

Fish and shrimp harvests and socio-economic survey in two mangrove areas of Sindh coast, Pakistan

By Abrarul Hasan, 1993

Abstract

In Pakistan, from 1983 to 1986, there was a ban on fishing for shrimps during June and July. Due to political reasons, the ban was lifted in 1987. This situation exacerbated growth overfishing, particularly in the areas of the Indus Delta. Therefore, it was of great interest to estimate fish and shrimp landings at Ibrahim Hyderi and Rehri Goth, and compare the trends of shrimp sale categories with the previous studies at Karachi Fish Harbour. The study also covers the socio-economic aspects of the fishermen communities living at Ibrahim Hyderi and Rehri Goth. This sort of study will be helpful in formulating realistic management advises based on up to date assessments.

For the estimation of shrimp and fish landings a stratified random survey technique was applied. This technique reduces the sampling variance by controlling variability in the parameter being estimated. A heterogeneous population is divided into homogenous sub-populations (strata) which are then subjected to simple random sampling. To reduce the sample variance, boats were divided into four categories 1) launches and gillnetters, 2) big boats 3) small boats without ice and 4) small boats with ice. The stratification into four categories has been used to improve the precision of estimates.

The estimated total landings of shrimps at Ibrahim Hyderi from August to December, 1992 were 2945 metric tons. There are three main categories of shrimps, namely Jaira, Kalri and Kiddi. At Ibrahim landing place, the total landings of Jaira by combined categories from August to December were estimated to 475.52 metric tons. The monthly landings of Jaira varied from a maximum of 202.84 metric tons in August to a minimum in November with 18.69 metric tons. The sale category Kalri was estimated to 310.03 metric tons for the same period, with the monthly range from 135.3 metric tons in August to 3.85 metric tons in December. Kiddi was the dominant sale category, with an estimated yield of 2159.29 metric tons. For this category, maximum landing was recorded in October, with an estimated yield of 915.20 metric tons, while landings were low in November and December.

The total landings of edible fish at Ibrahim Hyderi from August to December by combined sale categories were estimated to 1373.84 metric tons. The monthly break-up of fish ranged from a maximum of 451.96 metric tons in August to a minimum in November with 171.49 metric tons. The major groups of fish at Ibrahim Hyderi were seabreams, croakers, eelfish, sharks, catfish, flatfish, ladyfish, mullets, anchovies, snappers, grunts, white pomfrets and mackerels.

Small pelagic fish which are mainly treated as trash fish were also estimated. The maximum landing was recorded in November, with estimated landing of 24612.6 metric tons. Mixed trash fish was also estimated. The maximum landing was recorded in September with an estimated yield of 132.25 metric tons. The minimum was recorded in November.

The estimated total landing of Jaira at Rehri Goth from August to December, 1992 was 111 metric, tons. The monthly landings of Jaira at Rehri Goth varied from a maximum of 52.08 metric tons in August to a minimum in December with 3.30 metric tons. The maximum landing of fish at Rehri Goth was recorded in October.

The socio-economic survey of Ibrahim Hyderi and Rehri Goth revealed that the people of Ibrahim Hyderi and Rehri Goth depend on mangrove ecosystem for their subsistence. At Ibrahim Hyderi the total fish consumption as subsistence was estimated to 40metric tons.

The analysis of effort and landings of shrimps clearly indicates that the landings of Jaira and Kalri have decreased to a considerable extent in comparison with previous studies. Most probably the stocks of these sale categories are being overexploited in a continuous manner without any restrictions.

If left unchecked, overfishing to this extent may lead to a stock collapse and ruin of the fishery, because the present stocks, and thus the level of reproduction become affected. Therefore, commercial trawling in the Indus Delta creeks should permanently be forbidden. This will permit the shrimp and fish to utilize their capacity for rapid growth while inhabiting these nursery grounds. Two months of ban on commercial trawling from June to July should be contemplated to protect the recruitment occurring at that time.

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Department of International Environment and Development Studies (Noragric), Norwegian University of Life Sciences