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THE MARINE FISHERIES INFORMATION SERVICE: Technical and Extension Series envisages the rapid dissemination of information on marine and brackish water fishery resources and allied data available with the Fishery Data Centre and the Research Divisions of the Institute, results of proven researches for transfer of technology to the fish farmers and industry and of other relevant information needed for Research and Development efforts in the marine fisheries sector.

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CONTENTS

Cover photo: Fish landing centre at versova near Bombay.

MARINE FISH PRODUCTION IN INDIA DURING JULY TO SEPTEMBER 1978*

Total production for the quarter

The total marine fish production in India (excluding Andamans and Lakshadweep) during the third quarter of 1978 ie. for the period July to September, 1978 was provisionally estimated at 357,256 tonnes as against 269,617 tonnes during the same period of 1977, showing an increase of 87,639 tonnes (32.5%). While the total landings showed an increase in the States of Orissa, Tamil Nadu, Kerala, Karnataka, Maharashtra and Gujarat, lower landings were recorded in the States of West Bengal, Andhra Pradesh, Pondicherry and Goa. The monthwise total landings of marine fish in the various maritime States of India and the species-wise details of landings for the period July to September are shown in Fig. 1 and Tables 1 and 2. The bulk of the landings of the quarter was recorded in September, which accounted for 45.68% of the total catch of the quarter. The landings during July and August constituted 27.46% and 26.86% respectively of the total catch of the third quarter.

Statewise production

West Bengal

The total marine fish production in West Bengal declined by about 200 tonnes, as compared to the corresponding period in 1977 (Table 1). The decline in the total landings was mainly due to the poor

*Prepared by the Fishery Resources Assessment Division

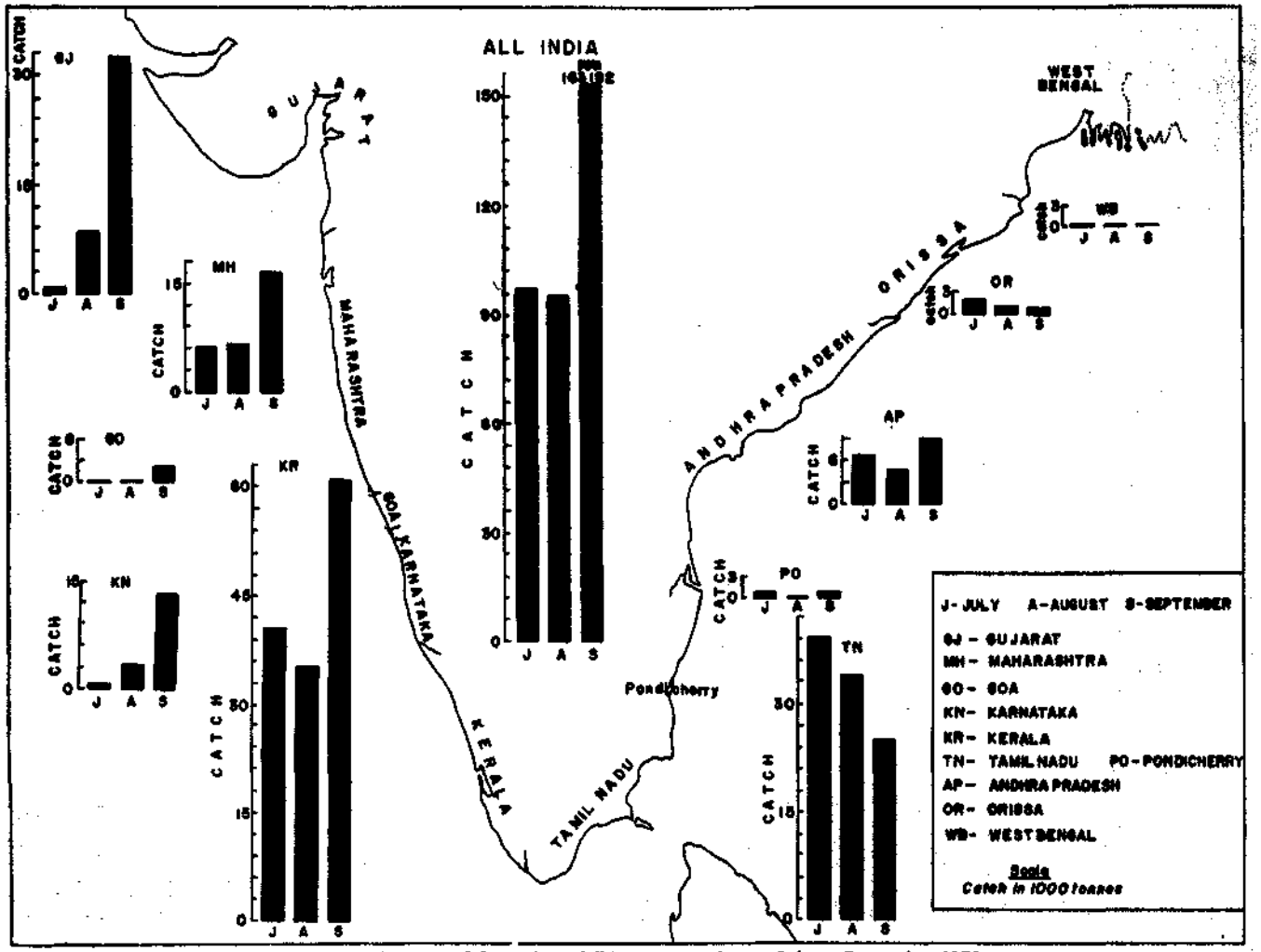

Fig. 1 Total marine fish catch in different states during July to September 1978

Table 1 *Statewise and monthwise total marine fish landings in India (excluding Andamans and Lakshadweep) during the period July to September 1978* (in tonnes)*

Sl. No	Name of state	July	August	Sept.	Total	Total for July to Sept. 1977
1.	West Bengal	282	218	157	657	879
2.	Orissa	1,546	1,355	1,064	3,965	2,617
3.	Andhra Pradesh	7,026	4,938	9,077	21,041	23,100
4.	Tamil Nadu	39,218	34,593	25,717	99,528	56,753
5.	Pondicherry	734	263	526	1,523	2,104
6.	Kerala	41,220	35,907	61,732	1,38,859	1,21,329
7.	Karnataka	245	3,349	13,439	17,033	8,692
8.	Goa	9	89	1,728	1,826	3,907
9.	Maha-rashtra	6,625	6,691	16,979	30,295	27,193
10.	Gujarat	1,209	8,557	32,763	42,529	23,043
	Total	98,114	95,960	1,63,182	3,57,256	2,69,617

* Provisional

fishery of penaeid prawns, *Thrissocles*, other clupeids, *Harpodon nehereus*, sciaenids and ribbon fish. The landings of *Hilsa ilisha*, elasmobranchs, pomfrets, polynemids and *Leiognathus*, however, showed increase. Table 3 shows the monthwise and specieswise landings of marine fish in West Bengal during the period July to September. It is seen that the landings in July was the highest, the catch in September being the lowest.

