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DEEP BOTTOM FISHING SURVEY IN SOLOMON ISLANDS  
JANUARY-JUNE 1985

by

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This article is a brief summary of the survey. During the period January to June 1985 a deep bottom survey was carried out in Solomon Islands by Kanagawa Prefectural Federation of Fisheries Cooperative Associations of Japan. The vessel "Daikatsu Maru" (28.6m, 99.9 gross tonnage) was chartered for the survey.

**Objectives of the Survey**

The general objective of the survey was to study the commercial feasibility of deep bottom fishing in Solomon Islands. Specifically the survey was carried out to:

1. identify areas with concentrations of bottom fish which have premium value, using available technology.
2. identify handling and processing procedures required to obtain economic returns.
3. identify the value of Solomon Island premium bottom fish in Japanese markets by carrying out a market survey at the same time.
4. transfer technology concerning the fishing methods to Solomon Islanders.

**Fishing Activities**

The fishing methods employed were vertical longlining (drop-lining), using electric reels, and bottom longlining. The hooks used were the "Matsu No. 23" type of Japanese circle hooks, having a flat lip (eyeless) on the end of the shank, with a piece of twine tied to it. An average of seven hooks per line and thirteen hooks per branch line were used for vertical longlining and bottom lonlining respectively. Only seven electric reels were mounted for the former fishing method but an average of eight men could fish at any one time.

The baits used were Japanese saury, herring and squid; a large proportion of it being saury (average of three boxes a day). The depths fished (and thought to be suitable by the Japanese) for the species sought were from 150m to 300m. A wet paper echosounder and a fish-finder were used to locate suitable depths and fish aggregations.

All the fishing was done during the day; from sunrise to sunset, with only a short break allowed for lunch. The fish caught were chilled first in brine tanks (fibreglass eskies)

then transferred to the blast freezer (-30°C) below the bridge. These were then transferred to the fish hold early the next morning (i.e after packing them in boxes).

Fisheries observers (2) kept records of times, depths fished, fishing method and the numbers and weights caught by species. Additionally, length-weight data and otolith samples were collected.

### Species Composition

The six major families of bony fishes caught were Lutjanidae, Serranidae, Lethrinidae, Pentapodidae, Carangidae, and Scombridae. Sharks were not recorded.

The fish identification book mainly used was by Masuda et al (1975). Other species identification sources include FAO Identification Sheets for Fishery Purposes (1974) and Munro (1967).

The fish species caught are listed in Table 1 with English names (Crossland, 1980) and Japanese names (supplied by the crew). A major proportion of the species come from the snapper family. The vertical distribution of the species in relation to depth follows the scheme given by Mead (1979).

### The Catch

For the nine fishing trips undertaken, 49.5t of fish were caught for an average catch of 5.5t per trip. Most of the fishing areas were visited more than once.

Table 2 is a summary of the catch composition (numbers and weights) by family. Of the total catch for the survey period, Family Lutjanidae made up 82.3% and 80.9% (40.0t) by numbers and weights respectively. Also, snappers made up most of the catch for most of the fishing areas.

Table 3 summarises the catch rates in each area for each fishing trip. The catch rates varied between areas and between the time the areas were visited. Generally the catch rates for vertical longlining are higher than those for bottom longlining.

### Conclusion

This brief summary is a preliminary result of the survey. However, the species and catch composition are clearly indicated by the initial assessment of the data. A lot more is still to be done. The full results of the marketing survey is still to be sent by the Japanese.

The length-weight data have not been dealt with yet. Also no facilities are available for reading the daily growth rings in the otoliths collected. Therefore aging of the fish is a problem at this stage.

