

Table 3.1.1 – Bacterial population in water and sediment off Okha during 1992 – 1998 (Average values given in parenthesis)

Type of bacteria	January 1992		February 1993	
	Water (no./ml)		Water (no./ml)	
	Plate	MF	Plate	MF
TVC	49.77	18	9.0-10.9 (10.1)	26.0-55.0 (36.0)
TC	1.08	0.7	ND-3.3 (1.2)	2.4-7.0 (4.3)
Mac Conkey ECLO	0.9	0.1	ND-1.7 (0.6)	0.8-2.0 (1.3)
M-Fc ECLO	0.58	ND	ND-2.0 (0.8)	0.2-1.2 (0.6)
SHLO	0.83	0.6	ND-0.3 (0.1)	ND-2.0 (1.2)
SLO	ND	ND	ND	ND
PKLO	1.08	0.8	ND-2.3 (0.8)	0.8-6.0 (2.5)
VLO	1.58	4.2	0.3-4.0 (1.4)	2.2-20.0 (8.3)
VPLO	0.1	1.0	ND	0.2-0.8 (0.5)
VCLO	1.42	2.4	0.3-2.0 (0.8)	1.2-17.0 (6.7)
PALO	2.6	3.1	ND	0.8-9.2 (4.5)
SFLO	ND	0.1	ND	ND-0.2 (0.1)

Type of bacteria	February 1996		February 1997		
	Water (no./ml)	Sediment (no. X 10 <sup>2</sup> /g dry wt.)	Water (no./ml)		Sediment (no. X 10 <sup>2</sup> /g dry wt.)
			Surface	Bottom	
TVC	169-BCR	1260			
TC	25-61	1.9	13.3-30.7 (18.6)	12.0-23.0 (17.4)	1.2-20.1 (5.3)
Mc Conkey ECLO	3-4	0.2	0.3-2.3 (1.4)	0-1.5 (0.7)	0-0.1 (0.03)
M-Fc ECLO	13-80	NR	0-0.3 (0.04)	0	0
SHLO	6-9	NR			
SLO	NR-2	NR			
PKLO	2-23	0.6			
VLO	2-49	1.9	29.0-67.3 (45.1)	30.5-52.0 (40.0)	0.8-1.6 (1.1)
VPLO	NR	NR	0.3-4.3 (1.8)	0-1.5 (0.8)	0-0.1 (0.04)
VCLO	2-46	1.1	0.3-5.0 (1.9)	0.5-1.5 (1.0)	0-0.1 (0.03)
PALO	NR-72	NR	0-2.3 (1.2)	0-1.3 (0.6)	0.01-0.05 (0.04)
SFLO	42-BCR	NR			

Table 3.1.1 (Contd. 2)

Type of bacteria	April 1997			September 1997			April 1998	
	Water (no./ml)		Sediment (no.X10 <sup>2</sup> /g dry wt.)	Water (no./ml)		Sediment (no.X10 <sup>2</sup> /g dry wt)	Water (no./ml)	Sedi ment (no. X10 <sup>2</sup> /g dry wt.)
	Plate	MF		Surface	Bottom			
TVC	1.67 X 10 <sup>2</sup>	2.7 X 10 <sup>2</sup>	1680				6.3 X 10 <sup>3</sup>	140
TC	15	27	2.4	5.0-21.7 (11.9)	10.7-20.0 (13.7)	0-50.1 (24.5)	21	2.6
Mac Conkey ECLO	--	--	0.9	0-5.0 (1.9)	1.3-6.5 (2.7)	0-10.0 (3.1)	10.8	1.3
M-Fc ECLO	--	1	--	0-0.5 (0.2)	0-0.7 (0.4)	0	--	--
SHLO	10	33	1.15				5	0.1
SLO	--	--	--				ND	ND
PKLO	11	18	0.2				15	2.4
VLO	15	28	8.8	26.7-96.7 (48.1)	33.5-62.0 (43.2)	2.9-8.0 (5.5)	35.8	14
VPLO	3	4	--	1.7-10.0 (6.3)	2.5-6.5 (3.8)	0-3.0 (1.4)	10	3.5
VCLO	6	6	4.8	3.3-21.7 (14.3)	1.7-16.7 (6.8)	0	22.5	10
PALO	--	15	--	0-6.7 (2.9)	1.0-5.7 (2.2)	3.9-20.0 (11.2)	ND	ND
SFLO	5	14	10.6				ND	ND

Table 3.1.2 – Bacterial population in water and sediment off Vadinar during 1997 (Average values given in parenthesis)

Type of bacteria	March 1996			March 1997		
	Water (no./ml)		Sediment (no. X 10 <sup>2</sup> /g dry wt.)	Water (no./ml)		Sediment (no. X 10 <sup>2</sup> /g dry wt.)
	Plate	MF		Plate	MF	
TVC	17-56 (30)	29-71 (52)	260-2380 (1500)	49-1100 (290)	56-1000 (281)	430-3600 (1543)
TC	ND-7 (3)	2-14 (7)	ND-180 (63)	ND-59 (24)	ND-67 (25)	0.4-12 (3.01)
Mac Conkey ECLO	ND	ND-1 (0.6)	ND-180 (45)	ND-9 (3)	ND-11 (6)	ND
M-Fc ECLO	ND-3 (0.4)	ND-7 (1.3)	ND-80 (20)	ND-16 (3)	ND-14 (6)	ND-3.4 (1.1)
SHLO	ND-7 (2.1)	4-12 (6)	ND-60 (15)	11-39 (16)	11-40 (21)	ND-6.7 (1.7)
SLO	ND	ND	-	ND-1 (0.1)	ND-2 (0.5)	-
PKLO	1-11 (6)	6-20 (13)	-	1-29 (9)	5-96 (21)	ND-4.4 (2.0)
VLO	4-9 (4)	4-16 (8)	ND-260 (73)	10-64 (29)	11-71 (36)	ND-25 (7.0)
VPLO	ND	ND	-	ND-21 (5)	ND-23 (6)	-
VCLO	1-4 (2)	2-11 (6)	-	2-28 (12)	7-32 (17)	ND-16 (5.3)
PALO	ND	2-16 (9)	-	ND	2-42 (16)	-
SFLO	ND-4 (1)	ND-4 (2)	ND-160 (107)	ND-21 (6)	ND-29 (9)	ND-3.3 (0.85)

Table 3.1.3 – Bacterial population in water and sediment off Sikka during 1997 (Average values given in parenthesis)

Type of bacteria	March/April 1997		
	Water (no./ml)		Sediment (no. X 10 <sup>2</sup> /g dry wt.)
	Plate	MF	
TVC	49-500 (278)	56-600 (249)	130 - 2820 (1030)
TC	ND-39 (22)	ND-62 (28)	ND-0.4 (0.2)
Mac Conkey ECLO	ND-19 (6)	ND-8 (3)	ND
M-Fc ECLO	ND-19 (6)	ND-28 (10)	ND
SHLO	9-31 (11)	7-34 (18)	ND
SLO	ND-6 (0.9)	ND-2 (0.4)	ND
PKLO	ND-28 (10)	2-32 (13)	ND-0.4 (0.1)
VLO	10-42 (23)	16-62 (38)	ND-2.9 (1.4)
VPLO	ND-2 (0.4)	ND	ND
VCLO	2-16 (8)	6-32 (19)	ND-1.8 (0.7)
PALO	ND-16 (2)	2-42 (14)	ND
SFLO	1-28 (8)	ND-31 (13)	ND-1.1 (0.4)

Table 3.1.4 – Bacterial population in water and sediment off Bedi during 1997 (Average values given in parenthesis)

Type of bacteria	February/March 1997		
	Water (no./ml)		Sediment (no. x 10 <sup>2</sup> /g dry wt.)
	Plate	MF	
TVC	27-600 (160)	40-700 (209)	530-3500 (1748)
TC	ND-121 (17)	ND-93 (21)	ND-7.3 (5.2)
ECLO	ND-21 (4)	ND-9 (3)	ND-1.8 (0.8)
M-Fc ECLO	ND-14 (5)	ND-12 (4)	ND-1.4 (0.4)
SHLO	ND-52 (7)	1-68 (11)	ND-1.7 (0.6)
SLO	ND-7 (0.7)	ND-9 (0.7)	-
PKLO	ND-29 (7)	ND-36 (11)	ND-1.7 (0.3)
VLO	2-71 (21)	7-89 (32)	5.0-12.9 (7.5)
VPLO	ND-22 (5)	ND-19 (5)	ND-1.3 (0.3)
VCLO	ND-46 (7)	ND-39 (9)	ND-7.3 (2.1)
PALO	ND	ND-22 (9)	-
SFLO	ND-21 (5)	ND-31 (9)	ND-1.7 (0.6)

Table 3.1.5 – Bacterial population in water and sediment off Kandla during 1998 (Average values given in parenthesis)

Type of bacteria	March 1996			October 1996			February 1998	
	Water (no./ml)		Sediment (no.X10 <sup>2</sup> /g dry wt.)	Water (no./ml)		Sediment (no.X10 <sup>2</sup> /g dry wt)	Water (no./ml)	Sediment (no. X10 <sup>2</sup> /g dry wt.)
	Plate	MF		Plate	MF			
TVC	9-182 (51)	17-269 (123)	8.31-16.7 (12.5)	1 X 10 <sup>2</sup> -7 X 10 <sup>2</sup> (3 X 10 <sup>2</sup> )	2 X 10 <sup>2</sup> -12 X 10 <sup>2</sup> (6 X 10 <sup>2</sup> )	3.1-8.4 (6.6)	2.4 X 10 <sup>3</sup> -7.8 X 10 <sup>4</sup> (4.2 X 10 <sup>4</sup> )	23-1000 (360)
TC	1-34 (13)	3-74 (28)	2.8-6.4 (4.6)	ND-89 (26)	ND-76 (29)	1.3-6.9 (3.9)	10-212 (92)	ND-0.7 (0.2)
Mac Conkey ECLO	ND-9 (2)	ND-12 (2)	ND-2.55 (1.3)	-	-	ND	ND-115 (42)	ND-0.3 (0.1)
M-Fc ECLO	ND-2 (0.2)	ND-4 (0.7)	ND	ND-2 (0.2)	ND-12 (2.0)	3.0-3.6 (2.2)		
SHLO	ND-11 (4)	ND-19 (9)	ND	ND-33 (18)	ND-46 (23)	ND-1.3 (0.4)	ND-580 (89)	ND-0.1 (0.04)
SLO	ND	ND-3 (0.5)	ND	ND-3 (0.7)	ND	ND	ND	ND
PKLO	ND-19 (9)	1-31 (14)	ND-0.9 (0.4)	ND-44 (17)	ND-67 (23)	2.1-8.2 (5.1)	ND-205 (51)	ND-0.1 (0.04)
VLO	3-49 (13)	7-80 (25)	0.3-2.9 (1.6)	ND-74 (37)	ND-90 (51)	2.9-3.7 (3.2)	10-245 (84)	ND-0.38 (0.13)
VPLO	ND	ND-1 (0.1)	ND	ND	ND		ND-122 (38)	ND-0.2 (0.1)
VCLO	ND-14 (4)	3-32 (10)	ND	ND-64 (26)	ND-74 (34)	1.3-3.1 (2.4)	5-123 (47)	ND-0.2 (0.05)
PALO	ND-13 (4)	ND-29 (12)	ND	ND	ND-36 (14)	ND	ND-85 (8)	ND
SFLO	ND-36 (11)	ND-60 (21)	ND-0.9 (0.5)	ND-69 (32)	21-72 (40)	4.7-11.4 (7.6)	ND-220 (28)	ND-0.8 (0.1)

Table 3.1.6 – Bacterial population in water and sediment off Luni during 1997 (Average values given in parenthesis)

Type of bacteria	March/April 1997		
	Water (no./ml)		Sediment (no. x 10 <sup>2</sup> /g dry wt.)
	Plate	MF	
TVC	62-500 (194)	79-600 (266)	1620-4790 (3170)
TC	ND-12 (7)	2-19 (11)	2.9-5.1 (7.1)
Mac Conkey ECLO	ND-8 (2)	ND-8 (2)	ND
M-Fc ECLO	1-6 (3)	ND-9 (4)	ND
SHLO	ND-21 (8)	2-27 (11)	ND-10.1 (6.3)
SLO	ND	ND-1 (0.2)	(ND)
PKLO	ND-11 (3)	1-15 (7)	ND-7.5 (3.5)
VLO	2-48 (29)	6-68 (37)	ND-5.9 (3.2)
VPLO	ND-16 (5)	ND-17 (4)	ND
VCLO	ND-30 (14)	ND-42 (21)	ND-5.9 (2.0)
PALO	ND	2-27 (13)	ND
SFLO	2-11 (5)	5-16 (11)	ND-2.9 (1.0)

Table 3.1.7 – Bacterial population in water and sediment off Mundra during 1997 – 1998 (Average values given in parenthesis)

Type of bacteria	March 1997		July 1998	
	Water (no./ml)	Sediment (no. x 10 <sup>2</sup> /g dry wt.)	Water (no./ml)	Sediment (no. x 10 <sup>2</sup> /g dry wt.)
TVC	0.7-1.3 X 10 <sup>2</sup> (1.0 X 10 <sup>2</sup> )	3100-4800 (4000)	3.6-30 X 10 <sup>3</sup> (14.3 X 10 <sup>3</sup> )	50-1700 (1120)
TC	3-14 (9)	5-13 (9)	0.7-2.6 X 10 <sup>3</sup> (6.6 X 10 <sup>2</sup> )	2-1500 (69.8)
Mac Conkey ECLO	ND-2 (1)	ND	ND-85 (33.5)	ND-6.4 (2.1)
M-Fc ECLO	1-7 (4)	ND		
SHLO	1-24 (13)	10-89 (50)	1.3-1.8 X 10 <sup>2</sup> (7.1 X 10 <sup>2</sup> )	50-340 (140)
SLO	ND-1 (1)	ND	ND-70 (28.5)	1.7-13 (6.4)
PKLO	1-13 (6)	2.9-7.5 (5.2)	10-520 (132)	14-140 (52)
VLO	4-38 (22)	ND-5.9 (3.0)	35-680 (212.5)	1.6-150 (64)
VPLO	ND-16 (8)	ND	15-150 (55)	8-93 (28)
VCLO	ND-19 (9)	ND-5.9 (3.0)	ND-530 (155.5)	6-150 (55)
PALO	1-6 (4)	ND	ND-5 (1)	1-71 (29)
SFLO	4-11 (7)	2.9 (2.9)	ND-190 (33.5)	ND-25 (13)

Table 3.2.1 - Primary productivity, phytoplankton pigments, population and composition off Okha during 1981 to 1999 (Average values given in parenthesis)

Parameters	Level	March/April 1981	December 1981
Chlorophyll <i>a</i> (mg/m <sup>3</sup> )	S	0.1-19.1 (5.0)	0.9-6.7 (3.1)
Chlorophyll <i>b</i> (mg/m <sup>3</sup> )	S	0.8-18.8 (5.6)	0.3-3.0 (1.3)
Chlorophyll <i>c</i> (mg/m <sup>3</sup> )	S	0.01-118.2 (24.5)	2.6-11.0 (4.5)
Total chlorophyll (mg/m <sup>3</sup> )	S	0.01-150.4 (34.7)	2.4-17.4 (8.9)
Carotenoids (m.SPU/m <sup>3</sup> )	S	0.6-62.2 (10.2)	1.3-10.4 (4.0)

Parameters	Level	February 1989	January 1990	March 1991	January 1992
Primary productivity (mgC/m <sup>3</sup> /h)	S	12.0 (100%)	--	-	-
	B	10.1 (1%)	--	-	-
Chlorophyll <i>a</i> (mg/m <sup>3</sup> )	S	0.5-3.7 (1.0)	0.5-4.6 (2.1)	0.5-2.7 (1.1)	0.5-2.1 (1.2)
	B	0.5-3.2 (1.1)	0.5-3.7 (1.5)	0.5-5.3 (1.1)	0.5-2.7 (1.0)
Phaeophytin (mg/m <sup>3</sup> )	S	0.5-1.9 (0.6)	0.4-3.8 (1.7)	0.1-1.3 (0.3)	0.1-2.7 (0.7)
	B	0.1-1.7 (0.5)	0.2-2.9 (1.3)	0.1-2.5 (0.5)	0.2-2.1 (1.0)
Cell count (no.X 10 <sup>3</sup> /l)	S	10-288 (42)	--	-	2-24 (10)
	B	33 (33)	--	-	-
Total genera (no.)	S	4-11 (7)	--	-	7-13 (10)
	B	8-13 (10)	--	-	-
Major genera	S	<i>Nitzschia</i> , <i>Skeletonema</i> , <i>Thalassiothrix</i> , <i>Coscinodiscus</i>			<i>Nitzschia</i> , <i>Skeletonema</i> , <i>Coscinodiscus</i> , <i>Asterionella</i>
	B	<i>Nitzschia</i> , <i>Thalassiothrix</i>			

Table 3.2.1 (Contd.2)

Parameters	Level	February 1993	March 1995	November 1995
Chlorophyll a (mg/m <sup>3</sup> )	S	0.5-2.1 (0.9)	0.5-6.4 (2.5)	0.5-4.3 (1.9)
	B	0.5-1.6 (0.8)	1.1-9.1 (2.8)	1.1-2.1 (1.5)
Phaeophytin (mg/m <sup>3</sup> )	S	0.1-1.6 (0.5)	0.2-4.0 (0.9)	0.2-2.0 (0.7)
	B	0.1-1.0 (0.4)	0.1-2.1 (0.9)	0.1-1.3 (0.7)
Cell count (no.X 10 <sup>3</sup> /l)	S	11.0-45.3 (29.1)	12.0-3227.0 (600.6)	46.6-1219.0 (288.0)
	B	10.6-38.7 (21.9)	17.3-3407.0 (639.0)	27.0-931.4 (230.3)
Total genera (no.)	S	6-8 (7)	5-9 (8)	12-22 (17)
	B	5-8 (7)	7-10 (8)	11-17 (15)
Major genera	S	<i>Nitzschia</i> , <i>Coscinodiscus</i> , <i>Navicula</i> , <i>Synedra</i> , <i>Skeletonema</i> , <i>Thalassiosira</i>		<i>Nitzschia</i> , <i>Skeletonema</i> , <i>Navicula</i> , <i>Chaetoceros</i> , <i>Thalassiosira</i> , <i>Gyrosigma</i> , <i>Rhizosolenia</i> , <i>Bacillaria</i>
	B	<i>Nitzschia</i> , <i>Coscinodiscus</i> , <i>Navicula</i> , <i>Rhizosolenia</i> , <i>Synedra</i> , <i>Thalassiosira</i>		<i>Nitzschia</i> , <i>Skeletonema</i> , <i>Thalassiosira</i> , <i>Pleurosigma</i> , <i>Gyrosigma</i> , <i>Rhizosolenia</i> , <i>Bacillaria</i> , <i>Navicula</i>

Table 3.2.1 (Contd. 3)

Parameters	Level	February 1997	April 1997	September 1997	April 1998
Primary productivity (mgC/m <sup>3</sup> /h)	S	0.5-6.2 (3.7)	--	1.3-7.7 (4.0)	-
	B	1.9 (1.9)	--	1.0-3.9 (2.7)	-
Chlorophyll a (mg/m <sup>3</sup> )	S	0.2-1.5 (0.7)	0.3-3.2 (0.7)	0.5-2.1 (1.2)	0.5-3.7 (1.3)
	B	0.8 (0.8)	0.3-4.8 (0.8)	0.3-5.2 (1.3)	0.5-5.9 (1.7)
Chlorophyll b (mg/m <sup>3</sup> )	S	0.8-2.0 (1.5)	0.3-3.2 (0.7)		0.5-3.7 (1.3)
	B	0.8 (0.8)	0.3-4.8 (0.8)		0.5-5.9 (1.7)
Chlorophyll c (mg/m <sup>3</sup> )	S	0.8-3.5 (2.0)	0.3-3.2 (0.7)		0.5-3.7 (1.3)
	B	0.8 (0.8)	0.3-4.8 (0.8)		0.5-5.9 (1.7)
Phaeophytin (mg/m <sup>3</sup> )	S		0.1-1.5 (0.4)		0.6-5.8 (1.5)
	B		0.2-1.1 (0.5)		0.2-1.6 (0.8)
Cell count (no.X 10 <sup>3</sup> /l)	S	17.6-37.7 (22.8)	124-25000 (4428)	297-747 (481)	6-888 (169)
	B	22.4 (22.4)	100-31206 (5410)	247-607 (391)	6-664 (131)
Total genera (no.)	S	10-15 (13)	3-7 (4)	12-17 (15)	4-7 (5)
	B	12 (12)	3-8 (5)	10-16 (13)	4-8 (5)
Major genera	S	<i>Nitzschia</i> , <i>Navicula</i> , <i>Thalassiothrix</i> , <i>Thalassiosira</i> , <i>Thalassionema</i> , <i>Coscinodiscus</i>	<i>Nitzschia</i> , <i>Skeletonema</i> , <i>Thalassiosira</i> , <i>Rhizosolenia</i> , <i>Coscinodiscus</i> , <i>Bacteriastrium</i> , <i>Amphiprora</i>	<i>Nitzschia</i> , <i>Navicula</i> , <i>Thalassionema</i> , <i>Thalassiosira</i> , <i>Thalassiothrix</i> , <i>Coscinodiscus</i>	<i>Nitzschia</i> , <i>Skeletonema</i> , <i>Thalassiosira</i> , <i>Rhizosolenia</i> , <i>Navicula</i>
	B	<i>Nitzschia</i> , <i>Navicula</i> , <i>Thalassiosira</i> , <i>Thalassiothrix</i> , <i>Thalassionema</i> , <i>Coscinodiscus</i>	<i>Nitzschia</i> , <i>Skeletonema</i> , <i>Rhizosolenia</i> , <i>Thalassiosira</i> , <i>Navicula</i> , <i>Coscinodiscus</i>	<i>Nitzschia</i> , <i>Navicula</i> , <i>Thalassionema</i> , <i>Thalassiothrix</i> , <i>Thalassiosira</i>	<i>Nitzschia</i> , <i>Skeletonema</i> , <i>Thalassiosira</i> , <i>Rhizosolenia</i> , <i>Pleurosigma</i>

Parameters	Level	March 1999	November 1999
Chlorophyll a (mg/m <sup>3</sup> )	S	0.5-4.3 (1.1)	0.5-5.3 (1.6)
	B	0.5-3.7 (1.1)	0.5-5.3 (1.3)
Phaeophytin (mg/m <sup>3</sup> )	S	0.2-15.8 (1.2)	0.1-1.9 (0.7)
	B	0.1-6.8 (1.2)	0.1-1.6 (0.6)
Cell count (no.X 10 <sup>3</sup> /l)	S	21.6-3452.0 (319.0)	18.0-775.2 (152.9)
	B	14.6-561.0 (122.7)	44.0-306.6 (135.1)
Total genera (no.)	S	5-11 (8)	9-15 (11)
	B	5-11 (8)	9-13 (11)
Major genera	S	<i>Rhizosolenia</i> , <i>Gyrosigma</i> , <i>Navicula</i> , <i>Thalassiothrix</i> , <i>Coscinodiscus</i> , <i>Thalassiosira</i> , <i>Oscillatoria</i>	<i>Chetoceros</i> , <i>Skeletonema</i> , <i>Anabaena</i> , <i>Nitzschia</i> , <i>Bacteriastrium</i>
	B	<i>Thalassiothrix</i> , <i>Nitzschia</i> , <i>Coscinodiscus</i> , <i>Pleurosigma</i> , <i>Navicula</i> , <i>Rhizosolenia</i>	<i>Synedra</i> , <i>Ditylum</i> , <i>Ulothrix</i> , <i>Oscillatoria</i> , <i>Thalassionema</i> , <i>Fragilaria</i> , <i>Skeletonema</i> , <i>Chaetoceros</i> , <i>Nitzschia</i> , <i>Thalassiothrix</i>





Table 3.2.2 (Contd. 2)

Genera	Okha	Vadinar	Sikka	Bedi	Navlakhi	Kandola	Luni*	Mundra	Jakhau*	Kharo Creek	Kori Creek
<i>Ceratium</i>	+	+	+	+	-	-	-	-	-	-	+
<i>Dinophysis</i>	+	-	-	+	-	-	-	-	-	-	-
<i>Noctiluca</i>	+	-	-	+	-	-	-	-	-	-	-
<i>Peridinium</i>	+	+	+	+	-	+	-	-	-	-	-
<i>Prorocentrum</i>	-	-	-	-	-	-	-	-	-	-	+
<i>Anabaena</i>	+	+	-	+	-	-	-	-	-	-	+
<i>Blue green algae</i>	+	-	-	-	-	-	-	-	-	-	-
<i>Microcystis</i>	-	+	-	-	-	-	-	-	+	-	-
<i>Oscillatoria</i>	+	+	+	+	-	-	-	-	+	-	+
<i>Chlamydomona</i>	-	+	-	-	-	-	-	-	-	-	-
<i>Distephanus</i>	-	+	+	-	-	-	-	-	-	-	-
<i>Green algae</i>	+	-	-	-	-	-	-	-	-	-	-

\* Names of all groups are not available

+: Present; -: Absent

Table 3.2.3 - Phytoplankton pigments, population and composition off Vadinar during 1994 -2000 (Average values given in parenthesis)

Parameters	Level	April 1994	November 1994	November 1995	March 1996
Chlorophyll a (mg/m <sup>3</sup> )	S	0.5-2.7 (0.8)	0.5-1.6 (0.7)	0.5-1.6 (0.9)	0.5-2.1 (1.1)
	B	0.5-1.6 (0.8)	0.5-1.6 (0.8)		
Phaeophytin (mg/m <sup>3</sup> )	S	0.1-1.6 (0.6)	0.1-2.8 (0.8)	0.1-1.9 (0.5)	0.1-3.8 (1.0)
	B	0.1-2.5 (0.8)	0.1-2.8 (0.9)		
Cell count (no. X 10 <sup>3</sup> /l)	S	11.8-56.3 (35.2)		6.3-32.7 (17.2)	4.3-42.8 (18.1)
	B				
Total genera (no.)	S	37		7-15 (10)	5-12 (8)
	B				
Major genera	S	<i>Bacillaria</i> , <i>Biddulphia</i> , <i>Coscinodiscus</i> , <i>Nitzschia</i> , <i>Navicula</i> , <i>Pleurosigma</i> , <i>Synedra</i>		<i>Navicula</i> , <i>Nitzschia</i> , <i>Skeletonema</i> , <i>Surirella</i> , <i>Melosira</i> , <i>Coscinodiscus</i>	<i>Nitzschia</i> , <i>Thalassiosira</i> , <i>Chaetoceros</i> , <i>Rhizosolenia</i> , <i>Thalassionema</i> , <i>Navicula</i>

Table 3.2.3 (Contd. 2)

Parameters	Level	March 1997	November 1997	January 2000
Chlorophyll a (mg/m <sup>3</sup> )	S	0.5-1.6 (0.9)	0.5-2.1 (0.9)	0.5-2.1 (1.2)
	B	0.5-2.7 (0.7)	0.5-1.1 (0.7)	0.5-2.1 (1.1)
Phaeophytin (mg/m <sup>3</sup> )	S	0.1-1.7 (0.4)	0.1-1.3 (0.6)	0.1-1.7 (0.6)
	B	0.1-1.3 (0.4)	0.1-1.3 (0.6)	0.1-1.7 (0.6)
Cell count (no.X 10 <sup>3</sup> /l)	S	28.1-420.0 (128.3)	6.4-27.6 (13.9)	7.2-67.6 (24.4)
	B	29.0-184.8 (88.2)	8.5-15.2 (13.3)	10.7-60.1 (29.3)
Total genera (no.)	S	5-11 (7)	2-10 (6)	8-15 (12)
	B	6-13 (9)	2-8 (6)	8-15 (12)
Major genera	S	<i>Thalassiosira</i> , <i>Rhizosolenia</i> , <i>Nitzschia</i> , <i>Chaetoceros</i> , <i>Skeletonema</i> , <i>Prorocentrum</i> , <i>Thalassiothrix</i> , <i>Coscinodiscus</i> , <i>Navicula</i> , <i>Gyrosigma</i> , <i>Stauroneis</i> , <i>Thalassionema</i> ,	<i>Nitzschia</i> , <i>Rhizosolenia</i> , <i>Thalassiothrix</i> , <i>Ditylum</i> , <i>Thalassiosira</i> , <i>Gyrosigma</i> , <i>Coscinodiscus</i> , <i>Pleurosigma</i> , <i>Climacosphenia</i> , <i>Denticula</i> , <i>Chaetoceros</i> , <i>Thalassionema</i> ,	<i>Coscinodiscus</i> , <i>Nitzschia</i> , <i>Thalassiosira</i> , <i>Chaetoceros</i> , <i>Rhizosolenia</i> ,
	B	<i>Thalassiosira</i> , <i>Thalassiothrix</i> , <i>Nitzschia</i> , <i>Skeletonema</i> , <i>Biddulphia</i> , <i>Navicula</i> , <i>Coscinodiscus</i> , <i>Rhizosolenia</i> , <i>Stauroneis</i> , <i>Chaetoceros</i> , <i>Melosira</i> , <i>Hemiaulus</i> , <i>Gyrosigma</i> , <i>Thalassionema</i> ,	<i>Ditylum</i> , <i>Thalassionema</i> , <i>Chaetoceros</i> , <i>Nitzschia</i> , <i>Climacosphenia</i> , <i>Thalassiothrix</i> , <i>Pleurosigma</i> , <i>Coscinodiscus</i> , <i>Rhizosolenia</i> , <i>Stauroneis</i> , <i>Gyrosigma</i> , <i>Oscillatoria</i> , <i>Navicula</i> ,	<i>Thalassionema</i> , <i>Thalassiosira</i> , <i>Coscinodiscus</i> , <i>Nitzschia</i> , <i>Synedra</i> , <i>Navicula</i> , <i>Rhizosolenia</i> ,

Table 3.2.4 - Phytoplankton pigments, population and composition off Sikka during 1985-2000 (Average values given in parenthesis)

Parameters	Level	March 1985	October 1989	November/ December 1993	March/April 1994
Chlorophyll a (mg/m <sup>3</sup> )	S	0.3-1.1 (0.6)	0.5-2.7 (1.7)	0.5-6.4 (2.8)	0.8-3.1 (1.4)
	M	0.5-1.1 (0.6)			
	B	0.8-2.7 (1.4)	0.5-2.7 (1.9)		
Phaeophytin (mg/m <sup>3</sup> )	S	0.2-2.7 (0.9)	0.02-1.4 (0.6)	0.1-4.8 (1.2)	0.1-3.1 (0.9)
	M	0.2-1.9 (0.8)			
	B	0.3-2.7 (1.0)	0.1-1.0 (0.4)		
Cell count (no.X 10 <sup>3</sup> /l)	S		26-72 (51)	4-1702 (327)	24-179 (53)
	B		36-92 (57)		
Total genera (no.)	S		5-9 (8)	4-21 (11)	4-20 (14)
	B		8-10 (9)		
Major genera	S		<i>Biddulphia</i> , <i>Chaetoceros</i> , <i>Coscinodiscus</i> , <i>Coscinosira</i> , <i>Ditylum</i> , <i>Leptocylindrus</i> , <i>Navicula</i> , <i>Nitzschia</i> , <i>Pleurosigma</i> , <i>Rhizosolenia</i> , <i>Stauroneis</i> , <i>Synedra</i> , <i>Thalassionema</i> , <i>Thalassiosira</i> , <i>Thalassiothrix</i>	<i>Chaetoceros</i> , <i>Coscinodiscus</i> , <i>Ditylum</i> , <i>Gyrosigma</i> , <i>Nitzschia</i> , <i>Navicula</i> , <i>Pleurosigma</i> , <i>Rhizosolenia</i> , <i>Synedra</i>	<i>Biddulphia</i> , <i>Bacteriastrum</i> , <i>Chaetoceros</i> , <i>Coscinodiscus</i> , <i>Ditylum</i> , <i>Leptocylindrus</i> , <i>Nitzschia</i> , <i>Navicula</i> , <i>Pleurosigma</i> , <i>Rhizosolenia</i> , <i>Synedra</i>
	B		<i>Biddulphia</i> , <i>Chaetoceros</i> , <i>Coscinodiscus</i> , <i>Ditylum</i> , <i>Gyrosigma</i> , <i>Nitzschia</i> , <i>Pleurosigma</i> , <i>Rhizosolenia</i> , <i>Stauroneis</i> , <i>Synedra</i> , <i>Thalassiosira</i> , <i>Thalassiothrix</i> , <i>Trichodesmium</i>		

Table 3.2.4 (Contd. 2)

Parameters	Level	March 1997	November 1997	January 2000
Chlorophyll a (mg/m <sup>3</sup> )	S	0.5-3.2 (1.2)	0.5-2.1 (0.9)	0.5-2.1 (1.2)
	B	0.5-2.7 (1.1)	0.5-1.1 (0.7)	0.5-2.1 (1.1)
Phaeophytin (mg/m <sup>3</sup> )	S	0.1-2.0 (0.5)	0.1-1.3 (0.6)	0.1-1.7 (0.6)
	B	0.1-2.9 (0.4)	0.1-1.3 (0.6)	0.1-1.7 (0.6)
Cell count (no.X 10 <sup>3</sup> /l)	S	22.6-222.6 (109.3)	6.4-27.6 (13.9)	7.2-67.6 (24.4)
	B	32.4-190.9 (88.3)	8.5-15.2 (13.3)	10.7-60.1 (29.3)
Total genera (no.)	S	4-9 (6)	2-10 (6)	8-15 (12)
	B	5-12 (8)	2-8 (6)	8-15 (12)
Major genera	S	<i>Skeletonema</i> , <i>Thalassiosira</i> , <i>Nitzschia</i> , <i>Thalassiothrix</i> , <i>Navicula</i> , <i>Bacteriastrum</i> , <i>Coscinodiscus</i> , <i>Rhizosolenia</i>	<i>Nitzschia</i> , <i>Rhizosolenia</i> , <i>Thalassiothrix</i> , <i>Ditylum</i> , <i>Thalassiosira</i> , <i>Gyrosigma</i> , <i>Coscinodiscus</i> , <i>Pleurosigma</i> , <i>Climacosphenia</i> , <i>Denticula</i> , <i>Chaetoceros</i> , <i>Thalassionema</i>	<i>Coscinodiscus</i> , <i>Pleurosigma</i> , <i>Surirella</i> , <i>Nitzschia</i> , <i>Thalassiosira</i> , <i>Thalassionema</i> , <i>Rhizosolenia</i> , <i>Thalassiothrix</i> , <i>Skeletonema</i> , <i>Navicula</i> , <i>Streptotheca</i> , <i>Ceratium</i> , <i>Biddulphia</i> , <i>Synedra</i>
	B	<i>Skeletonema</i> , <i>Nitzschia</i> , <i>Gyrosigma</i> , <i>Thalassiosira</i> , <i>Thalassiothrix</i> , <i>Chaetoceros</i> , <i>Navicula</i> , <i>Thalassionema</i> , <i>Coscinodiscus</i>	<i>Ditylum</i> , <i>Thalassionema</i> , <i>Chaetoceros</i> , <i>Nitzschia</i> , <i>Climacosphenia</i> , <i>Thalassiothrix</i> , <i>Pleurosigma</i> , <i>Coscinodiscus</i> , <i>Rhizosolenia</i> , <i>Stauroneis</i> , <i>Gyrosigma</i> , <i>Oscillatoria</i> , <i>Navicula</i> ,	<i>Thalassionema</i> , <i>Thalassiosira</i> , <i>Coscinodiscus</i> , <i>Biddulphia</i> , <i>Nitzschia</i> , <i>Synedra</i> , <i>Navicula</i> , <i>Ditylum</i> , <i>Rhizosolenia</i> ,

Table 3.2.5 – Primary productivity, phytoplankton pigments, population and composition off Bedi during 1997 (Average values given in parenthesis)

Parameters	Level	February / March 1997	October 1997
Primary productivity (mgC/m <sup>3</sup> /h)		0.9-169.4 (42.3)	0.2-93.9 (27.2)
Chlorophyll a (mg/m <sup>3</sup> )	S	0.5-5.9 (1.8)	0.5-3.2 (1.4)
	B	0.5-4.3 (1.2)	0.5-3.2 (1.5)
Phaeophytin (mg/m <sup>3</sup> )	S	0.1-7.6 (1.7)	0.1-2.8 (1.2)
	B	0.1-5.1 (1.2)	0.1-12.9 (1.6)
Cell count (no.X 10 <sup>3</sup> /l)	S	38-440 (134)	16-212 (68)
	B	39-936 (185)	14-214 (84)
Total genera (no.)	S	5-15 (11)	4-9 (6)
	B	6-16 (12)	4-10 (7)
Major genera	S	<i>Skeletonema</i> , <i>Nitzschia</i> , <i>Navicula</i> , <i>Coscinodiscus</i> , <i>Gyrosigma</i> , <i>Synedra</i> , <i>Thalassionema</i> , <i>Diploneis</i> , <i>Thalassiothrix</i>	<i>Nitzschia</i> , <i>Navicula</i> , <i>Rhizosolenia</i> , <i>Coscinodiscus</i> , <i>Amphiprora</i> , <i>Ditylum</i> , <i>Thalassionema</i> , <i>Thalassiosira</i>
	B	<i>Nitzschia</i> , <i>Skeletonema</i> , <i>Thalassionema</i> , <i>Navicula</i> , <i>Coscinodiscus</i> , <i>Gyrosigma</i> , <i>Thalassiothrix</i>	<i>Nitzschia</i> , <i>Navicula</i> , <i>Thalassiothrix</i> , <i>Skeletonema</i> , <i>Coscinodiscus</i>

Table 3.2.6 - Phytoplankton pigments, population and composition off Navlakhi during 1985 -1994 (Average values given in parenthesis)

Parameters	Level	February 1985	August 1986	November 1986	February 1987	November 1994
Chlorophyll a (mg/m <sup>3</sup> )	S	0.3-1.1 (0.6)	1.3-2.7 (1.7)	1.1-4.6 (2.2)	0.5-3.9 (1.6)	0.5-1.6 (0.9)
	B	0.1-2.1 (1.0)				0.5-1.6 (1.0)
Phaeophytin (mg/m <sup>3</sup> )	S	0.1-2.2 (0.9)	0.5-2.0 (1.4)	0.1-1.6 (0.6)	0.1-0.8 (0.4)	0.1-1.6 (0.8)
	B	0.3-1.7 (1.3)				0.1-2.8 (1.1)
Cell count (no.X 10 <sup>3</sup> /l)	S					9.0-24.2 (14.6)
	B					12.4-24.8 (17.4)
Total genera (no.)	S					17
	B					17
Major genera	S					<i>Amphiprora</i> , <i>Biddulphia</i> , <i>Coscinodiscus</i> , <i>Fragilaria</i> , <i>Nitzschia</i> , <i>Skeletonema</i>
	B					<i>Amphiprora</i> , <i>Amphora</i> , <i>Biddulphia</i> , <i>Coscinodiscus</i> , <i>Chaetoceros</i> , <i>Fragilaria</i> ,

Table 3.2.7 - Phytoplankton pigments, population and composition off Kandla during 1985 -1998 (Average values given in parenthesis)

Parameters	Level	February 1985	August 1986	November 1986	February 1987
Chlorophyll a (mg/m <sup>3</sup> )	S	0.1-0.5 (0.4)	1.1-4.3 (1.7)	0.5-2.7 (1.3)	0.5-2.1 (1.1)
	B	0.1-0.5 (0.4)			
Phaeophytin (mg/m <sup>3</sup> )	S	0.01-1.7 (0.9)	0.1-7.2 (2.1)	0.1-1.9 (0.7)	0.1-3.9 (1.0)
	B	0.01-1.7 (0.8)			

Parameters	Level	March 1996	October 1996	February 1998
Chlorophyll a (mg/m <sup>3</sup> )	S	0.5-3.2 (1.4)	1.1-4.3 (2.6)	0.5-2.7 (1.7)
	B	0.5-2.7 (1.0)	1.1-4.3 (2.6)	0.5-3.2 (1.5)
Phaeophytin (mg/m <sup>3</sup> )	S	0.2-2.7 (0.6)	0.1-2.3 (0.9)	0.2-5.1 (1.6)
	B	0.2-2.7 (1.0)	0.1-2.0 (1.1)	0.2-3.9 (1.5)
Cell count (no.X 10 <sup>3</sup> /l)	S	4.5-169.9 (39.1)	16.0-64.0 (37.6)	27.7-64.2 (43.5)
	B	1.8-90.1 (24.8)	11.0-50.0 (29.2)	19.2-58.4 (36.5)
Total genera (no.)	S	4-15 (8)	4-10 (6)	6-14 (9)
	B	3-14 (7)	2-9 (6)	7-12 (8)
Major genera	S	<i>Thalassiothrix</i> , <i>Thalassiosira</i> , <i>Nitzschia</i> , <i>Skeletonema</i> , <i>Chaetoceros</i> , <i>Rhizosolenia</i> , <i>Navicula</i> ,	<i>Nitzschia</i> , <i>Thalassiothrix</i> , <i>Coscinodiscus</i> , <i>Thalassiosira</i> , <i>Rhizosolenia</i>	<i>Nitzschia</i> , <i>Fragilaria</i> , <i>Thalassiothrix</i> , <i>Melosira</i> , <i>Coscinodiscus</i> , <i>Thalassiosira</i>
	B	<i>Thalassiothrix</i> , <i>Thalassiosira</i> , <i>Coscinodiscus</i> , <i>Nitzschia</i> , <i>Skeletonema</i>	<i>Thalassiosira</i> , <i>Nitzschia</i> , <i>Coscinodiscus</i> , <i>Thalassiothrix</i>	<i>Nitzschia</i> , <i>Thalassiothrix</i> , <i>Melosira</i> , <i>Coscinodiscus</i> , <i>Thalassiosira</i> , <i>Pleurosigma</i>

Table 3.2.8 - Phytoplankton pigments, population and composition off Mundra during 1997 - 2000 (Average values given in parenthesis)

Parameters	Level	March 1997	July 1998	August 1998	February 1999
Chlorophyll a (mg/m <sup>3</sup> )	S	0.5-2.7 (1.1)	1.1-5.9 (3.0)	0.5-16.6 (3.2)	0.5-6.4 (1.5)
	B	0.5-1.6 (0.9)	1.1-5.3 (2.8)		0.5-3.2 (1.3)
Phaeophytin (mg/m <sup>3</sup> )	S	0.1-1.0 (0.5)	0.1-2.2 (1.5)	0.1-6.6 (1.5)	0.1-3.7 (0.5)
	B	0.1-3.6 (0.5)	0.4-2.9 (1.6)		0.1-3.2 (0.7)
Cell count (no.X 10 <sup>3</sup> /l)	S	134.0-262.0 (200.0)	5.7-26.5 (14.1)	4.8-173.0 (47.7)	33.6-187.2 (74.5)
	B	120.5-275.9 (218.9)	3.5-12.0 (8.4)		32.4-97.2 (61.1)
Total genera (no.)	S	11-18 (13)	2-9 (5)	3-14 (6)	6-14 (10)
	B	13-16 (14)	2-5 (4)		6-12 (10)
Major genera	S	<i>Thalassiosira</i> , <i>Nitzschia</i> , <i>Rhizosolenia</i> , <i>Skeletonema</i> , <i>Chaetoceros</i> , <i>Gyrosigma</i> , <i>Fragilaria</i>	<i>Nitzschia</i> , <i>Melosira</i> , <i>Skeletonema</i> , <i>Fragilaria</i> , <i>Biddulphia</i> , <i>Pleurosigma</i>	<i>Fragilaria</i> , <i>Nitzschia</i> , <i>Hemiaulus</i> , <i>Thalassiosira</i> , <i>Pleurosigma</i> , <i>Melosira</i>	<i>Nitzschia</i> , <i>Navicula</i> , <i>Coscinodiscus</i> , <i>Thalassiothrix</i> , <i>Synedra</i>
	B	<i>Nitzschia</i> , <i>Skeletonema</i> , <i>Thalassiosira</i> , <i>Gyrosigma</i> , <i>Rhizosolenia</i>	<i>Nitzschia</i> , <i>Coscinodiscus</i> , <i>Fragilaria</i> , <i>Melosira</i> , <i>Biddulphia</i>		<i>Nitzschia</i> , <i>Fragilaria</i> , <i>Navicula</i> , <i>Thalassiothrix</i> , <i>Synedra</i>

Parameters	Level	March 1999	September 1999	March 2000
Chlorophyll a (mg/m <sup>3</sup> )	S	0.5-6.4 (1.5)	1.1-16.0 (4.7)	0.5-3.2 (1.4)
	B	0.5-3.2 (1.4)	1.1-5.9 (2.8)	0.5-3.2 (1.4)
Phaeophytin (mg/m <sup>3</sup> )	S	0.1-3.7 (0.6)	0.3-4.3 (2.1)	0.1-1.0 (0.4)
	B	0.1-3.2 (0.8)	0.3-4.2 (1.6)	0.1-1.2 (0.6)
Cell count (no.X 10 <sup>3</sup> /l)	S	33.6-187.2 (72.9)	32-1789 (442)	2.1-19.4 (10.0)
	B	32.4-97.0 (59.6)	60-413 (247)	1.4-22.1 (10.7)
Total genera (no.)	S	6-14 (10)	6-15 (11)	8-17 (12)
	B	6-13 (10)	6-12 (10)	8-16 (12)
Major genera	S	<i>Navicula</i> , <i>Nitzschia</i> , <i>Thalassiosira</i> , <i>Thalassiothrix</i> , <i>Synedra</i> , <i>Thalassionema</i> , <i>Fragilaria</i> , <i>Coscinodiscus</i>	<i>Thalassiosira</i> , <i>Fragilaria</i> , <i>Thalassiothrix</i> , <i>Coscinodiscus</i> , <i>Nitzschia</i>	<i>Fragilaria</i> , <i>Nitzschia</i> , <i>Navicula</i> , <i>Thalassiosira</i> , <i>Lauderia</i>
	B	<i>Fragilaria</i> , <i>Coscinodiscus</i> , <i>Nitzschia</i> , <i>Synedra</i> , <i>Biddulphia</i> , <i>Pleurosigma</i> , <i>Navicula</i> ,	<i>Thalassiosira</i> , <i>Fragilaria</i> , <i>Coscinodiscus</i> , <i>Nitzschia</i> , <i>Melosira</i> , <i>Hemiaulus</i> , <i>Biddulphia</i>	<i>Navicula</i> , <i>Fragilaria</i> , <i>Coscinodiscus</i> , <i>Thalassiosira</i>

