INTRODUCTION

Microinvertebrates are one of the most interesting groups of freshwater animals. They occupy intermediate position in the food chain of most aquatic ecosystems. Microinvertebrates may be living free-floating (planktonic) or attached to the submerged macrophytes (epiphytic).

Planktonic microinvertebrate community (zooplankton) in most temperate lakes comprised three main groups; Rotifera, Cladocera, and Copepoda, in addition to the meroplanktonic forms. Rotifers mostly inhabit the littoral zone and so are sessile in nature and associated with substrate. Rotifer density is the highest in association with submerged macrophytes. Cladocera are larger than rotifers, range in size from 0.2 to 3.0 mm. They are mostly littoral species but some are planktonic. Copepoda are three orders; Calanoida, Cyclopoida, and Harpacticoida. Harpacticoids are exclusively littoral and are found on macrovegetation and sediments. They feed by seizing and scraping particles from vegetation and sediments. Cyclopoids mostly littoral, but a few species are planktonic and these form major component of planktonic zooplankton communities. Different species tend to be quite specific in their food niches for certain sized particles due to behavioural and morphological adaptations. This partitioning of food allows the coexistence of many species simultaneously in the same volume of water. While Calanoids almost exclusively planktonic in the pelagic zone. They are good swimmers compared to the other groups.

Zooplankton are good indicators of particular environmental conditions or their changes. Zooplankton has long been used as indicators of water quality. Some species flourish in highly eutrophic waters while others are very sensitive to organic or chemical wastes.

Zooplankton organisms form an important link in aquatic chains, since they are therefore secondary producers (primary consumers). So, it is important to complete the general picture of the lake productivity. Zooplankton are one of the basic principal of natural fish feeding for the young and some adults of many fishes which support fish production and thus increase the yield of fish production. So, the fish yields in the tropics can be very high indeed. The high metabolic rate of young fishes in the tropics adds to the demand for food (Fernando, 1994).

Submerged macrophyte communities play a crucial role for these organisms by providing habitat complexity, shelter, breeding area as well as being substrata for periphyton and sites of abundant food production for many aquatic animals. Therefore, they influence the diversity, abundance and distribution pattern of aquatic invertebrates. Rotifers, cladocerans and insect larvae are the major secondary producers of both pelagic and vegetation areas. Some species were commonly found in both areas, whereas others are found in vegetation (Campbell *et al*., 1982; Havens, 1991; Lauridsen & Buenk, 1996 and Vijverberg & Boersma, 1997).

In addition to the prevailing environmental conditions, there are many other factors that may affect the epiphytic microinvertebrate distribution. These are submerged plant attributes, microinvertebrates predominant life form, mobility, abundance of microinvertebrate predators and seasonality. The abundance of phytophilous microinvertebrtes is probably related to a suite of factors, including plant morphology, surface texture, epiphytic algal growth and community composition, nutrient contents of the plant tissue, and the presence of defensive chemicals (Downing and Cyr 1985).

Epiphytic microinvertebrate may change their habitats between submerged plants and lake water depending on the above factors. Therefore, it was important to measure them on macrophytes and separately in lake water for better understanding of submerged macarophytes-microinvertebrates interrelationships (Sakuma *et al*. 2002).

Because these microinvertebrates are an important source of food for many species of juvenile fish, an important component of lake food webs, it is important to understand the relationship between macrophytes and microinvertebrates and their importance as food for the fishes, so that it may manage lakes better for both plants and fish. Finally, these epiphytic microinvertebrates used as indicators of lake water quality.

The present study aims to:

1-Fill part of an important gap in biodiversity knowledge by report microinvertebrates which live planktonic or attached to the submerged macrophytes (epiphytic) in Lake Nasser and their ecological roles.

2-Determine the species diversity, ecological and geographical status of the recorded microinvertebrate species.
3-Recorde the abundance of particular fractions of the epiphytic microinvertebrates (littoral phytophilous zooplankton) and compare them with the planktonic organisms in the water without macrophytes (few meters beside the submerged plants).

4- Also, analysis the stomach content of fishes to estimate the selectivity of natural food and fish secure food materials from the planktonic or the epiphytic microinvertebrates.

5- Evaluate the physical and chemical parameters to determine the relationship between these parameters and the studied taxa.