Study on Stable and Disturbance Status of the Caspian Sea Ecosystem (Iranian Coasts) Based on Changes of Phytoplankton Community Structure

Hassan Nasrollahzadeh Saravi[1]
Asieh Makhlough[2*]
Rahimeh Rahmati[3]
Fatemeh Sadat Tahami[4]
Alireza Keyhansani[5]
Mehdi Golaghaei[6]

1, 2, 3, 4, 5, 6. Iranian Fisheries Science Research Institute (IFSRI), Caspian Sea Ecology Research Center (CSERC), Agricultural Research, Education and Extension Organization (AREE), Sari, Iran

Corresponding Author:
asieh_makhlough@yahoo.com

Received date: 2015.02.06
Reception date: 2015.05.24

Abstract
In two recent decades the amount of different stressor factors included chemical and biological pollutions has been increased in the Caspian Sea. These events affected on biotic and abiotic factors of the environment. The present study is to investigate the effects of the stress on changes of phytoplankton structural pattern in 2008, 2009 and 2010 years compare to the stability phase of ecosystem in 1996. Sampling was carried out in eight transects perpendicular to the coast (Astara, Anzali, Sepidroud, Tonekabon, Noshahr, Babolsar, Amirabad and Bandar Turkmen) in four seasons (spring, summer, autumn and winter) in each year of the study. 1920 samples were collected from the different layers at depths of 5, 10, 20, 50 and 100 meters. Based on the results, 299 phytoplankton species identified that classified in 8 phyla: Bacillariophyta, Pyrrophyta, Cyanophyta, Chlorophyta, Euglenophyta, Xantophyta, Chrysophyta and Haptophyta. The number of species in each phylum was 127, 37, 47, 63, 19, 3, 1 and 1, respectively. The number of species and the abundance of phytoplankton in the years after disturbance were more than 2 and 3-15 folds of the stability year, respectively. In conclusion, there are some evidences such as intensive increasing trend of phytoplankton abundance, major displacement of dominant species, increasing of toxic and harmful species abundance and frequency presence, decreasing trend of abundance in native and dwell species, different algal bloom events in 2008, 2009 and 2010 compare to the year of 1996, which are not indicating to recovery trend of quality in the ecosystem.

Keywords: Phytoplankton, Structural pattern, Stress, Caspian Sea, Iranian Coasts.