Table 1. Common Fish Species Caught During the Survey

<u>Scientific name</u>	<u>English name</u>	<u>Japanese name</u>
<b>LUTJANIDAE</b>		
<i>Aphareus rutilans</i>	small-tooth jobfish	oguchi-isi-chibiki
<i>Aprion virescens</i>	green jobfish	
<i>Etelis species</i>		
<i>E. carbunculus</i>	short-tailed red snapper	hachijo-akamutsu
<i>E. coruscans</i>	long-tailed red snapper	onagadai
<i>Lutjanus bohar</i>	red bass	
<i>L. gibbus</i>	paddletail seaperch	
<i>L. kasmira</i>	blue-lined seaperch	
<i>Paracaeio caeruleus</i>		aodai
<i>P. kusakarii</i>	Kusakar's fusilier	shima-aodai
<i>P. stonei</i>	Stone's fusilier	-
<i>Pinjalo sp.</i>		
<i>Pristipomoides auricilla</i>	gold-tailed jobfish	
<i>P. filamentosus</i>	rosy jobfish	hime-edai
<i>P. flavipinnis</i>	yellow jobfish	kimefu-edai
<i>P. sieboldi</i>	jobfish	
<i>Tangia carnolabrum</i>		
<i>Tropidinicus amoenus</i>	large-eyed flower snapper	
<i>T. zonatus</i>	banded flower snapper	shima-chibiki
<b>SERRANIDAE</b>		
<i>Cephalopholis aurantius</i>	orange rock-cod	
<i>C. sonneratii</i>	tomato rock-cod	
<i>Epinephelus chlorostigma</i>	brown-spotted grouper	hoseki hata
<i>E. morrhua</i>	brown-striped grouper	hata
<i>Promicrops lanceolatus</i>	giant grouper	
<i>Saloptia powelli</i>		
<i>Variola louti</i>	lunartail rock-cod	
<b>LETHRINIDAE</b>		
<i>Lethrinus kallopterus</i>		
<i>L. miniatus</i>	long-nosed emperor	kitunefu-efuki
<i>L. rubrioperculatus</i>		
<b>PENTAPODIDAE</b>		
<i>Gnathodentex mossambicus</i>	large-eyed bream	kokenokogiri
<i>Gymnocranius griseus</i>		
<i>G. japonicus</i>		
<i>G. robinsoni</i>		

Table 1 contd

CARANGIDAE

<i>Caranx ferdau</i>	
<i>C. ignobilis</i>	lowly trevally
<i>C. lugubris</i>	black trevally
<i>C. melampygus</i>	bluefin trevally
<i>Elegatis bipinnulatus</i>	rainbow runner
<i>Seriola rivoliana</i>	deepwater amberjack hirenaga-kampachi

SCOMBRIDAE

<i>Euthynnus affinis</i>	island bonito, mackerel tuna
<i>Gymnosarda unicolor</i>	dogtooth tuna
<i>Katsuwonus pelamis</i>	skipjack

iso-maguru  
katsuo

OTHER SPECIES

<i>Ariomma evermanni</i>	
-----	unidentified red fish akasaba (protractile mouth)

