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SMALL-SCALE FISHERIES AT LAWSON'S BAY WALTAIR*

One of the most important fish landing centres in Andhra Pradesh is perhaps the centre at Lawson's Bay, Waltair. Here fishermen from three adjacent fishing villages viz., Jalaripeta, Vasavanipallem and Moolapalem with indigenous and traditional craft and gear land their catches which are chiefly disposed off in local markets. As elsewhere along the Andhra coast, the common craft here are the catamarans and the masula boats. The shore-seines, boat-seines, gill nets, bottom-set gill nets (also known as silk-nets) and hooks & line are the chief gears used. About 1000 active fishermen are engaged

in the fishing operations conducted through major part of the year in and around coastal waters off Visakhapatnam.

Data on fish catches at Lawsons' Bay collected over a period of 9 years from 1970 to 1978 (Tables 1 to 6 and Fig. 1) show that on an average 560 tonnes of fish per annum are landed at this centre. At an average rate of 50 paise per kg or Rs. 500/- per tonne, the yield from this catch amounts to a sum of about Rs. 2.8 lakhs.

* Prepared by: Staff of Waltair Research Centre.

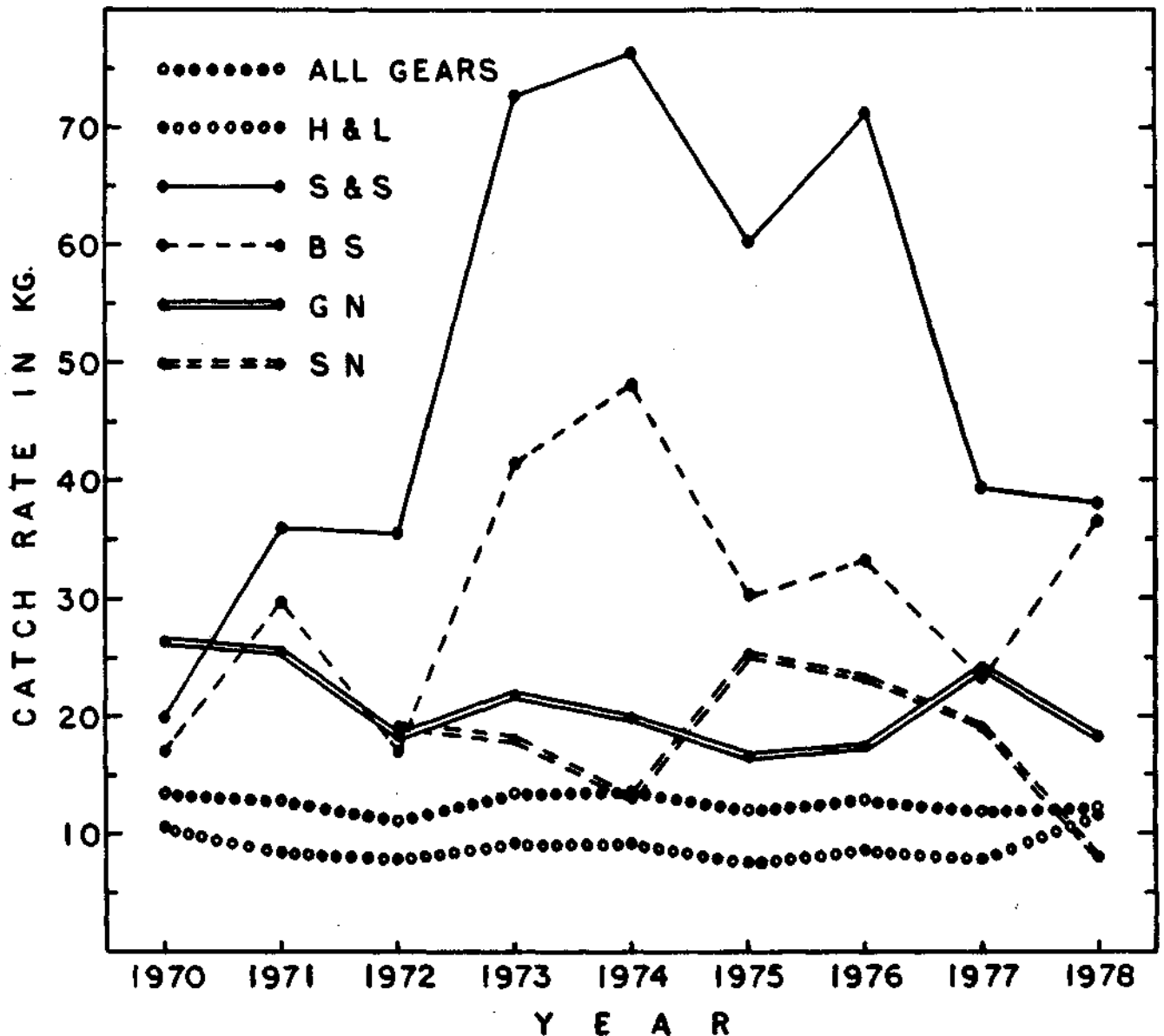


Fig. 1 Trends in the annual catch rates (C/U) of shore-seine (S & S), boat-seine (BS), gill net (GN), bottom-set gill net (SN), hooks & line (H&L) and all gears during the years from 1970 to 1978.

The most effective gear is the hooks & line, followed by the bottom-set gill net, the gill net, the shore-seine and the boat-seine in the order of importance mentioned (Table 6). With an annual average catch rate of 9.2 kg/U, the catch rates of hooks & line ranged from 7.7 to 11.6 kg/U (Table 1). The corresponding figures for bottom-set gill nets, gill nets, shore-seine and boat-seine respectively were: 16.7 kg/U—from 8.1 to 25.3 kg/U—(Table 2); 22.3 kg/U—from 16.7 to 26.5 Kg/U (Table 3); 54.3 kg/U—from 20 to 76.2 kg/U (Table 4); and 29.7 kg/U—from 17 to 48.4 kg/U (Table 5). An analysis of variance revealed that the variations in catch rates between gears were, as expected, significantly different whereas between years they were not significantly different. In other words, the fluctuations in the catches at Lawson's Bay may be due to fishery independent factors such as changes in the environment. In general the months from April to August witnessed peak catch returns.

