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Studies on Fish Landing Census of Bay of Bengal at Puri Sea-Shore in Odisha

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Abstract- The total fish production during the year 2008 - 2009 was 9011.51 metric tonnes and during the year 2009 - 2010 was 6619.35 metric tonnes. On the monthwise basis, maximum landings were recorded in January (2221.86MT) for 2008-2009 and in October (1034.57MT) for 2009 – 2010 .Groupwise the cat fishes constituted the highest amount (2904.27 MT) and mullets the lowest amount (706.90MT) during 2008-2009. The miscellaneous species formed the highest catch (1868.74 MT) and the Clupeids constituted the lowest catch (79.40 MT) during 2009-2010. Among all the landing centres Penthakota has the highest catch with 3422 MT (41.83%) during 2008-2009 and 2086.01 MT (41.40 %) during 2009-2010 while Khirsahi had lowest catch with 16 MT (0.19%) during 2008 - 2009 and Ramchandi with 15.55 MT (0.30%) during 2009-2010. The catch composition showed seasonal variation with maximum number of species in the landing during rainy season. The fish captured from the various quarters of Puri sea were transported by boats to a series of landing centers.

Index Terms- Fish landing, Metric tones, Bach landing craft, Fiber Reinforced , Plastic boat

I. INTRODUCTION

The fishes are considered as rich sources of food, since they constitute 6% of the total proteins and 16% of the animal protein consumed by people. Puri is one of the coastal district of Orissa, having a coastaline of 155Km. out of the total coastline of 480km. of the State. . The fishermen of the district are mostly traditional and the method of fishing is manual and passive. Traditional fishing with catamarans and the country boats is a common parlance in normally all the villages but the new technology is on the rise in the bigger landing centres where the advent of trawlers, Beach landing crafts (BLC) and Fiber Reinforced plastic boat(FRP's) are commonly present. The peak season for fishing is from October to February.

The present study deals with fish landing census at puri sea-beach.

II. MATERIALS AND METHODS

Marine water fishery in puri district can be classified on the basis of the distance of fishing operation from the coastline, i.e. coastal fishing and ocean fishing. Coastal fishing can be defined as the fishing operation taken up within 5Km. from the coastline. Coastal fishing is taken up mainly by the catamarans and the country boat. Also, now-a-days, motorized country boats i.e. Inboard machine engines (IBM'S) and outboard motor engines (OBM's) are commonly involved in coastal fishing. Coastal fishing is a daily phenomenon in Puri district with fishermen leaving the coastline early in the morning around 3AM and coming back with the catch around 3PM in the afternoon. Ocean fishing or, deep-sea fishing involves fishing beyond 5Km. of the coastline. It normally involves trawlers, BLC and FRP's, which are involved in fishing operation,. Normally, oceanic fishing is highly mechanized with the use of sophisticated equipments. The normal practice of this type of fishing is that once the craft goes out for fishing then the period of fishing varies from 3-8 days depending on the size of the craft. These craft has onboard freezing facility for the catch.

The fish landing data recorded from April 2008 to March 2010 in the twelve landing centers on seasonal basis through the fisheries department of Puri. The landing data from April to March were used for determining the annual landing & and that from July to June were used for estimating the season wise landings in a year. With special reference to seven major groups of fishes viz. Mullets, Clupeids, Perches, Threadfins, Catfishes, Beloniforms,& Miscellaneous fishes as well as centre wise total landing fishery resources were tabulated. A list of the commercially important species on the basis of their food value, market price and composition in the catch was assessed by surveying the fish markets at Puri Town, Brahmagiri, Ramchandi (Konark).

RESULTS AND DISCUSSION

The fish captured from the various quarters of Puri sea were observed to be transported by boats to a series of landing centres, mostly located on the northern margin of the sea. The 12 landing centres that receive bulk of the total catches are Nuagarh, Kaliakana, Sahana, Toilo, Chandrabhaga, Ramachandi, Penthakata, Sapakothi, Harchandi,Arakhakudha,Khirisahi & S. ramlanka(Table-3-5) of Fig. (1-3).

