

Species : *Synodus sechurae*

Date	Net No.	M/M	Length (cm)													No. of S.	T. Weight of S.	
			15	16	17	18	19	20	21	22	23	24	25	26				
'88	7/29	II	145	FL	2	2	4	5	6	4	6	5	3	2	1		40	2.5(kg)

Species : *Illex sp.*

Date	Net No.	M/M	Length (cm)												No. of S.	T. Weight of S.		
			1	2	3	4	5	6	7	8	9	10	11	12				
'88	9/7	II	214	ML					2	10	22	14	2				50	0.7(kg)

Species : *Epinopelus nigritus*

Date	Net No.	M/M	Length (cm)												No. of S.	T. Weight of S.		
			50	55	60	65	70	75	80	85	90	95	100	105				
'88	6/30	II	62	TL			1	3	1	11	14	16	5	4	9		65	689(kg)

Species : Hippoglossina tetraphthalmus

Date	Net No.	M/M	Length (cm)																	No. of S.	T. Weight of S.														
			15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			32	33	34	35	36	37	38	39	40	41	42	43	44	
'88	1/7	130						1	1	1	1	1	2	2	1	3	10	10	3	5	3	3	1	1	1									50	13.0 (kg)
	2/27	337								1							1	1			1	1	2										7	2.3	
'88	9/24	II 274	TL					2	1	1	1	1	1	1	5	17	13	8	6	1	1												56	11.8	

Species : Cyclosetta panamensis

Date	Net No.	M/M	Length (cm)																	No. of S.	T. Weight of S.													
			18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34			35	36	37	38	39	40	41	42	43	44	45	46	47
'88	1/6	128	TL									1			5	3	3	4	2	1				1									20	6.5 (kg)
'88	6/25	II 36	TL			1										2	2		1							1							8	2.9

Species : Pontinus sierna

Date	Net No.	M/M	Length (cm)																																	No. of S.	T. Weight of S.
			4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33					
'87	11/19	69	TL					2	9	9	9	1	1																					41	0.72 (kg)		
	12/7	97	"			1	2	6	10	19	17	20	5	4	1	1																		87	2.7		
	21	124	"							19	21	9		1																				50	0.9		
'88	2/10	270	"							10	22	13	4																					50	0.98		
	31	273	"			2				3	15	18	10	2																				50	0.9		
	3/2	347	"				1	3	4	5	5	3	2	2																				35	1.7		
'88	6/15	II 15	TL							18	14	13	7																					52	1.1		
	6/16	21	"					1	7	15	15	7	5	6	1	6	2	2	1															71	3.0		
	6/28	52	"					3	8	12	8	4	2	1																				40	1.05		
	7/2	77	"				1	1	3	15	12	15	8	3	1	1																		64	1.8		
	7/16	104	"					1	10	10	11	3	4		4	2	1	1																47	1.3		
	8/1	161	"					9	26	26	9	3	2	1	3	2	3																	84	2.6		
	9/8	219	"				1	4	19	8	2	4	1	3	1	1																		44	1.2		
	9/10	229	"					3	11	7	11	4	2	2	2	1	3																	50	2.2		
	9/11	235	"					2	5	3	1	1	2																					15	0.7		
	9/26	288	"				1	1	4	13	7	7	5	6	5	1																		50	1.5		
	9/28	305	"							3	2	2	2	2	7	6	3	4	6	1	4	2	1											50	4.5		

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1987

Surries No. of Net	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Survey Area	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Survey Date	Nov.7	Nov.7	Nov.7	Nov.7	Nov.7	Nov.8	Nov.8	Nov.8	Nov.8	Nov.8	Nov.8	Nov.9	Nov.9	Nov.9	Nov.9	Nov.9	Nov.9
Position	lat. (N)	9-31.9	9-36.9	9-38.4	9-42.3	9-44.2	9-43.7	9-46.3	9-48.4	9-43.2	9-46.4	9-49.7	9-55.9	9-54.9	9-59.4	10-02.8	10-04.1
of Start	long. (W)	85-10.7	85-08.4	85-14.2	85-19.1	85-22.7	85-25.5	85-29.6	85-30.0	85-28.4	85-36.0	85-33.5	85-45.0	85-44.8	85-48.7	85-47.4	85-48.2
Time of Start (LST)	09-29	10-38	12-54	14-20	15-45	07-29	08-50	10-15	11-30	13-30	15-43	07-45	10-18	11-46	13-32	14-47	15-55
Depth of Start (m)	71	85	68	88	60	62	90	95	63	121	104	78	90	104	83	99	65
Position	lat. (N)	9-32.6	9-38.0	9-39.0	9-43.3	9-45.9	9-44.5	9-47.4	9-48.5	9-44.2	9-45.5	9-49.7	9-54.6	9-56.2	10-00.5	10-01.4	10-05.4
of Finish	long (W)	85-09.1	85-09.9	85-15.3	85-20.5	85-24.5	85-27.0	85-30.8	85-28.5	85-29.5	85-35.2	85-35.0	85-44.0	85-45.5	85-47.5	85-46.8	85-49.0
Time of Finish (LST)	09-59	11-08	13-24	14-50	16-15	07-59	09-20	10-45	12-00	14-00	16-13	08-15	10-48	12-46	15-02	15-17	16-25
Depth of Finish (m)	75	90	69	86	58	62	88	87	59	115	105	92	87	101	84	72	67
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.8	3.4	3.2	3.0	3.2	3.1	3.2	3.0	3.0	3.0	3.0	3.0	3.2	3.0	3.0	3.0	3.4
Towing Direction	120	290	320	290	315	305		315	85	325	135	280	140	330	140	130	330
Length of Warp (m)	280	400	400	450	350	350	450	450	350	500	450	350	400	500	400	350	300
Wing Spread (m)			12	15	14				14						13	10	
State of Haul	Void	Void	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	B	B	B	B	C	B	BC	BC	C	BC	BC	C	B	BC	C	BC	BC
Wind Direction	N	N	S	S	S	-	N	S	S	S	SW	NW	SE	SE	SW	SE	SW
Wind Force	1	2	3	3	1	-	1	1	2	2	1	1	2	3	3	4	2
Atmosph.Pressure (mb)	1019	1019	1017	1016	1016	1016	1018	1019	1017	1016	1015	1017	1018	1017	1016	1015	1015
Air Temperature (°C)	31.0	31.0	30.0	30.0	31.0	28.5	31.0	29.5	30.0	30.0	30.0	28.5	32.0	31.5	31.0	30.0	30.0
Surface WaterTemp (°C)	28.8	29.0	29.3	29.2	29.2	28.8	28.8	29.0	29.2	29.2	28.3	28.6	28.7	29.1	29.4	29.2	29.2
Bottom materials			M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction	SE																NW
Total Catches (kg)	0	0	15.6	2.2	14.9	72.4	4.7	9.4	109.4	19.0	8.2	8.5	8.2	7.5	8.8	7.0	12.9
Remarks																	

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1987

Series No. of Net	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Survey Area	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1
Survey Date	Nov.10	Nov.10	Nov.10	Nov.10	Nov.10	Nov.10	Nov.11	Nov.11	Nov.11	Nov.11	Nov.11	Nov.13	Nov.13	Nov.13	Nov.13	Nov.13	Nov.13
Position lat. (N)	10-06.1	10-04.5	10-10.6	10-10.0	10-11.0	10-09.1	10-22.4	10-20.5	10-24.2	10-27.4	10-26.2	10-46.0	10-45.5	10-42.7	10-39.7	10-40.7	10-44.6
of Start long. (W)	85-50.8	85-52.3	85-54.1	85-52.7	85-53.1	85-53.3	85-59.2	85-57.5	85-56.0	85-59.1	86-08.9	85-49.1	85-46.7	85-44.8	85-44.6	85-46.3	85-51.9
Time of Start (LST)	07-15	08-38	10-59	12-33	14-10	15-37	08-52	10-31	11-49	13-15	15-21	07-35	08-52	10-10	12-55	14-30	15-54
Depth of Start (m)	84	125	87	75	72	90	94	72	70	88	134	65	59	57	60	66	78
Position lat. (N)	10-04.9	10-04.7	10-09.0	10-11.3	10-09.7	10-10.4	10-20.8	10-22.2	10-25.6	10-26.4		10-45.2	10-43.8	10-44.1	10-41.2	10-42.1	10-46.4
of Finish long (W)	85-49.9	85-52.4	85-53.8	85-52.1	85-52.1	85-54.1	85-59.1	85-57.9	85-56.2	85-58.1		85-47.8	85-46.7	85-44.1	85-44.6	85-47.2	85-51.8
Time of Finish (LST)	07-45	08-44	11-29	13-03	14-40	16-07	09-22	11-01	12-19	13-35		08-05	09-22	10-40	13-25	15-00	16-24
Depth of Finish (m)	80	125	95	72	71	90	84	75	71	84		64	60	51	59	67	76
Towing Time (min)	30	6	30	30	30	30	30	30	30	30	0	30	30	30	30	30	30
Towing speed (knot)	3.2	-	3.4	3.0	3.2	3.0	3.4	3.2	2.9	3.0		3.0	3.2	3.2	3.0	3.2	3.4
Towing Direction			170	330	145	330	155	345	355	140		135	185	20	0	330	5
Length of Warp (m)	450	500	400	350	400	500	500	400	350	500		300	300	300	300	300	400
Wing Spread (m)			14		11	10	11	10	12	9		12	14	13	13	14	14
State of Haul	Normal	Tear	Void	Void	Normal	Normal	Normal	Normal	Normal	Normal	Tear	Normal	Normal	Normal	Normal	Normal	Normal
Weather	B	B	BC	C	BC	B	B	B	B	BC	BC	C	BC	BC	C	BC	BC
Wind Direction	N	N	N	N	N	S	NE	N	NE	NE	NE	NNE	NNE	NE	NNE	NE	NE
Wind Force	3	3	2	5	4	2	5	5	4	4	4	4	3	5	5	5	5
Atmosph. Pressure (mb)	1017	1017	1017	1016	1015	1014	1017	1017	1016	1015	1014	1015	1015	1015	1015	1015	1015
Air Temperature (°C)	28.0	31.0	31.5	31.5	31.0	30.0	30.0	30.5	33.0	31.0	30.0	29.0	29.5	29.5	29.5	32.0	30.0
Surface WaterTemp (°C)	28.8	29.0	29.1	29.0	29.0	29.3	28.4	29.0	28.8	-	-	27.9	25.7	25.1	27.3	26.8	26.4
Bottom materials	M			M	M	M	M	M	M	M		M	M	M	M	M	M
Current Direction	NW	NW															
Total Catches (kg)	14.2	21.8	0	0	18.0	22.0	37.1	2.7	3.9	5.4	0	10.9	8.4	9.8	3.9	4.5	8.8
Remarks																	

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1987

Series No. of Net	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
Survey Area	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Survey Date	Nov.13	Nov.14	Nov.14	Nov.14	Nov.14	Nov.14	Nov.15	Nov.15	Nov.15	Nov.15	Nov.15	Nov.15	Nov.15	Nov.16	Nov.16	Nov.16	Nov.16
Position	(N) 10-47.0	10-49.6	10-55.1	10-58.6	10-59.8	11-00.0	10-44.7	10-45.1	10-44.0	10-46.5	10-45.2	10-46.3	10-45.2	10-49.3	10-48.2	10-50.5	10-51.8
of Start	(W) 85-54.7	85-56.7	85-58.4	85-57.2	85-53.7	85-59.6	85-57.8	85-59.0	86-01.3	86-05.7	86-07.7	86-11.0	85-58.0	86-01.2	86-02.5	86-08.5	86-11.2
Time of Start (LST)	17-14	08-16	10-45	12-02	13-48	16-33	07-34	08-48	10-08	11-48	13-10	14-27	17-45	07-14	08-55	10-18	11-29
Depth of Start (m)	87	94	100	99	90	104	112	126	140	160	181	195	108	120	135	162	182
Position	(N) 10-45.2	10-48.4	10-56.6	11-00.1	10-59.7	10-58.7	10-46.2	10-43.5	10-45.4	10-44.8	10-46.7	10-44.7	10-46.8	10-48.0	10-49.1	10-48.9	10-52.0
of Finish	(W) 85-55.0	85-55.3	85-58.3	85-56.4	85-52.0	86-00.9	85-58.0	85-59.1	86-01.8	86-06.0	86-08.4	86-11.6	85-58.0	86-01.5	86-04.0	86-09.5	86-12.9
Time of Finish (LST)	17-44	08-46	11-15	12-32	14-18	17-03	08-04	09-18	10-38	12-18	13-40	14-57	18-15	08-11	09-25	10-48	11-59
Depth of Finish (m)	92	91	97	98	85	108	103	129	143	168	181	200	102	130	136	172	187
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot.)	3.4	3.2	2.8	3.4	3.6	3.4	3.8	3.0	3.0	3.0	3.2	3.2	3.2	3.2	3.4	3.4	3.4
Towing Direction	185	125	5	30	95	225	355	190	340	195	330	200	0	190	305	210	290
Length of Warp (m)	400	400	400	400	400	400	450	500	500	500	600	600	450	500	500	600	600
Wing Spread (m)	12	12	13	13	15	15	15	9	15	14	12	10	12	12	11	12	11
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	C	C	C	C	C	C	BC	BC	BC	BC	BC	BC	C	BC	BC	BC	BC
Wind Direction	NE	N	NE	NE	NE	NE	NE	NE	NE	NNE	NNE	NNE	ENE	ENE	ENE	ENE	ENE
Wind Force	3	4	5	5	3	4	4	4	5	5	6	5	5	5	5	5	5
Atmosph. Pressure (mb)	1015	1017	1018	1017	1016	1015	1016	1017	1017	1016	1015	1014	1015	1015	1017	1016	1016
Air Temperature (°C)	28.5	28.0	30.5	29.0	30.0	28.0	28.0	29.0	31.0	30.0	30.0	29.0	29.0	28.5	27.0	29.0	30.0
Surface Water Temp (°C)	26.8	26.8	27.0	27.1	26.2	27.0	27.0	27.2	27.3	27.4	27.5	27.5	28.0	28.1	28.3	28.2	28.2
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction																	
Total Catches (kg)	44.6	23.5	21.3	36.3	146.9	46.0	16.0	487.5	82.0	63.6	7.8	495.5	21.7	657.0	44.6	31.3	12.5
Remarks																	

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Recording Data of Trawling Research Survey by Misshinmaru No.201, 1987

Series No. of Net	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
Survey Area	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Survey Date	Nov.16	Nov.16	Nov.16	Nov.17	Nov.17	Nov.17	Nov.17	Nov.17	Nov.17	Nov.17	Nov.18	Nov.18	Nov.18	Nov.18	Nov.18	Nov.18	Nov.19
Position	(N) 10-52.0	10-50.5	10-50.2	10-56.4	10-55.5	10-53.7	10-56.5	10-55.0	10-56.3	10-41.0	10-39.3	10-41.0	10-42.3	10-39.2	10-48.8	10-40.0	10-40.7
of Start	(W) 86-15.4	86-19.0	86-23.6	86-03.2	86-06.0	86-10.0	86-16.8	86-21.0	86-29.0	85-52.0	85-54.3	85-58.6	86-00.8	86-02.3	86-03.5	86-04.9	86-07.8
Time of Start (LST)	12-36	13-42	14-50	07-42	08-48	10-17	11-55	13-13	14-54	08-00	09-10	11-03	12-14	13-43	14-50	16-00	07-55
Depth of Start (m)	190	197	196	127	148	175	182	190	188	81	87	120	127	149	150	158	185
Position	(N) 10-51.3	10-50.5	10-50.2	10-56.2	10-54.2	10-54.2	10-55.5	10-54.4	-	10-39.6	10-41.3	10-42.2	10-40.9	10-41.0	10-39.1	10-41.8	10-39.9
of Finish	(W) 86-16.7	86-20.7	86-25.3	86-04.6	86-05.2	86-11.8	86-18.6	86-22.8	-	85-52.3	85-54.0	85-59.9	86-01.0	86-03.0	86-03.7	86-05.4	86-09.0
Time of Finish (LST)	13-06	14-12	15-20	08-12	09-18	10-47	12-25	13-43	15-00	08-30	09-40	11-33	12-44	14-13	15-20	16-30	08-25
Depth of Finish (m)	197	198	195	139	145	178	189	190	188	81	87	120	127	149	140	165	198
Towing Time (min)	30	30	30	30	30	30	30	30	6	30	30	30	30	30	30	30	30
Towing speed (knot)	3.4	3.4	3.4	2.8	2.8	3.4	3.4	3.4	-	2.8	4.0	3.4	3.0	4.0	3.4	3.4	3.0
Towing Direction	250	270	270	-	150	285	250	250	-	195	5	315	190	340	190	345	235
Length of Warp (m)	600	700	700	500	470	600	600	680	700	400	400	450	480	500	600	600	700
Wing Spread (m)	12	8	14	11	11	10	11	9	-	13	-	11	9	7	11	-	10
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Void	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	BC	BC	BC	B	BC	B	BC	BC	B	BC	BC	BC	C	BC	BC	BC	BC
Wind Direction	NNE	NNE	NNE	ESE	NE	NE	NNE	NNE	NNE	NE	NE	NE	NE	NE	NE	NE	NE
Wind Force	4	3	4	5	5	5	5	4	3	4	4	5	5	5	5	5	5
Atmosph. Pressure (mb)	1015	1015	1014	1017	1015	1016	1015	1015	1014	1016	1018	1018	1017	1015	1015	1015	1017
Air Temperature (°C)	28.8	30.0	28.3	28.0	28.8	30.0	30.2	31.5	30.0	29.5	31.0	30.0	29.5	30.5	30.0	32.0	30.0
Surface WaterTemp (°C)	27.8	27.9	27.8	28.2	28.2	28.3	28.1	28.0	28.2	28.5	28.5	29.0	29.0	29.1	29.0	29.1	28.8
Bottom materials			M	M	M	M	M	M				M					M
Current Direction				NW	NW					NW	NW					NW	NW
Total Catches (kg)	377.9	485.6	43.1	53.7	26.0	45.4	14.0	18.1	7.4	8.5	2.9	20.9	6.8	14.8	27.1	34.1	14.2
Remarks																	

