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Marine Fishery Resources of Orissa-An overview

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Introduction:

Orissa has a coastline of 480 Km which constitutes about 6% of the coast of India. The state has 6 maritime districts namely Balasore (80km), Bhadrak (50km), Kendrapara (68km) Jagatsinghpur (67km) and Ganjam (60km). According to an estimate by CMFRI (2007), Orissa has a total of 57 marine fish landing centres, 641 fishing villages and about 1.21 lakh active fisherfolk who operate mechanised (3577 numbers), motorized (4719 numbers) and non-

motorized (15444 numbers) fishing crafts. Orissa has a continental shelf area of 25000 Km² of which 65% is in the 0-50m depth range (DOF, 1998:61).

Exploratory surveys carried out along the north-east coast of India indicated that Orissa (Lat. 17.75°N to 22.5°N; Long. 81.5° to 87.6°E) is the most productive State in terms of bottom trawl fishery resources followed by Andhra Pradesh and West Bengal. Even though the marine fishery potential of Orissa is studied earlier by several exploratory

surveys, similar attempts on the diversity of marine fishes exploited commercially is seldom made. This paper focuses on the catch trend of marine fisheries of Orissa with special emphasis on the gear-wise and resource-wise landings during 2005 and 2006 based on the data collected by Fishery Resources Assessment Division of CMFRI, Kochi and analysed through an Inhouse Research Project entitled "Appraisal of Marine Fisheries of Orissa".

Exploitation (Fig. 1)

The marine fish landings in Orissa during 1975 to 2006 indicated an increasing trend from 16804 t during 1975 to 101500 t during 2005, with peaks during 1990 (64736 t), 1993 (62281 t), 2000 (84622 t) and 2005 (101500t). The landings of Orissa formed 1.18% of the all India marine landings during 1975 to 4.42% during 2005, the average being 2.6%.

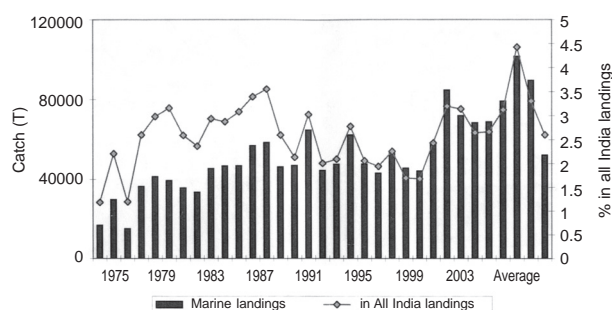


Fig 2. Marine fish landings off Orissa & its % in All India marine landings during 1975 to 2006

Fishery during 2005 & 2006: With a view to know the recent trend in landings, the catch and effort data during 2005 and 2006 were studied in detail.

Effort expended during 2005 & 2006: A total of 19 types of gears were operated off Orissa which can be categorized into mechanized, motorized and non-motorized gears. Particulars regarding unit effort and Actual Fishing Hours (AFH) expended off Orissa during 2005 and 2006 are presented in Table 1.

During 2005, a total of 0.69 lakhs mechanized units (11.62%) were operated followed by 2.80 lakh units of motorized gears (47.43%) and 2.42 lakh units of non motorized units (40.95%). The total units expended amounted to 5.91 lakhs units.

During 2006, mechanized, motorized and non-motorized gears operated were 0.56 lakhs (10.2%), 2.95 lakhs (54%) and 1.98 lakhs units (36%) respectively; the total effort input being 5.49 lakh units.

Effort in AFH: During 2005, the mechanized gears expended an effort of 18.03 lakhs h (52%) followed by 8.96 lakhs h by motorized gears (26%) and 8.03 lakhs h by non-motorised gears (23%).

During 2006, the mechanized gears had put in an effort of 13.98 lakhs h (45%), while motorized gears expended 10.34 lakhs h (33.3%). The effort expended by non-motorised gears was 6.71 lakhs h (22%). The total fishing hours expended during 2005 & 2006 amounted to 35 lakhs and 31 lakhs respectively.

