CHALLENGES AND STRATEGIES FOR BIODIVERSITY PROTECTION: AQUATIC BIO-INVASIONS IN TURKEY

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Abstract. Aquatic ecosystems face increasing global pressure from invasive alien species (IAS), which threaten native biodiversity, disrupt ecological balance, and impact economic sectors such as fisheries, aquaculture, and water management. Recognized as a major driver of biodiversity loss, IAS have prompted international responses under frameworks like the Convention on Biological Diversity (CBD) and the EU Biodiversity Strategy 2030, calling for early detection, rapid response, and coordinated management. Turkey, situated at the intersection of major biogeographic zones, hosts diverse and sensitive aquatic environments that are especially vulnerable to biological invasions. In inland waters, species such as *Pseudorasbora parva* (topmouth gudgeon) and *Carassius gibelio* (Prussian carp) have disrupted native fish communities across freshwater basins. In marine systems, *Mnemiopsis leidyi* in the Black Sea and *Caulerpa racemosa* in the Mediterranean illustrate the scale and complexity of marine invasions. Turkey's National Biodiversity Strategy and Action Plan (NBSAP), along with national legislation and institutional frameworks, guides the country's approach to IAS management. Ongoing efforts include monitoring programs, ecological risk assessments, and public awareness initiatives. However, gaps persist in interagency coordination, data sharing, and long-term policy integration. This case study highlights Turkey's experience within the broader context of global aquatic biodiversity conservation. It emphasizes the need for adaptive management strategies, enhanced regional cooperation, and stronger science-policy interfaces to protect aquatic ecosystems and meet international biodiversity targets.

Keywords: aquatic biodiversity; bio-invasion management; invasive alien species (IAS); Turkey