Ain Shams University
Faculty of Science
Zoology department

Ecological Studies on Aquatic Invertebrates of Ismailia Canal, Egypt

A Thesis Submitted in Partial Fulfillment of the Requirement for the Master Degree in Zoology (Environmental Science)

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قسم علم الحيوان

دراسات ايكولوجية على اللافقاريات المائية بترعة الاسماعيلية، مصر.

رسالة مقدمه للحصول علي درجة الماجستير في العلوم
في علم الحيوان (علوم بيئية)

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مـــــاريـــــــــان جـــــــــــورج نصـــــــيف

بكالوريوس علم الحيوان و الكيمياء، كلية العلوم، جامعة عين شمس، ٢٠٠٦

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Abstract

Ismailia canal is one of the most important canals in Egypt. It supplies water for a great number of the Egyptian citizens (about 12 million inhabitants), including those living in northern part of Cairo, Shubra El-Kheima, Mattaria, Musturod, Abu-Zaabal, Inchas, Belbeis, Abbasa, Abu-Hammad, Zagazeeg and El-Tell El-Kabier, before entering the Suez Canal Province. It is worthy to note that some factories are constructed at this area, discharging its wastes into the canal, which cause dramatic changes in the canal's water quality. To avoid problems associated with using poor quality water, we have to have monitoring program to reduce negative impacts and maximize sustainable use of the water. Thus, this study was devoted to assess the water quality of Ismailia Canal using physical and chemical parameters (e.g. water temperature, pH, EC, DO, BOD, Nitrate, Nitrite, orthophosphate and some heavy metals) and biological indicators (e.g. zooplankton and macrobenthic invertebrates). The samples were collected seasonally during 2010 from 10 stations along Ismailia Canal from El-Mezalat to Abu Zaabal city to monitor the adverse effect of three main companies' drainage. The results revealed that most of the physico-chemical parameters were within the permissible limits, although, Cairo Power station and Abu Zaabal Company causing partial pollution. Study of zooplankton community revealed relatively high species diversity and high population density indicating that the canal's water is suitable for fish production. The zooplankton was dominated by Rotifera (85.43 % of total zooplankton) indicating kind of eutrophication and fish predation along the canal. The community of macrobenthic invertebrates was represented by Mollusca (35.20 %), Annelida (33.62 %) and Arthropoda (31.18 %). *Limnodrilus hoffmeisteri* and Chironomus larvae were dominating the whole studied area (32% and 28.51% of total macrobenthos, respectively) and they are considered to be potential bioindicators for polluted ecosystem. Low species diversity and occurrence of pollution tolerant species (e.g. *Limnodrilus hoffmeisteri* and Chironomus larvae) indicate that the water quality of the canal is deteriorated. A regular program for biomonitoring is recommended which will allow future changes to be detected.

Key words: Ismailia Canal, aquatic invertebrates, zooplankton, macrobenthic invertebrates.

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