Т. 11. №5 2025
https://doi.org/10.33619/2414-2948/114

UDC 581.553; 574.34
AGRIS F40
https://doi.org/10.33619/2414-2948/114/07

GEOGRAPHICAL ANALYSIS OF THE CURRENT STATE OF VEGETATION COVER IN YEVLAKH DISTRICT (THE REPUBLIC OF AZERBAIJAN)

*©**Mammadova Z**., ORCID: 0000-0001-6811-2082, Baku State University, Baku, Azerbaijan, zulfiyya_m@rambler.ru*
*©**Vahidli A**., Baku State University, Baku, Azerbaijan*

ГЕОГРАФИЧЕСКИЙ АНАЛИЗ СОВРЕМЕННОГО СОСТОЯНИЯ РАСТИТЕЛЬНОГО ПОКРОВА ЕВЛАХСКОГО РАЙОНА (АЗЕРБАЙДЖАНСКАЯ РЕСПУБЛИКА)

*©**Мамедова З. Д**., ORCID: 0000-0001-6811-2082, Бакинский государственный университет, г. Баку, Азербайджан, zulfiyya_m@rambler.ru*
*©**Вахидли А. В**., Бакинский государственный университет, г. Баку, Азербайджан*

Abstract. The distribution of 176 plant species belonging to 27 families and 75 genera in the wild flora of the area was determined during the research conducted in Yevlakh district area in 2023-2025. A flora conspectus, identified during the research, was developed for the species, which included the taxonomic structure, life forms, geographical and areal types, ecological groups and endemism of the area's flora. It was found that the *Poaceae, Chenopodiaceae, Asteraceae, Fabaceae, Cyperaceae, Salicaceae, Polygonaceae* and *Rosaceae* families are represented by more species in the area. The research also determined the species composition and structural characteristics of the phytocenoses found in the vegatation cover of Yevlakh district, revealing that the area's flora includes desert, semi-desert, meadow, forest, swamp and other plant types. It was determined that recent global ecological problems, including anthropogenic factors, have a direct impact on the flora and vegetation of the area. In this regard, studying the geographical analysis of the current state of the flora in the territory of Yevlakh district creates the need for future geobotanical or phytosociological research within the area. This shows that the ongoing work is highly relevant.

Аннотация. В период с 2023 по 2025 гг. в ходе исследований, проведенных на территории Евлахского района, было определено распространение в дикой флоре региона 176 видов растений, относящихся к 27 семействам и 75 родам. Для выявленных видов был подготовлен конспект флоры, в котором отражены таксономическая структура, жизненные формы, географические и ареальные типы, экологические группы и эндемизм флоры региона. Было установлено, что наибольшее количество видов представлены семействами *Poaceae, Chenopodiaceae, Asteraceae, Fabaceae, Cyperaceae, Salicaceae, Polygonaceae* и *Rosaceae*, которые распространены в регионе. В ходе исследования также были определены видовой состав и структурные особенности фитоценозов, встречающихся в растительном покрове Евлахского района. Было выявлено наличие во флоре региона пустынного, полупустынного, лугового, лесного, болотного и других типов растительности, Было установлено, что происходящие в последнее время глобальные экологические проблемы, в том числе антропогенные факторы, оказывают прямое воздействие на флору и растительность региона. В этой связи, изучение географического анализа современного состояния флоры Евлахского района создает необходимость планируемых геоботанических

Т. 11. №5 2025
https://doi.org/10.33619/2414-2948/114

или фитоценологических исследований в пределах данной территории. Это подтверждает актуальность проводимой работы.

Ключевые слова: формация, ассоциация, флора, эндемик.

Keywords: formation, association, flora, endemic.

Yevlakh district of the Republic of Azerbaijan with a total area of 1465.4 square meters borders Agdash, Barda, Tartar, Goranboy, Samukh, Qakh and Shaki districts and is located on a plain area on the right bank of the Kura River [9, 12].

The soil cover of the area or the edaphic factors has a significant impact on the development, growth and spread of plants. Therefore, when studying the current state of the vegetation cover in the area, besides climatic conditions, fertility indicators in the soil cover must be taken into account in the restoration of vegetation cover. The ecological parameters of the soils formed as a result of the physical-geographical conditions of the research area are of great importance in the study of the flora and vegetation cover of the area.