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Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1987

Series No. of Net	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85
Survey Area	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Survey Date	Nov.19	Nov.19	Nov.19	Nov.19	Dec.3	Dec.3	Dec.3	Dec.3	Dec.3	Dec.3	Dec.3	Dec.4	Dec.4	Dec.4	Dec.4	Dec.5	Dec.5
Position lat. (N)	10-40.9	10-40.8	10-39.7	10-40.5	10-32.1	10-36.3	10-35.3	10-37.4	10-35.1	10-35.9	10-58.8	10-59.8	10-59.8	10-59.8	10-57.7	10-36.8	10-38.0
Position long. (W)	86-09.5	86-16.3	86-23.9	86-27.7	85-51.4	85-47.5	85-47.0	85-51.2	85-52.8	85-57.3	86-08.6	86-13.6	86-18.7	86-21.2	85-58.9	86-02.6	86-05.0
Time of Start (LST)	09-12	11-37	13-53	15-35	09-28	11-00	12-08	13-41	14-43	16-20	08-41	10-07	11-29	13-00	07-54	10-40	12-02
Depth of Start (m)	201	218	258	344	66	67	66	78	81	94	141	151	171	185	111	125	135
Position lat. (N)	10-41.7	10-41.7	10-41.1	-	10-33.3	10-35.2	10-36.9	10-36.0	10-34.5	10-37.4	10-58.6	10-59.8	11-00.1	10-57.8	10-38.3	10-36.7	10-37.1
Position long. (W)	86-10.5	86-17.2	86-25.4	-	85-50.3	85-48.9	85-47.7	85-51.6	85-53.6	85-56.8	86-10.1	86-15.3	86-20.0	86-24.7	85-59.0	86-04.0	86-06.6
Time of Finish (LST)	09-42	12-07	14-23	15-00	09-58	11-30	12-38	14-11	15-05	11-50	09-12	10-37	11-59	13-38	08-24	11-10	12-32
Depth of Finish (m)	211	208	255	-	69	71	66	80	84	76	148	159	175	185	107	119	141
Towing Time (min)	30	30	30	5	30	30	30	30	22	30	30	30	30	30	30	30	30
Towing speed (knot)	3.2	3.0	3.0	3.0	3.0	3.2	3.2	3.2	3.0	3.3	3.0	3.2	3.1	3.2	3.0	3.4	3.2
Towing Direction	315	310	315	-	40	230	10	195	230	20	280	270	280	275	180	220	260
Length of Warp (m)	700	700	800	-	300	300	280	280	380	400	500	500	580	600	400	400	480
Wing Spread (m)	-	13	12	-	13	12	11	12	12	13	10	9	-	9	9	9	9
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	BC	BC	BC	BC	B	B	B	B	BC	BC	BC	BC	BC	BC	BC	BC	BC
Wind Direction	NE	NE	NE	NE	NE	NE	NE	N	N	NE	NE	NE	NE	NE	NE	NE	NE
Wind Force	5	5	5	4	2	1	2	2	1	4	6	6	6	6	6	6	6
Atmosph. Pressure (mb)	1017	1016	1014	1014	1020	1020	1020	1019	1018	1018	1020	1021	1021	1017	1019	1020	1019
Air Temperature (°C)	29.3	30.0	31.0	30.0	29.0	31.5	32.0	32.0	32.0	30.5	29.0	29.5	28.5	28.0	27.0	27.5	29.0
Surface Water Temp (°C)	28.0	28.7	28.4	28.4	28.6	29.5	29.5	29.4	29.3	29.0	28.7	28.8	28.6	28.6	28.4	28.2	28.8
Bottom mater	M	M	M	R	Sh					M	M	M	M	M			
Current Direction	NW	NW								NW	NW	NW	NW	NW			
Total Catches (kg)	63.8	134.7	47.6	0	121.1	18.5	31.9	35.8	34.9	75.7	91.4	414.3	216.3	328.0	72.8	3.0	2.9
Remarks																	

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshimaru No.201, 1987

Series No. of Net	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102
Survey Area	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Survey Date	Dec.5	Dec.5	Dec.6	Dec.6	Dec.6	Dec.6	Dec.6	Dec.6	Dec.7	Dec.7	Dec.7	Dec.7	Dec.8	Dec.8	Dec.8	Dec.9	Dec.10
Position	(N) 10-36.4	10-35.4	10-30.2	10-31.4	10-33.1	10-32.3	10-31.2	10-35.0	10-45.0	1046.4	10-45.6	10-44.7	10-52.1	10-54.04	10-57.5	10-58.6	10-31.1
of Start	(W) 86-09.1	86-09.2	85-58.1	85-58.6	86-01.3	86-03.9	86-10.2	86-11.0	86-12.0	86-15.3	86-18.7	86-19.2	86-33.3	86-32.5	86-32.4	86-04.3	86-12.2
Time of Start	(LST) 13-45	15-28	08-06	09-14	10-48	11-48	13-54	15-03	07-57	09-22	11-02	16-05	12-47	14-37	15-58	15-10	08-36
Depth of Start	(m) 172	155	88	89	102	107	156	206	209	210	207	213	204	188	180	121	225
Position	(N) 10-36.0	10-35.2	10-31.5	10-30.8	10-32.5	10-32.0	10-32.9	10-36.3	10-46.2	10-47.7	10-46.5	10-44.4	10-51.1	10-55.8	10-57.2	10-57.1	10-32.4
of Finish	(W) 86-10.5	86-10.8	85-59.4	86-00.0	86-02.4	86-05.6	86-10.9	86-12.0	86-13.0	86-16.4	86-20.0	86-17.6	86-32.4	86-32.7	86-30.7	86-04.5	86-13.0
Time of Finish	(LST) 14-15	15-58	08-36	09-44	11-18	12-18	14-24	15-33	08-27	09-52	11-32	16-35	13-17	15-07	16-28	15-40	09-08
Depth of Finish	(m) 193	195	92	94	105	109	178	223	208	206	206	213	205	181	181	127	237
Towing Time	(min) 30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed	(knot) 3.2	3.2	3.0	3.0	3.4	3.2	4.0	3.2	3.6	3.4	3.2	3.2	3.2	3.0	3.2	3.2	3.0
Towing Direction	255	260	340	245	245	255	345	325	330	320	305	100	140	355	100	190	330
Length of Warp	(m) 580	580	340	380	400	400	600	700	680	700	700	700	680	600	600	480	700
Wing Spread	(m) 9	9	14	8	9	10	8	13	10	9	9	9	9	11	9	9	9
State of Haul	Normal	Normal	Void	Normal	Normal	Normal	Normal	normal	normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	BC	BC	BC	B	B	B	B	B	B	B	B	B	BC	BC	C	BC	B
Wind Direction	NE	NE	NE	NE	NE	NE	NE	NE	N	N	NE	NE	-	-	-	NE	NNE
Wind Force	6	6	6	6	6	6	6	6	1	1	3	3	-	-	-	3	5
Atmosph. Pressure (mb)	1017	1016	1018	1019	1020	1020	1018	1017	1018	1019	1019	1019	1016	1015	1015	1015	1018
Air Temperature (°C)	28.0	29.0	28.0	27.0	30.0	28.0	31.0	34.0	30.0	30.0	28.5	28.5	31.5	34.0	31.0	33.0	29.0
Surface WaterTemp (°C)	28.6	29.0	28.6	28.3	28.5	28.2	28.7	28.8	28.5	28.8	28.1	28.7	28.9	29.4	28.7	28.7	28.3
Bottom				M	M	M	M	M	M	M	M	M	M	M			
Current Direction			NW	NW	NW	NW	NW	NW		NNW							
Total Catches (kg)	135.4	208.0	0	20.4	5.7	10.7	38.0	76.3	800.6	1002.9	226.7	31.6	55.0	29.3	20.4	66.8	117.0
Remarks																	

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1987

Series No. of Net	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119
Survey Area	1	1	1	1	1	1	3	3	3	3	3	2	2	2	2	2	2
Survey Date	Dec.10	Dec.10	Dec.10	Dec.11	Dec.11	Dec.11	Dec.15	Dec.16	Dec.16	Dec.16	Dec.17	Dec.18	Dec.18	Dec.18	Dec.18	Dec.19	Dec.19
Position lat. (N)	10-34.2	10-30.5	10-34.1	10-30.4	10-33.1	10-33.6	9-33.0	9-37.8	9-28.6	9-28.4	9-44.3	10-04.9	10-07.3	10-07.1	10-08.5	10-26.0	10-21.2
of Start. long. (W)	86-13.4	86-13.6	86-16.0	86-14.2	86-16.4	86-18.6	85-10.4	85-21.5	85-10.4	85-13.3	85-31.5	85-51.7	85-50.3	85-51.3	85-54.5	86-02.3	86-06.5
Time of Start (LST)	09-45	12-20	13-40	07-41	09-09	11-09	15-45	07-25	10-59	13-26	12-00	10-32	12-13	13-41	15-02	13-38	15-35
Depth of Start (m)	235	268	255	315	339	375	68	132	342	433	115	102	65	82	108	102	121
Position lat. (N)	10-35.9	10-32.0	10-35.1	10-31.7	10-34.2	10-34.5	9-33.8	9-37.1	9-28.8	9-28.4	9-45.0	10-06.1	10-08.3	10-08.4	10-09.8	10-24.5	10-22.6
of Finish long. (W)	86-14.1	86-14.5	86-17.3	86-15.2	86-17.4	86-19.3	85-11.6	85-20.7	85-11.5	85-12.4	85-32.9	85-52.8	85-51.4	85-52.2	85-55.4	86-02.0	86-07.2
Time of Finish (LST)	10-15	12-50	14-10	08-11	09-39	11-39	16-10	07-45	11-29	13-50	12-30	11-02	12-43	14-11	15-32	14-08	16-05
Depth of Finish (m)	236	276	258	364	317	360	63	128	355	426	114	109	71	81	109	102	120
Towing Time (min)	30	30	30	30	30	30	25	20	30	24	30	30	30	30	30	30	30
Towing speed (knot)	3.0	3.4	3.0	3.2	3.0	3.2	3.1	3.0	2.2	2.0	3.0	3.2	3.0	3.0	3.2	3.0	3.0
Towing Direction	335	330	310	325	315	315	300	125	285	90	295	320	320	330	325	165	335
Length of Warp (m)	700	800	800	900	1000	1000	300	500	1000	1000	480	400	300	380	400	400	480
Wing Spread (m)				10			12	11									
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Tear	Normal	Normal	Normal	Normal	Normal	Normal
Weather	B	B	B	B	B	B	BC	BC	BC	B	BC	C	C	BC	BC	B	B
Wind Direction	NNE	NNE	NNE	E	NE	NE	SW	-	-	S	E	NNE	NNE	NNE	NNE	NE	ENE
Wind Force	4	3	3	3	3	2	1	-	-	2	2	5	5	6	5	6	4
Atmosph. Pressure (mb)	1018	1017	1016	1017	1018	1017	1015	1016	1017	1013	1014	1015	1014	1012	1012	1012	1012
Air Temperature (°C)	30.5	31.0	31.0	30.0	31.0	32.0	34.0	29.5	32.0	32.0	34.0	30.0	32.0	31.0	31.0	33.0	32.0
Surface WaterTemp (°C)	28.3	28.7	28.7	28.2	28.4	28.6	30.0	28.8	29.8	29.6	29.2	29.2	28.7	28.8	28.8	28.4	28.5
Bottom materials																	
Current Direction									NNW			NNW			NNW	NNW	NNW
Total Catches (kg)	41.3	49.2	795.7	4.5	66.4	2.9	8.9	25.1	75.6	2.0	17.8	9.1	14.7	14.4	33.0	42.7	37.8
Remarks																	

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No. 201, 1987/1988

Series No. of Net	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136
Survey Area	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	2
Survey Date	Dec. 20	Dec. 20	Dec. 20	Dec. 20	Dec. 21	Dec. 21	Dec. 21	Dec. 22	Jan. 6	Jan. 6	Jan. 7	Jan. 7	Jan. 7	Jan. 7	Jan. 7	Jan. 7	Jan. 7
Position of Start	(N) 10-16.5	10-17.1	10-25.4	10-28.6	9-56.7	9-56.8	9-55.1	10-19.2	9-35.0	9-35.3	9-40.8	9-43.6	9-46.0	9-48.5	9-48.4	9-48.5	9-59.9
of Start	(W) 86-03.5	86-04.9	86-11.0	86-11.1	85-48.9	85-48.4	85-47.4	86-03.4	85-12.7	85-14.5	85-18.1	85-24.6	85-25.2	85-28.3	85-31.2	85-33.4	85-45.7
Time of Start	(LST) 07-13	08-52	10-37	12-15	10-02	11-30	10-49	11-26	21-42	23-15	01-00	02-16	03-21	18-35	19-30	20-45	23-37
Depth of Start	(m) 125	186	260	219	254	171	183	109	62	80	58	80	66	54	64	82	65
Position of Finish	(N) 10-17.8	10-17.3	10-26.7	10-27.5	9-55.7	9-55.9	9-46.9	10-17.8	9-37.0	9-36.8	9-42.0	9-44.5	9-45.2	9-48.5	9-47.8	9-49.2	10-01.3
of Finish	(W) 86-04.6	86-05.1	86-11.9	86-11.2	85-48.1	85-47.8	85-46.9	86-03.0	85-12.8	85-15.8	85-19.4	85-26.0	85-23.2	85-28.1	85-29.1	85-35.0	85-47.2
Time of Finish	(LST) 07-43	08-57	11-07	12-31	10-32	12-00	12-19	11-56	22-15	23-45	01-30	02-46	03-51	18-40	20-00	21-15	00-07
Depth of Finish	(m) 126	182	277	226	224	183	197	113	60	79	58	83	61	56	63	87	63
Towing Time	(min) 30	5	30	16	30	30	30	30	30	30	30	30	30	5	30	30	30
Towing speed	(knot) 3.2	3.6	3.2	3.2	2.6	2.4	2.6	3.2	4.4	3.8	3.2	3.2	3.8	3.8	4.2	3.4	4.0
Towing Direction	320	320	325	180	140	150	155	170	330	300	220	300	220	105	290	290	315
Length of Warp	(m) 500	680	700	700	700	580	600	400	200	300	220	300	220	200	200	300	220
Wing Spread	(m)					13.5	14	13	12x2=24	24	24	24	24	24	24	24	24
State of Haul	Normal	Normal	Normal	Tear	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Void	Normal	Normal	Normal
Weather	B	B	B	B	B	B	B	C	B	B	B	B	B	C	C	C	B
Wind Direction	N	N	N	N	N	N	N	NE	-	-	-	NW	N	-	-	WNW	NNW
Wind Force	1	1	1	3	4	2	2	5	-	-	-	2	3	-	3	3	2
Atmosph. Pressure (mb)	1015	1016	1016	1014	1014	1014	1012	1014	1018	1018	1017	1015	1015	1016	1016	1017	1016
Air Temperature (°C)	30.0	35.0	33.0	32.0	32.0	32.0	34.0	30.0	30.0	29.0	27.5	27.0	27.5	28.5	28.0	28.0	28.0
Surface WaterTemp (°C)	28.7	28.9	28.8	28.6	29.0	29.2	29.5	28.9	28.9	29.0	29.0	28.9	28.9	29.1	29.1	29.0	28.7
Bottom materials									M	M	M	M	M				
Current Direction					NW			NW									NNW
Total Catches (kg)	212.1	41.9	1.5	75.5	81.0	392.7	469.5	91.0	78.6	40.6	145.1	20.6	32.7	20.8	48.7	32.6	25.8
Remarks		Trapped in sea bed		Trapped in sea bed													
									Double trawl net								

