

INTERNATIONAL MOUNTAIN CONFERENCE

#IMC22

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## >> SYNTHESIZE MOUNTAINS OF KNOWLEDGE <<

## Submitted Abstract

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## Abstract

Introduction and/or immigration of non-native fish species is a major threat to the freshwater biodiversity and an accelerated spread of multiple invasive species has been observed worldwide. However, only few studies investigated distributions of such fish species in rivers of mountain regions, and region-wide estimates of population dynamics are rarely available, which has prevented effective management of invasive species so far.

Here, we analyzed a dataset of >1300 electrofishing surveys in 650 different sites across a mountain region (South Tyrol, a province in northern Italy, ranging over 7400 km<sup>2</sup> of the European Alps) to firstly give an overview of key-species, prone river types or population trends. We analyzed the occurrences of non-native fish species in different types of rivers and estimated trends of population in abundance and biomass at sites that have been fished multiple times from 2000 to 2020.

Among the 38 fish species, we found 19 species considered invasive for European waters, eleven of which are non-native in the study region. While most species are restricted to low-elevation warm rivers and to few sites only, we found significantly increasing population sizes for Lepomis gibbosus and Pseudorasbora parva (two invasive species of Union concern) in lowland ditches in the South, supposedly supported by increasing water temperatures in these slow waters. Populations of non-native species relevant for recreational fishing and therefore stocked throughout the region, developed differently during the last decades: across the region and within the last 20 years, Oncorhynchus mykiss significantly increased (+7  $\pm$ 3% year-1). We suggest this being linked to the different stocking intensities of these species (compared to the others, the stocking level of S. fontinalis has been minimal).

Our results show that non-native and invasive fish species are a relevant part of fish communities in mountain rivers. Given that increasing river temperatures are expected to further enhance dispersion and population growth of such species, our work can be helpful to guide the fish management of rivers in mountain regions.

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