Orissa

In Orissa an increase of about 1,350 tonnes in the landings was noticed during the period July to September when compared to the catch of the same period of 1977. The landings of elasmobranchs, *Thrissocles*, other clupeids, sciaenids, *Chorinemus*, *Leiognathus*, pomfrets, seer fish and penaeid prawns

Table 2 *Statewise composition of marine fish landings in India (excluding Andamans and Lakshadweep) for the period July to September 1978* (in tonnes)*

Sl. No.	Name of fish	West Bengal	Orissa	Andhra Pradesh	Tamil Nadu	Pondi-cherry	Kerala	Karna-taka	Goa	Maha-rashtra	Gujarat	Total
1.	Elasmobranchs	65	504	1,910	4,157	66	1,158	387	117	1,131	3,046	12,541
2.	Eels	—	—	43	74	—	1	—	—	341	212	671
3.	Cat fishes	44	176	923	1,620	59	2,858	288	148	1,835	390	8,341
4.	*Chirocentrus*	40	239	410	427	29	94	106	14	94	108	1,561
5. a)	Oil sardines	—	—	—	—	—	16,836	1,399	20	—	—	18,255
b)	Lesser sardines	2	28	223	2,393	263	1,949	130	212	68	—	5,268
c)	*Hilsa ilisha*	135	582	1	86	—	95	51	—	1	17	968
d)	Other *Hilsa*	28	70	49	1,101	4	29	16	1	17	346	1,661
e)	*Anchoviella*	6	—	231	5,478	55	8,319	26	—	37	—	14,152
f)	*Thrissocles*	12	116	559	435	46	1,241	483	231	146	7	3,276
g)	Other clupeids	37	493	493	589	56	579	569	18	910	109	3,853
6. a)	*Harpodon nehereus*	16	44	926	5	—	—	2	5	3,612	446	5,056
b)	*Saurida & Saurus*	—	—	363	386	26	3,372	3	—	204	2	4,356
7.	*Hemirhamphus & Belone*	—	—	3	154	—	1	1	4	30	—	193
8.	Flying fish	—	—	12	943	256	—	—	—	—	—	1,211
9.	Perches	—	2	401	2,465	117	22,332	29	8	1,284	9,665	36,303
10.	Red mullets	—	—	147	1,030	43	96	25	—	—	—	1,341
11.	Polynemids	23	95	153	127	9	19	—	—	115	282	823
12.	Sciaenids	20	105	1,789	2,488	65	6,703	725	65	2,106	13,031	27,097
13.	Ribbon fish	16	12	1,885	44,841	17	17,984	167	11	2,011	1,026	67,970
14. a)	*Caranx*	—	19	417	1,448	54	2,713	21	42	133	21	4,868
b)	*Chorinemus*	16	198	126	152	—	100	2	9	163	124	890
c)	*Trachynotus*	—	—	—	30	—	—	—	—	—	—	30
d)	Other carangids	—	—	35	161	—	70	8	—	—	—	274
e)	*Coryphaena*	—	—	19	5	3	—	—	—	—	—	27
f)	*Elacate*	—	—	—	30	—	21	3	35	—	—	89
15. a)	*Leiognathus*	18	99	421	9,130	102	1,180	3,228	66	21	—	14,265
b)	*Gazza*	—	—	—	57	—	—	—	—	—	—	57
16.	*Lactarius*	—	1	166	475	—	1,157	79	2	77	—	1,957
17.	Pomfrets	100	534	349	201	5	221	15	19	910	8,055	10,409
18.	Mackerel	—	—	55	190	11	8,868	5,332	105	71	—	14,632
19.	Seer fish	20	214	592	1,214	18	635	255	332	327	406	4,013
20.	Tunnies	—	—	80	537	1	1,554	48	258	639	765	3,882
21.	*Sphyraena*	—	—	6	1,266	10	240	62	1	9	—	1,594
22.	*Mugil*	—	—	91	140	—	—	—	2	55	157	445
23.	*Bregmaceros*	—	—	—	—	—	—	—	—	—	—	—
24.	Soles	—	—	83	514	27	2,698	1,336	20	176	—	4,854
25. a)	Penaeid prawns	18	211	5,080	5,178	22	27,303	1,988	21	9,475	1,670	50,966
b)	Non-penaeid prawns	—	12	391	447	—	186	12	—	1,521	138	2,707
c)	Lobsters	—	—	2	125	—	28	—	—	119	14	288
d)	Crabs & other crustaceans	—	1	114	2,468	44	151	1	3	58	38	2,878
26.	Cephalopods	—	—	118	623	—	3,821	5	—	51	651	5,269
27.	Miscellaneous	41	210	2,375	6,338	115	4,247	231	57	2,548	1,803	17,965
	Total	657	3,965	21,041	99,528	1,523	1,38,859	17,033	1,826	30,295	42,529	3,57,256

were comparatively higher during the period. Lesser sardines, *Anchoviella,* ribbon fish, *Caranx* and cat fishes showed poor fishery. From Table 4 it is seen that the maximum landings were recorded in July and the minimum in September.

Andhra Pradesh

The marine fish production in Andhra Pradesh showed a decline of 2,059 tonnes during the third quarter. A sharp decline in the landings of lesser sardines, *Hilsa* spp., ribbon fish and non-penaeid prawns was seen during the period. The catch of elasmobranchs, cat fishes, *Chirocentrus, Anchoviella,* other clupeids, sciaenids, *Caranx, Leiognathus, Lactarius,* pomfrets, seer fish, tunnies and crabs & other crustaceans also declined. An increase in the landings of *Thrissocles, Harpodon nehereus, Saurida & Saurus,* perches, red mullets, polynemids, *Chorinemus* and cephalopods was also noticed. Table 5 gives the monthwise and specieswise catch details in the state during the quarter. September accounted for the maximum catch while the minimum catch was recorded in August.

Tamil Nadu

In Tamil Nadu the total landings in July to September showed a significant increase of 42,775 tonnes. This was due to higher landings of cat fishes, *Hilsa,* other clupeids, *Saurida & Saurus,* flying fish, perches, red mullets, *Leiognathus, Lactarius, Sphyraena,* penaeid prawns and crabs & other crustaceans. A bumper catch of ribbon fish was also responsible for boosting up the total catch during the period. The landings of elasmobranchs, lesser sardines, *Anchoviella,* sciaenids, *Caranx,* seer fish and tunnies were, however, poor. From Table 6 it could be seen that the catch was maximum in the month of July, the minimum being in September.

Pondicherry

The catch in Pondicherry showed a decrease of 581 tonnes during July to September. While the landings of elasmobranchs, cat fishes, lesser sardines, *Thrissocles,* perches, *Caranx, Lactarius,* mackerel, penaeid prawns and cephalopods were comparatively poor, a better fishery was seen in respect of *Anchoviella,* other clupeids, flying fish, red mullets, *Leiognathus* and crabs & other crustaceans. The specieswise catch particulars are shown in Table 7 from which it is seen that July recorded the maximum catch, the minimum being in the month of August.

