Individual and community changes of *Pseudonitzschia seriata* (phytoplankton) abundance during the activity of fish breeding in the southern of Caspian Sea

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Abstract:
Sustainability and continued exploitation of the Caspian Sea is based on the proper knowledge. In recent decades, eutrophication and algal bloom have been important issues and challenges in the world's aquatic ecosystems. The occurrences of bloom have widespread environmental, economic, and social consequences. Therefore, the aim of this study is to investigate individual changes of abundance in toxic and harmful algal species *Pseudonitzschia seriata* as well as in the community of phytoplankton in the last decade (2009-2019) in the Iranian coast of Caspian Sea. The result of the individual abundance of species showed that it's annual and seasonal (except in summer) averages increased from less than 1 to more than 4 million cells per cubic meter from 2009 to 2019. The percentage of *Pseudonitzschia seriata* in phytoplankton community was varied from 25 to 32%. This increase is more pronounced during the autumn and winter seasons, which is coinciding to the early breeding period of fish culture in Caspian Sea. In conclusion, there has been an increase in the individual abundance of *Pseudonitzschia seriata*, as well as a high percentage in phytoplankton community over the past decade (from 2009 to 2019). Therefore, it is necessary to know the sources of nutrients inlet and limit its entry into the ecosystem. Produced toxin is accumulating in the food chain which might appear symptoms of toxicity at different levels of food web.

Keywords: Algae, Blooms, Harmful, toxic, Caspian Sea, Iran