

Some Factors Affecting the Fisheries in Lake Mariut (South of Alexandria)

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In developing countries, different animal protein sources cannot be able to sustain the additional protein requirements. So, it is necessary to develop fishery resources either by exploiting less conventional fish species or maintaining satisfactory rate of fish production through fisheries improvement.

During the last twenty years and due to the continuous decrease in marine catch, lake fisheries represent about 60% of the total in Egypt.

The present work aimed to discuss several factors that affect fish production in lake Mariut as it plays an important role to the Egyptian fisheries. Lake Mariut is one of the four Delta lakes occupying a portion of the Mediterranean foreshore plain in a depression ranging between -4.0 & -3.4 meters below sea level with mean depth of about one meter. It has no connection with the sea and can be considered as an almost closed basin. To keep the lake water level lower than that of the adjacent cultivated lands, powerful pumps were established to pump water from the lake up into the sea.

During the period 1965-1986, the catch in lake Mariut decreased from 7261 tons in 1965 to its minimal value in 1968 (1289 ton), then gradually increased to 10668 tons in 1973 reaching maximum production of about 17500 tons in 1975. The catch is dropped to 5800 tons in 1986. Our study revealed that continuous decrease in lake Mariut fisheries during the last years is caused by various factors.

- As the other Delta lakes, lake Mariut has been subjected to noticeable shrinkage in its total area due to land reclamation programme, the area is reduced from 25000 acres in 1965 to 14000 acres in 1984. The reduced area is greatly connected with reduction in the length of shoreline, reduction in the total volume of water leading to overfishing, competition for food and space between different fish species and also competition between different units of gears.

- The lake has no direct connection with the Mediterranean, so its water level depends on the volume of water discharged into it from the adjacent cultivated lands and water pumped into the sea. Lowering the lake water level reduces the catch by diminishing the area, the water volume and by decreasing the efficiency of fishing gears used. The lake water level has an effective relationship with the net as an active fishing gear than with the passive as traps.

- Catch per unit effort is an index of abundance and level of exploitation of fishing resources. In closed water system there is an inverse relationship between fishing effort and fish catch per unit effort. However in lake Mariut during the period 1965-1972, it was observed that the small number of trips is accompanied by low catch per unit effort while the second period 1973-1982 is characterized by big number of trips and high catch per unit effort. Variation in catch per unit effort is caused by the change in fish stock induced by different environmental conditions taking place in the lake. In the period 1983-1986, fishing effort is slightly reduced, but catch per unit effort is decreased to half, its value during the period 1973-1982. The unfavorable environmental conditions caused by reduction of the area, water level of the lake, pollution as well as overfishing activity took place in the second period (1973-1982) directly affect the fish stock during the third period (1983-1986).

- Fishing gears used in Lake Mariut are classified into two groups, the first is the legal methods including trammel, cast, gill nets and traps. The second group is the illegal ones represented by surrounding nets, small enclosures and dams. 1984 illegal gears contributed about 63% of the total catch compared with 37% by legal. Enclosures and nets with small mesh catch small and big fish. Big catch and the rapid increase of fish prices promote the use of illegal methods.

Also the increase in the number of fisherman and fishing boats leads to overfishing.

- Pollution is caused by large amounts of sewage and industrial waters discharged to the lake through some drains. Organic pollutants adversely affect fish and other aquatic life through oxygen depletion. Other studies revealed that lake Mariut is suffered such pollution as manifested by acute oxygen deficiency, high ammonia and hydrogen sulphide content resulting from the decomposition of organic effluents from municipal sewage and many industries, particularly wood fiber sludge from pulp mills.