

## A REVIEW ON AQUACULTURE IN EGYPT

Nabila F. BISHARA

*Institute of Oceanography and Fisheries, Alexandria*

Fish culture is a successful way for increasing fish production. It has been practiced in Egypt since ancient times.

Total fish production in Egypt is 125000 metric tons, 60 % of which is produced from the lakes, namely lake Manzalah (170000 hectares), Lake Brollos (70000 hectares), and Lake Edku (15000 hectares). All the three lakes are connected to the Mediterranean through narrow openings. The fourth delta lake is Lake Mariut (6000 hectares), it is a closed lake, with no connection to the sea. A fifth lake, Lake Qarun, lies in Fayum depression about 100 km west of Cairo, it is also a closed lake, with high salinity.

The share of the Nile and its tributaries in the total fish production is only 15 %, the remaining 25 % is obtained from the Mediterranean and Red Sea.

Fish culture in Egypt depends on Mugil culture, carp culture and Tilapia culture.

Mugil fry are found in huge numbers at the delta Lake Sea connections and at the mouths of Nile Branches. Mugil fry have different seasons of aggregation :

1. *Mugil cephalus* fry aggregate from July to September. with a peak in August.
2. *Mugil capito* fry aggregate from January to June with a peak in February.
3. *Mugil saliens* fry aggregate from October to February with a peak in November.
4. *Mugil chello* fry aggregate from May to August with a peak in May.

Fry of other marine fish are also collected with Mugil fry :

*Anguilla vulgaris*, from January to May.

*Solea vulgaris* from April to July.

*Chrysophris (sparus) aurata* from May to June.

*Morone punctate* from April to September.

Induced spawning to the common carp, silver carp and also *clarias lazera* is a common practice in the governmental fish farms Serw, Manzalah and the Barrage fish farm (Fig. 1).

The indigenous *Tilapia* species are found in all fish farms. There are four species of *Tilapia* in Egypt. *T. nilotica*, *T. aurea*, *T. galilae* and *T. zilli*. As a result of successful experiments *Tilapia* is considered as a "miracle" fish, and water bodies are stocked excessively with this genus, which upset the zoogeography.



### Barrage experimental fish farm :

This farm was established in 1929 near Cairo. It consists of 14 spawning, nursering and experimental ponds, varying in area from 50 to 1800 m<sup>2</sup>. The water supply is from an irrigation canal of the Nile. Every pond has an inlet and outlet and is easily irrigated and drained.

This farm is mainly used for experiments on the acclimatization of exotic as well as indigenous fishes. The common carp *Cyprinus carpio* L. (Scale carp), the mirror carp *Cyprinus carpio* V. *specularis* Lac., the black bass *Micropterus salmoides*, *Tilapia mossambica* Pet., and the silver carp *Hypophthalmichthys molitrix* Val. were received in this farm 1934 to 1962.

### Serow experimental fish farm :

Was established in 1949 on the southern shore of Lake Manzalah. It consists of 46 spawning, nursering, experimental and rearing ponds making a water area of about 12 hectares. The water supply is fresh. This farm is considered as an ideal one for fish culture experiments.

### Manzalah fish farm :

This farm is located about 30 km south of Serow farm it was established in 1957 and consists of 38 spawning and nursering ponds varying in area from 50 to 1000 m<sup>2</sup> ; 15 rearing ponds 6 hectares each, and a large water area of about 280 hectares.

The water is brackish, water salinity varying between 1 & 8 g/l.

### Maryut fish farm :

This is the most recently established farm in Egypt. It is a large water area, isolated from Lake Maryut. Its area is about 400 hectares, and is intended to rear mullets, Anguilla, Tilapia and Carp.

## TRIALS FOR PROPAGATING FISH CULTURE IN EGYPT

### 1. Acclimatization of fishes :

It was until 1934 that real trials for the acclimatization of marine fishes have been attempted in Egypt.

In the period 1920 - 1936, mullet fry, collected from Mex near Alexandria were transported to the closed Lake Maryut and inland Lake Qarun.

