



## **Non-native freshwater fishes in Serbia and their impacts to native fish species and ecosystems**

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Serbian inland waters are inhabited by 91 species of fish of which 73 are indigenous and 18 are non-native. Alien fishes recorded in Serbia belonging to 9 families: Coregonidae (one species), Salmonidae (three species), Cyprinidae (five species), Ictaluridae (two species), Syngnathidae (one species), Gasterosteidae (one species), Centrarchidae (two species), Gobidae (two species) and Odontobutidae (one species). Some of these species (topmouth gudgeon – *Pseudorasbora parva*, black bullhead – *Ameiurus melas*, pumpkinseed – *Lepomis gibossus*, round goby – *Neogobius melanostomus*, racer goby – *Neogobius gymnotrachelus*) showed rapid and extensive spread during past decades in Serbian inland waters. Grass, silver and bighead carp start to be economically important species, but these species also induced faster eutrophication in reservoirs. Some non-native species (goldfish – *Carassius gibelio*, topmouth gudgeon, black bullhead, brown bullhead – *Ameiurus nebulosus*, pumpkinseed, round and racer goby) due to their wide distribution and their elevated densities in some locations, compete with native fish species for habitat, food and other resources. Pumpkinseed, topmouth gudgeon and black bullhead showed the predation of eggs and juveniles of native fish species. Non-native fish species have a great impact on qualitative and quantitative composition of ichthyofauna in many inland waters in Serbia.