Table 3 *Composition of marine fish landings in West Bengal during the period July to September* 1978 *(in tonnes)*

Sl. No.	Name of fish	July	August	Sept.	Total	Total for III qr. 1977
1.	Elasmobranchs	32	32	1	65	33
2.	Eels	—	—	—	—	—
3.	Cat fishes	24	18	2	44	28
4.	*Chirocentrus*	14	10	16	40	28
5. a)	Oil sardine	—	—	—	—	—
b)	Lesser sardines	—	—	2	2	—
c)	*Hilsa ilisha*	102	32	1	135	82
d)	Other *Hilsa*	16	12	—	28	—
e)	*Anchoviella*	—	4	2	6	—
f)	*Thrissocles*	—	4	8	12	20
g)	Other clupeids	12	14	11	37	114
6. a)	*Harpodon nehereus*	—	6	10	16	99
b)	*Saurida & Saurus*	—	—	—	—	—
7.	*Hemirhamphus & Belone*	—	—	—	—	—
8.	Flying fish	—	—	—	—	—
9.	Perches	—	—	—	—	—
10.	Red mullets	—	—	—	—	—
11.	Polynemids	8	10	5	23	9
12.	Sciaenids	—	10	10	20	38
13.	Ribbon fish	—	—	16	16	32
14. a)	*Caranx*	—	—	—	—	—
b)	*Chorinemus*	8	4	4	16	10
c)	*Trachynotus*	—	—	—	—	—
d)	Other carangids	—	—	—	—	—
e)	*Coryphaena*	—	—	—	—	—
f)	*Elacate*	—	—	—	—	—
15. a)	*Leiognathus*	—	2	16	18	7
b)	*Gazza*	—	—	—	—	—
16.	*Lactarius*	—	—	—	—	—
17.	Pomfrets	60	34	6	100	59
18.	Mackerel	—	—	—	—	—
19.	Seer fish	—	16	4	20	23
20.	Tunnies	—	—	—	—	—
21.	*Sphyraena*	—	—	—	—	—
22.	*Mugil*	—	—	—	—	—
23.	*Bregmaceros*	—	—	—	—	—
24.	Soles	—	—	—	—	—
25. a)	Penaeid prawns	—	—	18	18	115
b)	Non-penaeid prawns	—	—	—	—	19
c)	Other crustaceans	—	—	—	—	—
26.	Cephalopods	—	—	—	—	—
27.	Miscellaneous	6	10	25	41	163
	Total	282	218	157	657	879

Table 4 *Composition of marine fish landings in Orissa during the period July to September* 1978 *(in tonnes)*

Sl. No.	Name of fish	July	August	Sept.	Total	Total for III qr. 1977
1.	Elasmobranchs	177	148	179	504	384
2.	Eels	—	—	—	—	—
3.	Cat fishes	57	85	34	176	183
4.	*Chirocentrus*	119	79	41	239	178
5. a)	Oil sardine	—	—	—	—	—
b)	Lesser sardines	—	28	—	28	135
c)	*Hilsa ilisha*	272	239	71	582	531
d)	Other *Hilsa*	27	35	8	70	66
e)	*Anchoviella*	—	—	—	—	25
f)	*Thrissocles*	35	21	60	116	13
g)	Other clupeids	87	120	286	493	286
6. a)	*Harpodon nehereus*	28	16	—	44	6
b)	*Saurida & Saurus*	—	—	—	—	—
7.	*Hemirhamphus & Belone*	—	—	—	—	—
8.	Flying fish	—	—	—	—	—
9.	Perches	1	—	1	2	1
10.	Red mullets	—	—	—	—	—
11.	Polynemids	73	18	4	95	52
12.	Sciaenids	40	28	37	105	55
13.	Ribbon fish	6	6	—	12	24
14. a)	*Caranx*	8	7	4	19	45
b)	*Chorinemus*	66	89	43	198	68
c)	*Trachynotus*	—	—	—	—	—
d)	Other carangids	—	—	—	—	—
e)	*Coryphaena*	—	—	—	—	—
f)	*Elacate*	—	—	—	—	7
15. a)	*Leiognathus*	52	26	21	99	10
b)	*Gazza*	—	—	—	—	—
16.	*Lactarius*	—	—	1	1	4
17.	Pomfrets	269	192	73	534	191
18.	Mackerel	—	—	—	—	—
19.	Seer fish	75	97	42	214	144
20.	Tunnies	—	—	—	—	—
21.	*Sphyraena*	—	—	—	—	—
22.	*Mugil*	—	—	—	—	—
23.	*Bregmaceros*	—	—	—	—	—
24.	Soles	—	—	—	—	—
25. a)	Penaeid prawns	85	51	75	211	87
b)	Non-penaeid prawns	6	—	6	12	2
c)	Lobsters	—	—	—	—	—
d)	Crabs & other crustaceans	1	—	—	1	6
26.	Cephalopods	—	—	—	—	—
27.	Miscellaneous	62	70	78	210	114
	Total	1,546	1,355	1,064	3,965	2,617

Table 5 *Composition of marine fish landings in Andhra Pradesh during the period July to September* 1978 *(in tonnes)*

Sl. No.	Name of fish	July	August	Sept.	Total	Total for III qr. 1977
1.	Elasmobranchs	635	160	1,115	1,910	2,063
2.	Eels	—	38	5	43	54
3.	Cat fishes	364	177	382	923	1,415
4.	*Chirocentrus*	102	58	250	410	586
5. a)	Oil sardine	—	—	—	—	—
b)	Lesser sardines	144	64	15	223	1,185
c)	*Hilsa ilisha*	—	1	—	1	12
d)	Other *Hilsa*	14	11	24	49	1,103
e)	*Anchoviella*	28	128	75	231	347
f)	*Thrissocles*	218	99	242	559	399
g)	Other clupeids	260	117	116	493	737
6. a)	*Harpodon nehereus*	14	801	111	926	262
b)	*Saurida & Saurus*	101	104	158	363	69
7.	*Hemirhamphus & Belone*	1	—	2	3	—
8.	Flying fish	12	—	—	12	32
9.	Perches	221	72	108	401	321
10.	Red mullets	32	63	52	147	29
11.	Polynemids	105	17	31	153	83
12.	Sciaenids	746	387	656	1,789	1,886
13.	Ribbon fish	276	299	1,310	1,885	3,867
14. a)	*Caranx*	110	100	207	417	783
b)	*Chorinemus*	73	31	22	126	52
c)	*Trachynotus*	—	—	—	—	—
d)	Other carangids	—	22	13	35	1
e)	*Coryphaena*	19	—	—	19	—
f)	*Elacate*	—	—	—	—	6
15. a)	*Leiognathus*	170	149	102	421	928
b)	*Gazza*	—	—	—	—	—
16.	*Lactarius*	60	12	94	166	578
17.	Pomfrets	74	122	153	349	614
18.	Mackerel	34	6	15	55	32
19.	Seer fish	208	121	263	592	1,150
20.	Tunnies	80	—	—	80	153
21.	*Sphyraena*	—	—	6	6	14
22.	*Mugil*	63	20	8	91	3
23.	*Bregmaceros*	—	—	—	—	—
24.	Soles	33	18	32	83	49
25. a)	Penaeid prawns	782	1,417	2,881	5,080	1,179
b)	Non-penaeid prawns	232	56	103	391	2,002
c)	Lobsters	—	1	1	2	—
d)	Crabs & other crustaceans	46	10	58	114	209
26.	Cephalopods	23	34	61	118	34
27.	Miscellaneous	1,746	223	406	2,375	863
	Total	7,026	4,938	9,077	21,041	23,100