Table 3.2.9 - Phytoplankton pigments, population and composition at Kharo creek during 1994 - 1995 (Average values given in parenthesis)

Parameters	Level	December 1994	January 1995	February 1995
Chlorophyll a (mg/m <sup>3</sup> )	S	1.3-2.9 (1.8)	0.3-1.1 (0.7)	1.9-3.2 (2.4)
	B	0.5-2.7 (1.6)	0.8-1.6 (1.1)	1.3-2.9 (2.1)
Cell count (no. X 10 <sup>3</sup> /l)	S	0.1-1.1 (0.5)	0.1-1.1 (0.5)	0.3-1.1 (0.5)
	B	0.1-0.8 (0.3)	0.1-1.4 (0.6)	0.1-0.8 (0.4)
Total genera (no.)	S	5	7	4
	B	5	5	4
Major genera	S	<i>Coscinodiscus</i> , <i>Lauderia</i> , <i>Navicula</i> , <i>Nitzschia</i> , <i>Pleurosigma</i>	<i>Amphora</i> , <i>Bacillaria</i> , <i>Bacteriastrium</i> , <i>Coscosira</i> , <i>Nitzschia</i> , <i>Navicula</i> , <i>Pleurosigma</i>	<i>Navicula</i> , <i>Nitzschia</i> , <i>Rhizosolenia</i> , <i>Pleurosigma</i>
	B	<i>Navicula</i> , <i>Nitzschia</i> , <i>Pleurosigma</i> , <i>Cooscinodiscus</i> , <i>Lauderia</i>	<i>Amphora</i> , <i>Coscosira</i> , <i>Nitzschia</i> , <i>Navicula</i> , <i>Pleurosigma</i>	<i>Navicula</i> , <i>Nitzschia</i> , <i>Rhizosolenia</i> , <i>Pleurosigma</i>

Parameters	Level	March 1995	April 1995	May 1995
Phytoplankton				
Chlorophyll a (mg/m <sup>3</sup> )	S	2.1-2.3 (2.2)	3.7-7.5 (5.3)	ND
	B	2.7-3.2 (2.8)	2.1-6.4 (5.2)	ND
Cell count (no. X 10 <sup>3</sup> /l)	S	0.2-0.7 (0.4)	0.04-0.6 (0.2)	0.4-1.3 (0.8)
	B	0.2-0.4 (0.2)	0.08-0.08 (0.08)	0.08-0.6 (0.3)
Total genera (no.)	S	3	3	5
	B	3	2	4
Major genera	S	<i>Navicula</i> , <i>Nitzschia</i> , <i>Thalassiothrix</i>	<i>Navicula</i> , <i>Nitzschia</i> , <i>Thalassiothrix</i>	<i>Navicula</i> , <i>Nitzschia</i> , <i>Amphora Pleurosigma</i> , <i>Thalassiothrix</i> ,
	B	<i>Navicula</i> , <i>Nitzschia</i> , <i>Thalassiothrix</i>	<i>Navicula</i> , <i>Nitzschia</i>	<i>Navicula</i> , <i>Nitzschia</i> , <i>Pleurosigma</i> , <i>Thalassiothrix</i>



Table 3.2.10 - Phytoplankton pigments, population and composition at Kori creek during 1998 - 2000 (Average values given in parenthesis)

Parameters	Level	May 1998	October 1998	February 1999	February 2000
Chlorophyll a (mg/m <sup>3</sup> )	S	2.1-3.2 (2.4)	1.1-6.9 (3.1)	0.5-4.3 (1.4)	0.5-2.7 (1.4)
	B	1.6-4.3 (2.4)	0.5-7.5 (3.4)	0.5-3.2 (1.3)	0.5-2.7 (1.1)
Phaeophytin (mg/m <sup>3</sup> )	S	0.5-2.6 (1.4)	0.3-3.5 (1.3)	0.1-6.6 (1.2)	0.1-1.7 (0.4)
	B	0.5-2.5 (1.5)	0.8-5.6 (2.6)	0.1-3.8 (0.8)	0.1-1.5 (0.6)
Cell count (no.X 10 <sup>3</sup> /l)	S		24-370 (102)	32-65 (49)	12.0-85.0 (26.4)
	B		7-59 (27)	30-60 (47)	8.1-74.8 (23.0)
Total genera (no.)	S		4-13 (8)	6-8 (7)	5-9 (7)
	B		4-7 (5)	6-8 (7)	5-8 (6)
Major genera	S		<i>Nitzschia</i> , <i>Anabaena</i> , <i>Thalassiosira</i> , <i>Thalassiothrix</i> , <i>Thalassionema</i> , <i>Rhizosolenia</i> , <i>Coscinodiscus</i>	<i>Synedra</i> , <i>Coscinodiscus</i> , <i>Pleurosigma</i> , <i>Nitzschia</i> , <i>Thalassiothrix</i> , <i>Eucampia</i> , <i>Rhizosolenia</i> ,	<i>Thalassiosira</i> , <i>Synedra</i> , <i>Navicula</i> , <i>Rhizosolenia</i> , <i>Thalassionema</i> , <i>Coscinodiscus</i> , <i>Fragilaria</i>
	B		<i>Anabaena</i> , <i>Nitzschia</i> , <i>Thalassiothrix</i> , <i>Coscinodiscus</i> , <i>Thalassionema</i> , <i>Synedra</i> , <i>Rhizosolenia</i>	<i>Nitzschia</i> , <i>Pleurosigma</i> , <i>Coscinodiscus</i> , <i>Synedra</i> , <i>Thalassiosira</i> , <i>Pleurosigma</i> , <i>Eucampia</i> , <i>Thalassiothrix</i>	<i>Synedra</i> , <i>Thalassiosira</i> , <i>Nitzschia</i> , <i>Pleurosigma</i> , <i>Coscinodiscus</i> , <i>Fragilaria</i> , <i>Thalassionema</i>

Table 3.3.1 – Zooplankton biomass, population, total groups and major groups off Okha during 1981 - 1999  
(Average values given in parenthesis)

Parameters	March/April 1981	December 1981
Biomass (ml/100m <sup>3</sup> )	0.2-40.4 (4.3)	0.1-1.2 (0.6)
Total groups (no.)	13	5
Major groups	Copepods, Decapods, Chaetognaths, Gastropods, Ctenophores, Fish Eggs, Fish Larvae, Medusae, Pleurobranchia, Mysids, Cirripeds, Foraminiferans, Ostracods	Copepods, Decapods, Ctenophores, Fish Larvae, Lamellibranches

Parameters	February 1989	January 1990	March 1991	January 1992
Biomass (ml/100m <sup>3</sup> )	0.02-8.0 (4.8)	0.4-9.8 (4.5)	0.1-3.7 (1.4)	0.4-10.1 (2.6)
Population (no.X10 <sup>3</sup> /100m <sup>3</sup> )	0.02-17.2 (8.3)	0.8-29.9 (12.8)	0.3-43.7 (10.1)	0.7-26.3 (9.2)
Total groups (no.)	3-17 (12)	9-19 (14)	6-16 (10)	9-12 (11)
Major groups	Copepods, Decapods, Chaetognaths, Ostracods, Gastropods, Polychaetes, Pteropods	Copepods, Decapods, Chaetognaths, Fish Eggs, Fish Larvae, Appendicularians, Lamellibranchiates, Amphipods, Gastropods	Decapods, Copepods, Chaetognaths, Gastropods, Fish Larvae, Polychaetes	Decapods, Copepods, Foraminiferans, Chaetognaths, Gastropods, Ostracods, Fish Eggs



Table 3.3.2 (Contd. 2)

Groups	Okh a	Sala ya	Vadi nar	Sikk a	Bedi	Navl akhi	Kan dla	Luni *	Mun dra	Jakh au *	Khar o Cree k	Kori Cree k
Nematoda	-	-	-	-	-	-	-	-	-	+	-	-
Polychaeta	+	+	-	+	+	+	+	+	+	+	+	+
Lamellibranchia tes	+	+	+	+	+	+	+	+	+	+	+	+
Pteropoda	+	-	-	-	+	-	-	-	-	-	-	+
Heteropoda	-	+	+	-	-	-	+	-	-	-	-	-
Other gastropods	+	+	+	+	+	+	+	+	+	+	+	+
Cephalopoda	-	-	-	-	-	-	-	-	-	-	-	+
Cladocera	+	-	-	-	-	-	-	-	+	+	+	-
Ostracoda	+	+	+	+	+	+	+	+	+	-	-	-
Copepoda	-	+	+	+	+	+	+	+	+	+	-	+
Cirripedia	+		-	+	-	-	-	-	-	-	+	-
Mysidacea	-	+	-	+	-	+	+	-	+	-	-	+
Tanaidacea	+	-	-	-	-	-	-	-	-	-	-	-
Cumaceans	+	-	+	+	+	-	-	-	-	-	-	-
Isopoda	+	-	+	+	-	+	-	-	-	-	-	+
Amphipoda	+	+	+	+	+	+	+	-	+	+	-	+
Euphausiacea	-	-	-	-	-	-	-	-	-	-	-	-
<i>Lucifer</i> sp.	+	-	+	+	+	-	-	-	+	+	+	+
Sergestidae	+	-	-	-	-	-	-	-	-	-	-	-
<i>Acetes</i> sp.	-	-	+	+	-	+	+	+	+	-	-	+
Other decapods	+	+	+	+	+	+	+	+	+	+	+	+
Stomatopoda	+	+	+	+	+	+	+	-	+	-	-	+
Halobates	-	-	+	+	+	-	+	-	+	-	-	+
Chaetognatha	+	+	+	+	+	+	+	+	+	+	+	+
Copelata	+	+	+	+	+	-	+	-	-	+	+	-
Pyrosoma	-	-	-	-	-	-	-	-	-	-	-	-
Salps & Doliolids	-	-	-	-	-	-	-	-	-	-	-	-
Fish eggs	+	+	+	+	+	+	+	+	+	+	+	+
Fish larvae	+	+	+	+	+	+	+	+	+	+	+	+

\* Names of all groups are not available

+: Present

-: Absent

Table 3.3.3 – Zooplankton biomass, population, total groups and major groups off Vadinar during 1994 - 2000  
(Average values given in parenthesis)

Parameters	April 1994	November 1994	November 1995	March 1996
Biomass (ml/100m <sup>3</sup> )	0.8-50.8 (11.1)	0.6-33.8 (6.6)	0.5-2.9 (1.7)	0.6-3.5 (2.0)
Population (no.X10 <sup>3</sup> /100m <sup>3</sup> )	1.7-730.5 (45.4)	1.2-88.5 (24.4)	0.8-8.4 (5.0)	0.7-12.9 (3.9)
Total groups (no.)	8-17 (13)	9-16 (13)	7-13 (10)	11-15 (14)
Major groups	Medusae, Ctenophores, Chaetognaths, Copepods, <i>Lucifer</i> Sp., Decapod Larvae, Gastropods, Lamellibranchiates, Fish Eggs, Fish Larvae	Siphonophores, Medusae, Chaetognaths, Copepods, <i>Lucifer</i> Sp., Decapod Larvae, Gastropods, Lamellibranchiates, Fish Eggs, Fish Larvae	Copepods, Decapod Larvae, Chaetognaths, Gastropods, Fish Eggs, Fish Larvae, Siphonophores,	Copepods, Decapod Larvae, Chaetognaths, Gastropods, Fish Eggs, Fish Larvae,

Parameters	March 1997	November 1997	January 2000
Biomass (ml/100m <sup>3</sup> )	0.4-21.3 (4.2)	0.5-18.4 (6.4)	0.1-15.5 (2.1)
Population (no.X10 <sup>3</sup> /100m <sup>3</sup> )	2.4-105.6 (25.3)	2.6-140.0 (61.5)	0.3-41.1 (8.6)
Total groups (no.)	5-14 (11)	8-19 (12)	5-15 (11)
Major groups	Copepods, Decapod Larvae, Gastropods, Chaetognaths, Lamellibranchiates, Fish Eggs, Fish Larvae	Copepods, Decapod Larvae, Chaetognaths, <i>Lucifer</i> Sp., Fish Larvae, Fish Eggs, Gastropods	Copepods, Decapod Larvae, Chaetognaths, Siphonophores, Gastropods, Fish Eggs, Fish Larvae, Amphipods,

Table 3.3.4 – Zooplankton biomass, population, total groups and major groups off Sikka during 1985–2000  
Average values given in parenthesis)

Parameters	March 1985	October 1989	November/ December 1993	March/April 1994
Biomass (ml/100m <sup>3</sup> )	7.4-40.2 (26.6)	4.5-64.0 (20.7)*	1.0-93.1 (16.0)	0.5-29.7 (6.5)
Population (no.X10 <sup>3</sup> /100m <sup>3</sup> )	4.0-99.3 (54.1)	2864-14808 (5837)*	5.3-109.4 (42.5)	0.7-44.8 (8.1)
Total groups (no.)	10-15 (13)	7-16 (11)	10-16 (13)	7-17 (14)
Major groups	Copepods, Decapods, Siphonophores, Chaetognaths, Gastropods, Medusae, Amphipods, Ostracods, Heteropods, Isopods,	Decapods, Copepods, Medusae, Siphonophores, Fish Eggs, Chaetognaths, <i>Lucifer</i> Sp., Gastropods	Decapods, Copepods, Gastropods, Fish Eggs, Fish Larvae, Siphonophores, Mysids, <i>Lucifer</i> Sp., Chaetognaths, Medusae, Ostracods	Decapods, Copepods, Gastropods, Fish Eggs, Fish Larvae, Mysids, <i>Lucifer</i> Sp., Chaetognaths, Lamellibranchiates

\* Net operated manually and hence conversion to m<sup>3</sup> values not possible and hence not considered for average. Values given are for per haul of 15 minutes

Table 3.3.4 (contd)

Parameters	March 1997	November 1997	January 2000
Biomass (ml/100m <sup>3</sup> )	0.9-97.3 (9.7)	0.5-18.4 (6.4)	0.1-15.5 (2.1)
Population (no.X10 <sup>3</sup> /100m <sup>3</sup> )	0.7-105.6 (30.4)	2.6-140.0 (61.5)	0.3-41.1 (8.6)
Total groups (no.)	9-15 (11)	8-19 (12)	5-15 (11)
Major groups	Decapods, Copepods, Fish Eggs, Fish Larvae, Chaetognaths, Gastropods, Medusae	Copepods, Decapod Larvae, Chaetognaths, <i>Lucifer</i> Sp., Fish Larvae, Siphonophores, Fish Eggs, Gastropods,	Copepods, Decapod Larvae, Chaetognaths, Siphonophores, Gastropods, Fish Eggs, Fish Larvae, Amphipods,

Table 3.3.5 – Zooplankton biomass, population, total groups and major groups off Bedi during 1997 (Average values given in parenthesis)

Parameters	February/March 1997	October 1997
Biomass (ml/100m <sup>3</sup> )	0.5-25.5 (6.4)	1.9-112.9 (10.9)
Population (no.X10 <sup>3</sup> /100m <sup>3</sup> )	1.6- 219.6 (48.2)	5.5-196.3 (50.7)
Total groups (no.)	5-15 (10)	7-14 (10)
Major groups	Copepods, Decapod Larvae, Chaetognaths, Medusae, Fish Eggs, Ctenophores	Copepods, Decapods, Fish Eggs, Medusae, <i>Lucifer</i> Sp. Gastropods, Chaetognaths, Ctenophores,

Table 3.3.6 – Zooplankton biomass, population, total groups and major groups off Navlakhi during 1986 - 1994 (Average values given in parenthesis)

Parameters	February 1985	August 1986	November 1986	February 1987	November 1994
Biomass (ml/100m <sup>3</sup> )	4.6-36.2 (14.7)	5.4-10.0 (7.4)	13.4-55.2 (30.4)	18.8-95.0 (53.3)	1.8-13.5 (4.9)
Population (no.X10 <sup>3</sup> /100m <sup>3</sup> )	3.6-96.0 (22.8)	22.2-37.9 (28.7)	0.3-1.3 (0.7)	5.9-19.2 (11.7)	4.4-31.4 (12.6)
Total groups (no.)	6-14 (10)				9-15 (12)
Major groups	Copepods, Decapods, Mysids, Chaetognaths, Fish Eggs, Fish Larvae, Ostracods				Chaetognaths, Copepods, Decapod Larvae, Gastropods, Lamellibranchi ates

Table 3.3.7 – Zooplankton biomass, population, total groups and major groups off Kandla during 1985 - 1998  
(Average values given in parenthesis)

Parameters	February 1985	August 1986	November 1986	February 1987
Biomass (ml/100m <sup>3</sup> )	3.3-51.7 (26.0)	3.1-163.7 (28.3)	3.1-149.5 (47.4)	17.0-130.8 (57.8)
Population (no.X10 <sup>3</sup> /100m <sup>3</sup> )	7.5-102.5 (43.4)	3.4-33.0 (14.9)	0.9-32.9 (14.0)	9.4-183.5 (61.5)
Total groups (no.)	6-14 (10)			
Major groups	Copepods, Chaetognaths, Decapods, Gastropods, Medusae, Mysids, Fish Larvae			

Parameters	March 1996	October 1996	February 1998
Biomass (ml/100m <sup>3</sup> )	0.5-26.2 (9.2)	0.7-16.9 (4.3)	1.7-24.1 (10.1)
Population (no.X10 <sup>3</sup> /100m <sup>3</sup> )	3.7-81.3 (28.9)	1.2-217.6 (29.6)	7.8-117.1 (42.2)
Total groups (no.)	5-13 (8)	7-14 (10)	6-15 (10)
Major groups	Copepods, Decapod larvae, Chaetognaths	Copepods, Decapod larvae, Chaetognaths	Copepods, Decapod larvae, Chaetognaths, <i>Acetes</i> , Fish larvae, Gastropods

Table 3.3.8 – Zooplankton biomass, population, total groups and major groups off Mundra during 1997 – 2000  
(Average values given in parenthesis)

Parameters	March 1997	July 1998	August 1998
Biomass (ml/100m <sup>3</sup> )	3.3-17.3 (8.8)	0.4-38.4 (12.1)	0.4-14.0 (5.6)
Population (no.X10 <sup>3</sup> /100m <sup>3</sup> )	9.7-57.1 (25.2)	5.2-156.1 (66.0)	2.4-105.3 (31.7)
Total groups (no.)	10-16 (12)	6-13 (10)	7-13 (11)
Major groups	Copepods, Decapod Larvae, Gastropods, Chaetognaths, Ostracods, <i>Acetes</i>	Copepods, Decapod Larvae, Chaetognaths, Fish Larvae, <i>Acetes</i> , <i>Lucifer</i> , Medusae, Ostracods, Mysids	Decapod Larvae, Copepods, Chaetognaths, <i>Lucifer</i> , <i>Acetes</i> , Fish Larvae, Mysids, Fish Eggs

Table 3.3.8 (contd)

Parameters	February 1999	March 1999	September 1999	March 2000
Biomass (ml/100m <sup>3</sup> )	0.8-343.5 (33.1)	0.8-343.5 (31.0)	0.1-137.0 (18.2)	0.2-80.0 (10.4)
Population (no.X10 <sup>3</sup> /100m <sup>3</sup> )	2.1-573.0 (57.4)	2.1-571.9 (62.8)	0.1-307.5 (37.2)	1.9-234.6 (46.1)
Total groups (no.)	4-17 (12)	4-18 (12)	7-19 (13)	6-18 (10)
Major groups	Copepods, Decapod Larvae, Mysids, <i>Acetes</i> , Chaetognaths, Gastropods	Copepods, Decapod Larvae, <i>Acetes</i> , Gastropods	Decapod Larvae, Copepods, Medusae, Cladocera, Fish Eggs, Fish Larvae, Chaetognaths, Mysids, <i>Lucifer</i> Sp.	Decapod Larvae, Copepods, <i>Acetes</i> , Mysids, Ostracods,

Table 3.3.9 – Zooplankton biomass, population, total groups and major groups off Jakhau during 1993 - 1995 (Average values given in parenthesis)

Parameters	February 1993	August 1995	November 1995
Biomass (ml/100m <sup>3</sup> )	2.1-70.1 (32.1)	1.8-30.0 (15.9)	3.6-26.6 (11.9)
Population (no. X 10 <sup>3</sup> /100m <sup>3</sup> )	1.3-28.4 (10.9)	1.1-14.9 (7.9)	2.0-93.1 (29.7)
Total groups (no.)	7-11 (9)	5-6 (5)	11-18 (15)
Major groups	Copepods, Decapod Larvae, Fish Eggs, <i>Lucifer</i> Sp., Appendicularians	Cladocerans, Copepods, Polychaetes	Decapod Larvae, Copepods, <i>Lucifer</i> Sp., Chaetognaths, Lamellibranchiates, Gastropods,

Table 3.3.10 – Zooplankton biomass, population, total groups and major groups at Kharo creek during 1994 – 1995 (Average values given in parenthesis)

Parameters	December 1994	January 1995	February 1995
Biomass (ml/100m <sup>3</sup> )	0.04-3.6 (1.2)	0.01-2.0 (0.7)	0.1-3.2 (1.0)
Population (no. X 10 <sup>3</sup> /100m <sup>3</sup> )	2.8-1230.3 (380.9)	7.6-713.0 (150.9)	34.7-329.2 (151.3)
Total groups (no.)	6	5	5
Major groups	Copepods, Cirripede Nauplii, Cirripede Cypris, Decapods, <i>Lucifer</i> Sp., Copelata	Copepods, Brachyuran Larvae, Chaetognaths, Copelata, <i>Lucifer</i> Sp.,	Copepods, Brachyuran Larvae, Chaetognaths, Copelata, <i>Lucifer</i> Sp.,



Table 3.3.10 (contd)

Parameters	March 1995	April 1995	May 1995
Biomass (ml/100m <sup>3</sup> )	0.03-1.5 (0.6)	0.1-5.1 (1.1)	0.03-1.8 (0.6)
Population (no./100m <sup>3</sup> )	3.6-374.9 (142.8)	25.5-286.3 (112.9)	11.3-343.9 (148.4)
Total groups (no.)	8	9	8
Major groups	Copepods, Brachyuran Larvae, Chaetognaths, Copelata, <i>Lucifer</i> Sp., Decapods, Medusae, Polychaetes	Copepods, Decapods, Brachyuran Larvae, Gastropod Larvae, Lamellibranchiate, Chaetognaths, Copelata, <i>Lucifer</i> Sp., Fish Larvae	Copepods, Cirripede Nauplii, Brachyuran Larvae, Gastropod Larvae, Chaetognaths, Copelata, <i>Lucifer</i> Sp., Fish Larvae

Table 3.3.11 – Zooplankton biomass, population, total groups and major groups at Kori creek during 1998 – 2000 (Average values given in parenthesis)

Parameters	May 1998	October 1998	February 1999	February 2000
Biomass (ml/100m <sup>3</sup> )	0.01-10.6 (5.5)	2.1-68.9 (22.0)	0.4-19.5 (3.6)	0.9-14.7 (7.0)
Population (no.X10 <sup>3</sup> /100m <sup>3</sup> )	0.007-61.0 (19.6)	13.8-254.2 (76.0)	1.3-162.1 (33.1)	3.4-190.3 (66.5)
Total groups (no.)	1-14 (11)	8-17 (13)	7-13 (11)	9-16 (11)
Major groups	Copepods, Gastropods, Decapod larvae, Chaetognaths	Copepods, Decapod larvae, Gastropods, Chaetognaths	Copepods, Decapod larvae, Chaetognaths	Copepods, Decapod larvae, Chaetognaths, Fish eggs, Ctenophores

Table 3.3.12 - Decapods, fish eggs and fish larvae off Okha during 1999

Parameters	Decapods		Fish eggs		Fish larvae	
	March 1999	November 1999	March 1999	November 1999	March 1999	November 1999
Population density (no/100m <sup>3</sup> )	57-23624 (4530)	24-6293 (1205)	1-2197 (118)	1-50 (12)	1-151 (13)	1-482 (41)
Contribution to total zooplankton (%)	0.50-98.1 (27.8)	0.4-79.7 (26.3)	0.03-10.36 (1.5)	0.02-2.60 (0.5)	0.01-0.21 (0.1)	0.05-1.63 (0.5)

Table 3.3.13- Decapods and fish larvae off Bedi during 1997

Parameters	Decapods		Fish larvae	
	February/March 1997	October 1997	February/March 1997	October 1997
Population density (no/100m <sup>3</sup> )	237-13988 (5335)	752-299933 (25033)	1-51 (12)	1-25 (9)
Contribution to total zooplankton (%)	1.7-76.3 (22.0)	2.8-88.9 (27.6)	0.01-0.70 (0.12)	0.01-0.29 (0.04)
List of species / family/groups	Alpheids, crab zoea, palaemonids ( <i>Macrobrachium rosenbergii</i> , <i>Macrobrachium malcomsoni</i> ), megalopa, pandalid ( <i>Thalassocaris</i> ), hippolytid ( <i>Cretmocariss</i> ), <i>Penaeus semisulcatus</i> , <i>Penaeus indicus</i> , <i>Penaeus monodon</i> , <i>Metapenaeus affinis</i> , <i>Palaemon semelinkii</i> , <i>Hippolytid eitmocoris</i> ,	Crab zoea, pagurid zoea, pagurids, alpheids, porcellanid zoea, porcellanid, stomatopod larvae, upogobids, alima larvae, palaemonid, <i>Palaemon semelinkii</i> , <i>Acetes</i> sp., <i>Metapenaeus dobsoni</i> , pagurid ( <i>Diogenes</i> ), crab eggs, axiis	Dactylopteridae, Fistularia, <i>Thryssa dussumieri</i> , <i>Thryssa purava</i> , <i>Gobius planiceps</i> , <i>Gobius bynoensis</i> , <i>Ambassis ranga</i> , <i>Johnius dussumieri</i> , <i>Sebastes</i> sp., Percoidae, Scorpaenidae, Gobiidae, Cottidae, Scorpaeniformes, Atherinidae, Blennioidea	Cottidae, <i>Mugil</i> sp., Gobiidae, <i>Thryssa purava</i> , <i>Thryssa dussumieri</i> , Scorpaeniformes, <i>Gobius planiceps</i> , Agonidae, Myctophidae, Percoidae, Peristediidae, <i>Syngnathus spicifer</i> , <i>Tilesina</i> sp., <i>Cottius</i> sp., <i>Lepturacanthus</i> sp., Mugiloidae, Trachinoidae, Scombroproidae, Triacanthodidae, <i>Caranx melampygus</i> , Stromateadei, Clupeidae, Tetraodontiformes, Silligonidae, Apogonidae, Scombridae, Sparidae, Silligonidae, Normanchthyidae, Gobiidae, Engraulidae, Scorpaenidae, <i>Tilesina</i> sp.,

Table 3.3.14 – Decapod larvae (shrimps/prawns), fish eggs and fish larvae off Navlakhi during 1986-1987

Parameters	Decapods			Fish eggs August 1986	Fish larvae		
	August 1986	November 1986	February 1987		August 1986	November 1986	February 1987
Population density (no/100m <sup>3</sup> )	46	1	9	1	94	1	16
List of species / family/ groups	<i>Metapenaeus affinis</i> , <i>Metapenaeus kutchensis</i> , <i>Acetes indicus</i> , <i>Exopalaemon styliferus</i> , <i>Exhippolysmata ensirostris</i>	<i>Nematopalaemon</i> sp.	<i>Acetes indicus</i>		<i>Paraplagusia blochi</i> , <i>Engraulis mystax</i> , <i>Otolithoides</i> sp., <i>Boleophthalmus glaucus</i> , <i>Clupeid</i> sp.	<i>Boleophthalmus glaucus</i>	<i>Engraulis mystax</i> , <i>Boleophthalmus glaucus</i> , <i>Clupeid</i> sp.

Table 3.3.15 – Decapod larvae (shrimps/prawns), fish eggs and fish larvae off Kandla during 1986 – 1987

Parameters	Decapods			Fish eggs February 1987	Fish larvae		
	August 1986	November 1986	February 1987		August 1986	November 1986	February 1987
Population density (no/100 m <sup>3</sup> )	11-182 (72)	18-23 (21)	7-8 (7)	12 (12)	13-269 (134)	17-67 (42)	10 (10)
List of species / family/ groups	<i>Metapenaeus affinis</i> , <i>Metapenaeus kutchensis</i> , <i>Penaeus indicus</i> , <i>Acetes indicus</i> , <i>Exopalaemon styliferus</i> , <i>Exhippolyasma ata ensirostris</i> ,	<i>Penaeus indicus</i> , <i>Acetes indicus</i> , <i>Exopalaemon styliferus</i> , <i>Exhippolyasma ta ensirostris</i> ,	<i>Acetes indicus</i> , <i>Exhippolyasmata ensirostris</i> ,		<i>Paraplagusia blochi</i> , <i>Engraulis mystax</i> , <i>Synaptura commersoniana</i> , <i>Boleophthalmus glaucus</i> , <i>Clupeid sp.</i> , <i>Bregmaceros sp.</i>	<i>Cynoglossus sp.</i> , <i>Engraulis mystax</i> , <i>Boleophthalmus glaucus</i> , <i>Clupeid sp.</i> , <i>Bregmaceros sp.</i> , <i>Labridae sp.</i>	<i>Engraulis mystax</i> , <i>Tetrodon sp.</i> , <i>Boleophthalmus glaucus</i>

Table 3.3.16- Decapods, fish eggs and fish larvae off Mundra during 1998 – 2000

Parameters	Decapods		Fish eggs		Fish larvae	
	July 1998	August 1998	July 1998	August 1998	July 1998	August 1998
Population density (no/100m <sup>3</sup> )	952-35377 (14607)	811-99449 (19652)	0-21 (5)	0-56 (10)	3-386 (53)	9-566 (149)
Contribution to total zooplankton (%)	3.6-83.6 (32.0)	12.6-97.8 (54.0)	0-0.09 (0.02)	0-0.3 (0.1)	<0.01-1.0 (0.2)	0.02-3.7 (0.8)
List of species / family / groups	Crab zoea, alpheidids, <i>Lucifer</i> sp., porcellenid larvae	Crab zoea, alpheidids, megalopa, <i>Lucifer</i> sp., porcellenid zoea			<i>Thyssa purava</i> , <i>Gobius planifrons</i> , <i>Scorber microlepidotus</i> , Clupeidae, Percoidae, <i>Syngnathus</i> sp., <i>Stolephorus indicus</i> , Gempyllidae, Belonidae, <i>Paraplagusia blochii</i> ,	<i>Thyssa purava</i> , <i>Gobius planifrons</i> , <i>Scorber microlepidotus</i> , <i>Syngnathus</i> sp., Myctophidae, <i>Hilsa kelee</i> , Engraulidae, Clupeidae, <i>Gadiformes</i> , <i>Paraplagusia blochii</i> , Gempyllidae, <i>Stolephorus indicus</i> , Gobidae, Gempyllidae, <i>Coilia dussumieri</i> , Scorpaeniformes (Peristidiidae), <i>Apogon orbicularis</i> , Percoidae, <i>Stolephorus indicus</i>

Table 3.3.16 (Contd.2)

Parameters	Decapods		Fish eggs		Fish larvae	
	March 1999	March 2000	March 1999	March 2000	March 1999	March 2000
Population density (no./100m <sup>3</sup> )	658-74203 (16060)	2-70870 (7652)	1-238 (15)	0-27 (5)	1-54 (8)	0-53 (5)
Contribution to total zooplankton (%)	0.4-58.7 (24.8)	0.01-61.4 (18.8)	<0.01-3.1 (0.07)	0-0.9 (0.05)	<0.01-0.2 (0.02)	0-0.2 (0.03)
List of species / family / groups	Crab zoea, <i>Lucifer</i> sp., stomatopods, alpheids	Crab zoea, alpheids, <i>Acetes</i> sp., protozoea, crab megalopa, <i>Lucifer</i> sp., alima larvae, pagurids			Gobiidae, <i>Mugil</i> sp., <i>Scorpaeniformes</i> , Myctophidae, <i>Thryssa</i> sp., <i>Scorpaenidae</i> , <i>Thryssa dussumieri</i> , <i>Syngnathus</i> sp., <i>Thryssa purava</i> , Percoidae, <i>Gobius planiformes</i> , Stomatoteoidei, Scombroidei, Myctophidae, <i>Beloniformes</i> , Polynemidae, <i>Ambassis commersoni</i> , Monocanthidae, Sparidae, <i>Silago sihama</i> , <i>Hilsa kelee</i> , <i>Cynoglossus</i> spm.	Gobius sp., Clupidae, <i>Thryssa</i> sp., <i>Mugil</i> sp., Percoidae, <i>Scorpaeniformes</i>

Table 3.3.17 - Decapods, fish eggs and fish larvae at Kori creek during 2000

Parameters	Decapods	Fish eggs	Fish larvae
	February 2000	February 2000	February 2000
Population density (no/100m <sup>3</sup> )	25-5689 (1871)	5-104 (47)	2-909 (163)
Contribution to total zooplankton (%)	0.01-1.9 (0.3)	0.003-0.4 (0.1)	0.01-2.6 (0.5)
List of species / family / groups	<i>Lucifer</i> sp., pagurids, crab zoea, <i>Penaeus indicus</i> , <i>Metapenaeus dobsoni</i> , Alima larvae, crab megalopa, porcellanid zoea, <i>Acetes indicus</i> , alpheids		<i>Thryssa</i> sp., <i>Illisha</i> sp., <i>Stolephorus</i> sp., <i>Gobius planiceps</i> , <i>Gobius</i> <i>planifrons</i> , <i>Harpadon nehereus</i> , Gobiidae, <i>Mugil</i> sp., Mugilidae, Hoplichthyidae, Serranidae, Triglidae, <i>Cynoglossus</i> sp., Percoidei, <i>Solea</i> sp.

Table 3.4.1 – Intertidal macrobenthic biomass, population and composition off Okha during 1995 – 1999  
(Average values given in parenthesis)

Parameters	November 1995	March 1999	November 1999
Biomass (g/m <sup>2</sup> wet wt.)	0-91.1 (9.5)	0-88.0 (20.7)	<0.1-42.2 (4.9)
Population (no./m <sup>2</sup> )	0-9800 (2384)	0-62750 (8183)	50-23850 (2945)
Total groups (no.)	16	22	17
Major groups	Polychaetes, Amphipods, Isopods, Ostracods, Copepods	Hydrozoans, Nemertines, Nematodes, Polychaetes, Ostracods, Copepods, Cumaceans, Tanaidaceans	Anthozoans, Polychaetes, Ostracods, Copepods, Cumaceans, Tanaidaceans, Isopods



Table 3.4.2 – List of intertidal macrobenthic groups / species recorded at different zones in the Gulf of Kachchh

Groups	Okha	Vadin ar	Sikka	Bedi	Kandl a	Luni	Mund ra	Jakha u	Khara Creek	Kori Creek
Foraminiferans	-	+	+	+	-	-	+	-	+	-
Hydrozoans	+	+	+	+	-	+	+	+	-	-
Anthozoans	+	+	+	+	-	-	+	-	-	-
Coelenterates	-	-	-	-	-	-	-	-	-	-
Sea anemone	-	+	-	-	-	-	-	-	-	-
Nemertines	+	+	+	+	+	-	+	-	-	-
Nematodes	+	+	+	+	+	+	+	-	-	-
Sipunculids	-	+	+	+	-	-	+	-	-	-
Polychaetes	+	+	+	+	+	+	+	+	+	+
Oligochaetes	+	-	-	-	-	-	-	-	-	-
Pycnogonids	+	+	+	+	-	+	+	-	-	+
Bryozoans	-	-	-	-	-	-	-	-	-	-
Barnacles	-	+	-	-	-	-	+	+	-	-
Chiton	-	+	-	-	-	-	-	-	-	-
Cerithids	-	+	-	-	-	-	-	-	-	-
Thaisids	-	+	-	-	-	-	-	-	-	-
Umboniums	-	+	-	-	-	-	-	-	-	-
Cladocerans	-	-	-	-	-	-	-	+	-	-
Ostracods	+	+	+	+	+	+	+	+	-	-
Copepods	+	+	+	+	+	+	+	+	-	+
Mysids	+	+	+	-	+	-	+	-	-	-
Cumaceans	+	+	+	+	+	+	+	+	-	+
Tanaidaceans	+	+	+	+	+	+	+	-	-	-
Prawns	+	+	-	-	+	-	-	+	-	-
Crab	-	+	-	-	+	-	-	+	-	-
Hermit crab	-	+	-	-	-	-	-	-	-	-
Decapods	+	-	+	-	+	-	-	-	+	-
Isopods	+	+	+	+	-	+	+	+	-	+
Amphipods	+	+	+	+	+	+	+	+	+	+
Harpacticoids	+	-	-	-	-	-	-	-	-	-
<i>Caprella</i> sp.	-	-	-	-	-	-	-	-	-	-
<i>Lucifer</i> sp.	-	-	-	-	-	-	-	+	-	-
Macrurans	+	+	+	+	-	+	+	-	-	+
Anomurans	+	+	-	+	+	-	+	-	-	+
Brachyurans	+	+	+	+	+	+	+	-	-	+
Amphineurans	+	+	+	+	-	-	+	-	-	-
Crustacean larvae	+	+	+	-	+	+	+	-	-	-
Insects	+	+	+	+	+	+	+	-	-	+
Sea spider	+	+	-	-	+	-	-	+	-	-
Gastropods	+	+	+	+	+	+	+	-	+	+
Pelecypods	+	+	+	+	+	+	+	-	+	+
Molluscs	+	+	+	-	+	-	-	+	-	-
Asteroids	-	-	+	+	-	-	+	-	-	-
Echiuroids	-	+	+	-	+	-	+	-	-	-
Ophiuroids	+	+	+	+	+	-	+	-	-	-
Holothuroids	+	-	+	+	-	-	-	-	-	-
Sea cucumber	-	+	-	-	-	-	-	-	-	-
Brittle stars	-	+	-	-	-	-	-	-	-	-
Crinoids	+	-	-	+	-	-	-	-	-	-
Echinoderms	-	+	+	-	-	-	-	-	-	-
Fish eggs	+	+	-	-	-	-	-	+	-	-
Fish larvae	+	-	+	+	+	-	+	-	-	+
Ascidians	-	+	+	-	-	-	-	-	-	-
Flat worms	-	-	-	-	-	-	-	-	-	-

+: Present; -: Absent

Table 3.4.3 – Subtidal macrobenthic biomass, population and composition off Okha during 1981 – 1999  
(Average values given in parenthesis)

Parameters	March/April 1981	December 1981
Biomass (g/m <sup>2</sup> wet wt.)		
Population (no./m <sup>2</sup> )	1975-59600 (23271)	775-12875 (5055)
Total groups (no.)		
Major groups	Foraminiferans, Polychaetes, Copepods, Cirripeds Mysids, Amphipods, Stomatopods, Tanaidaceans	Foraminiferans, Polychaetes, Amphipods, Tanaidaceans, Mysids

Parameters	February 1989	January 1990	January 1992
Biomass (g/m <sup>2</sup> wet wt.)	0.01-83.0 (39.6)	<0.01 (<0.01)	3.9-9.5 (7.4)
Population (no./m <sup>2</sup> )	10-8233 (2645)	5 (5)	851-1725 (1293)
Total groups (no.)	1-13 (6)	1 (1)	5-9 (6)
Major groups	Polychaetes, Amphipods, Molluscs, Decapods, Cumaceans, Echinoderms	Polychaetes	Polychaetes, Amphipods, Copepods, Decapods, Echinoderms, Ostracods, Cumaceans, Crustacean Larvae

Parameters	March 1995	November 1995
Biomass (g/m <sup>2</sup> wet wt.)	0.1-29.6 (16.1)	<0.1-490.3 (80.9)
Population (no./m <sup>2</sup> )	200-14544 (4407)	39-27351 (7556)
Total groups (no.)	5-9 (6)	19
Major groups		Polychaetes, Amphipods, Isopods, Ostracods, Copepods

Parameters	April 1997	April 1998	March 1999	November 1999
Biomass (g/m <sup>2</sup> wet wt.)	2.8	79.6	<0.1-339.6 (44.6)	<0.1-18.6 (3.7)
Population (no./m <sup>2</sup> )	1352	52908	13-8000 (2013)	13-5115 (1174)
Total groups (no.)	6	21	16	14
Major groups	Polychaetes, Gastropods, Amphipods, Tanaidaceans, Pelecypods	Amphipods, Tunicates, Polychaetes, Isopods, Tanaidaceans, Pelecypods, Ophiuroids, Gastropods	Polychaetes, Amphipods, Isopods, Ostracods, Copepods, Tanaidaceans	Polychaetes, Ostracods, Copepods, Cumaceans, Tanaidaceans, Isopods, Amphipods

Table 3.4.4 – List of subtidal macrobenthic groups / species recorded at different zones in the Gulf of Kachchh

Groups	Okh a	Sala ya	Vadi nar	Sikk a	Bedi	Nav akhi	Kan dla	Luni	Mun dra	Jak hou	Kha ro cree k	Kori cree k
Foraminiferans	+	-	+	+	+	-	+	+	+	-	+	-
Hydrozoans	+	-	+	+	+	-	+	-	+	-	-	+
Anthozoans	-	-	+	+		-	-	-	+	-	-	-
Coelenterates	-	-		+		-	-	+	-	-	-	-
Sponges	+	-	-	-	-	-	-	-	-	-	-	-
Nemertines	+	-	+	+	+	-	+	-	-	+	-	-
Nematodes	+	-	+	+	+	-	+	+	+	-	-	-
Sipunculids	+	-		+	+	-	-	-	+	-	-	-
Polychaetes	+	+	+	+	+	+	+	+	+	+	+	+
Oligochaetes	+	-	-	-	-	-	-	-	-	-	-	-
Pycnogonids	+	-	+	+	+	-	-	+	+	-	-	-
Bryozoans	+	-				-	-	-	-	-	-	-
Ostracods	+	-	+	+	+	-	-	+	+	-	-	-
Copepods	+	-	+	+	+	+	+	+	+	+	-	+
Cirripeds	+	-	-	-	-	-	-	-	-	-	-	-
Mysids	+	-	-	-	+	-	-	-	+	+	-	-
Cumaceans	+	-	+	+	+	-	+	+	+	+	-	-
Tanaidaceans	+	-	+	+	+	-	-	+	+	-	-	-
Prawns	+	-	+	-	-	+	+	-	-	+	-	-
Crab			+	-	-	-	+	-	-	+	-	-
Decapods	+	-	+	+		-	-	-	-	+	+	-
Isopods	+	-	+	+	+	-	+	+	+	+	-	+
Amphipods	+	-	+	+	+	+	+	+	+	+	+/-	+
Harpacticoids	+	-	-	-	-	-	-	-	-	-	-	-
<i>Caprella</i> sp.	+	-	+			-	+	-	-	+	-	-
Macrurans	+	-	+	+	+	-	-	+	+	-	-	+
Anomurans	+	-				-	-	-	-	-	-	+
Brachyurans	+	-	+	+	+	+	+	+	+	-	-	+
Amphineurans	+	-	-	-	-	-	-	-	-	-	-	-
Hyperids	-	-	-	-	-	-	-	-	-	+		
Crustacean larvae	+	+	+	-	+	+	+	+	+	-	-	-
Stomatopods	+	-	-	-	-	-	-	-	-	-	-	-
Insects	+	-	+	+	+	-	+	-	+	+	-	+
Sea spider	+	-	-	-	-	-	+	-	-	+	-	-
Gastropods	+	-	+	+	+	-	+	+	+	+	+	+
Bivalves	+	-				+	+	+	+	-	+	+
Pelecypods	+	+	+	+	+	+	+	-	-	+	-	-
Molluscs	+	-	+	+		-	-	-	-	-	-	+
Asteroids	-	-	+		+	-	-	-	-	-	-	-
Echiuroids	+	-				-	-	+	+	-	-	-
Ophiuroids	+	-	+	+	+	-	-	-	+	-	-	-
Holothuroids	+	-	-	-	+	-	-	-	-	-	-	-
Crinoids	+	-	-	-	-	-	+	-	-	-	-	-
Brittle stars	-	-	-	-	-	-	+	-	+	+	-	-
Echinoderms	+	+	+	+		+	+	-	-	-	-	-
Fish eggs	+	-	-	-	-	-	+	+	-	-	-	+
Fish larvae	-	-	+	+	+	-	-	-	+	-	-	-
Ascidians	+	-	-	-	-	-	-	-	-	-	-	-
Tunicates	+	-	-	-	-	-	-	-	-	-	-	-
Flat worms	-	-	-	-	-	-	-	-	-	-	-	-

+: Present

-: Absent

Table 3.4.5 – Intertidal macrobenthic biomass, population and composition off Vadinar during 1994 – 2000  
(Average values given in parenthesis)

Parameters	April 1994	November 1994	November 1995	March 1996
Biomass (g/m <sup>2</sup> wet wt.)	2.2-72.8 (20.3)	0.7-126.7 (22.8)	0.2-92.1 (21.0)	1.0-123.3 (45.9)
Population (no./m <sup>2</sup> )	463-62000 (15802)	589-60000 (10327)	95-4434 (770)	1555-31245 (6795)
Total groups (no.)	3-9 (5)	1-7 (5)	8-18 (14)	10-17 (13)
Major groups	Polychaetes, Amphipods, Isopods, Brachyurans, Molluscs, Nemertines	Polychaetes, Amphipods, Isopods, Brachyurans, Molluscs, Nemertines	Polychaetes, Tanaidaceans, Cumaceans, Crab, Bivalve, Ostracods, Isopods, Prawn	Polychaetes, Amphipods, Decapods, Cumaceans, Crabs, Bivalves, Nemertines,

Parameters	March 1997	November 1997	January 2000
Biomass (g/m <sup>2</sup> wet wt.)	8.0-505.0 (127.1)	2.0-1787.0 (289.3)	25.2-1583.8 (509.8)
Population (no./m <sup>2</sup> )	3300-383700 (47586)	600-277300 (56442)	2848-222500 (60264)
Total groups (no.)	6-20 (13)	3-17 (10)	4-15 (9)
Major groups	Nemertines, Nematodes, Polychaetes, Tanaidaceans, Isopods, Amphipods, Brachyurans, Gastropods	Nematodes, Polychaetes, Cumaceans, Tanaidaceans, Isopods, Amphipods, Gastropods, Pelecypods	Polychaetes, Cumaceans, Tanaidaceans, Isopods, Amphipods, Macrurans, Anomurans, Brachyurans, Gastropods, Pelecypods

