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Prof. Bella Japoschvili

School of Natural Sciences and Medicine
Iliia State University, Tbilisi, Georgia
bellaj99@yahoo.com



Seminars 18-20 October 2022

Classroom J. Watson & F. Crick - Trignina



Tuesday 18 October – 16:00

Water resources of Georgia and biodiversity

[link](#)

Wednesday 19 October – 16:00

Hydropower development and its implications for freshwater biodiversity

Conservation

[link](#)



Thursday 20 October - 16:00

Invasive species and protection of native biodiversity

[link](#)

Water resources of Georgia and biodiversity

Georgia, the center of the Caucasus biodiversity hotspot, encompasses a geographically diverse landscape inhabited by a diverse Tertiary relic flora and fauna with a high degree of endemism. The Great Caucasus mountain chain forms northern boundary between Georgia and the Russian Federation, while the Lesser Caucasus range runs along the country's southern borders with Turkey and Armenia. Elevation gradients spanning from 0 to >5200 meters above sea level and a temperate to subtropical climate have created a wealth of habitats in Georgia, among which forested landscapes cover up to 40% of the country. Compared with other biodiversity hotspots, the Caucasus has supposedly received comparatively less scientific study and potentially less widespread recognition, mainly due to a tenuous political situation in the last few decades. Consequently, biodiversity knowledge remains generally limited. In the Caucasus region and elsewhere, knowledge of local and regional biodiversity is an essential tool for wildlife conservation and sustainable development. The river system of Georgia comprises nearly 25 thousand rivers. They are fed mainly by snow and glacial waters, underground waters and atmospheric precipitations, there are more than 800 lakes in Georgia, above 40 artificial reservoirs. Studies and information about water ecosystems, its biodiversity, monitoring and assessment will be discussed.

Hydropower development and its implications for freshwater biodiversity Conservation

Few issues have defined the challenges for conservation of the world's [freshwater fish](#) fauna in the first part of the 21st century as significantly as the unprecedented boom in hydropower dam development currently underway in many countries. Georgia's hydropower sector has seen growing investments in recent decades. Approximately 84 HPPs are in operation, with a further 24 at the construction and licensing stage and 67 projects at the technical-economic research stage of development. Hydropower accounts for around 78% of Georgia's total energy generation, but there is growing public opposition to hydropower projects. In addition to socio-economic impacts, in 2016, the Government of Georgia reduced the size of one of the country's Candidate Emerald sites, recognized for high biodiversity and conservation value, to pave the way for further development of around 30 HPPs. The Bern Convention Standing Committee expressed concerns over these plans for 'one of the most pristine nature areas in Georgia.'

Historical and modern trends in hydropower development, highlighting their consequences for river connectivity and freshwater fish diversity in Georgia list of research needs for [freshwater science](#) and conservation in light of current hydropower development and its future trajectory will discussed.

Invasive species and protection of native biodiversity

Invasive species refers to non-native species that are producing negative consequences in the environment or producing effects that humans don't like and deem harmful. Non-native invasive species can cause significant negative impacts on native fauna, and cause socio-economic losses to affected regions. For this reason, it is worthwhile to invest in the prevention of introductions and if a species is introduced, develop plans for functional management of the invasive alien species. In this regard, one of the vital steps is to scrutinize the alien species lists for a particular region of interest to identify, assess, monitor, and mitigate non-native species in a timely manner. Most countries in Europe and overseas have developed such lists and most importantly, this information has subsequently been used in drafting more effective legislations on a wider biogeographical scale, the South Caucasus belongs to the Ponto-Caspian region which is one of the primary sources of aquatic invaders worldwide, causing huge economic losses and biodiversity impacts. Unsurprisingly, the SC region is also a recipient of alien non-native aquatic species. However, the changes in diversity, the invasion trends, and the socio-economic impact of non-native aquatic species in the SC ecosystems are still poorly understood. Several studies on mainly on aquatic invasive species in Georgia will be highlighted.