Table 6 *Composition of marine fish landings in Tamil Nadu during the period July to September 1978 (in tonnes)*

Sl. No.	Name of fish	July	August	Sept.	Total	Total for III Qr. 1977
1.	Elasmobranchs	863	1,997	1,297	4,157	6,927
2.	Eels	49	—	25	74	50
3.	Cat fishes	347	717	556	1,620	1,094
4.	*Chirocentrus*	92	86	249	427	629
5. a)	Oil sardine	—	—	—	—	617
b)	Lesser sardines	245	294	1,854	2,393	7,465
c)	*Hilsa ilisha*	70	—	16	86	102
d)	Other *Hilsa*	143	363	595	1,101	414
e)	*Anchoviella*	143	2,010	3,325	5,478	8,865
f)	*Thrissocles*	142	146	147	435	583
g)	Other clupeids	162	183	244	589	263
6. a)	*Harpodon nehereus*	—	—	5	5	—
b)	*Saurida & Saurus*	218	118	50	386	245
7.	*Hemirhamphus & Belone*	25	106	23	154	116
8.	Flying fish	943	—	—	943	—
9.	Perches	1,287	818	360	2,465	1,424
10.	Red mullets	174	495	361	1,030	340
11.	Polynemids	109	12	6	127	843
12.	Sciaenids	711	1,119	658	2,488	3,137
13.	Ribbon fish	26,872	13,286	4,683	44,841	2,348
14. a)	*Caranx*	497	439	512	1,448	2,882
b)	*Chorinemus*	55	27	70	152	52
c)	*Trachynotus*	—	30	—	30	30
d)	Other carangids	1	106	54	161	21
e)	*Coryphaena*	5	—	—	5	19
f)	*Elacate*	2	22	6	30	67
15. a)	*Leiognathus*	2,166	5,187	1,777	9,130	3,616
b)	*Gazza*	32	17	8	57	20
16.	*Lactarius*	40	166	269	475	201
17.	Pomfrets	165	10	26	201	158
18.	Mackerel	86	59	45	190	394
19.	Seer fish	182	184	848	1,214	3,857
20.	Tunnies	215	76	246	537	1,383
21.	*Sphyraena*	87	660	519	1,266	808
22.	*Mugil*	6	64	70	140	104
23.	*Bregmaceros*	—	—	—	—	—
24.	Soles	91	304	119	514	302
25. a)	Penaeid prawns	1,041	1,518	2,619	5,178	1,293
b)	Non-penaeid prawns	369	44	34	447	21
c)	Lobsters	16	101	8	125	95
d)	Crabs & other crustaceans	230	1,314	924	2,468	1,430
26.	Cephalopods	45	338	240	623	585
27	Miscellaneous	1,292	2,177	2,869	6,338	3,953
	Total	39,218	34,593	25,717	99,528	56,753

Table 7 *Composition of marine fish landings in Pondicherry during the period July to September 1978 (in tonnes)*

Sl. No.	Name of fish	July	Aigust	Sept.	Total	Total for III Qr. 1977
1.	Elasmobranchs	34	2	30	66	188
2.	Eels	—	—	—	—	—
3.	Cat fishes	16	3	40	59	88
4.	*Chirocentrus*	1	2	26	29	32
5. a)	Oil sardine	—	—	—	—	—
b)	Lesser sardines	85	79	99	263	355
c)	*Hilsa ilisha*	—	—	—	—	—
d)	Other *Hilsa*	—	4	—	4	2
e)	*Anchoviella*	25	2	28	55	16
f)	*Thrissocles*	25	13	8	46	200
g)	Other clupeids	26	24	6	56	—
6. a)	*Harpodon nehereus*	—	—	—	—	—
b)	*Saurida & Saurus*	11	4	11	26	23
7.	*Hemirhamphus & Belone*	—	—	—	—	—
8.	Flying fish	240	16	—	256	—
9.	Perches	56	11	50	117	141
10.	Red mullets	24	3	16	43	10
11.	Polynemids	5	2	2	9	3
12.	Sciaenids	17	14	34	65	77
13.	Ribbon fish	15	1	1	17	20
14. a)	*Caranx*	2	9	43	54	390
b)	*Chorinemus*	—	—	—	—	3
c)	*Trachynotus*	—	—	—	—	—
d)	Other carangids	—	—	—	—	—
e)	*Coryphaena*	3	—	—	3	2
f)	*Elacate*	—	—	—	—	—
15. a)	*Leiognathus*	41	12	49	102	65
b)	*Gazza*	—	—	—	—	—
16.	*Lactarius*	—	—	—	—	42
17.	Pomfrets	1	2	2	5	18
18.	Mackerel	4	7	—	11	41
19.	Seer fish	6	6	6	18	10
20.	Tunnies	1	—	—	1	—
21.	*Sphyraena*	7	—	3	10	6
22.	*Mugil*	—	—	—	—	—
23.	*Bregmaceros*	—	—	—	—	—
24.	Soles	10	1	16	27	21
25. a)	Penaeid prawns	8	10	4	22	45
b)	Non-penaeid prawns	—	—	—	—	—
c)	Lobsters	—	—	—	—	—
d)	Crabs & other crustaceans	9	9	26	44	23
26.	Cephalopods	—	—	—	—	16
27.	Miscellaneous	62	27	26	115	267
	Total	734	263	526	1,523	2,104

Table 8 *Composition of marine fish landings in Kerala during the period July to September* 1978 *(in tonnes)*

Sl. No.	Name of fish	July	August	Sept.	Total	Total for III Qr. 1977
1.	Elasmobranchs	235	614	309	1,158	2,340
2.	Eels	—	—	1	1	3
3.	Cat fishes	1,785	222	851	2,858	4,043
4.	*Chirocentrus*	84	—	10	94	178
5. a)	oil sardines	1,925	998	13,913	16,836	17,084
c)	Lesser sardines	23	246	1,680	1,949	3,451
c)	*Hilsa-ilisha*	—	18	77	95	—
d)	Other *Hilsa*	29	—	—	29	—
e)	*Anchoviella*	1,161	1,721	5,437	8,319	4,116
f)	*Thrissocles*	71	1,115	55	1,241	1,204
g)	Other clupeids	462	80	37	579	213
6. a)	*Harpodon nehereus*	—	—	—	—	—
b)	*Saurida & Saurus*	379	2,349	644	3,372	3,252
7.	*Hemirhamphus & Belone*	1	—	—	1	2
8.	Flying fish	—	—	—	—	—
9.	Perches	4,580	15,600	2,152	22,332	11,169
10.	Red mullets	2	—	94	96	16
11.	Polynemids	—	—	19	19	7
12.	Sciaenids	2,096	1,404	3,203	6,703	5,179
13.	Ribbon fish	5,809	1,007	11,168	17,984	6,852
14. a)	*Caranx*	490	199	2,024	2,713	11,451
b)	*Chorinemus*	55	7	38	100	480
c)	*Trachynotus*	—	—	—	—	—
d)	Other carangids	—	—	70	70	78
e)	*Coryphaena*	—	—	—	—	2
f)	*Elacate*	2	4	15	21	31
15. a)	*Leiognathus*	97	954	129	1,180	5,603
b)	*Gazza*	—	—	—	—	—
16.	*Lactarius*	739	61	357	1,157	498
17.	Pomfrets	33	155	33	221	2,048
18.	Mackerel	239	47	8,582	8,868	3,534
19.	Seer fish	73	224	338	635	846
20.	Tunnies	927	214	413	1,554	1,164
21.	*Sphyraena*	172	15	53	240	101
22.	*Mugil*	—	—	—	—	—
23.	*Bregmaceros*	—	—	—	—	—
24.	Soles	1,397	785	516	2,698	3,147
25.	Penaeid prawns	17,079	7,094	3,130	27,303	25,493
b)	Non-penaeid prawns	134	52	—	186	40
c)	Lobsters	—	9	19	28	—
d)	Crabs & other crustaceans	5	—	146	151	2
26.	Cephalopods	—	232	3,589	3,821	1,633
27.	Miscellaneous	1,136	481	2,630	4,247	6,069
	Total	41,220	35,907	61,732	1,38,859	1,21,329

