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Fluctuations of Fisheries from the South-Eastern Mediterranean Sea

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Since 1962, the Mediterranean fisheries are one of the most important sources of fish production in Egypt contributing about 40% of the total. However, twenty years ago the catch curve showed a continuous decline from 38000 tons in 1962 to 12000 in 1967, then fluctuated around an annual average of 8000 tons in the period from 1968 - 1977 followed by an increase to annual average of 14000 tons during the period 1978-1985.

The present work aimed to study different factors responsible for such fluctuations in catch of sardine, shrimp and other species as well as number of fishing trips of both motorised and non-motorised boats.

Catch from the south-eastern Mediterranean during the period 1962-1985 is closely affected by catch of sardine and shrimp and these two species are greatly affected by the environmental changes took place after damming of the River Nile in 1966. The trend of variation obtained for the total catch of fish landing centres along the Egyptian Mediterranean coast agree with the trend of such fluctuations in the intervals 1962-1972 & 1973-1985 for sardine and shrimp as well as total catch without them.

Before 1965 sardine catch represented about 40% of the total Mediterranean catch, but now it contributes about 8%. Although its catch shows sharp drop, it still plays the first role. There is a positive relationship between monthly Nile water outflow and sardine catch, the correlation coefficient r values were 0.547 after one month and 0.895 after two months and after three months r became insignificant.

Damming in 1966 resulted in sharp deterioration of nutritive base of pelagic fish especially sardine. The catch curve of sardine production could be divided into three periods, the first before damming (1962-1966) with maximum annual average of 9500 tons, the second after complete damming (1967-1976) with annual average of 830 tons, the third period (1977-1985) is characterized by increase to annual average of 3800 tons which could be attributed to general decline in fish catch from the Mediterranean and introduction of purse seine nets in early seventies. Our study revealed a close relation between sardine catch and number of fishing trips due to the presence of sardine in large shoals in first period, so it is significantly correlated with non-motorized boats especially sardine gill net. In the third period, the relation becomes more significant because the catch of sardine is mainly caught by motorized boats especially purse seine net boats in which they are increased from 17×10^3 trips to 23×10^3 in first and third periods respectively.

The trend of shrimp catch variation during two periods 1962-1972 and 1973-1985 shows an observed decrease in its catch during the first that could be considered as an important factor responsible for the observed decrease in the total Mediterranean catch. In the second period, the trend shows slight increase explained by increasing role of motorized fishing boats especially trawlers during the last ten years.

The drastic changes took place after damming and pollutants discharged under the recent hydrological conditions exerted marked influence on shallow water characteristics and habitat of different aquatic organisms.

Recently, certain processes have been developed to compensate the decrease in fresh water, such as the role of convection intermixing has increased and the inflow of diluted waters into the sea from coastal lakes has grown and introduction of purse seine nets. By comparing the trend of catch of some fish species, we could conclude that the rate of increase in sardine and shrimp not at any level compensates the rate of decrease in catch of the most important dominant species which reduced, diminished or disappeared from the Egyptian Mediterranean waters. So, the observed decrease in total catch is due to the reduction in catch of sardine, shrimp and other species, while the observed slight increase in the total is due to the increase in sardine and shrimp landings.

There is strong relationship between catch of different species and number of fishing trips exerted by motorized boats recently, this is explained by increased number of purse seine boats and modern motorization of non-motorized ones. However, the sharp increase in number of fishing trips is not followed by significant increase in the catch.