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153
Survey Area	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1
Survey Date	Jan. 8	Jan. 8	Jan. 8	Jan. 8	Jan. 8	Jan. 8	Jan. 8	Jan. 8	Jan. 8	Jan. 9	Jan. 9	Jan. 9	Jan. 9	Jan. 9	Jan. 9	Jan. 10	Jan. 10
Position lat. (N)	10-00.8	10-04.1	10-08.7	10-10.6	10-20.7	10-22.5	10-23.3	10-23.7	10-25.7	10-30.3	10-48.3	10-54.3	10-58.4	10-59.6	10-56.4	10-58.5	11-00.1
Position long. (W)	85-48.1	85-49.6	85-51.6	85-53.8	85-57.1	85-58.4	85-58.4	85-55.5	85-57.6	85-56.8	86-01.2	86-04.9	86-07.5	86-04.0	86-03.8	85-56.9	85-54.6
Time of Start (LST)	00-36	02-00	03-00	18-05	20-10	21-25	22-33	00-25	01-33	02-30	18-30	20-05	21-20	22-55	23-50	01-58	02-50
Depth of Start (m)	82	81	72	85	66	81	79	67	79	83	124	136	139	114	121	96	91
Position lat. (N)	9-59.5	10-06.0	10-10.6	10-08.8	10-23.8	10-21.0	10-25.0	10-25.6	10-27.4	10-31.8	10-48.5	10-55.8	11-00.1	10-47.9	10-55.2	11-00.2	10-59.7
Position long. (W)	85-47.2	85-50.3	85-52.3	85-53.1	85-46.7	85-08.8	85-57.5	85-55.6	85-57.0	85-54.3	86-02.6	86-05.0	86-08.1	86-03.5	86-02.8	85-56.0	85-52.8
Time of Finish (LST)	01-06	02-30	03-30	18-35	20-40	21-55	23-03	00-55	02-03	03-00	19-00	20-35	21-50	23-25	00-20	02-28	03-20
Depth of Finish (m)	81	81	67	89	72	83	78	70	81	83	123	134	131	117	117	95	86
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.2	3.6	4.0	3.6	4.0	3.4	3.6	3.6	3.8	3.6	3.6	3.2	3.6	3.6	3.2	3.6	3.6
Towing Direction	145	320	340	335	10	190	30	335	20	35	310	355	340	160	145	30	105
Length of Warp (m)	300	300	280	300	240	300	300	190	300	300	400	420	420	390	390	300	290
Wing Spread (m)	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	B	B	B	C	B	B	B	B	B	B	B	B	B	B	B	B	BC
Wind Direction	SSE	NE	ENE	S	-	N	NE	NE	NE	NE	N	N	NE	ENE	ENE	NE	ENE
Wind Force	1	1	3	2	-	3	3	3	3	3	4	5	4	5	5	5	4
Atmosph. Pressure (mb)	1016	1015	1015	1015	1017	1017	1016	1016	1016	1016	1016	1015	1017	1017	1017	1015	1015
Air Temperature (°C)	27.5	27.5	27.0	28.5	28.5	28.5	28.0	27.5	27.7	27.5	29.0	27.0	27.2	27.0	27.0	27.0	27.0
Surface Water Temp (°C)	28.5	28.5	28.3	29.1	29.9	29.0	29.0	28.3	28.5	28.4	28.4	27.1	26.7	25.9	26.4	24.0	23.5
Bottom materials					M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW
Total Catches (kg)	13.9	26.3	14.5	49.4	38.1	49.5	48.4	21.4	45.7	43.6	41.0	63.8	56.2	75.2	109.0	66.2	37.6
Remarks																	

Appendix Table-4

Recordings Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170
Survey Area	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Survey Date	Jan.10	Jan.10	Jan.10	Jan.10	Jan.11	Jan.11	Jan.11	Jan.11	Jan.11	Jan.11	Jan.11	Jan.11	Jan.12	Jan.12	Jan.12	Jan.12	Jan.12
Position lat. (N)	10-44.2	10-46.3	10-42.2	10-40.7	10-41.1	10-37.5	10-33.7	10-35.5	10-37.4	10-36.0	10-33.5	10-30.9	10-30.8	10-41.4	10-44.8	10-44.2	10-47.8
Position long. (W)	85-59.3	86-02.1	85-57.8	86-00.0	86-03.0	86-05.5	86-09.3	85-58.6	86-01.8	86-04.7	86-01.2	86-04.5	86-00.3	85-44.0	84-46.3	85-50.4	85-54.7
Time of Start (LST)	18-26	19-33	21-15	22-23	00-46	01-50	03-05	18-00	19-20	20-30	22-23	23-28	01-40	18-24	19-26	20-31	21-45
Depth of Start (m)	114	136	110	125	140	137	124	94	120	120	103	107	95	57	61	76	85
Position lat. (N)	10-45.9	10-44.4	10-40.6	10-42.6	10-39.6	10-37.0	10-31.8	10-37.0	10-35.6	10-34.4	10-31.6	10-32.9	10-31.6	10-43.4	10-46.4	10-45.2	10-48.0
Position long. (W)	85-59.3	86-02.0	85-58.3	85-59.5	86-03.7	86-07.4	86-09.6	85-55.8	86-01.8	86-05.9	86-01.8	86-04.8	85-58.6	85-45.0	84-52.7	85-51.6	85-55.6
Time of Finish (LST)	18-56	20-03	21-45	22-53	01-16	02-20	03-35	18-30	19-50	21-00	22-53	23-58	02-10	18-54	19-56	21-01	22-15
Depth of Finish (m)	116	139	112	122	145	145	129	97	112	115	102	110	92	57	63	78	93
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.6	3.8	3.2	4.0	3.4	3.6	3.6	3.6	3.6	3.8	4.0	4.0	3.6	4.4	4.8	3.2	4.0
Towing Direction	330	175	190	15	205	250	190	30	180	220	200	350	65	330	310	310	205
Length of Warp (m)	390	430	330	400	430	430	430	300	400	430	390	330	350	210	210	290	290
Wing Spread (m)	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	B	B	B	B	B	B	B	B	B	B	B	B	BC	B	B	B	B
Wind Direction	NE	NE	NE	NE	NE	NE	NE	NE	ENE	ENE	NE	N	ENE	NE	NE	N	N
Wind Force	4	4	4	4	5	5	5	5	5	5	5	4	4	4	3	3	2
Atmosph. Pressure (mb)	1016	1016	1017	1017	1018	1016	1017	1016	1017	1018	1018	1018	1017	1016	1017	1018	1018
Air Temperature (°C)	28.8	29.0	28.0	28.0	27.5	28.0	27.0	29.0	28.5	27.5	27.5	27.5	27.5	28.5	27.5	27.5	27.5
Surface WaterTemp (°C)	28.6	28.4	28.6	28.4	28.3	28.4	28.2	27.4	28.3	27.2	27.3	27.3	27.2	26.1	25.0	24.8	25.4
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction											NNW						
Total Catches (kg)	39.1	60.5	55.6	9.8	15.5	8.5	62.8	19.8	25.4	40.5	39.2	18.5	29.4	12.5	17.5	20.5	70.9
Remarks																	

Appendix Table-4

Recording Data of Trawling Research Survey by Misshinmaru No.201, 1988

Series No. of Net	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187
Survey Area	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Survey Date	Jan.12	Jan.13	Jan.13	Jan.13	Jan.13	Jan.13	Jan.13	Jan.14	Jan.15	Jan.15	Jan.15	Jan.15	Jan.15	Jan.15	Jan.15	Jan.16	Jan.16
Position lat. (N)	10-40.5	10-40.2	10-42.5	10-39.7	10-37.2	10-36.0	10-36.2	10-33.8	10-35.7	10-37.4	10-33.4	10-32.4	10-31.5	10-36.0	10-36.5	10-59.2	10-59.8
Position long. (W)	85-53.9	85-52.6	85-49.6	85-45.8	85-45.9	85-46.4	85-50.5	85-50.4	85-47.7	85-48.7	85-50.7	85-53.6	85-57.8	85-55.8	85-52.6	85-50.4	85-52.9
Time of Start (LST)	23-13	00-55	01-45	18-35	20-23	21-44	22-40	00-20	08-09	09-08	10-20	11-30	12-52	14-32	15-50	10-09	11-24
Depth of Start (m)	89	82	74	63	52	64	76	73	69	72	74	80	89	93	82	79	87
Position lat. (N)	10-38.8	10-41.6	10-42.2	10-42.0	10-37.1	10-35.7	10-36.5	10-32.5	10-37.4	10-36.0	10-32.1	10-32.4	10-30.3	10-37.3	10-36.6	10-59.7	10-59.9
Position long. (W)	85-55.0	85-81.1	85-47.5	85-05.0	85-47.5	85-48.6	85-52.3	85-52.1	85-47.6	85-49.4	85-51.6	85-55.2	85-59.0	85-54.7	85-51.0	85-51.9	85-54.5
Time of Finish (LST)	23-43	01-25	02-15	19-05	20-53	22-14	23-10	00-50	08-39	09-38	10-50	12-00	13-22	15-02	16-20	10-39	11-54
Depth of Finish (m)	91	76	68	61	69	71	81	73	69	73	68	85	91	90	77	84	91
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	4.2	4.0	4.0	4.6	3.0	4.0	4.0	4.0	3.2	3.0	3.0	3.2	3.2	3.2	3.2	3.0	3.2
Towing Direction	210	50	100	20	270	265	280	235	355	205	210	270	220	40	85	290	275
Length of Warp (m)	300	290	290	210	210	210	300	300	300	370	300	380	400	400	300	300	300
Wing Spread (m)	24	24	24	24	24	24	24	24	14	10	10	12	10	14	10	13	13
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Wind Direction	NE	ENE	E	ENE	ENE	NE	NE	NE	E	E	N	NNW	NW	N	NE	ENE	NE
Wind Force	3	1	2	6	5	4	4	4	2	1	2	3	3	4	4	6	5
Atmosph. Pressure (mb)	1018	1017	1017	1016	1018	1019	1019	1018	1019	1020	1019	1018	1017	1017	1016	1020	1020
Air Temperature (°C)	27.5	27.5	27.5	28.5	28.0	27.5	27.5	28.0	27.0	29.0	29.0	30.0	30.5	32.0	30.0	28.0	28.0
Surface Water Temp (°C)	26.2	27.7	27.2	28.3	27.7	27.5	27.0	27.2	26.7	27.6	27.1	28.3	28.8	28.6	28.6	24.2	26.3
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction																	
Total Catches (kg)	42.5	32.5	13.8	1000.8	18.9	6.2	18.3	15.2	4.6	4.9	15.7	12.0	20.1	5.2	26.7	11.8	18.0
Remarks									Single trawl net								

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204
Survey Area	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3
Survey Date	Jan.16	Jan.16	Jan.16	Jan.17	Jan.17	Jan.17	Jan.17	Jan.17	Jan.18	Jan.18	Jan.18	Jan.18	Jan.18	Jan.18	Jan.18	Jan.23	Jan.23
Position lat. (N)	10-59.8	11-00.0	10-54.8	10-54.4	10-56.0	10-58.3	10-59.8	10-54.5	10-48.0	10-45.0	10-45.6	10-42.3	10-40.8	10-41.3	10-41.4	9-32.3	9-36.6
of Start long. (W)	85-58.6	86-02.3	86-06.4	85-58.8	86-01.6	86-09.0	86-15.8	86-12.5	85-50.9	85-49.7	85-45.8	85-43.6	85-46.9	85-50.0	85-53.2	85-09.0	85-14.7
Time of Start (LST)	12-48	13-53	15-35	07-48	09-02	10-39	12-18	14-45	07-01	08-05	09-21	10-24	11-35	12-33	13-40	10-08	11-41
Depth of Start (m)	101	108	145	98	110	146	164	178	66	70	55	54	67	76	86	65	64
Position lat. (N)	11-00.2	10-59.8	10-53.3	10-56.0	10-55.4	10-59.4	11-00.0	10-54.8	10-46.9	10-43.9	10-44.2	10-40.5	10-41.4	10-40.6	10-40.0	9-32.9	9-37.4
of Finish long (W)	86-00.0	86-04.2	86-05.9	85-58.7	86-03.2	86-10.2	86-17.3	86-14.2	85-49.7	85-48.6	85-44.7	85-43.5	85-48.4	85-51.5	85-53.8	85-10.5	85-16.1
Time of Finish (LST)	13-18	14-23	16-05	08-18	09-32	11-09	12-48	15-15	07-31	08-35	09-51	10-51	12-05	13-03	14-10	10-38	12-11
Depth of Finish (m)	104	115	144	98	121	145	169	182	63	69	52	56	72	80	89	62	71
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.0	3.4	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.4	3.2	3.2	3.2	3.0	3.2
Towing Direction	285	265	160	355	245	315	280	280	130	135	145	0	290	245	200	295	300
Length of Warp (m)	400	400	500	380	380	480	500	600	300	290	200	200	290	300	300	300	29
Wing Spread (m)	12			11	10				12	12	10	12	10	9	10		
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Wind Direction	N	N	NE	NE	NE	NNE	NE	NE	ENE	ENE	ENE	S	W	WNW	WNW	ENE	SE
Wind Force	5	5	5	4	5	5	5	6	3	2	4	2	2	3	3	4	3
Atmosph. Pressure (mb)	1019	1019	1017	1020	1021	1020	1021	1018	1018	1019	1019	1020	1019	1018	1017	1017	1017
Air Temperature (°C)	28.5	27.8	27.8	27.5	27.8	29.0	27.8	28.2	27.8	29.0	30.5	30.0	31.0	32.0	31.5	31.5	31.0
Surface WaterTemp (°C)	26.6	27.2	28.0	28.1	28.4	28.3	28.2	28.2	28.1	27.8	28.2	28.4	28.6	28.7	28.6	29.2	29.0
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	S	M
Current Direction				N		NW	NW	NW									NW
Total Catches (kg)	47.0	55.5	49.4	37.2	31.2	9.2	10.8	13.0	7.7	14.0	16.8	4.6	23.2	12.7	12.3	20.9	20.7
Remarks																	

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221
Survey Area	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2
Survey Date	Jan.23	Jan.23	Jan.23	Jan.23	Jan.24	Jan.24	Jan.24	Jan.24	Jan.24	Jan.24	Jan.24	Jan.25	Jan.25	Jan.25	Jan.25	Jan.25	Jan.25
Position of Start	lat. (N) 09-36.2	9-36.2	9-37.0	9-39.6	9-41.6	9-43.1	9-45.8	9-47.4	9-43.8	9-46.4	9-46.8	9-55.5	9-55.6	9-55.2	9-56.9	9-59.2	10-00.1
long. (W) 85-16.7	85-18.5	85-19.5	85-20.4	85-20.4	85-23.9	85-23.6	85-28.3	85-28.6	85-28.6	85-30.0	85-32.9	85-44.2	85-46.2	85-47.2	85-49.0	85-46.6	85-46.6
Time of Start (LST)	12-50	14-39	15-48	16-52	07-46	09-01	10-20	11-47	13-47	15-00	16-06	07-20	08-36	09-50	11-50	13-01	14-15
Depth of Start (m)	83	102	107	83	63	81	59	64	109	89	105	83	101	179	231	79	72
Position of Finish	lat. (N) 9-35.6	9-35.3	9-38.3	9-38.4	9-42.6	9-44.1	9-47.0	9-47.4	9-44.6	9-47.2	9-47.4	9-56.6	9-54.5	9-56.3	9-55.8	10-00.6	9-58.9
long. (W) 85-15.4	85-17.4	85-20.6	85-19.4	85-19.4	85-21.3	85-25.1	85-24.9	85-27.9	85-30.1	85-31.2	85-34.6	85-45.2	85-45.5	85-48.4	85-48.2	85-47.7	85-45.6
Time of Finish (LST)	13-10	15-09	16-18	17-22	08-16	09-31	10-50	11-55	14-17	15-30	16-36	07-50	09-01	10-20	11-35	13-31	14-45
Depth of Finish (m)	83	103	107	88	66	82	56	62	109	88	105	84	105	185	223	82	74
Towing Time (min)	30	30	30	30	30	30	30	8	30	30	30	30	25	30	30	30	30
Towing speed (knot)	2.8	3.0	3.4	3.0	3.2	3.2	3.6		3.6	3.0	3.4	3.1	3.1	3.4	2.9	3.4	3.0
Towing Direction	110	130	320	140	310	310	310	95	295	300	290	320	145	310	145	320	145
Length of Warp (m)	400	390	400	300	200	300	200	280	380	380	380	380	380	580	680	300	280
Wing Spread (m)	11	12	14	10	14	11	11	10	12	11	12	10		13		10	13
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Lost	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	B	B	B	BC	B	B	B	BC	B	B	B	B	B	B	B	B	B
Wind Direction	SE	SE	SE	SE	NE	NE	NW	SE	SE	SW	SW	NE	NE	ENE	S	NW	S
Wind Force	4	4	4	4	2	2	1	2	2	2	3	4	3	4	1	4	1
Atmosph. Pressure (mb)	1015	1014	1014	1015	1017	1019	1019	1018	1016	1016	1015	1016	1017	1017	1016	1015	1014
Air Temperature (°C)	31.0	32.0	29.0	29.5	29.0	30.0	31.0	31.5	31.5	31.0	31.0	29.8	29.1	32.0	31.0	30.5	32.0
Surface Water Temp (°C)	29.2	29.2	29.2	29.2	28.9	29.0	29.2	29.2	29.1	29.4	29.3	28.0	28.1	28.5	28.8	28.4	28.4
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction												MNW	MNW	MNW			
Total Catches (kg)	30.3	16.5	22.7	10.7	14.6	19.4	41.4	0	56.6	59.0	40.5	45.7	83.5	703.0	2448.8	6.9	57.2
Remarks																	