Table 9 *Composition of marine fish landings in Karnataka during the period July to September* 1978 *(in tonnes)*

Sl. No.	Name of fish	July	August	Sept.	Total	Total for III Qr. 1977
1.	Elasmobranchs	13	156	218	387	372
2.	Eels	—	—	—	—	3
3.	Cat fishes	9	6	273	288	154
4.	*Chirocentrus*	4	1	101	106	94
5. a)	Oil sardine	1	472	926	1,399	842
b)	Lesser sardines	—	4	126	130	115
c)	*Hilsa ilisha*	—	—	51	51	1
d)	Other *Hilsa*	—	1	15	16	5
e)	*Anchoviella*	—	—	26	26	145
f)	*Thrissocles*	5	156	322	483	381
g)	Other clupeids	24	115	430	569	187
6. a)	*Harpodon nehereus*	—	2	—	2	4
b)	*Saurida & Saurus*	—	3	—	3	—
7.	*Hemirhamphus & Belone*	—	—	1	1	18
8.	Flying fish	—	—	—	—	—
9.	Perches	1	20	8	29	60
10.	Red mullets	—	1	24	25	—
11.	Polynemids	—	—	—	—	2
12.	Sciaenids	25	251	449	725	590
13.	Ribbon fish	4	35	128	167	55
14. a)	*Caranx*	5	10	6	21	23
b)	*Chorinemus*	—	1	1	2	5
c)	*Trachynotus*	—	—	—	—	—
d)	Other carangids	—	—	8	8	4
e)	*Coryphaena*	—	—	—	—	—
f)	*Elacate*	—	—	3	3	—
15. a)	*Leiognathus*	14	39	3,175	3,228	141
b)	*Gazza*	—	—	—	—	—
16.	*Lactarius*	4	44	31	79	40
17.	Pomfrets	1	—	14	15	44
18.	Mackerel	57	26	5,249	5,332	3,229
19.	Seer fish	—	13	242	255	163
20.	Tunnies	—	—	48	48	140
21.	*Sphyraena*	—	—	62	62	—
22.	*Mugil*	—	—	—	—	—
23.	*Bregmaceros*	—	—	—	—	—
24.	Soles	3	14	1,319	1,336	182
25. a)	Penaeid prawns	38	1857	93	1,988	570
b)	Non-penaeid prawns	—	12	—	12	—
c)	Lobsters	—	—	—	—	2
d)	Crabs & other crustaceans	1	—	—	1	8
26.	Cephalopods	—	—	5	5	1
27.	Miscellaneous	36	110	85	231	1,112
	Total	245	3,349	13,439	17,033	8,692

Table 10 *Composition of marine fish landings in Goa during the period July to September 1978 (in tonnes)*

Sl. No.	Name of fish	July	August	Sept.	Total	Total for III Qr. 1977
1.	Elasmobranchs	1	5	111	117	41
2.	Eels	—	—	—	—	—
3.	Cat fishes	—	—	148	148	80
4.	*Chirocentrus*	—	6	8	14	9
5. a)	Oil sardine	—	12	8	20	203
b)	Lesser sardines	—	—	212	212	628
c)	*Hilsa ilisha*	—	—	—	—	—
d)	Other *Hilsa*	—	1	—	1	1
e)	*Anchoviella*	—	—	—	—	3
f)	*Thrissocles*	—	11	220	231	54
g)	Other clupeids	1	—	17	18	94
6. a)	*Harpodon nehereus*	—	5	—	5	20
b)	*Saurida & Saurus*	—	—	—	—	—
7.	*Hemirhamphus & Belone*	—	1	3	4	7
8.	Flying fish	—	—	—	—	—
9.	Perches	1	7	—	8	13
10.	Red mullets	—	—	—	—	—
11.	Polynemids	—	—	—	—	—
12.	Sciaenids	—	6	59	65	1,611
13.	Ribbon fish	—	—	11	11	16
14. a)	*Caranx*	—	3	39	42	125
b)	*Chorinemus*	—	—	9	9	6
c)	*Trachynotus*	—	—	—	—	—
d)	Other carangids	—	—	—	—	—
e)	*Coryphaena*	—	—	—	—	—
f)	*Elacate*	—	—	35	35	2
15. a)	*Leiognathus*	—	8	58	66	101
b)	*Gazza*	—	—	—	—	—
16.	*Lactarius*	—	—	2	2	5
17.	Pomfrets	—	—	19	19	7
18.	Mackerel	—	—	105	105	432
19.	Seer fish	—	1	331	332	20
20.	Tunnies	—	—	258	258	1
21.	*Sphyraena*	—	—	1	1	—
22.	*Mugil*	—	1	1	2	3
23.	*Bregmaceros*	—	—	—	—	—
24.	Soles	—	—	20	20	15
25. a)	Penaeid prawns	2	11	8	21	276
b)	Non-penaeid prawns	—	—	—	—	—
c)	Lobsters	—	—	—	—	—
d)	Crabs & other crustaceans	—	—	3	3	—
26.	Cephalopods	—	—	—	—	27
27.	Miscellaneous	4	11	42	57	107
	Total	9	89	1,728	1,826	3,907

Table 11 *Composition of marine fish landings in Maharashtra during the period July to September 1978 (in tonnes)*

