Study on Changes of Benthic invertebrate abundance and diversity in the Iranian coastal of Caspian Sea during different years

Hassan Nasrollahzadeh Saravi[1*]
Abdollah Hashemian[2]
Abdollah Solimanirudi[3]
Gholamreza Salarvand[4]
Asieh Makhlough[5]

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

***Corresponding author:**
hnsaravi@gmail.com

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Abstract

Benthic invertebrate abundance and community are the most important indicators to assess the function and health of ecosystems. They are also the important source of food for many fishes. This study is to summarize the results of the benthic invertebrate community (abundance, biomass list of species and diversity index) during 2008-2011 and compared with similar data during 1996-97 (as a reference data in stability condition of ecosystem). In addition, relation between benthic invertebrate's abundance and environmental paremeters were investigaed based on statistical analysis. Based on the results, the total number of species in each order such as Polychaeta, Crustacea, Insects and Bivalves were 6, 50, 1 and 5, respectively. About 80.7% of total species number (62) was belonged to the year of 1996-97, but it was recorded 38.7%, 51.5% and 48.4% in the year of 2008-2009, 2009-2010, and 2010-2011, respectively, with dominance of *Streblospio* sp. species. Annual and seasonal significantly reduction of Shannon and evenness indices observed in 2008-2011 as compared to year and seasons of 1996-97 ($P<0.05$). Principle component analysis showed that water temperatute and TOM were correlated with benthic invertebrate abundance at both periods (1996-97 and 2008-2011). The benthic invertebrate abundance rarally showed significant correlation with seabed grain size and kind of sediments. However, it was correlated with pH during warm and cold seasons at second period (2008-2011). Finally, there were some reasons (reduced biological indices, major displacement groups and dominant species during different seasons and dominance of invasive species abundance) for the instability continues in the Caspian Sea ecosystem.

Keywords: Macrobenthos, Structural Pattern, Environmental parametes, Iranian coasts, Caspian Sea.