

Invasive Alien Species Observatory and Network

Development for the Assessment of Climate Change Impacts and Contextual Ecosystem Services Evaluation in Black Sea Deltaic Protected Areas (IASON+)

Project code: BSB-00174

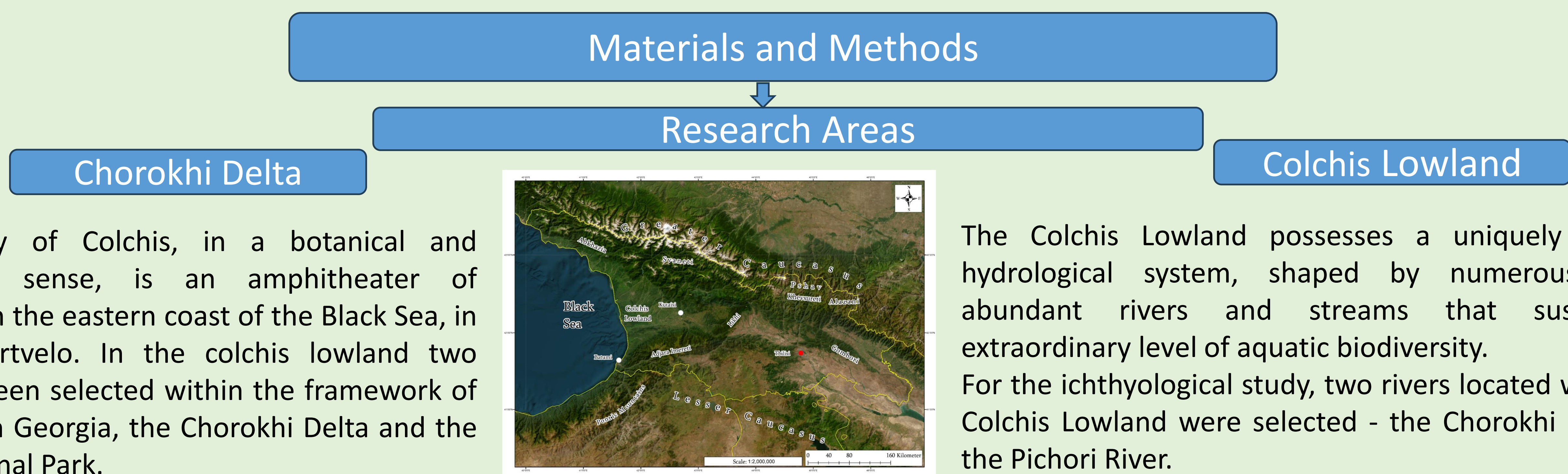
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Introduction: Presented research project aims to assess the impact of invasive alien species (Invasive Alien Species - IAS) on Ecosystem Services in Black Sea deltaic protected areas in the context of climate change.

The main geographical focus of the research is related to the most important natural heritage of Georgia - the Colchis area, in particular the Chorokhi Delta and the Kolkheti National Park. These areas enjoy a special conservation status and stand out for their high biodiversity and ecological sensitivity. Unique geographical location of deltaic zones and their critical role in regional ecosystem services determines the most important relevance of research. The central goal of the project is to determine the current status of alien species and to develop the mechanisms that provide an integrated assessment of the risks caused by climate change. Research was divided into two main, interrelated components that jointly assess threat to both terrestrial and aquatic systems.



The territory of Colchis, in a botanical and geographical sense, is an amphitheater of mountains on the eastern coast of the Black Sea, in Georgia/Sakartvelo. In the colchis lowland two areas have been selected within the framework of the project in Georgia, the Chorokhi Delta and the Colchis National Park.

The Colchis Lowland possesses a uniquely complex hydrological system, shaped by numerous water-abundant rivers and streams that sustain an extraordinary level of aquatic biodiversity. For the ichthyological study, two rivers located within the Colchis Lowland were selected - the Chorokhi River and the Pichori River.

Fig. 1. Map showing the location research area-Colchis lowland

Research Species

Solidago canadensis



Verbena brasiliensis



Amorpha fruticosa



Sicyos angulatus



Ambrosia artemisiifolia



Gleditsia triacanthos



Carassius gibelio



Planiliza haematocheilus



Gambusia affinis



Pseudorasbora parva



Monitoring was conducted through expeditions and field research. Between 2024 and 2025, botanical expeditions were carried out to assess the current status of alien plant species in the Colchis Lowland and to identify the most widespread taxa. Surveys were performed across various habitat types, including natural, semi-natural, and agro-ecosystems. Six invasive species selected from among the most widely distributed ones. The total cover, frequency, and density of each species were assessed using the Braun-Blanquet method. Transects were established in Kolkheti National Park and the Chorokhi Delta.

Based on the geographical and hydrological characteristics of the study area, the following research and monitoring activities were conducted: Desk-based analysis, anamnesis, visual inspection, field surveys, and laboratory investigations. The fieldwork included scientific fishing operations carried out using gillnets, cast nets, and drift nets. Sampling was conducted both during daytime and nighttime exposure sessions. All native fish species captured during the process were released back into the rivers, while only invasive species were retained for subsequent laboratory analysis.

Conclusions

The general trend of target species - Density, Frequency and Coverage increase - confirms that invasive processes are intensifying, gradually transforming natural phytocenoses are gradually transforming areas. Surveys conducted for ecosystem studies show, that species composition varies both invaded and non-invaded areas. Species composition also depends on the life form of the target species, distribution characteristics, etc.

The conducted ichthyofaunal survey highlights the ecological sensitivity of the Colchis Lowland river systems and the growing influence of invasive fish species. Continuous monitoring and integrated management are essential to maintain the ecological balance of these habitats, mitigate invasive impacts, and support sustainable use of aquatic resources within the framework of the Blue Economy

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