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MARINE CATFISH RESOURCES OF INDIA

EXPLOITATION AND PROSPECTS

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CHAPTER SEVEN

SOME SPECIAL FEATURES OF CATFISH FISHERIES FOR CONSIDERATION IN DEVELOPMENTAL PROGRAMMES

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There are some aspects of the catfish biology and behaviour that are significant from the point of view of exploitation and which, by the same token, make the fish vulnerable to indiscriminate fishing at the juvenile and spawner stages.

The first is the catfish migration to near-shore areas for spawning and for the feeding of juveniles, which makes the fish concentrate for limited periods within easy reach of the small vessels. As the breeding season approaches, many tachysurids move into shallower areas of muddy bottom for the juveniles and the young fish to feed on the rich benthic infauna and epifauna. The small-mesh nets used for the catfish fishery by the artisanal fishermen have always caught small fish as well as juveniles. But the harm done was limited, as the traditional fishery was less mobile and its gears limited in their area of operation. But when more efficient motorised craft using nets of small-sized mesh came on the scene the harm done to the population was more. Such extreme pressure in a limited area is by itself bad enough, but it is compounded by the low facundity of the fish which makes it a group that has to be protected in the spawning phase.

Besides such shore-ward migrations, large shoals, particularly of *T. tenuispinis* and *T. dussumeri*, move along the coastal waters in a southerly or northerly direction depending on the prevailing monsoon drift (Rao *et al.* 1977) and these shoals are easily accessible to bottom and midwater trawling.

Another behavioural pattern that lends itself to easy exploitation is the parental care in catfish. The males collect the fertilised eggs in the mouths (which are specially transformed as temporary brood pouches) and retain them until the young ones hatch out and the yolk gets absorbed. In the context of the artisanal fishery employing hooks and line, this would normally be a case of relative protection from exploitation, since the spawners and gestating males competely refrain from feeding and so do not 'bite'. Such a built-in conservation measure fails for the other gears. Particularly this is the time when the males segregate and such concentration of males prove good targets for gears such as purse-seines.

The purse-seine, as already mentioned, has proved to be an extremely efficient gear in boosting the landings of catfishes. But the effect of such large-scale removal of brooders and the destruction of eggs makes itself felt in subsequent years, though an immediate impact may not be discernible in such long-lived fish. The destruction of about 37 tonnes of incubating eggs of *T. tenuispinis* in septem-ber-October 1980 and similar quantities in subsequent two years from the Karnataka waters is an index of the magnitude of such fishing activities. A special monitoring study during this period covering Mangalore, Malpe and Gangoli (Silas *et al*, 1980) showed the capture of nearly 530 tonnes of fish and over 37 tonnes of eggs. The quantity of eggs that must have fallen through during the fishing operations and the transfer of catches to the deck of the fishing/carrier boats would be in addition to this. From sample weights the number of eggs landed during the period has been estimated as 23 million. As the percent-

age of ova with no sign of development was extremely low, the significance of such fishing on future recruitment has to be carefully considered. No doubt, capture of a portion of the shoals of incubating males has been there always by the boat-seines of the artisanal fishermen. But the proportion is different, since the extent of the reach, the continuity of operations and the quantum of the catch of the country crafts are limited enough as to leave no perceptible ill-effects later on. But mechanised craft that can cover wider areas and gears that can encircle whole shoals of incubating males are a different matter, particularly when the operations can be kept up continuously.

Increasing mechanization of the craft and the use of wide-reaching efficient gear are inevitable in the developmental programme for the fisheries, but fishing in such sensitive areas and periods has to be controlled so that the stocks are not damaged by consideration of short-term gains.

Another interesting aspect revealed by exploratory fishing off the west coast is the abundance of catfish in the western shelf area when it is covered with oxygen-deficient water during the south-west monsoon and when the grounds are devoid of most other groups (Rao *et al*, 1977). It has also been suggested that the food preferences of catfishes could be used for better exploitation with hooks and line which continues to be one of the major gears in many places. The hooks are at present baited with sardine, anchovy and such other small fish. Food studies on the east coast have revealed a preference to squilla and other crustaceans (Mojumder, 1969) while experiments off Veraval (Kartha *et al*, 1973) on selective action of differently baited hooks in bottom drift long lines has shown that catfish prefer cuttlefish to crustaceans and fish.

CHAPTER NINE

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