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ORIGINAL ARTICLE

THE IMPACT OF MARINE HEAT WAVES AND THEIR TEMPORAL PATTERNS ON THE ABUNDANCE AND DIVERSITY OF FISHERIES OFF IRAQI MARINE WATERS

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ABSTRACT

Data from the current study was used to analyse the impact of marine heat waves on the quantity and distribution patterns of Iraqi marine fisheries following the recent change in the climate of the northwestern Arabian Gulf. The average annual water temperature and salinity were 26°C and 38.6 psu, respectively, higher than the averages recorded during previous decades. The dissolved oxygen average was 8.65 psu, and the pH was 8.23. Principal components analysis (PCA) showed that temperature and salinity accounted for 66.93% of the effect of the studied factors, while the percentage of dissolved oxygen was 32.81% and the pH was 0.27%. The results showed a decrease in the weight, numbers, and diversity of the fish during the summer compared to the data from previous decades. Supplementary variable analysis showed that the number of species, individuals, and weights of commercial marine fisheries' catches were inversely correlated to water temperature and salinity. Autocorrelation analysis revealed temporal changes in the effect of temperature and salinity on the decline in the number of fish during the summer. It is extremely important that significant progress be made in understanding marine heat waves and the risks they pose to marine ecosystems in order to predict how these systems and the products they provide will be affected.

Keywords: Biodiversity, Climate change, Fish populations, Marine fisheries, Marine heat waves.

INTRODUCTION

An essential challenge in ecology is understanding patterns of biodiversity distribution and the drives behind them, especially global climate change and biodiversity loss (Weir and Schluter, 2007; Espino *et al.*, 2015). The ecological stability hypothesis indicates that the diversity increases in places with low environmental fluctuations. The fact that more stable environments favor a higher degree of specialization and leads to increased species richness (Sanders, 1968). Climatic phenomena shape the structure of biological systems and affect the