Thus the total production during the year 2008 - 2009 was 9011.51 metric tonnes and during the year 2009 - 2010 was 6619.35 metric tonnes. On the monthwise basis, maximum landings were recorded in January (2221.86MT) for 2008-2009 and in October (1034.57MT) for 2009 – 2010 (Table-1&2). Groupwise the cat fishes constituted the highest amount (2904.27 MT) and mullets the lowest amount (706.90MT) during 2008-2009. The miscellaneous species formed the highest catch (1868.74 MT) & the Clupeids constituted the lowest catch (79.40 MT) during 2009-2010. Among all the landing centres Penthakota has the highest catch with 3422 MT (41.83%) during 2008-2009 and 2086.01 MT (41.40 %) during 2009-2010 while Khirsahi had lowest catch with 16 MT (0.19%) during 2008 - 2009 and Ramchandi with 15.55 MT (0.30%) during 2009-2010.

The catch composition showed seasonal variation with maximum number of species in the landing during rainy season.

The highest landing of fish in the month of January during 2008 - 2009 and in October during 2009-2010 may be attributed to the capture in large number of ripe mullets and other groups, which undergo seaward breeding migrations. The rainy season being the peak season of landing substantiates this. Robertson and Blaber (1992), while reporting about the existence of definite seasonal patterns in the abundance of fish in alligator creek, observed that greater densities of fish occur in the wet season than the dry season. However, Krishnayya (1980) observed that the catches of prawns and clupeids were at the maximum during December and January, while mullets and perches were caught mostly during July and August in Pulicat Lake of India. The tonnages are based on the total catches and in most cases catches do not reflect sustainable yields (Blaber, 1997). The seasonal variations in the landing composition and the maximum catch during rainy season is supported by similar findings in Terminos Lagoon (Yanez-Arancibia *et al*., 1980), Italian lagoons (Ardizzone *et al*., 1988) and Alligator creek (Roberston and Duke, 1990). The earlier reports suggest that the annual fish landings from the sea varied from 1,098 to 2,038 tonnes during 1930-45 (Mitra, 1946), from 2,859 to 3,324 tonnes during 1948-52 (Devasundaram, 1951), from 2837 to 3334 tonnes during 1957-65 (Jhingran and Natarajan, 1966) and from 5,169 to 8,823 tonnes during 1972-82 (Mohapatra & Parija, 1986). . The earlier rise in the yields may be attributed to the introduction of monofilament gillnets and greater use of outboard engines. The total landings from Puri sea may, however, be higher to certain degree since the methods of data collection possess some lacunae and also lack accuracy to certain degree. The non-commercial landings in the subsistence sector and the amount consumed by the fishermen families are also not rightly reported. Smith (1993) has expressed similar views in case of the total fish landings of Hawaiin Islands. The low value of catch per unit effort (CPUE) in puri sea further establishes the overexploited state of the fishery.

Table – 1 : Landings of different groups of marine fishes (in MT) from Puri –on-sea during 2008-2009.

Groups	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	Total	%
Mullets	20.50	18.30	42.60	11.50	36.00	35.00	83.30	40.70	104.20	240.00	35.00	39.80	706.90	7.84
Clupeids	5.13	-	-	25.35	324.3	355	223.7	25.60	54.40	52.60	97.00	13.00	1175.08	13.03
Perches	7.00	3.90	20.80	41.60	48.20	57.00	57.30	53.50	135.20	262.00	22.00	30.40	738.90	8.19
Threadfins	-	5.00	12.00	21.50	25.00	81.00	44.00	44.00	145.00	300.00	15.00	29.00	721.50	8.00
Catfishes	102.95	34.90	98.05	122.50	212.50	227.40	316.20	363.90	384.07	807.00	150.00	84.00	2904.27	32.22
Beloniforms	34.63	18.19	32.15	29.60	69.60	68.30	121.60	91.70	205.35	408.00	55.00	29.10	1163.93	12.91
Miscellaneous species	20.15	52.25	61.85	116.2	110.5	106.12	148.40	16.00	231.42	152.26	300.05	97.26	1600.93	17.76
Total MT	190.36	132.54	267.45	368.25	826.1	929.82	994.5	635.4	1259.64	2221.86	674.5	322.56	9011.51	

Table 2 : Landings of different groups of marine fishes (in MT) from Puri-on- sea during 2009-2010.

