Oceanography/Vol.9/No.35/Fall 2018/1/1-1

Variation of Phytoplankton Composition and Nutrients near the Fish Cage-Culture in the Southern Caspian Sea, Guilan Offshore

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Received Date: September 19, 2017 **Corresponding Author* *Accepted Date: April 13, 2018*

Abstract

The Caspian Sea is sensitive to anthropogenic impacts as it is isolated from other seas. The environmental pollutions significantly increased in the last years. The impact of fish cage culture on the phytoplankton community was studied at 3 stations near the cage and 3 control stations in the southern Caspian Sea during January and April 2013. A total of 19 phytoplankton taxa belonging to diatoms (12 species), chlorophytes (2 species), cyanophytes (2 species), and dinoflagellates (3 species) were identified in the study area. The diatoms abundance was dominated (with 86% total abundance). The finding showed that the abundance of exotic species as diatoms *Pseudosolenia calcar-avis* and *Pseudo-nitzschia seriata* were dominated in the stations beside the fish cage culture comparing with the control stations. The PCA analysis confirmed significant difference between abundance of phytoplankton in the stations near the fish cage culture and the control stations. Furthermore, CCA analysis confirmed that there were strong relationship between diatoms, cyanophytes and nutrients levels ($r = 0.82$).

The reason for high phytoplankton abundance and exotic species in the fish cage culture stations could be related to the high nutrients concentrations due to fish nutrition and fecal. This study was performed during a short period, so the effect of fish cage culture on the Caspian Sea ecosystem should be taken into account in the future studies.

Keywords: *Fish cage-culture, Phytoplankton, Spatial variation, Guilan offshore, Caspian Sea.*