Table 3.4.6 – Subtidal macrobenthic biomass, population and composition off Vadinar during 1994 – 2000  
(Average values given in parenthesis)

Parameters	April 1994	November 1994	November 1995	March 1996
Biomass (g/m <sup>2</sup> wet wt.)	0.6-46.4 (13.5)	<0.1-9.4 (4.7)	<0.1-26.6 (6.8)	0.1-58.4 (12.5)
Population (no./m <sup>2</sup> )	196-5400 (2469)	25-4650 (1880)	13-4113 (1409)	188-9326 (2810)
Total groups (no.)	4-12 (8)	1-10 (8)	1-7 (5)	2-8 (6)
Major groups	Polychaetes, Amphipods, Decapods, Tanaidaceans, Brachyurans, Molluscs, Echinoderms, Prawns	Polychaetes, Amphipods, Decapods, Molluscs	Polychaetes, Nemertines, Molluscs	Foraminiferans, Polychaetes, Molluscs, Amphipods, Caprilla, Nemertines

Table 3.4.6 (Contd. 2)

Parameters	March 1997	November 1997	January 2000
Biomass (g/m <sup>2</sup> wet wt.)	3.4-80.8 (29.2)	0.8-73.3 (14.7)	0.2-10.2 (3.0)
Population (no./m <sup>2</sup> )	428-18150 (8083)	126-24900 (4656)	126-1840 (847)
Total groups (no.)	18	17	3-8 (5)
Major groups	Amphipods, Gastropods, Pelecypods, Asteroids	Polychaetes, Amphipods, Gastropods, Pelecypods	Polychaetes, Amphipods, Pelecypods

Table 3.4.7 – Intertidal macrobenthic biomass, population and composition off Sikka during 1985 – 2000 (Average values given in parenthesis)

Parameters	November/December 1993	March/April 1994	March 1997	November 1997	January 2000
Biomass (g/m <sup>2</sup> wet wt.)	<0.1-104.0 (24.2)	7.0-39.1 (17.8)	<0.1-68.6 (17.1)	2.0-1787.0 (289.3)	0.3-1583.8 (406.8)
Population (no./m <sup>2</sup> )	325-49000 (11888)	2900-18900 (9175)	88-59972 (11798)	600-277300 (56442)	501-354042 (58320)
Total groups (no.)	2-10 (8)	6-12 (8)	14-17 (15)	3-17 (10)	3-14 (8)
Major groups	Polychaetes, Decapods, Brachyurans, Molluscs, Copepods, Amphipods, Ostracods, Cumaceans,	Polychaetes, Decapods, Brachyurans, Molluscs, Amphipods,	Polychaetes, Amphipods, Brachyurans, Gastropods, Nematodes, Isopods	Polychaetes, Cumaceans, Tanaidaceans, Isopods, Amphipods, Gastropods, Pelecypods	Polychaetes, Cumaceans, Tanaidaceans, Amphipods, Macrurans, Anomurans, Brachyurans, Gastropods, Pelecypods

Table 3.4.8 – Subtidal macrobenthic biomass, population and composition off Sikka during 1985 – 2000 (Average values given in parenthesis)

Parameters	March 1985	October 1989	November/December 1993	March/April 1994
Biomass (g/m <sup>2</sup> wet wt.)	8.0 (1.32)	0.5-1.9 (1.2)	1.3-29.8 (10.4)	14.9-66.7 (35.7)
Population (no./m <sup>2</sup> )	600 (100)	139-1002 (573)	2106-24600 (9534)	2525-7145 (4315)
Total groups (no.)	3	3-6 (4)	6-14 (11)	11 (11)
Major groups	Polychaetes, Crustaceans, Sipunculids	Polychaetes, Ostracods, Amphipods, Sipunculids, Molluscs, Pycnogonids, Crustacean Larvae	Polychaetes, Amphipods, Decapods, Molluscs, Cumaceans, Foraminiferans, Ostracods,	Polychaetes, Amphipods, Molluscs, Echinoderms

Table 3.4.8 (Contd. 2)

Parameters	March 1997	November 1997	January 2000
Biomass (g/m <sup>2</sup> wet wt.)	1.2-116.0 (32.8)	0.8-73.3 (14.7)	0.2-16.8 (5.5)
Population (no./m <sup>2</sup> )	1116-22400 (8680)	126-24900 (4656)	126-1902 (868)
Total groups (no.)	9-15 (11)	17	2-8 (4)
Major groups	Polychaetes, Amphipods, Ophiuroids, Coelenterates, Ostracods, Pelecypods	Hydrozoans, Polychaetes, Ostracods, Amphipods, Gastropods, Pelecypods	Polychaetes, Tanaidaceans, Amphipods, Pelecypods

Table 3.4.9 – Intertidal macrobenthic biomass, population and composition off Bedi during 1997(Average values given in parenthesis)

Parameters	February / March 1997	October 1997
Biomass (g/m <sup>2</sup> wet wt.)	0.4-367.1 (36.8)	5.9-1259.4 (92.2)
Population (no./m <sup>2</sup> )	1474-86864 (10037)	341-67462 (14038)
Total groups (no.)	3-18 (9)	4-16 (8)
Major groups	Nematodes, Polychaetes, Pycnogonids, Cumaceans, Tanaidaceans, Isopods, Amphipods, Macrurans, Brachyurans, Gastropods, Pelecypods	Nematodes, Polychaetes, Tanaidaceans, Isopods, Amphipods, Brachyurans, Gastropods, Pelecypods

Table 3.4.10 – Subtidal macrobenthic biomass, population and composition off Bedi during 1997 (Average values given in parenthesis)

Parameters	February / March 1997	October 1997
Biomass (g/m <sup>2</sup> wet wt.)	0.2-23.3 (7.8)	1.0-554.5 (81.2)
Population (no./m <sup>2</sup> )	125-9664 (2944)	452-12591 (4112)
Total groups (no.)	2-14 (9)	4-14 (9)
Major groups	Foraminiferans, Nemertines, Nematodes, Polychaetes, Amphipods, Gastropods	Polychaetes, Cumaceans, Tanaidaceans, Isopods, Amphipods, Brachyurans, Gastropods, Pelecypods, Ophiuroids

Table 3.4.11– Subtidal macrobenthic biomass, population and composition off Navlakhi during 1986 – 1994  
(Average values given in parenthesis)

Parameters	February 1985	August 1986	November 1986	February 1987	November 1994
Biomass (g/m <sup>2</sup> wet wt.)	0.9 (0.4)	0.04	0.1	0.1	0.02-2.7 (0.9)
Population (no./m <sup>2</sup> )	72 (36)	14	60	72	38-3900 (605)
Total groups (no.)	2	2	2	2	1-5 (2)
Major groups	Polychaetes, Pelecypods	Polychaetes, Crustaceans	Polychaetes, Crustaceans	Polychaetes, Crustaceans	Polychaetes, Copepods, Amphipods, Molluscs, Prawn Larvae, Fish Eggs, Brachyurans

Table 3.4.12 – Intertidal macrobenthic biomass, population and composition off Kandla during 1996 – 1998  
(Average values given in parenthesis)

Parameters	March 1996	October 1996	February 1998
Biomass (g/m <sup>2</sup> wet wt.)	0.02-10.1 (3.4)	<0.1 -112.3 (11.1)	<0.1-27.3 (3.0)
Population (no./m <sup>2</sup> )	50-1702 (492)	51-4510 (941)	0-4774 (843)
Total groups (no.)	4-8 (6)	4-11	7-12 (9)
Major groups	Polychaetes, Amphipods, Isopods, Crabs	Polychaetes, Crabs, Prawn Larvae, Zoea	Polychaetes, Mysids, Brachyurans, Macrurans, Amphipods

Table 3.4.13 – Subtidal macrobenthic biomass, population and composition off Kandla during 1985 – 1998  
(Average values given in parenthesis)

Parameters	February 1985	August 1986	November 1986	February 1987
Biomass (g/m <sup>2</sup> wet wt.)	0-17.1 (0.7)	0.01-0.06 (0.05)	0.11-0.19 (0.16)	0.12-6.4 (3.5)
Population (no./m <sup>2</sup> )	0-2310 (88)	12-68 (43)	60-152 (107)	90-576 (310)
Total groups (no.)	4 (4)	1-3 (2)	2-3 (3)	1-3 (2)
Major groups	Polychaetes, Crustaceans, Echinoderms, Pelecypods	Polychaetes, Crustaceans, Foraminiferans	Polychaetes, Crustaceans, Foraminiferans	Polychaetes, Crustaceans, Foraminiferans

Parameters	March 1996	October 1996	February 1998
Biomass (g/m <sup>2</sup> wet wt.)	0.14-9.4 (2.6)	0.2-0.6 (0.4)	0-9.8 (1.5)
Population (no./m <sup>2</sup> )	88-2601 (979)	239-628 (406)	0-1389 (254)
Total groups (no.)	2-8 (4)	3-8 (5)	Nil-6 (2)
Major groups	Polychaetes, Amphipods, Bivalves, Crustacean Larvae	Polychaetes, Copepods, Amphipods, Molluscs	Polychaetes, Pelecypods, Brachyurans

Table 3.4.14 – Intertidal macrobenthic biomass, population and composition off Mundra during 1997 – 2000  
(Average values given in parenthesis)

Parameters	July 1998	March 1999	September 1999	March 2000
Biomass (g/m <sup>2</sup> wet wt.)	0-340.7 (36.8)	<0.1-135.8 (17.4)	0-7.2 (1.1)	<0.1-487.0 (48.4)
Population (no./m <sup>2</sup> )	0-7275 (1398)	26-48400 (4218)	0-8714 (1017)	88-133056 (11781)
Total groups (no.)	19	24	11	10
Major groups	Polychaetes, Copepods, Isopods, Amphipods, Brachyurans	Polychaetes, Mysids, Amphipods, Macrurans, Brachyurans, Gastropods	Polychaetes, Isopods, Cumaceans, Amphipods, Macrurans, Anomurans, Brachyurans, Pelecypods, Fish larvae,	Polychaetes, Amphipods, Macrurans, Brachyurans, Gastropods, Pelecypods

Table 3.4.15 – Subtidal macrobenthic biomass, population and composition off Mundra during 1997 – 2000  
(Average values given in parenthesis)

Parameters	March 1997	July 1998	August 1998
Biomass (g/m <sup>2</sup> wet wt.)	5.7-10.5 (8.9)	<0.1-47.3 (10.7)	0-2.9 (1.01)
Population (no./m <sup>2</sup> )	3700-10350 (7841)	138-4475 (1442)	0-2100 (795)
Total groups (no.)	17	1-7 (5)	3-5 (3)
Major groups	Foraminiferans, Polychaetes, Copepods, Isopods, Amphipods, Gastropods, Pelecypods	Polychaetes, Isopods, Amphipods, Brachyurans	Polychaetes, Mysids, Amphipods, Brachyurans, Gastropods

Parameters	February 1999	March 1999	September 1999	March 2000
Biomass (g/m <sup>2</sup> wet wt.)	0.1-63.1 (8.23)	0.1-63.1 (13.2)	0.6-4.5 (1.9)	0.1-43.1 (6.5)
Population (no./m <sup>2</sup> )	50-17650 (2438)	50-78625 (8422)	264-17176 (3377)	100-20600 (3028)
Total groups (no.)	2-10 (5)	18	7	16
Major groups	Polychaetes, Amphipods, Brachyurans, Copepods	Polychaetes, Isopods, Amphipods, Brachyurans,	Polychaetes, Cumaceans, Isopods, Amphipods, Macrurans, Brachyurans, Pelecypods	Polychaetes, Isopods, Amphipods, Pelecypods,



Table 3.4.16 – Intertidal macrobenthic biomass, population and composition off Jakhau during 1995 (Average values given in parenthesis)

Parameters	November 1995
Biomass (g/m <sup>2</sup> wet wt.)	0-25.3 (5.3)
Population (no./m <sup>2</sup> )	0-2165 (797)
Total groups (no.)	0-11 (5)
Major groups	Polychaetes, Amphipods, Isopods, Crab, Prawn

Table 3.4.17 – Subtidal macrobenthic biomass, population and composition off Jakhau during 1993 – 1995 (Average values given in parenthesis)

Parameters	February 1993	August 1995	November 1995
Biomass (g/m <sup>2</sup> wet wt.)	2.2-48.6 (25.4)	0.03-0.2 (0.1)	0.01-5.7 (2.2)
Population (no./m <sup>2</sup> )	702-32200 (16451)	76-3950 (2013)	89-6650 (1798)
Total groups (no.)	5	5	3-9 (5)
Major groups	Polychaetes, Amphipods, Nemertines, Crabs, Molluscs	Polychaetes, Copepods, Prawn Larvae, Mysids, Insects	Polychaetes, Amphipods, Isopods, Caprilla, Molluscs

Table 3.4.18 – Intertidal macrobenthic biomass, population and composition at Kharo creek during 1994– 1995 (Average values given in parenthesis)

Parameters	December 1994	January 1995
Biomass (g/m <sup>2</sup> wet wt.)	48.5-116.5 (82.5)	935.7 (935.7)
Population (no./m <sup>2</sup> )	17170-63360 (40265)	78080 (78080)
Total groups (no.)	6	6
Major groups	Foraminifera, Gastropods, Polychaetes, Bivalves, Amphipods, Decapods	Foraminifera, Gastropods, Polychaetes, Bivalves, Amphipods, Decapods

Table 3.4.19 – Subtidal macrobenthic biomass, population and composition at Kharo creek during 1994– 1995 (Average values given in parenthesis)

Parameters	December 1994	January 1995	February 1995
Biomass (g/m <sup>2</sup> wet wt.)	9.9-116.8 (40.2)	2.2-34.3 (20.7)	8.1-28.4 (17.7)
Population (no./m <sup>2</sup> )	1100-49300 (11539)	1800-13875 (4925)	3150-15400 (7813)
Total groups (no.)	6	6	6
Major groups	Foraminifera, Gastropods, Polychaetes, Bivalves, Amphipods, Decapods	Foraminifera, Gastropods, Polychaetes, Bivalves, Amphipods, Decapods	Foraminifera, Gastropods, Polychaetes, Bivalves, Amphipods, Decapods

Table 3.4.19 (Contd. 2)

Parameters	March 1995	April 1995	May 1995
Biomass (g/m <sup>2</sup> wet wt.)	4.0-33.6 (15.4)	1.2-23.5 (16.9)	3.2-466.4 (128.9)
Population (no./m <sup>2</sup> )	1550-9300 (4183)	201-6827 (3141)	4200-198400 (52988)
Total groups (no.)	5	5	6
Major groups	Foraminifera, Gastropods, Polychaetes, Bivalves, Amphipods	Foraminifera, Gastropods, Polychaetes, Bivalves, Amphipods	Foraminifera, Gastropods, Polychaetes, Bivalves, Amphipods, Decapods

Table 3.4.20 – Intertidal macrobenthic biomass, population and composition at Kori creek during 1998 – 2000 (Average values given in parenthesis)

Parameters	May 1998	February 1999	February 2000
Biomass (g/m <sup>2</sup> wet wt.)	3.1-153.0 (40.2)	2.3-221.2 (68.2)	<0.01-269.5 (18.3)
Population (no./m <sup>2</sup> )	176-1452 (605)	176-4796 (1731)	22-3080 (884)
Total groups (no.)	3-6 (4)	2-8 (5)	1-7 (4)
Major groups	Gastropods, Brachyurans, Polychaetes, Pelecypods	Brachyurans, Polychaetes, Gastropods, Pelecypods	Polychaetes, Amphipods, Brachyurans, Gastropods, Pelecypods, Macrurans

Table 3.4.21 – Subtidal macrobenthic biomass, population and composition at Kori creek during 1998 – 2000 (Average values given in parenthesis)

Parameters	October 1998	February 1999	February 2000
Biomass (g/m <sup>2</sup> wet wt.)	0-5.2 (2.1)	0.1-53.7 (11.4)	<0.1-0.6 (0.3)
Population (no./m <sup>2</sup> )	0-795 (277)	127-11392 (2531)	26-176 (101)
Total groups (no.)	2-8 (4)	3-7 (5)	2-5 (3)
Major groups	Polychaetes, Brachyurans	Polychaetes, Brachyurans, Pelecypods, Insects	Polychaetes, Amphipods

Table 3.7.1 - Marine fish landings (t) for Rajkot, Jamnagar and Kachchh districts along with state production.  
(Percentage given in parenthesis)

Year	Rajkot	Jamnagar	Kachchh	Gujarat State
1960-61	0	1997 (2.5)	1066 (1.3)	79411
1961-62	0	2786 (3.3)	2044 (2.4)	85154
1962-63	0	2308 (2.8)	1857 (2.2)	82687
1963-64	0	2306 (2.2)	1726 (2.0)	85000
1964-65	0	4064 (4.6)	2767 (3.1)	89017
1965-66	0	4191 (3.8)	2425 (2.2)	109007
1966-67	0	2752 (2.4)	2956 (2.6)	115175
1967-68	0	3758 (3.0)	3274 (2.6)	124882
1968-69	0	2836 (2.1)	2269 (1.7)	131748
1969-70	0	2891 (2.1)	2671 (1.9)	139995
1970-71	0	4657 (3.1)	3912 (2.6)	151190
1971-72	0	5457 (3.7)	4135 (2.8)	147023
1972-73	0	4562 (3.0)	4811 (3.2)	151203
1973-74	0	6760 (3.8)	6883 (3.9)	177647
1974-75	281 (0.2)	2982 (1.9)	4302 (2.7)	157430
1975-76	2159 (1.0)	5065 (2.4)	3842 (1.8)	208300
1976-77	1292 (0.6)	21679 (9.6)	5400 (2.4)	225379
1977-78	426 (0.2)	14463 (8.2)	6333 (3.6)	176895
1978-79	2680 (1.2)	21797 (9.5)	6298 (2.7)	229972
1979-80	455 (0.2)	24755 (12.0)	5706 (2.7)	206749
1980-81	1731 (0.9)	2305 (1.2)	4405 (2.3)	192670
1981-82	1978 (0.9)	34167 (15.5)	6334 (2.9)	220607
1982-83	498 (0.3)	29687 (15.4)	13785 (7.1)	192669
1983-84	1302 (0.6)	27443 (12.3)	23315 (10.4)	223291
1984-85	701 (0.2)	31521 (10.8)	34295 (11.8)	290708
1985-86	1674 (0.54)	25238 (8.2)	35417 (11.5)	306577
1986-87	504 (0.1)	27998 (8.9)	31314 (9.9)	315942
1987-88	463 (0.1)	40232 (12.3)	29743 (9.1)	327560
1988-89	2825 (0.7)	44161 (10.7)	46896 (11.3)	414073
1989-90	2452 (0.6)	45354 (10.5)	49566 (11.5)	432364
1990-91	1845 (0.4)	54299 (9.1)	65378 (13.01)	500462
1991-92	2681 (0.5)	63452 (12.5)	61830 (11.7)	530017
1992-93	1058 (0.2)	66202 (10.7)	62974 (10.3)	609103
1993-94	1489 (0.2)	58887 (9.5)	63234 (10.2)	619836
1994-95	1318 (0.2)	58912 (9.1)	76827 (11.9)	645261
1995-96	1014 (0.2)	68088 (9.8)	72617 (12.1)	598351
1996-97	855 (0.1)	76157 (11.5)	76662 (11.6)	660068
1997-98	823 (0.2)	56043 (8.0)	71787 (10.2)	702355
1998-99	238 (0.0)	28592 (5.2)	69686 (12.6)	551660
1999-00	812 (0.1)	71683 (10.7)	75030 (11.2)	670951

Source: Gujarat Fisheries Statistics, 1999-2000, Department of fisheries, Govt. of Gujarat

Table 3.7.2 - Districtwise fishing centers, fishermen, boats and fishing gears of Gulf of Kachchh

Details of fishery	Rajkot	Jamnagar	Kachchh	Gujarat
Length of coast line (km)	26	342	406	1600
No.of fishing centers	1	23	51	190
Fishermen population	998	23832	14890	275005
Active fishermen	320	5260	5685	98723
Trawlers	0	134	18	6787
Gill netters	40	494	645	3764
Dollnetters	0	0	0	663
Total others	48	414	368	6242
Total Mechanised boats	88	1042	1031	17456
Total non-mechanised boats	728	321	229	8819
Total boats	816	1363	1260	26275
Trawl nets	0	1089	113	41793
Gill netter	7690	116698	68673	796366
Degnets/dollnets	3007	0	6866	34633
Cast nets	83	715	1649	61260
Other stat. Gears	3578	151900	4542	489924
Total gears	14358	270402	81843	1423976

Source: Gujarat Fisheries Statistics, 1999-2000, Department of fisheries, Government of Gujarat, Jamnagar

Table 3.7.3 - Species wise fish landing (t) of Gujarat state, Jamnagar, Rajkot and Kachchh along with percentage contribution (in parenthesis) during 1999-2000

Name of fish	State	Rajkot	Jamnagar	Kachchh
White pomfret	11133 (1.7)	0	5197 (7.2)	1191 (1.6)
Black pomfret	3489 (0.5)	0	1159 (1.6)	90 (0.1)
Bombay duck	88166 (13.1)	77 (9.48)	147 (0.2)	12460 (16.6)
Thread fin	1938 (0.3)	25 (3.1)	791 (1.1)	689 (0.9)
Jew fish	9538 (1.4)	143 (17.6)	4635 (6.5)	925 (1.2)
Hilsa	1710 (0.2)	16 (2.0)	0	164 (0.2)
Clupeids	12733 (1.9)	36 (4.4)	2539 (3.5)	2368 (3.2)
<i>Coilia</i>	16651 (2.5)	26 (3.2)	0	4886 (6.5)
Shark	16588 (2.5)	30 (3.7)	3904 (5.4)	2765 (3.7)
Mullet	5378 (0.8)	83 (10.2)	1336 (1.9)	1552 (2.1)
Catfish	24526 (3.7)	118 (14.5)	6244 (8.7)	1467 (2.0)
Eel	3347 (0.5)	0	524 (0.7)	267 (0.4)
Leather jacket	2206 (0.3)	0	680 (0.9)	75 (0.1)
Seer fish	7133 (1.1)	0	2193 (3.1)	248 (0.3)
Indian salmon	1647 (0.2)	56 (6.9)	264 (0.4)	227 (0.3)
Ribbon fish	59616 (5.9)	0	6399 (8.9)	2692 (3.6)
Silver bar	3635 (0.5)	0	874 (1.2)	613 (0.8)
Perch	7156 (1.1)	47 (5.8)	616 (0.9)	250 (0.3)
Small sciaenids	224417 (33.4)	0	17646 (24.6)	31932 (42.5)
Shrimp	48032 (7.2)	66 (8.1)	1018 (1.4)	6199 (8.3)
Prawns (medium)	7284 (1.1)	0	338 (0.5)	1468 (1.9)
Prawns (jumbo)	1126 (0.2)	0	251 (0.3)	291 (0.4)
Lobster	511 (0.1)	0	108 (0.1)	38 (0.1)
Crab	1657 (0.2)	5 (0.6)	387 (0.5)	143 (0.2)
Levta	2205 (0.3)	0	0	0
Cuttle / squids	23423 (3.5)	0	3393 (4.7)	21 (0.0)
Miscellaneous	85706 (12.8)	84 (10.3)	11039 (15.4)	2008 (2.7)
Total	670951 (100)	812 (100)	71682 (100)	75029 (100)

Source: Gujarat Fisheries Statistics, 1999-2000, Department of fisheries, Government of Gujarat, Jamnagar

Table 3.7.4 - Centrewise fish landings (t) for Jamnagar district for the period 1990 to 1999

Centre	1990-91	1991-92	1992-93	1993-94	1994-95	1997-98	1998-99
Okha	21102	34283	42639	34128	36196	35151	11345
Bet Balapur	509	1859	1059	2377	613	812	1212
Salaya	5394	2523	2485	3021	2768	1792	3255
Vadinar	--	--	--	--	--	513	356
Bharana	210	343	190	376	246	347	303
Sikka	324	385	453	488	450	552	1213
Sarmat	49	94	41	--	22	142	143
Baid	82	231	169	105	274	231	368
Bedi	1322	1066	889	900	1598	1219	1558
Sachana	1609	1276	818	832	846	871	1213
Jodia	193	177	236	190	293	411	320

Source: Department of Fisheries, Government of Gujarat, Jamnagar

Table 3.7.5 - Average composition (%) of marine fish landings at Okha for the period 1990-95

Name of fish	Percentage contribution
White pomfret	2.8
Black pomfret	0.5
Bombay duck	0.6
Thread fin	0.6
Jew fish	2.6
Hilsa	0.0
Clupeids	2.8
<i>Coilia</i>	0.0
Shark	5.2
Mullet	0.0
Catfish	5.3
Eel	0.6
Leather jacket	0.3
Seer fish	0.1
Indian salmon	0.1
Ribbon fish	7.1
Silver bar	0.9
Perch	0.6
Small sciaenids	38.6
Shrimp	8.6
Prawns (medium)	3.6
Prawns (jumbo)	1.6
Lobster	0.2
Crab	0.0
Levta	0.1
Cuttle / squids	6.2
Miscellaneous	9.1

Source: Department of fisheries, Government of Gujarat, Jamnagar

Table 3.7.6 – Total number of fishing crafts and number of active fishermen at different centres in Jamnagar district (As on 2000)

Centre	Fishing craft			Fishermen
	Mechanised	Non-mechanised	Total	
Okha	21	20	41	101
Salaya	291	39	330	1220
Vadinar	6	20	26	204
Sikka	127	43	170	570
Bedi	149	39	188	474

Source: Department of Fisheries, Government of Gujarat, Jamnagar

Table 3.7.7 – Trawl catch rate and composition off Okha during 1997 and 1999

Parameters	March 1999	November 1999
Fish catch (kg/h)	8.5-12.0 (10.3)	4.0-23.5 (11.7)
Total species (no.)	Fishes 5 Prawns 1 Others 2	Fishes 20 Prawns 1 Others 1
Common species	Fishes: <i>Cynoglossus arel</i> , <i>Johnius glaucus</i> , <i>Lethrinus</i> sp., <i>Lutjanus johni</i> , <i>Protonibea dicanthus</i>	Fishes: <i>Mugil</i> sp., <i>Hilsa</i> sp., <i>Johnius glaucus</i> , <i>Lepturacanthus savala</i> , <i>Illisha</i> sp., <i>Harpadon nehereus</i> , <i>Thryssa dussumieri</i> , <i>Polynemus indica</i>
	Prawns: <i>Metapenaeus</i> sp.	Prawns: <i>Metapenaeus</i> sp.
	Others: Crab, Loligo	Others: Loligo

Table 3.7.8 – Species composition of trawl / gill net catch (groups / species) recorded at different zones in the Gulf of Kachchh

Groups / Species	Okha	Vadinar	Sikka	Bedi	Navlakhi	Kandla	Luni	Mundra	Jakhu	Kori Creek
<i>Acanthopagrus berda</i>						+				
<i>Acanthopagrus latus</i>								+		
<i>Ambassidae</i> sp.		+	+							
<i>Anodontostoma chacunda</i>		+		+				+	+	
<i>Apogon</i> sp.						+				
<i>Arius arius</i>	+					+				+
<i>Arius caelatus</i>			+	+	+	+		+	+	
<i>Arius maculatus</i>	+	+	+		+	+			+	
<i>Arius</i> sp.			+			+		+		+
<i>Arothron</i> sp.			+			+		+		+
<i>Asseraggodes</i> sp.		+	+					+		
<i>Astrape dipterygia</i>						+				
<i>Atropus</i> sp.		+								
<i>Atule mate</i>			+							
<i>Batrachua</i> sp.			+							
<i>Bempros</i> sp.			+	+	+	+	+	+		
<i>Boleophthalmus glaucus</i>					+	+				
<i>Boleophthalmus</i> sp.						+		+		
<i>Callionymus sagitta</i>						+				
<i>Carcharias laticaudus</i>					+					

Table 3.7.8 (Contd. 2)

Groups / Species	Okh a	Vadi nar	Sikk a	Bedi	Navl akhi	Kand la	Luni	Mun dra	Jakh au	Kori Cree k
<i>Carangoides caeruleopinnatus</i>		+								
<i>Carangoides talamparoid</i>			+							
<i>Carangidae</i> sp.		+						+	+	
<i>Caranx kalla</i>			+			+				
<i>Caranx nigripinnis</i>						+				
<i>Caranx para</i>		+	+	+					+	
<i>Caranx</i> sp.		+	+	+						
<i>Carcharias laticaudus</i>			+			+				
<i>Cephalopholis formosa</i>			+							
<i>Chiloscyllium arabicum</i>					+	+				
<i>Chirocentrus dorab</i>			+	+		+				
<i>Chirocentrus</i> sp.		+	+							
<i>Clupea lile</i>						+				
<i>Clupidae</i> sp.		+		+				+		
<i>Cociella crocodila</i>		+	+	+						
<i>Coilia dussumieri</i>		+	+	+	+	+		+	+	+
<i>Congresox tabalon</i>		+								
<i>Congresox talabonoides</i>						+				
<i>Crenidens crenidens</i>								+		
<i>Cyanoglossus arel</i>	+	+	+	+	+	+		+	+	+
<i>Cyanoglossus macrolepidotus</i>			+		+	+				
<i>Cyanoglossus</i> sp.			+							
<i>Cymatoceps mastutus</i>								+		
<i>Drepame longimana</i>		+	+	+	+			+		
<i>Drepane punctata</i>						+				
<i>Drepane</i> sp.			+						+	
<i>Dussumieri acuta</i>			+							
Electric ray				+				+	+	
<i>Eleutheronema tetradactylum</i>					+			+		
<i>Engraulis mystax</i>					+	+				
<i>Ephippus orbis</i>				+						
<i>Epinephelus malabaricus</i>			+							
<i>Euryglossa orientalis</i>		+				+				
<i>Formio niger</i>						+				
<i>Gerres lucidus</i>			+							
<i>Gerres</i> sp.		+								
<i>Gobius</i> sp.		+			+	+				
<i>Gymnocranius griseus</i>		+								
<i>Harpadon nehereus</i>	+		+	+	+	+	+	+		+
<i>Hemiramphus far</i>								+		
<i>Hemiramphus</i> sp.					+					
<i>Hilsa kelee</i>						+				
<i>Hilsa toil</i>			+			+				
<i>Hilsa</i> sp.	+									
<i>Hyporhamphus</i> sp.						+				

Table 3.7.8 (Contd. 3)

Groups / Species	Okh a	Vadi nar	Sikk a	Bedi	Navl akhi	Kand la	Luni	Mun dra	Jakh au	Kori Cree k
<i>Ilisha megaloptera</i>		+	+	+	+	+		+	+	
<i>Ilisha metastoma</i>						+				
<i>Ilisha sp.</i>	+		+	+				+		+
<i>Johnius belangeri</i>					+	+				
<i>Johnius diacanthus</i>						+				
<i>Johnius dussumieri</i>			+							
<i>Johnius glaucus</i>	+	+	+	+	+	+		+	+	+
<i>Johnius macropterus</i>		+	+	+		+				
<i>Johnius vogleri</i>					+	+				
<i>Johnius sp.</i>			+	+		+		+		
<i>Lactarius lactarius</i>									+	
<i>Lagocephalus sp.</i>			+	+		+		+	+	+
<i>Leiognathus splendens</i>		+		+						
<i>Leiognathus sp.</i>		+				+		+		
<i>Lepturacanthus savala</i>	+	+	+	+		+	+	+	+	+
<i>Lethrinus nebulosus</i>		+								
<i>Lethrinus sp.</i>	+	+	+							
<i>Liza carinata</i>					+					
<i>Longocephalus sp.</i>								+		
<i>Lutjanus erythropterus</i>			+							
<i>Lutjanus johni</i>	+	+	+	+		+		+	+	
<i>Lutjanus sp.</i>		+	+					+		
<i>Megalaspis cordyla</i>	+		+						+	+
<i>Megalops cyprinoids</i>										+
<i>Minous monodactylus</i>			+							
<i>Minouse sp.</i>				+						
<i>Monacanthidae sp.</i>				+						
<i>Monotaxis grandoculis</i>								+		
<i>Mugil cephalus</i>					+			+		
<i>Mugil dussumieri</i>						+				
<i>Mugil sp.</i>	+					+		+		+
<i>Muraenesox telabonoides</i>			+	+		+			+	
<i>Nemiopterus japonicus</i>		+	+							
<i>Nibea diacanthus</i>					+	+				
<i>Nibea maculata</i>		+	+		+					
<i>Opishopterus tardoore</i>		+	+	+		+		+	+	+
<i>Otolithes argenteus</i>			+			+				
<i>Otolithes cuiveri</i>		+	+	+		+				
<i>Otolithes rubber</i>					+	+				
<i>Otolithes sp.</i>		+		+		+		+	+	+
<i>Otolithoides biauritus</i>				+	+	+		+	+	+
<i>Otolithoides sp.</i>										+
<i>Pampus argenteus</i>			+	+	+	+	+	+	+	
<i>Pampus chinensis</i>				+		+		+	+	
<i>Paramonacanthus strigilifer</i>				+			+			
<i>Paramonacanthus sp.</i>		+	+							
<i>Paranibea sp.</i>			+							
<i>Paraplagusia marmorata</i>					+					
<i>Pegasidae</i>			+							



Table 3.7.8 (Contd. 4)

Groups / Species	Okh a	Vadi nar	Sikk a	Bedi	Navl akhi	Kand la	Luni	Mun dra	Jakh au	Kori Cree k
<i>Pelates quadirlineatus</i>		+	+							
<i>Pellona elongata</i>						+				
<i>Pellona filigera</i>						+				
<i>Pennahia macrophthalmus</i>			+							
<i>Periophthalmidae</i> sp.			+					+		
<i>Platycephalus punctatus</i>	+	+	+					+		
<i>Platycephalus</i> sp.				+						
<i>Plotosus lineatus</i>		+								
<i>Polynemus hexadactylus</i>		+	+	+	+	+				
<i>Polynemus indicus</i>	+			+	+	+		+	+	
<i>Polynemus tetradactylus</i>					+	+				
<i>Pomadasys hasta</i>						+				
<i>Pristipoma maculatum</i>		+	+							
<i>Protonibea diacanthus</i>	+	+	+	+	+	+		+		
<i>Pseudorhombus elevatus</i>			+							
<i>Pseudorhombus</i> sp.			+							
<i>Pseudotriacanthus strigilifer</i>		+	+	+				+		
<i>Rastrelliger kanagurta</i>	+									
<i>Rhechias</i> sp.								+		
<i>Rhynchobatus djiddensis</i>									+	
<i>Rogadius asper</i>			+							
<i>Sardinella fimbriata</i>						+				
<i>Sardinella gibbosa</i>		+	+							
<i>Sardinella life</i>						+				
<i>Sardinella longiceps</i>		+	+							
<i>Sardinella</i> sp.				+						
<i>Saurida tumbil</i>			+			+				
<i>Scatophagus argus</i>								+		
<i>Scoliodon laticaudus</i>				+	+	+	+	+	+	
<i>Scomberoides commersonianus</i>	+									
<i>Scomberomorus guttatus</i>	+		+			+				
<i>Scorpionidae</i>										+
<i>Secutor insidiator</i>		+	+	+				+	+	
<i>Secutor ruconius</i>		+	+							
<i>Sillago sihama</i>		+	+	+		+				
<i>Sillago maculata</i>		+								
<i>Sillago</i> sp.			+	+				+		
<i>Solea elongata</i>		+								
<i>Solea</i> sp.			+	+						
<i>Sparidae</i>										+
<i>Sphoeroides</i> sp.			+							
Stingray			+	+						+
<i>Strongylura strongylura</i>						+				
<i>Suggarandus</i> sp.				+						

Table 3.7.8 (Contd. 5)

Groups / Species	Okh a	Vadi nar	Sikk a	Bedi	Navl akhi	Kand la	Luni	Mun dra	Jakh au	Kori Cree k
<i>Synaptura commersoniana</i>						+				
<i>Synaptura</i> sp.								+		
<i>Tachysurus caelatus</i>						+				
<i>Tachysurus maculatus</i>					+	+				
<i>Tenualosa toil</i>					+					
<i>Terapon jarbua</i>	+		+					+		
<i>Terapon puta</i>		+						+		
<i>Terapon theraps</i>				+						
<i>Tetradon inermis</i>		+	+		+	+				
<i>Tetradon lunaris</i>						+				
<i>Tetrodon oblongus</i>					+	+				
<i>Therapon</i> sp.		+	+							
<i>Thyssa dussumieri</i>	+							+	+	
<i>Thyssa hamiltoni</i>		+								
<i>Thyssa mystax</i>		+	+	+		+		+	+	+
<i>Thyssa setirostris</i>		+	+							
<i>Thyssa vitirostris</i>				+	+	+		+		+
<i>Tricanthus brevirostris</i>						+				
<i>Trichiurus haumela</i>			+		+				+	
<i>Trichiurus lepturus</i>		+	+							
<i>Trichiurus savala</i>			+			+				
<i>Tripteron orbis</i>		+	+							
<i>Trissocles vitirostris</i>			+			+				
<i>Trygon walga</i>					+	+				
<i>Trygon</i> sp.			+			+				
<i>Trypauchen vagina</i>				+		+				+
<i>Valamugil</i> sp.					+					
<i>Zebrias guagga</i>		+								
<i>Zygaena malleus</i>						+				
<b>Prawns</b>										
<i>Atypopenaeus stenodactylus</i>				+		+		+	+	
<i>Exhippolysmata ensirostris</i>				+	+	+	+	+		
<i>Exhippolysmata</i> sp.				+				+		+
<i>Exopalaemon styliferus</i>				+	+	+	+	+		
<i>Macrobrachium</i> sp.								+		+
<i>Metapenaeopsis stridulens</i>			+							
<i>Metapenaeopsis</i> sp.			+							
<i>Metapenaeus affinis</i>		+	+	+	+	+			+	
<i>Metapenaeus brevicornis</i>								+	+	+
<i>Metapenaeus dobsoni</i>		+				+				
<i>Metapenaeus kutchensis</i>			+			+				
<i>Metapenaeus monoceros</i>			+			+				
<i>Metapenaeus</i> sp.	+	+	+		+	+	+	+		+
<i>Nematopalaemon tenuipes</i>				+		+		+		+
<i>Nematopalaemon</i> sp.					+	+				
<i>Palaemon</i> sp.					+			+		

Table 3.7.8 (Contd. 6)

Groups / Species	Okh a	Vadi nar	Sikk a	Bedi	Navl akhi	Kand la	Luni	Mun dra	Jakh au	Kori Cree k
<i>Parapenaeopsis hardwicki</i>		+			+	+				
<i>Parapenaeopsis sculptilis</i>				+	+	+		+	+	
<i>Parapenaeopsis stylifera</i>		+	+	+	+	+		+	+	+
<i>Parapenaeopsis</i> sp.		+	+	+		+		+		+
<i>Parapenaeopsis uncta</i>								+		
<i>Penaeus</i> (Fenneropenaeus) <i>indicus</i>			+					+		
<i>Penaeus</i> (Fenneropenaeus) <i>merguiensis</i>				+						
<i>Penaeus brevicornis</i>									+	
<i>Penaeus indicus</i>			+	+						
<i>Penaeus merguensis</i>			+							
<i>Penaeus monodon</i>		+								
<i>Penaeus penicillatus</i>									+	
<i>Penaeus semisulcatus</i>			+			+				
<i>Penaeus</i> sp.				+		+		+		+
Others										
<i>Solenocera crassicornis</i>				+				+		
<i>Solenocera</i> sp.		+	+							
<i>Trachypenaeus curvirostris</i>			+							
<i>Acetes indicus</i>					+	+				
<i>Acetes</i> sp.									+	
<i>Charybdis annulata</i>		+	+	+	+	+	+	+	+	+
<i>Charybdis cruciata</i>		+				+		+	+	
<i>Charybdis</i> sp.						+				
Crab	+		+	+		+		+		
<i>Doclea gracilipes</i>				+						
<i>Hyastenus planasius</i>			+							
Loligo	+	+	+	+					+	+
<i>Matuta lunaris</i>					+	+				
<i>Matuta planipes</i>				+	+			+		+
<i>Neptunus pelagicus</i>		+	+			+			+	
<i>Neptunus sanguinolentus</i>				+	+	+			+	
Octopus				+		+	+	+		
<i>Panulirus homarus</i>						+				
<i>Panulirus polyphagus</i>						+				
<i>Scylla serrata</i>			+	+	+	+		+		
Sepia		+	+	+		+			+	+
Squilla		+	+	+	+	+	+	+	+	
Star fish		+								

+: Present

Table 3.7.9 - Mean composition (%) of marine fish landing at Sikka, Salaya and Gujarat state.

Species	Sikka (1990-94)	Salaya (1990-94)	Gujarat state (1990-94)
White pomfret	6.3	4.4	2.2
Black pomfret	0.1	0.1	0.5
Bombay duck	-	-	12.1
Thread fin	0.2	0.3	0.4
Jew fish	13.5	1.7	2.3
Hilsa	0.4	<0.1	0.6
Clupeid	11.2	1.5	1.8
Anchovies	-	-	2.4
Shark	11.4	4.2	2.8
Mullet	15.2	5.9	1.2
Cat fish	19.1	4.4	3.2
Eel	-	0.5	0.7
Leather jacket	21.0	1.6	0.4
Seer fish	0.8	0.6	1.6
Indian salmon	-	0.8	0.4
Ribbon fish	<0.1	0.2	6.9
Silver bar	0.8	1.5	1.2
Perches	0.5	4.3	0.9
Small sciaenid	<0.1	39.4	32.8
Shrimps	0.7	18.2	11.4
Lobster	0.8	0.2	0.2
Crab	2.0	0.4	0.2
Cuttle/ squid	-	<0.1	2.6
Others	14.9	9.6	11.2
Average landings (t/y)	420	3238.4	4185.70

Table 3.7.10 - Composition (%) of marine fish landing at Salaya (1990-95).

Species	1990-91	1991-92	1992-93	1993-94	1995-95
White pomfret	5.0	4.3	2.7	4.3	5.5
Black pomfret	-	0.4	-	-	0.1
Thread fin	-	-	0.2	-	1.5
Jew fish	0.4	1.5	1.0	1.8	4.2
Hilsa	-	<0.1	-	-	-
Other clupeid	2.9	1.4	-	1.9	0.9
Shark	3.9	4.9	3.5	4.6	4.2
Mullet	6.7	7.6	6.4	4.2	4.9
Cat fish	4.5	4.0	4.1	4.5	4.9
Eel	0.1	0.8	0.3	1.3	0.3
Leather jacket	0.9	1.7	0.5	2.5	2.2
Seer fish	0.2	0.2	0.6	0.9	1.0
Indian salmon	1.5	0.6	-	0.7	0.9
Ribbon fish	0.2	-	0.8	0.1	-
Silver bar	1.6	1.1	0.8	1.8	2.1
Perches	4.0	5.7	4.6	3.6	3.7
Small sciaenid	41.8	35.9	40.9	40.3	37.0
Shrimp	15.1	18.0	23.0	19.2	17.0
Lobster	0.2	0.4	0.3	0.2	0.2
Crabs	0.9	0.2	0.1	0.1	0.8
Squid/ cuttle	-	-	-	-	0.1
Others	10.1	11.1	10.2	8.2	8.6
Total landings (t/y)	3594 *(9.9)	2523 *(4.0)	2486 *(3.8)	3022 *(5.1)	2768 *(4.7)

\* Percentage of total landings of Jamnagar district.

Source: Department of Fisheries, Government of Gujarat, Jamnagar.

Table 3.7.11– Trawl catch rate and composition off Vadinar during 1994 - 2000

Parameters	April 1994	November 1994	January 2000
Fish catch (kg/h)	2.4-72.9 (20.4)	34.2-115.6 (71.6)	32 (32)
Total species (no.)	Fishes 39 Prawns 4 Others 5	Fishes 40 Prawns 8 Others 6	Fishes 17 Prawns 4 Others 5
Common species	Fishes: <i>Cynoglossus arel</i> , <i>Asseraggodes</i> sp., <i>Drepane longimana</i> , <i>Ilisha megaloptera</i> <i>Platycephalus punctatus</i> <i>Lutjanus johni</i> <i>Sillago sihama</i> <i>Sardinella longiceps</i>	Fishes: <i>Sardinella longiceps</i> , <i>Ilisha megaloptera</i> , <i>Arius maculatus</i> , <i>Sillago sihama</i> , <i>Gobius</i> sp., <i>Coilia dussumieri</i> <i>Cynoglossus arel</i>	Fishes: <i>Johnius glaucus</i> , <i>Ilisha megaloptera</i> , <i>Thryssa mystax</i> , <i>Cynoglossus arel</i> , <i>Gobius</i> sp., <i>Lepturacanthus savala</i>
	Prawns: <i>Metapenaeus</i> sp., <i>Parapenaeopsis</i> sp., <i>Parapenaeopsis stylifera</i> , <i>Solenocera</i> sp.,	Prawns: <i>Metapenaeus</i> sp., <i>Parapenaeopsis stylifera</i> , <i>Penaeus monodon</i>	Prawns: <i>Metapenaeus</i> sp., <i>Parapenaeopsis</i> sp., <i>Penaeus monodon</i> , <i>Solenocera</i> sp.
	Others: <i>Loligo</i> , <i>Sepia</i>	Others: <i>Charybdis annulata</i> , <i>Loligo</i>	Others: <i>Charybdis annulata</i> , <i>Loligo</i> , <i>Squilla</i>

Table 3.7.12 - Species composition of trawl catch off Vadinar during pre and postmonsoon periods (1994).