Groups	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	Total	%
Mullets	17.00	16.50	15.00	40.80	90.75	108.90	162.00	97.00	80.00	90.00	75.00	75.00	867.95	13.11
Clupeids	3.00	-	34.90	41.50	-	-	-	-	-	-	-	-	79.40	1.19
Perches	10.00	5.00	22.90	27.20	27.50	33.00	250.00	160.00	80.00	90.00	80.00	90.00	847.64	12.80
Threadfins	-	2.00	3.00	34.00	10.03	13.20	24.00	30.00	45.00	48.00	36.00	40.00	285.23	4.30
Catfishes	72.30	52.60	169.20	201.10	-	47.16	370.03	175.00	185.00	190.00	45.00	46.00	1553.39	23.46
Beloniforms	34.70	14.00	42.00	49.90	77.00	92.40	137.00	144.00	166.00	170.00	95.00	95.00	1117.00	16.87
Miscellaneous species	57.26	35.10	33.40	90.00	101.50	313.50	91.54	37.75	385.00	370.70	267.90	85.15	1868.74	28.23
Total in MT	194.20	125.20	376.40	484.50	306.78	608.16	1034.57	643.75	941.00	958.70	598.90	431.15	6619.35	

Table 3 : Specieswise Landing Centerwise marine fish landings (in MT) 2008-2009

Name of the species	Kalia Kana	Nuagarh	Sahana	Toilo	Chandra bhaga	Ram chandi	Penth kota	Sapa Kothi	Hara chandi	Arakha kudha	Khir sahi	S. Rama lanka	Total landing in MT
Mullets	30	140	14	15	320	-	480	-	-	-	-	-	999.00
Clupeids	102	141.00	85	21	160	-	347	59	-	-	-	20	935.00
Perches	-	80.3	50	22	15.96	-	210	48	8.5	18.51	10	9	472.27
Threadfins	30.5	60	28	10	70	-	475	120	-	-	-	-	793.5
Catfishes	40	520	32	40	570	250	1410	135	5	5	3	4	3014.00
Beloniforms	50	140	120	10	50	-	500	60	5	5	3	5	948.00
Miscellaneous species	2	645.24	12	60	345	-	-	-	-	9.28	-	5	1018.52
Total in MT	245.5	1726.54	341	178	1530.96	250	3422	422	18.5	37.79	16	43	8180.02

Table 4 : Speceiswise Landing Centerwise marine fish landings (in MT) during 2009-2010

Name of the species	Kalia Kana	Nuagarh	Sahana	Toilo	Chandra bhaga	Ram chandi	Penth kota	Sapa Kothi	Hara chandi	Arakha kudha	Khir sahi	S. Rama lanka	Total landing in MT
Mullets	35.00	155.08	41.18	-	175.56	0.00	354.25	8.25	2.54	31.24	19.45	45.40	867.95
Clupeids	9.70	22.60	0.00	0.00	10.70	6.90	12.50	0.00	4.60	5.50	4.70	2.20	79.40
Perches	125.36	81.25	45.36	15.00	138.25	0.00	347.25	5.27	8.51	15.00	10.00	29.35	820.60
Threadfins	30.00	40.00	45.25	25.00	70.00	0.00	70.00	2.85	0.00	1.00	0.00	1.13	285.23
Beloniforms	85.65	240.00	48.25	29.45	78.10	0.00	480.00	4.54	2.00	98.25	2.00	48.76	1117.00
Miscellaneous species	76.09	500.83	38.87	72.72	189.12	8.65	822.01	7.95	16.76	44.08	82.28	9.38	1868.74
Total in MT	361.80	1039.76	218.91	142.17	661.73	15.55	2086.01	28.86	34.41	195.07	118.43	136.22	5038.92

Table 5: Percentage compositions of Fishes in the total landings(MT) of Puri –on-Sea during 2008-2009 and 2009-2010

	2008 – 2009		2009 - 2010	
Group	**Landing MT**	**% Composition**	**Landing MT**	**% Composition**
Mullets	706.90	7.84	867.95	13.11
Clupeids	1175.08	13.03	79.40	1.19
Perches	738.90	8.19	847.64	12.80
Thread Fins	721.50	8.00	285.23	4.30
Cat Fishes	2904.27	32.22	1553.39	23.46
Beloni Forms	1163.93	12.91	1117.00	16.87
Miscelneous Fish	1600.93	17.76	1868.74	28.23
Total	9011.51		6619.35	