The study of the current state of plants found in the wild flora of Yevlakh district is also relevant in terms of the implementing the "Problem of efficient use and protection of the plant life based on biological principles". The research also reveals the need to conduct geobotanical studies in the area, analyze the geographical assessment of the current state of the vegetation cover and fulfill the tasks set in the "State Program for 2016-2020 on the development of the real estate cadastral system, investigation of the efficiency of the land use and its protection in the Republic of Azerbaijan".

Material and methods of research

The main object of the research was the study of the current state and geographical analysis of the plants found in the wild flora of Yevlakh district of Azerbaijan in 2023-2025.

The life forms or biomorphs of plants, their classification, taxonomic structure [1, 2, 7, 17], projected cover [14, 18], ecological groups [16], geographical types [15] were taken into account, and various methods were used to determine endemism, rare and endangered representatives [8, 10, 11] during geobotanical and floristic research. At the same time, various geobotanical field-research methods were carried out while recording phytocenoses found gray-brown, chestnut, gray, gray-meadow, gray-brown, meadow-swamp, swamp, meadow-forest and tugay soils [4, 13] in the area.

Semi-desert vegetation has developed in the largest area in natural winter pasture in the wild flora of Yevlakh district of Azerbaijan. There are numerous floristic and geobotanical research works by various scholars regarding the improvement of natural winter pasture and the semi-desert vegetation found in the largest area of the research area [3, 5, 6].

However, despite the conducted research, global ecological changes are directly affecting the flora of the area. In this regard, research in the wild flora of Yevlakh district is relevant.

Discussion of results

The distribution of 176 plant species belonging to 27 families and 75 genera in the flora of the area was determined and a flora conspectus was developed during the conducted research. According to the analysis of the taxonomic structure or composition of the wild flora of Yevlakh district, it was clarified that 2 species belong to the gymnosperms and 174 species belong to the angiosperms.

Т. 11. №5 2025
https://doi.org/10.33619/2414-2948/114

While conducting the research on the wild flora of Yevlakh district, the analysis of the taxonomic structure revealed that 8 families (*Poaceae, Chenopodiaceae, Asteraceae, Fabaceae, Cyperaceae, Salicaceae, Polygonaceae,* and *Rosaceae)* have the most dominance in terms of the number of genera and species.

Overall, the analysis by taxon shows that the mentioned species play a significant role in the formation of the wild flora of Yevlakh district, creating phytocenoses and organizing into formations and associations.

When analyzing the life forms or biomorphs of the species found in the area's flora during the research, the methods provided by Serebryakov (1964) and Raunkier (1934) were used. According to Serebryakov (1964), when analyzing the life forms, it became clear that annual and perennial herbs, as well as shrubs and trees, predominated. Annual herbs, with 64 species, accounted for 36.5% of the total species, ranking first. Perennials, with 56 species, made up 31.8%, coming second, followed by shrubs with 22 species (12.5%), trees with 15 species (8.5%), biennial herbs with 10 species (5.9%), semi-shrubs with 4 species (2.4%), shrublets with 3 species (1.7%), and semi-shrubs with 1 species (0.7%).

According to Raunkier (1934), when analyzing the life forms of plants found in the flora of Yevlakh district, it was determined that therophytes predominated with 64 species (36.5%), followed by hemicryptophytes with 56 species (31.8%), phanerophytes with 37 species (21.0%), cryptophytes with 11 species (6.2%) and chamaephytes with 8 species (4.5%) among the 176 plant species.

Using the methods provided by A. A. Grossheym (1939-1961) and Portenier (2000), the distribution of plants found in the territory of Yevlakh district according to their areal types was analyzed. It was found that 97 species belonging to the Ancient Mediterranean areal type, representing 55.1%, predominated among the plants in the Yevlakh district. Species of the Boreal areal type were represented by 38 species (21.5%), species of the Caucasian areal type by 16 species (9.1%), species of the Desert areal type by 15 species (8.5%), species of the Steppe areal type by 2 species (1.1%), and species of the Adventive areal type by 1 species (0.7%). The areal type of 7 species was not observed, which accounted for 4.0% of the total species.

