Estimation of escaped rainbow trout from cage aquaculture and its environmental effects in the Caspian Sea

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Abstract

The escape of fish from marine aquaculture is percieved as threat to wild fish populations. The objective of the present study was to estimate the escape of rainbow trout from Caspian Sea cage culture with different scenarios and their affects on the Caspian ecosystem in futur years. In this study, the escapes of fish estimated for two scenarios of escapes 1 and 2% and in

different levels of production form 10 to 100 mt y^{-1}. According to the growth prameters, the natural, fishing and total mortality were estimated to be 0.6, 0.5 and 1.1 y^{-1}. Based on 1 percentage of escape scenario, survaive rate and 10000 mt annual prodution, about 200000 and 300000 fish in the first year (2021) and 2018 will escape from the cages, respectivly. With annual production 100000 mt, about 2 and 3 millions of fish will escape in the first and end of the period, repsectively. Also, with 2 percentage of escape scenario, the escapes of fish will be twice. Rainbow trout is not a endemic species in the Caspian Sea an it feed on small fish. Therefore, the espapees can have detrimental ecological effects on the Caspian ecosystem.
Keywords: Rainbow trout, Escape form cage, Survival, Environmental impacts, Caspian Sea