Common for premonsoon and postmonsoon	Premonsoon	Postmonsoon
<i>Cynoglossus arel</i>	<i>Aseragodes</i> sp.	<i>Terapon puta</i>
<i>Caranx</i> sp.	<i>Drepane longimana</i>	<i>Secutor ruconius</i>
<i>Anodontostoma chacunda</i>	<i>Pristipoma maculatum</i>	<i>Otolithes cuvieri</i>
<i>Polynemus heptadactylus</i>	<i>Nemipterus japonicus</i>	<i>Carangoides</i>
<i>Ilisha megaloptera</i>	<i>Caranx</i> sp.	<i>Caeruleopinnatus</i>
<i>Arius maculatus</i>	<i>Platycephalus punctatus</i>	<i>Sardinella gibbosa</i>
<i>Gobius</i> sp.	<i>Euryglossa orientalis</i>	<i>Johnius macropterus</i>
<i>Paramonacanthus</i> sp.	<i>Pelates quadrilineatus</i>	<i>Protonibea diacanthus</i>
<i>Tetradoninermis</i>	<i>Zebrias quagga</i>	<i>Lutjanus</i> sp.
<i>Lutjanus johni</i>	<i>Otolithes</i> sp.	<i>Sillago maculata</i>
<i>Sillago sihama</i>	<i>Leiognathus splendens</i>	<i>Solea elongata</i>
<i>Secutor insidator</i>	<i>Lethrinus nebulosus</i>	<i>Coilia dussumieri</i>
<i>Nibea maculata</i>	<i>Ambassis</i> sp.	<i>Lethrinus</i> sp.
<i>Sardinella longiceps</i>	<i>Pseudotricanthus strigilifer</i>	<i>Thryssa hamiltonii</i>
<i>Johnius glaucus</i>	<i>Thryssa setirostris</i>	<i>Opithopterus tardoore</i>
<i>Congresox talabon</i>	<i>Gymnocranius griseus</i>	<i>Lepturacanthus savala</i>
<i>Cociella crocodila</i>	<i>Gerres lucidus</i>	<i>Leiognathus</i> sp.
<i>Plotosus lineatus</i>	<i>Trichiurus lepturus</i>	<i>Thryssa vitrirostris</i>
<i>Thryssa mystax</i>	<i>Atropus</i> sp.	<i>Lactarius lactarius</i>
<i>Tripteron orbis</i>		<i>Penaeus monodon</i>
<i>Parapenaeopsis stylifera</i>		<i>Parapenaeopsis</i> sp.
<i>Solenocera</i> sp.		<i>P. hardwickii</i>
<i>Metapenaeus</i> sp.		<i>Metapenaeus brevicornis</i>
<i>Neptunus pelagicus</i>		<i>A. affinis</i>
<i>Charybdis annulata</i>		<i>Charybdis cruciata</i>
<i>Loligo Sepia</i>		<i>Squilla</i> sp.

Table 3.7.13 - Composition of marine fish landings (t/y) during 1985-96 at Sikka.

Name of fish	1985-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96
White pomfret	16.5	10.4	9.0	21.6	24.7	22.7	27.7	27.6	14.6	40.3	67.5
Black pomfret	0.2	0.2	2.0	0.9	1.2	--	1.5	--	--	--	0.7
Thread fin	--	--	6.2	0.8	--	--	3.0	--	--	1.4	7.0
Jew fish	75.6	31.5	28.6	28.5	35.2	54.5	60.8	57.3	69.6	41.2	89.4
Hilsa	0.9	--	--	--	0.6	2.1	5.9	--	--	--	--
Other clupeids	14.2	8.5	1.4	20.4	11.0	28.2	39.2	49.4	41.3	77.9	24.8
Shark	30.2	32.8	46.5	28.4	26.0	49.4	29.8	53.6	72.1	35.4	29.2
Mullet	68.7	32.1	56.8	42.1	44.9	39.4	56.0	64.7	64.4	95.9	121.8
Cat fish	214.7	48.4	83.2	15.0	19.9	39.4	65.3	122.9	113.9	60.7	61.3
Eel	--	10.4	2.5	4.1	0.2	--	--	--	--	--	0.8
Leather jacket	11.3	3.4	--	3.0	6.0	11.4	10.4	7.0	10.4	30.4	2.9
Seer fish	--	3.6	8.8	1.7	1.3	--	--	--	0.7	0.7	1.5
Indian Salmon	0.4	4.2	3.1	0.3	3.9	--	--	--	--	--	3.4
Ribbon fish	--	--	--	1.7	--	--	--	--	--	--	--
Silverbar	5.9	0.7	8.2	6.3	5.7	2.8	--	--	11.2	1.8	6.7
Perches	--	2.8	0.8	3.0	7.2	8.3	2.8	--	--	--	4.7
Small scienides	--	--	--	--	0.1	0.2	--	--	--	--	--
<i>Shrimps</i>	0.4	0.6	--	1.5	4.6	6.4	3.6	2.7	1.3	1.3	--
Prawns (medium)	--	--	--	--	0.4	0.2	--	--	--	--	--
Lobster	--	0.1	--	--	1.2	--	1.4	--	12.9	2.7	--
Crabs	1.7	5.2	0.4	4.7	0.4	5.5	9.6	9.9	11.8	7.2	0.9
Levta	--	0.5	--	--	--	--	--	--	--	--	6.5
Others	53.5	69.8	101.7	67.7	54.2	53.9	68.3	57.9	62.9	70.4	45.3
Total	490.7* (1.9)	265.7 (0.9)	397.5 (1.0)	245.6 (0.5)	248.8 (0.5)	324.4 (0.6)	385.3 (0.6)	452.9 (0.7)	488.0 (0.8)	450.3 (0.8)	474.4 (0.7)

\* Percentage of total landings of Jamnagar district

Source: Department of Fisheries, Government of Gujarat, Jamnagar.

Table 3.7.14-- Trawl and gill net catch rate and composition off Sikka during 1985- 2000

Parameters	March 1985	
	Trawl catch	Gill net catch
Fish catch (kg/h)	30.0-163.0 (90.3)	4.17 (4.2)
Total species (no.)	Fishes 26 Prawns 7 Others 3	Fishes 6
Common species	Fishes: <i>Trygon</i> sp., <i>Charcarias laticaudus</i> , <i>Arius</i> sp., <i>Cynoglossus macrolepidotus</i> , <i>Trichiurus savala</i> , <i>Johnius dussumieri</i>	<i>Arius</i> sp., <i>Carcharias laticaudus</i> , <i>Chirocentrus dorab</i> , <i>Hilsa toli</i> , <i>Pampus argenteus</i> , <i>Scomberomorous guttatus</i> .
	Prawns: <i>Metapenaeus kutchensis</i> , <i>Metapenaeopsis</i> sp.	
	Others: Loligo, Sepia	

Table 3.7.14 (contd)

Parameters	December 1993	April 1994
Fish catch (Kg/h)	0.9-35.2 (11.0)	1.1-5.8 (2.7)
Total species (no.)	Fishes 41 Prawns 4 Others 4	Fishes 20 Prawns 5 Others 5
Common species	Fishes: <i>Ilisha megaloptera</i> , <i>Johnius glaucus</i> , <i>Secutor insidator</i> , <i>Sardinella longiceps</i> , <i>Arius coelatus</i> , <i>Arius maculatus</i> , <i>Pelates quadrilineatus</i>	Fishes: <i>Ilisha megaloptera</i> , <i>Johnius glaucus</i> , <i>Secutor insidator</i> , <i>Cociella crocodila</i> , <i>Atule mate</i>
	Prawns: <i>Metapenaeopsis stridulens</i> , <i>Metapenaeus</i> sp., <i>Parapenaeopsis</i> sp., <i>Penaeus indicus</i> ,	Prawns: <i>Metapenaeopsis stridulens</i> ,
	Others: <i>Charybdis annulata</i> , Loligo, Sepia	Others: Loligo, <i>Scylla serrata</i> , Sepia, Squilla.

Parameters	November 1996	April 1997	January 2000
Fish catch (k/h)	3.2-54.2 (20.1)	1.4-12.2 (6.8)	47 (47)
Total species (no.)	Fishes 30 Prawns 3 Others 4	Fishes 20 Prawns 2 Others 3	Fishes 17 Prawns 3 Others 3
Common species	Fishes: <i>Drepane longimana</i> , <i>Opisthopterus tardoore</i> , <i>Coilia dussumieri</i> , <i>Dussumieri acuta</i> , <i>Pseudotricanthus strigilifer</i> , <i>Thryssa mystax</i>	Fishes: <i>Bempros</i> sp., <i>Coilia dussumieri</i> , <i>Drepane longimana</i> , <i>Harpadon nehereus</i> , <i>Ilisha megaloptera</i> , <i>Ilisha</i> sp., <i>Lagocephalus</i> sp., <i>Lepturacanthus savala</i> , <i>Pampus argenteus</i> , <i>Platycephalus punctatus</i> , <i>Secutor insidator</i> , <i>Thryssa mystax</i> .	Fishes: <i>Johnius glaucus</i> , <i>Ilisha megaloptera</i> , <i>Thryssa mystax</i> , <i>Cynoglossus arel</i> , <i>Lepturacanthus savala</i> , <i>Coilia dussumieri</i>
	Prawns: <i>Metapenaeus</i> sp., <i>Parapenaeopsis stylifera</i> , <i>Penaeus</i> ( <i>Fenneropenaeus</i> ) <i>indicus</i>	Prawns: <i>Metapenaeus</i> sp., <i>Penaeus merguensis</i>	Prawns: <i>Parapenaeopsis</i> sp., <i>Metapenaeus</i> sp., <i>Penaeus indicus</i>
	Others: Crab, Loligo, Sepia, Squilla	Others: <i>Hyastenus planasius</i> , Loligo, <i>Neptunus pelagicu</i> .	Others: <i>Charybdis annulata</i> , Loligo, Squilla

Table 3.7.15 - Species composition of trawl catch off Sikka during pre and postmonsoon periods (1993-97).

Common for premonsoon and postmonsoon	Premonsoon	Postmonsoon
<i>Anodontostoma chacunda</i>	<i>Aseragogodes</i> sp.	<i>Sardinella longiceps</i>
<i>Polynemus heptadactylus</i>	<i>Caranx</i> sp.	<i>Secutor ruconius</i>
<i>Ilisha megaloptera</i>	<i>Cociella crocodila</i>	<i>Tripterodon orbis</i>
<i>Paramonacanthus</i> sp.	<i>Thyssa vitrirostris</i>	<i>Arius caelatus</i>
<i>Otolithes cuvieri</i>	<i>Pampus argenteus</i>	<i>Arius maculatus</i>
<i>Megalaspis cordyla</i>	<i>Harpodon nehereus</i>	<i>Johnius macropterus</i>
<i>Gerres lucidus</i>	<i>Nemiopterus japonicus</i>	<i>Cynoglossus arel</i>
<i>Sardinella gibbosa</i>	<i>Platycephalus punctatus</i>	<i>Cynoglossus</i> sp.
<i>Lutjanus johni</i>	<i>Protonibea diacanthus</i>	<i>Thyssa setirostris</i>
<i>Lethrinus</i> sp.	<i>Minous monodactylus</i>	<i>Pelatus quadrilineatus</i>
<i>Johnius glaucus</i>	<i>Atule mate</i>	<i>Epinephelus malabaricus</i>
<i>Pseudotricanthus strigilifer</i>	<i>Sauvagella</i> sp.	<i>Paranibea</i> sp.
<i>Bempros</i> sp.	<i>Lepturacanthus savala</i>	<i>Sphoeroides</i> sp.
<i>Trichiurus lepturus</i>	<i>Cephalopholis Formosa</i>	<i>Drepane longimana</i>
<i>Secutor insidiator</i>	<i>Batrachus</i> sp.	<i>Trichiurus haumela</i>
<i>Pristipoma maculatum</i>	<i>Trachypenaeus curvirostris</i>	<i>Chirocentrus</i> sp.
<i>Thyssa mystax</i>	<i>Solenocera</i> sp.	<i>Carangoides talamparoides</i>
<i>Coilia dussumieri</i>	<i>Scylla serata</i>	<i>Solea</i> sp.
<i>Sillago sihama</i>	<i>Neptunus pelagicus</i>	<i>Nibea maculata</i>
<i>Metapenaeopsis stridulens</i>	<i>Hyasterus planasius</i>	<i>Pennahia macrophththalmus</i>
<i>Lagocephalus</i> sp.		<i>Opisthopterus tardoore</i>
<i>Penaeus indicus</i>		<i>Caranx para</i>
<i>Penaeus merguensis</i>		<i>Rogadius asper</i>
<i>Parapenaeopsis</i> sp.		<i>Arothron</i> sp.
<i>Parapenaeopsis stylifera</i>		<i>Therapon jarbua</i>
<i>Charybdis annulata</i>		<i>Metapenaeus</i> sp.
<i>Loligo</i> sp.		<i>Periophthalmide</i>
<i>Sepia</i> sp.		<i>Dussmeiri acuta</i>
<i>Squilla</i> sp.		<i>Pseudorhombus</i> sp.
		<i>Pegasiidae</i>

Table 3.7.16 - Fish landing (t) at Bedi during 1992-97.

Species	1992-93	1993-94	1994-95	1995-96	1996-97
White pomfret	102	109	185	141	223
Thread fin	244	64	59	19	56
Jew fish	87	128	220	126	162
Other clupeids	42	41	72	90	49
Shark	14	95	121	100	117
Mullet	30	37	118	72	66
Cat fish	101	174	374	322	222
Eel	-	4	48	112	-
Leather jacket	10	37	40	16	41
Seer fish	44	40	52	9	63
Indian Salmon	-	3	-	-	-
Silver bar	94	44	143	41	98
Perches	3	5	19	-	-
Shrimps	3	4	16	-	5
Lobster	-	11	3	2	3
Crabs	18	12	23	35	14
Others	97	92	105	57	168
Total	889	900	1598	1142	1287



Table 3.7.17 – Trawl catch rate and composition off Bedi in February (premonsoon) and October (postmonsoon) 1997

Parameters	February 1997	October 1997
Fish catch (Kg/h)	0.36-8.76 (3.86)	31.8-139.0 (73.8)
Total species (no.)	Fishes 19 Prawns 1 Others 5	Fishes 40 Prawns 14 Others 9
Common species	Fishes: <i>Thryssa mystax</i> , <i>Opisthopterus tardoore</i> , <i>Sardinella</i> sp., <i>Protonibea diacanthus</i> , <i>Lagocephalus</i> sp., <i>Lepturacanthus savala</i>	Fishes: <i>Pampus argenteus</i> , <i>Otolithoides biauritus</i> , <i>Coilia dussumieri</i> , <i>Drepane longimana</i> , <i>Lagocephalus</i> sp., <i>Secutor insidiator</i> , <i>Johnius macropterus</i> , <i>Johnius</i> sp., <i>Cynoglossus arel</i> , <i>Arius coelatus</i>
	Prawns: <i>Penaeus</i> sp.	Prawns: <i>Parapenaeopsis sculptilis</i> , <i>Parapenaeopsis</i> sp., <i>Parapenaeopsis stylifera</i> , <i>Atypopenaeus stenodactylus</i> , <i>Metapenaeus</i> sp., <i>Penaeus indicus</i>
	Others: <i>Charybdis annulata</i> , Crab, <i>Loligo</i> , <i>Matuta planipes</i> , <i>Sepia</i> .	Others: <i>Charybdis annulata</i> , <i>Loligo</i> , Octopus, <i>Scylla serrata</i> , <i>Sepia</i> , <i>Squilla</i> .

Table 3.7.18 - Annual marine fish landings (t) at Navlakhi.

Years	Navlakhi
1983-84	308
84-85	338
85-86	1811
86-87	245
87-88	992
88-89	784
89-90	333
90-91	295
91-92	1315
92-93	1059
93-94	1489

Source: Department of Fisheries, Government of Gujarat, Rajkot

Table 3.7.19 - Composition of marine fish landings (t) at Navlakhi.

Name of fish	Year			
	1990-91	91-92	92-93	93-94
White pomfret	-	17	-	-
Bombay duck	31	815	246	714
Thread fin	7	30	136	59
Jew fish	24	19	127	49
Hilsa	23	14	-	-
Other clupeids	-	-	-	5
Coilia	8	28	3	59
Shark	15	32	13	27
Mullet	56	37	182	144
Cat fish	50	59	128	177
Seer fish	3	-	-	-
Indian Salmon	-	10	-	18
Perches	-	32	35	-
Prawns	30	75	65	89
Others	48	147	119	156
Total	295	1315	1059	1489

Source: Department of Fisheries, Government of Gujarat, Rajkot.

Table 3.7.20 – Trawl and gill net catch rate and composition off Navlakhi during 1986-1987 and 1994

Parameters	August 1986		November 1986	
	Trawl catch		Gill net catch	
Fish catch (kg/h)	1.6 (1.6)		2.7 (2.7)	
Total species (no.)	Fishes 12 Prawns 2 Others 2		Fishes 17 Prawns 5 Others 3	
Common species	Fishes: <i>Carcharias laticaudus</i> , <i>Trygon walga</i> , <i>Otolithoides biauritus</i> , <i>Tachysurus maculatus</i> , <i>Harpadon nehereus</i>		Fishes: <i>Polynemus tetradactylus</i> , <i>Coilia dussumieri</i> , <i>Harpodon nehereus</i> , <i>Otolithoides biauritus</i> , <i>Polynemus tetradactylus</i> , <i>Johnius vogleri</i> , <i>Cynoglossus macrolepidotus</i> .	
	Prawn: <i>Exopalaemon styliferus</i> , <i>Parapenaeopsis hardwickii</i> .		Prawn: <i>Exopalaemon styliferus</i> , <i>Metapenaeus affinis</i> ,	
	Others: <i>Acetes indicus</i> , <i>Matuta lunaris</i>		Others: <i>Acetes indicus</i> , <i>Matuta lunaris</i> , <i>Neptunus sanguinolentus</i> .	

Parameters	February 1987		December 1994
	Trawl catch		
Fish catch (kg/h)	12.72 (12.7)		1.26 (1.26)
Total species (no.)	Fishes 14 Prawns 4 Others 4		Fishes 3
Common species	Fishes: <i>Carcharias laticaudus</i> , <i>Chiloscyllium arabicum</i> , <i>Trygon walga</i> , <i>Otolithoides biauritus</i> , <i>Cynoglossus macrolepidotus</i> , <i>Tachysurus maculatus</i> ,		Fishes: <i>Engraulis mystax</i> , <i>Pampus argenteus</i> , <i>Tachysurus maculatus</i> ,
	Prawns: <i>Nematopalaemon</i> sp., <i>Parapenaeopsis hardwickii</i> , <i>Parapenaeopsis stylifera</i> , <i>Parapenaeopsis sculptilis</i>		Prawns: <i>Parapenaeopsis stylifera</i> , <i>Palaemon</i> sp., <i>Metapenaeus</i> sp.
	Others: <i>Acetes indicus</i> , <i>Matuta lunaris</i> , <i>Scylla serrata</i> , <i>Squilla</i> sp.		Others: <i>Charybdis cruciata</i> , <i>Charybdis annulata</i> , <i>Mutata planipes</i> , <i>Squilla</i>

Table 3.7.21 - Marine fish landing for Kachchh district, Takra (Tuna) and Kandla ports during 1991-96.

Year	Kachchh district landing (T x 10 <sup>3</sup> )	Takra (Tuna)		Kandla	
		Landing (T)	Contribution to the district (%)	Landing (T)	Contribution to the district (%)
1991-92	61.8	366.5	0.6	827.7	1.3
1992-93	63.0	609.6	1.0	1347.4	2.1
1993-94	63.2	343.2	0.5	786.5	1.2
1994-95	75.3	996.1	1.3	2402.7	3.2
1995-96	72.6	741.5	1.0	711.6	1.0

Table 3.7.22 - Composition of marine fish landings (t) of Kandla and Mitha ports during 1994-95 and 1996-98.

Species	Kandla Port			Mitha Port		
	1994-95	1996-97	1997-98	1994-95	1996-97	1997-98
White pomfret	76	14	47	3	--	--
Bombay duck	1008	495	156	48	--	11
Thread fin	39	73	78	4	--	--
Jew fish	61	111	104	--	-	--
Hilsa	30	19	14	--	--	--
Other clupeids	--	16	16	1	--	4
Coilia	709	218	52	62	--	10
Shark	9	--	62	--	--	4
Mullet	9	10	18	20	31	39
Cat fish	9	130	26	2	3	19
Leather jacket	2	--	--	--	--	--
Seer fish	--	38	19	--	--	4
Indian Salmon	30	19	35	--	--	2
Ribbon fish	--	--	9	4	--	2
Perches	34	55	16	4	--	--
Small sciaenides	26	19	6	21	--	--
Shrimps	53	--	--	40	9	4
Prawns (medium)	196	67	10	47	19	35
Others	106	232	108	13	51	43
Total	2403	1516	776	270	113	177

Source: Department of Fisheries, Government of Gujarat, Bhuj.

Table 3.7.23 - Month wise composition of marine fish landings (t) at Tuna port during 1994-95

Name of fish	April 94	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan 95	Feb	Mar	Total
White pomfret	--	--	--	--	--	7.5	9.9	5.6	13.0	6.8	3.2	3.7	49.7
Bombay duck	--	--	--	--	--	25.7	26.8	33.5	61.8	38.7	25.1	15.5	287.1
Other clupeids	--	--	--	--	--	--	--	--	--	--	--	--	--
Coilia	--	--	--	--	--	15.9	43.4	55.4	56.9	46.8	10.2	18.3	246.9
Small sciaenids	--	--	--	--	--	7.9	15.5	10.2	16.1	1.9	2.8	5.1	59.5
Shrimps	--	--	--	--	--	--	--	--	--	8.7	--	--	8.7
Prawns (medium)	--	--	--	--	--	29.4	66.7	90.4	85.4	25.7	6.2	7.3	311.2
Other	--	--	--	--	--	5.0	7.4	5.0	7.5	5.8	2.3	--	33.0
Total	Nil	Nil	Nil	Nil	Nil	91.4	229.7	200.1	240.8	134.4	49.8	49.9	996.1

Source: Department of Fisheries, Government of Gujarat, Bhuj.

Table 3.7.24– Trawl and gill net catch rate and composition off kandla during 1985 – 1997.

Parameters	March 1985		August 1986	
	Trawl catch	Gill net catch	Trawl catch	Gill net catch
Fish catch (kg/h)	30.0-40.5 (35.2)	3.75-9.33 (6.5)	0.64-1.23 (0.9)	0.93-1.91 (1.4)
Total species (no.)	Fishes 20 Prawns 4 Others 2	Fishes 19 Others 1	Fishes 13 Prawns 6 Others 5	Fishes 10
Common species	Fishes: <i>Trygon</i> sp., <i>Trissocles vitirostris</i> , <i>Harpodon nehereus</i>	Fishes: <i>Carcharias laticaudus</i> , <i>Hilsa toli</i> <i>Opisthopterus tardoer</i> , <i>Pampus argenteus</i>	Fishes: <i>Chiloscyllium arabicum</i> , <i>Trygon walga</i> , <i>Otolithoides biauritus</i> , <i>Synaptura commersoniana</i> , <i>Harpodon nehereus</i> ,	Fishes: <i>Carcharias laticaudus</i> , <i>Zygaena malleus</i> , <i>Pampus argenteus</i> , <i>Harpodon nehereus</i> , <i>Hilsa toli</i> , <i>Engraulis mystax</i> , <i>Pellona elongata</i> ,
	Prawns: <i>Metapenaeus monoceros</i> , <i>Parapenaeopsis hardensis</i> , <i>Penaeus indicus</i>		Prawns: <i>Exopalaemon styliferus</i> , <i>Parapenaeopsis hardwickii</i> , <i>Penaeus indicus</i>	
	Others: <i>Panulirus homarus</i> , <i>Squilla</i> .	Others: <i>Panulirus homarus</i>	Others: <i>Acetes indicus</i> , <i>Squilla</i> sp., <i>Neptunus pelagicus</i> , <i>Neptunus sanguinolentus</i> ,	

Table 3.7.24 (Contd. 2)

Parameters	November 1986		February 1987	
	Trawl catch	Gill net catch	Trawl catch	Gill net catch
Fish catch (kg/h)	6.09-22.52 (12.26)	1.22-3.16 (2.22)	3.68-19.72 (12.16)	0.6-4.92 (6.17)
Total species (no.)	Fishes 25 Prawns 5 Others 6	Fishes 10	Fishes 20 Prawns 8 Others 9	Fishes 5
Common species	Fishes: <i>Chiloscyllium arabicum</i> , <i>Charcarias laticaudus</i> , <i>Trygon walga</i> , <i>Otolithoides biauritus</i> , <i>Johnius vogleri</i> , <i>Nibea diacanthus</i> , <i>Tachysurus maculatus</i> , <i>Harpodon nehereus</i> , <i>Coilia dussumieri</i>	Fishes: <i>Carcharias laticaudus</i> , <i>Pampus argenteus</i> , <i>Tachysurus maculatus</i> , <i>Harpodon nehereus</i> , <i>Engraulis mystax</i> , ,	Fishes: <i>Carcharias laticaudus</i> <i>Chiloscyllium arabicum</i> , <i>Trygon walga</i> , <i>Johnius vogleri</i> , <i>Otolithoides biauritus</i> , <i>Nibea diacanthus</i> , <i>Pampus argenteus</i> , <i>Harpodon nehereus</i> , <i>Coilia dussumieri</i>	Fishes: <i>Carcharias laticaudus</i> , <i>Chirocentrus nudus</i> , <i>Pampus argenteus</i> , <i>Tachysurus maculatus</i>
	Prawns: <i>Exopalaemon styliferus</i> , <i>Parapenaeopsis hardwickii</i> , <i>Exopalaemon styliferus</i>		Prawn: <i>Penaeus semisulcatus</i> , <i>Metapenaeus kutchensis</i> , <i>Parapenaeopsis hardwickii</i> , <i>Exopalaemon styliferus</i> ,	
	Others: <i>Acetes indicus</i> , <i>Panulirus polyphagus</i>		Others: <i>Acetes indicus</i> , <i>Panulirus polyphagus</i> , <i>Neptunus sanguinolentus</i> , <i>Charybdis cruciata</i> ,	

Parameters	March 1996		October 1996	February 1998
	Trawl catch	Gill net catch	Trawl catch	Trawl catch
Fish catch (kg/h)	4.4-14.6 (5.0)	*	2.0-9.2 (4.8)	1.1-24.0 (8.4)
Total species (no.)	Fishes 13 Prawns 5 Others 2	Fishes 3 Prawns 1 Others 1	Fishes 17 Prawns 5 Others 2	Fishes 28 Prawns 8 Others 8
Common species	Fishes: <i>Coilia dussumieri</i> , <i>Johnius glaucus</i> , <i>Harpodon nehereus</i> , <i>Lepturacanthus savala</i> , <i>Thryssa vitrirostris</i> , <i>Cyanoglossus arel</i> , <i>Otolithoides biauritis</i>	Fishes: <i>Clupea lile</i> , <i>Gobeid sp.</i> , <i>Thryssa mystax</i> .	Fishes: <i>Scoliodon laticaudus</i> , <i>Thryssa mystax</i> , <i>Johnius glaucus</i> , <i>Johnius macropterus</i> , <i>Arius arius</i> , <i>Coilia dussumieri</i> , <i>Harpodon nehereus</i> , <i>Lepturacanthus savala</i>	Fishes: <i>Pampus argenteus</i> , <i>Lepturacanthus savala</i> , <i>Coilia dussumieri</i> , <i>Cynoglossus arel</i> , <i>Thryssa vitrirostris</i> , <i>Boleophthalmusi sp.</i>
	Prawns: <i>Nematopalaemon tenuipes</i> , <i>Parapenaeopsis stylifera</i> ,	Prawns: <i>Nematopalaemon tenuipes</i>	Prawns: <i>Exopalaemon stylifera</i> , <i>Metapenaeus sp.</i> , <i>Parapenaeopsis stylifera</i>	Prawns: <i>Exopalaemon styliferus</i> , <i>Metapenaeus sp.</i> , <i>Parapenaeopsis sculptilis</i>
	Others: <i>Charybdis annulata</i> ,	Others: <i>Charybdis annulata</i>	Others: Crab, Octopus	Others: <i>Charybdis annulata</i>

\* Catch rate not given

Table 3.7.25 - Composition of marine fish landings (t/y) at Mundra during 1991-98.

Name of fish	91-92	92-93	93-94	94-95	95-96	97-98
White pomfret	23.5	18.2	55.4	19.2	68.4	18.0
Black pomfret	-	-	1.1	3.3	13.0	-
Bombay duck	1185.5	133.6	256.3	205.1	1040.0	540.5
Jew fish	10.5	8.8	5.4	14.8	43.3	6.2
Other clupeids	-	-	-	-	-	9.3
Coilia	994.0	131.8	243.1	171.3	549.4	323.3
Shark	26.3	21.7	8.4	12.7	25.4	6.3
Mullet	-	-	-	17.2	-	24.9
Cat fish	11.9	7.8	10.5	9.0	9.6	11.9
Eel	-	-	24.4	-	-	-
Leather jacket	-	-	-	-	-	2.2
Seer fish	10.2	-	25.6	7.1	14.1	12.7
Ribbon fish	12.3	4.7	-	2.1	-	3.3
Silver bar	6.1	4.2	12.4	2.6	6.9	5.6
Small scienides	-	-	-	7.3	5.5	13.2
Shrimps	27.6	27.3	23.1	55.7	732.2	47.1
Prawns (medium)	-	5.3	16.7	13.9	6.6	10.0
Lobster	1.3	-	-	-	0.5	1.1
Crabs	1.5	-	-	8.5	1.0	0.9
Levta	-	-	-	-	1.8	-
Others	122.8	57.3	100.7	73.8	212.5	-
Total	2436.4	420.8	783.2	623.5	2730.4	1263.9

Source: Department of Fisheries, Government of Gujarat

Table 3.7.26 - Composition of marine fish landings (t) around Mundra during 1998-99

Name of fish	Navinal	Jarpara	Mundra	Chenkhe dia	Luni	Bhadres hwar	Kukadas ar
White pomfret	24.7	1.3	30.6	3.2	17.7	25.4	30.5
Black pomfret	-	-	-	-	0.2	-	-
Bombay duck	654.7	72.3	772.8	19.9	792.3	499.3	724.9
Thread fin	-	-	-	-	10.4	-	-
Jew fish	9.9	-	14.4	-	2.8	6.5	2.8
<i>Hilsa</i>	-	0.8	4.7	5.6	1.0	0.6	-
Other clupeids	21.5	19.2	39.3	21.6	40.6	43.9	32.6
<i>Coilia</i>	135.5	29.1	251.9	7.8	308.0	312.4	131.3
Shark	19.1	12.2	43.2	16.9	33.8	23.4	28.4
Mullet	27.8	46.7	24.7	81.7	49.6	7.1	29.3
Cat fish	21.7	11.5	52.6	23.5	66.2	66.3	50.4
Eel	-	-	-	-	3.6	-	-
Seer fish	-	8.1	31.9	10.2	28.2	7.1	3.2
Indian salmon	5.6	4.0	29.4	6.4	18.8	21.4	7.8
Ribbon fish	3.5	0.4	28.1	-	26.9	48.4	21.0
Silver bar	1.4	6.0	13.0	4.9	14.0	19.2	1.5
Perches	-	-	1.6	-	16.2	-	7.4
Small sciaenides	29.0	4.3	9.5	8.2	25.4	33.6	46.0
Shrimps	9.7	8.9	93.2	13.8	49.6	116.8	29.1
Prawns (medium)	43.6	8.8	14.8	22.6	29.2	27.3	8.5
Prawn (Jumbo)	-	11.3	1.7	-	-	-	20.9
<i>Lobster</i>	2.0	-	-	-	-	-	-
Crabs	5.4	-	-	2.2	-	-	-
Miscellaneous	92.8	52.3	202.8	63.7	158.3	66.2	113.1
Total	1107.9	297.2	1660.2	312.2	1693.6	1324.9	1288.7

Source: Department of Fisheries, Government of Gujarat.

Table 3.7.27 – Trawl and gill net catch rate and composition off Mundra during 1997 to 2000

Parameters	March 1997	July 1998	August 1998
Fish catch (kg/h)	21.6 (21.6)	2.2-33.1 (15.5)	0.8-20.2 (8.4)
Total species (no.)	Fishes 6 Prawns 3 Others 3	Fishes 15 Prawns 1 Others 1	Fishes 19 Prawns 2 Others 2
Common species	Fishes: <i>Harpadon nehereus</i> , <i>Lepturacanthus savala</i> , <i>Scoliodon laticaudes</i> , <i>Pampus argenteus</i>	Fishes: <i>Acanthopagrus</i> sp., <i>Pampus argenteus</i> , <i>Carangidae</i> sp., <i>Crenidens crenidens</i> , <i>Mugil cephalus</i> , <i>Secutor insidator</i>	Fishes: <i>Mugil cephalus</i> , <i>Mugil</i> sp., <i>Hemiramphus far</i> , <i>Sillago</i> sp., <i>Thryssa mystax</i> , <i>Scoliodon laticaudes</i>
	Prawns: <i>Exhippolysmata ensirostris</i> , <i>Exopalaemon styliferus</i> , <i>Metapenaeus</i> sp.	Prawns: <i>Penaeus</i> ( <i>Fenneropenaeus</i> ) <i>indicus</i>	Prawns: <i>Metapenaeus</i> sp., <i>Penaeus</i> sp.
	Others: <i>Charybdis annulata</i> , Octopus, Squilla	Others: <i>Charybdis annulata</i>	Others: <i>Charybdis annulata</i> , <i>Matuta planipes</i> .

Parameters	March 1999	October 1999	March 2000
	Trawl catch	Gill net catch	Trawl catch
Fish catch (kg/h)	8.5-21.0 (15)	4.0-11.5 (7.6)	8.5-23.5 (15.75)
Total species (no.)	Fishes 15 Prawns 4 Others 1	Fishes 25 Prawns 6 Others 3	Fishes 20 Prawns 9 Others 5
Common species	Fishes: <i>Coilia dussumieri</i> , <i>Harpadon nehereus</i> , <i>Lepturacanthus savala</i> , <i>Mugil</i> sp., <i>Otolithes</i> sp., <i>Otolithoides biauritus</i> , <i>Pampus argenteus</i> ,	Fishes: <i>Coilia dussumieri</i> , <i>Harpadon nehereus</i> , <i>Otolithoides biauritus</i> , <i>Pampus argenteus</i> , <i>Thryssa dussumieri</i> ,	Fishes: <i>Pampus chinensis</i> , <i>Harpadon nehereus</i> , <i>Coilia dussumieri</i> , <i>Lagocephalus</i> sp., <i>Otolithes</i> sp
	Prawns: <i>Atyppopenaeus stenodactylus</i> , <i>Parapenaeopsis sculptilis</i> , <i>Parapenaeopsis stylifera</i> , <i>Penaeus</i> sp.	Prawns: <i>Atyppopenaeus stenodactylus</i> , <i>Exhippolysmata ensirostris</i>	Prawns: <i>Parapenaeopsis sculptilis</i> , <i>Exhippolysmata</i> sp.,
	Others: Crabs	Others: <i>Charybdis annulata</i>	Others: <i>Charybdis annulata</i> , Crabs, <i>Matuta planipes</i> , Octopus, <i>Scylla serrata</i>

Table 3.7.28 - Marine fish landings (tx10<sup>3</sup>/y) of Jakhau and other centres of Kachchh district.

Year	Kachchh district	Jakhau		Narayan Sarovar		Lakhpat		Other centres	
		Landing	Contribution to district total (%)	Landing	Contribution to district total (%)	Landing	Contribution to district total (%)	Landing	Contribution to district total (%)
1994-95	75.3	44.6	59.3	1.1	1.4	0.2	0.2	29.5	39.1
1995-96	72.6	50.2	69.2	1.2	1.6	0.2	0.3	20.9	28.9
1996-97	76.8	50.9	66.2	1.6	2.1	0.1	0.2	24.2	31.5
1997-98	71.8	47.5	66.2	0.8	1.1	0.1	0.2	23.3	32.5
1998-99	69.7	51.8	74.4	1.0	1.4	0.4	0.5	16.5	23.7



Table 3.7.29 - Composition of marine fish landings (t) at Jakhau during 1998-99

Name of fish	April 1998	May	Aug	Sept	Oct	Nov	Dec	Jan 1999
White pomfret	2.1	2.5	38.8	51.6	41.7	60.8	58.4	40.5
Black pomfret	-	-	6.3	7.1	1.0	3.5	6.7	4.0
Bombay duck	88.6	-			686.2	972.0	1199.3	1191.1
Thread fin	75.7	1.7	1.8	3.3	20.7	21.0	26.0	22.0
Jew fish	76.9	6.8	7.9	9.2	39.2	30.7	49.2	59.2
Hilsa	1.0	1.7	1.6	2.7	19.1	20.0	30.7	16.9
Other clupeids	28.9	12.4	16.1	72.7	294.2	332.0	57.0	107.3
Coilia	51.8	-	-	-	557.7	571.4	793.4	853.6
Shark	74.8	24.1	59.3	143.9	386.2	388.0	199.1	237.4
Mullet	42.0	32.4	28.8	26.3	76.0	85.3	242.3	118.7
Cat fish	38.7	13.1	20.8	30.9	62.7	72.8	87.6	77.6
Eel	1.4	0.4	0.4	-	22.0	26.0	16.9	15.8
Leather jacket	-	0.7	1.8	1.7	4.6	9.4	13.4	4.5
Seer fish	0.3	1.9	2.9	4.1	15.1	25.2	23.6	11.7
Indian Salmon	0.1	1.1	1.7	2.2	14.7	15.6	23.3	10.4
Ribbon fish	20.8	28.2	62.9	200.0	522.7	346.4	215.0	149.5
Silverbar	2.1	3.2	4.1	4.0	31.3	35.0	44.0	28.6
Perches	3.3	0.8	2.7	1.9	18.5	22.0	31.9	21.7
Small scienides	104.6	267.4	1502.9	1478.4	3841.0	4581.7	5843.0	4791.0
<i>Shrimps</i>	18.8	48.8	267.7	740.5	675.1	886.3	953.9	808.3
Prawns (medium)	1.0	8.6	117.2	81.0	147.4	143.1	222.5	107.9
Prawns (Jumbo)	0.2	0.4	27.6	9.4	19.1	20.9	36.4	19.6
Lobster	-	-	0.8	-	3.4	1.4	-	-
Crabs	-	-	-	0.7	0.8	2.0	2.3	2.2
Squid	-	0.2	0.5	1.4	2.0	1.4	3.3	2.4
Miscellaneous	14.4	11.3	24.6	20.9	66.0	68.8	63.2	60.2
Total	647.5	467.7	2199.2	2893.9	7568.4	8742.7	9982.4	8762.1

Table 3.7.30 - Commercial status of fish landings at Jakhau

Class	Organism	Total landing (%)	Commercial status
A	Shrimps/ prawns/ lobsters/ pomfrets.	15.5	Very important
B	<i>Hilsa</i> / Indian salmon/ jew fish/ Bombay duck/ leather jacket/ mullet/ perch/ ribbon fish/ seer fish/ silver bar.	43.0	Important
C	Shark/ cat fish/ <i>Coilia</i> / eel/ crabs/ small sciaenids/ clupeids/ miscellaneous.	41.5	Less important

Table 3.7.31 – Trawl catch rate and composition off Jakhau during 1995.

Parameters	August 1995	November 1995
Fish catch (kg/h)	27.5 (27.5)	36-44 (40)
Total species (no.)	Fishes 9 Prawns 3 Others 4	Fishes 26 Prawns 4 Others 4
Common species	Fishes: <i>Cynoglossus arel</i> , <i>Scoliodon laticaudus</i> , <i>Rhynchobatus djiddensis</i> , <i>Thryssa mystax</i>	Fishes: <i>Pampus argenteus</i> , <i>Pampus chinensis</i> , <i>Cynoglossus arel</i> , <i>Lepturacanthus savala</i> , <i>Ilisha megaloptera</i> , <i>Secutor insidor</i>
	Prawns: <i>Parapenaeopsis sculptilis</i> , <i>Penaeus brevicornis</i> , <i>Penaeus penicillatus</i> .	Prawns: <i>Atypopenaeus stenodactylus</i> , <i>Metapenaeus affinis</i> , <i>Metapenaeus brevicornis</i> , <i>Parapenaeopsis stylifera</i> .
	Others: <i>Charybdis annulata</i> , <i>Charybdis cruciata</i> , <i>Neptunes pelagicus</i> , <i>Neptunus sanguinolentus</i> .	Others: <i>Acetes</i> , <i>Loligo</i> , <i>Sepia</i> , <i>Squilla</i> .

Table 3.7.32 - Composition of marine fish landings (t) at Narayan Sarovar during 1998-99

Name of fish	April 98	May	Aug	Sep	Oct	Nov	Dec	Jan 99
White pomfret	0.9	0.9	7.5	19.8	0.8	-	-	-
Black pomfret	-	-	0.4	-	-	-	-	-
Thread fin	0.8	-	-	-	16.0	-	-	11.2
Jew fish	8.1	-	0.3	-	10.7	10.2	15.8	13.8
Hilsa	2.7	-	-	2.5	-	-	7.4	-
Other clupeids	1.8	2.3	1.8	13.2	8.4	-	-	-
Shark	11.2	1.6	1.1	33.0	44.3	-	-	-
Mullet	-	1.2	0.5	10.7	76.2	-	-	-
Cat fish	15.1	1.9	1.2	38.0	16.7	84.1	-	18.0
Eel	-	-	-	-	-	-	22.0	-
Leather jacket	2.7	-	-	6.6	-	-	-	-
Seer fish	6.9	1.9	0.1	24.8	-	6.3	-	14.1
Indian Salmon	-	-	-	7.4	24.3	-	5.6	-
Ribbon fish	-	-	0.4	-	-	-	3.7	-
Silver bar	2.1	1.9	0.5	5.8	-	-	-	-
Perches	-	-	-	-	-	-	-	12.1
Small sciaenides	-	-	-	-	-	8.0	17.7	21.8
Shrimps	-	-	-	-	-	-	25.6	-
Miscellaneous	17.6	-	0.6	9.9	13.7	2.6	4.1	8.7
Total	69.9	13.8	14.4	171.7	211.1	111.2	101.9	99.7

Table 3.7.33 - Composition of marine fish landings (t) at Lakhsat during 1998-99.

Name of fish	April 98	May	Aug	Sep	Oct	Nov	Dec	Jan 99
White pomfret	1.2	-	0.1	-	-	-	1.9	-
Thread fin	-	-	-	-	-	-	-	2.3
Jew fish	1.1	-	0.4	0.9	-	1.7	4.7	-
Other clupeids	2.3	-	1.0	0.9	2.7	-	9.8	2.8
Shark	2.7	-	0.9	1.2	3.3	1.0	-	2.3
Mullet	-	3.3	3.4	5.4	9.4	9.7	56.5	5.4
Cat fish	4.5	0.7	0.8	1.7	3.3	3.0	14.0	2.0
Seer fish	0.8	-	-	-	-	2.7	1.8	3.4
Indian Salmon	-	-	-	-	4.6	-	-	4.7
Ribbon fish	-	-	<0.1	0.1	-	-	-	-
Silver bar	-	-	0.1	<0.1	-	0.9	-	2.3
Perches	-	-	0.3	0.2	-	-	12.8	-
Small sciaenides	-	-	-	-	-	-	-	2.0
Prawns (Medium)	-	-	-	-	3.9	-	62.7	-
Miscellaneous	6.8	0.3	0.8	0.4	4.6	3.5	3.5	20.2
Total	19.4	4.3	7.9	10.9	31.8	22.5	167.7	47.4

Table 3.7.34- Composition of marine fish landings (t) at different landing centers around Bhuj and Kachchh district during 1996-1999

Name of fish	Narayan sarovar			Layza			Mandvi (Salava)			Jakhau		
	1996-1997	1997-1998	1998-1999	1996-1997	1997-1998	1998-1999	1996-1997	1997-1998	1998-1999	1996-1997	1997-1998	1998-1999
White pomfret	15.4	44.3	36.6	36.8	37.0	22.1	186.3	187.2	42.8	478.0	510.2	341.4
Black pomfret	1.6	--	0.4	6.5	--	--	31.4	3.3	0.4	5.1	31.2	31.3
Bombay duck	--	--	--	840.6	113.6	497.0	3893.1	2557.3	456.9	4305.6	3509.9	5377.7
Thread fin	28.3	21.8	46.0	--	--	--	6.6	--	1.1	767.4	635.6	884.3
Jew fish	394.5	106.7	102.0	--	--	2.8	19.0	13.7	5.6	1109.5	845.3	1152.4
Hilsa	--	10.4	18.8	1.7	--	5.9	21.1	15.6	1.3	190.5	179.1	113.8
Other clupeids	8.4	40.4	27.5	20.8	32.0	27.2	92.1	141.2	68.7	1830.0	1468.1	1195.9
Coilia	--	5.0	--	52.1	82.7	94.2	220.4	146.1	256.3	3667.7	2734.4	3693.5
Shark	299.5	110.0	114.2	18.2	2.4	7.7	96.2	199.2	42.5	3481.2	2845.5	2151.8
Mullet	92.6	131.5	98.6	48.6	55.0	42.7	104.9	359.0	109.8	1152.1	690.5	906.0
Cat fish	291.5	115.4	202.6	31.6	34.9	23.2	145.1	168.3	122.3	871.8	763.7	848.3
Eel	--	--	22.0	--	--	--	12.6	--	0.6	172.3	78.5	107.8
Leather jacket	5.2	18.4	14.7	0.6	--	--	16.6	--	--	67.4	75.2	39.4
Seer fish	5.6	15.3	57.9	7.0	1.1	8.4	46.6	48.0	22.6	132.8	118.2	102.2
Indian salmon	70.8	13.5	44.3	4.0	--	16.2	8.6	3.9	1.8	128.4	110.5	81.8
Ribbon fish	1.6	25.5	4.1	21.1	30.6	1.7	64.7	43.8	31.0	3005.5	2978.3	1709.8
Silver bar	1.9	21.4	14.4	11.6	3.1	5.4	182.7	151.1	55.0	239.7	224.1	197.5
Perches	146.0	21.3	16.4	--	--	--	50.9	--	3.7	210.7	204.8	139.5
Small scienides	--	--	48.7	--	--	20.7	--	9.8	--	23212.3	23680.6	26368.2
Shrimps	--	--	25.6	17.7	36.9	15.5	31.6	28.5	61.2	4485.4	4396.7	4809.8
Prawns (Medium)	--	--	--	5.8	5.9	26.9	16.7	15.2	12.5	515.9	768.9	924.2
Prawns (Jumbo)	--	--	--	--	--	--	7.0	2.2	0.2	71.8	137.2	152.5
Lobster	0.9	--	--	3.9	0.5	14.0	22.0	10.2	10.6	7.3	5.1	5.5
Crabs	--	--	--	17.6	--	4.9	45.1	36.9	4.6	53.9	20.5	10.6
Levta	--	--	--	--	--	--	--	0.9	--	--	--	--
Cuttle/squid	--	--	--	--	--	--	--	--	--	64.4	21.8	14.3
Other	269.6	105.6	80.2	122.5	22.0	170.5	422.9	321.1	54.1	639.9	493.8	469.4
Total	1633.1	806.5	974.8	1268.6	457.7	1007.0	5744.2	4462.7	1365.6	50867.0	47528.3	51828.9

Table 3.7.35 – Trawl catch rate and composition at Kori creek during 1998 to 2000

Parameters	October 1998	February 1999	February 2000
Fish catch (kg/h)	9.2 (9.2)	11.7 -115.2 (45.4)	5.1-20.0 (10.13)
Total species (no.)	Fishes 15 Prawns 5 Others 1	Fishes 8 Prawns 2 Others 1	Fishes 14 Prawns 4 Others 3
Common species	Fishes: <i>Lepturacanthus savala</i> , <i>Johnius glaucus</i> , <i>Cynoglossus arel</i> , <i>Harpadon nehereus</i> , <i>Trypauchen vagina</i> , <i>Otolithoides biauritus</i>	Fishes: <i>Lepturacanthus savala</i> , <i>Johnius glaucus</i> , <i>Otolithoides biauritus</i> , <i>Otolithoides</i> sp., <i>Lagocephalus</i> sp., <i>Thryssa vitrirostris</i>	Fishes: <i>Harpadon nehereus</i> , <i>Otolithoides biauritus</i> , <i>Mugil</i> sp., <i>Arius</i> sp., <i>Coilia dussumieri</i> , <i>Thryssa vitrirostri</i> , <i>Otolithes</i> sp.
	Prawns: <i>Macrobrachium</i> sp., <i>Nematopalaemon tenuipes</i> , <i>Exhipolysmata</i> sp., <i>Metapenaeus brevicornis</i> , <i>Parapenaeopsis stylifera</i> .	Prawns : <i>Metapenaeus</i> sp., <i>Parapenaeopsis</i> sp.	Prawns: <i>Metapenaeus</i> sp., <i>Parapenaeopsis stylifera</i> , <i>Parapenaeopsis</i> sp, <i>Penaeus</i> sp.
	Others: Sepia	Others: Loligo	Others: <i>Charybdis annulata</i> , <i>Matuta planipes</i> , Sepia.