Sl. No.	Name of fish	July	August	Sept.	Total	Total for III Qr. 1977
1.	Elasmobranchs	171	223	737	1131	504
2.	Eels	—	—	341	341	289
3.	Cat fishes	535	188	1,112	1,835	503
4.	*Chirocentrus*	—	7	87	94	174
5. a)	Oil sardine	—	—	—	—	—
b)	Lesser sardines	5	—	63	68	26
c)	*Hilsa ilisha*	—	—	1	1	—
d)	Other *Hilsa*	—	—	17	17	110
e)	*Anchoviella*	15	—	22	37	189
f)	*Thrissocles*	5	39	102	146	73
g)	Other clupeids	204	178	528	910	1,945
6. a)	*Harpodon nehereus*	865	734	2,013	3,612	4,291
b)	*Saurida & Saurus*	—	52	152	204	—
7.	*Hemirhamphus & Belone*	2	—	28	30	—
8.	Flying fish	—	—	—	—	—
9.	Perches	76	413	795	1,284	7
10.	Red mullets	—	—	—	—	—
11.	Polynemids	21	2	92	115	89
12.	Sciaenids	622	581	903	2,106	2,533
13.	Ribbon fish	301	432	1,278	2,011	559
14. a)	*Caranx*	1	20	112	133	18
b)	*Chorinemus*	—	13	150	163	12
c)	*Trachynotus*	—	—	—	—	—
d)	Other carangids	—	—	—	—	—
e)	*Coryphaena*	—	—	—	—	—
f)	*Elacate*	—	—	—	—	—
15. a)	*Leiognathus*	1	1	19	21	23
b)	*Gazza*	—	—	—	—	—
16.	*Lactarius*	—	15	62	77	95
17.	Pomfrets	16	71	823	910	3,421
18.	Mackerel	4	7	60	71	21
19.	Seer fish	—	1	326	327	422
20.	Tunnies	195	325	119	639	1
21.	*Sphyraena*	3	5	1	9	—
22.	*Mugil*	36	5	14	55	25
23.	*Bregmaceros*	—	—	—	—	—
24.	Soles	166	5	5	176	107
25. a)	Penaeid prawns	2,240	2,277	4,958	9,475	3,576
b)	Non-penaeid prawns	626	449	446	1,521	3,978
c)	Lobsters	3	50	66	119	7
d)	Crabs & other crustaceans	57	1	—	58	12
26.	Cephalopods	32	3	16	51	26
27.	Miscellaneous	423	594	1,531	2,548	4,157
	Total	6,625	6,691	16,979	30,295	27,193

Kerala

In this State the catch increased by 17,530 tonnes during the period July to September, as compared to the corresponding period in 1977. The increase in total catch was due to higher landings of *Anchoviella*, perches, sciaenids, ribbon fish, *Lactarius*, mackerel, tunnies, penaeid prawns and cephalopods. The landings of elasmobranchs, cat fishes, oil sardines, lesser sardines, *Caranx*, *Leiognathus*, pomfrets, seer fish and soles, however, were comparatively poor. From Table 8 it is noticed that the maximum landings were in September, forming 44.46% of the total catch of the quarter, the percentages of the catch for July and August being 29.68 and 25.86 respectively.

Karnataka

The catch in Karnataka during the quarter almost doubled when compared to that of the corresponding quarter of 1977. The successful fishery in respect of oil sardine, *Thrissocles*, other clupeids, sciaenids, ribbon fish, *Leiognathus*, mackerel, soles and penaeid prawns contributed to this increase in catch. The landings of *Anchoviella*, perches, pomfrets and tunnies, however, showed a decline. The specieswise catch details are shown in Table 9 from which it is seen that the landings in September were the maximum, the minimum being in the month of July.

Goa

The marine fish production in Goa declined by 2,081 tonnes in this quarter. While the landings of elasmobranchs, cat fishes, *Thrissocles*, *Elacate*, seer fish and tunnies showed some increase, oil sardine, lesser sardines, other clupeids, sciaenids, *Caranx*, *Leiognathus*, mackerel, penaeid prawns and cephalopods recorded poor landings. From table 10 it is seen that the maximum landings were recorded in September and the minimum in July.

Maharashtra

The total landings in Maharashtra showed an increase of 3,102 tonnes as compared to the corresponding period in 1977. A substantial increase in the landings of elasmobranchs, eels, cat fishes, *Thrissocles*, perches, *Saurida & Saurus*, ribbon fish, *Caranx*, *Chorinemus*, tunnies, soles, penaeid prawns, lobsters, crabs & other crustaceans and cephalopods was noticed. The catch of *Chirocentrus*, *Hilsa*, *Anchoviella*, other clupeids *Harpodon nehereus*, sciaenids, pomfrets, seer fish and non-penaeid prawns, however, showed some decline.

Table 12 *Composition of marine fish landings in Gujarat during the period July to September* 1978 *(in tonnes)*

Sl. No.	Name of fish	July	August	Sept.	Total	Total for III Qr. 1977
1.	Elasmobranchs	167	422	2,457	3,046	1,371
2.	Eels	—	—	212	212	40
3.	Cat fishes	100	78	212	390	313
4.	*Chirocentrus*	3	5	100	108	103
5. a)	Oil sardine	—	—	—	—	—
b)	Lesser sardines	—	—	—	—	—
c)	*Hilsa ilisha*	6	2	9	17	—
d)	Other *Hilsa*	91	79	176	346	340
e)	*Anchoviella*	—	—	—	—	—
f)	*Thrissocles*	2	—	5	7	6
g)	Other clupeids	35	25	49	109	298
6. a)	*Harpodon nehereus*	58	42	346	446	491
b)	*Saurida & Saurus*	2	—	—	2	36
7.	*Hemirhamphus & Belone*	—	—	—	—	—
8.	Flying fish	—	—	—	—	—
9.	Perches	1	11	9,653	9,665	50
10.	Red mullets	—	—	—	—	38
11.	Polynemids	130	80	72	282	7
12.	Sciaenids	147	12	12,872	13,031	13,161
13.	Ribbon fish	1	28	997	1,026	745
14. a)	*Caranx*	2	17	2	21	20
b)	*Chorinemus*	1	—	123	124	224
c)	*Trachynotus*	—	—	—	—	—
d)	Other carangids	—	—	—	—	—
e)	*Coryphaena*	—	—	—	—	—
f)	*Elacate*	—	—	—	—	—
15. a)	*Leiognathus*	—	—	—	—	—
b)	*Gazza*	—	—	—	—	—
16.	*Lactarius*	—	—	—	—	973
17.	Pomfrets	185	7,603	267	8,055	1,581
18.	Mackerel	—	—	—	—	—
19.	Seer fish	22	3	381	406	118
20.	Tunnies	—	1	764	765	40
21.	*Sphyraena*	—	—	—	—	—
22.	*Mugil*	54	28	75	157	209
23.	*Bregmaceros*	—	—	—	—	—
24.	Soles	—	—	—	—	27
25. a)	Penaeid prawns	19	27	1,624	1,670	2,326
b)	Non-penaeid prawns	21	29	88	138	130
c)	Lobsters	—	—	14	14	6
d)	Crabs & other crustaceans	30	8	—	38	17
26.	Cephalopods	—	—	651	651	—
27.	Miscellaneous	132	57	1,614	1,803	373
	Total	1,209	8,557	32,763	42,529	23,043

Table II gives the catch particulars of this quarter. The bulk of the landings was recorded in September when about 56% of the total catch of the quarter was obtained. The minimum landings were recorded in the months of July and August during which months the landings remained almost the same.