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238
Survey Area	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1
Survey Date	Jan.25	Jan.26	Jan.26	Jan.26	Jan.27	Jan.27	Jan.28	Jan.30	Jan.30	Jan.30	Jan.30	Jan.30	Jan.30	Jan.30	Jan.30	Jan.31	Jan.31
Position lat. (N)	9-57.6	10-04.0	10-06.1	10-05.4	10-08.7	10-10.3	10-20.5	10-43.7	10-44.7	10-48.1	10-45.8	10-44.3	10-45.3	10-44.0	10-47.4	10-58.4	10-59.7
of Start long. (W)	85-44.8	85-48.3	85-50.5	85-51.4	85-51.4	85-53.1	85-57.0	85-50.7	85-54.7	85-55.2	85-58.9	86-00.2	86-02.7	86-05.2	86-04.1	86-21.9	86-26.3
Time of Start (LST)	15-28	07-39	08-43	10-03	07-10	08-25	07-58	07-46	09-04	10-14	11-30	12-43	13-55	15-15	16-32	09-04	10-35
Depth of Start (m)	75	65	81	101	67	76	66	76	90	88	110	127	142	159	145	183	180
Position lat. (N)	9-56.4	10-05.5	10-04.7	10-04.7	10-10.1	10-09.0	10-22.2	10-45.2	10-46.1	10-48.5	10-44.3	10-46.0	10-43.9	10-45.8	10-49.0	10-57.8	11-00.0
of Finish long (W)	85-43.6	85-49.3	85-49.7	85-51.8	85-52.5	85-52.4	85-57.0	85-51.2	85-55.4	85-56.8	85-58.2	86-00.7	86-02.9	86-05.4	86-04.3	86-23.5	86-28.0
Time of Finish (LST)	15-58	08-09	09-13	10-15	07-40	08-55	08-28	08-16	09-34	10-44	12-00	13-13	14-25	15-45	17-02	09-34	11-05
Depth of Finish (m)	75	67	83	106	71	78	72	76	92	94	114	127	142	157	145	183	173
Towing Time (min)	30	30	30	12	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.2	3.6	3.2	3.4	3.4	3.0	3.0	3.2	3.0	3.2	3.2	3.6	3.0	3.4	3.2	3.2	3.2
Towing Direction	140	325	150	180	325	150	0	340	335	290	155	340	185	355	355	250	280
Length of Warp (m)	280	280	300	380	280	280	280	300	300	300	380	400	480	500	480	600	580
Wing Spread (m)	10	13	11	13	13			10	14	14		9		9	10		
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	B	B	B	B	BC	B	BC	BC	BC	BC	BC	BC	BC	BC	BC	C	BC
Wind Direction	SW	MNE	MNE	MNE	NE	NE	MNE	NE	NE	NE	NE	NE	N	N	NE	NE	NE
Wind Force	3	6	5	5-7	6	6	5	3	3	3	3	3	4	3	4	3	4
Atmosph. Pressure (mb)	1014	1017	1018	1018	1018	1018	1017	1016	1017	1017	1016	1016	1014	1013	1014	1016	1017
Air Temperature (°C)	30.5	30.0	27.5	28.5	25.0	27.0	30.0	22.5	26.0	28.0	28.0	29.5	27.5	26.5	28.0	25.5	26.2
Surface Water Temp (°C)	28.6	28.1	28.0	28.0	25.2	27.1	24.6	21.1	21.8	21.1	22.3	22.9	22.8	23.0	22.6	24.6	26.2
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction		NW	NW											NNW			
Total Catches (kg)	26.4	65.1	16.9	26.4	63.4	43.5	67.0	120.2	317.2	101.7	32.0	98.0	75.7	100.7	113.6	77.3	109.2
Remarks																	

Appendix Table-4

Recording Date of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255
Survey Area	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Survey Date	Jan.31	Feb.1	Feb.1	Feb.1	Feb.1	Feb.1	Feb.1	Feb.2	Feb.2	Feb.2	Feb.2	Feb.2	Feb.2	Feb.2	Feb.2	Feb.2	Feb.3
Position lat. (N)	11-00.4	10-49.3	10-41.06	10-40.2	10-41.7	10-42.2	10-37.4	10-30.7	10-33.8	10-35.7	10-34.1	10-32.5	10-34.5	10-37.1	10-39.3	10-40.5	10-44.6
of Start long. (W)	86-31.4	86-03.2	86-03.0	86-02.3	86-00.7	85-59.7	86-01.4	86-03.2	86-04.5	86-07.0	86-09.1	86-10.3	86-09.8	86-09.586-05.5	86-07.0	86-08.2	
Time of Start (LST)	12-04	07-03	09-11	10-28	11-39	13-10	14-32	07-16	08-13	09-20	10-19	11-26	13-02	14-04	15-40	07-42	09-08
Depth of Start (m)	159	130	143	134	129	124	119	102	111	120	124	156	189	195	166	173	183
Position lat. (N)	10-59.6	10-48.5	10-40.0	10-41.7	10-40.1	10-39.9	10-35.6	10-32.3	10-35.5	10-34.3	10-32.3	10-30.9	10-36.1	10-38.4	10-41.0	10-41.9	10-45.3
of Finish long (W)	86-32.9	86-03.0	86-03.5	86-01.6	86-00.6	85-59.5	86-02.4	86-04.0	86-04.8	86-08.1	86-09.5	86-10.5	86-09.7	86-08.6	86-05.9	86-08.0	86-09.4
Time of Finish (LST)	12-34	07-33	09-41	10-58	12-09	13-40	15-02	07-46	08-43	09-50	10-49	11-56	13-32	14-34	16-10	08-12	09-38
Depth of Finish (m)	162	134	142	132	126	121	113	108	115	117	128	172	185	189	167	183	186
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.2	2.6	3.2	3.4	3.2	4.4	3.8	3.6	3.4	3.6	3.6	3.4	3.0	3.0	3.6	3.4	3.8
Towing Direction	240	175	195	25	180	175	210	335	350	215	190	190	5	35	350	325	325
Length of Warp (m)	500	400	480	400	400	380	380	380	380	380	380	480	480	500	500	580	580
Wing Spread (m)		10	8	12		11	10	15	15	11	9	10			11		
State of Haul	Normal	Normal	Normal	Normal	Tear	Normal	Tear	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	BC	BC	B	B	BC	BC	B	B	B	BC	B	B	B	BC	BC	BC	B
Wind Direction	NE	NE	NE	NE	NE	NE	N	N	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NE	NE
Wind Force	5	5	6	5	5	4	3	2	3	3	3	3	5	5	4	5	6
Atmosph. Pressure (mb)	1016	1016	1016	1016	1016	1014	1014	1016	1016	1018	1018	1016	1015	1013	1013	1016	1018
Air Temperature (°C)	28.0	26.0	27.5	29.0	28.5	29.0	29.5	31.0	31.0	29.5	29.3	29.2	32.0	32.0	32.0	30.0	29.5
Surface WaterTemp(°C)	26.0	27.1	27.5	27.5	27.6	27.6	27.8	28.1	28.2	28.3	28.2	28.2	28.3	28.4	28.3	28.0	27.6
Bottom materials	M	M	M	M	M	M	M/Sh	M	M	M	M	M	M	M	M	M	M
Current Direction																	
Total Catches (kg)	30.0	944.2	32.0	29.1	51.7	29.5	40.5	27.1	25.0	120.4	18.8	101.3	32.1	175.2	282.1	196.2	109.4
Remarks																	

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272
Survey Area	1	1	1	1	1	1	1	1	1	3	3	3	3	3	3	3	2
Survey Date	Feb.3	Feb.3	Feb.3	Feb.3	Feb.4	Feb.4	Feb.4	Feb.4	Feb.4	Feb.9	Feb.9	Feb.9	Feb.10	Feb.10	Feb.10	Feb.10	Feb.11
Position lat.	(N) 10-49.1	10-54.3	10-50.4	10-46.6	10-51.8	10-52.0	10-53.9	10-54.8	10-50.4	9-28.5	9-28.2	9-28.9	9-30.4	9-29.9	9-29.5	9-39.4	10-06.7
of Start long.	(W) 86-09.4	86-08.7	86-06.8	86-06.5	86-13.6	86-17.9	86-18.9	86-22.4	86-22.4	85-10.3	85-10.5	85-11.2	85-12.2	85-13.4	85-12.7	85-16.7	85-54.7
Time of Start (LST)	10-35	12-41	14-20	15-44	08-29	09-40	11-42	13-47	14-56	12-37	14-21	16-19	07-26	08-44	10-17	13-05	07-26
Depth of Start (m)	180	162	160	166	191	196	192	192	197	362	402	289	172	234	254	63	181
Position lat.	(N) 10-50.8	10-52.7	10-48.6	10-45.2	10-51.8	10-52.2	10-54.3	10-55.1	10-50.8	9-28.6	9-28.3	9-28.2	9-30.7	9-29.9	9-29.8	9-40.2	10-05.7
of Finish long	(W) 86-10.4	86-08.3	86-06.6	86-07.0	86-15.4	86-19.7	86-20.6	86-24.0	86-24.1	85-11.6	85-11.8	85-12.4	85-13.6	85-14.7	85-14.1	85-17.9	85-53.7
Time of Finish (LST)	11-05	13-11	14-50	16-14	08-59	10-10	12-12	13-17	15-26	13-07	14-51	16-49	07-56	09-14	10-47	13-35	07-56
Depth of Finish (m)	182	164	161	172	195	196	192	191	194	378	403	291	169	237	248	60	198
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.8	3.2	3.6	3.0	3.4	3.4	3.4	3.4	3.4	2.8	2.6	2.6	3.0	2.6	2.9	3.0	2.9
Towing Direction	330	165	170	200	270	275	285	285	285	275	275	285	285	270	285	310	135
Length of Warp (m)	580	480	480	480	580	600	580	580	580	900	1000	880	500	700	780	280	580
Wing Spread (m)											9	12		14		9	13
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	B	B	B	B	B	B	B	B	B	B	B	BC	B	B	B	B	BC
Wind Direction	NE	NE	NE	NE	NE	NE	ENE	ENE	ENE	E	SE	SE	NW	NNW	NW	S	NE
Wind Force	6	6	6	5	6	5	6	6	5	3	4	4	2	3	1	1	4
Atmosph. Pressure (mb)	1017	1015	1013	1013	1017	1017	1016	1017	1013	1014	1013	1012	1015	1017	1017	1015	1016
Air Temperature (°C)	29.5	32.0	30.0	29.0	27.0	27.0	29.0	29.0	29.0	31.5	30.5	30.0	29.0	30.0	31.0	34.0	28.5
Surface WaterTemp (°C)	27.8	27.2	27.3	27.5	27.6	27.6	27.6	27.7	27.6	29.2	29.2	29.2	29.0	28.8	29.7	29.6	28.1
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction																	
Total Catches (kg)	109.4	287.6	56.3	997.4	273.8	139.3	189.2	141.7	207.8	14.8	19.0	79.6	477.0	188.0	41.5	41.3	125.0
Remarks																	

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No. 201, 1988

Series No. of Net	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289
Survey Area	2	2	2	2	2	1	1	1	1	2	2	2	2	2	2	1	1
Survey Date	Jan. 11	Jan. 11	Jan. 11	Jan. 11	Jan. 11	Jan. 12	Jan. 12	Jan. 12	Jan. 12	Jan. 13	Jan. 13	Jan. 13	Jan. 13	Jan. 13	Jan. 13	Jan. 14	Jan. 15
Position lat. (N)	10-06.2	10-09.0	10-11.0	10-11.2	10-15.6	10-30.8	10-35.0	10-39.4	10-40.2	10-28.7	10-25.4	10-23.5	10-22.1	10-18.8	10-21.9	10-38.9	10-39.8
Position long. (W)	85-54.7	85-54.9	85-59.0	85-59.2	86-01.4	86-12.0	86-12.0	86-09.9	86-12.6	85-57.1	85-56.0	85-59.3	85-59.4	86-02.8	86-07.3	86-15.3	85-44.4
Time of Start (LST)	08-53	10-35	12-17	13-39	15-41	08-33	10-22	12-27	13-35	07-58	09-10	10-23	11-41	13-02	14-48	08-52	18-58
Depth of Start (m)	236	107	174	209	112	224	214	205	218	84	71	86	89	110	124	229	58
Position lat. (N)	10-05.2	10-10.0	10-10.1	10-10.0	10-14.2	10-32.2	10-36.4	10-40.8	10-39.1	10-27.2	10-23.8	10-24.8	10-20.6	10-20.0	10-20.6	10-39.1	10-41.5
Position long. (W)	85-53.7	85-56.2	85-58.1	85-58.3	86-00.6	86-12.6	86-12.5	86-10.9	86-13.6	85-57.2	85-56.0	86-00.3	85-59.7	86-04.1	86-16.4	86-15.5	85-44.6
Time of Finish (LST)	09-23	11-05	12-47	14-09	16-11	09-03	10-52	12-57	14-05	08-28	09-40	10-53	12-11	13-32	15-18	09-00	19-28
Depth of Finish (m)	250	114	181	217	114	231	226	212	226	81	70	92	95	109	127	225	57
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	8	30
Towing speed (knot.)	2.8	3.3	2.6	2.8	3.0	3.0	2.8	3.2	3.0	3.2	3.4	3.4	3.2	3.4	3.0		3.5
Towing Direction	140	310	135	140	150	340	340	325	225	180	180	325	190	315	150	325	350
Length of Warp (m)	600	380	500	600	400	700	600	600	700	280	285	300	300	380	400	700	180
Wing Spread (m)		11	13	13	14					15	14	12	11	14			24
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Tear	Normal
Weather	BC	BC	BC	BC	BC	B	BC	B	BC	B	BC	BC	BC	BC	B	BC	B
Wind Direction	NE	NE	NE	NE	N	NNE	NE	NE	NE	NE	NE	NE	NE	NNE	NE	NE	NNE
Wind Force	4	4	3	4	3	4	4	5	5	3	4	4	4	3	4	5	5
Atmosph. Pressure (mb)	1017	1017	1016	1015	1014	1018	1018	1016	1016	1018	1018	1018	1017	1016	1015	1018	1015
Air Temperature (°C)	29.5	32.0	33.0	32.0	31.0	29.5	31.0	31.0	28.5	27.0	27.5	29.8	27.8	29.5	29.0	28.5	28.5
Surface Water Temp (°C)	28.2	28.3	28.4	28.3	28.5	28.0	28.0	28.0	28.0	27.1	26.6	26.9	26.8	26.4	27.2	25.4	27.5
Bottom materials	M	M	M	M	K	M	M	M	M	M	M	M	M	M	M	M/R	M
Current Direction																	
Total Catches (kg)	67.8	161.1	114.4	465.0	378.0	315.2	57.3	181.9	243.5	97.3	52.3	54.7	64.5	95.1	119.4	8.7	16.8
Remarks																	Double Trawl Net