ID:AS1/1 TABLE 2. BOTTOM FISH SURVEY CATCH COMPOSITION BY FAMILY AND BY TRIP AND AREA

FAMILY												
TRIP/AREA	DURATION	LUTJANIDAE	SERRANIDAE	LETHRINIDAE	CARANGIDAE	PENTAPODIDAE	SCOMBRIDAE	OTHERS	TOTAL			
CODE	LOCATION	NO. WT(KG)	NO. WT(KG)	NO. WT(KG)	NO. WT(KG)	NO. WT(KG)	NO. WT(KG)	NO. WT(KG)	NO. WT(KG)	NO. WT(KG)	NO. WT(KG)	NO. WT(KG)
T1/1	HAMMONDSPORT BANK	9JAN	125 287.6	20 21.8	23 16.6	64 153.9	5 15.4	14 67.2	1 2	252 564.1		
T1/2	SE. MARAU SOUND	10JAN	1 7.7	0 0	0 0	0 0	0 0	0 0	0 0	1 7.7		
T1/3	MURA ISLAND	10-13JAN	605 2270.1	23 55.6	1 3.5	12 73	10 42.4	22 146	13 63.6	716 2654.2		
T1/4	S. NDAI ISLAND	14JAN	25 118.8	0 0	0 0	0 0	0 0	0 0	1 4.7	26 123.5		
T2/1	S. RUSSELLS	2-5FEB	700 2372.8	23 173.4	1 3.8	7 37.6	22 30.7	8 85.9	1 8	762 2707.8		
T2/2	BROUGHAM SHOAL	5FEB	402 567	7 11.1	6 16.9	14 29.1	16 25.8	5 29.9	0 0	450 675.8		
T2/3	NW. VELLA	6FEB	13 16.5	4 2.4	8 9.7	19 57.6	3 2.5	3 5	1 1.8	51 94.3		
T2/4	BROUGHAM SHOAL	7-8FEB	799 1285.8	13 18	12 37.2	61 185.6	57 84.5	4 17	1 1.6	947 1629.5		
T2/6	S. RUSSELLS	9-12FEB	1586 3313.8	44 60.3	19 63.5	49 163.6	129 143.2	18 88.2	8 26	1849 3856.2		
T3/1	"	15-16FEB	266 895.1	10 12.5	2 5.2	14 55.5	29 34.7	2 15.8	2 5.8	324 1024.6		
T3/2	BROUGHAM SHOAL	17FEB	218 581.6	24 60	13 56.8	18 53.2	41 70.6	7 38.7	1 1.8	322 861.3		
T3/3	NW. VELLA	19FEB	3 23.7	0 0	0 0	1 2.8	2 2.2	0 0	0 0	6 28.7		
T3/4	EDWARDS BANK, ISABEL	22FEB	276 592.6	9 21.5	9 27.5	55 143.3	57 83.2	38 176.1	1 3.5	445 1051.7		
T3/6	N. MALAITA, MALU'U	24FEB	50 129	4 43.7	0 0	2 5.8	4 7.3	1 4.9	1 4.3	62 195		
T3/7	NDAI-N. MALAITA	24FEB	55 108.1	0 0	0 0	12 28.5	7 10.1	2 7	0 0	76 153.7		
T3/9	S. NDAI ISLAND	25-27FEB	371 1879	0 0	0 0	0 0	0 0	0 0	37 152.2	408 2031.2		
T3/10	"	27FEB	60 129.7	3 5.3	2 2.5	12 35.5	6 9.6	6 47.5	0 0	89 230.1		
T3/11	"	28FEB	19 38.4	0 0	0 0	0 0	0 0	0 0	0 0	19 98.4		
T3/12	NDAI-N. MALAITA	"	166 347.3	7 32.9	4 12.3	33 90.7	35 46.8	12 72.1	0 0	257 602.1		
T3/13	N. MALAITA, MALU'U	1-2MARCH	440 1656	6 52.4	0 0	0 0	0 0	4 30.7	21 70.1	471 1812.8		
T4/1	MURA ISLAND	8-10MARCH	158 475.1	11 20.9	0 0	2 17.2	32 32.1	8 59.3	3 14.8	215 619.9		
T4/2	W. PALAU BAY	11MARCH	0 0	0 0	0 0	0 0	0 0	7 7.8	0 0	1 7.3		
T4/4	THREE SISTERS	14; 17-19MARCH	930 2036	37 79.5	32 94.7	29 89.1	63 111.7	36 183.4	1 2.8	1125 2647.3		
T4/5	STAR HARBOUR	15-16MARCH	344 1013.4	20 32	2 7.3	8 36.1	37 59.4	1 3.3	0 0	412 1151.5		
T5/1	S. RUSSELLS	24-25MARCH	557 1126.2	34 42.5	5 12.1	19 62.7	61 74.1	5 33.9	3 15.4	684 1371.9		