A large number of species are landed by each boat-net combination. Nevertheless, those that were fishery in importance were few and more or less characteristic of the gear employed. For example, about 40 to 50 species were landed by the bottom-set gill net during the course of a year. But only 20 species were of any importance and of these substantial contribution was made by only 10 to 11 species (Table 2). Similar was the situation in the case of all the other gears. Taking into consideration only the first 10 or 11 species in respect

of each gear and pooling all the data for 9 years together, it became apparent that the fisheries at Lawson's Bay are supported mainly by the following 16 species:

Sl. No.	Name of species	% contribution	Common name
1.	<i>Scomberomorus guttatus</i>	15.8	Seer fish
2.	<i>Sardinella</i> spp.	12.9	Lesser sardines
3.	Sharks	9.0	Sharks
4.	<i>Anchoviella</i> spp.	8.0	White bait
5.	<i>Scomberomorus commersonii</i>	6.7	Seer fish
6.	Tuna	4.9	Tuna
7.	<i>Tachysurus thalassinus</i>	4.2	Cat fish
8.	<i>Histiophorus gladius</i>	4.0	Sail fish
9.	<i>Ilisha filigera</i>	3.5	Herring
10.	<i>Rastrelliger canagurta</i>	2.9	Mackerel
11.	<i>Trichiurus</i> spp.	2.7	Ribbon fish
12.	<i>Tachysurus tenuispinis</i>	2.5	Cat fish
13.	<i>Chorinemus</i> spp.	1.9	Leather skin
14.	<i>Dussumieria</i> spp.	1.3	Rainbow sardine
15.	<i>Chirocentrus dorab</i>	1.0	Wolf herring
16.	Other cat fish	0.9	—

Furthermore, it was also evident that excepting the cat fishes (*T. thalassinus* and *T. tenuispinis*) and *Trichiurus* spp. all other species are the main supporters of pelagic fisheries at Lawson's Bay as elsewhere in the country. Considering the fact that large scale fishing by mechanised boats has been established and conducted off Visakhapatnam and substantial expansion and exploitation of demersal fisheries are contemplated, the present result is of significance because of the very nature of the small-scale fisheries at Lawson's Bay and there is no reason to believe that conflicts of interest exist.