According to the conducted research, it has been concluded that the distribution of species formed in the Ancient Mediterranean areal type and corresponding classes (Sarmatian, Mediterranean, and Near Eastern) in the wild flora of the area is related to migration from the Atropatene group. Furthermore, the plant species belonging to the relevant areal types found here are formed numerous classes.

When analyzing the ecological groups of plants found in Yevlakh district, groups such as xerophytes, mesoxerophytes, mesophytes and hydrophytes were identified, taking into account the relief they occupy, their water requirements and the granulometric composition of the soils.

During the research, the analysis of the distribution of plants found in Yevlakh district according to ecological groups revealed that xerophytes predominated with 110 species (62.5%). Mesoxerophytes were represented by 19 species (10.8%), mesophytes by 30 species (17.0%) and hydrophytes by 17 species (9.7%).

The endemism of plants found in Yevlakh district was also determined during the research. A number of references were used in this process. According to the information provided by A. M. Asgarov (2016), the higher plants distributed in the flora of Azerbaijan are represented by 5,000 types belonging to 176 families and 1,142 genera. The author also notes that endemics consist of 181 species belonging to 31 families and 86 genera in the Republic of Azerbaijan [1].

Т. 11. №5 2025
https://doi.org/10.33619/2414-2948/114

The comparative analysis revealed that a total of 22 endemic species are found in the flora of the area, of which Caucasian areal endemics make up 15 species (8.5%), and Azerbaijani endemics make up 7 species (4.0%).

The types of vegetation found in the area were also identified during the geographical analysis of the current state of the flora of the Yevlakh district. It was revealed that the flora of the area includes desert, semi-desert, meadow, forest, swamp and other types of vegetation. While studying the vegetation types, the species composition and structural characteristics of the phytocenoses found there were also determined, and the geobotanical description of the formations was made. As a result of the research, it was determined that semi-desert vegetation is the more widespread among these vegetation types. It was found that plants of economic importance, particularly leguminous plants predominate in the semi-desert vegetation of Yevlakh district.

The classification of phytocenoses of leguminous plant revealed 2 formation classes, 2 formation groups and 2 associations belonging to 1 vegetation type in the semi-desert vegetation of the Yevlakh district during the research. The semi-shrubby-perennial herbaceous semi-deserts and perennial herbaceous-ephemeral semi-deserts can be mentioned among the identified formation classes.

It was determined that the semi-shrubby-perennial herbaceous semi-desert formation class is represented by the *Salsoleta - Alhagietum* formation group with the *Salsoleta dendroides - Alhagietum pseudoalhagi* association, while the perennial herbaceous-ephemeral semi-deserts formation class is represented by the *Glycyrrhieta - Ephemeretum* formation group with the *Glycyrrhieta glabra - Ephemeretum* association.

The forage qualities of the species found in the semi-desert vegetation of Yevlakh district, such as (*Medicago minima* Grub.), (*M. caucasica* Vass.), (*M. tribuloides* Desr.), (*M. arabica* All.), (*M. agrestis* Ten.), (*Trifolium echinatum* M.B.), (*T. parviflorum* Ehrh.), (*T. scabrum* L.), (*T. striatum* L.), (*Astragalus caucasis* Pall.), (*A. contortuplicatus* L.), (*A. brachyceras* Ledeb.), (*G. macedonica* Boiss. & Orph.), (*Alhagi pseudalhagi* (Bieb.) Desv.), and others are high, and when planted together with cereal crops, they are considered nutritious forage. At the same time, the products obtained from these leguminous plants are widely used in agriculture, medicine for pharmaceuticals, landscaping for decoration, honey production, soil protection and the establishment of forest strips, as well as in various other fields.

Conclusion

It was determined that 176 plant species belonging to 27 families and 75 genera are spread in the area during the geographical analysis of the current state of the plant cover of Yevlakh district in the Republic of Azerbaijan. A flora conspectus was developed for the species identified during the research, which included the taxonomic structure of the area's flora, life forms, geographical and areal types, ecological groups and endemism. It was found that the *Poaceae, Chenopodiaceae, Asteraceae, Fabaceae, Cyperaceae, Salicaceae, Polygonaceae,* and *Rosaceae* families are represented by the greatest number of species in the studied area.