Table 3.8.1 - Marine algae recorded along the intertidal zone of the Gulf.

Name	Status
Chlorophyceae	
<i>Boodlea composita</i>	Common
<i>Bryopsis indica</i>	Common
<i>B. plumosa</i>	Common
<i>B. ramulosa</i>	Common
<i>Caulerpa crassifolia</i>	Common
<i>C. cupressoides</i>	Common
<i>C. racemosa</i>	Common
<i>C. scalpelliformis</i>	Common
<i>C. sertularioides</i>	Common
<i>C. taxiformes</i>	Common
<i>C. verticillata</i>	Common
<i>Chaetomorpha indica</i>	Common
<i>Chamaedoris auiculata</i>	Common
<i>Cladophora glomerata</i>	Common
<i>C. prolifera</i>	Common
<i>Codium decorticatum</i>	Rare
<i>C. dwarkensis</i>	Common
<i>C. elongatum</i>	Common
<i>Dictyosphaeria cavemosa</i>	Common
<i>Enteromorpha intestinalis</i>	Common
<i>Halideda tuna</i>	Common
<i>Pseudobryopsis mucronata</i>	Common
<i>Spongomorpha</i> sp.	Common
<i>Udoea indica</i>	Common
<i>Ulva fasciata</i>	Common
<i>U. lactuca</i>	Common
<i>U. reticulata</i>	Rare
<i>Valonia utricularis</i>	Rare
<i>Valloniopsis spachynema</i>	Rare

Table 3.8.1 (Contd. 2)

Name	Status
Phaeophyceae	
<i>Colpomenia sinuosa</i>	Common
<i>Cystoceira indica</i>	Common
<i>Dictyota atomaria</i>	Common
<i>D. bartayrisiana</i>	Rare
<i>D. cervicornis</i>	Rare
<i>D. ciliolate</i>	Common
<i>D. dichotoma</i>	Common
<i>D. divaricata</i>	Rare
<i>Dictyopteris australis</i>	Common
<i>D. woodwardii</i>	Common
<i>Ectocarpus</i> sp.	Common
<i>Hinskia mitchelle</i>	Common
<i>Hormophysa triquetra</i>	Rare
<i>Hydroclathrus clathratus</i>	Rare
<i>Iyengaria stellata</i>	Common
<i>Myriogloea sciurus</i>	Rare
<i>Nemacystus decipiens</i>	Rare
<i>Padina gymnospora</i>	Rare
<i>P. tetrastromatica</i>	Common
<i>Pocockiella</i> sp.	Common
<i>Rosenvingia intricata</i>	Rare
<i>Sargassum johnstonii</i>	Common
<i>S. tenerrimum</i>	Common
<i>S. plagiophyllum</i>	Rare
<i>S. swartzii</i>	Common
<i>S. wisgthii</i>	Rare
<i>Spathoglossum asperum</i>	Rare
<i>S. variabile</i>	Common
<i>Stoechospermum marginatum</i>	Common
<i>Turbinaria ornata</i>	Rare

Name	Status
Rhodophyceae	
<i>Acanthaphora delilei</i>	Common
<i>A. specifera</i>	Rare
<i>Amphiroa fragilissima</i>	Rare
<i>Asparogopsis taxiformis</i>	Common
<i>Botryocladia leptapoda</i>	Common
<i>Calaglossa bombayance</i>	Rare
<i>Ceramium</i> sp.	Common
<i>Champia indica</i>	Common
<i>Chondria ornata</i>	Rare
<i>C. dasyphylla</i>	Rare
<i>Coelarthrum opuntia</i>	Common
<i>Corallina officinalis</i>	Common
<i>Corynomorpha prismatica</i>	Rare
<i>Cryotopleur</i> sp.	Rare
<i>Dasya</i> sp.	Rare
<i>Desmia hormmanni</i>	Rare
<i>Gastroclonium iyengarii</i>	Rare
<i>Glaxaura oblongata</i>	Common
<i>Gelidiella acerosa</i>	Common
<i>Gelidiosopsis gracilis</i>	Common
<i>Gigartina</i> sp.	Rare

Table 3.8.1 (Contd. 2)

Name	Status
<i>Gracilaria corticata</i>	Rare
<i>G. pygmaea</i>	Common
<i>G. verrucosa</i>	Rare
<i>Grateloupia inica</i>	Common
<i>G. felicina</i>	Rare
<i>Haloplegma</i> sp.	Rare
<i>Halymenia floresia</i>	Rare
<i>H. porphyroides</i>	Common
<i>H. venusta</i>	Common
<i>Helminthocladia clayadosii</i>	Common
<i>Heterosiphonia muelleri</i>	Common
<i>Hypnea cervicornis</i>	Common
<i>H. musciformis</i>	Common
<i>Hypoglossum spathulatum</i>	Rare
<i>Laurencia papillosa</i>	Common
<i>L. pedicularioides</i>	Common
<i>Liagora cerenoides</i>	Rare
<i>Lophocladia lallemandi</i>	Rare
<i>Neurymenia fraxinifolia</i>	Rare
<i>Polysiphonia</i> sp.	Common
<i>Rhodymenia australis</i>	Common
<i>R. palmate</i>	Common
<i>Scinaia indica</i>	Common
<i>S. furcellata</i>	Rare
<i>Sebdenia polydactyla</i>	Common
<i>Spyridia altermans</i>	Common
<i>Soleria robusta</i>	common



Table 3.8.2 - General features of mangroves in Gulf of Kachchh

Station	Species	Occurrence	Nature of distribution	Habit	Habitat	Average height (m)	Remarks
Mundra	<i>Avicennia marina</i>	Dominant, monotypic	Patchy	Stunted bushy	Intertidal, in the creeks	1	Large number of plants faced destruction due to 1998 cyclone
Salaya	<i>A. marina</i>	Dominant, monotypic	Patchy	Stunted bushy	Intertidal, in the creeks	1	
Pirotan Island	<i>A. marina</i>	Dominant	Random at places and uniform at forest Dept. plantations	Stunted	Intertidal, Leeward side inland	1.5	Plantation of <i>A. marina</i> by Forest Department
	<i>A. officianalis</i>	Frequent	C lumped	Tree	Inner side	2.3	Conservation due to presence of Pir (Darga) on the island
Karumbhar	<i>Ceriops tagal</i>	Frequent	Clumped	Bushy	Inner side	0.75	
	<i>R. mucronata</i>	Rare	Isolated individuals	Tree	Towards waterfront of the creeks	3	
Vamles hwar (off Alia Bet)	<i>A. marina</i>	Dominant, monotypic	Patchy	Stunted bushy	Intertidal, Leeward	1	No grazing pressure
	<i>A. marina</i>	Dominant	Scattered	Stunted	Intertidal	0.40	<i>C. tagal</i> trees had some seedlings

Source: Sen Gupta and Deshmukhe, 2000

Table 3.8.3 - Distribution of mangroves in the Gulf

Location	Mangroves Area (ha)	Mangrove species	Source
South and west coast of Gulf	12,800	<i>Avicennia officinalis</i> <i>Rhizophora mucronata</i> <i>R. conjugata</i> <i>Ceriops spp.</i> <i>Bruguiera parviflora</i> <i>B. gymnorhiza</i> <i>Rhizophora mucronata</i> <i>R. apiculata</i> <i>Aegiceros corniculata</i>	1.Kulkarni (1958) 2.Untawale & Wafer (1988).
Gulf	52,000	<i>Avicennia marina</i> Var <i>acutissima</i> <i>A. officinalis</i> <i>Bruguiera parviflora</i> <i>B. gymnorhiza</i> <i>Rhizophora mucronata</i> <i>R. apiculata</i> <i>Aegiceros corniculata</i> <i>Sonneratia apetata</i> Associated flora <i>Salicornia brachiata</i> <i>Sueda fruticos</i> <i>Atrplex stocksii</i>	NIO (1978)
West coast of Gulf	11,000	<i>Aegiceros marina</i> <i>Ceriops tagal</i> <i>Derris heterophylla</i> <i>Excoecaria agallocha</i> <i>Salicornia brachiata</i> <i>Saevadora persica</i> <i>Sueda maritima</i> <i>Clerodendrum inerme</i>	Untawale (1980)
Gulf	58,258	<i>Avicennia marina</i> <i>A. officinalis</i> <i>A. alba</i> <i>Rhizophora mucronata</i> <i>Ceriops tagal</i> <i>Bruguiera spp.</i> <i>Sonneratia spp.</i>	(Department of Forest, Gujarat Government, Jamnagar)

Table 3.8.4 - Marine algae at Okha and surroundings

Species	Mithapur	Positra Bay	Paga Reef
Chlorophyta			
<i>Bryopsis hypnoides</i> , Lamour	D		
<i>Bryopsis plumoza</i> (Hud). Ag.	D		+
<i>Caulerpa crassifolia</i> (Ag). J. Ag.	D		
<i>Caulerpa peltata</i>		-	+
<i>C. sertularioides</i>		-	+
<i>C. scalpeliformis</i>		-	+
<i>Codium dwarkens</i>		-	+
<i>Cladophora prolifera</i>	C		
<i>Enteromorpha linza</i> (L) J. Ag.	C		
<i>Enteromorpha tubulosa</i>		+	+
<i>Enteromorpha clathrata</i> (Roth) J. Ag.	C	+	-
<i>E. intestinalis</i>		+	-

Table 3.8.4 (contd)

Species	Mithapur	Positra Bay	Paga Reef
<i>Halimeda tuna</i> (Ell. Et.al) La.	R		
<i>Microdictyon</i>		-	+
<i>Struvea</i>		-	+
<i>Ulva fasciata</i>		+	+
<i>Ulva lactuca</i> (Linn)	D	+	+
<i>U. reticulata</i>		+	+
Phaeophyta			
<i>Colpomenia sinusa</i>		-	+
<i>Crystosoria myrica</i>	C		
<i>Cystoseira</i> sp.		+	+
<i>Dictyota atomaria</i> (Lamour)	D		
<i>Dictyota divaricata</i> (Lamour)	C		
<i>Dictyota dichotoma</i>		-	+
<i>Iyengaria stellata</i> (Boerg) Boerg	C	-	+
<i>Lobophora</i> sp.		-	+
<i>Padina tetrastomatica</i> (Hauck)	C	-	+
<i>Pockockiella verigata</i>			+
<i>Sargassum johnstonii</i>		+	+
<i>Sargassum ilicifolium</i>		+	+
<i>Sargassum swartzii</i>		+	-
<i>Sargassum</i> sp.	C		+
<i>Sargassum tenerimum</i> J. Ag.	C		

Species	Mithapur	Positra Bay	Paga Reef
Rhodophyta			
<i>Stoechospermum marginatum</i> Ag. Kuetz	R		
<i>Spatoglossum asperum</i> J. Ag.	C	-	+
<i>Turbinaria</i> sp.		+	+
<i>Turbinaria ornata</i> J. Ag.	C		
<i>Acanthophora spicifera</i>		+	+
<i>Amphiroa anceps</i> (Lamk.) Decsne	C		
<i>Amphiroa fragilissima</i> (L) Lamour	C		+
<i>Antithamnion</i>			+
<i>Botryocladia leptopoda</i> (J. Ag.) kylin	C		
<i>Coelarthrum opuntia</i> (J. Ag.) Boerg	C		
<i>Gelidiella acerosa</i>			+
<i>Gloioflaea</i>		-	+
<i>Gracilaria edulis</i>		+	+
<i>Gracilaria verrucosa</i> (Huds)	C		
<i>Grateloupia indica</i> (Boerg)	C		
<i>Gymnothamnion</i>			+
<i>Halymenia vensusta</i> (Boerg)	R		
<i>Hypnea musciformis</i> (Wulf) Lamour	C	-	+
<i>Laurencia obtusa</i>		-	+
<i>Liagora</i> sp.		-	+
<i>Lobophora variegata</i>	C		
<i>Melobesia</i> sp.			+
<i>Sebdenia polydactyla</i> (Boerg)	R		
<i>Halymenia porphyroides</i> (Boerges)	R		
Unidentified sp.	C		
Unidentified sp.	R		

D: Dominant; C: Common; R: Rare; +: Present; -: Not recorded

Table 3.8.5 - Mangroves at Narara Bet and Kalubhar island

Species	Narara Bet	Kalubhar island
Mangroves		
<i>Avicennia marina</i>	Dominant	Dominant
<i>A. officinalis</i>	Common	Rare
<i>A. alba</i>	Rare	Rare
<i>Rhizophora mucronata</i>	Rare	Rare
<i>Ceriops tagal</i>	Rare	Rare
<i>Salvadora perscia</i>	Rare	Rare
Obligate halophytes		
<i>Salicornia brachiata</i>	Rare	Common
<i>Sesuvium portulacastrum</i>	Rare	Common
<i>Suaeda maritima</i>	Rare	Rare
<i>S. fruticosa</i>	Rare	Rare

Table 3.8.6 - Marine algae recorded at Narara Bet and Kalubhar Island

Species	Narara Bet	Kalubhar island
MARINE ALGAE		
Cyanophyceae		
<i>Lyngbya majuscula</i>	++	++
<i>Lyngbya</i> sp.	-	+++
<i>Microcoleus</i> sp.	++	+
Chlorophyceae		
<i>Bryojopsis hypnoides</i>	+	-
<i>Caulerpa racemosa</i>	++	++
<i>C. peltata</i>	+	+
<i>C. sertilaroides</i>	+	+
<i>C. taxifolia</i>	+	+
<i>Cladophora patentiramea</i>	++	++
<i>C. expansa</i>	+	-
<i>Cladophora</i> sp.	+	+
<i>Enteromorpha clathrata</i>	+++	+++
<i>E. intestinalis</i>	+++	+++
<i>E. flexuosa</i>	+	-
<i>Ulva lactuca</i>	-	+++
<i>U. reticulata</i>	-	+++
<i>Halimeda macroloba</i>	+	-
<i>H. tuna</i>	+	+
Phaeophyceae		
<i>Celpomenia sinuosa</i>	+	+
<i>Cystoseira indica</i>	+	+
<i>C. myrica</i>	+	+
<i>Dictyota australis</i>	+	-
<i>D. bartayressiana</i>	+	+
<i>D. cervicornis</i>	+	+
<i>D. dichotoma</i>	+	-
<i>Hydroclathrus clathratus</i>	-	+++
<i>Ectocarpus</i> sp.	++	-
<i>Hinskia mitchelle</i>	++	+
<i>Iyegaria stellata</i>	+++	-
<i>Padina tetrastrum</i>	++	+++
<i>Rosenvingea intricate</i>	+	-
<i>Sargassum</i> sp. 1.	+	+
<i>Sargassum</i> sp. 2.	+	+
<i>S. ilicifolium</i>	++	++

Table 3.8.6 (Contd. 2)

Species	Narare Bet	Kalubhar island
<i>Swartzii</i>	+	+
<i>S. vulgare</i>	+	+
<i>S. tenerrimum</i>	+	+
<i>S. johnstonii</i>	+	-
<i>Turbinaria ornata</i>	+	+
Rhodophyceae		
<i>Acanthophora specifera</i>	++	+
<i>Agardhiella robusta</i>	+	-
<i>Ahnfeltia pilicata</i>	+	-
<i>Amphiroa fragilissima</i>	++	++
<i>A. rigida</i>	+	+
<i>Asparagopsis taxiformes</i>	+	-
<i>Botrycladia leptopoda</i>	+	-
<i>Champia indica</i>	++	++
<i>Centroceros clavulatum</i>	++	++
<i>Cheilosporum spectabile</i>	+	-
<i>Digenia simplex</i>	-	+++
<i>Dasya</i> sp.	+	-
<i>Galaxura oblongata</i>	+	-
<i>Gelidium pussilum</i>	+	-
<i>Gracilaria corticata</i>	+	+++
<i>G. verrucosa</i>	+	+
<i>G. crassa</i>	-	+++
<i>G. textorii</i>	-	+
<i>Gracilaria</i> sp.	+	-
<i>Grateloupia</i> sp.	+	-
<i>Hypnea cervicomis</i>	+	++
<i>H. musciformes</i>	++	++
<i>H. velanite</i>	+	-
<i>Jania</i> sp.	+	-
<i>Laurencia papillosa</i>	+	+
<i>L. pedicularioides</i>	+	+
<i>L. obtusa</i>	+	-
<i>Polysiphonia platycarpa</i>	+	++
<i>Scinaia indica</i>	+	-
<i>Wranglia</i> sp.	+	-
Sea grasses		
<i>Halodule univervis</i>	+	+
<i>Halophila ovata</i>	++	+
<i>H. beccarii</i>	++	+

Very common: +++

Common: ++

Rare: +

Not recorded: -

Table 3.8.7 - Marine flora off Sikka and adjacent region

Group/ Spp	Ecological status
Marine algae	
Cyanophyceae	
<i>Lyngbya majuscula</i>	D
Unidentified	R

Table 3.8.7 (contd)

Group/ Spp	Ecological status
Chlorophyceae	
<i>Boodlea composita</i>	C
<i>Caulerpa racemosa</i>	C
<i>C. taxiformes</i>	R
<i>Cheatomorpha indica</i>	R
<i>Codium dwarkensis</i>	C
<i>Enteromorpha clathrata</i>	C
<i>E. flexirosa</i>	R
<i>Halimeda macroloba</i>	R
<i>H. tuna</i>	R
<i>Ulva fasciata</i>	R
<i>U. lactuca</i>	R
Phaeophyceae	
<i>Colpomenia sinuosa</i>	R
<i>Cylasseira indica</i>	R
<i>Dictyota cervicornis</i>	C
<i>D. dichotoma</i>	C
<i>D. divaricata</i>	C
<i>Ectocarpus rhodochorooides</i>	C
<i>Hinskia mitchellae</i>	C
<i>Iyengaria stellata</i>	C
<i>Padina gymnospora</i>	C
<i>Rosenvingea intricata</i>	C
<i>Sargassum</i> sp. 1	D
<i>Sargassum</i> sp. 2	D
<i>Sargassum</i> sp. 3	D
Rhodophyceae	
<i>Acanthophora spicifera</i>	C
<i>Amphiroa fragilissima</i>	C
<i>Centroceros clavilatum</i>	C
<i>Champia indica</i>	D
<i>Fosliella</i> sp.	R
<i>Gelidiella acerosa</i>	R
<i>Gracilaria cortica</i>	C
<i>G. verrucosa</i>	C
<i>Hypnea cervicornis</i>	C
<i>Lithothamnion</i> sp.	C
<i>Lithophyllum</i> sp.	C
<i>Laurencia papilosa</i>	C
<i>Sacronema filiformae</i>	R
<i>Scinaia hatei</i>	C
<i>S. furcellata</i>	R
Seagrasses	
<i>Halophila ovata</i>	C, patchy
<i>Halodule uninervis</i>	R, patchy
Mangroves	
<i>Avicennia marina</i>	D
<i>A. officinalis</i>	R
<i>Ceriops tagal</i>	R
<i>Rhizophora mucronata</i>	VR
<i>Salicornia brachiata</i>	VR
<i>Salvadora persica</i>	R
<i>Sueda fruiticosa</i>	VR
D - Dominant    R - Rare    C - Common    VR - Very rare	

Table 3.8.8 - Mangroves and associated flora around Bedi port and Pirotan, Chaad and Zindra islands during March and October 1997

Name	Ecological status			
	Bedi	Chaad	Zindra	Pirotan
<b>Mangroves</b>				
<i>Avicennia marina</i>	d	d	d	d
<i>A. officinalis</i>	d	d	d	d
<i>Aegiceros corniculatum</i>	-	-	-	r
<i>Ceriops tagal</i>	-	-	-	r
<i>Rhizophora mucronata</i>	r	r	r	c
<i>Salvadora persica</i>	c	c	c	c
<b>Obligate halophytes</b>				
<i>Sesuvium portulacastrum</i>	c	-	-	c
<i>Sueda fruticosa</i>	r	-	-	r
<i>Sueda nudiflora</i>	r	-	-	r
<i>Salicornia brachiata</i>	r	-	-	r
<b>Sand-dunes</b>				
<i>Ipomea pescaprae</i>	c	-	-	c
<i>Launea nudicaulis</i>	-	-	-	c
<i>Sporobolus</i> sp.	-	-	-	c
<b>Mash grass</b>				
<i>Aleuopus lagopoides</i>	c	-	-	c
<b>Seagrasses</b>				
<i>Halodule uninervis</i>	-	-	-	r
<i>Halophila ovata</i>	-	-	-	r

-: Not observed

c: Common

d: Dominant

r: Rare

Table 3.8.9 - Seaweeds around Bedi port and Pirotan, Chadd and Zindra islands during March and October 1997

Name	Ecological status			
	Bedi	Chaad	Zindra	Pirotan
<i>Acanthophora delilei</i>	-	-	-	d
<i>S. spicifera</i>	-	-	-	c
<i>Amphiroa fragilissima</i>	-	-	-	c
<i>Caulerpa racemosa</i>	-	-	-	d
<i>C. taxifolia</i>	-	-	-	d
<i>C. sertulariodes</i>	-	-	-	d
<i>Cladophora glomerata</i>	-	-	-	r
<i>Chaetomorpha linum</i>	-	-	-	d
<i>Champia indica</i>	-	-	-	r
<i>Codium decorticalum</i>	-	-	-	r
<i>C. dwarkensis</i>	-	-	-	r
<i>Corallina officinalis</i>	-	-	-	r
<i>Colpomenia simosa</i>	-	-	-	d
<i>Cystoseira indica</i>	-	-	-	c
<i>Ceramium rubrum</i>	-	-	-	c
<i>Dictyota dicholoma</i>	-	-	-	c
<i>D. cervicornis</i>	-	-	-	c
<i>Enteromorpha intestinalis</i>	c	c	c	c
<i>E. clathrala</i>	c	c	c	c
<i>E. flexuosa</i>	-	-	-	r
<i>Gracilaria corticata</i>	-	-	-	c
<i>Gracilaria sp.</i>	-	-	-	r
<i>Halimeda tuna</i>	-	-	-	d
<i>Heliminthocladia clayadosii</i>	-	-	-	c
<i>Hydroclathrus clathralus</i>	-	-	-	C
<i>Hypnea cervicornis</i>	-	-	-	r
<i>H. musciformis</i>	-	-	-	r
<i>H. valentiae</i>	-	-	-	c
<i>Iyengaria stellata</i>	-	-	-	c
<i>Laurencia papillosa</i>	-	-	-	c
<i>L. pedicularioides</i>	-	-	-	r
<i>Lyngbya majuscula</i>	-	-	-	c
<i>Microcoleus chthonoplast</i>	-	-	-	c
<i>Padina tetrastratica</i>	-	-	-	c
<i>Polysiphonia sp.</i>	-	-	-	c
<i>Rhodymenia australis</i>	-	-	-	r
<i>Solieria rubusta</i>	-	-	-	r
<i>Sargassum ilicifolium</i>	-	-	-	r
<i>S. tennerimum</i>	-	-	-	r
<i>Scinia halei</i>	-	-	-	r
<i>S. indica</i>	-	-	-	r
<i>Ulva fasciata</i>	-	-	-	r
<i>U. reticulata</i>	-	-	-	c
<i>U. lactuca</i>	-	-	-	c

-: Not recorded  
c: Common  
d: Dominant  
r: Rare



Table 3.8.10 - Characteristics of littoral zones along Kandla creek

Zone	Nature	Approximate width range (m)	Vegetation type	Dominant vegetation	Frequency of inundation (times / month)
I	Intertidal	50-120	Open mudflat		60-62
II	Intertidal vegetated	30-80	Mangroves and obligate halophytes ( <i>Avicennia marina</i> , <i>A. Alba</i> , <i>Sesuvium portulacastrum</i> )	<i>Avicennia marina</i> , <i>Sesuvium portulacastrum</i>	60-62
III	Lower supralittoral vegetated	50-100	Obligate halophytes and mangroves ( <i>Salicornia brachiata</i> , <i>A. marina</i> , <i>Salvadora persica</i> )	<i>Salicornia brachiata</i>	50-60
IV	Middle supralittoral vegetated	50-100	Obligate halophyte ( <i>Salicornia brachiata</i> )	<i>Salicornia brachiata</i>	12-20
V	Upper supralittoral vegetated	100-500	Obligate halophytes ( <i>Salicornia brachiata</i> , <i>Sueda maritima</i> )	<i>Salicornia brachiata</i>	04-10
VI	Saline banks	500-a few kilometers	Barren		02-04

Table 3.8.11 - Composition and structure of marine vegetation along Kandla creek

Zone	Species	Habitat	Nature & extent	Height (m)	Density (no/10m <sup>2</sup> )	Density of seedlings (no/km <sup>2</sup> )	Total biomass (Kg wet wt)	FO (%)	Ecological status
I	<i>Enteromorpha</i> sp.	Open mudflat	Patchy	--	--	--	--	--	-
II	<i>Avicennia marina</i>	Shrub	Stretches	0.5-1.5	10-25	10-50	No	60	D
	<i>Avicennia alba</i>	Shrub	Mixed	0.5-1.5	Negligible	Negligible	No	05	R
III	<i>Sesuvium portulacastrum</i>	Creeper	Stretches & Patches	--	--	--	2.3	10	C
	<i>Avicennia marina</i>	Shrub	Stretches	0.5-0.8	6-10	Negligible	No	20	R
	<i>Salicornia brachiata</i>	Shrub	Stretches	0.2-1.5	20-40	--	4.2	60	D
	<i>Salvadora persica</i>	Shrub	Mixed	0.1-0.2	Negligible	--	No	05	C
	<i>Sesuvium portulacastrum</i>	Creeper	Small patches	--	--	--	Negligible	--	R
IV	<i>Salicornia brachiata</i>	Shrub & herb	Scattered shrubs	0.2-0.1	10-20	--	2.63	30	C
V	<i>Salicornia brachiata</i>	Shrub & herb	Scattered shrubs	0.2-0.6	08-10	--	0.21	10	C
VI	<i>Sueda maritima</i>	Herb/shrub	Stray	0.2-0.8	Negligible	--	--	--	R

Legend: A = Absent; D = Dominant; C = Common; R = Rare; FO = Frequency of occurrence; No = No observations made

Table 3.8.12 - Texture of substratum from littoral zones along Kandla creek

Zone	Colour	Moisture (%)	Clay (%)	Sand (%)	Silt (%)	Salt (%)	Bi-carbonates (%)	Organic matter (%)	Type of soil
I	Brown	11.6	8.9	43.7	34.0	0.2	7.8	4.7	Clay
II	Brown	11.5	27.1	94	49.0	0.5	8.7	4.9	Clay
III & IV	Brown	11.5	24.2	14.7	39.5	0.5	14.0	6.5	Loam
V	Brown	9.8	18.2	8.7	44.6	0.8	11.0	16.9	Loam
Average		11.1	19.6	21.6	41.8	0.5	10.4	8.8	--

I = Intertidal open mudflat zone; II = Intertidal mangrove zone; III & IV = Lower & middle supralittoral zones; V = Upper supralittoral zone

Table 3.8.13 - Composition and ecological status of mangroves and obligate halophytes off Mundra

Species	Habit	Habitat	Ecological status
Mangroves			
<i>Avicenia marina</i>	Tree Shrubs	Intertidal	Dominant
<i>Rhizophora mucronata</i>	Tree Shrubs	Intertidal	Stray
<i>Salvadora persica</i>	Tree Shrubs	Supralittoral	Common
Obligate Halophyta			
<i>Sesuvium portulacastrum</i>	Runner	Lower Supralittoral	Common
<i>Salicornia brachiata</i>	Shrub	Supralittoral	Common
<i>Sueda maritima</i>	Shrub	Supralittoral	Rare



Table 3.9.1(Contd. 2)

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>Favia speciosa</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
<i>F. fava</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Favites complanata</i>	+	+	+	+	+	+	+	-	-	+	-	-	-	+	+
<i>F. melicerus</i>	+	-	+	-	-	-	-	-	+	-	-	-	-	+	+
<i>Goniastrea pectinata</i>	+	+	+	+	+	+	+	-	+	+	+	-	+	+	+
<i>Platygyra sinensis</i>	+	+	+	+	-	-	-	-	-	+	-	-	-	+	+
<i>Hydrophora exesa</i>	+	+	+	+	-	-	-	-	-	+	-	-	+	-	+
<i>Plesiastrea versipora</i>	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-
<i>Leptastrea purpurea</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Si kk a P oi nt
<i>Cyphastrea serailia</i>	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+
<i>Symphyllia radian</i>	-	+	-	+	-	+	-	-	+	-	-	-	-	-	-
<i>Acanthastrea simplex</i>	+	+	+	+	-	-	-	-	+	+	-	-	-	-	+
<i>Mycedium elephantotus</i>	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>Paracyathus stokesi</i>	+	-	-	-	-	-	-	-	-	-	-	-	-	10	M
<i>Polycyathus verilli</i>	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-
<i>Tubastraea aurea</i>	+	+	+	+	+	-	-	-	+	+	-	-	-	-	-
<i>Turbinaria crater</i>	+	+		-	+	-	-	+	-	-	-	-	-	-	+
<i>T. peltata</i>	-	+	+	+	+	+	+	-	-	+	-	-	+	+	+

- 1 - Okha  
2 - Dholio Gugar  
3 - Dona  
4 - Boria  
5 - Mangundra  
6 - Savaj  
7 - Paga  
8 - Manmarudi Langamarudi  
9 - Ajad  
10 - Bural Reef  
11 - Dhani  
12 - Kalumbhar Reef  
13 - Narara Reef  
14 - Goose Reef  
15 - Pirotan Island

Source: Pillai, C.S.G. and M.I. Patel, 1988

Table 3.9.2 - Sub-tidal coral biodiversity along the Gulf of Kachchh

Station	Stony corals	Soft corals	Associated fauna	Associated flora
Pirotan	<i>Favia fавus</i> , <i>Favites melicerum</i> , <i>Goniopora nigra</i> , <i>G. planulata</i> , <i>Montipora</i> sp., <i>Platygyra sinensis</i> , <i>P. compressa</i> , <i>Tubastrea aurea</i>	Gorgonians	Perch fish, puffer fish, <i>Sabella</i> sp., sea anemone, sponges, <i>Acanthaster planci</i> , bryozoans, gastropod, <i>Bonelia</i> sp., crabs, <i>panularus polyphagus</i> (spiny lobster), <i>Lytocarpus</i> colony	<i>Caulerpa</i> , <i>Codium</i> , <i>Ulva</i> , Coralline algae, <i>Enteromorpha</i> , <i>Gracilaria</i> , <i>Hypnea</i> , <i>Padina</i> , Sargassum, <i>Soliera</i>
Karumbhar	<i>Cymfavia radians</i> , <i>Favia fавus</i> , <i>F. speciosa</i> , <i>Favites melicerum</i> , <i>Goniastrea pectinata</i> , <i>G. planulata</i> , <i>Platygyra sinensis</i> , <i>Porites</i> sp., <i>P. compressa</i> , <i>Tubastrea aurea</i> , <i>Turbinaria peltata</i>	<i>Astromuriacea stelligera</i> , gorgonians, <i>Dendronephthya dendrophyta</i> , <i>Lophogorgia lutkeni</i> , <i>Nephthya</i> sp.	Perch fish, <i>Pomacanthus annularis</i> , <i>Sabella</i> sp., sea anemone, <i>Antedon</i> , sponges, sea lily, brittle star, bryozoan, hydrozoans, gastropods, polychaetes, <i>Triphylozooan</i> sp., crabs	<i>Caulerpa</i> , <i>Ulva</i> , Coralline algae, <i>Enteromorpha</i> , <i>Halimeda</i> , <i>Hypnea</i> , Sargassum, <i>Soliera</i>
Boria Reef	<i>Montipora</i> sp., <i>Porites</i> sp., <i>Turbinaria peltata</i>	<i>Dendronephthya dendrophyta</i> , <i>D. brevirama</i> , gorgonians, <i>Lobophytum panciglosum</i> , <i>Nephthya</i> sp., <i>Sclerophytum polydactylum</i> , <i>Sinularia</i> sp.	Sea lily, bryozoans, gastropods, crabs, sponges	<i>Caulerpa</i> , <i>Codium</i> , Coralline algae, <i>Gracilaria</i> , <i>Halimena</i> , <i>Hypnea</i> , <i>Kjellimania</i> , Sargassum, <i>Soliera</i>
Beyt Shankhodar	<i>Goniopora nigra</i> , <i>Turbinaria peltata</i>	Gorgonians	Sea anemone, <i>Discosoma isp.</i> , sponges, sea lily, bryozoans, gastropods	<i>Caulerpa</i> , <i>Halimena</i> , <i>Kjellimania</i> , Sargassum, <i>Soliera</i>
Mungra reef	Young polyps - colony of <i>Tubastrea</i> sp., <i>Porites</i> sp.	Gorgonians, <i>Dendronephthya</i> sp.	Bryozoans, gastropods, crabs, polychaetes, sponges, sea urchins	<i>Ulva</i> , coralline algae
Mundra	Young polyps - colony of <i>Tubastrea</i> sp., dead <i>Acropora</i> pieces		<i>Holothuria</i> sp., brittle star, <i>Antedon</i> , sea urchins, gastropods, <i>Membranopora</i>	Coralline algae
Mandvi	Young polyps - colony of <i>Tubastrea</i> sp.		Sponges, bryozoans, <i>Membranopora</i> , barnacle, gastropods, oyster spats	<i>Dictyota bartreysiana</i>

Source: Deshmukh, Ramamoorthy and Sen Gupta, 2000.

Table 3.9.3 - Distribution of corals on reefs between Okha and Paga Reef

Species	1	2	3	4	5	6	7
<i>Acropora humilis</i>	-	--	+	+	--	--	+
<i>A. squarrosa</i>	-	--	--	+	--	--	-
<i>Montipora explanata</i>	+	--	+	+	--	+	+
<i>M. venosa</i>	-	--	--	+	--	--	+
<i>M. turgescens</i>	-	--	--	--	--	--	+
<i>M. hispida</i>	+	+	--	+	+	--	+
<i>M. foliosa</i>	-	--	--	+	--	--	+
<i>M. monastriata</i>	-	--	--	+	--	--	+
<i>Coscinaraea monile</i>	+	+	+	+	+	+	+
<i>Siderastrea savignyana</i>	+	--	--	--	--	--	-
<i>Pseudosiderastrea tayamai</i>	+	--	--	--	--	--	+
<i>Goniopora planulata</i>	+	+	--	--	+	+	+
<i>G. minor</i>	-	--	--	+	--	--	+
<i>G. nigra</i>	+	+	--	+	+	+	+
<i>Porites lutea</i>	+	+	+	+	--	--	+
<i>P. lichen</i>	+	--	--	--	--	--	+
<i>P. compressa</i>	+	+	--	--	--	--	-
<i>Favia fавus</i>	+	+	+	+	+	+	+
<i>Favites complanata</i>	+	+	+	+	+	+	+
<i>F. melicerum</i>	+	--	+	--	--	--	-
<i>Goniastrea pectinata</i>	+	+	+	+	+	+	+
<i>Platygyra sinensis</i>	+	+	+	+	--	--	-
<i>Hydnophora exesa</i>	+	+	+	+	--	--	-
<i>Plesiastrea versipora</i>	-	+	--	--	--	--	+
<i>Cyphastrea serailleia</i>	+	+	+	+	+	+	+
<i>Symphyllia radians</i>	-	+	--	+	--	+	-
<i>Acanthastrea simplex</i>	+	+	+	+	--	--	-
<i>Mycedium elephantosus</i>	-	--	--	+	--	--	-
<i>Paracyathus stokesi</i>	+	--	--	--	--	--	-
<i>Polycyathus verrilli</i>	+	--	+	--	--	--	+
<i>Tubastraea aurea</i>	+	+	+	+	+	--	-
<i>Dendrophyllia minuscule</i>	+	--	--	--	--	--	-
<i>Turbinaria crater</i>	+	+	--	+	--	--	+
<i>T. peltata</i>	-	+	+	+	+	+	+

1. Okha; 2. Dholio Guar; 3. Dona; 4. Boria; 5. Mangunda; 6. Savaj; 7. Paga

Present: + Not recorded: -

Source: NIO

Table 3.9.4 - Species list of corals at Narara bet

Species	Status
<i>Acropora</i> sp.	+
<i>Montipora striata</i>	++
<i>Pavona minuta</i>	++
<i>Pseudosiderastrea tayamai</i>	+
<i>Goniopora stokesi</i>	+++
<i>G. lobata</i>	++
<i>Goniopora</i> sp.	+
<i>Porites lutea</i>	+++
<i>P. compressa</i>	++
<i>P. stephensoni</i>	+
<i>Favia pallida</i>	+++
<i>F. favius</i>	++
<i>F. maxima</i>	+
<i>F. speciosa</i>	++
<i>Favites abtida</i>	+++
<i>F. chinensis</i>	+
<i>F. pentagona</i>	++
<i>F. complanata</i>	+
<i>F. bebettea</i>	+
<i>Goniastrea aspera</i>	++
<i>G. pectinata</i> (Ehrenberg 1834)	+
<i>G. edwardsi</i>	++
<i>G. favulus</i>	+
<i>Platygyra</i> sp.	++
<i>Hydnophora exesa</i>	+
<i>Cyphastrea serailia</i>	++
<i>Trachyphyllia geoffroyi</i>	++
<i>Symphyllia nobilis</i>	+
<i>Turbinaria peltata</i>	+

Very common : +++

Common : ++

Rare : +



Table 3.9.5 - Species list of corals at Kalubhar island

Species	Status
<i>Favia pallida</i>	+++
<i>F. speciosa</i>	++
<i>Favia</i> sp.	+
<i>Porites lutea</i>	+++
<i>P. compressa</i>	+
<i>P. rus</i>	+
<i>P. lichen</i>	+
<i>P. stephensoni</i>	+
<i>Goniastrea aspera</i>	++
<i>G. edwardsi</i>	+
<i>G. pectinata</i>	+
<i>G. favulus</i>	++
<i>Favites abtida</i>	+
<i>F. pentagona</i>	++
<i>F. complanata</i>	+
<i>F. chinensis</i>	+
<i>F. benettea</i>	+
<i>F. astrinus</i>	+
<i>Favites</i> sp.	+
<i>Pseudosiderastrea serailia</i>	++
<i>P. tayamai</i>	+
<i>Cyphastrea serailia</i>	+
<i>Goniopora stokesi</i>	++
<i>G. lobata</i>	+++
<i>G. tenuidensis</i>	+
<i>Goniopora</i> sp.	++
<i>Platygyra pini</i>	+
<i>Monitpora striata</i>	+
<i>Plesiastrea versipora</i>	+
<i>Gardinoseris planulata</i>	+
<i>Agaricia incrustans</i>	+
<i>Symphyllia nobilis</i>	+
<i>S. radians</i>	+
<i>Turbinaria</i> sp.	+
<i>Siderastrea</i> sp.	+

Very common :       +++

Common :            ++

Rare :                +

Table 3.9.6 - Live corals in different zones off Sikka

Zone	Distribution (Average % area)	Status
Subtidal		
LW-250 m (0-2 m depth)	35	Moderate
250-500 m (2-4 m depth)	20	Moderate
500-750 m (4-6 m depth)	5	Poor
750-1 Km (6-8 m depth)	0.5	Very poor
1-2.5 Km (>8 m depth)	0	Absent
Intertidal (LW – HW)		
Lower reef flat ( 0-250 m)	25	Moderate
250-500 m	10	Por
500-750 m	5	Poor
Upper reef flat		
750-1 Km	2	Very poor
1-1.25 Km	1	Very poor
1.25-1.5 Km	0.05	Very poor
1.5-1.75 Km	0.005	Very poor
Upper intertidal	--	Absent

LW – Low water ; HW – High water

Table 3.9.7 - Distribution of live corals off Sikka

Name of Species	Status
<i>Porites lutea</i>	+++
<i>P. rus</i>	+
<i>P. stephensoni</i>	+++
<i>P. lichen</i>	+
<i>P. compressa</i>	++
<i>Porites</i> sp.	++
<i>G. lobata</i>	+++
<i>G. stokesi</i>	++
<i>G. tenuidensis</i>	++
<i>Goniastrea pectinata</i>	+++
<i>G. favulus</i>	+++
<i>Goniopora</i> sp.	++
<i>Favites benettea</i>	+++
<i>F. pentagona</i>	+++
<i>F. pallida</i>	+++
<i>Favia</i> sp.	+
<i>Turbanaria peltata</i>	+++
<i>T. bifrons</i>	+
<i>Turbanaria</i> sp.	+
<i>Pavona explanulata</i>	+
<i>Pavona minuta</i>	+
<i>Symphyllia radians</i>	++
<i>Symphyllia agaricia</i>	++
<i>Gardinoseris planulata</i>	+++
<i>Cyphastrea serailia</i>	+++
<i>Siderastrea</i> sp.	+++
<i>Tubastrea coccinea</i>	+
<i>Platigyra</i> sp.	++
<i>Montipora</i> sp.	++

+++ : Very common; ++ : Common; + : Rare

Table 3.9.8 - Corals at Pirotan island

List of Species recorded (1997)	
Scleractinians	
<i>Montipora explanta</i>	<i>Favites complanta</i>
<i>M. hispida</i>	<i>F. melicerum</i>
<i>Coscinaraea monile</i>	<i>Goniastrea pectinata</i>
<i>Pseudosiderastrea tayami</i>	<i>Platygyra sinensis</i>
<i>Goniophora planulata</i>	<i>Hydnophora exesa</i>
<i>G. minor</i>	<i>Cyphastrea serailia</i>
<i>G. nigra</i>	<i>Acanthastrea simplex</i>
<i>Porites lutea</i>	<i>Turbinaria crater</i>
<i>P. dichem</i>	<i>T. peltala</i>
<i>P. compressa</i>	Alcyonarians
<i>Favia speciosa</i>	<i>Lobophytum</i> sp.
<i>F. favus</i>	<i>Favites complanta</i>

Table 3.11.1 - List of waterbirds in the Gulf area

Scientific name	English name	Status of habitat	
		Salt-pans	Gulf
Podicipedidae			
<i>Podiceps cristatus</i>	Great Crested Grebe	LM	
<i>Podiceps nigricollis</i>	Blanknecked Grebe	M	
Pelecanidae			
<i>Pelecanus onocrotalus</i>	White Pelican	LM	LM
<i>Pelecanus crispus</i>	Dalmatian Pelican	M	M
Phalacrocoracidae			
<i>Phalacrocorax carbo</i>	Comorant	LM	LM
<i>Phalacrocorax fuscicollis</i>	Indian Shag	LM	LM
<i>Phalacrocorax niger</i>	Little Comorant	LM	R
<i>Anhinga rufa</i>	Darter	LM	R
Ardeidae			
<i>Ardea cinerea</i>	Grey Heron	LM	R
<i>Ardea purpurea</i>	Purple Heron	LM	
<i>Ardeola striatus</i>	Little Green Heron	LM	R
<i>Ardeola grayii</i>	Pond Heron	LM	R
<i>Bubulcus ibis</i>	Cattle Egret		LM
<i>Ardea alba</i>	Large Egret	LM	R
<i>Egretta intermedia</i>	Smaller Egret	LM	
<i>Egretta intermedia</i>	Little Egret	LM	
<i>Egretta gularis</i>	Indian Reef Heron	LM	R
<i>Nycticorax nycticorax</i>	Night Heron	LM	R
Ciconiidae			
<i>Mycteria leucocephala</i>	Painted stork	LM	R
<i>Ephippiorhynchus asiaticus</i>	Black necked stork	LM	LM
Threskiornithidae			
<i>Threskiornis aethiopica</i>	White Ibis	LM	R
<i>Pseudibis papillasa</i>	Black Ibis		R
<i>Platalea leucordia</i>	Spoon bill	LM	R
Phoenicopteridae			
<i>Phoenicopterus roseus</i>	Flamingo	LM	LM
<i>Phoeniconatans minor</i>	Lesser Flamingo	LM	R

Table 3.11.1 (contd)

Scientific name	English name	Status of habitat	
		Salt-pans	Gulf
Anatidae			
<i>Tadorna ferruginea</i>	Ruddy Shel duck		M
<i>Anas acuta</i>	Pintail	M	M
<i>Anas crecca</i>	Common Teal	M	
<i>Anas poecilorhyncha</i>	Spotbill Duck	LM	LM
<i>Anas clypeata</i>	Shoveller	M	
Accipitridae			
<i>Haliastur Indus</i>	Brahminy Kite	LM	R
<i>Circus aeruginosus</i>	Marsh Harrier	M	M
<i>Pandian Haliaetus</i>	Osprey	M	M
Gruidae			
<i>Grus grus</i>	Common Crane	M	M
<i>Anthopoides virgo</i>	Demoiselle Crane	M	M
Rallidae			
<i>Fulica atra</i>	Coot	LM	LM
Jacanidae			
<i>Hydrophasianus chirurgus</i>	Pheasant-tailed jacana	LM	
Haematopodidae			
<i>Haematopus stralegus</i>	Oystercatcher	M	M
Charadriidae			
<i>Vanellus indicus</i>	Redwattled Lapwing	R	R
<i>Pluvialis sugotarol</i>	Grey plover	M	M
<i>Pluvialis dominica</i>	Eastern Golden Plover		M
<i>Charadrius leschenaultii</i>	Large Sand Plover	M	M
<i>Charadrius hiaticula</i>	Ringed Plover	R	
<i>Charadrius alexandrinus</i>	Kentish Plover	R	R
<i>Charadrius mongolus</i>	Lesser Sand Plover	M	M
<i>Numenius phaeopus</i>	Whimbrel	M	M
<i>Numenius arquata</i>	Curlew	M	M
<i>Limsoa limsoa</i>	Blacktailed Godwit	M	
<i>Limosa lapponica</i>	Bartailed Godwit	M	M
<i>Tringa erythropus</i>	Spotted Redshank	M	M
<i>Tringa totans</i>	Common Redshank	M	M
<i>Tringa stagnatilis</i>	Marsh Sandpiper	M	M
<i>Tringa nebulaira</i>	Greenshank	M	M
<i>Tringa ochropus</i>	Green Sandpiper	M	M
<i>Tringa glareola</i>	Wood Sandpiper	M	
<i>Tringa terek</i>	Terek Sandpiper	M	M
<i>Tringa hypoleucos</i>	Common sandpiper	M	M
<i>Arenaria interpres</i>	Turnstone	M	M
<i>Calidris carutus</i>	Knot		M
<i>Calidris tenuirostris</i>	Easter Knot		V
<i>Calidris alba</i>	Sanderling		M
<i>Calidris ruficollis</i>	Eastern Little Stint		V
<i>Calidris minuta</i>	Little Stint	M	M
<i>Calidris alpina</i>	Dunlin	M	M
<i>Calidris testacea</i>	Curlew -Sandpiper	M	M
<i>Limicola falcinellus</i>	Broadbilled Sandpiper	M	M
<i>Philomachus pugnax</i>	Ruff and Reeve	M	M
<i>Phalaropus lobatus</i>	Red necked Phalarope	M	M
Recurvirostidae			
<i>Himantopus himantopus</i>	Blackwinged Stilt	R	
<i>Recurvirostra avosetta</i>	Avocet	LM	
Dromadidae			
<i>Dromas ardeola</i>	Crab Plover	M	M

Table 3.11.1 (Contd. 4)

Scientific name	English name	Status of habitat	
		Salt-pans	Gulf
Burhinidae			
<i>Esacus magirostris</i>	Great Stone Plover	LM	R
Laridae			
<i>Larus argentatus</i>	Herring Gull	M	M
Lesser Blackbacked			
<i>Larus fuscus</i>	Gull	M	M
<i>Larus ichthyaetus</i>	Blackheaded	M	M
<i>Larus brunnicephalus</i>	Brownheaded Gull	M	M
<i>Larus ridibunds</i>	Blackheaded Gull	M	M
<i>Larus genei</i>	Slenderbilled Gull	M	M
<i>Chiildonias hybrida</i>	Whiskered Tern	M	M
<i>Chiildonia leucopterus</i>	Whitewinged Black	M	M
Tern			
<i>Gelochelidon nilotica</i>	Gullbilled Tern	M	M
<i>Hdroprogne caspia</i>	Caspian Tern	LM	LM
<i>Sterna hirunda</i>	Common Tern	M	M
<i>Sterna repressa</i>	Whitecheeked Tern	M	M
<i>Sterna anaethetus</i>	Brownwinged Tern	M	M
<i>Sternma albitrons</i>	Little Tern	M	M
<i>Sterna saudersi</i>	Saunders Little Tern	LM	R
<i>Sterna bergii</i>	Large Crested Tern	M	M
<i>Sterna bengalensis</i>	Indian Lesser Crested Tern	M	M
<i>Sterna sandvicensis</i>	Sandwich Tern	M	M
<i>Rynchops albicollis</i>	Indian skimmer	LM	LM
Alcedinidae			
<i>Alcedo atthis</i>	Common Kingfisher	LM	LM
<i>Halcyon smymensisq</i>	Whitebreast	LM	LM
<i>Halcyon pileata</i>	Blackcapped kingfisher	M	M

R: Resident, breeding has been recorded during the study

LM: Local migrant, breeding has not been recorded during the study, but is known to nest within the state.