Table 1 Hooks & line—Specieswise estimated annual catches (in kg) during the years from 1970 to 1978 at Lawson's Bay, Waltair

Species	1970	1971	1972	1973	1974	1975	1976	1977	1978	All years	%	Rank
<i>S. guttatus</i>	1,49,072	74,417	81,905	65,239	1,09,856	66,669	60,797	68,221	69,517	7,45,693	27.2	1
Sharks	48,613	41,948	48,305	32,283	60,569	45,018	40,594	42,806	63,656	4,23,792	15.5	2
<i>S. commersonii</i>	34,972	43,564	76,064	36,133	29,032	27,365	20,922	33,754	29,034	3,30,840	12.1	3
Tuna	16,231	13,446	17,361	17,627	24,101	18,901	24,310	20,698	86,489	2,39,164	8.7	4
<i>H. gladius</i>	50,900	17,022	13,058	19,549	30,704	8,347	17,739	31,203	13,982	2,02,504	7.4	5
<i>T. thalassinus</i>	12,484	26,149	22,690	19,453	18,862	10,263	12,265	40,724	13,324	1,76,214	6.4	6
<i>Chorinemus</i> spp.	15,697	14,897		5,819	11,792	16,834	12,217	3,088	16,140	96,484	3.5	7
<i>T. tenuispinis</i>				8,891		4,038	9,764	5,903	12,207	40,803	1.5	8
Other catfishes	10,665	28,916								39,581	1.4	9
<i>S. zygaena</i>	18,139		11,905						1,476	31,520	1.2	10
<i>P. hasta</i>	4,931	13,506							9,770	28,207	1.0	11
<i>C. dorab</i>				8,848	5,543	3,888		4,779	3,134	26,192	1.0	12
<i>Lutjanus</i> spp.			7,383	8,014	4,964				5,688	26,049	1.0	13
Turtle							23,382			23,382	0.9	14
<i>Coryphaena</i> spp.			5,537				5,278		6,178	16,993	0.6	15
Skates		9,041								9,041	0.3	16
<i>R. canadus</i>					3,015			3,232	1,800	8,047	0.3	17
Miscellaneous	43,265	47,574	36,557	31,099	19,793	28,155	19,503	15,645	31,788	2,73,379	17.5	
All fish (C)	4,04,969	3,30,480	3,20,765	2,52,955	3,18,231	2,29,478	2,46,771	2,70,053	3,64,183	27,37,885		
No. of Units (U)	37,600	37,646	37,212	27,785	35,100	29,960	29,023	32,201	31,497	2,98,024		
Catch rate (C/U)	10.8	8.8	8.6	9.1	9.1	7.7	8.5	8.4	11.6	9.2		

Table 2 Bottom-set Gill net (Silk net)—Specieswise estimated annual catches (in kg) during the years from 1970 to 1978 at Lawson's Bay, Waltair.

Species	1972	1973	1974	1975	1976	1977	1978	All years	%	Rank	
<i>I. filigera</i>	56,571	32,794	3,353	37,247	2,898	5,636	5,353	1,43,852	20.9	1	
<i>R. canagurta</i>	15,446	8,813	21,176	6,969	3,134	41,166	5,682	1,02,386	14.8	2	
<i>T. tenuispinis</i>	13,580	25,738	3,239	9,779	2,322	11,232	2,793	68,683	10.0	3	
<i>C. dorab</i>	9,843	15,021	1,664	5,372	1,920	5,466	8,909	48,195	7.0	4	
<i>S. guttatus</i>	6,457	13,358	1,513	7,390	1,739	5,940	11,665	48,062	6.9	5	
<i>T. thalassinus</i>	6,142	7,798	2,213	9,164	2,352	4,271	1,976	33,916	4.9	6	
Sharks	4,369			2,538	690	2,666		19,560	29.823	4.3	7
Other carangids	13,524	5,665						2,751	21,940	3.2	8
<i>Hilsa</i> spp.					5,772	8,664	546		14,982	2.2	9
<i>Trichiurus</i> spp.			3,671	10,063					13,734	2.0	10
Prawns	5,429	5,073					945		11,447	1.7	11
Other catfish		5,845					4,769		10,614	1.5	12
Other sciaenids			2,163	4,533	1,228		1,365		9,289	1.3	13
<i>Psenes indicus</i>			1,680			4,552	512		6,744	1.0	14
<i>S. niger</i>				4,873			1259		6,132	0.9	15
Squids		5,158							5,158	0.7	16
<i>S. commersonii</i>						2,263	2,132		4,395	0.6	17
Other clupeoids	3,248						546		3,794	0.6	18
<i>Trissocles</i> spp.			2,025				834		2,859	0.4	19
<i>Leiognathus</i> spp.					501				501	0.1	20
Miscellaneous	25,199	35,489	7,789	12,179	2,674	7,242	12,516	1,03,088	14.9		
All fish (C)	1,59,808	1,60,752	50,486	1,10,107	25,230	99,098	84,113	6,89,594			
No. of Units (U)	8,259	8,936	3,825	4,349	1,083	4,510	10,373	41,335			
Catch rate (C/U)	19.3	18.0	13.2	25.3	23.3	22.2	8.1	16.7			

