VEGETATION MAPPING IN THE TERRITORY OF THE REPUBLIC OF AZERBAIJAN IS AN ACTUAL PROBLEM

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Abstract: *Due to the natural, ecological, anthropogenic, infrastructure urbanization and mineral extraction processing, etc. effects, there was a change in the phytocenosis, or the vegetation, related to the composition of the biocenosis in the territory of the republic. Vegetation mapping is required to prevent such negative processes. From this point of view, drawing up a map of vegetation on geobotanical contours at the level of type and formation classes is an actual problem in modern times.*

Therefore, the preparation of the relevant map in an electronic version was set as a goal. Thus with the application of the Geographical Information System ArcGıs) and the " Electron Land Cadastre Registration Information System (ELCRİS) as well as with reference to the aerospace sounding method and investigations conducted, a map was developed based on the classification of vegetation. Referring to our research, "Vegetation map of Azerbaijan" was compiled on a scale of 1:600000.

Keywords: *type, formation class, aerospace sounding, legend*

INTRODUCTION

Botanical and geographical zoning in the Republic of Azerbaijan was first conducted in 1954 by Professor L.I.Prilipko. The "Vegetation Map of Azerbaijan" was compiled by Academician Vahid Hajiyev in 1983. The vegetation of each region is undergoing changes as a result of the continuous complex impact of environmental factors on the territory. These changes occur depending on the physical and geographical conditions of the area. In the species composition of vegetation in the territories of its distribution, depending on geobotanical and bioecological features, certain dynamics in associations and formations, project cover, and cenotypic characteristics of phytocenoses are recorded. The unique natural-geographic conditions and complex relief of our republic have recently created serious and noticeable changes in its various types of plants and vegetation. These variables depend on the climatic changes occurring on Earth, as well as on the impact of natural factors such as anthropogenic (technogenic), urbanization (infrastructure), extraction (processing) of natural resources, etc. Vegetation undergoes changes and requires periodic review and summarization. In order to achieve the remarkable innovations in the field of botany, which are the result of the hard work of botanical scientists, it is essential for teachers and researchers in this field to collaborate. Vegetation is an integral part of a living ecosystem that is constantly changing, thus requiring regular updates to maps and area classifications. The "Vegetation Map of Azerbaijan", compiled by Professor Elshad Gurbanov, who is the head of

the Department of Botany and Plant Physiology at Baku State University, a Corresponding Member of ANAS, and a Doctor of Biological Sciences, is an excellent result of this hard work. Professor Elshad Gurbanov has recently published the "Vegetation Map of Azerbaijan", which provides an up-to-date overview of the current state of plant species that have not been systematically documented for over three decades. This map, which has a scale of 1:600,000, includes 87 legends. It is based on personal research and the latest information technologies.

