

Effect of Aswan High-Dam on the phytoplankton standing crop around
Alexandria

by
Halim Y., Sultan H.A., & Samaan A. A.

Abstract

After completion of the Aswan High-Dam in 1965, a new condition was created by the complete retention of the flood water. The periodicity of the cycle remained the same with two peaks, the spring and the late summer peaks. The latter one, however, is the smallest, contrary the pre-High-Dam condition, in addition, a sharp decrease in the phytoplankton standing crop is noted.

*** ***

The phytoplankton standing crop off Alexandria, was previously studied for 1956-57 by El-Maghraby & Halim (1965) and Halim et. al (1967) for 1964. The present study was carried out along an inshore-offshore Alexandria section after the construction of the High-Dam.

Investigations were carried out along a section perpendicular to Alexandria coast (340) at station I, II & III, situated at 4.2, 8.0 & 10.5 nautical miles, respectively. Sampling was carried out monthly from September 1969 to August 1970, from surface, 10, 20 & 30 meters depths. Quantitative estimation of the phytoplankton standing crop was carried out by using the sedimentation method.

The average maximum numbers of phytoplankton (0-30 meters) reached 13784, 2832 & 3425 cell/l for stations I, II & III, respectively (Table 1). The phytoplankton standing crop remained at moderate values in January increasing to the year's peak in February at Stations II & III, and one month later at station I. It remained more or less constant through April, dropped from May to July, a smaller increase being observed in August. El-Maghraby & Halim (1965) recorded a high phytoplankton peak in September after the Nile flood and a lower one in February. In the present investigation and after the construction of the High-Dam, and retention of the nutrient rich flood water, considerable changes in the biological condition have resulted. The two phytoplankton peaks are still recorded but their relative amplitude is different. In the same area Savich (1970), recorded the same change.

A similar drastic change in the dynamics of the phytoplankton standing crop in the Eastern-Harbour of Alexandria was also observed after the High-Dam construction. In 1956-57, long before the High-Dam was in place, the cycle was bimodal with an outstanding Autumn bloom (El-Maghraby & Halim 1965). In 1965-66 (Halim et al., 1967) the cycle was still bimodal but the Nile bloom dropped to 10%. In 1972-73, in the absence of any Nile bloom, the cycle was still bimodal, but the spring bloom became the major one (Halim et. al., 1980).

The construction of Aswan High-Dam is responsible for changes not only in the bloom periodicity but it also decreased markedly the maximum phytoplankton crop as follows: 9000.10^3 cell/l in 1957 (El-Maghraby & Halim, 1965) to 800.10^3 cell/l in 1964 (Halim et. al., 1967), 140.10^3 cell/l (Savich, 1970) and 14.10^3 cell/l in the present observations.

Standing crop (ce l/l) in water column (0-30 meters depth), I,II & III

Months	St. I	St. II	St. III
September, 1969	2033	323	262
January, 1970	929	749	274
February	2105	2832	3425
March	13784	1420	352
April	2386	1370	598
May	142	97	280
June	214	236	174
July	372	196	181
August	882	682	938

References

- El-Maghraby A.M. & Halim Y., 1965. A quantitative and qualitative study of the phytoplankton of Alexandria water. *Hydrobiol.*, 25, (1-2), 221-238.
- Halim Y., Guerguess S.K. & Saleh H.H., 1967. Hydrographic condition and plankton in the south east Mediterranean during the last normal Nile flodd, 1964. *Intern. Revue Gesanat Hydrobiol.* 52 (3): 401-425.
- Halim Y., Samaan A.A. & Sultan H.A., 1980. Primary productivity in the Eastern Harbour of Alexandria. *Acta Adriat.* 21, (2): 255-269.
- Savich S.M., 1970. About the phytoplankton condition in the south east of the Mediterranean. *Azov. Black Sea Institute of Oceanography and Fisheries, USSR, Transaction* 30, 143-162 (R).