

Abstract

The construction of river obstacles is considered one of the major threat to freshwater ecosystems worldwide, with a greater impact upon riverine fish than any other human activity. River obstacles, especially dams and weirs, affect the natural environment in streams and rivers, causing changes in physical, chemical and biological processes and disrupting connectivity of rivers via alternating series of lotic and lentic reaches. The effect of obstacles is further magnified by associated habitat alterations like are channelization, flow regulation, fortification and deepening of a riverbed. Organisms and especially fish that live in rivers are highly sensitive to these changes, which affects them at the level of individuals, species and the whole populations. The most pronounced is the barrier-effect to upstream and downstream migration and loss of habitats. Diadromous and rheophilic species of fish are the most sensitive ones as they have complex migration strategies and habitat requirements. Fish are further affected by obstacles via many other mechanisms, such as the effect on reproduction success, growth and development, changes in the composition and trophic structure of communities and restricted response to further environmental constraints including water pollution or predicted climate changes. Efforts are made to remedy or mitigate barrier impact, particularly in developed countries. Fish passage facilities are constructed to maintain or restore the connectivity of watersheds, however, they are often inefficient and fish population persistence further declines. There is, therefore, an increased need to conserve and restore the overall natural character of streams, preventing the construction of new obstacles and, if possible, removing the old ones.

Keywords: river obstacles, dams, weirs, impoundments, fish, river fragmentation, migration barrier, habitat