Gujarat

In Gujarat an increase of about 19,500 tonnes in the landings was noticed during July to September as compared to the same period in 1977. The increase was due to higher landings of elasmobranchs, eels, cat fishes, perches, polynemids, ribbon fish, pomfrets, seer fish, tunnies, lobsters, crabs & other crustaceans and cephalopods. The landings of clupeids, *Harpodon nehereus,* red mullets, sciaenids, *Chorinemus, Lactarius, Mugil* and penaeid prawns were poor. The maximum landings were recorded in September and the minimum in July (Table 12).

NEWS — INDIA AND OVERSEAS

Krishi Vigyan Kendra trains farm women in prawn/fish seed collection

Under the various training programmes of the Krishi Vigyan Kendra for mariculture established at Narakkal near Cochin by the Central Marine Fisheries Research Institute, farm women are given training in prawn/fish seed collection. Several prawn farmers engaged in the traditional prawn filtration in paddy fields are slowly adopting selective stocking of fast and larger growing prawns like naran chemmeen (*Penaeus indicus*) and culturing for varying periods. This would require a regular supply of prawn seed of the correct variety in large quantities and the collection of these has become a very lucrative job in these areas.

In this connection the Krishi Vigyan Kendra is regularly training farmers in the collection of seed from the surf region and backwater canals. Farm women also are given training in this field so that they could use their leisure time in this work and at the same time earn an extra income. Under this programme 101 women belonging to small, marginal as well as landless farmers' families have been trained. Many of them

Training in collection of prawn seed from canal using special nets.

Women trainees learn to sort the collection

are now employed by prawn culturists in seed collection of naran chemmeen and it is reported that each individual earns about Rs. 10/- per day.

Aids to fish catching

The Information Planning and Analysis Group (IPAG) of the Electronics Commission of the Government of India has identified two electronic aids as indispensible for increasing the country's offshore catch of fish, namely, the echo sounder and the radio telephone. IPAG has recommended that for a start India should manufacture 1000 pieces of these equipments of 110-watt output yearly. The report says that the state-owned Bharat Electronics Ltd., Bangalore has the know-how to produce these instruments with a range of 50 fathoms. According to the Commission report modernisation of the fishing fleet would increase the yearly catch from the continental shelf alone tenfold.

Fishing harbour planned for Goa

The Department of Agriculture is proposing to construct a fishing harbour in Goa. The project is estimated to cost Rs. 28.9 million. There would be facilities to handle 250 mechanised boats ranging in length from 11 to 16 m. Among the harbour works to be undertaken are the construction of breakwaters, 440 m of wharfs, a slipway with slide slipping arrangements and onshore facilities such as an auction hall, water supply, roads and buildings.

20% rise in marine products exports

Exports of marine products from India in the first eight months of the current financial year (April to November 1978) touched a record level of Rs. 143.75 crores against 118.29 crores in the corresponding period of the previous year, thereby registering an increase of nearly 20%. At the present rate, the exports for the full year might well cross Rs. 200 crores. In terms of quantity, however, the rise was not very conspicuous, increasing from 41,074 tonnes during April-November 1977 to 47,019 tonnes in April–November 1978, an increase of 13 per cent. Evidently the unit price realisation has been picking up in the recent past.

Mussels take to Arctic

Mussels farmed in the warm waters of the Black Sea and off the coast of California are now being grown on a sea farm in the Arctic conditions of the northern coast of the Soviet Union. A pilot scale commercial farm consisting of 80 rafts has been established at western Zelenetskaya inlet. Feasibility studies conducted earlier have shown that nearly 5 to 6 kg of edible fish a year can be harvested from each square metre of the rafts. The first year's harvest from the pilot installation is estimated at two and a half tonnes.

The mussels will be used for providing protein rich additives to various food stuffs in Arctic regions, particularly around Murmansk.

Fish Farming International: June 1977

Shrimp farming by restocking the sea in Japan

Production of seeds in culture fisheries is quite high in Japan and farming by restocking, as opposed to farming by culture in captivity, is gaining importance. The techniques of production of seedlings by laboratory spawning and rearing of larvae of shrimps has been so much streamlined that the production of these seeds has reached a very high level. Because such a high level of seedling production was far beyond the capacity of traditional culture in ponds, researchers began looking for a new method of using the seed production capacity on a large scale. As early as in 1964 they started experiments for releasing fish and shrimp seedlings in large quantities using the Seto Inland Sea as a large semi-enclosed sea area. Following the successful results of these experiments, the concept of restocking has been enlarged to include all suitable coastal areas around the Japanese islands. Species for restocking are chosen according to their suitability for the local coastal ecology.

Subsequently there has been considerable improvement in releasing and recapture technology. From an economic point of view it is too expensive to rear the seedling to the early adolescent stage (body length 25–30 mm) in tanks on shore on a large scale. So it was necessary to find a method for moving the seedlings into the sea at the early juvenile stage (body length 7–9 mm). The difficulty was to protect the small seedlings from natural predators until they were big enough to swim away and escape, which they are capable of doing only at the adolescent stage. By experimentation a solution for this has been found by constructing an artificial beach for the juvenile shrimp, preventing the predators to inhabit the initial restocking area. At the same time the seedlings are enabled to move down the beach naturally as they grow and eventually move offshore when they reach the sub adult stage. By using artificial beaches for releasing post larvae, the recapture rate has increased from less than one percent to about 30 percent, thus assuring a high survival rate.

World Fishing: August 1977

Vast area set aside as a crab reserve

The USSR claims to have established the world's first crab reserve. Situated in the Soviet Far East off the Kamchatka shores, around Ptichy Island in the Okhotsk Sea, it covers an area of more than 4500 square miles.

During an expedition in 1976 Soviet scientists found large accumulations of young crabs in an area near the planned reserve. Trawling is already prihobited there. This protection would provide conditions to increase the stock of crabs in these areas. The Pacific Institute of Fisheries and Oceanography is now investigating the artificial breeding of crabs.

FNI. 16 (4):April 1977.

Low cost oil dispersant

A new low cost oil dispersant and solvent, Fleetex BD/3, with particular application at sea and on waterways has been developed by lubricant specialists Isaac Bentley & Co. Ltd., a subsidiary of Marston Lubricants Ltd., of Liverpool, England. The solvent is claimed to be significant in that it will not damage aquatic life when used to clear oil spillages at sea or in waterways and thus biologically acceptable.

According to the manufacturers, when applied to spillages of oil or grease Fleetex BD/3 renders them emulsifiable with seawater and disperses them immediately. The product has the approval of the UK Department of Industry's Warren spring Laboratory as an oil dispersant suitable for oil spill clean up operations at sea, on coastal waters and beaches.

FNI. 16 (4):April 1977

Development of marine fish farms in desert

The Government of Israel has planned for a major development scheme in which water from the Mediterranean will be syphoned off and channelled more than 80 km to the Dead Sea. While supplying much-needed water to maintain a viable level of the Dead Sea, this will also provide means of generating electricity on a large scale as well as helping to set up fish farms in desert areas on the sides of the channel.

