CENTRAL MARINE FISHERIES
RESEARCH INSTITUTE

Activities and Achievements

Bombay Research Centre

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The Central Marine Fisheries Research Institute established a sub-station at Bombay in 1947 which served as the Centre for collection of fish landing data. The research programmes at that time were limited to the investigations on the biology of Bombay duck, *Harpodon nehereus* and fish eggs and larvae of Bombay waters. The Sub-station was wound up in 1950 due to economy drive of the Government of India and the staff were transferred to Mandapam Camp, the Institute's then Head-quarters. Subsequently, with the commencement of off-shore trawling operations by the Government of India during 1952-53, the establishment was reopened as an Unit in 1953 at Sasoon Docks. In 1957, the Unit was upgraded as a Sub-station and shifted to Sir P. M. Road. With further expansion in later years and after renaming it as Bombay Research Centre of CMFRI in 1977, the establishment was shifted to its present venue during 1978.

MAJOR ACTIVITIES AND ACHIEVEMENTS

Research in late fifties and early sixties was on the commercial trawling operations by the vessels of the Government of India, Taiyo Fishing Company and New India Fisheries Company, which has yielded useful information on the commercially important fishes like, Dara *(Polydactylus indicus)*. Ghol *(Nibea diacanthus)* Koth *(Otolithoides brunneus)*, Wam *(Muraenesox talabonoides)*, Karkara *(Pomadasys hasta)*, Catfish *(Tachysurus* spp), Pomfrets *(Pampus argenteus* and *Formio niger)*, Dhoma (lesser sciaenids), Elasmobranchs (Sharks, rays and skates) and Prawns (Penaeid prawns).

Muraenesox talabonoides (Wam)

Rich grounds for some of the fishes have been identified in the continental shelf on the North-West of India. Areawise distribution and seasonal variations have been marked for different species. Typical size distribution prevailing in 'Dara' has indicated that the areas off Dwarka are nursery grounds for the juveniles called 'chelna' and that adults migrate towards the Gulf of Cambay and Gulf of Kutch for spawning. Results of the

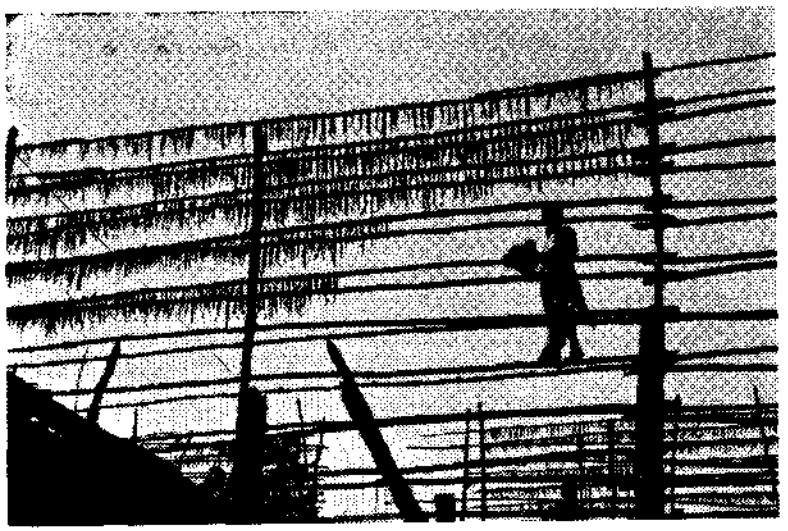
biological investigations on the food and feeding habits, maturation, spawning, and growth parameters of most of these commercially important species have been published.

The Bombay Research Centre has played a vital role in the one-year survey carried out by the Polish Vessel M. T. Murena chartered by the Government of India in 1977. The vessel has covered areas between 15° and 24°N in the depth range of 55-360 m in six cruises. An important finding of this survey is that beyond 90 metres, there are no substantial resources of either pelagic or demersal fishes.

With the mechanisation of traditional craft in the early sixties, the marine fish landings in Maharashtra has been steadily progressing. From late sixties onwards, there has been a shift in demands towards prawns which has led to the development of commercial shrimp trawling. The shrimp trawlers have landed more fish as bycatches particularly the demersal species and this has given a tremendous boost to the marine fish production in the State.

Pelagic Fishery Resources

The pelagic fishes form about 40% of the total landings in the state. The Bombay duck, *Harpodon nehereus* is the most important resource forming about 21.7% of the catches. During the past 10 years, the average annual catch has been 57,680 tonnes per year. This mid-pelagic fish is mainly captured from the inshore waters of Maharashtra and Gujarat by 'dol' nets. The racial studies have indicated the occurrence of 3 stocks of Bombay duck along the north west each one concentrating along the coasts of Bombay and Saurashtra and in the Gulf of Kutch. Silver pomfret, *Pampus argenteus* and black pomfret, *Formio niger* together contribute



Dried Bombay duck being removed from bamboo scafoldings at Versova.

to 17,000 tonnes. The other important pelagic resources are the anchovy, *Coilia dussumieri* (12,375 t), Sharks (7,958 t), Seer fish (4,570 t) and *Chirocentrus* spp. (4,162 t). Detailed studies on their resource characteristics, viz, food and feeding habits, age and growth, maturation and spawning, sex-ratio and size composition are being carried out at the Research Centre with the aim of assessment of stock of the commercially important species.

Silver pomfret.

Chirocentrus dorab.