It may be noticed that the total effort both in units and AFH expended is more during 2005 than 2006. However, among the different groups of gears, motorized gears were found to have put in more effort in units while mechanized gears had expended more fishing hours during both the years which may be attributed to the operation of multiday trawlers by mechanized units.

Fishery during 2005 & 2006: Particulars regarding the landings of various resources off Orissa by different crafts and gears for the years 2005 and 2006 are given in Table 2.

During 2005, pelagic fishes contributed to a total of 43791 t (43%), while demersal fishes formed 38750 t (38%). Crustacean resources brought a landing of 17293t (17%) while molluscs 1194 t (1.2%)

Table 1: Effort (units & AFH in Lakhs) expended off Orissa during 2005 & 2006

Crafts/Years	Effort (Units)				Effort (*AFH)			
	2005		2006		2005		2006	
	Total	%	Total	%	Total	%	Total	%
Mechanised	0.69	11.62	0.56	10.18	18.03	51.48	13.98	45.05
Motorised	2.80	47.43	2.95	53.68	8.96	25.58	10.34	33.33
Non-motorised	2.42	40.95	1.98	36.14	8.03	22.93	6.71	21.61
Total	5.91		5.49		35.03		31.02	

*Actual Fishing Hours

Table 2: Gearwise landings (t) of major resources off Orissa during 2005 & 2006

Resources/Years	2005					2006				
	Mechanised	Motorised	Non-motorised	Total Catch (t)	%	Mechanised	Motorised	Non-Motorised	Total Catch (t)	%
Pelagic fishes	23498	14566	5727	43791	43	24844	10948	5289	41081	45.86
Demersal fishes	29795	7633	1322	38750	38	24496	7292	2229	34017	37.97
Crustaceans	16257	284	752	17293	17	11939	903	254	13096	14.62
Molluscs	1173	11	10	1194	1.2	507	3	2	512	0.57
Miscellaneous	253	114	105	472	0.5	579	149	152	880	0.98
Total	70976	22608	7916	101500		62365	19295	7926	89586	
%	69.93	22.27	7.80			68.98	23.91	6.13		

and miscellaneous items 472 t (0.47%) contributing to the rest of the catches. The total catch amounted to 101500 t.

During 2006, the total catch of 89586 t was contributed by the pelagic fishes (41081t.; 45.86%), demersal fishes (34017t; 38%), crustaceans (13096 t; 14.62%), molluscs (512 t;0.57%) and miscellaneous items (880 t; 1%).

During 2005, pelagic fishes were contributed maximum by mechanized gears (23498 t) followed by motorized gears (14566 t) and non-motorized gears (5727 t).

Demersal fishes landed were also maximum in mechanized gears (29795 t) followed by motorized gears (7633 t) and non-motorised gears (1322 t).

Crustacean resources were landed the maximum in mechanized gears (16257 t) followed by non-motorized gears (752 t) and motorized gears (284 t).

Molluscan resources also were landed more by mechanized gears (1173t) with lesser representation in motorized gears and non-motorised gears.

During 2006 also, all the resources were landed more by mechanized gears followed by motorized and non motorized gears (Table 2).

Resource-wise landings:

Average percentage composition of pelagic, demersal and crustacean resources landed during 2005 & 2006 are depicted in Table 3.