T5/2	BROUGHAM SHOAL	27MARCH	157 340.1	9 13.1	2 6.5	19 54.5	58 37.8	9 44.7	0 0	254 556.9		
T5/3	MURA ISLAND	30MARCH	0 0	0 0	0 0	0 0	2 1.2	0 0	0 0	2 1.2		
T5/4	THREE SISTERS	31MARCH-1APRIL	296 551.3	16 19.9	3 13.5	10 27.9	34 56.7	10 52.6	0 0	369 721.9		
T5/5	MURA ISLAND	2-3APRIL	359 1223.6	16 65.3	1 3.6	10 50.6	19 18.5	5 43.1	6 28.9	416 1433.8		
T6/1	BROUGHAM SHOAL	10-15APRIL	994 2866.1	20 224.8	0 0	49 252.2	33 50.6	14 81.9	17 57.6	1127 3533.2		
T6/2	S. RUSSELLS	16APRIL	40 80.3	1 1.2	0 0	10 26.7	12 10.2	0 0	0 0	63 118.4		
T6/3	BROUGHAM SHOAL	17-18APRIL	302 533.2	34 45.2	9 33.4	42 137.5	185 266.8	4 16.6	3 7.7	579 1040.4		
T7/1	MURA ISLAND	23-25APRIL	316 397.2	13 69	6 17.4	19 99.6	29 24.1	19 129.1	6 21.4	403 1257.8		
T7/2	THREE SISTERS	26-27APRIL	401 356	4 7.1	22 90.3	19 52.4	29 43.3	5 20.7	0 0	480 1070.3		
T7/3	W. SANTA CRUZ	30APRIL	20 27.7	3 2.7	0 0	0 0	0 0	0 0	0 0	23 30.4		
T7/4	SE. SANTA CRUZ	1-2MAY	158 364.2	2 3.1	12 23.7	28 68.6	3 4	11 68.6	1 3.6	215 535.3		
T7/5	MURA ISLAND	5-6MAY	113 327.2	3 4.1	1 3.6	3 13.6	7 5.3	14 46	1 4	132 397.3		
T8/1	W. RUA DIKA	10-12MAY	1087 3338	23 33.1	12 34.2	28 137.3	23 33.8	28 108.5	0 0	1291 3684.9		
T8/2	N. MALAITA, MALU'U	13-14MAY	345 1164	18 337.9	5 18.2	3 14.3	26 27.9	6 27.2	6 25.9	409 1615.4		
T8/3	NDAI-N. MALAITA	15MAY	117 447.4	16 275.1	2 8.2	9 40	10 14.1	22 165.2	0 0	176 950		
T8/4	S. NDAI ISLAND	15MAY	20 82.1	0 0	0 0	0 0	0 0	0 0	0 0	20 82.1		
T8/5	NDAI-N. MALAITA	"	14 30.1	1 1.9	0 0	1 3.5	0 0	0 0	0 0	16 34.4		
T8/6	N. MALAITA, MALU'U	"	7 17.7	1 1.7	0 0	0 0	0 0	0 0	0 0	8 19.4		
T8/7	S. RUSSELLS	19MAY	0 0	0 0	0 0	0 0	4 3.9	0 0	0 0	4 3.9		
T9/1	W. RUA DIKA	23MAY	109 311.8	8 9.4	0 0	8 42.2	1 8	2 4.9	0 0	128 369.1		
T9/2	N. BUEA VESTA	24MAY	14 29.7	1 1.9	0 0	2 9.3	6 6.5	9 59.5	0 0	32 106.9		
T9/3	E. RUA DIKA	"	40 90.6	0 0	0 0	0 0	0 0	1 3.1	0 0	41 93.7		
T9/4	W. RUA DIKA	24-25MAY	145 365.8	26 44	0 0	4 18.5	15 24.3	5 16.7	0 0	195 469.3		
T9/5	N. MALAITA, MALU'U	26-28MAY	277 1082.5	3 21.2	0 0	0 0	0 0	10 58.3	7 26.2	297 1138.7		
T9/6	S. NDAI ISLAND	28MAY	0 0	0 0	0 0	0 0	0 0	0 0	0 0	2 10.3		
T9/7	ANUHA ISLAND	29MAY	4 13.1	0 0	0 0	0 0	0 0	0 0	0 0	4 13.1		
T9/8	N. BUEA VESTA	29-30MAY	76 248.7	1 1.9	0 0	2 13	1 1.5	3 19.3	0 0	93 274.4		
T9/9	E. RUA DIKA	30MAY-1JUNE	1034 3366.6	17 27.4	4 19.6	28 142.1	0 0	25 105.6	0 0	1108 3661.3		
	TOTAL	14613 40041	532 1954.5	218 642.4	727 2534.9	1138 1577.6	305 2184.5	143 548.9	17756 49496			
	% COMPOSITION	32.3	30.9	3 3.9	1.2	1.3	4.1	5.1	6.4	3.2	2.2	4.4
								.8	1.1			