Appendix Table-4

Recording Data of Trawling Research Survey by Misshinmaru No.201, 1988

Series No. of Net	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306
Survey Area	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Survey Date	Feb.15	Feb.15	Feb.15	Feb.16	Feb.16	Feb.16	Feb.16	Feb.16	Feb.16	Feb.16	Feb.16	Feb.17	Feb.17	Feb.17	Feb.17	Feb.17	Feb.17
Position lat. (N)	10-44.2	10-45.0	10-45.3	10-45.6	10-46.6	10-44.7	10-41.0	10-42.6	10-41.0	10-40.4	10-42.2	10-40.4	10-47.7	10-59.4	11-00.9	11-00.2	10-59.6
of Start long. (W)	85-44.6	85-47.7	85-51.0	85-55.2	85-59.0	86-01.6	85-47.6	85-51.1	85-54.2	85-58.4	86-00.1	86-02.4	86-02.4	85-50.4	85-55.4	85-56.9	86-01.2
Time of Start (LST)	20-03	21-07	22-33	00-02	10-11	02-18	19-29	20-33	21-30	22-40	23-36	00-35	02-15	19-25	20-40	21-40	22-59
Depth of Start (m)	53	62	76	95	114	136	69	77	88	114	125	138	135	78	90	96	105
Position lat. (N)	10-45.6	10-46.0	10-43.4	10-47.3	10-45.1	10-46.4	10-42.6	10-41.4	10-39.4	10-42.1	10-41.1	10-42.2	10-49.4	10-59.7	11-00.5	10-58.5	11-00.6
of Finish long (W)	85-45.9	85-48.0	85-50.6	85-55.8	85-59.4	86-02.1	85-47.6	85-52.6	85-55.2	85-58.5	86-01.3	86-02.5	86-02.6	85-52.1	85-57.0	85-56.5	86-03.1
Time of Finish (LST)	20-33	21-32	23-03	00-32	01-41	02-48	19-59	21-03	22-00	23-10	00-06	01-05	02-45	19-55	21-10	22-10	23-29
Depth of Finish (m)	56	64	77	94	119	136	69	81	94	115	131	139	129	84	96	96	111
Towing Time (min)	30	25	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.8		3.8	3.5	3.2	3.6	3.2	3.6	3.4	3.4	3.2	3.6	3.4	3.2	3.2	3.4	3.6
Towing Direction	320	315	170	340	195	345	0	225	215	355	225	0	350	280	255	170	295
Length of Warp (m)	180	180	180	300	320	320	270	270	280	310	300	300	370	270	280	280	310
Wing Spread (m)	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Wind Direction	NNE	WNW	NW	N	NW	NW	NE	NE	NE	NE	NE	NE	NE	NE	NE	ENE	NNE
Wind Force	3	1	3	3	3	3	6	6	4	4	4	5	6	4	4	5	5
Atmosph. Pressure (mb)	1015	1016	1016	1016	1015	1015	1014	1015	1015	1015	1016	1016	1015	1016	1017	1017	1016
Air Temperature (°C)	28.5	28.0	27.5	27.0	27.0	26.5	28.5	28.5	28.0	27.5	27.0	27.5	27.0	26.0	24.5	23.8	24.8
Surface WaterTemp(°C)	27.5	27.0	26.8	26.2	26.2	26.4	27.2	27.3	27.3	27.7	28.0	27.8	27.3	20.8	21.2	21.3	24.6
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction																	
Total Catches (kg)	134.4	60007.0	14.1	39.0	81.2	81.8	18.8	110.0	44.0	73.2	17.0	14.4	60.7	13.1	14.8	20.4	27.3
Remarks		Jelly- fish															

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshimaru No.201, 1988

Series No. of Net	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323
Survey Area	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
Survey Date	Feb.18	Feb.18	Feb.18	Feb.18	Feb.18	Feb.18	Feb.18	Feb.19	Feb.19	Feb.19	Feb.19	Feb.19	Feb.19	Feb.19	Feb.20	Feb.20	Feb.20
Position lat.	(N) 11-00.5	10-56.1	10-54.0	10-36.8	10-35.9	10-36.3	10-37.0	10-38.1	10-37.2	10-37.5	10-34.2	10-32.6	10-32.6	10-33.1	10-33.2	10-32.5	10-27.2
of Start long.	(W) 86-05.9	86-03.1	86-04.8	85-48.6	85-46.7	85-50.6	85-54.1	86-00.6	86-03.5	86-05.4	85-50.5	85-54.8	85-58.4	86-01.3	86-03.1	86-05.0	85-56.6
Time of Start (LST)	00-03	01-52	02-44	19-18	20-12	21-08	22-07	23-36	00-43	01-50	19-08	20-23	21-36	22-49	00-00	01-00	19-00
Depth of Start (m)	123	121	136	71	64	76	89	119	122	140	74	84	93	102	107	109	79
Position lat.	(N) 10-59.2	10-54.6	10-52.7	10-36.6	10-35.9	10-36.8	10-37.1	10-36.5	10-38.9	10-36.0	10-32.8	10-31.5	10-31.3	10-31.8	10-31.6	10-34.2	10-25.6
of Finish long	(W) 86-08.5	86-03.8	86-05.4	85-46.9	85-48.6	85-52.2	85-55.8	86-01.5	86-03.4	86-05.6	85-51.0	85-55.6	85-59.1	86-02.2	86-03.8	86-05.0	85-57.2
Time of Finish (LST)	00-33	02-22	03-14	19-48	20-42	21-38	22-37	00-06	01-13	02-20	19-38	20-53	22-06	23-19	00-30	01-30	19-30
Depth of Finish (m)	132	128	143	65	69	81	94	113	138	120	70	84	92	102	107	113	78
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	2.8	3.2	3.2	3.2	3.6	3.2	3.2	3.6	3.4	3.0	3.2	2.8	3.0	3.4	3.5	3.4	3.2
Towing Direction	205	210	200	90	270	290	270	210	5	190	200	220	210	215	205	0	200
Length of Warp (m)	370	370	380	270	280	280	320	400	400	430	280	310	370	400	390	380	290
Wing Spread (m)	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	BC
Wind Direction	ENE	NE	NE	SE	SE	NW	NNW	E	N	E	S	S	SE	E	E	NE	S
Wind force	6	6	5	2	3	1	3	3	2	4	3	2	2	2	3	2	1
Atmosph. Pressure (mb)	1015	1013	1014	1015	1015	1018	1016	1015	1015	1015	1013	1014	1014	1014	1014	1013	1014
Air Temperature (°C)	25.0	25.5	25.0	28.5	28.5	28.5	28.2	27.5	27.5	27.0	28.0	28.8	29.0	28.7	28.1	28.0	29.0
Surface Water Temp (°C)	25.6	27.0	27.4	27.5	27.2	27.6	28.1	28.1	28.1	28.2	28.4	28.5	28.6	28.6	28.8	28.7	29.0
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction																	
Total Catches (kg)	43.9	110.1	88.5	6.0	19.1	10.4	23.8	23.9	27.2	31.0	9.9	19.8	39.8	41.2	45.5	25.6	18.6
Remarks																	

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
Survey Area	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
Survey Date	Feb.20	Feb.20	Feb.20	Feb.20	Feb.21	Feb.21	Feb.21	Feb.21	Feb.21	Feb.21	Feb.27	Feb.27	Feb.27	Feb.27	Feb.28	Feb.28	Feb.28
Position lat. (N)	10-25.6	10-25.2	10-23.2	10-23.0	10-10.5	10-10.7	10-02.6	10-05.4	10-00.7	9-59.7	9-34.6	9-36.3	9-37.4	9-40.4	9-43.2	9-43.6	9-43.7
of Start long. (W)	85-55.8	85-57.7	85-58.6	85-56.6	85-54.0	85-52.4	85-49.1	85-49.0	85-46.6	85-46.9	85-13.0	85-16.6	85-15.1	85-18.0	85-22.5	85-25.1	85-28.6
Time of Start (LST)	19-55	21-06	21-53	23-02	01-08	02-16	18-49	19-45	20-48	21-41	19-20	20-20	21-37	22-35	19-10	20-07	21-05
Depth of Start (m)	72	79	81	71	90	87	88	66	68	79	66	82	65	61	68	85	90
Position lat. (N)	10-23.7	10-23.8	10-21.5	10-21.4	10-09.0	10-09.1	10-04.3	10-03.7	9-59.4	10-01.3	9-35.8	9-37.2	9-39.0	9-41.2	9-44.6	9-44.8	9-47.0
of Finish long (W)	85-55.6	85-58.4	85-59.5	85-57.0	85-53.6	85-51.9	85-49.4	85-48.2	85-45.6	85-47.4	85-14.7	85-17.9	85-16.6	85-19.7	85-24.0	85-26.6	85-30.2
Time of Finish (LST)	20-25	21-36	22-23	23-32	02-38	02-46	19-19	20-15	21-18	22-11	19-50	20-50	22-07	23-05	19-40	20-37	21-35
Depth of Finish (m)	68	80	87	68	96	71	79	72	68	77	68	84	66	64	68	82	85
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.6	3.6	3.8	3.6	3.2	3.2	3.2	3.6	3.2	3.4	3.2	3.2	4.0	3.5	3.8	3.8	3.8
Towing Direction	170	205	210	190	170	160	350	155	155	335	320	305	320	290	315	305	310
Length of Warp (m)	240	230	260	220	300	210	300	210	290	300	230	250	210	210	210	250	250
Wing Spread (m)	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	BC	BC	BC	BC	BC	BC	B	B	B	B	BC	BC	BC	BC	B	B	B
Wind Direction	SE	S	S	S	S	S	NE	NE	E	E	SE	E	E	N	-	-	N
Wind Force	2	2	2	2	2	2	5	5	4	4	3	2	3	3	-	-	3
Atmosph. Pressure (mb)	1014	1015	1016	1016	1016	1015	1014	1015	1016	1015	1017	1018	1018	1018	1017	1017	1017
Air Temperature (°C)	28.8	29.0	28.7	28.8	28.2	27.5	30.5	30.5	31.0	30.1	28.5	28.2	28.0	28.0	28.5	28.3	28.2
Surface WaterTemp (°C)	28.9	29.0	28.8	28.6	26.2	28.9	28.8	28.0	28.4	28.5	28.5	28.6	28.4	28.4	28.5	28.4	28.3
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction																	
Total Catches (kg)	15.5	32.5	54.0	23.7	34.2	20.4	22.8	14.8	11.4	35.3	13.1	13.1	4.9	13.0	21.8	30.5	55.7
Remarks																	

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No. 201, 1988

Series No. of Net	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356
Survey Area	3	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
Survey Date	Feb. 28	Mar. 1	Mar. 1	Mar. 1	Mar. 2	Mar. 2	Mar. 2	Mar. 3	Mar. 3	Mar. 3	Mar. 3	Mar. 5	Mar. 5	Mar. 6	Mar. 8	Mar. 8
Position	lat. (N)	10-45.1	10-15.6	10-45.3	10-47.8	10-48.5	10-45.6	10-30.1	10-34.4	10-33.7	10-30.3	10-32.3	10-33.9	10-26.3	10-22.6	10-25.2
of Start	long. (W)	85-32.6	86-11.7	86-13.4	86-15.2	86-12.9	86-17.6	86-13.8	86-15.6	86-18.0	86-14.1	86-15.6	86-12.8	86-01.7	86-06.4	85-59.7
Time of Start (LST)	22-10	07-13	09-45	11-55	07-27	09-03	11-00	07-18	09-00	10-47	10-00	11-35	13-33	15-51	12-15	14-20
Depth of Start (m)	81	206	213	212	203	205	210	266	251	359	310	334	231	101	116	91
Position	lat. (N)	10-44.3	10-44.6	10-44.7	10-47.4	10-48.1	10-45.0	10-31.5	10-35.1	10-33.3	10-31.6	10-33.0	10-34.8	10-27.8	10-24.0	10-25.4
of Finish	long. (W)	85-34.2	86-13.0	86-15.0	86-17.0	86-14.7	86-19.2	86-14.5	86-16.9	86-17.3	86-14.9	86-16.8	86-14.2	86-02.0	86-07.2	85-59.3
Time of Finish (LST)	22-40	08-01	10-15	12-25	07-57	10-33	11-30	07-48	09-30	11-03	10-30	12-05	14-03	16-21	12-45	14-50
Depth of Finish (m)	88	215	215	210	206	203	211	289	245	358	398	360	242	102	115	90
Towing Time (min)	30	30	30	30	30	30	30	30	30	16	30	30	30	30	30	30
Towing speed (knot)	3.4	3.0	3.6	3.4	3.6	3.5	3.4	3.0	3.2		3.0	2.8	3.0	3.2	3.2	2.8
Towing Direction	290	240	240	250	260	260	250	330	295	120	325	310	305	350	330	20
Length of Warp (m)	240	600	600	600	600	600	600	800	800	900	900	800	700	380	380	280
Wing Spread (m)	24			14			12	13		15	11	11		19	19	20
State of Haul	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Weather	B	B	B	B	B	B	B	B	B	B	B	B	BC	B	B	B
Wind Direction	N	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NNE	NNE	NE	NNE	NNE
Wind Force	5	6	6	6	6	6	6	3	3	3	3	4	5	3	3	3
Atmosph. Pressure (mb)	1017	1019	1020	1019	1018	1019	1018	1017	1018	1018	1020	1019	1017	1014	1019	1016
Air Temperature (°C)	26.5	23.5	25.2	25.0	23.5	24.2	24.5	28.0	29.5	29.5	31.5	31.0	31.0	31.0	33.0	32.0
Surface Water Temp (°C)	28.3	23.3	23.1	23.2	23.0	22.9	23.7	27.1	26.5	26.3	28.2	28.2	28.3	28.4	28.2	27.8
Bottom materials	M	M	M	M	M	M	M				Sh/Co/M	Sh/Co/M	M	M	M	M
Current Direction																
Total Catches (kg)	23.0	326.3	200.7	145.7	216.0	194.5	154.7	104.5	99.2	102.8	53.5	54.0	100.8	56.0	106.4	106.1
Remarks		Single trawl net														

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Survey Area	1	"	"	"	"	1	"	"	"	"	"	1	"	"	"	1	"
Survey Date	Jun.13	"	"	"	"	Jun.14	"	"	"	"	"	Jun.15	"	"	"	Jun.16	"
Position lat. (N)	11-00.8	11-01.2	11-00.5	11-00.2	11-00.0	10-43.8	10-40.0	10-44.2	10-46.1	10-47.6	10-46.2	10-59.2	10-59.1	10-59.0	10-58.7	10-53.2	10-54.8
of Start long. (W)	85-52.6	85-55.6	85-58.8	86-02.0	86-06.4	85-45.0	85-42.0	85-46.6	85-49.0	85-53.8	85-54.9	86-15.2	86-18.8	86-22.1	86-27.0	85-59.0	86-01.6
Time of Start (LST)	09-30	10-45	12-30	14-00	15-37	8-45	10-10	11-45	13-10	14-35	15-55	9-05	10-30	11-45	13-05	7-45	9-00
Depth of Start (m)	85	91	102	110	131	56	58	64	64	83	90	163	178	133	165	98	110
Position lat. (N)	11-01.0	10-59.8	11-01.2	10-59.4	10-59.5	10-42.2	10-41.9	10-43.6	10-47.1	10-48.2	10-44.8	10-59.6	10-58.9	10-58.9	10-58.4	10-54.6	10-55.7
of Finish long. (W)	85-54.4	85-56.2	86-00.2	86-03.6	86-08.0	85-44.8	85-43.7	85-48.2	85-50.1	85-55.8	85-54.6	86-16.8	86-20.4	86-23.8	86-28.6	85-59.1	86-03.0
Time of Finish (LST)	10-00	11-15	13-00	14-30	16-07	9-15	10-40	12-15	13-40	15-10	16-25	9-35	11-00	12-15	13-35	8-15	9-30
Depth of Finish (m)	90	94	105	117	136	59	56	72	65	90	92	170	181	182	172	98	116
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.2	3.2	3.2	3.5	3.2	3.3	3.6	3.2	3.2	3.7	3.0	3.0	3.2	3.2	3.2	2.9	3.3
Towing Direction	275	200	290	245	255	170	10	250	320	285	170	280	260	265	255		305
Length of Warp (m)	300	300	310	380	380	280	280	280	280	280	280	500	500	500	500	300	360
Wing Spread (m)	13	"	15	15	14	12	13	14	16	15	13	11	-	-	13	13	16
State of Haul	Normal	"	"	"	"	Normal	"	"	"	"	"	Normal	"	"	"	Normal	"
Weather	BC	BC	BC	BC	BC	BC	BC	BC	BC	BC	BC	BC	BC	BC	BC	BC	BC
Wind Direction	Calm	Calm	SW	S	SSW	Calm	Calm	Calm	WNW	SW	SW	NNE	NNE	ENE	E	NNE	NNE
Wind Force			2	3	2				1	2	1	4	3	2	1	4	3
Atmosph. Pressure (mb)	1017	1017	1016	1015	1015	1019	1019	1018	1018	1016	1016	1019	1019	1019	1018	1017	1018
Air Temperature (°C)	31.0	32.0	31.0	29.8	30.0	31.0	31.0	31.0	33.0	30.0	33.5	29.5	28.5	29.0	30.5	28.5	30.0
Surface WaterTemp (°C)	28.5	29.8	29.5	29.8	28.3	28.7	28.9	29.2	29.6	29.4	29.4	28.1	28.2	28.2	28.6	28.4	28.8
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction																	
Total Catches (kg)	37.3	86.6	98.1	170.0	689.9	38.1	29.1	27.3	23.8	46.8	546.7	1391.8	570.2	810.1	26.7	95.0	213.7
Remarks																	

