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Abstract book

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P.5.3 - Biodiversity of Alpine ecosystems in a changing world (BIOALPEC): the focus on Alpine inland water ecosystems

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The "Biodiversity of Alpine ecosystems in a changing world" (BIOALPEC) project, carried out within the National Biodiversity Future Center (NBFC), aims at understanding the distribution and ecological function of Alpine biodiversity, spanning from genes to ecosystems, through the collection and integration of data from field studies, remote sensing, and innovative -omics approaches. Among the various research lines of the project, particular emphasis will be placed on the study of a wide range of Alpine freshwater ecosystems and organisms along morphometric and altitudinal gradients, with a focus on selected microbial communities (bacteria, protists, fungi), microcrustaceans, and molluscs. The habitats under investigation will include lakes, small water bodies, hyporheic environments, and high-altitude streams and springs. The study will be based on a comprehensive and integrative approach combining traditional methods based on morphological taxonomy with molecular and high-throughput techniques for genetic barcoding, eDNA metabarcoding, full shotgun metagenomics, and metabolomic profiling. This approach will provide valuable insights into the taxonomy and functionality of Alpine freshwater populations and communities, with a special emphasis on habitats fa-

cing challenges such as climate change, anthropogenic pressures, and the presence of non-indigenous invasive species.