



CENTRAL MARINE FISHERIES RESEARCH INSTITUTE

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R & D SERIES FOR MARINE FISHERY RESOURCES MANAGEMENT

6. THE CATFISH RESOURCES

The marine catfishes form a commercially important group widely distributed in the tropical Indo-Pacific and they constitute a regular, sometimes dominant, component of the demersal fish landings along the Indian Coast. Species of the genus *Tachysurus* contribute nearly 99% of the catfish catch, particularly *T. thalassinus*, *T. tenuispinis*, *T. serratus* and *T. dussumieri*. *Osteogeniosus militaris* also forms a fishery along the northwest coast.

Occurrence and production

The catfishes occur in coastal waters upto a depth of about 80 m. The young ones are found in the shallower muddy areas where they feed on the luxuriant growth of benthic epi-and in-fauna, while the larger and adult fish live in deeper waters. Hooks and line, gill nets, trawls and purse-seines are the gears used for capture of catfish.

The annual catfish landings average over 53,000 tonnes, which forms approximately 10% of the ground fish catches and 4-6% of the total marine fish landings. Nearly 70% of the catch comes from the west coast, mainly from Kerala (29%) and Maharashtra (20%), with Karnataka also having recently risen to the top position after the introduction of the purse-seines.

Acoustic surveys by FAO/UNDP Pelagic Fisheries Project along the southwest coast and the Gulf of Mannar have indicated

an average standing stock of 84,000 tonnes in the area. The highest biomass of catfish has been along the coasts of Kerala, followed by Karnataka, Goa and South Maharashtra and the lowest in the Gulf of Mannar. The period of abundance of catfish is January-June off Maharashtra Coast, April-September off Karnataka and Kerala, July-September in the Gulf of Mannar, and March-June and December-January off the Andhra Coast.

Catfishes are mostly marketed fresh, but in times of very heavy catch, they are also cured by methods such as salting and semi-drying or pit-curing. Larger species, like *T. serratus*, *T. dussumier* and *T. thalassinus* are also filleted fresh and sold, or where cold storage facilities are available they are also sold frozen. The air-bladders of catfish are utilized for the preparation of icinglass and have an export market. The smaller catfish are used, along with other 'trash fish', for the preparation of fishmeal and fish protein concentrate.

Resource estimates

The Institute has been studying the catfish resources from different centres viz., Cochin, Calicut, Mangalore, Bombay, Veraval Waltair and Mandapam and the assessments on the stocks of the important species have shown that for an MSY per recruit of 400 g the required value of exploitation rate is 0.70 and the index for size at first capture 0.66. In the light of this, most of the species are under heavy fishing pressure in the present grounds.

A. thalassinus: The average annual stock of 210 tonnes and the annual yield of 151 t at Waltair appears better than at all other centres. The values estimated at different centres show that exploitation rates range between 0.79 and 0.83 and size at capture between 0.24 and 0.50. Thus at almost all centres the existing level of exploitation is higher and a reduction in effort is needed, if the size at capture is retained at present level.

T. tenuispinus: The maximum average annual stock has been at Mangalore (1482 t) which also has the maximum catch (1008 t). The fishing pressure at most centres (ranging between 0.71 and 0.75) is nearer the required level, but the index for size at capture, 0.36 - 0.50, is far lower and the size has to be increased to get the MSY at all centres.

T. serratus: At Cochin this fishery has an annual average stock of 190 t and annual yield of 165 t. The exploitation rate works out to 0.93 and the size at first capture 0.28. Thus the fishing pressure here is quite high and at this level, the size at first capture should be increased more than twice to get the MSY, without affecting the stock.

T. dussumieri: At Veraval the annual average stock estimated is 534 t and annual average catch 438 t. The position is similar to that given for *T. serratus* with exploitation rate at 0.91 and size at first capture 0.30. Hence reduction of fishing pressure with the present size, or increase of size at capture to nearly double, at the present fishing level, is required for maintaining the MSY.

O. militaris: With an average stock value at 482 tonnes and annual yield at 275 t, the fishery at Veraval appears in a good position. The exploitation rate of 0.64 and size at capture at 0.56, indicate the situation to be satisfactory both with regard to fishing level and size fished.

Management of the resource

It is clear that the fishing pressure on the catfish resources in the nearshore waters is very high, often above the level required to get the MSY. This can be remedied by either decreasing the fishing pressure or increasing the mesh size of the cod-end of the gear. However, at the major centres, demersal trawling is mainly aimed at shrimp fishing, which will be adversely affected if the mesh size is increased. So in the present fishing grounds, the solution may be only to bring down the fishing effort. At the same time exploratory surveys have shown fishing grounds for catfishes in regions between 30 and 80 m depth. So the extension of fishing operations to areas beyond the present fishing limits is recommended. As these areas are not easily accessible to the artisanal fishermen, mechanization of the fleet is also required for this.

The large-scale introduction of purse seines has, however, recently led to a most disturbing trend, found in Karnataka, which could affect the future of catfish fishery.

In catfishes the males play an important role in parental care. The fertilized eggs are retained by the adult males in the mouth for incubation and these males get segregated after spawning and move in large shoals. This behaviour has led to the selective fishing and large-scale capture of adult males along the Karnataka Coast by the purse-seiners operating there. Millions of eggs weighing several tonnes, have been destroyed thus year after year. This peculiar vulnerability of the incubating male catfishes has to be taken into account in such developmental plans. The fishing effort has to be regulated accordingly in the inshore waters, particularly for trawlers and purse-seiners, during the spawning months of August to November.

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The conclusions/recommendations made in this series are subject to revision with addition of further information on the resource.

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