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Survey Area	I	"	"	"	I	"	"	I	"	"	"	"	"	"	3	"	"
Survey Date	Jun.16	"	"	"	Jun.17	"	"	Jun.18	"	"	"	"	"	"	Jun.25	"	"
Position lat. (N)	10-53.0	10-54.6	10-55.0	10-52.4	10-52.0	10-55.0	10-55.0	10-33.6	10-32.3	10-32.6	10-31.1	10-33.7	10-35.5	10-36.6	9-32.4	9-34.6	9-38.1
of Start long. (W)	86-05.2	86-10.0	86-14.3	86-16.8	86-18.2	86-19.5	86-25.2	85-50.6	85-54.7	85-58.2	86-02.0	86-03.2	86-03.7	86-04.4	85-08.8	85-13.4	85-16.0
Time of Start (LST)	10-40	12-05	13-30	15-00	9-35	11-00	12-15	7-30	8-50	10-10	11-35	12-40	14-10	15-10	11-35	12-55	14-00
Depth of Start (m)	138	164	179	195	195	190	189	72	83	91	102	108	115	122	64	62	65
Position lat. (N)	10-54.2	10-54.9	10-55.0	10-51.3	10-53.3	10-55.1	10-54.3	10-32.4	10-31.1	10-31.2	10-32.8	10-32.2	10-37.2	10-35.2	9-33.2	9-36.9	9-39.7
of Finish long (W)	86-06.4	86-11.8	86-16.0	86-15.4	86-19.3	86-21.2	86-23.6	85-51.6	85-56.0	85-59.6	86-01.8	86-04.3	86-03.8	86-04.3	85-10.4	85-14.7	85-17.0
Time of Finish (LST)	11-15	12-35	14-00	15-30	10-05	11-30	12-45	8-00	9-20	10-40	12-05	13-10	14-40	15-40	12-05	13-25	14-30
Depth of Finish (m)	143	170	185	199	193	189	190	71	85	94	104	107	123	115	64	66	61
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.4	3.4	3.4	3.2	3.2	3.2	3.3	3.2	3.4	3.4	3.2	3.2	3.2	2.8	3.4	3.8	3.5
Towing Direction	315	275	270	130	315	270	150	225	210	225	10	210	N	180	295	315	325
Length of Warp (m)	480	580	580	600	600	600	600	280	300	300	300	300	300	380	280	280	280
Wing Spread (m)	15	11	12	13	14	15	11	13	12	145	11	13	12	12	16	16	15.1
State of Haul	Normal	"	"	"	Normal	"	Tear	Normal	"	"	"	"	"	"	Normal	"	"
Weather	BC	BC	BC	BC	BC	BC	BC	BC	BC	BC	BC	0	0	0	C	C	C
Wind Direction	NE	NE	NE	NE	NE	NE	NE	ENE	E	NW	Calm	Calm	Calm	S	Calm	Calm	Calm
Wind Force	3	3	3	3	4	3	2	4	1	1	-	-	-	1	-	-	-
Atmosph. Pressure (mb)	1018	1017	1017	1016	1017	1016	1016	1016	1017	1017	1017	1016	1015	1015	1018	1017	1017
Air Temperature (°C)	30.0	30.0	30.0	29.5	31.0	30.0	29.5	27.3	30.0	31.5	31.8	32.0	30.0	30.0	28.5	28.5	27.0
Surface Water Temp (°C)	28.6	28.7	28.8	28.8	28.7	28.4	28.8	28.8	28.9	29.3	30.3	30.2	29.6	29.4	27.3	27.6	27.3
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction																	
Total Catches (kg)	210.2	166.2	864.1	97.0	305.9	56.3	1650.3	6.7	70.3	82.4	108.8	157.7	0.6	76.3	54.5	127.0	
Remarks																	Finished Started No.1 Leg No.2 Leg

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
Survey Area	3	"	3	"	"	"	3	3	"	"	"	"	"	"	2	"	"
Survey Date	Jun.25	"	Jun.26	"	"	"	Jun.26	Jun.27	"	"	"	"	"	"	Jun.28	"	"
Position lat. (N)	9-41.0	9-44.1	9-38.9	9-30.2	9-29.6	9-28.6	9-28.4	9-35.6	9-41.6	9-43.3	9-44.7	9-45.3	9-47.3	9-47.3	9-54.9	9-55.8	9-56.6
of Start long. (W)	85-18.0	85-21.5	85-19.2	85-12.1	85-13.0	85-10.2	85-10.4	85-18.0	88-22.9	85-26.7	85-27.0	85-30.0	85-31.9	85-34.0	85-43.6	85-46.6	85-48.3
Time of Start (LST)	15-10	16-15	7-25	9-55	11-40	13-55	16-00	7-40	9-40	11-10	12-50	13-55	15-15	16-25	8-05	9-25	11-15
Depth of Start (m)	56	57	86	185	262	353	420	104	87	105	87	106	89	105	85	105	176
Position lat. (N)	9-42.4	9-45.0	9-37.0	9-30.6	9-29.8	9-28.8	9-28.2	9-36.6	9-42.6	9-42.5	9-45.2	9-45.8	9-47.8	9-47.9	9-55.8	9-54.6	9-55.4
of Finish long. (W)	85-19.8	85-22.7	85-18.2	85-13.6	85-14.0	85-11.8	85-11.9	85-19.2	85-24.2	85-25.4	85-28.2	85-31.5	85-33.4	85-35.4	85-44.8	85-45.7	85-47.2
Time of Finish (LST)	15-40	16-45	7-55	10-25	12-05	14-25	16-30	8-10	10-10	11-40	13-20	14-25	15-45	16-55	8-35	9-55	11-45
Depth of Finish (m)	57	57	85	182	240	365	431	104	88	103	92	109	96	106	88	107	169
Towing Time (min)	30	30	30	30	25	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.8	3.4	3.0	3.2	2.9	3.0	2.7	3.5	3.5	3.0	3.0	3.3	3.3	3.0	3.2	3.0	3.2
Towing Direction	310	305	135	285	275	275	285	310	310	125	295	290	285	290	305	145	135
Length of Warp (m)	280	280	300	580	780	900	1000	380	300	380	300	380	300	380	300	380	580
Ving Spread (m)	16	15	14	12.7	-	-	-	15.9	11.2	15.3	14.0	15.9	13.0	10.4	15.0	15.3	13.6
State of Haul	Normal	"	Normal	"	"	"	Normal	Normal	"	"	"	"	"	"	Normal	"	"
Weather	R	C	C	BC	R	C	BC	R	C	C	C	C	O	O	BC	BC	BC
Wind Direction	Calm	Calm	S	S	SW	WSW	WSW	WSW	WSW	WSW	W	W	W	W	N	N	W
Wind Force	-	-	2	1	2	3	4	4	3	2	3	3	4	4	1	2	3
Atmosph. Pressure (mb)	1017	1017	1018	1018	1018	1016	1015	1017	1017	1017	1016	1015	1015	1015	1016	1017	1016
Air Temperature (°C)	27.5	27.5	27.2	30.0	28.0	29.0	28.5	27.0	28.5	30.0	30.0	29.0	28.0	29.5	28.5	29.0	30.0
Surface WaterTemp(°C)	27.2	26.8	26.5	28.0	27.5	27.8	27.8	26.8	26.8	27.7	27.2	27.4	27.5	-	26.9	27.3	28.2
Bottom materials	H	H	M	M	M/R	M	M	M	M	M	M	M	M	M	M	M	H
Current Direction																	
Total Catches (kg)	34.0	58.3	23.9	1194.6	162.5	4.2	4.9	1500.7	39.5	1102.6	60.9	427.2	775.3	294.0	23.9	54.7	628.0
Remarks																	

Appendix table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
Survey Area	2	"	"	2	"	"	"	"	"	2	"	"	"	"	"	2	"
Survey Date	Jun.28	"	"	Jun.29	"	"	"	"	"	Jun.30	"	"	"	"	"	Jul.1	"
Position lat. (N)	9-56.7	9-59.0	10-03.7	10-05.6	10-08.8	10-10.8	10-08.6	10-11.2	10-11.0	10-14.5	10-17.8	10-20.9	10-21.0	10-24.1	10-22.4	10-25.5	10-25.8
of Start long. (W)	85-48.6	85-46.8	85-49.2	85-49.7	85-54.4	85-54.2	85-51.6	85-59.0	85-59.0	86-00.0	86-02.8	85-59.2	85-57.2	85-59.1	86-06.8	85-55.8	85-57.5
Time of Start (LST)	13-00	14-45	16-10	07-00	9-10	10-20	11-45	13-50	15-45	7-25	8-40	10-45	12-25	13-45	16-00	7-35	8-55
Depth of Start (m)	215	81	80	72	107	89	70	180	210	113	112	89	72	87	119	71	80
Position lat. (N)	9-55.5	10-00.4	10-05.0	10-07.1	10-10.2	10-08.8	10-10.2	10-10.0	10-10.1	10-15.7	10-19.4	10-22.4	10-22.5	10-25.3	10-23.7	10-24.3	10-27.0
of Finish long (W)	85-47.8	85-47.6	85-50.1	85-50.5	85-55.4	85-53.3	85-52.3	85-57.9	85-58.3	86-01.0	86-03.7	85-59.6	85-56.8	85-59.6	86-07.0	85-55.4	85-58.0
Time of Finish (LST)	13-30	15-15	18-40	07-30	9-40	10-50	12-15	14-20	16-10	7-55	9-10	11-15	12-55	14-15	16-30	8-05	9-25
Depth of Finish (m)	206	80	81	69	107	90	70	182	210	113	108	87	73	90	117	68	83
Towing Time (min)	30	30	30	30	30	30	30	30	25	30	30	30	30	30	30	30	30
Towing speed (knot)	3.0	3.4	3.5	3.0	3.3	3.3	3.3	3.0	3.0	3.3	4.0	3.2	3.0	2.8	3.0	2.8	3.0
Towing Direction	145	330	330	325	325	155	3490	135	135	315	330	350	15	340	N	170	350
Length of Warp (m)	700	300	300	300	380	300	300	580	700	380	380	300	300	300	400	300	300
Wing Spread (m)	11	16.0	15.0	16	12.9	14	16	13.6	14	15	16	14.5	12	14.5	14	14	14.5
State of Haul	Normal	"	"	Normal	"	"	"	"	"	Normal	"	"	"	"	"	Normal	"
Weather	BC	C	C	C	O	BC	BC	BC	BC	C	BC	R	C	BC	BC	BC	BC
Wind Direction	W	W	W	WSW	W	W	W	W	W	W	W	N	NNW	NW	Calm	SE	SE
Wind Force	2	2	3	2	2	2	2	3	1	1	1	4	2	1	-	3	1
Atmosph. Pressure (mb)	1016	1016	1015	1016	1017	1017	1016	1014	1014	1016	1016	1016	1015	1014	1013	1016	1016
Air Temperature (°C)	31.0	30.0	28.0	27.5	30.0	29.0	30.5	29.5	34.0	30.0	30.5	28.0	28.3	30.0	30.5	28.5	28.2
Surface Water Temp (°C)	28.4	28.6	28.2	27.9	28.6	28.8	28.5	28.8	29.2	28.5	28.5	-	28.4	28.8	28.6	28.4	28.5
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction																	
Total Catches (kg)	378.8	59.5	44.1	36.0	52.1	31.3	38.2	2500.0	2000.0	57.8	763.2	10.9	36.7	33.4	562.6	42.1	2.9
Remarks												lots of jelly-fishes				lots of mud	lots of jelly-fishes

Appendix Table-4

Recording Date of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	59	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85
Survey Area	2	1	"	"	1	"	"	"	"	1	"	"	"	"	"	1	"
Survey Date	Jul.1	"	"	"	Jul.2	"	"	"	"	Jul.3	"	"	"	"	"	Jul.4	"
Position lat. (N)	10-27.7	10-36.8	10-37.4	10-36.5	10-47.8	10-49.2	10-48.7	10-48.7	10-49.5	10-45.6	10-44.3	10-45.7	10-44.2	10-46.5	10-44.7	10-44.1	10-45.3
of Start long. (W)	86-02.2	86-01.4	86-04.8	86-08.7	86-01.3	86-04.8	86-07.2	86-11.0	86-16.4	85-57.0	85-59.2	86-03.3	86-06.4	86-11.6	86-16.0	86-01.0	86-05.2
Time of Start (LST)	10-45	12-55	14-30	16-00	8-55	10-20	12-05	13-40	15-25	08-00	9-25	10-50	12-25	13-50	15-50	7-40	9-05
Depth of Start (m)	102	119	138	169	122	146	165	191	204	98	118	143	167	204	215	131	158
Position lat. (N)	10-29.1	10-38.5	10-36.8	10-35.5	10-49.6	10-47.4	10-50.2	10-50.0	10-48.4	10-44.3	10-45.3	10-44.2	10-45.4	10-44.9	10-46.2	10-45.4	10-43.9
of Finish long (W)	86-02.1	86-01.7	86-06.0	86-09.9	86-02.0	86-04.4	86-07.7	86-12.0	86-17.6	85-55.9	86-00.4	86-02.9	86-07.8	86-11.7	86-16.0	86-02.1	86-05.5
Time of Finish (LST)	11-15	19-25	15-00	16-70	9-25	10-50	12-35	14-10	15-55	8-30	9-55	11-20	12-55	14-20	16-20	8-10	9-35
Depth of Finish (m)	101	128	131	176	122	147	165	191	206	96	124	142	177	207	212	137	159
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.0	3.2	2.8	3.1	3.7	3.3	3.2	3.3	3.2	3.4	3.3	3.2	3.4	3.2	3.2	3.6	3.0
Towing Direction	10	N	235	225	335	170	340	315	235	140	315	165	315	180	N	315	200
Length of Warp (m)	380	380	480	580	400	480	580	600	600	300	380	480	580	600	680	400	500
Wing Spread (m)	13.5	14	13	14	14.7	15.6	13.7	10.2	16	12.6	15.9	14.0	15.5	15	12.3	10.8	11.3
State of Haul	Normal	"	"	"	Normal	"	"	"	"	Normal	"	"	"	"	"	Normal	"
Weather	BC	BC	C	R	O	BC	BC	BC	C	BC	BC	BC	BC	BC	BC	C	C
Wind Direction	SE	W	W	SW	S	S	Calm	Calm	SW	ESE	S	S	S	W	W	N	N
Wind Force	2	2	2	2	1	1	-	-	1	3	1	2	2	2	2	3	3
Atmosph. Pressure (mb)	1017	1016	1015	1014	1016	1016	1017	1015	1015	1016	1017	1017	1016	1016	1014	1016	1017
Air Temperature (°C)	30.2	30.6	28.0	28.3	29.0	31.0	31.5	31.0	30.1	30.8	30.2	30.5	30.5	31.5	30.0	27.5	28.5
Surface Water Temp (°C)	29.0	29.1	28.8	28.2	28.8	28.8	29.2	29.4	29.4	28.5	28.5	28.7	29.3	29.5	28.8	28.4	28.7
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction										NW							
Total Catches (kg)	42.2	95.6	100.9	1002.7	56.2	1300.2	31.6	40.8	63.5	114.4	35.0	35.8	144.0	90.0	219.1	32.5	198.1
Remarks																	