M: Migrant, does not breed in this area, spends the winter here and also sometimes the summer.

V: Not normally found in the area, one to few records only.

Source: Saurashtra University, 1991

Table 3.11.2 - Check list of birds recorded in Mundra

Scientific name	Common English Name	T/W	Abundnace status	Migratory status
Family & Species				
Phasianidae				
<i>Francolinus pondicerianus</i>	Grey francolin	T	C	R
<i>Pavo cristatus</i>	Indian peafowl	T	C	R
Picidae				
<i>Dendrocopos mahrattensis</i>	Yello crowned woodpecker	T	VR	R
Upupidae				
<i>Upupa epops</i>	Common hoopoe	T	R	R
Coraciidae				
<i>Coracias garrulus</i>	European roller	T	R	M
<i>Coracias benghalensis</i>	Indian roller	T	C	R
Alcedinidae				
<i>Alcedo Hercules</i>	Common kingfisher	W	R	R
<i>Halcyon amayroptera</i>	White-throated kingfisher	W	R	R
Meropidae				
<i>Merops orientalis</i>	Green bee-eater	T	A	R
<i>Merops persicus</i>	Blue-cheeked bee-eater	T	R	RM
Cuculidae				
<i>Eudynamys scolopacea</i>	Indian koel	T	C	R
Centropodidae				
<i>Centropus sinensis</i>	Greater coucal	T	R	R
Psittacidae				
<i>Psittacula krameri</i>	Rose-ringed parakeet	T	C	R
Apodidae				
<i>Apus affinis</i>	House swift	T	R	R
Strigidae				
<i>Bubo nipalensis</i>	Spot-bellied eagle-owl	T	R	R
<i>Athene brama</i>	Spotted owl	T	C	R
Caprimulgidae				
<i>Caprimulgus indicus</i>	Sykes's nightjar	T	R	RM
<i>Caprimulgus asiaticus</i>	Indian nightjar	T	R	R
Columbidae				
<i>Columba livea</i>	Blue rock pigeon	T	A	R
<i>Streptopelia senegalensis</i>	Laughing dove	T	A	R
<i>Streptopelia tranquebarica</i>	Red collared-dove	T	R	R
<i>Streptopelia decaocto</i>	Eurasian collared-dove	T	C	R
Otididae				
<i>Chlamydotis macqueeni</i>	Houabara bustard	T	VR	M
Gruidae				
<i>Grus leucogeranus</i>	Common crane	W/T	C	M
Pteroclididae				
<i>Pterocles alchata</i>	Chestnut-bellied sandgrouse	T	C	R
Scolopaciidae				
<i>Limosa lomosa</i>	Black-tailed godwit	W	R	M
<i>Limosa lapponica</i>	Bar-tailed godwit	W	C	M
<i>Numenius phaeopus</i>	Whimbrel	W	A	M
<i>Numenius arquata</i>	Eurasian curlew	W	A	M
<i>Tringa erythropus</i>	Spotted redshank	W	R	M

Table 3.11.2 (Contd.2)

Scientific name	Common English name	T/W	Abundnace status	Migratory status
<i>Tringa totanus</i>	Common redshank	W	A	RM
<i>Tringa stagnatilis</i>	Marsh sandpiper	W	C	M
<i>Tringa nebularia</i>	Common greenshank	W	C	M
<i>Tringa glareola</i>	Wood sandpiper	W	R	M
<i>Xenus cinereus</i>	Terek sandpiper	W	C	RM
<i>Actitis hypoleucos</i>	Common sandpiper	W	A	M
<i>Calidris tenuirostris</i>	Sanderling	W	C	M
<i>Calidris minuta</i>	Little stint	W	R	M
<i>Calidris temminckii</i>	Temminck's stint	W	R	M
<i>Calidris alpina</i>	Dunlin	W	C	M
<i>Philomachus pugnax</i>	Ruff	W	R	M
<i>Phalaropus lobatus</i>	Red-necked phalarope	W	R	M
<i>Vanellus malabaricus</i>	Yellow-wattled lapwing	T	R	R
<i>Vanellus indicus</i>	Red-wattled lapwing	W/T	A	R
Charadriidae				
<i>Haematopus ostralegus</i>	Eurasian oystercatcher	W	R	M
<i>Himantopus himantopus</i>	Blackwinged stilt	W	R	R
<i>Recurvirostra avosetta</i>	Pied avocet	W	R	RM
<i>Pluvialis apricaria</i>	Eurasian golden plover	W	R	M
<i>Pluvialis squatarola</i>	Grey plover	W	R	M
<i>Charadrius hiaticula</i>	Common ringed plover	W	C	RM
<i>Charadrius alexandrinus</i>	Kentish plover	W	C	RM
<i>Charadrius leschenaultii</i>	Greater sand plover	W	C	M
Glareolidae				
<i>Dromas ardeola</i>	Crab-plover	W	R	M
Laridae		W	VR	R
<i>Rynchops albigollis</i>	Indian skimmer	W	VR	M
<i>Larus argentatus</i>	Herring gull	W	VR	M
<i>Larus brunnicephalus</i>	Brown headed gull	W	C	RM
<i>Larus genei</i>	Slender billed gull	W	R	RM
<i>Gelochelidon nilotica</i>	Gull-billed tern	W	A	RM
<i>Sterna caspia</i>	Caspian tern	W	R	RM
<i>Sterna aurantia</i>	River tern	W	C	R
<i>Sterna bergii</i>	Great crested tern	W	R	R
<i>Sterna albifrons</i>	Little tern	W	R	R
<i>Chlidonias hybridus</i>	Whiskered tern	W	C	RM
Accipitridae				
<i>Pandion haliaetus</i>	Osprey	W/T	VR	RM
<i>Pernis ptilorhyncus</i>	Oriental honey buzzard	T	VR	RM
<i>Elanus caeruleus</i>	Black-shouldered kite	T	VR	R
<i>Haliastur Indus</i>	Brahminy kite	T	VR	R
<i>Circaehr gallicus</i>	Shorat-toed snake eagle			
<i>Circus aeruginosus</i>	Eurasian marsh harrier	T/W	VR	M
<i>Circus macrourus</i>	Pallid harrier	T	VR	M



Table 3.11.2 (Contd.3)

Scientific name	Common English name	T/W	Abundance status	Migratory status
<i>Accipiter nisus</i>	Eurasian sparrowhawk	T	R	M
<i>Aquila rapax</i>	Tawny eagle	T	VR	R
<i>Hieraaetus fasciatus</i>	Bonelli's eagle	T	VR	R
Falconidae				
<i>Falco tinnunculus</i>	Common kestrel	T	VR	RM
<i>Falco chicquera</i>	Red-headed merlin	T	VR	R
<i>Falco subbuteo</i>	Northern hobby	T	VR	RM
<i>Falco jugger</i>	Laggar falcon	T	VR	RM
Ardeidae				
<i>Egretta garzetta</i>	Little egret	W	C	R
<i>Egretta gularis</i>	Western reef heron	W		RM
<i>Ardea cinerea</i>	Grey heron	W		RM
<i>Casmerodius albus</i>	Great egret	W		RM
<i>Mesophoxys intermedia</i>	Intermediate egret	W		RM
<i>Bubulcus ibis</i>	Cattle egret	T		R
<i>Ardeola grayii</i>	Indian pond-heron	W		R
<i>Phoenicopterus ruber</i>	Greater flamingo	W		R
<i>Phoenicopterus minor</i>	Lesser flamingo	W		R
Threskiornithidae				
<i>Threskiornis melanocephalus</i>	Asian white ibis	W		R
<i>Pseudibis papillosa</i>	Black ibis	W/T		R
<i>Platalea leucorodia</i>	Eurasian spoonbill	W		
Pelecanidae				
<i>Pelecanus crispus</i>	Dalmatian pelican	W		M
Ciconiidae				
<i>Mycteria leucocephala</i>	Painted stork	W		RM
Laniidae				
<i>Lanius collurio</i>	Rufous-tailed shrike	T		M
<i>Lanius vittatus</i>	Baby-backed shrike	T		R
<i>Lanius schach</i>	Long-tailed shrike	T		R
<i>Lanius excubitor</i>	Great grey shrike	T		RM
Corvidae				
<i>Corvus splendens</i>	House crow	T		R
<i>Corvus macrorhynchos</i>	Jungle crow	T		R
<i>Pericrocotus cinnamomeus</i>	Small minivet	T		R
<i>Dicrurus macrocercus</i>	Black drongo	T		R
<i>Aegithina tiphia</i>	Marshall's lora	T		R
<i>Tephrodornis pondicerianus</i>	Lesser woodshrike	T		R
Muscicapidae				
<i>Ficedula zanthopygia</i>	Red-throated flycatcher	T		M
<i>Saxicoloides fulicata</i>	Indian robin	T		R
<i>Phoenicurus ochruros</i>	Black redstart	T		M
<i>Oenanthe pleschanka</i>	Pied wheatear	T		M
<i>Oenanthe deserti</i>	Desert wheatear	T		M
<i>Oenanthe isabellina</i>	Isabelline wheatear	T		M
Sturnidae				
<i>Strunus pagodarum</i>	Brahminy starling	T		R
<i>Strunus roseus</i>	Rosy starling	T		M
<i>Acridotheres tristis</i>	Common myna	T		R
<i>Acridotheres ginginianus</i>	Bank myna	T		R

Table 3.11.2 (Contd.4)

Scientific name	Common English name	T/W	Abundance status	Migratory status
Hirundinidae				
<i>Hirundo rustica</i>	Barn swallow	T	R	RM
<i>Hirundo smithii</i>	Wire-tailed swallow	T	R	R
<i>Hirundo daurica</i>	Red-rumped swallow	T	C	R
Pycnonotidae				
<i>Pycnonotus leucotis</i>	White-eared bulbul	T	A	R
<i>Pycnonotus cafer</i>	Red-vented bulbul	T	C	R
Cisticolida				
<i>Prinia buchanani</i>	Rufous-fronted prinia	T	C	R
<i>Prinia sylvatica</i>	Jungle prinia	T	R	R
Zosteropidae				
<i>Zosterops palpebrosus</i>	Oriental white-eye	T	C	R
Sylviidae				
<i>Acrocephalus dumetorum</i>	Blyth's reed warbler	T	C	M
<i>Acrocephalus arundinaceus</i>	Great reed-warbler	T	C	M
<i>Hippolais caligata</i>	Booted warbler	T	VR	M
<i>Orthotomus sutorius</i>	Common tailorbird	T	A	R
<i>Turdoides caudatus</i>	Common babbler	T	A	R
<i>Sylvia curruca</i>	Lesser whitethroat	T	A	M
<i>Sylvia hortensis</i>	Orphean warbler	T	R	M
Alaudidae				
<i>Mirafra cantillans</i>	Singing bush-lark	T	R	R
<i>Eremopterix grisea</i>	Ash-crowned sparrow lark	T	R	R
<i>Calandrella cheleensis</i>	Asian short-toed lark	T	C	M
<i>Chalandrella raytal</i>	Sand short-toed lark	T	C	M
<i>Galerida cristata</i>	Crested lark	T	R	R
<i>Alauda gulgula</i>	Eastern skylark	T	VR	R
Nectariniidae				
<i>Nectarinia asiatica</i>	Purple sunbird	T	A	R
Passeridae				
<i>Passer domesticus</i>	House sparrow	T	A	R
<i>Passer</i>	Yellow throated sparrow			
<i>Montacilla cinerea</i>	Grey wagtail			
<i>Montacilla alba</i>	White wagtail	W/T	VR	M
<i>Anthus campestris</i>	Tawny pipit	T	VR	M
<i>Ploceus philippinus</i>	Baya weaver	T	C	R
<i>Lonchura malabarica</i>	Plain munia	T	A	R

T/W – T: Terrestrial bird, W: Water bird

Abundance status – A: Abundant, C: Common, R: Rare, VR: Very rare

Migratory status – R: Resident, M: Migrant, RM: Resident with migrant population

Table 3.11.3 - List of water birds of Kalubhar island

English name	Scientific name
Pond Heron	<i>Ardeola grayii</i>
Large Egret	<i>Ardea alba</i>
Painted stork	<i>Anastomus oscitans</i>
Black necked stork	<i>Xenorhynchus asiaticus</i>
White ibis	<i>Threskiornis melanocephalus</i>
Great flamingo	<i>Phoeniconatus rubber</i>
Lesser Flemingo	<i>Phoenicopterus minor</i>
Braminy kite	<i>Haliastur Indus</i>
Little ringed plover	<i>Charadrius dubius</i>
Lesser sand plover	<i>Charadrius mongolus</i>
Curlew	<i>Numenius arquata</i>
Common sandpiper	<i>Tringa hypoleucos</i>
Marsh sand piper	<i>Tringa stagnatilis</i>
Black tailed godwit	<i>Limosa limosa</i>
Little stint	<i>Calidrus minuta</i>
Sanderling	<i>Calidris alba</i>
Dulin	<i>Calidrus alpina</i>
Ruff	<i>Philomachus pugnax</i>
Head shank	<i>Tringa tetanus</i>
Turnstone	<i>Arenaria interpres</i>
Black headed gull	<i>Larus ridibundus</i>
Brown headed gull	<i>Larus brunnicephalus</i>
Great black headed gull	<i>Larus ichthyaetus</i>
Herring gull	<i>Larus argentatus</i>
Gullbilled tern	<i>Gelochelidon niliatica</i>
Little tern	<i>Sterna albifrons</i>
Indian lesser crested tern	<i>Sterna bengalensis</i>
Redrumped swallo	<i>Hirundo daurica</i>
Whimberal	<i>Numenius phaeopus</i>

Source: Marine National Park, Jamnagar

Table 4.2.1 – Bacterial population in water and sediment at Kandla creek and Nakti creek (Average values given in parenthesis)

Parameters	Kandla creek					
	March 1996			October 1996		
	Water (no./ml)		Sediment (no. X 10 <sup>2</sup> /g dry wt.)	Water (no./ml)		Sediment (no.X10 <sup>2</sup> /g dry wt)
Plate	MF	Plate		MF		
TVC	15-182(56)	59-269 (139)	8.31-16.7 (12.5)	1 X 10 <sup>2</sup> -7 X 10 <sup>2</sup> (3 X 10 <sup>2</sup> )	2 X 10 <sup>2</sup> -12 X 10 <sup>2</sup> (6 X 10 <sup>2</sup> )	3.1-8.4 (5.8)
TC	4-34(14)	9-74 (32)	2.8-6.4 (4.6)	ND-89 (23)	ND-76 (25)	1.3-3.6 (2.5)
Mac Conkey ECLO	ND-9(2)	ND-12 (2)	ND-2.55 (1.3)	-	-	ND
M-Fc ECLO	ND-2 (0.3)	ND-4 (0.8)	ND	ND-2 (0.3)	ND-12 (3.0)	ND-3.6 (1.8)
SHLO	ND-11 (5)	3-19 (10)	ND	ND-33 (21)	ND-46 (26)	ND-1.3 (0.6)
SLO	ND	ND-3 (0.6)	ND	ND-3 (0.8)	ND	ND
PKLO	3-19(10)	3-31 (16)	ND-0.9 (0.4)	6-44 (20)	13-67 (25)	2.1-4.9 (3.5)
VLO	6-49(15)	11-80 (28)	0.3-2.9 (1.6)	ND-74 (36)	ND-90 (52)	2.9-3.1 (3.0)
VPLO	ND	ND-1 (0.1)	ND	ND	ND	ND
VCLO	ND-14(5)	3-32 (11)	ND	ND-64 (25)	ND-74 (33)	2.9-3.1 (3.0)
PALO	ND-13(4)	ND-29 (14)	ND	ND	ND-31 (11)	ND
SFLO	ND-36(13)	ND-60 (24)	ND-0.9 (0.5)	ND-57 (26)	21-72 (40)	6.8-11.4 (9.1)

Parameters	Kandla creek (February 1998)		Nakti creek (March 1997)		
	Water (no./ml)	Sediment (no. x 10 <sup>2</sup> /g dry wt.)	Water (no./ml)		Sediment (no. x 10 <sup>2</sup> /g dry wt.)
			Plate	MF	
TVC	2.4 X 10 <sup>3</sup> -7.2 X 10 <sup>4</sup> (2.7 X 10 <sup>4</sup> )	23-1000 (350)	219	149	2860
TC	10-205 (89)	ND-0.7 (0.2)	69	46	12.3
ECLO	ND-115 (49)	ND-0.05 (0.02)	39	19	-
M-Fc ECLO			38	16	-
SHLO	ND-580 (92)	ND-0.15 (0.05)	1	6	0.9
SLO	ND	ND	-	-	-
PKLO	ND-140 (39)	ND-0.15 (0.05)	-	27	-
VLO	10-140 (71)	ND-0.4 (0.1)	23	29	-
VPLO	ND-122 (38)	ND-0.2 (0.1)	-	-	-
VCLO	5-105 (44)	ND-0.2 (0.05)	16	4	-
PALO	ND-85 (12)	ND	8	2	-
SFLO	ND-35 (10)	ND-0.8 (0.2)	-	2	-

Table 4.2.2 – Bacterial population in water and sediment at Sara creek and Phang creek during 1998 (Average values given in parenthesis)

Parameters	Sara creek (February 1998)		Phang creek (March 1996)		Phang creek (February 1998)	
	Water (no./ml)	Sediment (no. X 10 <sup>2</sup> /g dry wt.)	Water (no/ml)		Water (no./ml)	Sediment (no. X 10 <sup>2</sup> /g dry wt.)
			Plate	MF		
TVC	1.9 X 10 <sup>4</sup> – 3.5 X 10 <sup>4</sup> (2.7 X 10 <sup>4</sup> )	100 (100)	40	82	4.5 X 10 <sup>4</sup> – 1.2 X 10 <sup>5</sup> (2.7 X 10 <sup>4</sup> )	190 (190)
TC	30-40 (35)	0.04 (0.04)	7	19	40-55 (48)	1.31 (1.31)
ECLO	10-20 (15)	0.04 (0.04)	-	-	15-40 (28)	ND
M-Fc ECLO			-	-		
SHLO	ND	ND	6	2	ND-15 (8)	ND
SLO	ND	ND	-	-	ND	ND
PKLO	30-40 (35)	0.08 (0.08)	3	11	70-140 (105)	ND
VLO	15-145 (80)	ND	14	17	25-25 (25)	ND
VPLO	10-45 (28)	ND	-	-	15-20 (18)	ND
VCLO	5-100 (53)	ND	12	12	5-10 (8)	ND
PALO	ND	ND	2	8	ND	ND
SFLO	ND-1 (0.5)	7.04 (7.04)	6	11	1-20 (11)	ND

Table 4.2.3 - Phytoplankton pigments, population and composition at Kandla creek during 1985-1998 (Average values given in parenthesis)

Parameters	Level	February 1985	August 1986	November 1986	February 1987
Chlorophyll a (mg/m <sup>3</sup> )	S	0.1-0.5 (0.4)	1.1-2.4 (1.9)	1.1-2.7 (1.9)	0.5-1.6 (1.1)
	B	0.1-0.5 (0.4)			
Phaeophytin (mg/m <sup>3</sup> )	S	0.01-1.7 (0.8)	0.1-1.9 (1.3)	0.3-0.8 (0.7)	0.3-3.9 (1.3)
	B	0.01-1.7 (1.1)			

Parameters	Level	March 1996	October 1996	February 1998
Primary productivity (mgC/m <sup>3</sup> /h)	S			
	B			
Chlorophyll a (mg/m <sup>3</sup> )	S	0.5-3.2 (1.4)	1.1-4.3 (2.6)	0.5-2.7 (1.7)
	B	0.5-2.7 (1.0)	1.1-4.3 (2.6)	0.5-3.2 (1.5)
Phaeophytin (mg/m <sup>3</sup> )	S	0.2-2.7 (0.6)	0.1-2.3 (0.9)	0.2-5.1 (1.5)
	B	0.2-2.7 (1.0)	0.1-2.0 (1.1)	0.2-3.9 (1.5)
Cell count (no.X 10 <sup>3</sup> /l)	S	4.5-169.9 (39.1)	16.0-64.0 (37.6)	27.7-64.2 (44.0)
	B	1.8-90.1 (24.8)	11.0-50.0 (29.2)	25.2-58.4 (39.4)
Total genera (no.)	S	4-15 (8)	4-10 (6)	7-14 (10)
	B	3-14 (7)	2-9 (6)	7-11 (8)
Major genera	S	<i>Thalassiothrix</i> , <i>Thalassiosira</i> , <i>Nitzschia</i> , <i>Skeletonema</i> , <i>Chaetoceros</i> , <i>Rhizosolenia</i> , <i>Navicula</i> ,	<i>Nitzschia</i> , <i>Thalassiothrix</i> , <i>Coscinodiscus</i> , <i>Thalassiosira</i> , <i>Rhizosolenia</i>	<i>Nitzschia</i> , <i>Fragilaria</i> , <i>Thalassiothrix</i> , <i>Melosira</i> , <i>Coscinodiscus</i> , <i>Thalassiosira</i>
	B	<i>Thalassiothrix</i> , <i>Thalassiosira</i> , <i>Coscinodiscus</i> , <i>Nitzschia</i> , <i>Skeletonema</i>	<i>Thalassiosira</i> , <i>Nitzschia</i> , <i>Coscinodiscus</i> , <i>Thalassiothrix</i>	<i>Fragilaria</i> , <i>Nitzschia</i> , <i>Thalassiothrix</i> , <i>Melosira</i> , <i>Coscinodiscus</i> , <i>Thalassiosira</i> ,

Table 4.2.4 – List of phytoplankton genera recorded at different creeks in the Gulf of Kachchh

Genera	Kandla creek	Nakti creek	Sara creek	Phang creek
<i>Amphiprora</i>	+	-	+	+
<i>Amphora</i>	-	-	-	-
<i>Anabaena</i>	-	-	-	-
<i>Anacystis</i>	-	-	-	-
<i>Asterionella</i>	+	-	-	-
<i>Aulacodiscus</i>	-	-	-	-
<i>Bacillaria</i>	-	-	-	-
<i>Bacteriastrum</i>	-	-	-	-
<i>Biddulphia</i>	+	-	-	+
<i>Blue green algae</i>	-	-	-	-
<i>Ceratium</i>	-	-	-	-
<i>Ceratulina</i>	-	-	-	-
<i>Chaetoceros</i>	+	-	-	-
<i>Chlamydomonas</i>	-	-	-	-
<i>Climacodium</i>	-	-	-	-
<i>Climacosphenia</i>	+	-	-	-
<i>Corethron</i>	-	-	-	-
<i>Coscinodiscus</i>	+	+	+	+
<i>Coscinosira</i>	-	-	-	-
<i>Cyclotella</i>	+	-	-	+
<i>Cymbella</i>	-	-	-	-
<i>Dinophysis</i>	-	-	-	-
<i>Diploneis</i>	+	-	-	-
<i>Distephanus</i>	-	-	-	-
<i>Ditylum</i>	+	-	+	-
<i>Eucampia</i>	+	-	-	-
<i>Fragilaria</i>	+	+	+	+
<i>Green algae</i>	-	-	-	-
<i>Guinardia</i>	-	-	-	-
<i>Gyrosigma</i>	+	+	+	+
<i>Hemiaulus</i>	-	+	-	-
<i>Hemidiscus</i>	-	-	-	-
<i>Hyalodiscus</i>	+	-	-	-
<i>Leptocylindrus</i>	-	-	-	-
<i>Lauderia</i>	-	-	-	-
<i>Licmophora</i>	+	-	-	-
<i>Melosira</i>	+	-	+	+
<i>Microcystis</i>	-	-	-	-
<i>Navicula</i>	+	-	+	+
<i>Nitzschia</i>	+	+	+	+
<i>Noctiluca</i>	-	-	-	-
<i>Nodularia</i>	-	-	-	-

Table 4.2.4 (Contd. 2)

Genera	Kandla creek	Nakti creek	Sara creek	Phang creek
<i>Oscillatoria</i>	-	-	-	-
<i>Pediastrum</i>	-	-	-	-
<i>Peridinium</i>	+	-	-	-
<i>Planktoniella</i>	-	-	-	-
<i>Pleurosigma</i>	+	-	+	+
<i>Prorocentrum</i>	-	-	-	-
<i>Rhizosolenia</i>	+	-	-	-
<i>Skeletonema</i>	+	-	-	-
<i>Stauroneis</i>	-	-	-	-
<i>Stephanopyxis</i>	-	-	-	-
<i>Streptotheca</i>	-	-	+	-
<i>Surirella</i>	+	-	+	+
<i>Synedra</i>	+	-	-	-
<i>Thalassionema</i>	+	+	+	+
<i>Thalassiosira</i>	+	+	+	+
<i>Thalassiothrix</i>	+	+	+	+
<i>Trichodesmium</i>	-	-	-	-
<i>Tropidoneis</i>	-	-	-	-
<i>Ulothrix</i>	-	-	-	-

+: Present

-: Not recorded

Table 4.2.5 - Phytoplankton pigments, population and composition at Phang creek during 1986 -1998 (Average values given in parenthesis)

Parameters	Level	August 1986	November 1986	February 1987	March 1996	October 1996	February 1998
Chlorophyll a (mg/m <sup>3</sup> )	S	1.1-1.1 (1.1)	1.1-2.1 (1.3)	1.1-2.1 (1.6)	2.1 (2.1)	2.1-2.1 (2.1)	0.5-1.1 (0.8)
	B				2.1 (2.1)	1.1-2.1 (1.6)	0.5-1.6 (1.1)
Phaeophytin (mg/m <sup>3</sup> )	S	1.9-4.2 (2.9)	0.1-1.9 (0.7)	0.1-1.9 (0.8)	2.0 (2.0)	0.1-0.1 (0.1)	1.2-1.7 (1.5)
	B				1.2 (1.2)	0.1-1.9 (1.0)	0.2-0.6 (0.4)
Cell count (no.X 10 <sup>3</sup> /l)	S				4.5 (4.5)	38.2 (38.2)	36.5-50.0 (43.3)
	B				4.0 (4.0)	25.2 (25.2)	34.0-34.5 (34.3)
Total genera	S				5 (5)	6 (6)	7-8 (7)
	B				3 (3)	5 (5)	7-10 (9)
Major genera	S				<i>Thalassiosira</i> , <i>Coscinodiscus</i> , <i>Thalassiothrix</i>	<i>Coscinodiscus</i> , <i>Nitzschia</i> , <i>Thalassiothrix</i> , <i>Navicula</i>	<i>Nitzschia</i> , <i>Fragilaria</i> , <i>Thalassiothrix</i> , <i>Coscinodiscus</i>
	B				<i>Thalassiosira</i> , <i>Thalassiothrix</i> , <i>Coscinodiscus</i>	<i>Coscinodiscus</i> , <i>Biddulphia</i> , <i>Nitzschia</i>	<i>Melosira</i> , <i>Nitzschia</i> , <i>Fragilaria</i> , <i>Coscinodiscus</i>



Table 4.2.6 - Phytoplankton pigments at the surface waters at Chach creek, Chottakuttathuki and Hansthal creek during 1986 -1987 (Average values given in parenthesis)

Parameters	August 1986	November 1986	February 1987
Chach creek			
Chlorophyll a (mg/m <sup>3</sup> )	1.1-3.2 (2.1)	0.5-3.2 (1.5)	0.5-2.1 (1.3)
Phaeophytin (mg/m <sup>3</sup> )	0.4-8.0 (3.9)	0.5-2.5 (1.3)	1.6-6.2 (3.6)
Chottakuttathuki			
Chlorophyll a (mg/m <sup>3</sup> )	1.1-3.6 (1.9)	0.5-2.7 (1.2)	1.1-2.1 (1.4)
Phaeophytin (mg/m <sup>3</sup> )	0.5-2.7 (1.8)	0.6-1.8 (1.1)	0.1-4.9 (1.8)
Hansthal creek			
Chlorophyll a (mg/m <sup>3</sup> )	1.3-2.7 (1.7)	1.1-4.6 (2.2)	0.5-3.9 (1.6)
Phaeophytin (mg/m <sup>3</sup> )	0.5-2.0 (1.4)	0.1-1.6 (0.6)	0.1-0.8 (0.4)

Table 4.2.7 – Zooplankton biomass, population, total groups and major groups at Kandla creek during 1985 - 1998 (Average values given in parenthesis)

Parameters	February 1985	August 1986	November 1986	February 1987
Biomass (ml/100m <sup>3</sup> )	3.3-51.7 (24.0)	3.1-163.7 (57.7)	82.3-149.5 (109.9)	38.3-63.9 (48.5)
Population (no. X 10 <sup>3</sup> /100m <sup>3</sup> )	7.5-70.7 (37.2)	3.4-6.4 (5.2)	0.9-7.3 (3.7)	9.4-42.1 (23.0)
Total groups (no.)	6-14 (10)			
Major groups	Copepods, Chaetognaths, Decapods, Gastropods, Medusae, Mysids, Fish Larvae,			

Parameters	March 1996	October 1996	February 1998
Biomass (ml/100m <sup>3</sup> )	0.5-26.2 (9.2)	0.7-16.9 (4.3)	1.7-22.4 (8.2)
Population (no.X10 <sup>3</sup> /100m <sup>3</sup> )	3.7-81.3 (28.9)	1.2-217.6 (29.6)	7.8-78.9 (30.5)
Total groups (no.)	5-13 (8)	7-14 (10)	6-15 (10)
Major groups	Copepods, Decapod Larvae, Chaetognaths	Copepods, Decapod Larvae, Chaetognaths	Copepods, Decapod Larvae, Chaetognaths, <i>Acetes</i> , Fish Larvae, Gastropods

Table 4.2.8 – List of zooplankton groups recorded at different creeks in the Gulf of Kachchh

Groups	Kandla creek	* Nakti creek	* Sara creek	Phang creek
Foraminifera	-	-	-	-
Hydromedusae	+	-	-	+
Siphonophore	+	-	-	-
Anthozoa	-	-	-	-
Ctenophora	+	+	-	+
Polychaeta	+	-	-	-
Lamellibranchiates	+	-	-	+
Pteropods	-	-	-	-
Heteropoda	-	-	-	-
Other Gastropods	+	+	-	+
Cephalopoda	-	-	-	-
Cladocera	-	-	-	-
Ostracoda	+	-	-	-
Copepoda	+	+	+	+
Cirripedia	-	-	-	-
Mysidacea	+	-	-	-
Tanaidacea	-	-	-	-
Cumaceans	-	-	-	-
Isopoda	-	+	-	-
Amphipoda	+	-	-	+
Euphausiacea	-	-	-	-
<i>Lucifer</i> sp.	-	-	-	-
Sergestidae	-	-	-	-
<i>Acetes</i> sp.	+	+	+	+
Other decapoda	+	+	+	+
Stomatopoda	-	-	-	-
Halobates	+	-	-	-
Chaetognatha	+	+	+	+
Copelata	+	-	-	+
Pyrosoma	-	-	-	-
Salps & Doliolids	-	-	-	-
Fish eggs	+	-	-	+
Fish larvae	+	-	+	+

\* Names of all groups are not available

+: Present

-: Not recorded

Table 4.2.9 – Zooplankton biomass, population, total groups and major groups at Phang creek during 1986 - 1998 (Average values given in parenthesis)

Parameters	August 1986	November 1986	February 1987	March 1996	February 1998
Biomass (ml/100m <sup>3</sup> )	5.4-10.0 (7.4)	10.8-58.3 (31.3)	3.3-78.7 (30.1)	5.1 (5.1)	2.3-2.4 (2.3)
Population (no. X 10 <sup>3</sup> /100m <sup>3</sup> )	22.2-37.9 (28.7)	1.6-3.1 (2.3)	7.1-27.9 (15.6)	13.0 (13.0)	6.4-21.7 (14.0)
Total groups (no.)				4 (4)	10-11 (10)
Major groups				Decapod Larvae, Copepods, Chaetognaths, Fish Larvae	Copepods, Decapod Larvae, Chaetognaths

Table 4.2.10 – Zooplankton biomass, population, total groups and major groups at Chach creek, Chottakuttathuki and Hansthal creek during 1986 - 1987 (Average values given in parenthesis)

Parameters	August 1986	November 1986	February 1987
Chach creek			
Biomass (ml/100m <sup>3</sup> )	46.9-185.5 (112.2)	2.5-10.9 (5.5)	2.0-7.0 (4.5)
Population (no. X 10 <sup>3</sup> /100m <sup>3</sup> )	16.0-381.7 (139.4)	0.5-7.8 (4.6)	1.0-12.2 (6.6)
Chottakuttathuki			
Biomass (ml/100m <sup>3</sup> )	0.6-3.2 (1.6)	2.2-13.4 (7.8)	2.9-39.6 (16.4)
Population (no. X 10 <sup>3</sup> /100m <sup>3</sup> )	0.5-8.7 (4.3)	0.6-2.4 (1.5)	28.0-81.7 (51.4)
Hansthal creek			
Biomass (ml/100m <sup>3</sup> )	5.4-10.0 (7.4)	13.4-55.2 (30.4)	18.8-95.0 (53.3)
Population (no. X 10 <sup>3</sup> /100m <sup>3</sup> )	22.2-37.9 (28.7)	0.3-1.3 (0.7)	5.9-19.2 (11.7)

Table 4.2.11 – Total population and composition of decapod larvae (prawns / shrimps) and fish larvae from the interior creeks of the Gulf during 1986 to 1987

Parameter	Decapods			Fish larvae		
	August 1986	November 1986	February 1987	August 1986	November 1986	February 1987
Kandla creek						
Population density (no/100m <sup>3</sup> )	11	18	7	13		
List of species / family / groups	<i>Metapenaeus affinis</i> , <i>Metapenaeus kutchensis</i>	<i>Acetes indicus</i> , <i>Exopalaemon styliferus</i>	<i>Acetes indicus</i> , <i>Exhippolysmata ensirostris</i>	<i>Clupeid</i> sp.		
Phang creek						
Population density (no/100m <sup>3</sup> )	61	24	6	417	1	1224
List of species / family / groups	<i>Metapenaeus affinis</i> , <i>Metapenaeus kutchensis</i> , <i>Metapenaeus dobsoni</i> , <i>Exopalaemon styliferus</i>	<i>Acetes indicus</i> , <i>Exhippolysmata ensirostris</i>	<i>Penaeus indicus</i> , <i>Acetes indicus</i>	<i>Engraulis mystax</i> , <i>Boleophthalmus glaucus</i>	<i>Engraulis mystax</i>	<i>Synaptura commersoniana</i> , <i>Boleophthalmus glaucus</i> , <i>Clupeid</i> sp.

Table 4.2.11 (Contd. 2)

Chach creek		Decapods		Fish eggs		Fish larvae	
Parameters	August 1986	November 1986	February 1987	February 1987	August 1986	November 1986	February 1987
Population density (no/100m <sup>3</sup> )	396	26	3	6	221	8	225
List of species / family / groups	<i>Metapenaeus affinis</i> , <i>Exopalaemon styliferus</i> , <i>Exhippolyasmata ensirostris</i>	<i>Metapenaeus affinis</i> , <i>Acetes indicus</i>	<i>Acetes indicus</i>	-	<i>Boleophthalmus glaucus</i> , <i>Clupeid sp.</i>	<i>Boleophthalmus glaucus</i>	<i>Boleophthalmus glaucus</i>
Chottakuttiathuki							
Population density (no/100m <sup>3</sup> )	548	13	24	-	77	-	699
List of species / family / groups	<i>Metapenaeus affinis</i> , <i>Metapenaeus kutchensis</i> , <i>Acetes indicus</i> , <i>Exopalaemon styliferus</i>	<i>Acetes indicus</i> , <i>Exopalaemon styliferus</i>	<i>Acetes indicus</i>	-	<i>Engraulis mystax</i> , <i>Otolithoides sp.</i> , <i>Boleophthalmus glaucus</i>	-	<i>Boleophthalmus glaucus</i> , <i>Clupeidsp</i>

Table 4.2.12 – Intertidal macrobenthic biomass, population and composition at Kandla creek during 1996 – 1998 (Average values given in parenthesis)

Parameters	March 1996	October 1996	February 1998
Biomass (g/m <sup>2</sup> wet wt.)	0.02-10.1 (3.4)	<0.1-112.3 (11.1)	<0.1-27.3 (3.0)
Population (no./m <sup>2</sup> )	50-1702 (492)	51-4510 (941)	0-4774 (843)
Total groups (no.)	4-8 (6)	4-11	7-12 (9)
Major groups	Polychaetes, Amphipods, Isopods, Crabs	Polychaetes, Crabs, Prawn Larvae, Zoea	Polychaetes, Mysids, Brachyurans, Macrurans, Amphipods

Table 4.2.13 – List of intertidal macrobenthic groups / species recorded at different creeks in the Gulf of Kachchh

Groups	Kandla creek	Nakti creek
Nemertines	+	-
Nematodes	+	-
Polychaetes	+	-
Ostracods	+	-
Copepods	+	-
Mysids	+	-
Cumaceans	+	-
Tanaidaceans	+	-
Prawn	+	-
Crab	+	-
Decapods	+	-
Isopods	+	-
Amphipods	+	-
Macrurans	+	+
Anomurans	+	-
Brachyurans	+	-
Amphineurans	-	+
Crustacean larvae	+	-
Insects	+	+
Sea spider	+	-
Gastropods	+	-
Pelecypods	+	-
Molluscs	+	-
Echiuroids	+	-
Ophiuroids	+	-
Fish larvae	+	+

+: Present

-: Not recorded

Table 4.2.14 – Subtidal macrobenthic biomass, population and composition at Kandla creek during 1986 – 1998 (Average values given in parenthesis)

Parameters	August 1986	November 1986	February 1987
Biomass (g/m <sup>2</sup> wet wt.)	0.01 (0.01)	0.11 (0.11)	0.12 (0.12)
Population (no./m <sup>2</sup> )	12 (12)	152 (152)	576 (576)
Total groups (no.)	1 (1)	3 (3)	1 (1)
Major groups	Crustaceans	Polychaetes, crustaceans, foraminiferans	Foraminiferans

Table 4.2.14 (contd)

Parameters	March 1996	October 1996	February 1998
Biomass (g/m <sup>2</sup> wet wt.)	0.1-9.4 (2.6)	0.2-0.6 (0.4)	0-9.8 (2.0)
Population (no./m <sup>2</sup> )	88-2601 (979)	239-628 (406)	0-1389 (351)
Total groups (no.)	2-8 (4)	3-8 (5)	Nil-6 (2)
Major groups	Polychaetes, amphipods, bivalves, crustacean larvae	Polychaetes, copepods, amphipods, molluscs	Brachyurans, polychaetes, pelecypods

Table 4.2.15 – List of subtidal macrobenthic groups / species recorded at different creeks in the Gulf of Kachchh

Groups	Kandla creek	Nakti creek	Sara creek	Phang creek	Chach creek	Chotta Kuttathu ki	Hansthal creek
Foraminiferans	+	-	-	-	-	-	-
Hydrozoans	+	-	-	-	-	-	-
Nemertines	+	-	-	-	-	-	-
Nematodes	+	-	-	-	-	-	-
Polychaetes	+	+	+	+	+	+	+
Copepods	+	+	-	-	-	-	-
Cumaceans	-	+	-	-	-	-	-
Prawns	+	-	-	-	-	-	-
Crab	+	-	-	-	-	-	-
Decapods	-	-	-	+	-	-	-
Isopods	+	-	+	-	-	-	-
Amphipods	+	+	-	+	-	-	-
<i>Caprella</i> sp.	+	-	-	-	-	-	-
Macrurans	-	+	-	-	-	-	-
Brachyurans	+	+	+	-	-	-	-
Crustacean larvae	+	+	-	+	+	+	+
Insects	+	+	-	+	-	-	-
Sea spider	+	-	-	-	-	-	-
Gastropods	+	+	-	-	-	-	-
Pelecypods	+	-	+	+	-	-	-
Molluscs	+	-	-	-	-	-	-
Brittle star	+	-	-	-	-	-	-
Echinoderms	+	-	-	-	-	-	-
Fish eggs	+	-	-	-	-	-	-
Fish larvae	+	-	-	-	-	-	-

+: Present

-: Not recorded

Table 4.2.16 – Subtidal macrobenthic biomass, population and composition at Phang creek during 1986 – 1998 (Average values given in parenthesis)

Parameters	August 1986	November 1986	February 1987	March 1996	February 1998
Biomass (g/m <sup>2</sup> wet wt.)	0.01-0.02 (0.01)	0.02 (0.02)	0.002-0.38 (0.15)	0.83 (0.83)	1.3 (1.3)
Population (no./m <sup>2</sup> )	6-6 (6)	12 (12)	12-24 (20)	415 (415)	210 (210)
Total groups (no.)	1	1	2	6	2
Major groups	Polychaetes	Polychaetes	Polychaetes, Crustaceans	Bivalves, Polychaetes, Decapods, Amphipods, Insect Larvae, Crustacean Larvae	Pelecypods, Polychaetes

Table 4.2.17 – Subtidal macrobenthic biomass, population and composition at Chach creek, Chottakuttathuki and Hansthal creek during 1986 – 1987 (Average values given in parenthesis)

Parameters	August 1986	November 1986	February 1987
Chach creek			
Biomass (g/m <sup>2</sup> wet wt.)	0.02-0.26 (0.14)	0.01-0.03 (0.02)	0.02-0.42 (0.22)
Population (no./m <sup>2</sup> )	8-276 (142)	12-12 (12)	24-216 (120)
Total groups (no.)	2	2	2
Major groups	Polychaetes, crustaceans	Polychaetes, crustaceans	Polychaetes, crustaceans
Chottakuttathuki			
Biomass (g/m <sup>2</sup> wet wt.)	0.01-0.02 (0.01)	0.05 (0.05)	0.01-0.02 (0.01)
Population (no./m <sup>2</sup> )	6-12 (9)	36 (36)	12-60 (32)
Total groups (no.)	2	1	2
Major groups	Polychaetes, crustaceans	Crustaceans	Polychaetes, crustaceans
Hansthal creek			
Biomass (g/m <sup>2</sup> wet wt.)	0.04	0.1	0.1
Population (no./m <sup>2</sup> )	14	60	72
Total groups (no.)	2	2	2
Major groups	Polychaetes, crustaceans	Polychaetes, crustaceans	Polychaetes, crustaceans