The conducted research has led to the conclusion that the occurring climate changes, as well as anthropogenic factors are affecting the flora of Azerbaijan. In this regard, conducting a geographical analysis of the current state of the flora in Yevlakh district area creates a necessity for future geobotanical or phytosociological studies within the area.

At the same time, the research has shown that the forage, straw and silage of the economically important species found in the vegetation types of Yevlakh district, especially in the semi-desert vegetation type, are rich in proteins, fats, as well as substantial amounts of minerals and vitamins. By studying these valuable economically important species, high results can be achieved in

Т. 11. №5 2025
https://doi.org/10.33619/2414-2948/114

increasing the winter forage reserves and improving the development of agricultural livestock in the Republic of Azerbaijan. This highlights the relevance of the conducted work.

References:

1. Askerov, A. M. (2016). Rastitel'nyi mir Azerbaidzhana (Vysokie rasteniya - Embryophyta). Baku. (in Azerbaijani).

2. Flora Azerbaidzhana (1950-1961). Baku. I-VIII. (in Russian).

3. Gurbanov, E. M. (2007). Flora i rastitel'nost' Atropatanskoi provintsii (v predelakh Azerbaidzhanskoi Respubliki). Baku. (in Azerbaijani).

4. Gurbanov, E. M., & Dzhabbarov, M. T. (2017). Geobotanika. Baku. (in Azerbaijani).

5. Gurbanov, E., & Asadova, K. (2019). Phytocenosis Created by Leguminous Plants at Mil Steppe of Azerbaijan and Their Agricultural Importance. *Asian Journal of Plant Science & Research.*

6. Ibadullayeva, S. J., & Huseynova, I. M. (2021). An overview of the plant diversity of Azerbaijan. Biodiversity, Conservation and Sustainability in Asia: *Volume 1: Prospects and Challenges in West Asia and Caucasus,* 431-478. https://doi.org/10.1007/978-3-030-59928-7_17

7. Takhtadzhyan, A. L. (2003). Konspekt flory Kavkaza. St. Petersberg. (in Russian).

8. Krasnaya kniga Azerbaidzhanskoi Respubliki (2023). Baku. (in Azerbaijani).

9. Mamedova, Z. D. (2011). Bobovye rasteniya, vstrechayushchiesya v raznykh zonakh Azerbaidzhana, i ikh ratsional'noe ispol'zovanie. *Nauchnye trudy Instituta botaniki NANA. 31,* 121-124. (in Azerbaijani). https://doi.org/%2010.18384/2310-7189-2016-2-24-33

10. Mamedova, Z. D. (2014). Nekotorye redkie i ischezayushchie bobovye rasteniya i puti ikh okhrany. *Geograficheskaya sreda i zhivye sistemy,* (5), 32-36. (in Russian).

11. Musaev, S. Kh. (2005). Reviziya endemichnykh vidov flory Azerbaidzhana. *Vestnik Natsional'noi Akademii Nauk Azerbaidzhana. Seriya biologicheskikh nauk,* (1-2), 84-96. (in Azerbaijani).

12. Museibov, M. A. (1998). Fizicheskaya geografiya Azerbaidzhana. Baku. (in Azerbaijani).

13. Novruzov, V. S. (2010). Osnovy fitotsenologii (geobotaniki). Baku. (in Azerbaijani).

14. Lavrenko, B. M., & Korchakin, A. A. (1959-1976). Polevaya geobotanika. Moscow. (in Russian).

15. Portenier, N. N. (2000). Sistema geograficheskikh elementov flory Kavkaza. *Botanicheskii zhurnal, 85*(9), 26-33. (in Russian).

16. Shennikov, A. P. (1950). Ekologiya rastenii. Moscow. (in Russian).

17. Gurbanov, E., Huseynova, H., Mammadova, Z., & Rzayeva, A. (2024). Biomorphological and Ecological Analysis of the Flora of the Caspian Coast. *Bulletin of Science and Practice, 10*(12), 96-103. https://doi.org/10.33619/2414-2948/109/12

18. Mammadova, Z., & Umudova, Sh. (2024). The Current State of Flora and Phytocoenosis Along the Kura River in Mingachevir City (Azerbaijan). *Bulletin of Science and Practice, 10*(2), 47-52. https://doi.org/10.33619/2414-2948/99/05

Список литературы

1. Əsgərov A. M. Azərbaycan florası (Hündür bitkilər - Embryophyta). Bakı: TEAS Press, 2016. 444 s.