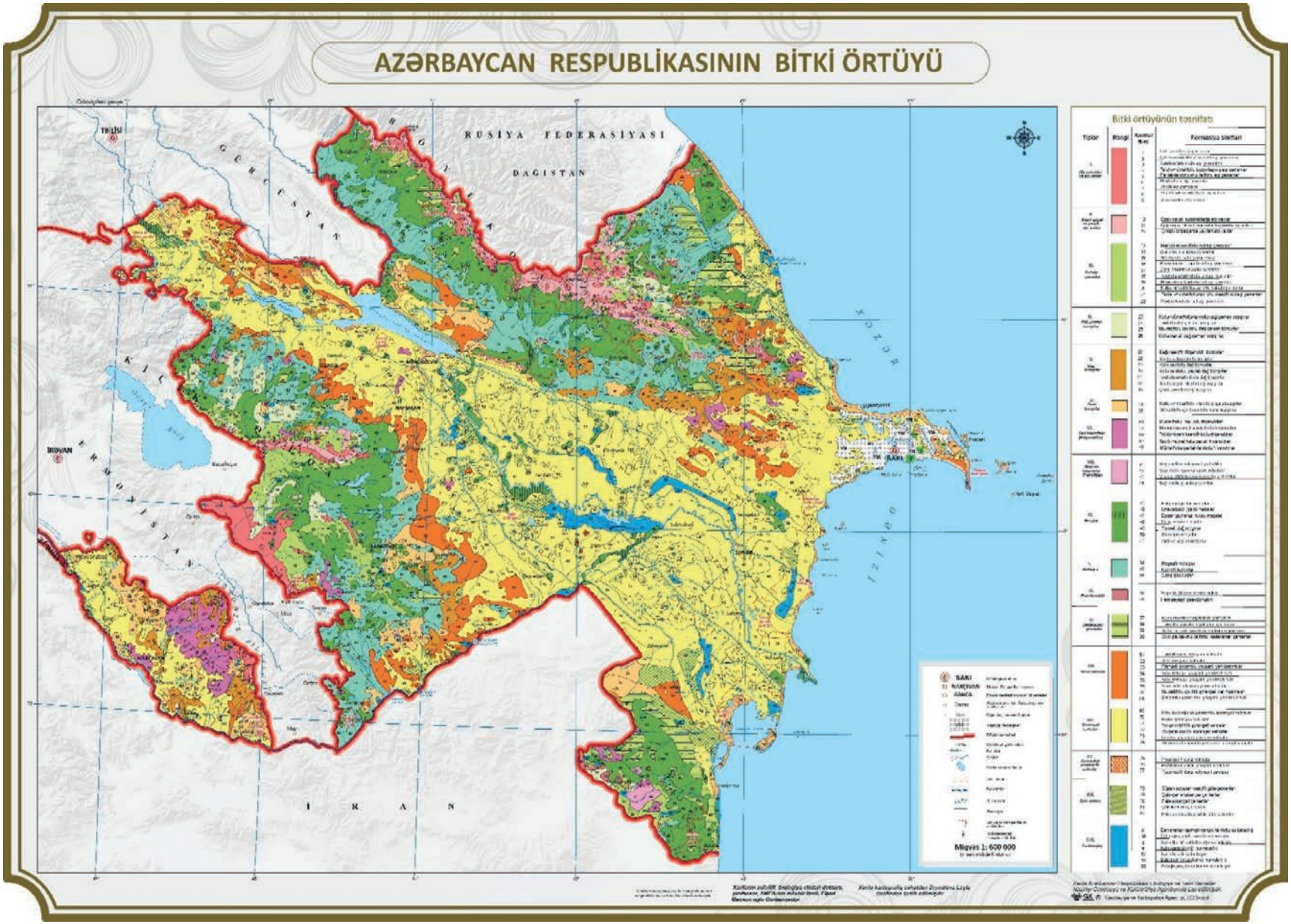
MATERIAL AND METHODS

The mapping of vegetation cover and geobotanical zoning of the territory of the Republic of Azerbaijan was first carried out in 1954, 1965 and 1970 under the supervision of professor L.I. Prilipko. Thus, the book" Vegetation of Azerbaijan "[Prilipko, 1954]," Vegetation map of the Azerbaijan SSR "[Prilipko, 1965] and "Vegetation map of the Azerbaijan SSR "(modern cover) [Prilipko, 1954], as well as "legendas"was prepared mainly as an explanatory text. The map " Forest vegetation of Azerbaijan " gives the classification of the Republic on forest vegetation.

The "Plant Map" (1:500,000 scale) compiled by V.C. Hajiyev and published in the Ecological Atlas of the Republic of Azerbaijan in 2009, explains the classification of vegetation in the country's territory. The map categorizes the vegetation based on the following types: Glaciers, Rocky, Stony areas, subalpine, alpine meadows and carpets; broad-leaved mountain forests, Tugai forests; bushes of mixed composition; bush, stream-meadow, forest plants, wild plants restored in place; Restored plants at the Grayling site; semi-deserts; plants restored in semi-deserts; and seaside sand plants.

Recently, Professor Elshad Gurbanov has compiled a detailed "Map of vegetation cover of Azerbaijan" for the entire territory of the Republic of Azerbaijan [Gurbanov 2014; 2023]. Over the years, various researchers, including V.Bakhshiev [2009], A.Akhundov [2009], Z.Mammadova [2013], H.Huseynova [2009; 2014], S.S.Aslanova [2015], and D.B.Mammadova [2017], have worked under the guidance of E.Gurbanov to compile vegetation maps of different regions. Furthermore, in 2018, "Botanical-geographical zoning" and "Botanical-geographical zoning of the Caspian Sea coast in the territory of the Republic of Azerbaijan" maps were also created [Gurbanov 2018; 2019].

MAP OF VEGETATION OF THE REPUBLIC OF AZERBAIJAN



RESULTS AND DISCUSSION

Upon close examination of the map created by E. Gurbanov, it becomes evident that he has recently conducted a comprehensive classification of Azerbaijan's vegetation, employing new technologies and research to develop a new planting map. A comparison with previous maps and classifications clearly highlights the scope of this work. For instance, Prilipko's classification and map only divided forest vegetation into four formation classes (broad-leaved forests, Hyrkan relict forests, plain broad-leaved forests, and Tugai forests), whereas Gurbanov's map divides forest vegetation into seven formation classes (broad-leaved mountain forests, coniferous (pine) forests, plain riverside Tugai forests, coastal forests, high mountain forests, subtropical forests, and dry and sparse forests). Furthermore, while semi-deserts are classified under the 2nd formation class in Prilipko's description, they are classified under 8 formation classes in Gurbanov's classification. These refinements are undoubtedly the result of thorough research and the utilization of advanced technologies.