Lake Qarun is facing the problem of increasing salinity due to excessive evaporation, a condition which led to the disappearance of most, if not all, fresh water fish formerly found in the lake. Transplantation of marine fry such as *Mugil cephalus*, *M. capito*, *M. saliens*, *M. chelo*, *M. seheli*, *Solea vulgaris* and *Chrysophris aurata* was carried out from 1928 till 1970.

It is interesting to mention that *Mugil saliens* was successfully acclimatized and spawned in the Lake.



## 2. Introducing new fish species from different countries :

The common carp *Cyprinus carpio* Lin was introduced from Indonesia in 1934. Spawning of this fish occurred successfully in our waters. Millions of carp fry were released in the Nile and its tributaries without any apparent effect. It was replaced by the mirror carp *Cyprinus carpio* V. *specularis* Lac. introduced from France. Acclimatization and spawning of this new species was successful (Koura and El-Bolok, 1960).

Trials for increasing carp production in the Egyptian ponds were carried out and proved successful to the extent that, after selection experiments about 63 % of the newly produced fish attained the good characters, this percentage was only 17 % before selection. This was reflected by an increase in weight of the new generation equal to 300 % per individual fish. The total gain in production per hectare was 700 Kg instead of 260 Kg before selection. In Egypt carp is reared with many local fish species, such as *Tilapia* spp and *Mugil capito*.

Acclimatization of *Tilapia mossambica*, and the large mouth black bass *Micropterus salmoides* were not successful in our water. The drop of temperature in winter below the tolerated range for *T. mossambica* had a fatal effect. On the other hand the predatory nature of the black bass was an obstacle in the way of its rearing in our ponds.

The silver carp was introduced from Japan in 1962, it thrived well in our waters and attained sexual maturity at the end of the fifth year of life. Experiments on induced spawning of this species were only partially successful.

### Economical significance of transplantation :

Mullet fry had been transplanted in both Lake Maryut and Lake Qarun since 1920 and 1928 respectively.

A total of about 20 million fry were introduced into Lake Qarun in the period 1928 - 1964. Mullet started to appear in the catch in 1929 - 1930. Later on *M. saliens* appeared in the commercial catch.

The high production of *M. saliens*, which now constitutes 13.6 percent of total fish production in Lake Qarun, is due to the ability of the fish to spawn in the Lake (El Zarka, 1964).

Transplantation of other marine species such as *Chrysophris aurata*, *Dicontrarchus larbax* and *Morone punctata* as well as shrimps was carried out in Lake Qarun with the aim of changing this lake into a big marine farm.

Transplantation of Mullet and carp fry into the fresh and brackish water ponds distributed all over the country has a marked economical importance. The production of private farms has now reached about 2 ton per hectare.

To assist private farms in increasing their fish production wide experiments were carried out at Mex experimental farm by Wahby (1974) and Bishara (1978 & 1979). For *Mugil cephalus* it was recommended to fertilize the ponds with superphosphate at a monthly rate of 20 Kg, which gave an increase in the growth rate as indicated by the condition factor was nearly double that reported by other authors.

As for *Mugil capito* best results were achieved by adding supplemental artificial food composed of powdered blood and flour.

#### Fish culture in rice fields :

Fish culture in the Egyptian rice fields started in 1954 using carp of 20 to 55 gm in weight, and a stocking rate of 750 to 1250 fish per hectare. After rearing for 2 to 3 months, about 200 Kg of carp were obtained plus an increase in rice production of 250 to 375 Kg per hectare.

This is estimated to be 5 - 7 % increase in rice crop as a result of rearing carp in the rice fields.

#### Rehabilitation of old ponds :

Every governorate in Egypt has many old ponds and water areas which can be used in fish production. The total water area of such old ponds suitable for fish culture is estimated to be about 1800 hectares. A complete programme for recreating and managing these ponds is now under execution. If only 500 Kg of fish is taken annually from such ponds, a total production of about 900 ton can be obtained from such neglected source of fish.

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