2. Флора Азербайджана. Баку: Изд-во АН Азербайджан. СССР, Т. I-VIII. 1950-1961.

3. Qurbanov E. M. Atropatena quberniyasının flora və bitki örtüyü (Azərbaycan Respublikası daxilində). Bakı: Qarağac, 2007. 240 s.

4. Qurbanov E. M., Cabbarov M. T. Geobotanika. Bakı, 2017. 320 s.

5. Gurbanov E., Asadova K. Phytocenosis Created by Leguminous Plants at Mil Steppe of Azerbaijan and Their Agricultural Importance // Asian Journal of Plant Science & Research. 2019.

6. Ibadullayeva S. J., Huseynova I. M. An overview of the plant diversity of Azerbaijan // Biodiversity, Conservation and Sustainability in Asia: Volume 1: Prospects and Challenges in West Asia and Caucasus. 2021. P. 431-478. https://doi.org/10.1007/978-3-030-59928-7_17

7. Тахтаджян А. Л. Конспект флоры Кавказа. СПб.: Изд-во С.-Петерб. ун-та, 2003.

8. Azərbaycan Respublikasının Qırmızı Kitabı. Bakı: İmak, 2023. 503 s.

9. Məmmədova Z. D. Azərbaycanın müxtəlif zonalarında rast gəlinən paxlalı bitkilər və onlardan səmərəli istifadə. AMEA Botanika İnstitutunun elmi əsərləri. 2011. Cild. 31. P. 121-124. https://doi.org/%2010.18384/2310-7189-2016-2-24-33

10. Мамедова З. Д. Некоторые редкие и исчезающие бобовые растения и пути их охраны // Географическая среда и живые системы. 2014. №5. С. 32-36.

11. Musayev S.X. Azərbaycan florasının endemik növlərinə yenidən baxılması // Azərbaycan Milli Elmlər Akademiyasının Xəbərləri. Biologiya elmləri seriyası. 2005. № 1-2. S.84-96.

12. Müseibov M.A.Azərbaycanın fiziki coğrafiyası. Bakı, 1998. 400 s.

13. Novruzov V.S. Fitosenologiyanın əsasları (geobotanika). Bakı: Qarağac, 2010. 306 s.

14. Лавренко Б. М., Корчакин А. А. Полевая геоботаника. М.: Наука, 1959-1976.

15. Портениер Н. Н. Система географических элементов флоры Кавказа // Ботанический журнал. 2000. Т. 85. №9. С. 26-33.

16. Шенников А. П. Экология растений. М.: Сов. наука, 1950. 376 с.

17. Gurbanov E., Huseynova H., Mammadova Z., Rzayeva A. Biomorphological and Ecological Analysis of the Flora of the Caspian Coast // Бюллетень науки и практики. 2024. Т. 10. №12. С. 96-103. https://doi.org/10.33619/2414-2948/109/12

18. Mammadova Z., Umudova Sh. The Current State of Flora and Phytocoenosis Along the Kura River in Mingachevir City (Azerbaijan) // Бюллетень науки и практики. 2024. Т. 10. №2. С. 4752. https://doi.org/10.33619/2414-2948/99/05

Работа поступила
в редакцию 02.03.2025 г.

Принята к публикации
12.03.2025 г.

Ссылка для цитирования:

Mammadova Z., Vahidli A. Geographical Analysis of the Current State of Vegetation Cover in Yevlakh District (the Republic of Azerbaijan) // Бюллетень науки и практики. 2025. Т. 11. №5. С. 59-64. https://doi.org/10.33619/2414-2948/114/07

Cite as (APA):

Mammadova, Z., & Vahidli, A. (2025). Geographical Analysis of the Current State of Vegetation Cover in Yevlakh District (the Republic of Azerbaijan). *Bulletin of Science and Practice, 11*(5), 59-64. https://doi.org/10.33619/2414-2948/114/07