraphauna of old gardens around the city. The butterfly communities of these areas are comparable on the basis of the' island biogeography theory'. The results of the studies show that butterfly communities in parks of newly built habitat themes are made up of fewer species compared to older parks around the city [15].

Preliminary studies on the targeted study of dendrophagous lepidopthers insects of some cities of Russia I.N.Performed by Bolotov. In particular, Bolotov studied the fauna and ecology of lepidopthers insects in the Russian city of Arkhangelsk and its surrounding parks [8].

Hogsden and Hutchinsons research the diversity of butterfly fauna in the families Papilionidae, Pieridae, Lycaenidae, Nymphalidae, and Hesperiidae along a decaying old town gradient in southeastern Ontario, Canada. The results of the study show that 15 of the total 26 observed species of butterflies are extinct or significantly disappearing across disturbed old towns [13].

Thomas and a number of researchers have expressed concerns about the regional and global extinction of the species as a result of population growth in Britain. The extent to which the extinction of a

ISSN NO: 2771-8840
Date of Publication: 30-08-2023

group of organisms can affect other taxa has been analyzed. It has also been noted that butterflies have experienced the largest and most accurate losses in Britain in recent decades [23].

The impact of urbanization on the richness, guild structure, and uniqueness of butterfly species was researched by Clark and co-authors in Greater Boston, Massachusetts in 2004. The influence of urbanization-related landscape features, as well as local features, on the richness of butterfly species was estimated on four spatial scales (50, 150, 500 and 1000 m) [10].

Factors that determine the diversity of butterfly and bee species within New York City in America have been studied by Kevin and Gail. Models have been evaluated that include local and landscape factors that can affect the species richness of bees and butterflies of parks located in the densely populated neighborhoods of the Bronx and East Harlem in New York City (>10,000 people/km2). The gardens are surrounded by buildings and a limited amount of green space (3,600-17,400 units of construction within a radius of 500 m and 10-32% of green space). Unlike early predictions by scientists that the landscape green space can be particularly impressive in conditions of strong urbanization, the most supported models for Bee and butterfly diversity (based on the Akaike reference Criterion) have been noted to be the flower space in the garden, flower diversity, and the presence of sunlight [14].

A botanical garden with a total area of 178,000 m2 and a variety of Barreirinha amusement park butterflies with a total area of 275,380 m2 in Curitiba Paraná, Brazil were studied by Bonfantti and his co-authors [9].

It has been argued by Italian scientists that the increase in residential areas as a negative effect of the urbanization process on insects leads to a decrease in species diversity. These studies were conducted in the city of Rome using the example of 4 groups of insects, including thongchacanotic insects [11; 12].

Lazzeri and his co-authors ' paper "the diversity of the order Lepidoptera (Hesperioidea and Papilionoidea) in Corrientes, Argentina" argued that the process of urbanization is one of the most important threats to biodiversity. The order Lepidoptera has been noted to be one of the taxonomic groups used as indicators of environmental diversity and quality [17].

Most of the forests in the cities are small and isolated. Instead of increasing habitat size and cohesion, improving the quality of living of small forests can be an effective means of preserving the biodiversity of such fragmented landscapes. Japanese scientists have studied the relative importance of habitat quantity, quality, and isolation in butterfly communities in small and isolated or fragmented forests in Tokyo, in order to prove how well the above suggestions are based [22].

Southeast Asian scholars Singh, Jusoh, Hashim, and Wilson note that rapid economic development and urbanization accelerated the loss of biodiversity in Southeast Asia. Studies of Urban Ecology show that urban gardens in other temperate regions can be an effective refuge for wildlife, but in tropical regions that are rapidly urbanized, their effectiveness as a refuge is insufficient [21].

Preliminary studies have been carried out by Chinese scientists on the study of butterflies in the parks of 10 cities in Beijing with a history of urbanization for more than 800 years. The relationship between the distribution and diversity of butterfly species and the age, Area, distance to the city center of Parks and the richness of other bioindicator groups (birds and plants) has been analyzed by scientists. Studies have identified 31 species of butterflies in 5 families of tangachanotic haraots. 74% of the identified species are reported to be cosmopolitan. The highest diversity of butterfly species has been recorded in gardens on the outskirts of the city [16].

