



The study on interaction between fish cage culture activity and sediment population dynamics of heterotrophic bacteria in the southern of Caspian Sea (Nowshahr region)

Yaghoubzadeh Z.^{1*}; Nasrollahzadeh Saravi H.¹; Safari R.¹

1-Agricultural Research, Education and Extension Organization (AREEO), Iranian Fisheries Science Research Institute (IFSRI), Caspian Sea Ecology Research Center (CSERC), Sari, P.O. Box 961, Iran

*Corresponding author's email: za_yaghoub@yahoo.com

Abstract

The aim of this study was to investigate the interaction between fish cage culture and sediment bacterial contamination in the southern of Caspian Sea. For this purpose, sampling of sediment was constructed at Nowshahr region, Mazandaran province during the rainbow trout farming period at different distances (shadow, 200 and 1000 m from the cage) in 2017-2018. The results showed that in the whole rearing period, the maximum and minimum mean of total count sediment bacteria (246875 CFU/g) and (2500 CFU/g) were observed at the middle and end of the rearing period at the 200 m distance, respectively. The presence of total coliform and fecal coliform at sediment was recorded 12.5% and 2.08%, respectively, and *Clostridium perfringens* was not observed in any of the samples and station. Maximum and minimum sediment pH were observed at the end and before the rearing period (8.60 and 8.05), respectively ($p < 0.05$). Maximum and minimum sediment TOM were reported (14.18 and 2.45) at the end and before the rearing period ($p < 0.05$). The results showed that the maximum and minimum Eh sediment were observed (-51.3 and -83.4), respectively, at the beginning and the end of the rearing period ($p < 0.05$). Usually, the TOM increases from coast to depths region, it is because the sand bed shifted to the muddy bed. In this study, the negative correlation of Total count of sediment bacteria with TOM (Total count increases and TOM decreases) indicated that increased bacterial growth due to consumption of sediment organic matter. The water current removes waste products (fish feces, uneaten food and bacterial mass) from fish cages beneath and ultimately reduces the environmental pollution caused by the construction of cages.

Keywords: Bacterial contamination, Fish cage culture, Sediment, Nowshahr, Mazandaran, Iran