

INFLUENCE OF SUBMERGED MACROPHYTES ON ZOOPLANKTON BIOMASS IN SOME WATER BODIES SOUTHERN IRAQ

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Abstract

This study aimed to show how submerged macrophytes affect zooplankton biomass. From November 2020 to October 2021, samples of water, plants, and zooplankton were collected monthly from six stations in the Al-Hammar, Al-Chebiyesh Marshes, and Euphrates River. Physical, chemical, and biological water parameters were analysed including water temperature, water current, light penetration, NO₃, PO₄, Chlorophyll-*a*, and plant biomass. Zooplankton biomass was estimated as wet weight, dry weight, and displacement volume. Water temperature ranged from 13 °C to 33 °C in February and August; water's current ranged from 0.02 to 0.52 m/sec in November and February. Light penetration ranged from 7 to 218 cm in November and February, NO₃ ranged from 2.3 to 6.4 mg/L in August and February, PO₄ ranged from 0.24 to 0.76 mg/L in August and February, Chlorophyll-*a* ranged from 5.01 to 19.13 µg/L in February and September. Plant biomass ranged from 40.89 to 1120.6 gm DW/m². In stations with submerged macrophytes, zooplankton biomass as dry weight ranged from 4.1 to 100.7 gm/m³. Wet weight ranged from 3.4 to 128.31 gm/m³ in February and October respectively. The biomass ranged from 1.2 to 7.6 gm/m³ DW and 1.75 to 9.3 gm DW/m³ in February and October respectively. In contrast, in stations with submerged macrophytes and those without, the displacement volume ranged from 0.08 to 0.92 mL/m³ and 0.11 to 1.01 mL/m³ in February and October.

Keywords: Submerged Macrophytes, Zooplankton, Biomass, Water Bodies

Introduction

Water bodies are not devoid of large and small assemblies of organisms living within the ecosystem. Such organisms are linked with one another, and their environment by relationships and are thus subject to the negative or positive influence of physical, chemical, and biological factors on them (Salman *et al.*, 2003). Zooplankton has a pivotal role in the food chain by controlling the production of phytoplankton. Malfunctions of each trophic level affect even the predator-prey interaction, leading a severe degradation of the ecosystem, as zooplankton was the major link between low and high trophic levels and thus supports its biodiversity (Lomartire *et al.*, 2021). The study of changes in the zooplankton community was necessary to know the population dynamics and thus the structure of aquatic ecosystems (Havens, 1998). Zooplankton biomass was measured directly as wet or dry weight or it is estimated indirectly from other measurements, one of the most commonly used indirect methods was the displacement size (Bode *et al.*, 1998).