Lin and co-authors argue that butterflies are the main indicators of urban biodiversity and one of the most vulnerable groups of organisms to environmental changes. It is very important to study how butterflies spread and what factors can affect them in urban green spaces. The authors ' study examined and analyzed the diversity of butterflies at three different levels of urbanization (urban, suburban and urban outskirts) in nine parks in Fuchzhou, China, from July 2022 to September 2022. The response of butterfly communities to urbanization has been studied. A total of 427 butterflies from 4 families and 13 species have been observed in the studies. According to the results, Shennon diversity had a lower incidence in urbanized Parks [18].

Ramírez and Macgregor have compiled scientific publications devoted to the study of urban butterflies, with the aim of determining the ecological status of butterflies distributed in urban centers. They have compiled a total of 173 studies, including published articles and theses (1956-2015), from 37 countries

ISSN NO: 2771-8840
Date of Publication: 30-08-2023

and over 110 cities. According to analysis of the data collected, most articles (69%) focus on ecological topics, 14% on Biological Conservation and 17% on the species list [19].

In general, most of the research carried out in foreign mamalakats is aimed at studying the impact of urbanization intensity in cities on the diversity of butterflies.

The study of dendrophagous lepidopthers insects in Uzbekistan: V.V.Yakhontov's scientific monograph" pests and fight against Central Asian agricultural plants and products " (1962) provides information about the distribution, biology and damage-causing properties of certain pollinator insects that are pests on ornamental trees and shrubs, as well as fruit trees [25].

J.A.Azimov, D.A.Bekuzin, A.G.Davletshina, M.K.In the Russian-language scientific work "insects of Uzbekistan" (1993), co-authored by kadirovas, information about certain species of dendrophagous lepidopthers is found [1].

A.In a scientific paper published by Yusupov (1998), tangachanotic insects were illuminated by the damaging properties of odorous woodcarver (Cossus cossus)in the family Cossidae [4].

By a number of scientists of Tashkent State Agrarian University (A.Sheraliyev, Sh.Esanbayev, B.Boltayev, B.Suleymanov, Sh.Aripov, A.Yusupov, 2001) a methodological instruction prepared "forest pests, diseases and measures to combat them" summarizes the harm-causing properties of the unequal silkworm (Lumantria dispar) butterfly [3].

Sh.T.Khojaev, E.A.The educational manual "Entomology, protection of agricultural crops and the basics of agrotoxicology" (2014, 3rd edition), co-authored by kholmurodov, also provides information about the feeding of some agricultural crops on pest cockroaches, both with ornamental trees and shrubs, in descriptions [24].

M.X.In bekchanov's dissertation work on" the bioecology of the Khorezm Oasis leakage butterflies (Lepidoptera: Pieridae) and the problems of their conservation " (2019), it was noted that 9% of the total 21 species of leaky butterflies identified in the Khorezm Oasis feed on dendrotamnophagous or different parts of trees and shrubs [5].

B.A.Suleymanov, A.In his paper "entomophages of Representatives of the family Eribidae distributed in Forest biocenosis and their incidence rates" (2020), the rate of occurrence of entomophages of Representatives of the family Eribidae in the biocenosis of forest farms of Tashkent region was analyzed by God [2].

M.X.In Bekchanova's dissertation work" fauna, biology and ecological characteristics of the lower amudarya County tunlam butterflies (Noctuidae, Lepidoptera) " (2022), it was argued that 18.7% or 29 species of lower Amudarya County tunlam butterflies are dendrobionts. Among them, in terms of the large number of species, the large family Hadeninae dominates, constituting 9 species, in other smaller families their proportion is much less: 7 species in the small family Acronictinae, 2 species in the small family Cuccilinae, 5 species in the small family Acontiinae, 4 species in the small family Xyleninae, only 1 species in the small families Plusiinae and Noctuinae [7].

