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A Preliminary Account of Experimental Fishing in "Derjong" Reservoir

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This communication deals with the comprehensive studies made on the state of fishery and fishing techniques employed in Derjong reservoir. Results of experiments conducted with framed gill nets are presented.

In Orissa state there are two major, five medium and 1033 minior reservoirs with a water spread of 1,65,698 ha. (Anon, 1984). The development of the fishery of these water resources has not kept pace with the growing need of the country. However, development schemes for these reservoirs have been drawn by Orissa Government. In order to provide the resources and to suggest suitable fishing gear, experimental fishing was conducted in Derjong reservoir and the resultant findings are discussed in this communication.

Morphometry of the reservoir

Derjong reservoir is located in Dhenkanal district of Orissa. This minor reservoir formed as a result of construction of dam across two rainy rivulets, Mathalia and Lingura has a water spread area of 866.37 ha at F.R.L. It is shallow in nature and the depth ranges from 0-15 m. The bottom is muddy and devoid of under water obstructions. Due to its shallow nature and gradual slope, the water spread area is reduced significantly during the summer season and the maximum depth is reduced to 3-5 m. The reservoir got completely dried up during 1980 draught.

Fishery

This reservoir has a natural stock of indigenous species, which include mainly of *Cirrhina reba, Barbus serrana, Notopterus notopterus, Ompok bimaculatus, Labeo bata, Chela punctatus, Mastacembalus armatus* and *Puntius* sp. The reservoir was stocked a few years back with fingerlings of *C.catla, L.rohita* and *C.mrigala* to augment its production. Amongst those stocked, only *L.rohita* alone had established itself in the reservoir. This also vanished once again due to the draught during 1980. However, once again efforts were made by the State Fisheries Department to revive the fishery by resorting to extensive stocking. At present the four species (viz.) *L.bata, C.reba, B.serrana* and *N.notopterus* contribute a major share of the total fish landings.

The percentage composition of the local fish landings are furnished in Tables 1 & 2.

Table 1. *Percentage composition of fish in local landings in Derjong reservoir*

Name of fish	Percentage by weight
Cirrhina reba	32.30
Notopterus notopterus	21.52
B.serrana	15.21
Labeo rohita	5.29
Cirrhina mrigala	3.40
Miscellaneous	22.28

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Table 2. *Length and weight of predominant fishes*

Name of the fish	Length in cm	Weight in kg
Labeo bata	20-35	0.11-0.30
Cirrhina reba	18-25	0.06-0.10
Barbus serrana	15-28	0.03-0.30
Notopterus sp.	18-26	0.03-0.08

The predominant size group of the four fishes (viz.) *Labeo bata*, *Cirrhina reba*, *B.serrana* and *.Notopterus* sp. is furnished in Table 2.

Indigenous fishing gear and craft

As a prelude for undertaking the experimental fishing with the improved gear, observations were made on the local gear and craft. The fishing gear operated in the reservoir include gill nets and drag nets. The specifications of local gear are furnished in Table 3.

Table 3. *Specification of local nylon gill nets*

Hung length	... 25.0 m
Hung depth	... 2.5 - 3.0 m
Twine size	... Nylon 210x1x2 and 210x1x3
Mesh size	... 15 - 100 mm
Total length of webbing used in operation by a single boat	... 100 - 150 m or 4 - 6 units
Floats	... Thermocole pieces 4.5 x 2 cm to 3 x 10 cm size
Sinkers	... Small stones attached at regular intervals to the webbing

Nylon Drag nets

Head rope length	... 125.0 m
Foot rope	... Absent
Mesh size	... Main webbing 20 mm of 210x1x2
Selvedge mesh	... 50 mm of 210x3x3
Floats	... Thermocole pieces
Sinkers	... Iron nuts at 15 cm interval

The craft used are mostly dug out canoes made of Simili wood (Local name in Oriya) and each canoe can carry two persons along with fishing gear and accessories.

The boats are made of Sal wood having three planks at the bottom and one plank on either side of the boat.

Specifications of the craft (Boat)

Material used	... Sal wood
O.A.L.	... 7.97 m
Structure	... 3 planks at the bottom & 1 plank on each side of 2 cm thickness
Height at centre	... 0.28 m
Stern	... 0.31 m
Bow	... 0.29 m
Width of central plank	... 0.16 m
Width of bottom & side planks	... 0.25 m
Length of side plank	... 4.75 m
Carrying capacity of the boat	... 4 - 3 persons alongwith fishing equipment

Experimental fishing with improved gear

The design details of this gear (Table 4) remained same as discussed by Khan *et al.*(1980).

Table 4. *Specifications of improved Nylon gill nets*

	Simple gill net		Frame net		
Mesh size	25 mm	45 mm	75 mm	90 mm	105 mm
Twine	210x1x2	210x3x3	210x2x3	210x2x3	210x2x3
Area of unit	105 sq.m	—	183.75 sq.m		
Head & Foot rope	3 mm dia Kapron		—		
Frame size	—		1.75 m square		
Hanging %	50%		50% (both horizontal & vertical)		

These nets were operated in two spells during December, 1984 and March to April, 1985. The percentage catch composition of the improved nets are shown in Table 5.

Table 5. *Percentage catch of fishes in experimental nets (number)*

C.Catla	1.06
C.mrigala	6.38
Labeo rohita	6.38
Labeo bata	3.19
Cirrhina reba	28.73
Barbus serrana	14.89
O.bimaculatus	6.38
Notopterus notopterus	30.86
Channa punctatus	1.07

Results and Discussion

The landing data recorded from the experimental gear indicate that the percentage representation by number of major carps is only 13.82 of the total landings. Similar trend was observed from the analysis of data recorded from the local fish landing centres which clearly indicate that the reservoir is at present teeming with weed fishes.

The simple gill nets having 20 mm to 30 mm bar were found to be effective gear for harvesting the weed fishes like*Chela*and *Puntius* sp.

Since the fishery of major carps is in the initial stage the operations of small meshed gill nets immediately after the breeding season may not be advisable. The fishing effort in relation to the extent of fishing area of the reservoir might have been excessive, thus adversely affecting the existing fishery.

References

Anon (1984) *Orissa Fisheries at a glance*. Department of Fisheries, Orissa