2.4 PP5 – KTU-MSF – Kızılırmak Delta, Türkiye

Article title: ***Risk assessment analysis of the selected Invasive Alien Secies (IAS) in the Lakes of the Kızılırmak Deltaic Area***

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Abstract: Our world has been threatened by many vectors such as chemicals and biological pollution, overpopulation, and climate change. Each of these threats is changing the quality of life of living organisms. Invasive alien species have one of the most catastrophic impacts on their invaded area. The Kızılırmak Deltaic area is a naturally protected area and it has three levels of protection to protect the sustainability of the natural resources and at the same time support the public economy. 7 IAS species were chosen for making risk assessments. The method for evaluation of the risk levels of the species was “A minimum set of standards for the risk assessment of alien species (MSRAS)” According to this method, *Carassius gibelio, Gambusia holbrooki, Gambusia affinis, Pseudorasbora parva*, and *Mnemiopsis leidyi* were found the most invasive species in the aquatic system in the delta. *Rapana venosa* has a moderate (medium) impact on the aquatic environment and they are high economic income resources for the public who live in the delta. Mugil soiuy has a low impact of the delta ecosystems. Mugil soiuy is a economically valuable IAS for the local people.
Keywords: Invasive alien species (IAS), Kızılırmak Delta, aquatic environment, fishes, invertebrates, risk assessment

Introduction: Our world has been threatened by many vectors such like chemicals and biological pollution, overpopulation, and climate change. These threats will force human beings to struggle with these great problems for centuries even in future. While human beings have a chance to live much more comfortably with technological developments, they also cause changes of the world's future who they live in, both themselves, plants and animals living around them.
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Conclusions: The Kızılırmak Delta was investigated by means of 10 invasive alien species invasion levels from different taxonomic groups. *Carassius gibelio* was found the most invasive species in the aquatic system in the delta. The individual of this species was found in three lakes, the Kızılırmak River itself even the coastal area. The local fishermen mention that this species invaded all water bodies in the delta. Mosquito fish species especially *Gambusia holbrooki* and *Gambusia affinis* were very dangerous small-size species for the Delta ecosystem. Predation upon the fry and eggs of native fish, and by attacking all sized fish by aggressive fin-nipping, thereby leaving them susceptible to disease. Mugil soiuy is an alien species and it has a

negative impact on the aquatic ecosystem. This species also supports the economy of fishermen. For this reason, it is evaluated as low risk for the ecosystem. *Mnemiopsis leidyi* is a very dangerous and invasive species in the Black Sea. Because of this species, Black Sea fishing collapsed in the 1990s. The species still actively impact the marine environment and ecosystem services in the sea. *Rapana venosa* is another IAS in the Black Sea marine environment where the Kızılırmak discharged. *R. venosa* is introduced and established in the Black Sea for many decades and now these species are very valuable for all Black Sea fisheries. It is an invasive species and the risk value is medium.

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