X.O'.Bekchanov (2023) found that in the lepidopterophauna of Northwestern Uzbekistan, according to the relationship of plants with their life form, dendrobionts - tree feeders were 134 species (51.34%), dendrotamnobionts - tree and shrub feeders were 48 species (18.4%) [6].

M.R.In Shermatov's candidate thesis work" the distribution, biology and ecological characteristics of Mulberry parvona in the Fergana Valley "(2010), it was noted that Mulberry (Glyphodes pyloalis) also causes serious damage to ornamental Mulberry ("snake mulberry") trees grown on the edges of roads and in parks in cities [20].

In general, most of the species listed in the results of the studies mentioned above have not been studied within the entomophauna of urban dendrophlora.

Conclusion. According to the analysis, most of the research carried out in foreign mamalakats is aimed at studying the impact of urbanization intensity in cities on the diversity of butterflies. It has been argued that the urbanization process is one of the most important threats to biodiversity. It is separately noted that the order Lepidoptera is one of the taxonomic groups used as indicators of environmental diversity and quality.

ISSN NO: 2771-8840
Date of Publication: 30-08-2023

According to foreign entomologists, understanding the response of butterflies to urbanization helps to develop strategies to manage, plan and maintain urban biodiversity worldwide.

No specific studies have been conducted in Uzbekistan on dendrophagous tangent cells. Studies devoted to cockroach insects do not include references to the study of dendrophagous cockroaches of cities or urbanized areas. It follows that research aimed at studying the fauna of dendrophagous lepidopthers of the urbanized regions of the Republic, assessing the impact of anthropogenic factors on the stability of urban ecosystems and the intensity of urbanization, protecting certain species with a shrinking number, has an urgent scientific and practical importance in identifying species with a high level of protection for dendroflora.

References

1. Азимов Д.А., Бекузин Д.А., Давлетшина А.Г., Кадирова М.К. Насекомые Узбекистана.- Изд. “Фан”. -Ташкент, 1993. -С. 172.
2. Сулаймонов Б.А., Ғозибеков А.С. Ўрмон биоценозида тарқалган Eribidae оиласи вакилларининг энтомофаглари ҳамда уларнинг учраш даражалари // Agro kimyo himoya va o‘simliklar karantini, №4. Toshkent, 2020. -B. 17-18.
3. Шералиев А., Эсанбаев Ш., Болтаев Б., Сулаймонов Б., Арипов Ш., Юсупов А. Ўрмон зараркунандалари, касалликлари ва уларга қарши кураш чоралари // ТошДАУ таҳририят бўлими (маърузачига қўлланма). - Тошкент, 2001. – 15 б.
4. Юсупов А.Х. Пахучий древоточец-вредитель тополей //Ж. Сельское хозяйство Узбекистана. – 1998. - №1. – С. 21.
5. Bekchanov M.X. Xorazm vohasi oqish kapalaklari (Lepidoptera: Pieridae) bioekologiyasi va ularni saqlash muammolari. Biol.fan.b. fal.dok.diss. avtoreferati. – Toshkent, 2019. – 40 b.
6. Bekchanov X.O‘. Shimoli - G‘arbiy O‘zbekiston tangachaqanotlilari (Insecta, Lepidoptera) faunasi va ekologiyasi. Biol. fan. dokt. diss. (DSc) avtoref. – Toshkent, 2023. – 54 b.
7. Bekchanova M.X. Quyi Amudaryo okrugi tunlam kapalaklarining (Noctuidae, Lepidoptera) faunasi, biologiyasi va ekologik xususiyatlari. Biol.fan.b. fal.dok.diss. avtoreferati. – Nukus, 2022. – 40 b.
8. Bolotov I. N. Diurnal lepidopterans (Lepidoptera, Rhopalocera) of Arkhangelsk and its surroundings // Zool. Zh. – 2002. – T. 81. – №. 4. – C. 457-462.
9. Bonfantti D. et al. Butterflies's richness in two urban parks in Curitiba Parana, Brazil // Biota Neotropica. – 2011. – T. 11. – P.247-253.
10. Clark P. J., Reed J. M., Chew F. S. Effects of urbanization on butterfly species richness, guild structure, and rarity //Urban Ecosystems. – 2007. – T. 10. – P.321-337.
11. Fattorini S. Insect extinction by urbanization: a long term study in Rome //Biological Conservation. – 2011. – T. 144. – №. 1. – C. 370-375.
12. Fattorini, S. Insects and the city: what island biogeography tells us about insect conservation in urban areas, Web Ecol., 2016, 16, 41-45, https://doi.org/10.5194/we-16-41-2016
13. Hogsden K. L., Hutchinson T. C. Butterfly assemblages along a human disturbance gradient in Ontario, Canada //Canadian Journal of Zoology. – 2004. – T. 82. – №. 5. – P. 739-748.
14. Kevin C. Matteson & Gail A. Langellotto. Determinates of inner city butterfly and bee species richness // Urban Ecosyst (2010) 13:333-347 https://doi.10.1007/s11252-010-0122-y
15. Kitahara M., Fujii K. An island biogeographical approach to the analysis of butterfly community patterns in newly designed parks //Population Ecology. – 1997. – T. 39. – №. 1. – P.23-35.
16. Kong-Wah Sing, Jiashan Luo, Wenzhi Wang, Narong Jaturas, Masashi Soga, Xianzhe Yang, Hui Dong & John-James Wilson. Ring roads and urban biodiversity: distribution of butterfies in urban parks in Beijing city and correlations with other indicator species // Scientific Reports, 2019. 9:7653. https://doi.org/10.1038/s41598-019-43997-8
17. Lazzeri M. G., Bar M. E., Pieri Damborsky M. Diversidad del orden Lepidoptera (Hesperioidea y Papilionoidea) de la ciudad Corrientes, Argentina //Revista de Biología Tropical. – 2011. – T. 59. – №. 1. – P. 299-308.