Table 4.2.18 – Trawlcatch and gill net catch rates and composition at Kandla creek during 1986 to 1988

Parameters	August 1986		November 1986	
	Trawl catch	Gill net catch	Trawl catch	Gill net catch
Fish catch (kg/h)	1.2 (1.2)	0.9 (0.9)	8.2 (8.2)	1.2 (1.2)
Total species (no.)	Fishes 11 Prawns 3 Others 5	Fishes 5	Fishes 20 Prawns 3 Others 3	Fishes 8
Common species	Fishes: <i>Trygon walga</i> , <i>Otolithoides biauritus</i> , <i>Synaptura commersoniana</i>	Fishes: <i>Zygaena malleus</i> , <i>Polynemus tetradactylus</i> , <i>Harpodon nehereus</i>	Fishes: <i>Chiloscyllium arabicum</i> , <i>Trygon walga</i> , <i>Otolithoides biauritus</i> , <i>Pampus argenteus</i> , <i>Harpodon nehereus</i>	Fishes: <i>Polynemus tetradactylus</i> , <i>Pampus argenteus</i> , <i>Engraulis mystax</i>
	Prawns: <i>Exopalaemon styliferus</i> , <i>Parapenaeopsis hardwickii</i> ,		Prawn: <i>Exopalaemon styliferus</i> , <i>Parapenaeopsis hardwickii</i> , <i>Parapenaeopsis stylifera</i> ,	
	Others: <i>Neptunus pelagicus</i> , <i>Neptunus sanguinolentus</i> , <i>Matuta lunaris</i> , <i>Squilla</i> sp.		Others: <i>Panulirus polyphagus</i>	

Parameters	February 1987	
	Trawl catch	Gill net catch
Fish catch (kg/h)	13.1	0.6
Total species (no.)	Fishes 15 Prawns 2 Others 7	Fishes 2
Common species	Fishes: <i>Carcharias laticaudus</i> , <i>Chiloscyllium arabicum</i> , <i>Coilia dussumieri</i> , <i>Otolithoides biauritus</i>	Fishes: <i>Chirocentrus nudus</i> , <i>Pampus argenteus</i> .
	Prawn: <i>Metapenaeus kutchensis</i> , <i>Penaeus semisulcatus</i> ,	
	Others: <i>Neptunus sanguinolentus</i> , <i>Charybdis cruciata</i>	

Parameters	February 1998
Fish catch (kg/h)	1.1-4.0 (2.2)
Total species (no.)	Fishes 10 Prawns 8 Others 1
Common species	Fishes: <i>Lepturacanthus savala</i> , <i>Ilisha metastoma</i> , <i>Boleophthalmus</i> sp., <i>Thryssa mystax</i>
	Prawns: <i>Exopalaemon styliferus</i> , <i>Metapenaeus</i> sp., <i>Parapenaeopsis sculptilis</i> , <i>Parapenaeopsis</i> sp.
	Others: <i>Charybdis</i> sp.,

Table 4.2.19 – List of fishes recorded from creeks located in the interior part of the Gulf of Kachchh

Groups / Species	Kandla creek	Nakti creek	Phang creek	Chach creek	Hansthal creek
<i>Arius caelatus</i>					+
<i>Arius maculatus</i>					+
<i>Arothron</i> sp.	+				
<i>Astrape dipterygia</i>	+				
<i>Bempros</i> sp.	+				+
<i>Boleophthalmus glaucus</i>	+		+	+	+
<i>Boleophthalmus</i> sp.	+				
<i>Carcharias laticaudus</i>					+
<i>Caranx kalla</i>	+				
<i>Carcharias laticaudus</i>	+		+	+	
<i>Chiloscyllium arabicum</i>	+				+
<i>Chirocentrus nudus</i>	+				
<i>Cociella crocodila</i>					
<i>Coilia dussumieri</i>	+			+	+
<i>Cyanoglossus arel</i>					+
<i>Cyanoglossus macrolepidotus</i>	+				+
<i>Cymatoceps mastutus</i>					+
Electric ray					+
<i>Eleutheronema tetradactylum</i>					+
<i>Engraulis mystax</i>	+		+	+	
<i>Escualosa thoracata</i>		+			
<i>Glyptoparus delicatulus</i>					+
<i>Gymnocranius griseus</i>					+
<i>Harpadon nehereus</i>	+		+	+	
<i>Hemiramphus far</i>					+
<i>Hilsa toil</i>	+				
<i>Ilisha megaloptera</i>	+		+		+
<i>Ilisha metastoma</i>	+				
<i>Ilisha</i> sp.		+			
<i>Johnius belangeri</i>					+
<i>Johnius diacanthus</i>	+				
<i>Johnius glaucus</i>			+		+
<i>Johnius macropterus</i>	+				
<i>Johnius semiluctuosus</i>			+		
<i>Johnius vogleri</i>	+			+	+
<i>Johnius</i> sp.	+				
<i>Lagocephalus</i> sp.		+			
<i>Lepturacanthus savala</i>	+				
<i>Liza carinata</i>					+
<i>Mugil cephalus</i>				+	+
<i>Nibea diacanthus</i>	+		+		+
<i>Nibea maculata</i>				+	+
<i>Otolithes rubber</i>					+
<i>Otolithes</i> sp.	+				
<i>Otolithoides biauritus</i>	+		+	+	+
<i>Pampus argenteus</i>	+				+
<i>Paraplagusia marmorata</i>					+
<i>Pellona elongata</i>	+				
<i>Pellona filigera</i>	+				
<i>Polynemus hexadactylus</i>	+				+
<i>Polynemus indicus</i>	+			+	+

Table 4.2.19 (Contd. 2)

Groups / Species	Kandla creek	Nakti creek	Phang creek	Chach creek	Hansthal creek
<i>Polynemus tetradactylus</i>	+				+
<i>Pristis microdon</i>				+	
<i>Protonibea diacanthus</i>					+
<i>Scoliodon laticaudus</i>					+
<i>Synaptura commersoniana</i>	+				
<i>Tachysurus caelatus</i>	+			+	
<i>Tachysurus maculatus</i>	+			+	+
<i>Tenualosa toil</i>					+
<i>Tetradon inermis</i>					+
<i>Tetradon lunaris</i>	+				
<i>Tetradon oblongus</i>	+			+	+
<i>Thryssa mystax</i>	+				
<i>Thryssa vitrirostris</i>	+				+
<i>Tricanthus brevirostris</i>				+	
<i>Trichiurus haumela</i>					+
<i>Trichiurus savala</i>	+			+	
<i>Trygon walga</i>	+				+
<i>Valamugil</i> sp.					+
<i>Zygaena malleus</i>	+				
<i>Prawns</i>					
<i>Exhippolysmata ensirostris</i>			+		+
<i>Exopalaemon styliferus</i>	+	+	+	+	+
<i>Metapenaeus affinis</i>					+
<i>Metapenaeus kutchensis</i>	+			+	
<i>Metapenaeus</i> sp.	+	+			+
<i>Nematopalaemon</i> sp.			+		+
<i>Palaemon</i> sp.					+
<i>Parapenaeopsis hardwicki</i>	+		+	+	+
<i>Parapenaeopsis sculptilis</i>	+		+		+
<i>Parapenaeopsis stylifera</i>	+	+	+	+	+
<i>Parapenaeopsis</i> sp.	+				
<i>Penaeus indicus</i>	+				
<i>Penaeus semisulcatus</i>	+				
<i>Penaeus</i> sp.	+				
<i>Others</i>					
<i>Acetes indicus</i>	+		+	+	+
<i>Charybdis annulata</i>					+
<i>Charybdis cruciata</i>	+				
<i>Charybdis</i> sp.	+				
<i>Matuta lunaris</i>	+				+
<i>Matuta planipes</i>					+
<i>Neptunus pelagicus</i>	+			+	
<i>Neptunus sanguinolentus</i>	+				+
<i>Panulirus polyphagus</i>	+				
<i>Scylla serrata</i>	+		+		+
Sepia	+				
Squilla	+				+

+: Present

Table 4.2.20 – Trawlcatch and gill net catch rates and composition at Phang creek during 1986 to 1987

Parameters	August 1986		November 1986		February 1987	
	Trawl catch	Gill net catch	Trawl catch	Gill net catch	Trawl catch	Gill net catch
Fish catch (kg/h)	1.3	0.4	0.7	0.2	0.7	0.3
Total species (no.)	Fishes 4 Prawns 2 Others 1	Fishes 3	Fishes 2 Prawns 3 Others 1	Fishes 2	Fishes 4 Prawns 4 Others 2	Fishes 3
Common species	Fishes: <i>Boleophthalmus glaucus</i> , <i>Johnius glaucus</i> , <i>Nibea diacanthus</i> , <i>Otolithoides biauritus</i> . Prawn: <i>Exopalaemon styliferus</i> , <i>Parapenaeopsis sculptilis</i> .	Fishes: <i>Engraulis mystax</i> , <i>Harpodon nehereus</i> , <i>Johnius semiluctuosus</i> ,	Fishes: <i>Harpodon nehereus</i> , <i>Otolithoides biauritus</i> .	Fishes: <i>Carcharias laticaudus</i> , <i>Engraulis mystax</i>	Fishes: <i>Boleophthalmus glaucus</i> , <i>Johnius glaucus</i> , <i>Illisha megaloptera</i> , <i>Nibea diacanthus</i> ,	Fishes: <i>Carcharias laticaudus</i> , <i>Engraulis mystax</i> , <i>Harpodon nehereus</i> ,
	Others: <i>Acetes indicus</i>		Others: <i>Acetes indicus</i>		Prawn: <i>Exhippolysmata ensirostris</i> , <i>Nematopalaemon</i> sp., <i>Parapenaeopsis hardwickii</i> , <i>Parapenaeopsis stylifera</i> , Others: <i>Acetes indicus</i> , <i>Scylla serrata</i>	

Table 4.2.21 – Trawlcatch and gill net catch rates and composition at Chach creek during 1986 to 1987

Parameters	August 1986		November 1986		February 1987	
	Trawl catch	Gill net catch	Trawl catch	Gill net catch	Trawl catch	Gill net catch
Fish catch (kg/h)	9.9	1.5	0.4	0.1	1.1	0.6
Total species (no.)	Fishes 13 Prawns 3 Others 2	Fishes 5	Fishes 7 Prawns 2	Fishes 1	Fishes 7 Prawns 3 Others 1	Fishes 1
Common species	<p>Fishes:</p> <p><i>Boleophthalmus glaucus</i>,  <i>Coilia dussumieri</i>,  <i>Cynoglossus Engraulis mystax</i>,  <i>Harpodon nehereus</i>,  <i>Johnius vogleri</i>,  <i>macrolepidotus</i>,  <i>Nibea diacanthus</i>,  <i>Otolithoides biauritus</i>,  <i>Polynemus indicus</i>,  <i>Pristis microdon</i>,  <i>Tachysurus caelatus</i>,  <i>Tetrodon oblongus Trichiurus savala</i>,</p> <p>Prawn:  <i>Exopalaemon styliferus</i>  <i>Parapenaeopsis hardwickii</i>,  <i>Parapenaeopsis stylifera</i></p> <p>Others: <i>Acetes indicus</i>, <i>Neptunus pelagicus</i></p>	<p>Fishes: <i>Carcharias laticaudus</i>,  <i>Engraulis mystax</i>,  <i>Harpodon nehereus</i>,  <i>Tachysurus caelatus</i>,  <i>Tricanthus brevirostris</i></p>	<p>Fishes:</p> <p><i>Coilia dussumieri</i>,  <i>Harpodon nehereus</i>,  <i>Johnius vogleri</i>,  <i>Mugil cephalus</i>,  <i>Otolithoides biauritus</i>,  <i>Tachysurus maculatus</i>,  <i>Trichiurus savala</i></p>	<p>Fishes: <i>Engraulis mystax</i></p>	<p>Fishes:</p> <p><i>Boleophthalmus glaucus</i>, <i>Engraulis mystax</i>, <i>Harpodon nehereus</i>, <i>Johnius vogleri</i>,  <i>Nibea diacanthus</i>,  <i>Otolithoides biauritus</i>,  <i>Tachysurus maculatus</i></p>	<p>Fishes: <i>Engraulis mystax</i></p>

Table 4.2.22 – Trawlcatch and gill net catch rates and composition at Hansthal creek during 1986 to 1987

Parameters	August 1986		November 1986		February 1987	
	Trawl catch	Gill net catch	Trawl catch	Gill net catch	Trawl catch	Gill net catch
Fish catch (kg/h)	1.6	-	2.7	0.5	12.7	1.3
Total species (no.)	Fishes 12 Prawns 2 Others 2	-	Fishes 17 Prawns 5 Others 3	Fishes 6	Fishes 14 Prawns 4 Others 4	Fishes 3
Common species	Fishes: <i>Carcharias laticaudus</i> , <i>Chiloscyllium arabicum</i> , <i>Trygon walga</i> , <i>Coilia dussumieri</i> , <i>Otolithoides biauritus</i> , <i>Harpodon nehereus</i> , <i>Engraulis mystax</i> , Prawns: <i>Exopalaemon styliferus</i> , <i>Parapenaeopsis hardwickii</i> .		Fishes: <i>Coilia dussumieri</i> , <i>Cynoglossus macrolepidotus</i> , <i>Engraulis mystax</i> , <i>Harpodon nehereus</i> , <i>Tetodon oblongus</i> , <i>Pampus argenteus</i> , <i>Polynemus tetradactylus</i> , <i>Tachysurus maculatus</i>	Fishes: <i>Carcharias laticaudus</i> , <i>Coilia dussumieri</i> , <i>Engraulis mystax</i> , <i>Harpodon nehereus</i> , <i>Johnius belangeri</i> , <i>Pampus argenteus</i>	Fishes: <i>Carcharias laticaudus</i> , <i>Chiloscyllium arabicum</i> , <i>Cynoglossus macrolepidotus</i> , <i>Otolithoides biauritus</i> , <i>Tachysurus maculatus</i> , <i>Trygon walga</i> , <i>Boleophthalmus glaucus</i> ,	Fishes: <i>Engraulis mystax</i> , <i>Pampus argenteus</i> , <i>Tachysurus maculatus</i>
	Prawns: <i>Exopalaemon styliferus</i> , <i>Parapenaeopsis hardwickii</i> .		Prawn: <i>Exopalaemon styliferus</i> , <i>Parapenaeopsis hardwickii</i> , <i>Parapenaeopsis stylifera</i> .		Prawn: <i>Nematopalaemon</i> sp., <i>Parapenaeopsis hardwickii</i> , <i>Parapenaeopsis sculptilis</i> , <i>Parapenaeopsis stylifera</i> , Others: <i>Acetes indicus</i> , <i>Matuta lunaris</i> , <i>Squilla serrata</i> , <i>Squilla</i> sp.	
	Others: <i>Acetes indicus</i> , <i>Matuta lunaris</i>		Others: <i>Acetes indicus</i> , <i>Matuta lunaris</i> , <i>Neptunus sanguinolentus</i> .			



Table 4.3.2 – Phytoplankton pigments, population and composition along a transect in the Gulf during March 1997 (Average values given in parenthesis)

Parameters	Level	March 1997		
		Northern Gulf	Middle Gulf	Southern Gulf
Chlorophyll <i>a</i> (mg/m <sup>3</sup> )	S	0.5-2.7 (1.1)	0.3-3.2 (1.3)	0.5-1.1 (0.9)
	B	0.5-1.6 (0.9)	0.5-2.7 (1.4)	0.5-1.1 (0.8)
Phaeophytin (mg/m <sup>3</sup> )	S	0.1-1.0 (0.5)	0.2-2.0 (0.5)	0.1-1.0 (0.4)
	B	0.1-3.6 (0.5)	0.1-2.9 (0.5)	0.1-1.3 (0.3)
Cell count (no. X 10 <sup>7</sup> /l)	S	134.0-262.0 (200.0)	37.5-229.0 (119.1)	25.2-222.6 (115.2)
	B	120.5-275.9 (218.9)	38.5-293.0 (161.1)	32.4-163.6 (69.8)
Total genera (no.)	S	11-18 (13)	4-13 (8)	5-6 (5)
	B	13-16 (15)	5-14 (11)	7-8 (7)
Major genera	S	<i>Fragilaria</i> , <i>Thalassiosira</i> , <i>Rhizosolenia</i> , <i>Nitzschia</i> , <i>Skeletonema</i> , <i>Gyrosigma</i> , <i>Chaetoceros</i>	<i>Nitzschia</i> , <i>Skeletonema</i> , <i>Thalassiosira</i> , <i>Coccinodiscus</i> , <i>Rhizosolenia</i> , <i>Chaetoceros</i>	<i>Skeletonema</i> , <i>Thalassiosira</i> , <i>Nitzschia</i> , <i>Thalassiothrix</i> , <i>Navicula</i> , <i>Bacteriastrium</i>
	B	<i>Nitzschia</i> , <i>Skeletonema</i> , <i>Rhizosolenia</i> , <i>Gyrosigma</i> , <i>Thalassiosira</i>	<i>Thalassiosira</i> , <i>Nitzschia</i> , <i>Skeletonema</i> , <i>Thalassionema</i> , <i>Coccinodiscus</i> , <i>Rhizosolenia</i> , <i>Chaetoceros</i>	<i>Skeletonema</i> , <i>Nitzschia</i> , <i>Gyrosigma</i> , <i>Thalassiosira</i> , <i>Thalassiothrix</i> , <i>Chaetoceros</i> , <i>Navicula</i>



Table 4.3.3 – List of phytoplankton genera recorded along a transect in the Gulf of Kachchh during 1997

Genera	Northern Gulf	Middle Gulf	Southern Gulf
<i>Amphiprora</i>	+	-	+
<i>Asterionella</i>	-	+	-
<i>Bacillaria</i>	+	-	+
<i>Bacteriastrum</i>	+	+	+
<i>Biddulphia</i>	+	+	-
<i>Ceratium</i>	-	+	-
<i>Chaetoceros</i>	+	+	+
<i>Climacosphenia</i>	-	+	-
<i>Coscinodiscus</i>	+	+	+
<i>Distephanus</i>	+	-	-
<i>Ditylum</i>	+	+	-
<i>Fragilaria</i>	+	-	-
<i>Gyrosigma</i>	+	-	+
<i>Hemiaulus</i>	+	+	-
<i>Leptocylindrus</i>	+	+	-
<i>Licmophora</i>	-	-	+
<i>Navicula</i>	+	+	+
<i>Nitzschia</i>	+	+	+
<i>Peridinium</i>	+	+	+
<i>Pleurosigma</i>	+	+	+
<i>Rhizosolenia</i>	+	+	+
<i>Skeletonema</i>	+	+	+
<i>Stauroneis</i>	-	+	+
<i>Surirella</i>	+	+	-
<i>Thalassionema</i>	+	+	-
<i>Thalassiosira</i>	+	+	+
<i>Thalassiothrix</i>	+	+	+

+: Present  
 -: Not recorded

Table 4.3.4 – Zooplankton biomass, population, total groups and major groups along a transect in the Gulf of Kachchh during 1997 (Average values given in parenthesis)

Parameters	March 1997		
	Northern Gulf	Middle Gulf	Southern Gulf
Biomass (ml/100m <sup>3</sup> )	3.3-17.3 (9.0)	0.4-97.3 (21.2)	1.5-17.9 (5.6)
Population (no.X10 <sup>3</sup> /100m <sup>3</sup> )	10.0-57.1 (24.9)	0.7-144.1 (38.5)	3.4-105.6 (37.1)
Total groups (no.)	10-16 (13)	9-16 (12)	9-14 (8)
Major groups	Copepods, Decapods, Chaetognaths, Ostracods, Gastropods, <i>Acetes</i>	Copepods, Decapods, Gastropods, Ostracods, Chaetognaths, Medusae	Decapods, Copepods, Fish Eggs, Fish Larvae, Chaetognaths, Gastropods

Table 4.3.5 – List of zooplankton groups / species recorded\* along a transect in the Gulf of Kachchh during 1997

Groups	Northern Gulf	Middle Gulf	Southern Gulf
Foraminifera	-	+	-
Hydromedusa	+	+	-
Ctenophora	+	+	-
Polychaeta	+	+	-
Lamellibranchiata	+	+	+
Other gastropods	+	+	+
Cladocera	-	+	-
Ostracoda	+	+	-
Copepoda	+	+	+
<i>Acetes</i> sp.	+	+	-
Other decapods	+	+	+
Chaetognatha	+	+	+
Fish eggs	+	-	+
Fish larvae	+	-	+

\* Names of all groups are not available

+: Present

-: Not recorded

Table 4.3.6 – Subtidal macrobenthic biomass, population and composition along a transect in the Gulf during 1997 (Average values given in parenthesis)

Parameters	March 1997		
	Northern Gulf	Middle Gulf	Southern Gulf
Biomass (g/m <sup>2</sup> wet wt.)	5.7-10.5 (8.9)	1.2-4.4 (2.8)	6.4-116.0 (43.3)
Population (no./m <sup>2</sup> )	3700-10350 (7842)	1116-5700 (3408)	3153-22400 (11201)
Total groups (no.)	12 (12)	9-11 (10)	9-15 (11)
Major groups	Nematodes, Polychaetes, Copepods, Isopods, Amphipods, Gastropods	Foraminiferans, Polychaetes, Ostracods, Copepods, Amphipods, Gastropods, Pelecypods	Coelenterates, Polychaetes, Amphipods, Ophiuroids, Nematodes, Ostracods, Cumaceans, Macrurans, Pelecypods

Table 4.3.7 – List of subtidal macrobenthic groups recorded along a transect in the Gulf of Kachchh during 1997

Groups	Northern Gulf	Middle Gulf	Southern Gulf
Foraminiferans	+	+	-
Hydrozoans	-	-	-
Anthozoans	-	-	+
Coelenterates	-	+	+
Nemertines	-	+	+
Nematodes	+	-	+
Sipunculids	-	-	-
Polychaetes	+	+	+
Pycnogonids	+	-	+
Bryozoans	-	-	-
Ostracods	+	+	+
Copepods	+	+	-
Mysids	-	-	-
Cumaceans	+	+	+
Tanaidaceans	+	-	+
Isopods	+	-	+
Amphipods	+	+	+
<i>Caprella</i> sp.	-	-	-
Macrurans	+	-	+
Anomurans	-	-	-
Brachyurans	+	-	+
Amphineurans	-	-	-
Crustacean larvae	-	-	+
Insects	-	+	+
Gastropods	+	+	+
Pelecypods	+	+	+
Asteroids	-	-	-
Echiuroids	-	-	-
Ophiuroids	+	+	+
Holothuroids	-	-	-
Fish larvae	+	+	-
Ascidians	-	-	-
Flat worms	-	-	-

+: Present

-: Not recorded

Table 4.3.8 – Trawicatch rate and composition of Gulf of Kachchh

Parameters	March/April 1997 Southern Gulf 1.4-12..2 (6.8)	Middle Gulf 1.4-10.6 (6.0)	Northern Gulf 21.6 (21.6)
Fish catch (kg/h)			
Total species (no.)	Fishes 14 Prawns 2 Others 3	Fishes 9 Prawns 3 Others 1	Fishes 6 Prawns 3 Others 3
Common species	Fishes: <i>Pampus argenteus</i> , <i>Thyssa mystax</i> , <i>Coilia dussumieri</i> , <i>Lepturacanthus savala</i> , <i>Bempros sp.</i> Prawns: <i>Metapenaeus sp.</i> , <i>Penaeus merguensis</i> Others: <i>Hyastenus planasius</i> , <i>Loligo</i> , <i>Neptunus pelagicus</i> ,	Fishes: <i>Thyssa mystax</i> , <i>Scoliodon laticaudes</i> , <i>Coilia dussumieri</i> , <i>Harpadon nehereus</i> , <i>Lepturacanthus savala</i> Prawns: <i>Exopalaemon styliferus</i> , <i>Parapenaeopsis stylifera</i> , <i>Metapenaeus sp.</i> , Others: <i>Loligo</i>	Fishes: <i>Bempros sp.</i> , <i>Harpadon nehereus</i> , <i>Lepturacanthus savala</i> , <i>Scoliodon laticaudes</i> . Prawns: <i>Exhipolismata ensirostris</i> , <i>Exopalaemon styliferus</i> , <i>Metapenaeus sp.</i> Others: <i>Charybdis annulata</i> , <i>Octopus</i> , <i>Squilla</i>

Table 4.3.9 – List of fishes recorded along a transect in the Gulf of Kachchh during 1997

Groups / Species	Southern Gulf	Middle Gulf	Northern Gulf
<i>Bempros</i> sp.	+	-	+
<i>Coilia dussumieri</i>	+	+	-
<i>Glyptoparus delicatulus</i>	-	+	-
<i>Harpadon nehereus</i>	+	+	+
<i>Ilisha megaloptera</i>	+	-	-
<i>Ilisha</i> sp.	+	-	-
<i>Leiognathus</i> sp.	-	+	-
<i>Lepturacanthus savala</i>	+	+	+
<i>Lethrinus</i> sp.	+	-	-
<i>Nemipterus japonicus</i>	+	-	-
<i>Pampus argenteus</i>	+	-	+
<i>Platycephalus punciatus</i>	+	-	-
<i>Protonibea diacanthus</i>	+	-	-
<i>Pseudorhombus elevatus</i>	+	-	-
<i>Pseudotriacanthus strigilifer</i>	-	-	+
<i>Sardinella gibbosa</i>	+	-	-
<i>Scoliodon laticaudus</i>	-	+	+
<i>Secutor insidiator</i>	-	+	-
<i>Thryssa mystax</i>	+	+	-
<i>Thryssa vitrirostris</i>	-	+	-
<i>Prawns</i>			
<i>Exhippolysmata ensirostris</i>	-	-	+
<i>Exopalaemon styliferus</i>	-	+	+
<i>Metapenaeus</i> sp.	+	+	+
<i>Parapenaeopsis stylifera</i>	-	+	-
<i>Penaeus merguensis</i>	+	-	-
<i>Others</i>			
<i>Charybdis annulata</i>	-	-	+
<i>Hyastenus planasius</i>	+	-	-
Loligo	+	+	-
<i>Neptunus pelagicus</i>	+	-	-
Octopus	-	-	+
Squilla	-	-	+

+: Present

-: Not recorded

Table 5.1.1 - Range and average of bacterial population in water and sediment recorded at different zones in the Gulf of Kachchh

Type of bacteria	Okha		Vadinar		Sikka		Bedi	
	Water (no/ml)	Sediment (no. X 10 <sup>2</sup> /g dry wt)	Water (no/ml)	Sediment (no. X 10 <sup>2</sup> /g dry wt)	Water (no/ml)	Sediment (no. X 10 <sup>2</sup> /g dry wt)	Water (no/ml)	Sediment (no. X 10 <sup>2</sup> /g dry wt)
TVC	90-6.3 X 10 <sup>3</sup> (1.6 X 10 <sup>3</sup> )	140-1680 (1026.7)	17-1100 (160)	260-3600 (1521)	49-500 (278)	130-2820 (1030)	27-600 (160)	530-3500 (1748)
TC	ND-61 (12.5)	0-50.1 (7.3)	ND-59 (14)	ND-180 (33)	ND-39 (22)	ND-0.4 (0.2)	ND-121 (17)	ND-7.3 (5.2)
Type of bacteria	Kandla		Luni		Mundra			
	Water (no/ml)	Sediment (no. X 10 <sup>2</sup> /g dry wt)	Water (no/ml)	Sediment (no. X 10 <sup>2</sup> /g dry wt)	Water (no/ml)	Sediment (no. X 10 <sup>2</sup> /g dry wt)	Water (no/ml)	Sediment (no. X 10 <sup>2</sup> /g dry wt)
TVC	9-7.8 X 10 <sup>4</sup> (14.1 X 10 <sup>3</sup> )	3.1-1000 (126.4)	62-500 (194)	1620-4790 (3170)	0.7-30 X 10 <sup>3</sup> (7.2 X 10 <sup>3</sup> )	50-4800 (2560)		
TC	ND-212 (44)	ND-6.9 (2.9)	ND-12 (7)	2.9-5.1 (7.1)	3-2.6 X 10 <sup>3</sup> (3.3 X 10 <sup>3</sup> )	2-1500 (39.4)		

Table 5.1.2 – Range and average of phytoplankton pigments and population recorded at different zones in the Gulf of Kachchh

Parameters	Okha		Salaya		Vadinar		Sikka		Bedi		Navlakhi	
	S	B	S	B	S	B	S	B	S	B	S	B
Chlorophyll 'a' (mg/m <sup>3</sup> )	0.1-19.1 (1.6)	0.5-5.3 (1.4)	0.5-3.2 (1.6)	0.5-2.7 (1.2)	0.5-2.7 (0.9)	0.5-2.7 (0.8)	0.5-6.4 (1.4)	0.5-2.7 (1.2)	0.5-5.9 (1.6)	0.5-4.3 (1.4)	0.3-4.6 (1.4)	0.1-2.1 (1.0)
Phaeophytin (mg/m <sup>3</sup> )	0.1-15.8 (0.8)	0.1-6.8 (0.8)	0.1-2.9 (0.9)	0.1-2.4 (0.9)	0.1-3.8 (0.6)	0.1-2.8 (0.7)	0.02-4.8 (0.8)	0.1-2.9 (0.6)	0.1-7.6 (1.5)	0.1-12.9 (1.4)	0.1-2.2 (0.8)	0.1-2.8 (1.2)
Cell Count (no X 10 <sup>3</sup> /l)	2-25000 (594.8)	6-31206 (713.6)			43- 420.0 (39.5)	8.5- 184.8 (43.6)	4.0- 1702 (96.4)	8.5- 190.9 (47.0)	16-440 (101)	14-936 (135)	9.0-24.2 (14.6)	12.4- 24.8 (17.4)
Total Genera (no.)	3-22 10	3-17 (9)			2-37 (13)	2-15 (9)	2-15 (10)	2-37 (9)	4-15 (9)	4-16 (10)	17 (17)	17 (17)

Table 5.1.2 (contd)

Parameters	Kandla		Luni		Mundra		Jakhau		Kharo creek		Kori creek	
	S	B	S	B	S	B	S	B	S	B	S	B
Chlorophyll 'a' (mg/m <sup>3</sup> )	0.5-4.3 (1.5)	0.5-4.3 (1.4)	0.3-2.7 (1.0)	0.5-1.6 (0.9)	0.5-16.6 (2.3)	0.5-5.9 (1.8)	0.5-1.6 (0.9)	ND-7.5 (2.1)	ND-6.4 (2.1)	0.5-6.9 (2.3)	0.5-6.9 (2.3)	0.5-7.5 (2.4)
Phaeophytin (mg/m <sup>3</sup> )	0.01-7.2 (1.1)	0.01-3.9 (1.1)	0.1-1.0 (0.5)	0.1-3.6 (0.5)	0.1-6.6 (1.0)	0.1-4.2 (1.0)	0.4-2.3 (1.3)	0.4-2.7 (1.0)		0.1-6.6 (1.3)	0.1-6.6 (1.3)	0.1-5.6 (1.6)
Cell Count (no X 10 <sup>7</sup> /l)	4.5- 169.9 (40.1)	1.8-90.1 (30.2)	62.4- 262 (181.9)	120.5- 293 (223.6)	2.1- 1789 (123.0)	1.4-4.13 (101.0)	67-519 (173)	138-194 (169)	0.04-1.3 (0.5)	0.7-1.4 (0.3)	12-370 (59.1)	7.0-74.8 (32.3)
Total Genera (no.)	4-15 (8)	2-14 (7)	7-18 (12)	13-16 (14)	6-18 (10)	2-16 (10)	13-20 (17)	14-21 (18)	3-7 (4)	2-5 (4)	4-13 (7)	4-8 (6)

Table 5.1.3 – Range and average of zooplankton biomass, population and total groups recorded at different zones in the Gulf of Kachchh

Parameters	Okha		Salaya		Vadinar		Sikka		Bedi		Navlakhi	
	S	B	S	B	S	B	S	B	S	B	S	B
Biomass (ml/100m <sup>3</sup> )	0.02-40.4 (3.4)		1.9-76.3 (28.8)		0.1-50.8 (4.9)		0.1-97.3 (11.2)		0.5-112.9 (8.7)		1.8-95.0 (22.1)	
Population (no X 10 <sup>7</sup> /100m <sup>3</sup> )	0.02-7120 (209.3)		3.7-150.6 (62.9)		0.3-730.5 (24.9)		0.3-140.0 (34.2)		1.6-219.6 (49.5)		0.3-96.0 (15.3)	
Total groups (no.)	3-19 (10)		9-14 (12)		5-19 (12)		5-19 (12)		5-15 (10)		9-15 (11)	
Parameters	Kandla		Luni		Mundra		Jakhau		Kharo creek		Kori creek	
Biomass (ml/100m <sup>3</sup> )	0.5-163.7 (26.2)		0.4-72.7 (14.8)		0.1-343.5 (17.0)		1.8-70.1 (20.0)		0.01-5.1 (0.9)		0.01-68.9 (9.5)	
Population (no X 10 <sup>7</sup> /100m <sup>3</sup> )	1.2-217.6 (33.5)		1.6-144.1 (37.4)		0.1-573.0 (46.6)		1.1-93.1 (16.2)		2.8-1230.3 (181.2)		0.01-254.2 (48.8)	
Total groups (no.)	5-15 (10)		9-16 (13)		4-19 (11)		5-18 (10)		5-9 (7)		1-17 (12)	

Table 5.1.4 – Range and average of intertidal macrobenthic biomass, population and total groups recorded at different zones in the Gulf of Kachchh

Parameters	Okha	Salaya	Vadinar	Sikka	Bedi	Navlakhi
Biomass (wet wt.gm/m <sup>2</sup> )	0-91.1 (11.7)	--	0.2-1787.0 (148.0)	<0.01-1787.0 (151.0)	04-1259.4 (64.5)	
Population (no./m <sup>2</sup> )	0-62750 (4504)	--	95-383700 (28284)	88-354042 (29525)	341-86864 (12038)	
Total groups (no.)	16-22 (18)	--	1-20 (10)	2-17 (10)	3-18 (9)	
Parameters	Kandla	Luni	Mundra	Jakhau	Kharo creek	Kori creek
Biomass (wet wt.gm/m <sup>2</sup> )	0.02-112.3 (5.8)	1.0-114.8 (17.2)	0-487.0 (25.9)	0-25.3 (5.3)	48.5-935.7 (509.1)	<0.01-269.5 (42.2)
Population (no./m <sup>2</sup> )	0-4774 (759)	375-15950 (3543)	0-133056 (4604)	0-2165 (797)	17170-78080 (59173)	22-4796 (1073)
Total groups (no.)	4-12 (9)	13-14 (13)	10-24 (16)	0-11 (5)	6-6 (6)	1-8 (4)

Table 5.1.5 – Range and average of subtidal macrobenthic biomass, population and total groups recorded at different zones in the Gulf of Kachchh

Parameters	Okha	Salaya	Vadinar	Sikka	Bedi	Navlakhi
Biomass (wet wt.gm/m <sup>2</sup> )	<0.01-490.3 (30.5)	0-4.8 (4.9)	<0.1-80.8 (12.1)	0.2-116.0 (14.5)	02-554.5 (44.5)	0.02-2.7 (0.3)
Population (no./m <sup>2</sup> )	10-59600 (9244)	0-936 (312)	13-24900 (3165)	126-24900 (4104)	125-9664 (3528)	14-3900 (157.0)
Total groups (no.)	1-21 (11)	4 (4)	1-18 (10)	2-17 (9)	2-14 (9)	1-5 (2)
Parameters	Kandla	Luni	Mundra	Jakhau	Kharo creek	Kori creek
Biomass (wet wt.gm/m <sup>2</sup> )	0-17.1 (1.3)	4.4-10.5 (7.8)	0-63.1 (7.2)	0.01-48.6 (9.2)	1.2-466.4 (40.0)	0-53.7 (4.6)
Population (no./m <sup>2</sup> )	0-2601 (312)	3700-10350 (7306)	0-78625 (3906)	76-32200 (6754)	201-198400 (14098)	0-11392 (970)
Total groups (no.)	1-8 (3)	9-12 (11)	1-18 (10)	3-9 (5)	5-6 (5)	2-8 (4)



Table 5.1.6 – Range and average of trawl and gill net catch rates at different zones in the Gulf of Kachchh

Parameters		Okha	Salaya		Vadinar		
		Trawl catch	Gill net catch	Trawl catch	Gill net catch	Trawl catch	Gill net catch
Fish catch (kg/h)		4.0-23.5 (11.0)	--	--	2.4-115.6 (41.3)	--	--
Total species (no.)		5-20 (12)	--	--	17-40 (32)	--	--
	Fishes	1 (1)	--	--	4-8 (5)	--	--
	Prawns	1 (1)	--	--	5-6 (5)	--	--
	Others	1 (1)	--	--		--	--

Parameters		Sikka	Bedi		Navlakhi		
		Trawl catch	Gill net catch	Trawl catch	Gill net catch	Trawl catch	Gill net catch
Fish catch (kg/h)		0.9-163.0 (29.7)	4.2 (4.2)	0.4-139.0 (38.8)	--	1.6-60.0 (10.8)	0.5-1.3 (0.9)
Total species (no.)		17-41 (26)	6 (6)	19-40 (30)	--	12-25 (17)	3-6 (5)
	Fishes	2-7 (4)	--	1-14 (7)	--	2-5 (4)	--
	Prawns	3-5 (4)	--	5-9 (7)	--	2-4 (3)	--
	Others		--		--		--

Parameters		Kandla	Luni		Mundra		
		Trawl catch	Gill net catch	Trawl catch	Gill net catch	Trawl catch	Gill net catch
Fish catch (kg/h)		0.6-40.5 (11.3)	0.6-9.3 (4.1)	21.6 (21.6)	--	0.8-33.1 (15.3)	4.0-11.5 (7.6)
Total species (no.)		13-28 (19)	3-19 (9)	6 (6)	--	6-20 (15)	25 (25)
	Fishes	4-8 (6)	1	3 (3)	--	1-9 (4)	6 (6)
	Prawns	2-9 (5)	1	3 (3)	--	1-5 (2)	3 (3)
	Others				--		

Parameters		Jakhau	Kharo creek		Kori creek		
		Trawl catch	Gill net catch	Trawl catch	Gill net catch	Trawl catch	Gill net catch
Fish catch (kg/h)		27.5-44.0 (33.8)	--	--	--	5.1-115.2 (21.6)	--
Total species (no.)		9-21 (15)	--	--	--	8-15 (12)	--
	Fishes	3-4 (3)	--	--	--	2-5 (4)	--
	Prawns	4-4 (4)	--	--	--	1-3 (2)	--
	Others		--	--	--		--

Table 5.3.1 - Range and average of bacterial population in water and sediment recorded at different creeks in the Gulf of Kachchh

Type of bacteria	Kandla creek		Nakti creek		Sara creek		Phang creek	
	Water (no/ml)	Sediment (no. X 10 <sup>2</sup> /g dry wt)	Water (no/ml)	Sediment (no. X 10 <sup>2</sup> /g dry wt)	Water (no/ml)	Sediment (no. X 10 <sup>2</sup> /g dry wt)	Water (no/ml)	Sediment (no. X 10 <sup>2</sup> /g dry wt)
TVC	15-7.2 X 10 <sup>4</sup> (9.1 X 10 <sup>3</sup> )	3.1-1000 (122.8)	219 (219)	2860 (2860)	1.9-3.5 X 10 <sup>4</sup> (2.7 X 10 <sup>4</sup> )	100 (100)	40-1.2 X 10 <sup>5</sup> (13.5 X 10 <sup>3</sup> )	190 (190)
TC	ND-205 (42)	ND-6.4 (2.4)	69 (69)	12.3 (12.3)	30-40 (35)	0.04 (0.04)	7-55 (28)	1.31 (1.31)

Table 5.3.2- Range and average of phytoplankton pigments and population recorded at different creeks in the Gulf of Kachchh

Parameters	Kandla creek		Nakti creek		Sara creek		Phang creek		Chach creek		Chotta Kuttathuki		Hansthal creek	
	S	B	S	B	S	B	S	B	S	B	S	B	S	B
Chlorophyll 'a' (mg/m <sup>3</sup> )	0.1-4.3 (1.6)	0.1-4.3 (1.4)	0.5-2.0 (0.8)	0.5-1.6 (1.1)	1.1-1.6 (1.4)	0.5-2.1 (1.3)	0.5-2.1 (1.5)	0.5-2.1 (1.6)	0.5-2.1 (1.5)	0.5-2.1 (1.6)	0.5-3.2 (1.6)	0.5-3.2 (1.5)	0.5-3.6 (1.8)	0.5-4.6 (1.8)
Phaeophytin (mg/m <sup>3</sup> )	0.01-5.1 (1.8)	0.01-3.9 (1.2)	0.2-4.2 (1.5)	0.2-2.1 (1.2)	0.1-1.4 (0.8)	1.3-1.6 (1.5)	0.1-4.2 (1.3)	0.1-1.9 (0.9)	0.1-1.9 (0.9)	0.1-4.2 (1.3)	0.4-8.0 (2.9)	0.1-4.9 (1.6)	0.1-2.0 (0.8)	0.1-2.0 (0.8)
Cell Count (no X 10 <sup>3</sup> /l)	4.5-169.9 (40.2)	1.8-90.1 (31.1)	391-1659 (809)	181.2-792 (520)	20.5-29.9 (25.2)	19.2-34.5 (26.9)	4.5-50.0 (28.7)	4.0-34.5 (21.2)	4.0-34.5 (21.2)	4.0-34.5 (21.2)	--	--	--	--
Total Genera (no.)	4-15 (8)	2-14 (7)	7-16 (11)	7-12 (9)	9-9 (9)	5-13 (9)	5-8 (6)	3-10 (6)	3-10 (6)	3-10 (6)	--	--	--	--

Table 5.3.3- Range and average of zooplankton biomass, population and total groups recorded at different creeks in the Gulf of Kachchh

Parameters	Kandla creek		Nakti creek		Sara creek		Phang creek		Chach creek		Chotta Kuttathuki		Hansthal creek	
	S	B	S	B	S	B	S	B	S	B	S	B	S	B
Biomass (ml/100m <sup>3</sup> )	0.5-163.7 (37.4)	0.5-163.7 (37.4)	1.6-71.9 (19.9)	1.6-71.9 (19.9)	4.3-13.9 (9.1)	4.3-13.9 (9.1)	2.3-78.7 (15.2)	2.3-78.7 (15.2)	2.0-185.5 (40.7)	2.0-185.5 (40.7)	0.6-39.6 (8.6)	0.6-39.6 (8.6)	5.4-95.0 (30.4)	5.4-95.0 (30.4)
Population (no.X 10 <sup>3</sup> /100m <sup>3</sup> )	0.9-217.6 (22.6)	0.9-217.6 (22.6)	19.8-189.2 (89.3)	19.8-189.2 (89.3)	24.8-38.4 (31.6)	24.8-38.4 (31.6)	1.6-37.9 (18.4)	1.6-37.9 (18.4)	0.5-381.7 (50.2)	0.5-381.7 (50.2)	0.5-81.7 (19.1)	0.5-81.7 (19.1)	0.3-37.9 (13.7)	0.3-37.9 (13.7)
Total groups (no.)	5-10 (9)	5-10 (9)	6-10 (9)	6-10 (9)	8-11 (10)	8-11 (10)	4-11 (7)	4-11 (7)	4-11 (7)	4-11 (7)	--	--	--	--

Table 5.3.4 – Range and average of intertidal macrobenthic biomass, population and total groups recorded at different zones in the Gulf of Kachchh

Parameters	Kandla creek	Nakti creek	Sara creek	Phang creek	Chach creek	Chotta Kuttathuki	Hansthal creek
Biomass (wet wt.gm/m <sup>2</sup> )	0.02-112.3 (5.8)	0.01-0.5 (0.3)	-	-	-	-	-
Population (no./m <sup>2</sup> )	0-4774 (759)	11-44 (24)	-	-	-	-	-
Total groups (no.)	4-12 (9)	3-4 (3)	-	-	-	-	-

Table 5.3.5 – Range and average of subtidal macrobenthic biomass, population and total groups recorded at different zones in the Gulf of Kachchh

Parameters	Kandla creek	Nakti creek	Sara creek	Phang creek	Chach creek	Chotta Kuttathuki	Hansthal creek
Biomass (wet wt.gm/m <sup>2</sup> )	0-9.8 (0.9)	0.2-2.2 (0.9)	3.2 (3.2)	0.002-0.8 (0.5)	0.01-0.4 (0.13)	0.01-0.05 (0.02)	0.04-0.1 (0.08)
Population (no./m <sup>2</sup> )	0-2601 (413)	63-315 (151)	1876 (1876)	6-415 (133)	12-276 (91)	6-60 (26)	14-72 (49)
Total groups (no.)	0-8 (3)	2-6 (4)	4 (4)	1-6 (2)	2 (2)	1-2 (1)	2 (2)

Table 5.3.6 – Range and average of trawl and gill net catch rates at different zones in the Gulf of Kachchh

Parameters	Kandla creek		Nakti creek		Sara creek	
	Trawl catch	Gill net catch	Trawl catch	Gill net catch	Trawl catch	Gill net catch
Fish catch (kg/h)	1.1-13.1 (6.2)	0.6-1.2 (0.9)	4.4 (4.4)	--	--	--
Total species (no.)	10-20 (14)	2-8 (5)	3 (3)	--	--	--
Fishes	2-8 (4)	--	3 (3)	--	--	--
Prawns	1-7 (4)	--	--	--	--	--
Others						

Parameters	Phang creek		Chach creek		Hansthal creek	
	Trawl catch	Gill net catch	Trawl catch	Gill net catch	Trawl catch	Gill net catch
Fish catch (kg/h)	0.7-1.3 (0.9)	0.2-0.4 (0.3)	0.4-9.9 (3.8)	0.1-1.5 (0.7)	1.6-12.7 (5.7)	0.5-1.3 (0.9)
Total species (no.)	2-4 (3)	2-3 (2)	7-13 (9)	1-5 (2)	12-17 (14)	3-6 (5)
Fishes	2-4 (3)	--	2-3 (2)	--	2-5 (4)	--
Prawns	2-4 (3)	--	2-3 (2)	--	2-5 (4)	--
Others	1-2 (1)	--	1-2 (1)	--	2-4 (3)	--