Table 3 Gill net—Specieswise estimated annual catches (in kg) during the years from 1970 to 1978 at Lawson's Bay, Waltair

Species	1970	1971	1972	1973	1974	1975	1976	1977	1978	All years	%	Rank
<i>Sardinella</i> spp.	1,82,734	1,38,432	49,818	28,177	91,759	30,471	50,414	39,973	14,135	6,25,913	86.4	1
<i>I. filigera</i>		18,770	152			1,289	4,380			24,591	3.4	2
Prawns		11,159								11,159	1.5	3
<i>Dussumieria</i> spp.	450	3,012	2,262	154	208	2,656	1,882			10,624	1.5	4
<i>Thrissocles</i> spp.	2,811		958				2,715			6,484	0.9	5
<i>R. canagurta</i>	3,585		425	923			1,200			6,133	0.8	6
Other catfish		3,464								3,464	0.5	7
<i>Trichiurus</i> spp.						3,368				3,368	0.5	8
<i>Leiognathus</i> spp.	855		1,369				677			2,901	0.4	9
<i>T. tenuispinis</i>		2,118								2,118	0.3	10
<i>T. thalassinus</i>						1,029				1,029	0.1	11
Miscellaneous	917	18,562	131	1,004	356	4,500	848		22	26,340	3.6	
All fish (C)	1,91,352	1,95,517	55,115	30,258	92,323	43,313	62,116	39,973	14,157	7,24,124		
No. of Units (U)	7,230	7,673	2,953	1,379	4,590	2,597	3,565	1,668	767	32,422		
Catch rate (C/U)	26.5	25.5	18.7	21.9	20.1	16.7	17.4	24.0	18.5	22.3		

Table 4 Shore-seine—Specieswise estimated annual catches (in kg) during the years from 1970 to 1978 at Lawson's Bay, Waltair

Species	1970	1971	1972	1973	1974	1975	1976	1977	1978	All years	%	Rank
<i>Anchoviella</i> spp.	1,493	5,080	7,040	58,526	51,019	34,040	59,626	53,250	37,926	3,08,000	62.3	1
<i>D. dayii</i>					1,575		32,691			34,266	6.9	2
<i>R. canagurta</i>	92	3,124	501	1,143	15,534	2,242		663	718	24,017	4.9	3
<i>Sardinella</i> spp.	2,229	1,416	1,091	3,627	1,343	5,185	3,004	2,826	2,211	22,932	4.6	4
<i>Leiognathus</i> spp.	426	1,027	4,824	2,061	4,096	1,062	3,480	1,529	1,589	20,094	4.1	5
<i>Trichiurus</i> spp.	570	206	232	225	16,903				281	18,417	3.7	6
<i>Dussumieria</i> spp.		5,002	684	737	700	7,448	415	1,957	1,358	18,301	3.7	7
Tuna		194				3,960	2,910			7,064	1.4	8
<i>Acetes</i> spp.				4,123	1,503				4,127	9,753	2.0	9
Sciaenids			3,032			206	476		78	3,792	0.8	10
<i>Thrissocles</i> spp.		1,364	382		703		288	75	361	3,173	0.6	11
<i>Sphyraena</i> spp.							2,227			2,227	0.5	12
Other carangids	54			655	380					1,089	0.2	13
Miscellaneous	755	1,185	1,252	1,692	2,020	643	1,820	2,013	10,135	21,515	4.3	
All fish (C)	5,619	18,598	19,038	72,789	95,776	54,786	1,06,937	62,313	5,8784	4,94,640		
No. of Units (U)	281	517	530	1,000	1,257	910	1,504	1,569	1,539	9,107		
Catch rate (C/U)	20.0	36.0	35.9	72.8	76.2	60.2	71.1	39.7	38.2	54.3		

Table 5 Boat-Seine-Specieswise estimated annual catches (in kg) during the years from 1970 to 1978 at Lawson's Bay, Waltair

