

3.8. OPI LAKE A

by Landis HARE

1. Geography and morphology

Opi Lake A ($6^{\circ}45'N$, $7^{\circ}29'30''E$) is located in the West African Guinea Savanna region near its southern border with the coastal forest (Fig. 3.24). It lies, together with a number of similar sized lakes, in the valley of the River Uhere, a branch of the River Ora which drains a small portion of the Enugu escarpment in southeastern Nigeria. It is typical of lakes in the area with the exception that it has no permanent surface inlet or outlet and consequently fluctuates seasonally in depth (max. 2.4-4.0 m). Corresponding fluctuations in mean depth (1.27-2.17 m), surface area (1.4- 2.0 ha) and volume ($17,400-43,300 \text{ m}^3$) were observed during the period of study (1979-80).

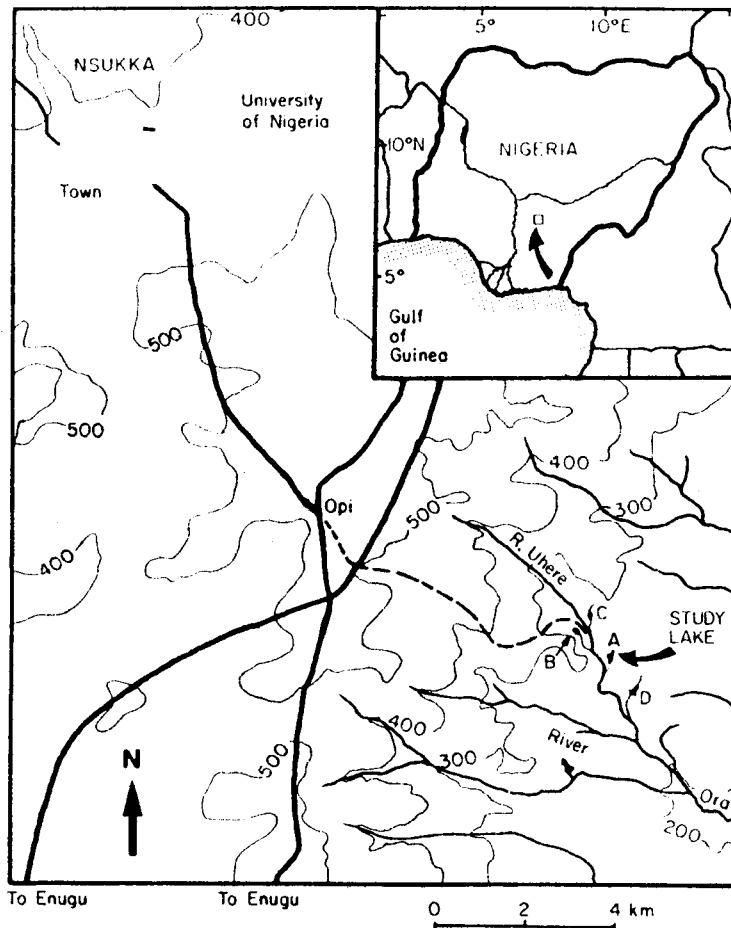


Fig. 3.24 The location of Opi Lake A.

2. Geology and Climate

Soils in the area are heavily leached red laterites grading into sand in river valley bottoms. Opi Lake A experiences a distinct seasonality in weather, largely related to the north-south movements of a broad discontinuity between humid maritime (Atlantic) and dry continental (Saharan) air masses. Less than 2% of the total annual rainfall fell during the driest 3 months of the year (Nov./Dec. - Jan./Feb).