Among pelagic fishes, other clupeids (13.47%), carangids (20.58%) and ribbon fishes (19.54%), were the major resources landed followed by *Stolephorus* spp., (6.6%), *Setipinna* spp. (5.71%), Indian mackerel

Table 3: Percentage composition of major resources off Orissa during 2005 & 2006 (Average)

Resources	Average %	Resources	Average %
Pelagics		Demersals	
Other Sardines	9.23	Elasmobranchs	3.92
Hilsa Shad	2.41	Catfishes	16.05
<i>Coilia</i> spp.	3.39	Eels	3.44
<i>Setipinna</i> spp.	5.71	Lizard fish	2.34
<i>Stolephorus</i> spp.	6.61	Perches	3.14
Other Clupeids	13.47	Silverbellies	5.36
Bombay duck	3.12	Goatfishes	4.66
Half beaks & Full beaks	1.77	Croakers	35.06
Ribbon fishes	19.54	Pomfrets	17.10
Carangids	20.58	Flatfishes	4.22
Indian Mackerel	6.64	Others	4.69
Seer fishes	5.19		
Others	2.37		
Crustaceans		Molluscs	
Penaeid prawns	78.20	Cephalopods	100
Non penaeid prawns	11.64		
Lobsters	0.31		
Crabs	9.25		
Stomatopods	0.61		

(6.64%), seer fishes (5.2%) and other sardines (9.23%).

Among demersals, croakers (35%), pomfrets (17%), catfishes (16%), silver bellies (5.36%), goat fishes (4.66%) and flat fishes (4.22%) were the major groups landed.

Among crustaceans, penaeid prawns (78.2%), non penaeid prawns (11.64%) and crabs (9.25%) were the major groups landed. Molluscs were represented by cephalopods alone.

Major species landed: Among pelagic fishes, lesser

sardines were represented more by *Sardinella gibbosa*, *S. fimbriata* and *S. brachysoma*. Major carangids represented in the landings were *Megalaspis cordyla*, *Caranx ignobilis*, *C. malabaricus*, *Decapterus russelli*, *D. macrosoma* and *Selar crumenophthalmus*. Major ribbon fish species landed were *Trichiurus lepturus*, *Lepturacanthus savala*, *Eupleurogrammus intermedius* and *E. muticus*.

Among demersal fishes, catfishes were represented by species such as *Tachysurus thalassinus*, *T. tenuispinis* and *T. jella*, while the dominant croakers landed were *Otolithoides biauritus*, *Protonibea diacanthus*, *Johnius carutta*, *Otolithus argenteus* and *O. ruber*.

Among crustaceans, penaeid prawns were represented by *Parapenaeopsis stylifera*, *Metapenaeus dobsoni*, *M. monoceros*, *M. affinis*, *Solenocera crassicornis*, *S. choprai*, *S. indica*, *S. hextii* and *Fenneropenaeus indicus*. Molluscan resources were chiefly represented by cephalopods.

Seasonal abundance: Average catch rate (kg/h) of dominant groups of various resources landed during 2005 and 2006 in mechanized trawlers and gill netters is depicted in Fig. 2a-f.

Ribbon fishes (Fig. 2a): Ribbon fishes were landed more during January and March and during November and December in mechanized trawlers, while in motorized gears, peak landings was mainly during November/December and January.