The flow of water by gravitation will be about 70 tonnes per second. The water will be channelled through an open channel initially from the Mediterranean and then tunnelled through the mountians of Judea to a reservoir which will collect the water before it falls about 390 m to the Dead Sea. The electricity to be generated will provide about 15% of the power requirements of Israel.

About 1500 ha of fish ponds are to be developed in depressions in the desert adjacent to the channel of the water way. The saline water in these ponds will be used for culture of sole, grey mullet, sea bream, sea bass and shrimp with estimated yields ranging from 1000 to 3000 tonnes per year. The construction of the waterway will take many years and this will give the aquaculturist ample time to choose the fish to cultivate in the ponds.

The scheme is expected to lead to great changes in the areas through which the waterway will pass. In addition to the ponds, facilities such as roads, power, services etc. will have to be provided. Economic expansion and growth will take place throughout the adjacent territory as a result of movement of large numbers of people into these areas and establishment of industries, leading to the blooming of the desert.

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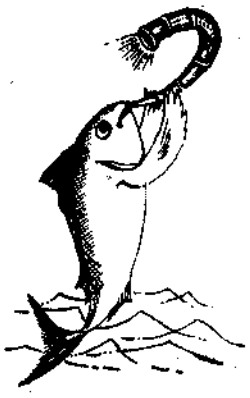

BOOKS

Shrimp and prawn farming tn the western hemisphere. Edited by Joe A. Hanson and Harold L. Goodwin. Dowden, Hutchinson and Ross. Inc., Stroudsburg, Pennsylvania, pp 439 ,1977.

This book is in two parts, the first part containing the proceedings of the workshop on the culture of penaeid shrimp held in Galveston, Texas, October 8-11, 1975 and the second part containing the proceedings of the second workshop on the culture of the freshwater prawn *Macrobrachium* sp. held in Charleston, South Carolina, July 14–15, 1976. It is a compilation of the contributions of the participants on state-of-the-art reviews and status assessments concerning shrimp and prawn culture and presents a comprehensive picture of the culture of the marine penaeid shrimps as well as the fresh water prawn in America up to the present time. In the case of the penaeid shrimp, since some of the most advanced research and development work is currently under way at AQUACOP, Centre Oceanologique du Pacifique (COP), Tahiti, work at this centre also is included in the report which is otherwise concerned with the Americas. The state-of-the-aquaculture art with reference to shrimp and prawn is reviewed under various heads such as life cycle control, hatchery systems, grow-out systems and systems engineering, diseases and disease control, nutrition and feeds, production economics and processing and marketing, legal and regulatory issues and research priorities. Details concerning the people and orgranisations involved in shrimp and prawn culture along with extensive bibliography, listing 1019 references, enhances the value of the publication.

Fish population dynamics. Edited by John Gulland. John Wiley & Sons, New York, pp 372, 1977.

The book describes how the dynamics of fish populations can be analysed in terms of the factors affecting their rates of growth, mortality and reproduction, with particular emphasis on the effects of fishing. Drawing on the expertise of recognised authorities in the different fields from the world over, it gives a comprehensive picture of the present state of these studies. A thorough knowledge concerning the dynamics of fish populations is necessary for proper fishery management and the contributions of the various authors present a review of what has been accomplished and of problems currently being attacked. It should be of interest and of practical value to all who are concerned with the management of aquatic resources.

Aquacultural Engineering. By Frederick W. Wheaton. John Wiley & Sons, New York, pp 708, 1977.

Physical, biological and design data which are useful to practising aquacultural engineers, biologists, hatchery managers, aquaculturists and others concerned with the culture of aquatic organisms or with fisheries are summarised in this book. It provides a hand book that will save hundreds of hours of literature searching, since most available design concepts and data are assembled in this single volume. It is divided into two parts, of which the first one deals with the interaction of the environment with aquatic organisms. The second part emphasises the engineering considerations of different aspects of aquaculture. An attempt has been made in this vlume to summarise current knowledge and to give design information where possible.

Submersibles and their uses in oceanography and ocean engineering. Edited by Richard A. Geyer. Elsevier Scientific Publishing Company, Amsterdam, Oxford, New York, pp 383, 1977.

This is the 17th volume of the Elsevier Oceanography Series. The book gives a series of case histories describing the results of the most recent developments in the use of submersibles to solve diversified problems in the ocean for a wide variety of scientific and engineering disciplines. These case histories are taken from diversified scientific disciplines as geological, geophysical and biological oceanography. It is useful for scientists, engineers, management personnel in the academic, industrial and governmental sectors as well as lawyers, bankers and insurance companies.

Fundamentals of marine acoustics. By Jerald W. Caruthers. Elsevier Scientific Publishing company, Amsterdam, Oxford, New York, pp 153, 1977.

This is the 18th volume of the Elsevier Oceanography Series intended for those graduate and upper level undergraduate students in technical fields who wish to know something about how sound is propagated in the ocean. It is also useful for the practising engineer and scientist.

Oceanography and Marine Biology—An annual Review Vol. 15. Edited by Harold Barnes. Aberdeen University Press, Scotland, pp 600, 1977.

The volume consists of contributions by different authors on chemical equilibrium in the oceans, recent Japanese contributions to marine chemistry, marine lipids, anaerobic energy metabolism in bivalve molluscs, algal calcification, inorganic particulate suspensions in the sea and their effects on marine animals, radionuclides in marine fish and the physiology and behaviour of chitons (Mollusca: Polyplacophora). This would be an essential reference text for research workers and students.

ICAR GOLDEN JUBILEE TRANSFER OF TECHNOLOGY PROGRAMME OF CMFRI

The Indian Council of Agricultural Research has launched its Golden Jubilee celebrations in 1979 with the **LAB TO LAND** programme as the major highlight. The ICAR has taken up an ambitious programme of reaching 50,000 farming families belonging to the marginal and small farmer groups and landless labour with appropriate agricultural technologies for the improvement of their lot and for bringing in integrated rural development. The ICAR Institutes, Agricultural Universities and Voluntary Agencies are involved in this programme.

Under this programme, the Central Marine Fisheries Research Institute is transferring the technologies developed at the Institute in (1) marine prawn culture, (2) mixed farming of fishes and prawns, (3) mussel culture, (4) oyster culture and (5) seaweed culture.

Farmers having small holdings of suitable water area have been selected in Ketamangalam, Ezhikara, Valappu and Puthuvypu villages in Ernakulam District and Thekkumbhagom and Ayiramthengu villages in Quilon District for the programme on marine prawn culture and in some cases polyculture. Ten families have been selected from Elathur in Calicut District for the transfer of mussel culture technology. Karikadu Kuppam, a village near Madras with over 100 families has been adopted for a large-scale mussel culture programme. Oyster culture has been taken up at Tuticorin and seaweed culture at Mandapam Camp.

The Institute provides all technical inputs and also conducts training programmes for these farmers. Right from the preparation and stocking of ponds upto harvest and marketing, the scientists monitor the fields. With this assistance from the Institute during the Golden Jubilee Year the farmers can be expected to continue intensive farming practices in a scientific manner in future for increasing the production.

The programme of the Institute also includes organising an Extension Fortnight when technical exhibitions will be conducted, Krishi Melas will be organised and the scientists and technicians will reach the villages with the message of science.

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