Species	1970	1971	1972	1973	1974	1975	1976	1977	1978	All years	%	Rank
<i>Trichirus</i> spp.	5,554	10,433	1,978	4,360	54,524	12,315	4,688	3,237	3,360	1,00,449	25.5	1
<i>Anchoviella</i> spp.	2,980	24,477	579	7,807	17,885	2,638	9,936	18,923	11,795	97,020	24.7	2
<i>Dussumieria</i> spp.		11,204				2,802			24,363	38,369	9.8	3
<i>S. niger</i>	2,945	10,485	430		554	2,280				16,694	4.2	4
<i>T. tenuispinis</i>		1,547				8,947	544	3,193	155	14,386	3.7	5
<i>R. canagurta</i>		3,211		4,925			1,753	182	3,750	13,821	3.5	6
<i>Leiognathus</i> spp.	3,634	2,054	1,267	366	1,318	1,629	478	757		11,503	2.9	7
<i>Acetes</i> spp.	4,802			2,077		2,925	908	213	480	11,405	2.9	8
Prawns	4,769	4,773	446		820				121	10,929	2.8	9
<i>I. filigera</i>	4,372		276	364		1,733	2,647			9,392	2.4	10
Sciaenids	2,162	1,649			1,615	1,313	1,608		487	8,834	2.4	11
<i>Sardinella</i> spp.		2,447			798			704	2,672	6,621	1.7	12
Other carangids	5,388			336						5,724	1.5	13
<i>S. argenteus</i>	3,886									3,886	1.0	14
Other catfish			253	1,835						2,088	0.5	15
<i>S. tumbil</i>				2,074						2,074	0.5	16
<i>C. dorab</i>						764	882		159	1,805	0.5	17
<i>Hilsa</i> spp.							1,008			1,008	0.3	18
Miscellaneous	12,408	5,124	3,806	1,476	3,012	4,036	2,923	1,540	3,012	37,337	9.5	
All fish	52,900	77,404	9,035	25,620	80,526	41,382	27,375	28,749	50,354	3,93,345		
No. of Units (U)	3,058	2,587	531	619	1,665	1,360	818	1,232	1,378	13,248		
Catch rate (C/U)	17.3	29.9	17.0	41.4	48.4	30.4	33.5	23.3	36.5	29.7		

Table 6 Gearwise all years estimated catches (kg) of the most important species supporting the fisheries at Lawson's Bay, Waltair

Species	Hooks & line	Bottom-Set Gill net	Gill net	Shore-seine	Boat seine	All gears	%	Rank
<i>S. guttatus</i>	7,45,693	48,062				7,93,755	15.8	1
<i>Sardinella</i> spp.			6,25,913	22,932		6,48,845	12.9	2
Sharks	4,23,792	29,823				4,53,615	9.0	3
<i>Anchoviella</i> spp.				3,08,000	97,020	4,05,020	8.0	4
<i>S. commersonii</i>	3,30,840					3,30,840	6.7	5
Tuna	2,39,164			7,064		2,46,228	4.9	6
<i>T. thalassinus</i>	1,76,214	33,916	1,029			2,11,159	4.2	7
<i>H. gladius</i>	2,02,504					2,02,504	4.0	8
<i>I. filigera</i>		1,43,852	24,591		9,392	1,77,835	3.5	9
<i>R. canagurta</i>		1,02,386	6,133	24,017	13,821	1,46,357	2.9	10
<i>Trichirus</i> spp.		13,734	3,368	18,417	1,00,449	1,35,968	2.7	11
<i>T. tenuispinis</i>	40,803	68,683	2,118		14,386	1,25,910	2.5	12
<i>Chorinemus</i> spp.	96,484					96,484	1.9	13
<i>Dussumieria</i> spp.			10,624	18,301	38,369	67,294	1.3	14
<i>C. dorab</i>		48,195				48,195	1.0	15
Other catfish	39,581		3,464			43,045	0.9	16
<i>Leiognathus</i> spp.			2,901	20,094	11,503	34,498	0.9	17
<i>D. dayii</i>				34,266		34,266	0.7	18
Prawns		11,447	11,159		10,929	33,535	0.7	19
<i>S. zygaena</i>	31,520					31,520	0.6	20
Other carangids		21,940				21,940	0.4	21
<i>Acetes</i> spp.				9,753	11,405	21,158	0.4	22
<i>S. niger</i>					16,694	16,694	0.3	23
<i>Hilsa</i> spp.		14,982				14,982	0.3	24
<i>Thrissoles</i> spp.			6,484			6,484	0.1	25
Other sciaenids				3,792		3,792	0.1	26
Miscellaneous	4,11,290	1,52,574	26,340	28,004	69,377	6,87,585	13.6	
All fish (C)	27,37,885	6,89,594	7,24,124	4,94,640	3,93,345	50,39,588		
No. of Units (U)	2,98,024	41,335	32,422	9,107	13,248	3,94,136		
Catch rate (C/U)	9.2	16.7	22.3	54.3	29.7	12.8		
Average annual catch (tonnes)	304.2	98.5	80.5	54.6	43.7	559.95		



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