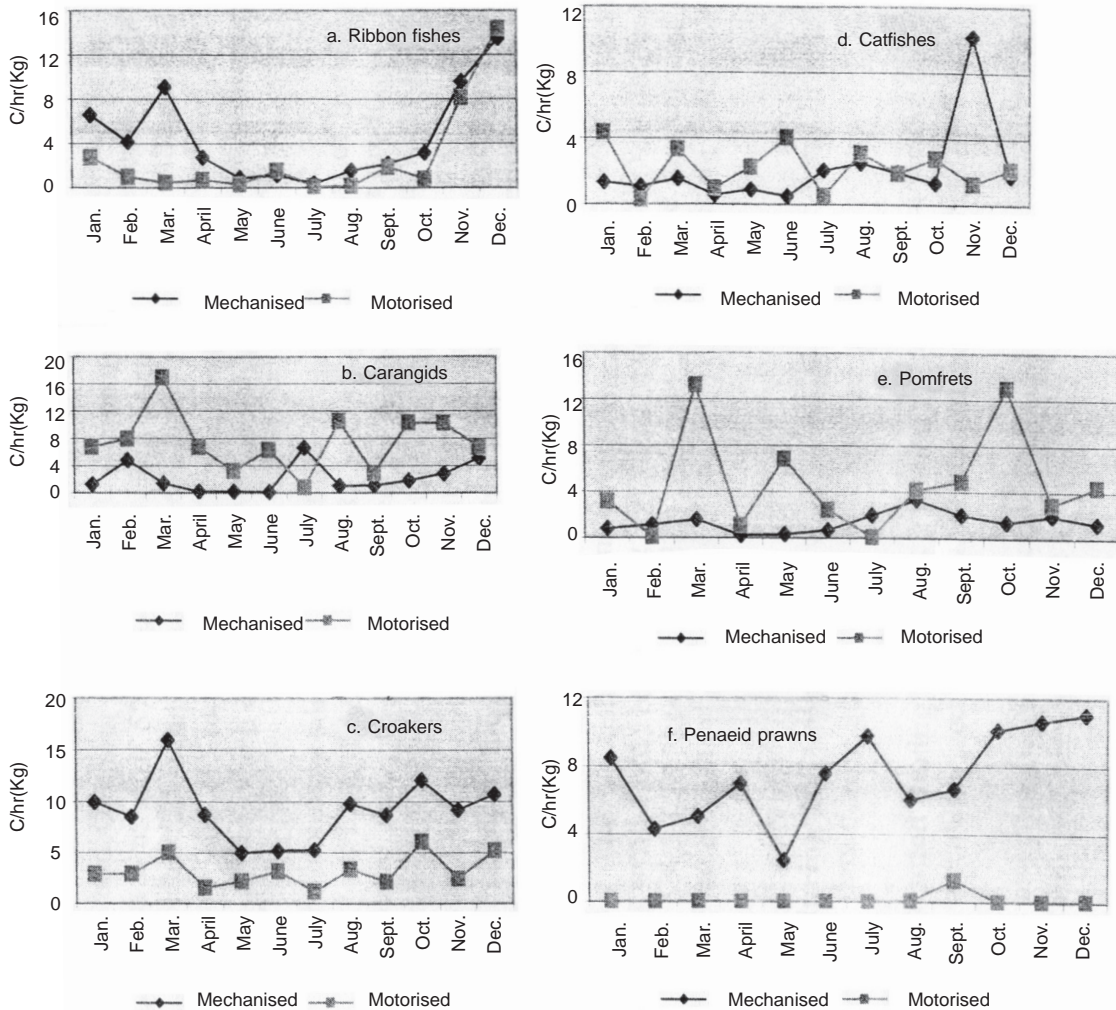


Fig 2 a-f. Seasonal abundance of major marine fishery resources off Orissa by mechanised and motorised gears during 2005 and 2006 (Average)

Carangids (Fig. 2b): Catch rates were more in motorised gears than in mechanized gears and the peak landings being brought during March, August and October-December. In mechanized gears, peak catch rates were realized during February, July and November / December.

Croakers (Fig. 2c): Mechanised gears brought good catch rates and the peak season being March and from August to December. In motorised gears, peak catch rates were realized during January, March, June and August.

Catfishes (Fig. 2d): This group also was landed more by motorized gears with peaks during January, March, June, August, October and December. However, mechanized trawlers brought higher catch rates during November.

Pomfrets (Fig. 2e): Promfrets also were landed more in motorized gears with peaks during March, May and October. In mechanized trawlers, catch rates were generally low with peak during August.

Penaeid prawns (Fig. 2f): Penaeid pawns were landed more in mechanized trawlers with peak during January, April, June and October-December. In motorized gill netters, catch rates were negligible.

In general, it may be seen that peak landings were brought during the 4th quarter (October-December) followed by 1st quarter (January-March) which may be attributed to the increased zooplankton production during these months which in turn are influenced by the prominent north-east monsoon and the resultant fresh water influx bringing high nutrient load into the coastal waters.