3. Hydrology and chemistry

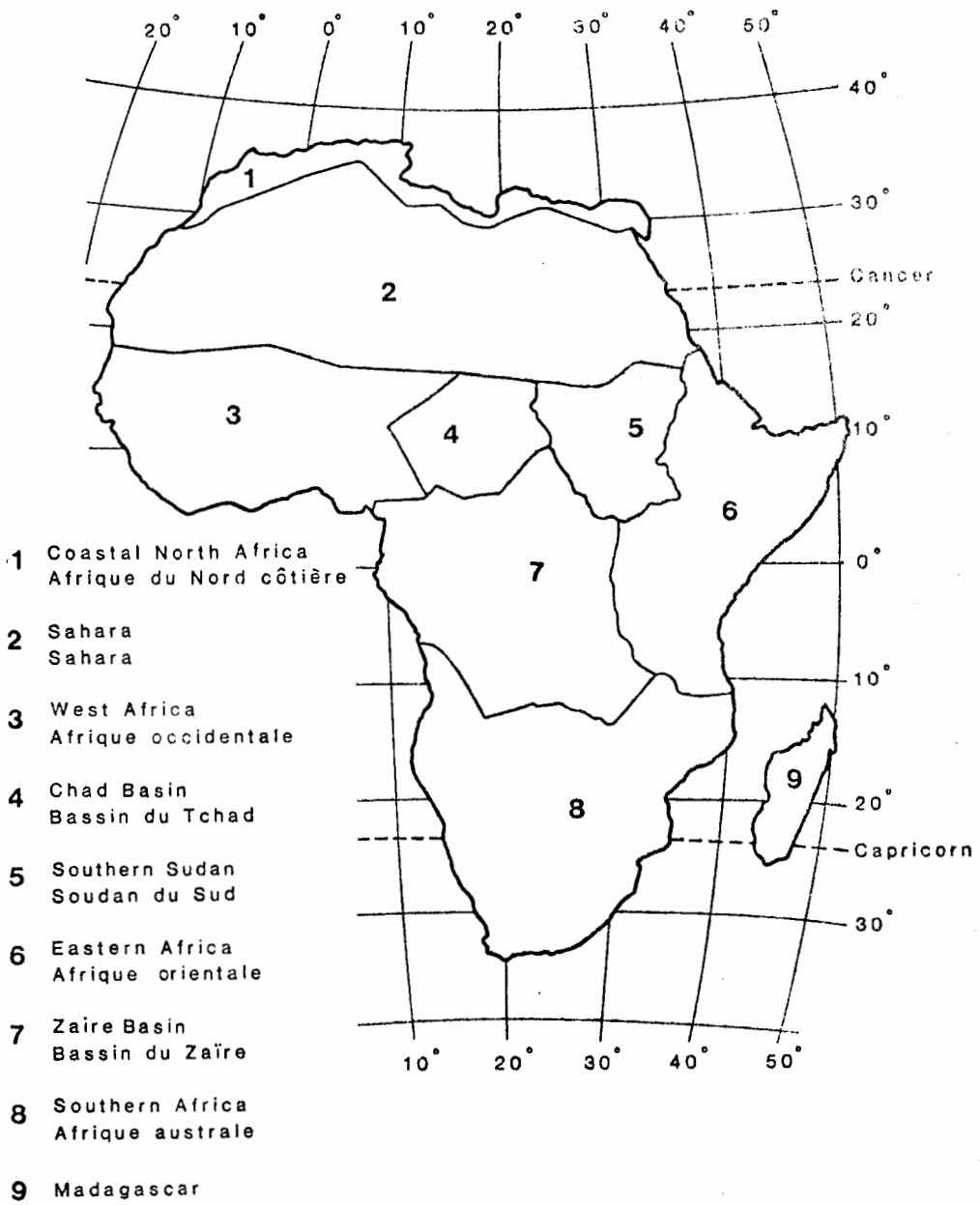
Lake waters were very dilute ($15-24.10^{-6} S.cm^{-1}$ at $25^{\circ}C$) and somewhat acid (pH 6.0-6.5), probably a result of the highly leached soils in its small drainage basin (less than $1 km^2$). Annual minimum water temperatures were recorded during the early dry season Harmattan period. A diel cycle of day-time thermal stratification and complete or near-complete night-time destratification occurred throughout the year. During the dry season, when prevailing winds were strong and lake depth shallow, night-time destratification was accompanied by deep circulation. In the rainy season, when prevailing winds were weak and lake depth was greatest, deep vertical circulation apparently did not take place, as evidenced by anoxia in near-bottom waters.

4. Flora and Fauna

The only aquatic macrophyte common in the lake was Nymphaea micrantha. The lake phytoplankton was dominated by Chlorophyta, mainly desmids, during the rainy season and by varying proportions of Chlorophyta, Euglenophyta and Cyanophyta during the dry season (S. Biswas pers. comm.). The dominant crustacean zooplankter at all times of the year was the cyclopoid copepod Thermocyclops consimilis. The deep water benthic community was dominated by Chaoborus (3 species) while at shallow water sites Chironomidae or Chironomidae and Naididae were most abundant.

5. Human activity

The escarpment on which the lakes were located was forested and relatively undisturbed as compared to the more heavily populated and cultivated highlands and lowlands. Direct human influences were largely in the form of clothes washing and angling by local residents.



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