ISSN NO: 2771-8840
Date of Publication: 30-08-2023

18. Lin, Y.; Huang, S.; Fang, W.; Zhao, Y.; Huang, Z.; Zheng, R.; Huang, J.; Dong, J.; Fu, W. Butterfly Communities Vary under Different Urbanization Types in City Parks. Animals 2023, 13, 1775. https://doi.org/10.3390/ani13111775
19. Ramírez-Restrepo L., MacGregor-Fors I. Butterflies in the city: a review of urban diurnal Lepidoptera //Urban ecosystems. – 2017. – T. 20. – P. 171-182.
20. Shermatov M.R. Tut parvonasi (Glyphodes pyloalis Walker)ning Farg‘ona vodiysida tarqalishi, biologiyasi va ekologik xususiyatlari: Biol. fan. nomz. …diss. –Toshkent, 2010. - 120 b.
21. Sing, K. W., Dong, H., Wang, W. Z. & Wilson, J. J. Can butterfies cope with city life? Butterfy diversity in a young megacity in Southern China. Genome, 2016. 59, 751-761.
22. Soga M., Koike S. Relative importance of quantity, quality and isolation of patches for butterfly diversity in fragmented urban forests //Ecological Research. – 2012. – T. 27. – P.265-271.
23. Thomas J. A. et al. Comparative losses of British butterflies, birds, and plants and the global extinction crisis //Science. – 2004. – T. 303. – №. 5665. – P.1879-1881.
24. Xo‘jaev Sh.T., Xolmurodov E.A. Entomologiya, qishloq xo‘jalik ekinlarini himoya qilish va agrotoksikologiya asoslari (3-nashr). – Toshkent: Fan, 2014., – 565 b.
25. Yaxontov V.V. O‘rta Osiyo qishloq xo‘jaligi o‘simliklari hamda mahsulotlarining zararkunandalari va ularga qarshi kurash. – Toshkent: «O‘rta va oliy maktab», 1962. –693 b.
26. https://www.researchgate.net/publication/259889679_Air_temperature_regulation_by_urban_trees_and_green_infrastructure
27. https://www.un.org/sustainabledevelopment/