We have systematized and updated the contours of comparative types and classes of formations in a map using modern computer technology. This map depicts the change of vegetation as a component of the ecosystem or biogeocenosis in Azerbaijan. The map, called the "Vegetation Map of Azerbaijan", is the first of its kind and has a scale of 1:600000. We used the modern typological classification units of the studied vegetation on methodical grounds, as outlined in the "Indexes of Typological Classification Units, Conditional and Color Signs Instruction. Natural Fodder Areas of the Republic of Azerbaijan, 2004". We compiled the map based on ArcGIS and ELCRIS programs, which reflect the changes of modern vegetation on the borders of the Republic. The map shows 14 forms of 89 types of vegetation in contours, with their colors given according to phytoecological principles [Gurbanov, 2023].

CONCLUSION

The map with copyright certificate number 13555 was issued by the Intellectual Property Agency of the Republic of Azerbaijan in 2023. It was also presented to ANAS as a significant scientific result. This map is not only useful for geobotanists and botanists, but also for specialists, teachers, undergraduates, and postgraduates, especially those in the field of natural sciences, such as soil scientists.

The map has become a resource for teachers and doctoral students at the Faculty of Biology, Department of Botany and Plant Physiology.

REFERENCE

Agaguliyev I. (2000). Vegetation map of Southeastern Shirvan/Flora and vegetation of Southeastern Shirvan. Baku, BSU Publishing House, p.144.

Atamov V. (2002). Map of steppe vegetation of Azerbaijan. Baku, 2002, pp. 76-77

Gurbanov E. (2014). Vegetation of Absheron Peninsula (scale 1:100000) / National Atlas of the Republic of Azerbaijan. Baku.

Gurbanov E. (2018). Botanical-geographical zoning /Geographic Atlas Of The Republic of Azerbaijan. Baku: Baku cartography factory. p.114.

Gurbanov E.M. (2002). Vegetation map of Atropatene (scale 1:100000) / Flora and vegetation of Azerbaijan. Baku. p. 76-77.

Gurbanov E.M. (2023). Vegetation Map of Azerbaijan (scale 1: 600000) / Geodesy and Cartography Agency of the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan. Baku.

Gurbanov E., Akhundova A. (2009). Ecological-geobotanical map of Absheron Peninsula (scale 1: 100000), Baku.

Gurbanov E., Aslanova S. (2015) Ecological-geobotanical map of lankaran mountainous part (scale 1:100000). Baku.

Gurbanov E. Bakhshiyev V. (2009). Vegetation map of the central part of Shirvan plain (scale 1:600000). Baku.

Gurbanov E., Mammadova D. (2017). Globotanical map of Sumgayit Basin plant / / Intellectual Property Agency of the Republic of Azerbaijan. Copyright certificate 9299. Baku.

Gurbanov E., Huseynova H. (2020). New spreading areas of some species in the Botanical-geographical Baku regions of the middle part of the Caspian coast. Acta Botanica Caucasica. Published by State University, Department of Botany and Plant Physiology. Volum 1, № 1.p.4-8.

Gurbanov E., Rzayeva A., (2022). Evaluation Of Decorative Properties Of Some Coniferous Plants Introduced To Absheron Peninsula.Acta Botanica Caucasica. Published by State University, Department of Botany and Plant Physiology. Volum 1, № 2. p.3-7.

Gurbanov E., Huseynova H. (2014).Ecological-geobotaniki map of Samur-Shabran lowland (scale 1: 50000), Baku.

Gurbanov E., Huseynova H. (2019). Geobotanical map of natural vegetation (scale 1:12000; 1:600000), Baku.

Gurbanov E., Huseynova H.(2019). Map of botanical - geographical zoning of the Caspian coast in the territory of the Republic of Azerbaijan (scale 1:600000), Baku.

Gurbanov E.. Mammadova Z. (2013). Ecological-geobotanical map of some phytosyntheses produced by legumes in the natural vegetation of Azerbaijan (scale 1:60000) Intellectual Property Agency of the Republic of Azerbaijan copyright certificate 7462. Baku.

Hajiyev V., Akhmedov G. (1987). Botanical and geographical zoning of Azerbaijan / Reports of the Academy of Sciences of the Azerbaijan SSR, Vol. .XLIII, 1, p.72-75.

Instruction on indices, conditional and color signs of typological classification units of natural feed fields of the Republic of Azerbaijan. Baku; 2004, 48 p.

Prilipko L.N.(1954). Vegetation map of the Azerbaijan SSR (scale 1:100000). Edited by L.N.Prilipko. Moscow, Department of Geodesy and Cartography of the State Committee.

Prilipko L.N.(1954). Forest vegetation of Azerbaijan. Publishing House of the Academy of Sciences of the Azerbaijan SSR. Baku

Prilipko L.N.(1965). Vegetation map of Azerbaijan (scale 1:1000000) GUGK Publishing House, Moscow. UDC 58.582:477.

Vegetation map of Azerbaijan (1996), (scale 1:600000), Baku: State Committee for Geodesy and mapping of the Republic of Azerbaijan.

Vegetation map of Azerbaijan (2007), (scale 1:60000). Baku: State Committee for land and cartography.

Vegetation (2009), (scale 1: 500000) / Ecological Atlas of the Republic of Azerbaijan. Baku Cartographic Factory.

CONTENT

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