

Activity Periods of Certain Fishes in Hirakud Reservoir

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The activity of some common species of fish was studied on the basis of the number of fishes caught in gill nets between specific intervals. The results indicated that all the three species investigated, viz., *Gudusia chapra*, *Osteobrama cotio cotio* and *Eutropiichthys vacha*, were active during the first quarter of the day (00:00-06:00 h) and hence is the best period for harvesting these species by gill net.

Selective fishing practised in reservoirs for the exploitation of commercially important species of fish resulted in proliferation of minor fishery resources which ultimately formed a major constituent of fish stock. Bennet (1962), David *et al.* (1969), Shetty (1969), Natarajan (1972 & 1976) discussed the adverse effects of such situation on the reservoir fishery and suggested possible control measures. Khan *et al.* (1980) recommended small meshed gill net for exploitation of *Gudusia chapra* (Hamilton-Buchanan), *Osteobrama cotio cotio* (Hamilton-Buchanan) and *Eutropiichthys vacha* (Hamilton-Buchanan). Lawler (1969) studied the activity of fishes by setting gill nets to record any change in catch during day/night. Hamley (1980) reported that activity of fish and the consequent vulnerability for capture depended on the time of the day as well as the species, and hence the time of setting and lifting of nets for catching individual species are to be optimized. But, there is not much information on the activity period of tropical fishes. Therefore the authors have attempted to study the above aspects in respect of *G. chapra*, *O. cotio cotio* and *E. vacha* for effective exploitation and the results are presented in this communication.

Materials and Methods

Simple gill nets of 25 mm bar mesh evolved for exploiting minor resources (Khan *et al.* 1980) were operated at different

depths and zones in Hirakud reservoir (Orissa, India), during the period from March 1979 to February 1982. A total of 136 valid observations were taken, equally distributed among the first (00:00-06:00h), second (06:00-12:00h), third (12:00-18:00h) and fourth (18:00-24:00h) quarters of the day and catches were recorded species-wise for analysis.

Results and Discussion

The total number of individual species caught every 6 h period and their percentage of occurrence in each quarter are presented in Table 1 and Fig.1 respectively. More number of fishes, irrespective of

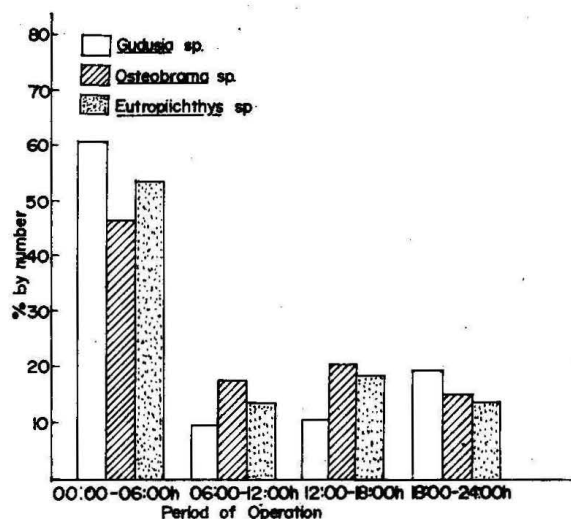


Fig. 1. Histogram showing percentage distribution of fishes caught during different quarters.

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Table 1. Number of fishes caught during different quarters.

Species	Catch in numbers				Total
	Quarter I 00:00-06:00 h	Quarter II 06:00-12:00 h	Quarter III 12:00-18:00 h	Quarter IV 18:00-24:00 h	
<i>Gudusia chapra</i>	12261	1961	2188	3890	20300
<i>Osteobrama cotio cotio</i>	231	87	102	77	497
<i>Eutropiichthys vacha</i>	579	153	199	151	1082
Total	13071	2201	2489	4118	21879

species, were caught during the first quarter of the day, followed by the last quarter.

The share of the first quarter was 59.74% of the total catch of 21879 fishes. Catch during the remaining period was worked out as 10.09, 11.35 and 18.82% of the total landings, respectively for second (06:00-12:00h), third (12:00-18:00h) fourth (18:00-24:00h) quarters. Among the three species studied *G. chapra* was predominant in all the periods and its individual contribution during the experimental period formed 92.7% of the total catch of all the species combined. It was also observed that 60.4% of the combined catches of *G. chapra* in all the 4 quarters, was caught in the first quarter. The maximum catch during the first quarter indicated that the fishes were more active during this period, presumably due to intense search for food. This mobility makes them more vulnerable to capture by gill nets. Lawler (1969) observed that the more active the fish is, the greater is the chance for their capture. The catch declined in the remaining quarters of the day. But an increase in catch was noticed during last quarter in the case of *G. chapra* in contrast to preceeding quarters II and III, whereas it was more or less uniform with regard to other two species. This may be due to difference in net avoidance reactions under visual conditions and changes in light-dependant behaviour of different species. Blaxter (1975) observed that fishes move upwards in water column with declining light intensity. The abundance of *G. chapra* during first and last quarters showed that this species was more active at twilight and night hours. Similar observation was

made by Ryder (1977) on Wall eye. According to him the rate of change of illumination is a major factor that stimulate initiation of feeding. Since the maximum number of fishes were caught during the first quarter, 00:00-06:00 h, this period is best suited for harvesting all the three species.

The authors are grateful to Director, Central Institute of Fisheries Technology, Cochin, for according permission to publish this communication. They are also thankful to the Head of Division (Fishing Technology) for offering valuable suggestions.

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