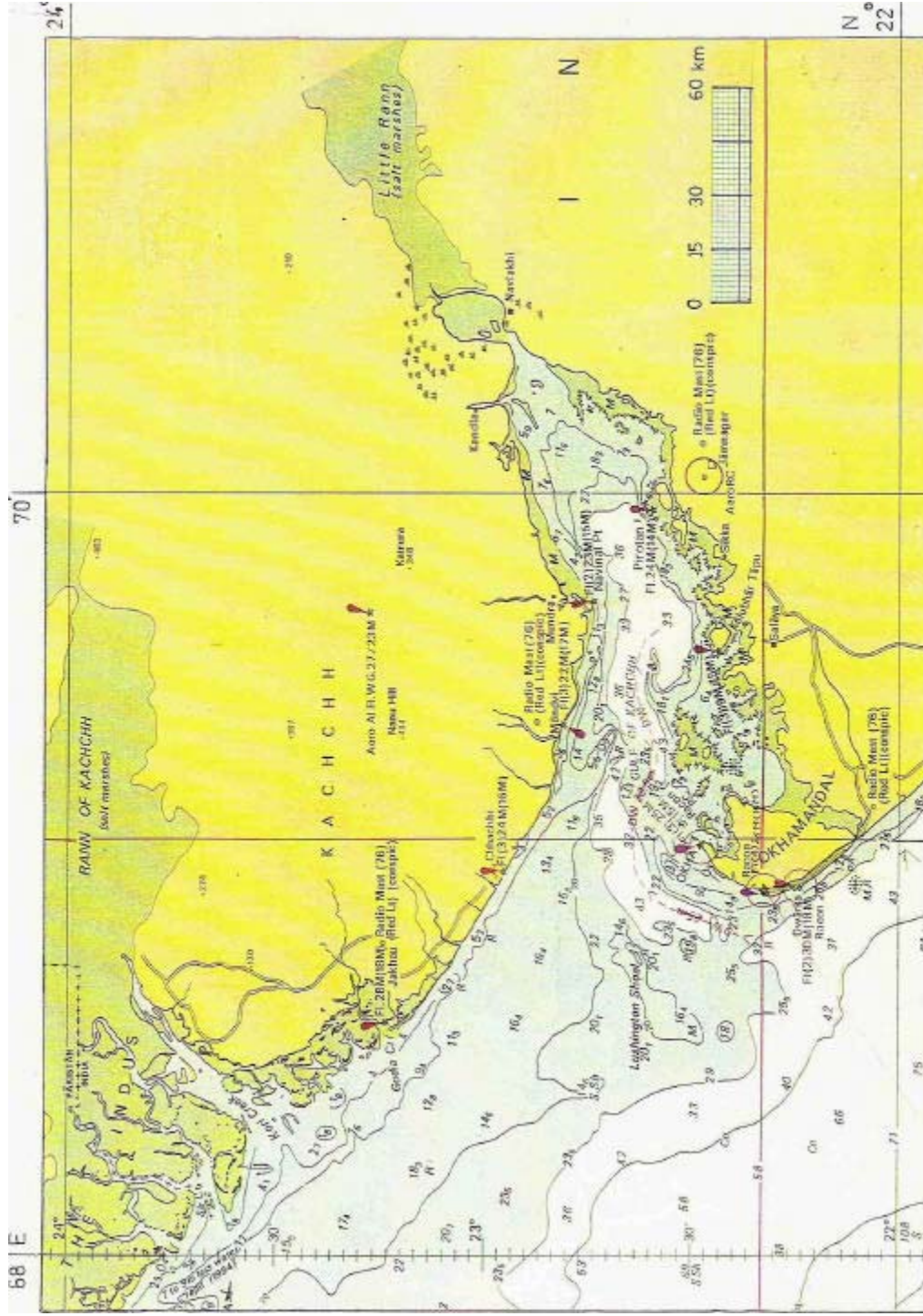


Figure 2.1.1 : Gulf of Kachchh and surrounding region

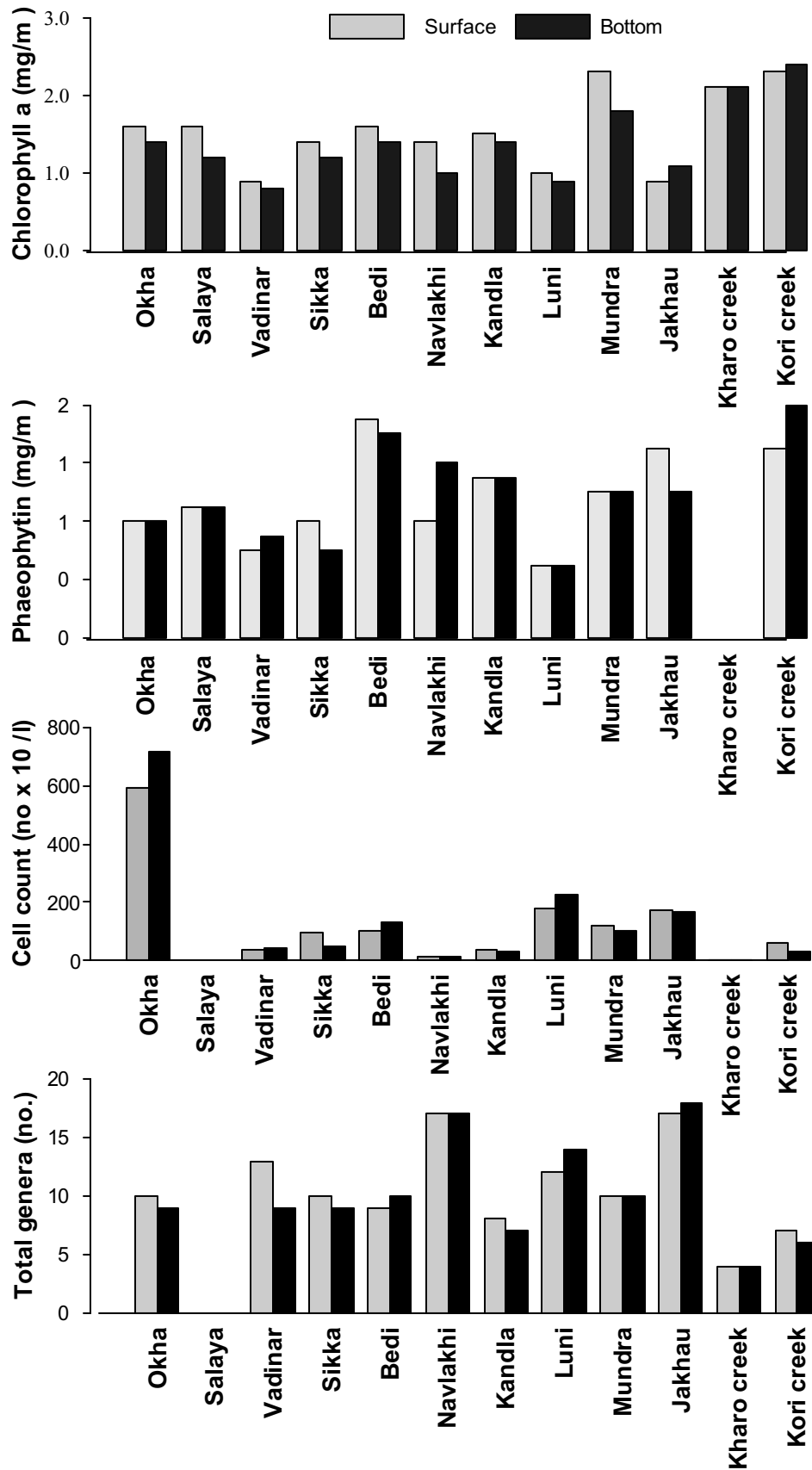
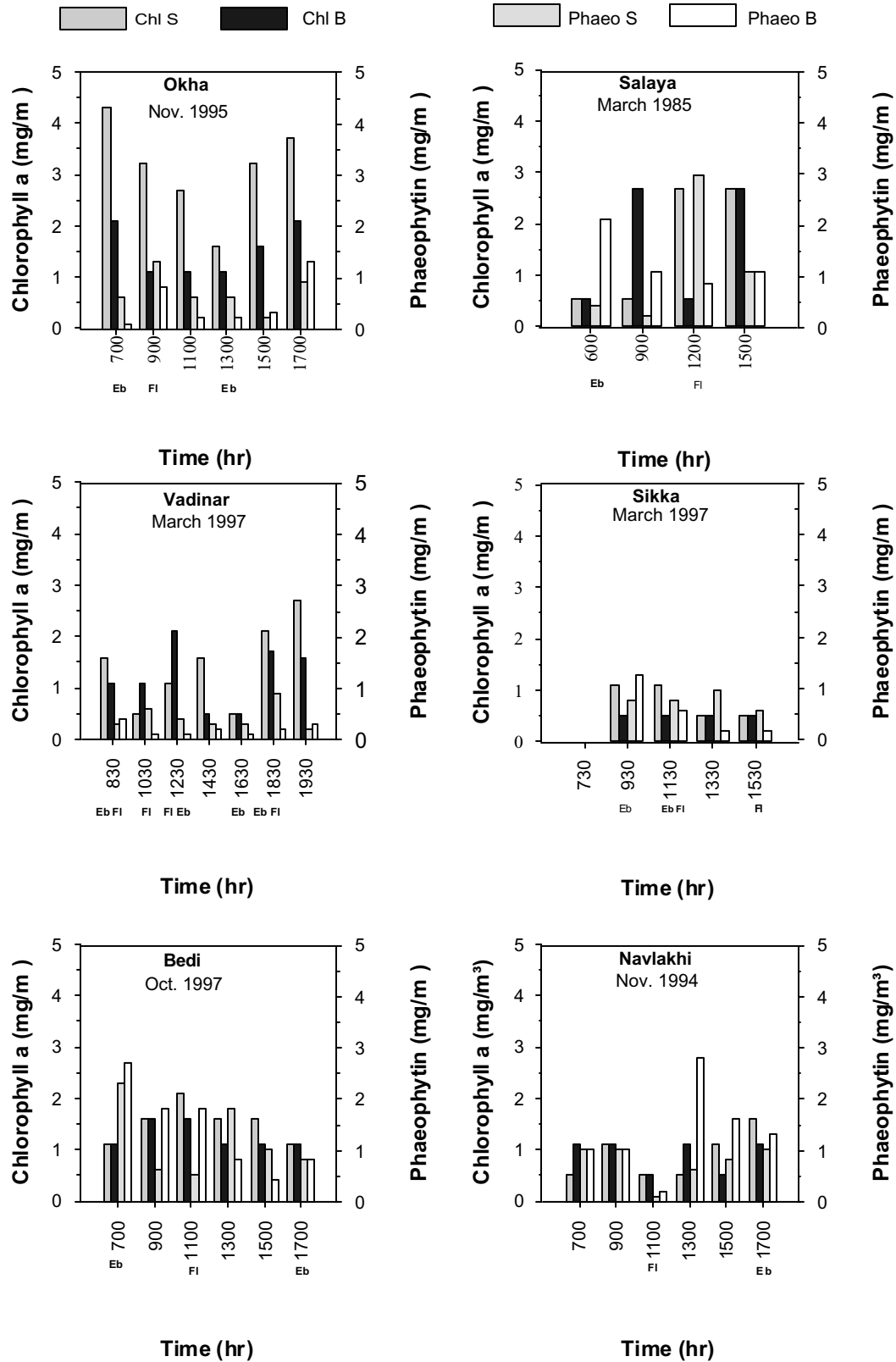
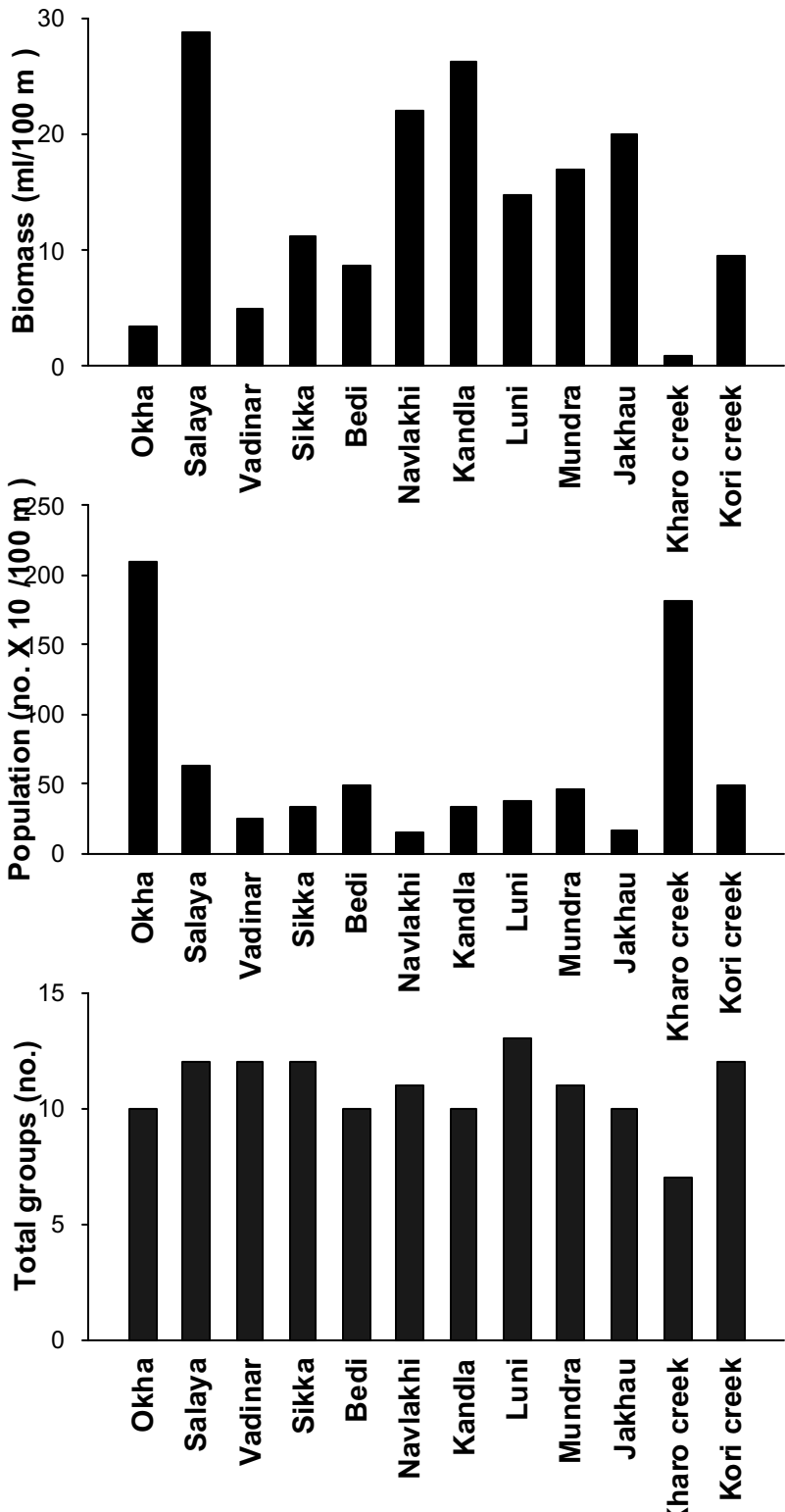


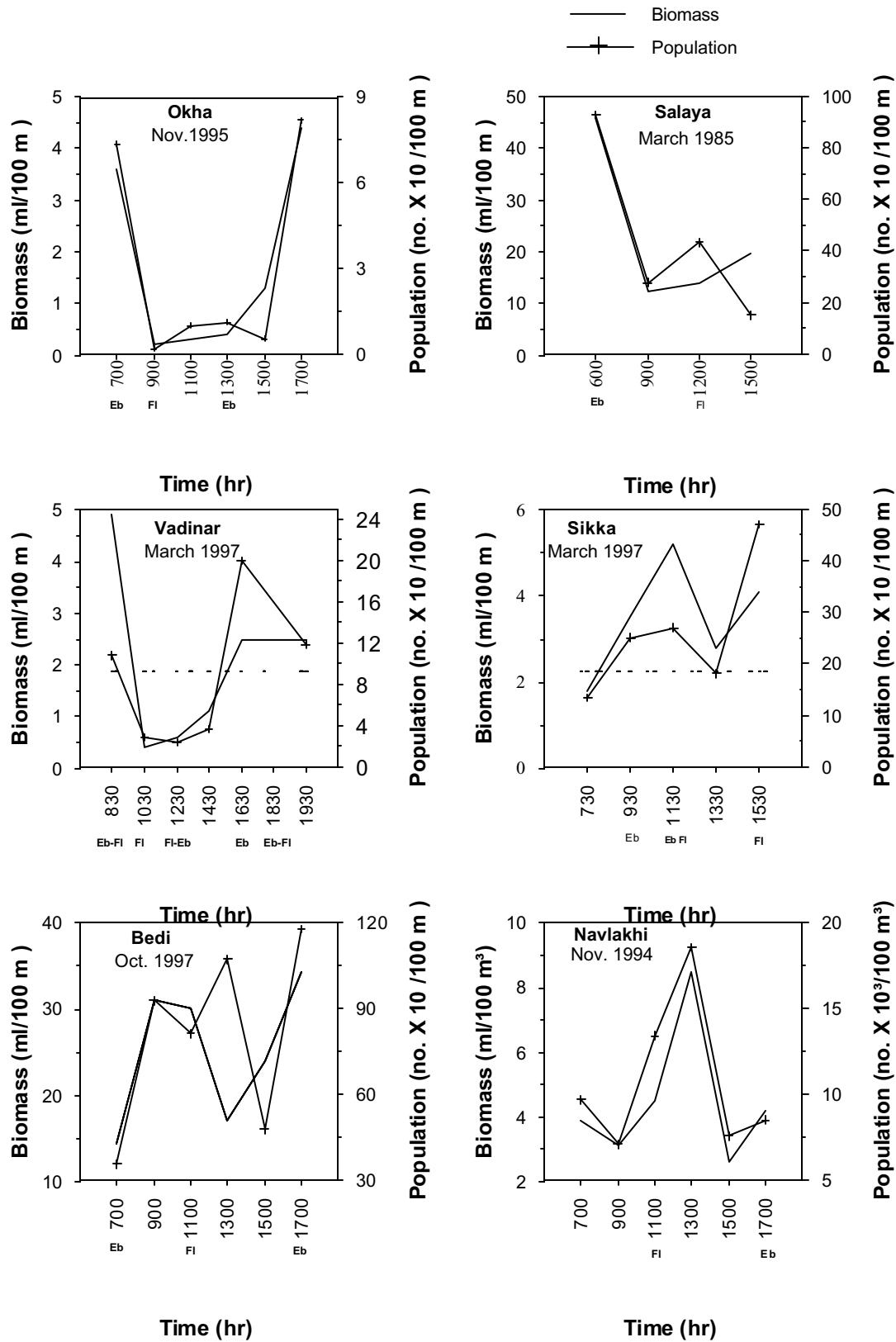
Fig. 5.1.1 - Average values of phytoplankton pigments, cell count and total genera at different segments of the Gulf



**Fig. 5.1.2 - Temporal variation in phytoplankton pigments at different segments of the southern Gulf**

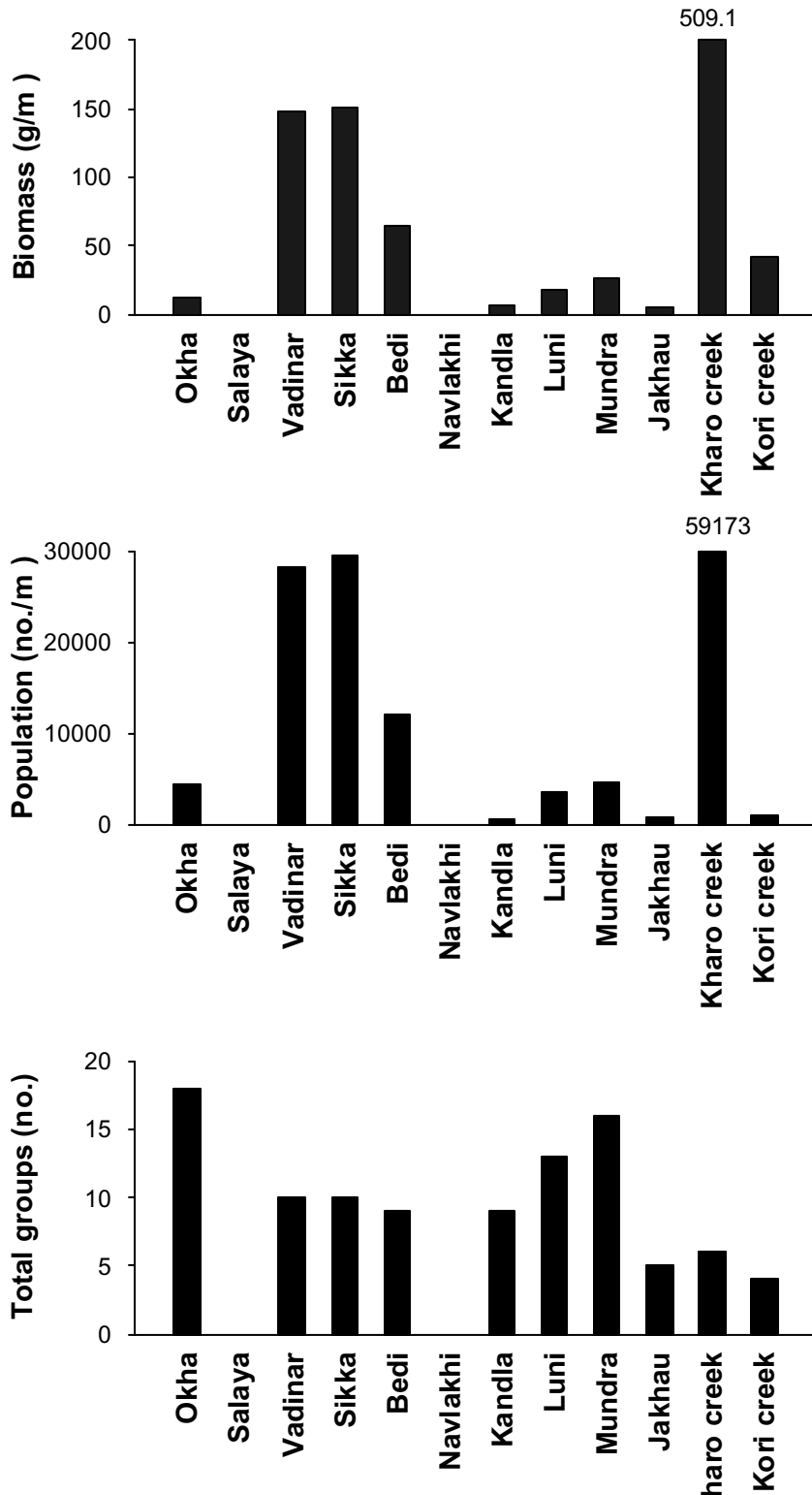


**Fig. 5.1.3 - Average values of zooplankton standing stock and total groups at different segments of the Gulf**

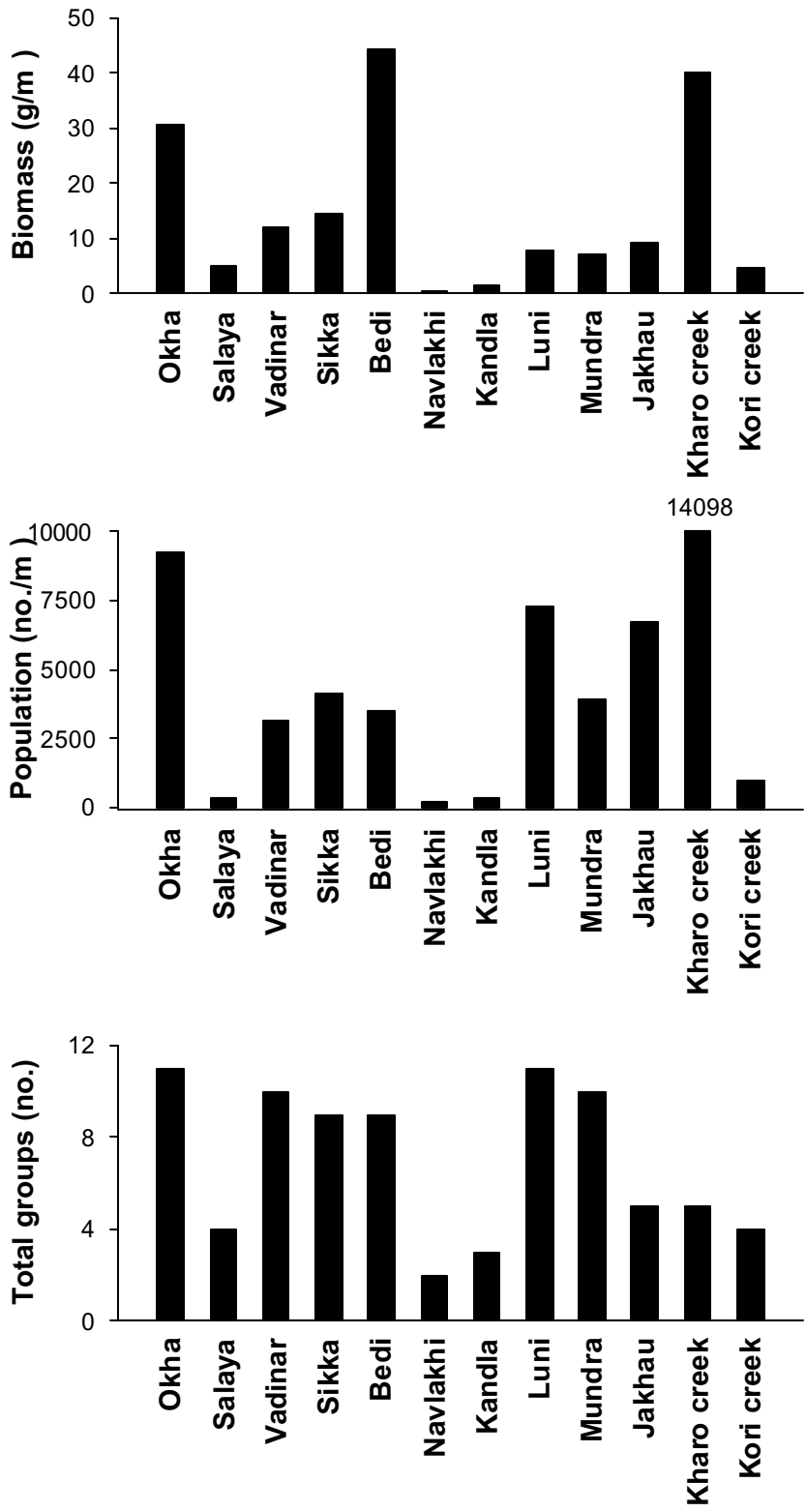


**Fig. 5.1.4 - Temporal variation in zooplankton standing stock at different segments of the southern Gulf**

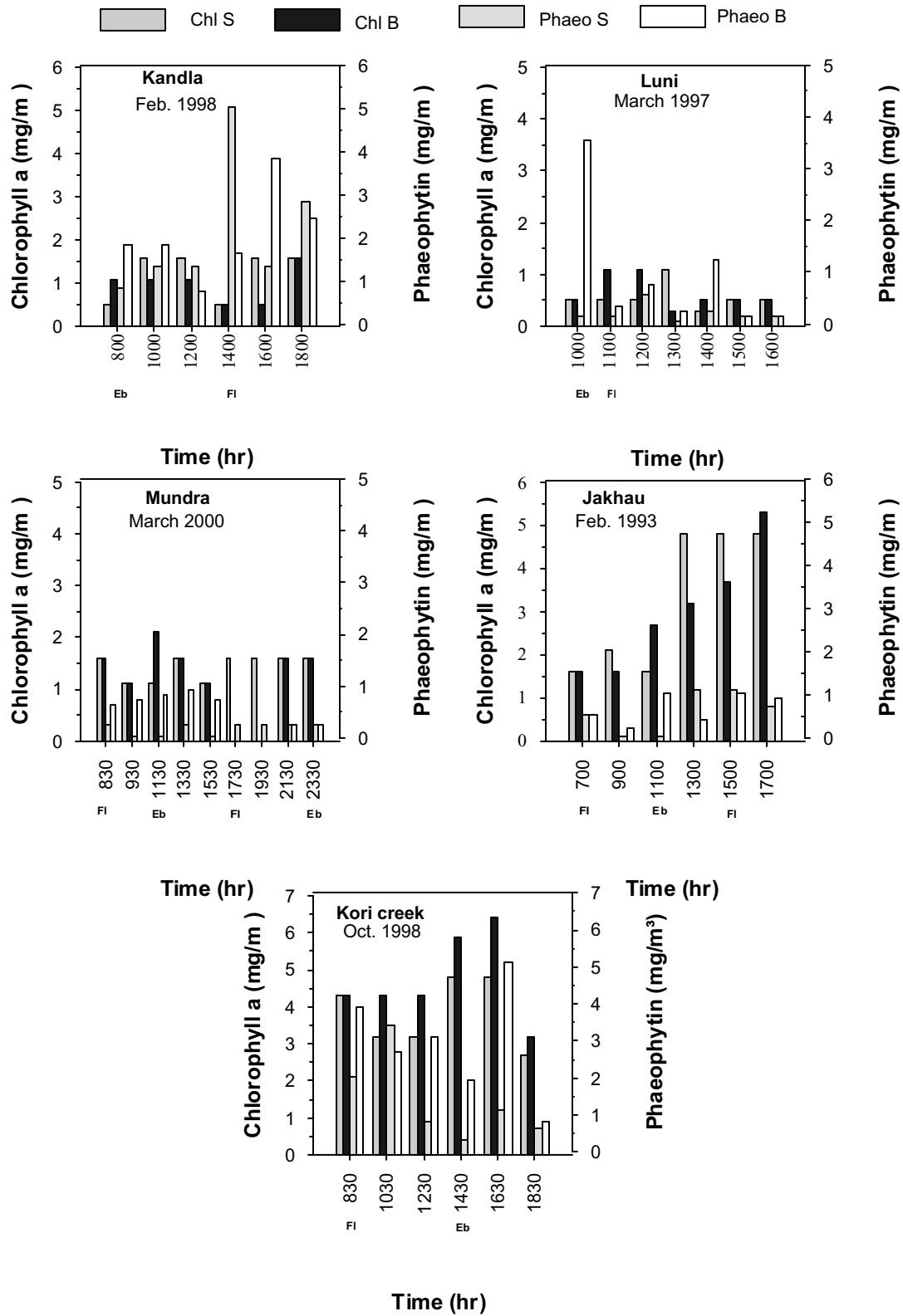




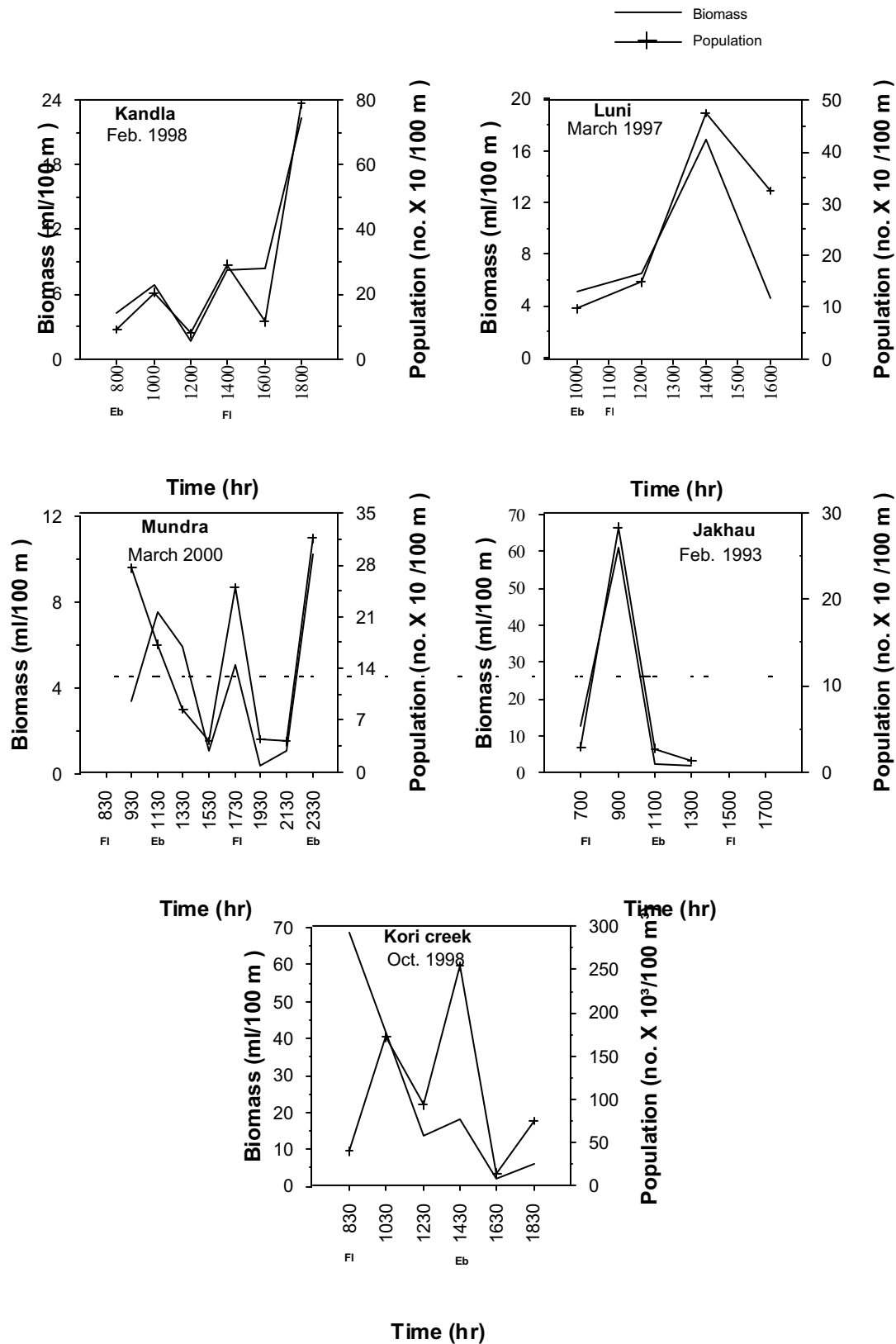
**Fig. 5.1.5 - Average values of intertidal macrobenthic standing stock and total groups at different segments of the Gulf**



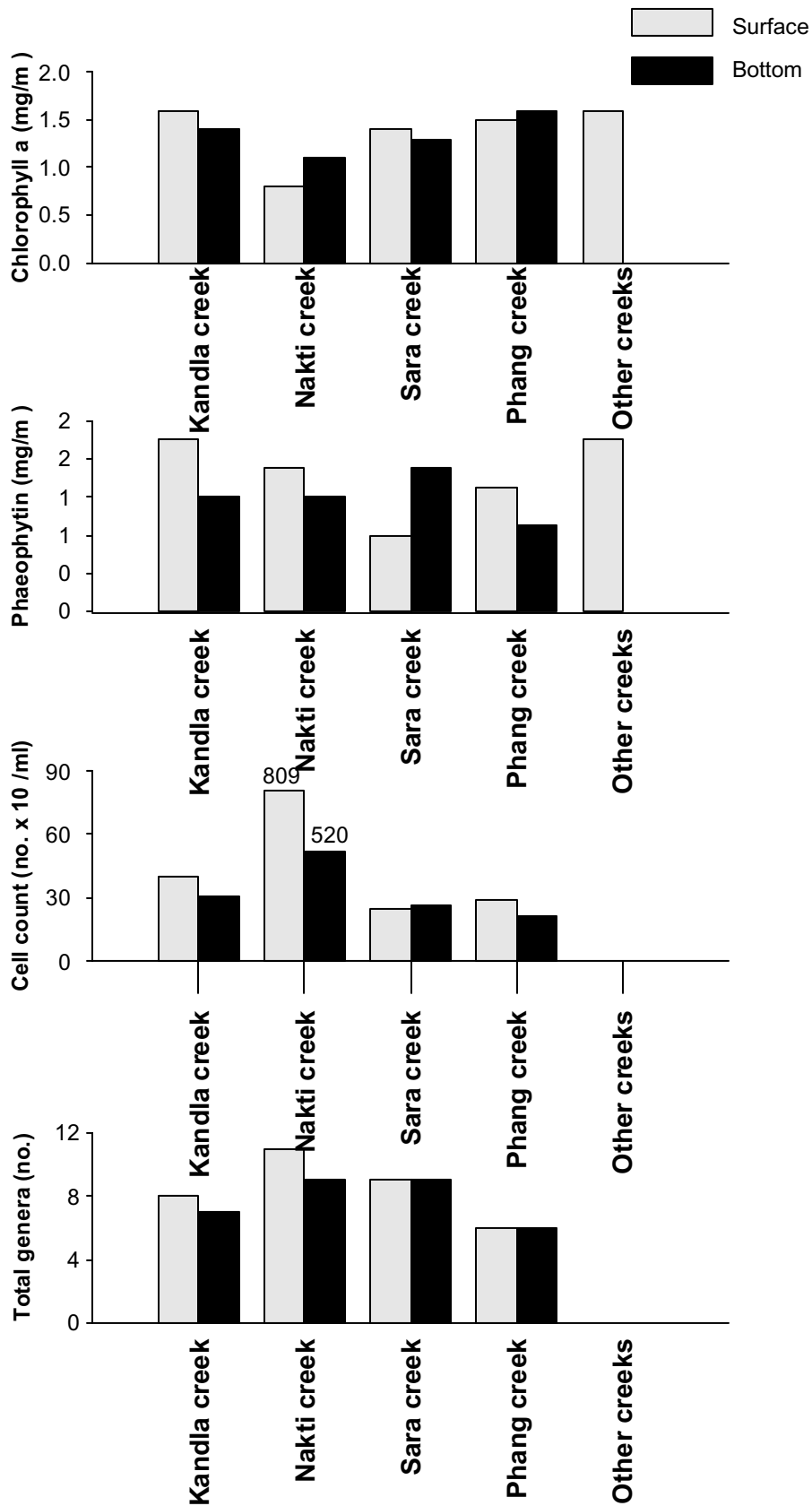
**Fig. 5.1.6 - Average values of subtidal macrobenthic standing stock and total groups at different segments of the Gulf**



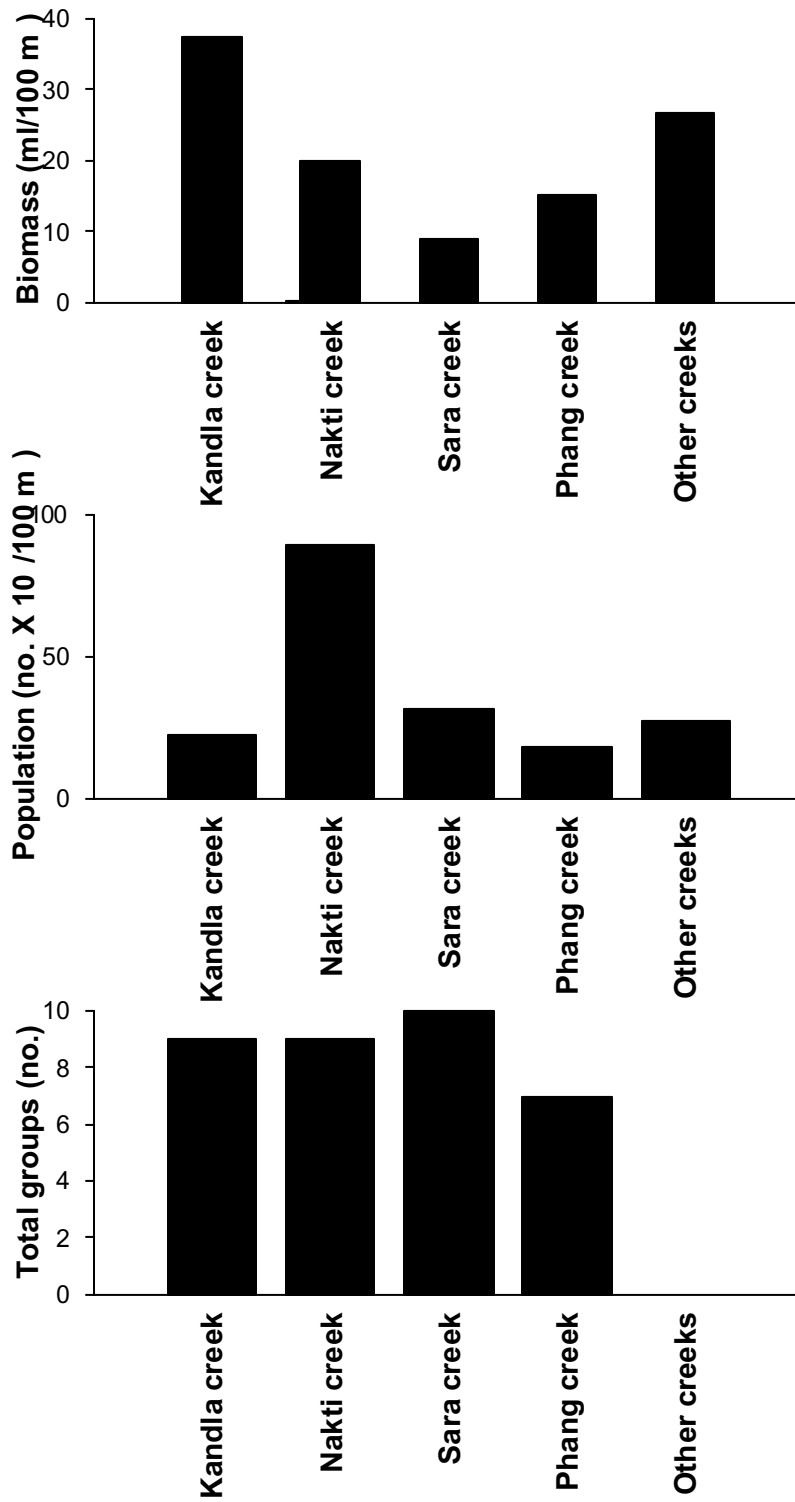
**Fig. 5.1.7 - Temporal variation in phytoplankton pigments at different segments of the northern Gulf**



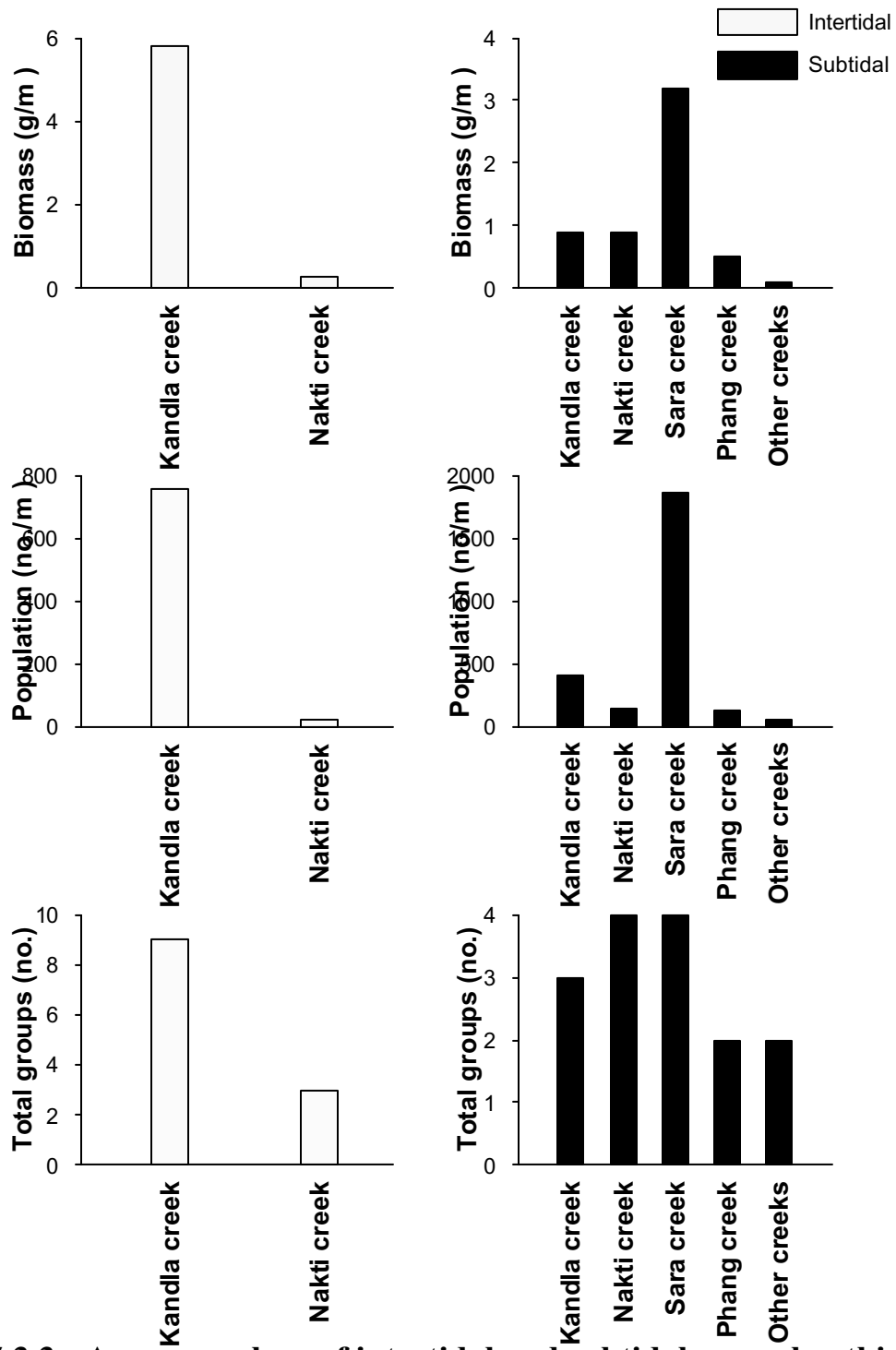
**Fig. 5.1.8 - Temporal variation in zooplankton standing stock at different segments of the northern Gulf**



**Figure 5.3.1 - Average values of phytoplankton pigments, cell count and total genera at different creeks in the Gulf**



**Fig. 5.3.2 - Average values of zooplankton standing stock and total groups at different creeks in the Gulf**



**Fig. 5.3.3 - Average values of intertidal and subtidal macrobenthic standing stock and total groups at different creeks in the Gulf**