Appendix Table-4

Recording Data of Trawling Research Survey by Misshinmaru No.201., 1988

Series No. of Net	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102
Survey Area	1	"	"	"	1	"	"	"	"	1	"	"	2	"	"	"	"
Survey Date	Jun.4	"	"	"	Jun.4	"	"	"	"	Jun.6	"	"	Jun.14	"	"	"	"
Position lat. (N)	10-44.2	10-45.0	10-44.6	10-50.0	10-42.6	10-40.7	10-42.1	10-40.6	10-41.8	10-59.3	10-56.1	10-52.3	9-57.5	10-00.6	10-05.3	10-07.0	10-06.0
of Start long. (W)	86-07.9	86-14.4	86-18.0	86-20.2	85-54.6	85-57.8	86-03.2	86-07.6	86-10.0	86-30.0	86-31.1	86-33.2	85-44.6	85-46.9	85-51.8	85-55.0	85-54.4
Time of Start (LST)	10-35	12-10	13-35	15-15	8-30	10-15	12-00	13-50	15-40	11-00	12-27	14-06	9-28	10-32	11-55	13-23	15-40
Depth of Start (m)	179	212	215	200	92	110	142	179	203	167	183	204	73	72	103	180	210
Position lat. (N)	10-45.3	10-44.4	10-46.4	10-51.3	10-41.0	10-42.3	10-40.5	10-42.2	10-40.2	10-59.3	10-54.6	10-51.1	9-58.5	10-01.9	10-06.8	10-06.8	10-05.2
of Finish long (W)	86-09.1	86-15.8	86-18.0	86-21.0	85-53.8	85-58.1	86-03.7	86-07.7	86-10.0	86-31.5	86-30.7	86-32.1	85-45.5	85-47.5	85-52.7	85-54.9	85-53.5
Time of Finish (LST)	11-05	12-40	14-05	15-45	9-00	10-45	12-30	14-20	16-10	11-30	12-57	14-36	9-58	11-02	12-25	13-29	16-03
Depth of Finish (m)	187	216	209	198	88	111	145	178	202	166	189	201	75	74	103	176	203
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	6	23
Towing speed (knot)	3.3	3.2	3.2	3.1	3.4	3.3	3.2	3.2	3.2	3.2	3.2	3.2	2.9	3.1	3.3	-	2.4
Towing Direction	315	240	N	305	150	350	200	N	180	270	165	125	320	330	330	-	135
Length of Warp (m)	580	680	680	600	300	380	480	580	600	500	580	600	280	280	380	580	600
Wing Spread (m)	11.8	-	-	-	14	11	14.9	11	15.9	14.2	16.4	15	13.8	14.6	14.1	-	10.2
State of Haul	Normal	"	"	"	Normal	"	"	"	"	"	"	"	Normal	"	"	Tear	Normal
Weather	0	C	R	R	BC	BC	C	C	R	BC	BC	BC	BC	BC	BC	BC	BC
Wind Direction	N	Calm	S	S	ESE	E	S	S	S	Calm	Calm	S	S	S	Calm	S	S
Wind Force	2	-	5	3	3	2	3	3	3	-	-	2	2	2	-	1	2
Atmosph. Pressure (mb)	1017	1017	1017	1016	1017	1017	1018	1016	1016	1018	1018	1016	1018	1019	1018	1018	1016
Air Temperature (°C)	31.5	32.5	24.5	24.0	28.5	30.0	31.0	30.0	28.0	31.0	31.5	31.5	29.0	30.0	31.7	31.8	32.0
Surface WaterTemp(°C)	29.1	30.3	28.3	28.3	28.4	28.5	28.6	28.4	28.3	29.1	29.2	28.6	27.5	27.6	28.5	28.1	28.2
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction																	
Total Catches (kg)	600.8	112.0	414.2	1000.2	61.2	197.0	93.9	2000.0	146.7	4000.0	4.1	53.0	32.1	48.5	41.6	87.0	628.8
Remarks										Lots of butterfish		Finished No.2 Leg	Started No.3 Leg			Trapped in sea bed	

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	
Survey Area	2	1	"	"	"	"	"	1	"	"	"	"	1	"	"	"	"	
Survey Date	Jun.14	Jun.15	"	"	"	"	"	Jun.16	"	"	"	"	Jun.19	"	"	"	"	
Position lat. (N)	10-06.3	10-35.0	10-35.8	10-35.0	10-37.3	10-40.8	10-41.2	10-40.2	10-42.5	10-42.3	10-38.5	10-37.0	10-31.4	10-33.0	10-35.3	10-39.8	10-42.5	
of Start long. (W)	85-54.3	85-56.4	85-53.7	85-48.6	85-46.2	85-46.6	85-50.0	86-00.2	86-01.4	86-04.9	86-08.9	86-01.2	86-10.6	86-12.0	86-12.2	86-11.7	86-14.1	
Time of Start (LST)	16-47	8-44	10-00	11-23	12-38	14-10	15-20	8-22	9-22	10-47	12-16	13-42	8-43	10-02	11-13	12-36	13-50	
Depth of Start (m)	196	93	84	72	63	68	77	125	131	157	195	212	180	217	222	220	220	
Position lat. (N)	10-05.2	10-36.5	10-37.0	10-35.7	10-37.0	10-42.0	10-41.1	10-41.9	10-40.8	10-40.9	10-37.6	10-35.6	10-32.5	10-32.2	10-36.4	10-41.3	10-41.4	
of Finish long (W)	85-53.8	85-55.8	85-53.0	85-46.8	85-47.5	85-47.7	85-51.7	86-00.4	86-00.9	86-05.6	86-09.9	86-01.6	86-10.9	86-12.0	86-12.6	86-11.7	86-15.0	
Time of Finish (LST)	17-08	9-14	10-26	11-53	13-08	14-40	15-50	8-52	10-22	11-17	12-46	14-12	9-08	10-19	11-38	13-06	14-20	
Depth of Finish (m)	195	93	84	68	68	71	81	127	129	168	198	213	199	222	227	220	222	
Towing Time (min)	21	30	26	30	30	30	30	30	30	30	30	30	25	17	25	30	30	
Towing speed (knot)	2.8	3.2	3.2	3.4	3.0	3.3	3.2	3.3	3.3	3.2	3.0	3.0	3.0	-	-	3.0	3.0	
Towing Direction	140	20	25	95	255	320	265	355	170	215	220	195	350	180	335	N	215	
Length of Warp (m)	600	300	280	280	285	280	280	400	400	500	600	680	580	680	680	680	680	
Wing Spread (m)	11.1	16.5	15.1	14.6	13.5	14.2	13.7	16	12.7	15.5	12.1	15.5	14.5	-	16.6	8.0	14.4	
State of Haul	Normal	Normal	"	"	"	"	"	Normal	"	"	"	"	Normal	"	"	"	"	
Weather	BC	C	0	C	0	C	C	BC	BC	BC	BC	BC	BC	BC	BC	BC	BC	
Wind Direction	S	E	E	NE	NE	NE	Calm	NE	NE	NE	NE	NE	N	N	N	N	N	
Wind Force	2	2	3	3	2	1	-	3	2	2	3	2	4	4	4	5	4	
Atmosph. Pressure (mb)	1016	1019	1019	1019	1018	1017	1016	1020	1020	1020	1020	1019	1017	1017	1017	1017	1016	
Air Temperature (°C)	33.0	29.0	31.0	31.0	32.0	33.0	32.8	30.0	31.0	31.0	29.5	30.0	30.0	31.0	31.5	31.5	30.0	
Surface WaterTemp (°C)	28.5	27.8	28.2	28.6	29.2	28.6	28.6	28.0	28.2	28.1	28.4	28.8	28.3	28.4	28.6	28.6	28.7	
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	
Current Direction	N										NNW	NNW	N	N	N	N	N	
Total Catches (kg)	149.5	12.9	9.4	39.2	67.1	0.1	16.2	15.2	33.5	73.8	2501.1	808.2	1090.3	503.8	2112.2	313.2	205.8	
Remarks	Bad bottom		Bad bottom			Lots of jelly-fish						Lots of butter-fish	Lots of To Punta-renas for crew change					

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No. 201, 1988

Series No. of Net	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136
Survey Area	1	1	"	"	"	"	1	"	"	"	"	1	"	3	"	"	"
Survey Date	Jun. 19	Jun. 20	"	"	"	"	Jun. 21	"	"	"	"	Jun. 22	"	Jun. 27	"	"	"
Position lat. (N)	10-33.5	10-30.8	10-30.6	10-32.4	10-34.0	10-34.6	10-31.3	10-34.4	10-34.6	10-34.3	10-34.5	10-34.4	10-34.2	9-34.5	9-37.1	9-37.6	9-40.1
of Start long. (W)	86-12.5	86-14.2	86-13.9	86-15.4	86-20.0	86-16.1	85-59.8	86-00.1	86-00.1	86-00.2	86-00.3	86-00.2	86-00.1	85-12.9	85-15.1	85-18.6	85-18.4
Time of Start (LST)	17-00	9-00	10-38	11-53	13-18	15-50	6-55	10-53	14-33	18-40	23-00	2-20	5-24	18-46	19-42	20-57	22-20
Depth of Start (m)	226	316	288	324	381	252	96	102	102	103	103	103	102	63	68	82	64
Position lat. (N)	10-34.5	10-31.9	10-31.8	10-33.4	10-34.5	10-35.2	10-32.8	10-32.6	10-31.1	10-32.8	10-33.2	10-32.8	10-32.7	9-35.7	9-38.7	9-38.5	9-41.1
of Finish long. (W)	86-12.7	86-15.2	86-14.8	86-16.7	86-21.0	86-16.8	86-00.1	86-00.3	86-00.3	86-00.4	86-01.2	86-00.0	85-59.8	85-14.1	85-15.9	85-19.5	85-19.7
Time of Finish (LST)	17-20	9-30	11-08	12-23	13-39	16-10	7-25	11-23	15-03	19-10	23-30	2-50	5-54	19-16	20-12	21-27	22-50
Depth of Finish (m)	228	322	299	335	396	247	99	99	99	100	103	98	97	64	65	86	63
Towing Time (min)	20	30	30	30	21	20	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.6	3.0	3.0	3.0	-	3.6	3.1	3.4	3.2	3.1	3.2	3.2	3.2	3.2	3.4	3.2	3.4
Towing Direction	350	320	325	320	295	320	350	190	185	190	215	175	170	310	325	310	305
Length of Warp (m)	700	900	800	900	1000	780	300	300	300	300	300	300	300	200	200	300	200
Wing Spread (m)	12.6	-	-	-	-	-	-	11.2	-	-	-	-	-	12x2	"	"	"
State of Haul	Normal	Normal	"	"	"	"	Normal	"	"	"	"	Normal	"	Normal	"	"	"
Weather	BC	B	BC	BC	BC	0	BC	BC	C	C	C	BC	BC	C	BC	BC	BC
Wind Direction	S	NE	NE	N	N	NE	N	NE	NE	NE	E	NE	E	NE	Calm	Calm	Calm
Wind Force	3	4	5	5	5	4	2	5	5	3	4	3	4	-	-	-	-
Atmosph. Pressure (mb)	1015	1018	1018	1017	1016	1017	1016	1017	1016	1016	1018	1016	1017	1017	1016	1018	1018
Air Temperature (°C)	29.5	30.0	29.7	29.8	29.8	30.5	28.0	31.0	30.0	28.2	28.0	26.7	27.0	28.5	27.8	27.5	27.5
Surface Water Temp (°C)	28.6	28.2	28.2	28.2	27.6	28.2	28.2	28.6	28.6	28.2	28.2	27.7	27.3	28.5	28.6	28.4	28.2
Bottom materials	M						M	M	M	M	M	M	M	M	M	M	M
Current Direction	N	NNW	NNW	NNW		NNW	NW					NW					
Total Catches (kg)	242.0	0	0	0.6	0.6	12.2	137.1	208.7	203.9	183.1	101.9	238.1	358.5	33.2	36.5	46.3	23.1
Remarks				Trapped in sea bed	in sea bed	Bad bottom	Day-night survey	"	"	"	"	"	Started double rigged				
													Finished rigged No.3 Leg trawl				

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153
Survey Area	3	"	"	2	"	"	"	"	"	2	"	"	"	1	"	"	1
Survey Date	Jun.28	"	"	Jun.29	"	"	"	"	"	Jun.30	"	"	"	"	"	"	Jun.31
Position lat. (N)	9-42.8	9-43.8	9-45.8	9-59.0	9-59.8	10-04.1	10-09.1	10-59.9	10-21.1	10-23.2	10-25.1	10-21.8	10-25.4	10-31.0	10-33.7	10-31.4	10-34.3
of Start long. (W)	85-21.9	85-25.0	85-28.4	85-45.4	85-47.2	85-49.5	85-51.7	85-53.4	85-56.7	85-56.6	85-57.6	85-59.1	85-58.0	85-59.0	86-01.2	85-03.7	86-04.7
Time of Start (LST)	18-40	19-48	20-55	0-13	1-19	18-39	19-48	22-15	23-37	0-35	1-42	18-40	19-50	21-10	22-24	23-35	0-50
Depth of Start (m)	67	82	83	65	83	81	68	84	67	72	80	85	80	90	103	106	113
Position lat. (N)	9-43.8	9-44.7	9-46.9	10-00.6	10-01.2	10-05.6	10-10.6	10-11.2	10-22.9	10-24.6	10-23.7	10-23.5	10-26.9	10-32.5	10-32.3	10-33.1	10-32.6
of Finish long (W)	85-23.2	85-26.2	85-29.7	85-46.2	85-47.9	85-50.2	85-52.5	85-54.6	85-56.4	85-56.2	85-58.2	85-58.8	85-57.3	85-58.9	86-01.9	86-03.1	86-04.8
Time of Finish (LST)	19-10	20-18	21-25	0-43	1-49	19-09	20-18	22-45	0-07	1-05	2-12	19-16	20-20	21-40	22-54	7-05	1-20
Depth of Finish (m)	67	81	85	65	84	80	70	90	71	72	80	83	80	92	102	108	111
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.2	3.0	3.2	3.2	3.3	3.4	3.4	3.3	3.3	3.0	3.2	3.3	3.4	3.3	3.2	3.5	3.3
Towing Direction	310	305	305	335	330	335	330	320	10	20	205	10	25	5	210	10	180
Length of Warp (m)	200	300	300	200	300	300	200	300	200	200	300	300	300	300	300	300	300
Wing Spread (m)	12x2	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
State of Haul	Normal	"	"	Normal	"	"	"	"	"	Normal	"	"	"	"	"	"	Tear
Weather	0	C	R	R	R	C	R	C	BC	BC	BC	C	C	BC	BC	BC	BC
Wind Direction	S	WSW	WSW	W	W	W	W	NW	NW	Calm	SW	S	Calm	N	N	N	N
Wind Force	3	4	5	4	3	5	5	5	3	-	2	2	-	2	1	1	2
Atmosph. Pressure (mb)	1016	1016	1016	1017	1017	1017	1017	1018	1018	1018	1017	1016	1016	1017	1017	1017	1017
Air Temperature (°C)	28.5	28.0	27.5	26.0	25.8	27.0	28.0	26.0	26.8	27.0	27.0	25.7	26.5	27.0	27.5	27.0	27.0
Surface WaterTemp (°C)	28.6	28.8	28.4	27.8	27.4	28.2	28.0	28.2	28.3	28.4	28.2	28.3	28.0	28.5	28.2	28.2	28.2
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	H	M	M	M
Current Direction																	
Total Catches (kg)	35.1	63.0	63.1	20.2	33.2	49.1	33.9	25.8	29.3	23.9	73.1	259.2	74.1	244.3	171.3	79.7	38.1
Remarks																	

