

1.6. LAKE QARUN
by Mary J. BURGIS

The following information is taken from the papers of Abdel-Malek & Ishak (1980) and Ishak & Abdel-Malek (1980).

1. Geography and morphology

Location: 29°25' - 29°34'N; 30°34' - 30°49'E; in the Fayoum Depression 87 km south of Cairo; it is surrounded by the intensive agriculture of a large oasis.

Altitude: 44 m below sea level.

Area: total area of the lake c. 235 km².

Length: 40 km on SW-NE axis.

Width: maximum c. 9.25 km in western part.

Depth: mean 4.2 m; maximum 8.5 m in the west basin; only 18% of area more than 5 m deep; shallowest in SE area.

2. Climate

Air temperature: ranges from 17°-18°C in December-January to 30°-33°C in July-August.

Relative humidity: 48.9% in June to 75.3% in December.

Rainfall: annual total c. 8.6 mm.

Evaporation: estimates range from 1774-1903 mm per year.

3. Hydrology

The lake lies in an endorheic basin which has been artificially fed with water from the River Nile for many centuries. Today the lake receives only drainage water from the irrigation system via two canals which enter the eastern part of the basin. These supply an average $390 \times 10^6 \text{ m}^3$ per year of increasingly saline water.

4. Physico-chemical characteristics

Water temperature: surface: 15°-16°C in January; 28°-30°C in August. There is a daily variation of 4°-7°C but the water column does not stratify.

Transparency: 60 cm near the inflows, 200-300 cm in the western part increases in summer and decreases in winter.

pH: always c. 8.

Alkalinity: c. 200 mg/l CaCO₃.

Salinity: in 1901 the salinity of the lake water was recorded as 13.4‰; by 1953-55 it has risen to 30.6‰ and between 1974-76 rose from 30.9 to 34.5‰. This process of salinization has been accelerated since the closure of the High Aswan Dam on the Nile; artificial fertilisers are used to replace the nutrients formerly supplied by the sediments of the river flood and these raise the salt content of the drainage water entering the lake. The salinity is greatest in the western part of the lake and lowest near the inflow canals.

Nitrates: $40-50.10^{-6} \text{ g/l}$.

Phosphates: $0-0.7.10^{-6} \text{ g/l}$.

5. Phytoplankton

The phytoplankton is characterised by diatoms and dinoflagellates with the former dominant. Some blue-green algae are also present such as Lyngbya and Oscillatoria. The majority of species are related to those found in the Mediterranean Sea and are presumed to be imported with the fish fry that are stocked into the lake each year.

There are two maxima of phytoplankton abundance, in spring and autumn; the estimates of average organic carbon biomass is 0.36 gC/m^3 .

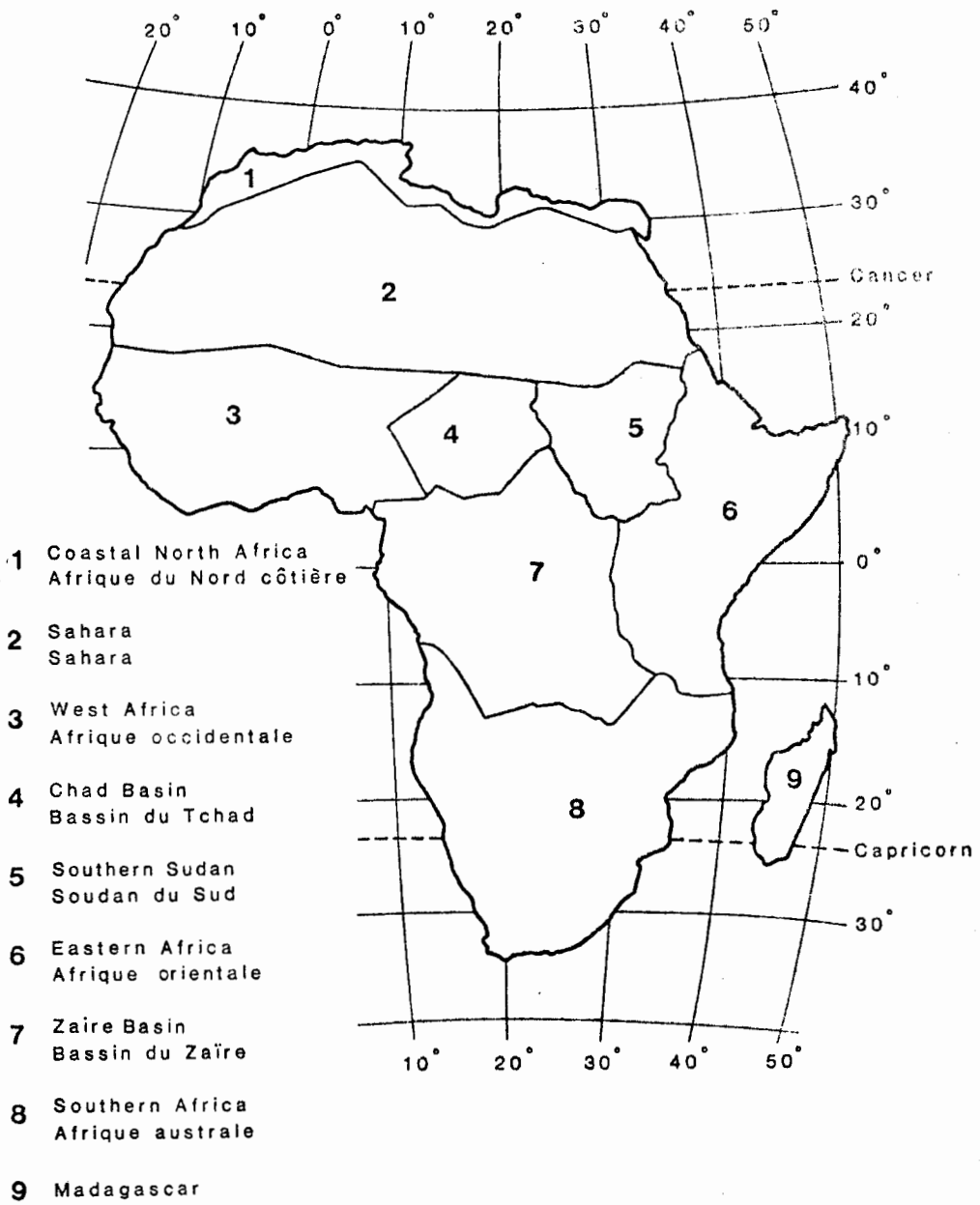
6. Invertebrates

Zooplankton: the original fresh/brackish water fauna has been replaced by a variety of predominantly marine species although a few rotifers have survived the increasing salinity. The copepod Acartia latisetosa is dominant and constitutes 21-31% of the total zooplankton abundance; it is most abundant in the eastern part of the lake. Many marine larvae such as those of Balanus (Cirripedia) and polychaeta worms are also abundant in the zooplankton.

Benthos: the benthic fauna is dominated by relatively few vigorously growing species of which by far the most abundant are the Mollusca, particularly Cerastoderma glaucum which has an average standing crop of 288.5 g dry weight per m^2 forming 70% of the total average biomass (413 g dry weight per m^2) of the benthos. The benthic fauna includes many euryhaline marine species such as the polychaete worm Nereis diversicolor.

7. Fish

There are four main species of fish in the lake (Tilapia zillii, Mugil cephalus, M. capito and Solea vulgaris). All were artificially introduced in 1928 and their fry are restocked into the lake each year.



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