

Brief information about the project

Name of the project	AP26100721 «Investigation of the taxonomic and functional diversity of the ichthyofauna of Alatau»
Relevance	The main idea of this project is to conduct a comparative analysis of fish populations and communities in different water bodies, taking into account environmental conditions. Based on this analysis, indicators will be identified that reflect the influence of habitat conditions on taxonomic diversity, abundance, and ecosystem services of various fish species. A fundamental objective of the project is to test the hypothesis of the possibility of rapid speciation in isolated water bodies of the temperate zone. The study of fish taxonomic diversity and their functional characteristics is essential for making informed decisions on the conservation and sustainable use of biological resources. The obtained data will help prevent the loss of unique species and reduce unnecessary economic costs associated with the conservation of forms that do not pass their traits on to subsequent generations. The practical significance of the project lies in the comprehensive assessment of the state of aquatic ecosystems and fish populations, the study of the biological productivity of rivers, as well as the identification and ranking of existing threats. This will enable well-founded socio-economic decisions aimed at the conservation and sustainable use of fish diversity and the prevention of economic losses associated with declining ecological stability. The study of native fish populations ex situ will also make it possible to identify the most promising species for aquaculture and to develop effective strategies for the conservation of rare species under captive conditions.
Purpose	1) To find out the modern taxonomic composition of fish; 2) to study the relationship of taxonomic and functional diversity of fish with habitat conditions.
Objectives	1) To collect material (fish, water samples, aquatic organisms and bottom sediments) in the reservoirs of the foothill and mountain zones of Zhetysu (Dzungarian), Kungei, Ile and Talas Alatau. 2) To carry out a physico-chemical analysis of the abiotic conditions of fish habitat (water and soil). 3) Conduct a hydrobiological analysis of reservoirs. 4) To carry out morphological and biological analysis of fish. 5) To carry out a molecular genetic analysis of native fish species. centers of the greatest diversity of native species. 6) To study the possibility of ex situ conservation of native fish species.
Expected and achieved results	Upon completion of all research stages, a comprehensive taxonomic list of fish comprising the

	ichthyofauna of Alatau will be compiled based on morpho-biological and molecular genetic methods. Using bioinformatics approaches, phylogenetic analysis and haplotype network construction will be carried out for complex taxonomic groups of fish. The application of multivariate statistical analysis will allow the identification and quantitative assessment of key factors influencing species composition and the ecological status of water bodies. The collected data will be integrated into a database that includes information on species occurrence. The use of a cartographic approach will ensure the visualization of habitats and species distribution ranges, forming a basis for further analysis and the development of recommendations for their conservation.
Research team members with their identifiers (Scopus Author ID, Researcher ID, ORCID, if available) and links to relevant profiles	Sharakhmetov Sayat Yermukhanbetovich (PhD, Senior researcher, Project Manager) Hirsch Index - 5 Scopus author ID: 55937772400 Researcher ID: JCE-4554-2023 ORCID https://orcid.org/0000-0001-7278-5351 Mamilov Nadir Shamilevich (candidate of biological sciences, Leading Researcher) Hirsch Index - 8 Scopus author ID: 57224985136 Researcher ID: JNY-4731-2023 ORCID https://orcid.org/0000-0001-6142-6425 Habibullin Farhat Khasanovich (candidate of biological sciences, Leading Researcher) Hirsch Index - 1 Scopus author ID: - ORCID https://orcid.org/0000-0002-6438-0546 Sapargalyeva Nazym Sapargalykyzy (candidate of biological sciences, Senior researcher) Hirsch Index - 4 Scopus author ID: 56871250400 Researcher ID: AFP-6214-2022 ORCID https://orcid.org/0000-0001-5628-9470 Mamilov Anvar Shamilieich (к.б.н, Senior researcher) Hirsch Index - 2 Scopus author ID: 57387830200 Researcher ID: AFP-6214-2022 ORCID https://orcid.org/0000-0002-7482-2221 Amirbekova Fariza Talgatovna (PhD, Senior researcher)

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Usage	The target users of the obtained results are institutions involved in the organization of sustainable use and conservation of biological resources (ecology departments, nature reserves, and wildlife sanctuaries), as well as higher education institutions engaged in training specialists in the fields of biology and fisheries.
Priority compared to real-world alternatives	-
List of publications with links to them	Khassengaziyeva G.K., Mamilov N.Sh., Kosaibai M.B. The diversity of hydrobionts of the Alatau mountain rivers with a natural hydrological regime on the example of the Kensu river (Balkash basin, Central Asia) //KazNU Bulletin, Eurasian Journal of Ecology. – 2025. – V. 83. – №. 2. – 152-163. https://doi.org/10.26577/EJE2025832012 https://bulletin-ecology.kaznu.kz/index.php/1-eco/article/view/1611
Patents	-