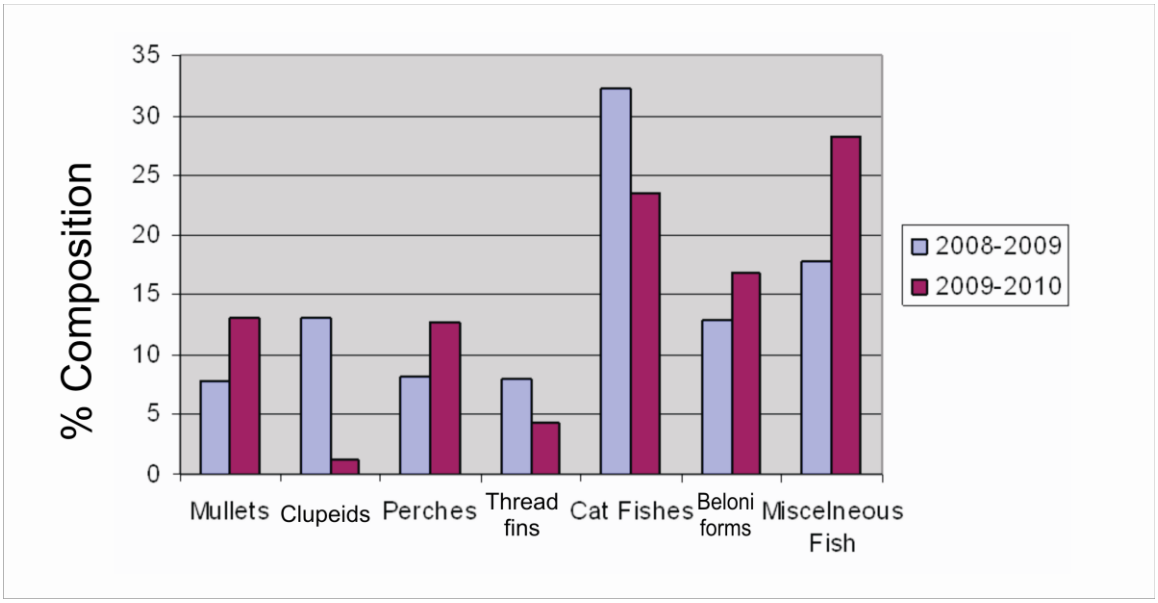

Fig. 1

Percentage composition of various groups in the total landings of Fish during 2008-2009 & 2009-2010

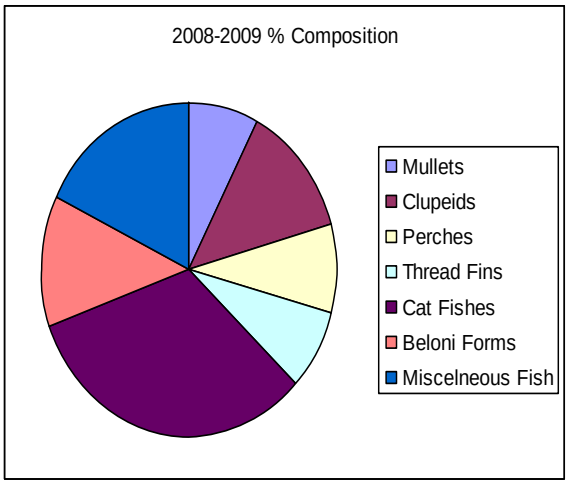

Fig.2

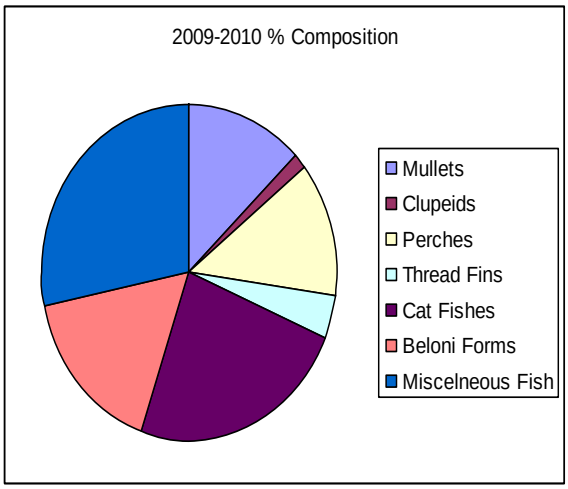

Fig.3

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