Appendix Table-4

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170
Survey Area	1	"	"	"	"	"	"	"	"	"	1	"	"	"	"	"	"
Survey Date	Jun.31	"	"	"	Aug.1	"	"	"	"	"	Aug.2	"	"	"	"	"	Aug.3
Position lat. (N)	10-35.9	10-37.3	10-35.5	10-37.0	10-33.0	10-32.2	10-40.8	10-42.0	10-39.5	10-42.2	10-39.7	10-40.8	10-58.4	10-59.7	10-59.9	11-00.4	10-55.6
of Start long. (W)	86-05.8	86-03.9	86-02.2	85-55.8	85-55.3	85-51.8	86-08.5	86-05.7	86-02.6	86-00.9	85-58.3	85-54.8	85-57.2	85-52.7	86-00.7	86-06.2	86-06.2
Time of Start (LST)	18-44	19-58	21-15	23-00	0-00	1-25	18-42	20-04	21-34	22-50	0-03	1-35	18-37	19-58	21-28	22-43	0-05
Depth of Start (m)	120	125	110	93	85	71	191	163	136	127	112	87	98	87	104	126	140
Position lat. (N)	10-37.7	10-35.6	10-37.2	10-35.5	10-31.2	10-33.8	10-42.6	10-40.6	10-41.5	10-40.7	10-41.4	10-39.0	10-59.6	10-59.7	11-00.2	10-59.8	10-54.2
of Finish long. (W)	86-05.8	86-03.9	86-02.3	85-55.7	85-55.5	85-51.0	86-08.4	86-05.6	86-02.6	86-00.7	85-58.0	85-55.0	85-56.1	85-54.3	86-02.4	86-07.8	86-05.3
Time of Finish (LST)	19-14	20-28	21-45	23-30	0-30	1-55	19-12	20-34	22-04	23-20	0-33	2-05	19-07	20-28	21-58	23-13	0-35
Depth of Finish (m)	50	115	119	91	85	75	189	164	138	125	112	91	97	91	109	132	137
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.3	3.2	3.0	3.0	3.3	3.3	3.6	3.0	4.0	3.2	3.3	3.4	3.3	3.2	3.2	3.2	3.3
Towing Direction	N	180	N	175	185	30	N	175	N	170	10	210	40	270	275	265	150
Length of Warp (m)	400	300	300	250	250	200	600	500	400	350	300	250	300	300	300	350	450
Wing Spread (m)	12x2	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
State of Haul	Normal	"	"	"	Normal	"	"	"	"	"	Normal	"	"	"	"	"	Normal
Weather	R	R	C	BC	BC	BC	C	R	BC	R	BC	BC	R	R	C	C	C
Wind Direction	S	S	SE	SE	SE	Calm	S	S	SE	S	SE	S	W	W	SW	SW	SW
Wind Force	2	2	2	2	2	-	3	3	3	3	4	3	2	3	4	5	5
Atmosph. Pressure (mb)	1016	1017	1017	1017	1017	1016	1017	1018	1019	1019	1018	1017	1016	1017	1018	1019	1017
Air Temperature (°C)	26.3	27.0	27.0	26.5	27.5	27.0	27.0	28.0	27.5	27.5	27.5	26.0	27.0	27.0	28.4	28.0	26.8
Surface WaterTemp (°C)	28.0	28.0	27.8	27.8	28.0	27.8	28.2	28.2	28.2	28.0	28.0	28.2	28.2	28.1	28.2	28.0	27.8
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction																	
Total Catches (kg)	106.1	96.3	385.9	25.1	8.8	114.4	94.3	123.2	115.8	142.1	111.4	9.8	3.6	15.3	16.4	27.2	48.6
Remarks																	

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	
Survey Area	1	"	"	"	"	1	"	"	"	"	"	1	"	"	"	"	"	
Survey Date	Aug.3	"	"	"	"	Aug.4	"	"	"	"	"	Aug.5	"	"	"	"	"	
Position lat. (N)	10-54.1	10-50.1	10-47.6	10-50.2	10-46.4	10-43.4	10-45.9	10-47.1	10-45.3	10-45.1	10-46.0	10-42.3	10-40.8	10-42.7	10-36.8	10-36.7	10-35.8	
of Start long. (W)	86-03.8	86-02.9	86-03.8	86-08.0	86-08.5	86-05.6	86-02.5	85-56.0	85-51.7	85-47.4	85-46.5	85-44.4	85-46.7	85-50.4	85-53.4	85-49.2	85-46.6	
Time of Start (LST)	2-03	18-52	19-55	21-25	22-53	0-35	1-55	19-20	20-37	21-53	23-10	0-15	1-23	18-50	20-15	21-15	22-15	
Depth of Start (m)	125	130	144	171	190	160	138	93	78	63	58	57	66	77	86	75	66	
Position lat. (N)	10-55.2	10-48.4	10-49.2	10-48.5	10-44.8	10-45.0	10-44.4	10-45.4	10-43.8	10-46.2	10-44.8	10-40.6	10-41.8	10-41.5	10-36.3	10-36.7	10-36.0	
of Finish long (W)	86-02.8	86-02.8	86-03.8	86-07.7	86-08.8	86-05.0	86-01.8	85-55.2	85-51.0	85-48.9	85-45.6	85-44.1	85-47.9	85-51.7	85-51.4	85-47.7	85-48.2	
Time of Finish (LST)	2-33	19-22	20-25	21-55	23-23	1-05	2-25	19-50	21-07	22-23	23-40	0-45	1-53	19-20	20-45	21-45	22-45	
Depth of Finish (m)	116	137	138	170	192	153	135	93	78	63	56	57	71	82	81	70	71	
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
Towing speed (knot)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.4	3.2	3.4	3.1	3.4	3.2	3.2	3.4	3.2	3.2	
Towing Direction	45	175	N	170	190	15	150	150	155	315	140	170	315	225	105	895	275	
Length of Warp (m)	400	400	450	500	550	450	400	300	210	200	150	150	200	200	250	200	200	
Wing Spread (m)	12x2	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
State of Haul	Normal	"	"	"	"	Normal	"	"	"	"	"	Normal	"	"	"	"	"	
Weather	R	C	C	C	C	BC	BC	BC	BC	BC	BC	BC	BC	R	R	C	C	
Wind Direction	SW	SW	N	NW	Calm	Calm	Calm	E	NE	NE	NE	E	NE	Calm	SE	SE	SE	
Wind Force	5	3	3	2	-	-	-	4	5	4	3	3	3	-	3	3	3	
Atmosph. Pressure (mb)	1016	1016	1016	1016	1017	1016	1016	1017	1017	1017	1016	1016	1017	1016	1016	1017	1017	
Air Temperature (°C)	26.0	26.0	26.5	26.5	26.8	27.5	27.0	28.0	27.5	27.3	28.0	27.0	27.8	27.0	27.5	27.0	26.5	
Surface WaterTemp (°C)	28.1	27.7	27.8	27.6	27.4	27.4	27.6	28.1	27.8	27.8	27.6	27.7	28.2	28.1	28.0	28.0	28.2	
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	
Current Direction																		
Total Catches (kg)	35.7	29.7	26.6	21.5	155.1	84.7	89.6	13.3	5.2	65.8	62.4	54.9	41.8	132.1	78.7	60.9	54.6	
Remarks																		finished double trawled

Appendix

Recording Data of Trawling Research Survey by Nisshinmaru No.201, 1988

Series No. of Net	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204
Survey Area	1	"	"	"	"	i	"	"	"	"	1	"	"	"	"	"	"
Srvey Date	Sep.3	"	"	"	"	Sep.4	"	"	"	"	Sep.5	"	"	"	"	"	"
Position lat. (N)	10-53.8	10-58.5	11-00.5	11-01.0	11-00.9	11-00.2	11-00.1	11-01.5	11-00.6	11-00.8	10-48.0	10-46.5	10-45.7	10-42.8	10-40.7	10-37.3	10-37.0
of Start long. (W)	85-58.8	85-57.4	85-53.4	85-58.9	86-03.5	86-08.6	86-15.6	86-20.8	86-25.3	86-30.1	85-57.2	85-54.9	85-52.2	85-51.0	85-53.2	85-55.3	85-53.5
Time of Start (LST)	10-00	11-18	12-40	14-00	15-12	8-05	9-43	11-03	12-20	13-37	7-42	8-42	9-55	10-58	11-57	13-06	14-23
Depth of Start (m)	97	99	87	102	111	135	159	173	181	153	96	88	79	79	86	94	87
Position lat. (N)	10-55.5	10-59.8	11-00.2	11-01.1	11-00.8	11-00.3	11-00.1	11-01.5	11-00.6	11-00.9	10-47.8	10-44.9	10-44.2	10-41.4	10-39.8	10-35.8	10-36.6
of Finish long (W)	85-58.6	85-56.6	85-55.0	86-00.3	86-05.0	86-10.2	86-17.2	86-22.5	86-26.9	86-31.7	85-55.5	85-54.6	85-51.5	85-51.8	85-54.5	85-55.7	85-52.0
Time of Finish (LST)	10-30	11-48	13-10	14-30	15-42	8-35	10-13	11-33	12-50	14-07	8-12	9-12	10-25	11-28	12-27	13-36	14-53
Depth of Finish (m)	95	97	91	103	117	141	164	175	179	155	90	89	79	81	92	93	81
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.3	3.2	3.3	3.0	3.0	3.2	3.2	3.2	3.0	3.4	3.2	3.2	3.2	3.2	3.2	3.4	3.2
Towing Direction	5	30	260	275	265	270	270	270	270	275	95	165	145	215	235	195	100
Length of Warp (m)	350	300	300	300	380	400	500	580	600	480	300	280	280	280	300	300	300
Wing Spread (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
State of Haul	Normal	"	"	"	"	Normal	"	"	"	"	Normal	"	"	"	"	"	"
Weather	BC	BC	BC	BC	BC	BC	BC	BC	BC	B	BC	C	C	BC	BC	BC	C
Wind Direction	SW	SW	WSW	N	N	N	N	N	N	N	N	N	S	S	N	N	NW
Wind Force	2	3	3	3	3	3	3	2	2	2	1	1	2	2	2	2	2
Atmosph. Pressure (mb)	1018	1018	1017	1016	1015	1018	1017	1017	1017	1016	1017	1018	1018	1018	1016	1016	1016
Air Temperature (°C)	29.0	29.0	30.0	30.0	29.5	28.0	30.0	32.0	32.0	31.0	29.0	30.0	32.0	32.0	32.0	32.0	30.5
Surface Water Temp (°C)	28.9	28.9	28.9	29.0	28.8	28.2	27.7	28.8	29.2	28.8	28.0	28.2	28.5	29.0	29.2	29.0	28.0
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction																	
Total Catches (kg)	1.9	4.8	3.4	10.0	28.8	1280.6	6.7	58.3	101.2	148.5	0	11.4	10.5	80.5	34.8	3.3	1.1
Remarks	Started No.6 Leg										Discarded all catches						

Recording Data of Trawling Research Survey by Nishimaru No.201, 1988

Series No. of Net	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221
Survey Area	1	"	"	"	"	"	"	"	1	"	"	"	"	"	1	"	"
Srvey Date	Sep.6	"	"	"	"	"	"	"	Sep.7	"	"	"	"	"	Sep.8	"	"
Position lat. (N)	10-32.8	10-35.9	10-36.6	10-41.2	10-40.6	10-44.4	10-43.9	10-45.5	10-53.4	10-56.0	10-56.3	10-55.9	10-55.7	10-55.9	10-53.6	10-52.1	10-51.9
of Start long. (W)	85-51.9	85-48.9	85-48.6	85-48.5	85-43.4	85-44.7	85-46.9	85-49.3	86-03.3	86-06.2	86-10.5	86-14.6	86-18.3	86-21.8	86-29.9	86-33.3	86-34.0
Time of Start (LST)	8-02	9-16	10-25	11-48	13-18	14-30	15-47	16-36	8-26	9-43	11-02	12-22	13-34	14-47	10-58	12-19	13-55
Depth of Start (m)	74	71	71	72	56	53	63	67	124	140	160	178	188	189	188	207	209
Position lat. (N)	10-33.9	10-36.2	10-36.8	10-42.0	10-41.9	10-45.8	10-44.9	10-46.6	10-54.7	10-56.8	10-56.5	10-55.9	10-55.6	10-55.8	10-53.6	10-51.5	10-51.2
of Finish long (W)	85-51.0	85-47.3	85-47.1	85-47.2	85-43.8	85-45.5	85-48.2	85-50.4	86-04.4	86-07.6	86-11.8	86-16.1	86-19.8	86-23.4	86-31.4	86-31.9	86-32.5
Time of Finish (LST)	8-32	9-46	10-55	12-18	13-48	15-00	16-17	17-06	8-56	10-13	11-32	12-52	14-04	15-17	11-28	12-49	14-25
Depth of Finish (m)	75	68	67	69	57	53	67	68	129	144	166	183	190	189	191	204	206
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.0	3.2	3.0	3.2	2.8	3.2	3.4	3.2	3.3	3.2	3.0	3.0	3.3	3.2	3.2	3.0	3.3
Towing Direction	40	80	80	55	340	325	300	315	320	305	280	270	265	265	270	115	120
Length of Warp (m)	280	280	280	280	180	180	200	200	380	480	500	580	600	600	600	600	600
Wing Spread (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
State of Haul	Normal	"	"	"	"	"	"	"	Normal	"	"	"	"	"	Normal	"	"
Weather	0	C	C	BC	BC	BC	C	C	BC	BC	BC	BC	BC	BC	BC	BC	BC
Wind Direction	ENE	ENE	E	ENE	ENE	S	W	W	Calm	NW	NW	WNW	WNW	WNW	WNW	SW	Calm
Wind Force	3	3	4	4	2	2	3	2	-	3	2	3	3	3	3	3	-
Atmosph. Pressure (mb)	1018	1018	1018	1017	1017	1016	1015	1015	1017	1018	1018	1017	1016	1015	1017	1016	1015
Air Temperature (°C)	25.6	27.5	27.5	29.5	32.0	29.0	28.5	28.3	31.0	30.5	31.5	31.0	30.0	31.0	30.0	31.5	31.0
Surface Water-Temp (°C)	27.0	27.6	27.8	27.4	28.6	28.6	28.5	28.5	28.2	28.2	28.7	28.7	28.8	29.0	28.8	28.8	30.0
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction																	
Total Catches (kg)	9.0	0.8	2.1	9.3	0	0.3	69.7	37.2	1506.5	509.2	1200.1	133.6	225.4	118.0	10.0	254.4	547.4
Remarks					Lots of Jelly-fishes				Lots of butter-fishes								

Appendix

Recording Data of Trawling Research Survey by Misshinmaru No.201, 1988

Series No. of Net	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238
Survey Area	1	"	"	"	"	"	1	"	"	"	"	"	1	"	"	"	"
Survey Date	Sep. 9	"	"	"	"	"	Sep. 10	"	"	"	"	"	Sep. 11	"	"	"	"
Position lat. (N)	10-49.2	10-51.6	10-52.4	10-52.9	10-52.2	10-52.0	10-45.7	10-47.3	10-44.7	10-46.2	10-45.8	10-48.6	10-43.2	10-43.0	10-41.1	10-42.7	10-36.8
of Start long. (W)	86-03.9	86-06.4	86-10.1	86-15.2	86-19.2	86-22.3	86-08.7	86-12.5	86-13.1	86-16.1	86-19.0	86-19.8	86-09.0	86-10.7	86-12.5	86-14.4	86-12.6
Time of Start (LST)	7-45	9-01	10-20	11-36	13-13	14-18	8-35	10-03	11-17	12-40	13-49	15-05	8-43	10-10	11-25	12-50	14-18
Depth of Start (m)	138	151	175	185	198	196	184	206	214	211	209	203	189	211	220	220	224
Position lat. (N)	10-50.5	10-52.2	10-52.4	10-53.2	10-51.8	10-52.3	10-47.1	10-45.9	10-45.6	10-46.4	10-46.8	10-49.3	10-44.8	10-41.4	10-42.2	10-41.1	10-37.2
of Finish long (W)	86-04.8	86-08.0	86-11.8	86-16.6	86-20.7	86-23.7	86-09.9	86-13.4	86-14.4	86-17.7	86-20.2	86-18.4	86-09.6	86-11.2	86-13.6	86-14.8	86-12.2
Time of Finish (LST)	8-15	9-31	10-50	12-06	13-43	14-48	9-05	10-33	11-47	13-10	14-19	15-03	9-13	10-40	11-55	13-20	14-48
Depth of Finish (m)	143	161	180	186	197	194	189	213	213	210	206	203	193	215	221	221	225
Towing Time (min)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Towing speed (knot)	3.1	3.3	3.2	3.0	3.1	3.0	3.4	3.2	3.0	3.2	3.1	3.2	3.3	3.2	3.2	3.2	3.2
Towing Direction	325	295	270	280	260	280	320	215	325	275	310	65	340	195	315	195	170
Length of Warp (m)	480	480	580	500	500	500	500	500	580	580	580	500	500	600	580	580	580
Wing Spread (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
State of Haul	Normal	"	"	"	"	"	Normal	"	"	"	"	"	Normal	"	"	"	"
Weather	0	C	BC	R	BC	BC	R	C	R	C	C	C	R	C	C	C	C
Wind Direction	WSW	SW	SW	S	S	S	SW	SW	WSW	SW	W	NE	NE	SE	N	SW	W
Wind Force	4	3	3	3	4	4	4	5	5	5	5	5	4	3	3	2	3
Atmosph. Pressure (mb)	1016	1017	1017	1016	1014	1014	1016	1017	1017	1016	1015	1015	1017	1017	1016	1015	1015
Air Temperature (°C)	25.5	25.8	28.5	26.0	29.5	28.5	27.5	30.0	26.5	28.8	28.3	26.0	24.3	26.0	26.5	27.8	28.3
Surface WaterTemp (°C)	28.0	27.5	28.2	28.0	28.2	28.4	27.9	28.2	27.9	28.0	28.1	28.0	27.3	27.4	27.4	27.6	27.8
Bottom materials	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Current Direction																	
Total Catches (kg)	421.7	455.8	101.7	428.5	472.7	241.5	337.4	135.3	697.0	257.4	175.0	312.0	303.9	196.0	917.0	209.0	1500.1
Remarks																	