

DESCRIPTION FOR THE GENERAL PUBLIC

Brown trout (*Salmo trutta* L.) is a palearctic salmonid species that is distributed in Europe from the White Sea to northern Spain, including the entire Baltic Sea basin, North Africa and western Asia. It is a polymorphic teleost fish species with few life strategies. Anadromous trout, named 'sea trout', migrate from the natal rivers to the sea for feeding and growing until reaching sexual maturity, subsequently returning to their native rivers to spawn. In contrast, the resident trout spends its whole life in a river or stream and often spawns in smaller tributaries of the same area. Brown trout populations have great economic importance and are important elements of fishery resources, playing a significant role for sport and tourism purposes, including angling, in many European countries.

Migratory sea trout and resident brown trout may live in the same water system and they can be genetically isolated or belong to the same population. Partial migration, the phenomenon of migratory and resident individuals coexisting in the same population, is a common expression of life history in salmonid fishes. The decision to migrate is controlled by both genetic and environmental factors. Despite differences in life cycle, the degree of direct and indirect biological interactions, competition for food or space, and the extent of reproductive isolation between these two forms are still disputed. The two forms may use the same locality for spawning during overlapping periods and are morphologically identical at the juvenile stage. Unfortunately, in many places, natural gene flow between brown trout forms has been affected by anthropogenic habitat fragmentation leading to a decrease in effective population sizes and substantial shift in migration–selection–drift equilibria.

In the southern Baltic area, the existence of gene flow between forms of brown trout has not been investigated, and the hybridization rate, if it occurs, is unknown. The main objective of the proposed project is estimation of gene flow level and migration rate among resident and migratory brown trout by genetic analysis of parents and progeny in potential hybridization areas located below impassable barriers. New facts about the mechanisms of interpopulation processes in brown trout affected by habitat fragmentation leading to restoration of the correlation between genetic and geographic distance would take a different look at the biology of this complex species and what is important for both biodiversity protection and fisheries management.