ID:AS1/2 TABLE 3 CATCH RATES PER FISHING AREA PER TRIP BY FISHING METHOD

FISHING AREA LOCATION	TRIP/AREA	CATCH (KG)	VERTICAL LONGLINE			BOTTOM LONGLINE			TOTAL CATCH/ AREA	CATCH/ (KG)
			EFFORT HOOK HOURS	CATCH KG/HK HRS	RATE	CATCH (KG)	EFFORT HK HRS	CATCH KG/HK HRS		
HAMMONSPORT BANK	T1/1	564.1	472.3		1.2					564.1
SE.MARAU SOUND	T1/2					7.7	3438.7	.002		7.7
NURA ISLAND	T1/3	637.7	746	.9		2016.5	30223	.07		
	T4/1	414.1	605.4	.7		205.8	8544.7	.02		6364.7
	T5/3		1.2	83.4	.01					
	T5/5	264.1	198.4	1.3		1169.7	18911	.06		
	T7/1					1257.8	43404	.03		
	T7/5	37.3	113.3	.3		360.5	12233	.03		
S.NDAI ISLAND	T1/4	123.5	261.6	.5						
	T3/9	2031.2	1215	1.7						
	T3/10	230.1	205.3	1.1						
	T3/11	98.4	130.2	.7						
	T8/4	82.1	212.8	.4						
	T9/6	10.3	45.6	.2						
NDAI-N.MALAITA	T3/7	153.7	96.2	1.6						
	T3/12	602.1	299.6	2						
	T8/3	950	542.9	1.7						
	T8/5	34.4	86	.4						
N.MALAITA, MALU'U	T3/6	195	295	.7						
	T3/13	1812.8	1083.2	1.7						
	T8/2	1615.4	1047.1	1.5						
	T8/6	19.4	85.2	.2						
	T9/5	2.2	44.5	.05		1196.5	28016	.04		
W.FAUABU BAY	T4/2	7.8	21.7	.4						
S.RUSSELLS	T2/1	2459.5	1264.9	1.9		248.3	15552	.02		
	T2/6	3856.2	2415.4	1.6						
	T3/1	1024.6	702.2	1.5						
	T5/1	1371.9	1568.7	.9						
	T6/2	89.4	198.5	.5		29	4446	.01		
	T8/7	3.9	145.1	.03						
BROUGHAM SHOAL, VANGUNU	T2/2	675.8	675.9	1						
	T2/5	1629.5	1750.7	.9						
	T3/2	861.3	520.2	1.7						
	T5/2	556.8	387.4	1.4						
	T6/1	145.7	280.4	.5		3387.5	64179	.05		
	T6/3	1029.5	809.8	1.3		10.9	5768.8	.002		
N.W.VELLA	T2/4	94.3	172.9	.6						
	T3/3	28.7	114.7	.3						
EDWARDS BANK, ISABEL	T3/4	1051.7	644.4	1.6						
THREE SISTERS	T4/4	2647.3	1752.6	1.5						
	T5/4	721.9	779.7	.9						
	T7/2	1070.3	800.5	1.3						
STAR HARBOUR	T4/5	1002.6	747.1	1.3		158.9	2541.5	.06		
W.SANTA CRUZ	T7/3	30.4	70.4	.4						
SE.SANTA CRUZ	T7/4	535.8	420.2	1.3						
W.RUA DIKA	T8/1	3684.9	1369	2.7						
	T9/1	369.1	210.2	1.8						
	T9/4	469.3	594.2	.8						
E.RUA DIKA	T9/3	93.7	69	1.4						
	T9/9	2794.7	1140.8	2.4		866.6	5353.4	.2		
N.BUENA VESTA	T9/2	106.9	191.7	.6						
	T9/8	274.4	326.8	.8						
ANUHA ISLAND	T9/7	13.1	57.2	.2						

