

Study on biofilm, with an emphasis on microalgae in aquaculture equipment sites in the Caspian Sea

Asieh Makhloogh^{1*}, Hassan Nasrollahzadeh Saravi², Mohammad Ali Afraei³ and Alireza Kayhansani⁴

1, 2, 3, 4, 5- Caspian Sea Ecology Research Center (CSERC), Iranian Fisheries Science Research Institute (IFSRI), Agricultural Research, Education and Extension Organization (AREEO), P.O. Box: 961, Sari

*Corresponding Author e-mail: asieh_makhloogh@yahoo.com

Abstract

Biofilms affect the function of aquaculture equipments and production efficiencies. Therefore, it is important to identify groups and species of biofilm living organisms. The aim of this study is determination of microalgae species, which are more likely to be present in the structure of biofilms and biofouling of the Caspian Sea due to their form and shape (chain, string, colony and cumulative). The data source of study is from historical data in the Caspian Sea. The results showed that the species from bacillariophyta phyla formed 50% of all phytoplankton species which have potential for biofilm forming. The pinnate diatoms formed about 70% of

the bacillariophyta species. It is obvious that the dominant species (such as *Cerataulina pelagica*, *Dactyliosolen fragilissima*, *Pseudonitzschia*, *Oscillatoria*) or species with a history of bloom (*Nodularia*) and intense density in the Caspian Sea are likely to be more involved in the biofiling structure. Also, some species such as *Ceratium hirundinella* (a rare species of the Caspian Sea) with large flagellate and big horns as well as cysts of dinoflagelates may trap in massive filaments or setae's of other alga. In the aquaculture sites, the concentration of nutrient elements is high. SO the cysts may enter to the vegetative stage in favorite temperature. Regarding the harmfulness or toxicity of some microalga listed, identification of these species is an important step in controlling program to prevent unpleasant events of biofilm at the aquaculture sites.

Keywords: Aquaculture, Biofilm, Microalgae, Caspian Sea, Iran