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Preface: Emerging trends in aquatic ecology IV

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Our understanding of aquatic ecology and ecosystem functioning continuously improves. The special issues of Hydrobiologia on "Emerging Trends in Aquatic Ecology" each represent a collection of papers to testify to the variety of approaches and topics that concur in reaching the common aim to scientifically underpin political and societal decisions to mitigate our impacts on our planet and its biodiversity.

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The series started exactly 100 volumes ago, with volume 750 in 2015 (Martens, 2015). We here proudly present the fourth edition of the series, with papers from colleagues within and outside of the editorial board of the journal.

The current trend of continuous biodiversity loss resulted in several international and national regulations and funding schemes to target biodiversity protection and halt its loss. Such a trend is clearly reflected in the papers published in this special issue, which now, more than in the previous editions of the ETAE (Naselli-Flores et al., 2017; Thomaz et al., 2020), present studies that improve our basic understanding of the patterns and processes in biodiversity, that introduce and review state-of-the-art tools and approaches to study biodiversity, that use biodiversity to monitor and assess ecological quality of waters, and that study the effects of anthropogenic activities and climate change on aquatic biodiversity.

Three papers deal with the distribution of species. They addressed the influence of abiotic processes like floodings on species occurrence and interactions in plants in the Amazons (da Silva et al., 2023), the role of dried aquatic macrophytes in dispersal of Neotropical ostracods (Rosa et al., 2023), and potential biases affecting our understanding of biodiversity and biogeography of microscopic aquatic organisms (Marrone et al., 2023).

Ferreira et al. (2023) provide advice on the use of different literature databases when searching for literature surveys on topics in aquatic ecology, given

that different databases use different algorithms to provide results. Medina-Contreras & Arenas (2023) review the use of stable isotopes for tracking the effect of anthropogenic activities on mangrove forests. Schenekar (2023) reviews the use of environmental DNA to monitor freshwater ecosystems. Pennino et al. (2023) provide an overview of the current approaches used in fisheries management based on ecosystem models and on stock assessment models.

Burlakova et al. (2023) quantify benthic macroinvertebrate communities for the biological assessment of ecological quality by enhancing traditional methods with underwater imagery, water quality, and sediment nutrients data in the Great Lakes of North America. Datta & Bertocci (2023) use free-living marine nematodes as ecological indicators, merging metrics from species richness, community equitability, trophic guilds, life strategy and morphological traits. Machado et al. (2023) use mesocosm experiments to demonstrate the reliability of different taxonomic and functional indicators of phytoplankton communities to assess eutrophication.

Rezende & Moretti (2023) review the current literature on microplastic research in marine and freshwater habitats to explore which topics still need to be addressed. Tarter et al. (2023) analyse the effect of extreme climate events on sessile freshwater mussels and suggest that the protection of extensive wetlands is crucial to buffer the local negative effects of frequent and prolonged droughts and floods. Cavalcante et al. (2023) review the effects of human activities on functional homogenization in aquatic ecosystems, favouring generalist non-native species. Rodrigues et al. (2023) suggest caution in using the invasive bivalve *Mytilopsis leucophaeata* (Conrad, 1831) to clear hypereutrophic waters in bioremediation actions, since the magnitude of its impacts on local biodiversity and on ecosystem functioning is still unknown. Conceiçao et al. (2023) use niche-based models to predict changes in ostracod diversity in South America as a result of future climate change in order to formulate evidence-based management plans for aquatic ecosystems.

The editors of the present special issue are confident that you will enjoy reading these papers. They represent a great complement to those in other regular and special issues of Hydrobiologia, which, in its role as the ''International Aquatic Library'' (Thomaz et al., 2020), truly shapes the current trends in aquatic ecology and evolution.

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