BOTTOM FISH SURVEY -SPECIES CODE

FAMILY LUTJANIDAE

AphRut:Aphareus rutilans  
AprVir:Aprion virescens  
Ete Sp:Etelis sp.  
EteCar:E.carbanculus  
EteCor:E.coruscans  
LutArg:Lutjanus argentimaculatus  
LutBoh:L.bohar  
LutFul:L.fulvus  
LutGib:L.gibbus  
LutKas:L.kasmira  
LutMal:L.malabaricus  
LutSan:L.sanguineus  
ParCae:Paracaesio caeruleus  
ParKus:P.kusakarii  
ParSor:Paracaesio sordidus  
ParSto:Paracaesio stonei  
ParXan:Paracaesio xanthurus  
Pin Sp:Pinjalo sp.  
PriAur:Pristipomoides auricilla  
PriFil:P.filamentosus  
PriFla:P.flavipinnis  
PriMul:P.multidens  
PriSie:P.sieboldi  
RanFil:Randallichthys filamentosus  
TanCar:Tangia carnolabrum  
TroAmo:Tropidinius amoenus  
TroZon:T.zonatus

FAMILY LETHRINIDAE

LetKal:Lethrinus kallopterus  
LetMin:L.miniatus  
LetRub:L.rubrioperculatus  
Let Sp:Lethrinus sp.

FAMILY PENTAPODIDAE

GnaMos:Gnathodentex mossambicus  
GymGri:Gymnocranius griseus  
GymJap:G.japonicus  
GymRob:G.robinsoni

FAMILY CARANGIDAE

CarFer:Caranx ferdau  
CarIgn:C.ignobilis  
CarLug:C.lugubris  
CarMel:C.melampygus  
EleBip:Elegatis bipinnulatus  
SerRiv:Seriola rivoliana  
Ser Sp:Seriola sp.

FAMILY SERRANIDAE

CepAur:Cephalopholis aurantius  
CepIga:C.igarasiensis  
CepSex:C.sexmaculatus  
CepSon:C.sonnerati  
EpiAre:Epinephelus areolatus  
EpiBle:E.bleekeri  
EpiAka:E.akaara  
EpiChl:E.chlorostigma  
EpiFus:E.fuscus  
EpiHoe:E.hoedti  
EpiMac:E.maculatus  
EpiMor:E.morrhua  
Epi Sp:Epinephelus species  
ProLan:Promicrops lanceolatus  
SalPow:Saloptia powelli  
VarLou:Variola louti

FAMILY SCOMBRIDAE

EutAff:Euthynnus affinis  
GraBic:G.bicarinatus  
GymUni:Gymnosarda unicolor  
KatPel:Katsuwonus pelamis  
ThuAlb:Thunnus albacares

OTHER SPECIES

Akasaba(Jap name):unidentified  
red fish with protractile  
mouth(Erythrocles sp. ?)  
AriEve:Arionoma evermanni  
HolOli:Holotrachys oligolepsis  
PonMac:Pontinus macrocephalus  
TriBur:Triodon bursarius  
EumIll:Eumegistus illustris

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