

EFFECT OF WATER DEPTH ON FISH DISTRIBUTION AND FEEDING HABITS IN EASTERN HAMMAR MARSH USING HEAT MAP PLOTTING TECHNIQUE

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Abstract

Fish assemblage in the East Hammar marsh was described during November 2020 to October 2021. A total of 46,277 individuals comprises of 43 fish species belong to three origins were collected; 20 of marine fish, 12 native species and 11 of exotic species. Water and fish samples were collected from three stations which characterized as having different depths. Nile tilapia *Oreochromis niloticus* was the most abundant species which reached (18.47%) in Al- Sallal AL- while was the highest abundant species in AL-Mansory attaining (22.01%), Blue tilapia *Oreochromis aureus* was the most abundant species in AL-Burka which reached (18.43%). The heatmap showed a difference in fish densities according to the depths where fish diversity increased with depth as well as during flood tides. The subtidal zone characterized by variously feeding habit groups with dense herbivores and large –size piscivores unlike small fish that migrate to intertidal zone and shallow areas for feeding and protection from predators. Alien species were also found in all stations in East Hammar marsh but the highest abundance was in the shallow area. The study revealed the clear effect of water depth on fish abundance and diversity whereas exotic species have a significant negative correlation with the depth ($r = -0.2$) in contrast to the positive relation with native species ($r = 0.4$), and also fish order according to their patterns of feeding habits. Keywords: Basrah marsh, fish structure, feeding habits, heatmap, tidal effect.

Introduction

Wetlands have multiple benefits to the ecosystem and life, the most important of which is that they are a repository of genetic diversity, and contain many types of organisms. It represents approximately 40% of the world's total species and supports almost all major living species. From microbes to mammals (1) in addition to its economic benefits as an important source of fish, rich in diverse products, fertile agricultural land, areas for recreation and tourism, part of humanity's cultural heritage, and an outstanding scientific laboratory.

Hammar marsh is one of the three main marshes in the southern region and extends between the provinces of Dhi Qar and Basrah, 56% of the total area of the marshes is located in Dhi Qar and 44% in Basrah. It was subjected to extensive drying in 1991 and after 2003 the eastern part, which was called East Hammer, was flooded again. It connects from the south to the Shatt al-Arab via Karmat-Ali river and from there southward to the Arabian Gulf. Thus, the southeastern part of the