

Some Observations on Macro-invertebrate Benthos of Lake Volta at Yeji Area (Stratum VII) Thirty Years after Impoundment

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Abstract

Quantitative samples taken from the bottom of Lake Volta at various depths of water were studied to monitor the seasonal as well as depth distribution of macro-invertebrates in the sediments. Macro-invertebrates occurred in sediments collected from all depths. The densities were highest between the shore and depths of 8-10 m. Macro-invertebrates were most abundant in July and least in May. The diversity of macrobenthos had reduced considerably. Generally, Chironominae were abundant while Orthoclaadiinae and Ephemeroptera were scarce in the sediments compared to what was found during the formative years of the lake. The observed change in the composition of benthos was attributed mainly to increasing anthropogenic influences exerted on the lake as evidenced by the changing chemistry of the lake water at Yeji.

Introduction

Lake Volta in Ghana was formed in 1964 as a result of the construction of a hydroelectric dam on River Volta at Akosombo. Between 1960 and 1970 construction of large dams became commonplace in Africa, and man-made lakes such as Koussou in Côte d'Ivoire, Kariba in Zimbabwe and Kainji in Nigeria were all formed during this period.

Earlier studies conducted on Lake Volta covered limnology and hydrobiology (Viner 1970a, 1970b; Lawson *et al.*, 1969), phytoplankton populations (Biswas, 1969, 1972), fisheries (Vanderpuye, 1972; Petr, 1967, 1969a, 1974a) and benthic fauna (Petr 1969b, 1972, 1974b). Ecological studies on Lake Volta, however, could not be sustained at the same pace and by 1984 scientific studies had virtually come to a standstill (Petr 1986). Scientific study of the lake has been reviewed recently, following two severe droughts in the sub-region during 1972/73 and 1983/84, which drastically reduced the water level of the lake. The

lake is being used increasingly as a transportation route from the south to the north of Ghana. In addition, it is an important source of fish for both domestic consumption and export. Thus, there is an urgent need for studying the ecology of the lake to ensure sustainable exploitation of the lake's resources.

A recent study focussed on the limnology and fishery of the lake (Ofori-Danson & Antwi, 1994). This study examined the occurrence, composition, densities and distribution of macro-invertebrates in the sediments of the lake 30 years after its formation. The present study forms part of an on-going project that seeks to relate the densities of macro-invertebrates to oxygen concentration levels and depths at which macro-invertebrates occur in the Volta Lake.

Materials and methods

Lake Volta stretches from latitude 6° 15' N to latitude 9° 10' N and lies between longitude 0° 30' E and longitude 1° 30' W. It covers an