Demersal Fishery Resources

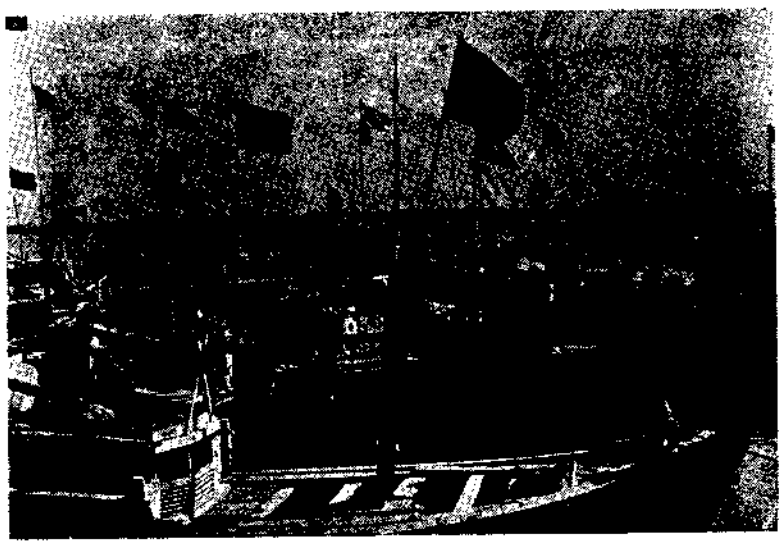
Sciaenids locally known as 'dhoma' are the most important resources contributing to about 17,640 tonnes annually. *Johnius macrorhynus, Johnieops vogleri* and *Otolithes cuvieri* together account for more than 70% to the total catches. The catfishes form about 11,200 tonnes and the important species are *Osteogeneous militaris, Tachysurus thalassinus, T. dussumieri* and *T. tenuispinis, Nemipterids* (400 t) are comprised of *Nemipterus japonicus* and *N. mesoprion.* The other important re-

sources are, rays (2,440 t), Skates (1,680 t) and Lizard fish (1,770 t). Stock assessment studies on sciaenids and *N. japonicus* have indicated that the stocks are optimally exploited at present around Bombay, except in the case of *J. macrorhynus* which is being overexploited.

Crustacean Fishery Resources

Prawns are an important fishery resource contributing about 19.1% of the total fish landings in Maharashtra. The prawn fishery of Maharashtra. consists of penaeid prawns (43%) which are intensively exploited by the trawlers and the non-penaeid prawns (57%) mainly fished by the dol net sector. The dominant penaeid prawns are *Penaeus merguiensis, Parapenaeopsis stylifera, P. hardwickii, P. sculptilis, Metapenaeus affinis, M. monoceros* and *Solenocera crassicornis*. After 1982, the trawlers which started fishing in deeper waters (40-70 m) have discovered new resources of penaeid prawns such as *Metapenaeopsis stridulans, Parapenaeus longipes, Trachypenaeus curvirostris, Penaeus japonicus* and *Solenocera choprai*. The non-penaeid prawn fishery is mainly supported by *Acetes indicus,*

Non-penaeid prawns at Versova.



'Dol' netters at Satpati.

Nematopalaemon tenuipes and *Exhippolysmata ensirostris*. Resources such as *A. sibogae* in creeks and *A. johni* in open sea have also been reported recently.

Researches have revealed that the standing stock of penaeid prawns in the 25000 Km^2 area of Bombay between Lat. 17° and 21°N and Long. 71° and 73°E is estimated as 13,000 tonnes which could give an exploitable yield of 7,800 tonnes annually. This is equal to the present level of exploitation and hence further expansion of shrimp trawler fleet in waters off Bombay is not advisable.

About 500 tonnes of crabs are landed in Maharashtra annually. The commercially important species are *Scylla serrata*, *Charybdis cruciata*, *C. hoplites* and *C. callianassa*.

The annual landings of lobsters in Maharashtra is about 500 tonnes forming about 27% of the country's lobster catches. The species contributing to the fishery are the rock lobster, *Panulirus polyphagus* and sand lobster, *Thenus orientalis*. Stock assessment studies have indicated that the present yield has exceeded MSY and hence any further increase in effort will be detrimental to the stock.

Molluscan Resources

The most important molluscan resource exploited along this coast is the squid, *Loligo duvaucelii* and the cuttle fishes, *Sepia aculeata* and *S. pharaonis*. The average landing is about 3,885 tonnes, caught mainly by trawlers. The squids are landed during the pre-monsoon months of January-May whereas the cuttle fishes are caught during post-monsoon months of September-December. Stock assessment of *L. duvaucelii* has indicated that it is under-exploited.

Investigations on rock-oyster resources particularly around Bombay have indicated that it is about 335 tonnes in the case of *Saccostrea cucullata* along the Bombay coast.

Fishery Environmental Studies

Investigations are being carried out on oceanographical and ecological characteristics off Versova, to gain an insight into the influence of environmental factors on the seasonal and annual fluctuations of fish production in the area.

STAFF STRENGTH AND INFRASTRUCTURAL FACILITIES

The Staff strength is 8 Scientists, 12 Technical personnels, 4 administrative and 9 supporting staff. The Centre has recently acquired one computer.

FUTURE PROGRAMMES

Besides collection of data for monitoring the major marine resources, the emphasis will be on the stock assessment. The thrust will be to study the stock of fish community as a whole rather than of individual species. This will enable to suggest suitable management policies in the multi-species context particularly the demersal resources of fish and prawns. This Research Centre has recently acquired a computer with the help of which the data on sciaenids, prawns, lobsters, squids and cuttle fishes have been analysed and their stock estimated within a short period of time. It is envisaged in the coming years to estimate the stocks of Bombay duck, pomfret and prawn species and also to analyse the past data collected over the years on various fish and prawns species and their resources. Attempts will be made to assess the under-exploited and unexploited resources from the Exclusive Economic Zone. The collection of environmental data from the fishng grounds will be given priority to study their influence on seasonal and annual fluctuations of the landings.