

Proposal for the Shoyo-maru spawning ground survey (Japan)

**Fisheries Agency of Japan
Government of Japan**

2003年度豪州水域におけるみなみまぐろ資源調査の概要

【照洋丸(2, 114ト)】

産卵場調査

(1) 調査目的

インドネシアはみなみまぐろの産卵場において漁業を行っているが、その不透明さゆえこれら漁獲量から産卵親魚の資源量を得ることは難しい。近年の豪・印による共同調査から、産卵場において大型の成熟度の高い魚ほど表層に分布するという仮説が提唱された。そこで、魚体サイズ・産卵活性・環境要因に基づくみなみまぐろの分布特性を把握することを本調査の目的とする。

(2) 調査方法

浅縄及び深縄による延縄漁獲調査

漁具水深及び水温のモニタリング

標識放流調査(ピンガー、アーカイバルタグ、ポップアップアーカイバルタグ、通常タグ)

まぐろ類幼魚のネットサンプリング

海洋環境調査

(3) 調査日程

2004年1月15日～2004年3月23日

(4) 調査海域

南緯20°より北で、東経100～130°間、豪州、インドネシアのEEZを含む
(別添1参照)

(5) 調査期間

独立行政法人水産総合研究センター遠洋水産研究所

REQUEST FOR FOREIGN RESEARCH VESSEL TO CONDUCT MARINE SCIENTIFIC RESEARCH IN AUSTRALIAN WATERS

List of the abbreviations used in the text:

CCSBT	Commission for the Conservation of Southern Bluefin Tuna
IOTC	Indian Ocean Tuna Commission
CSIRO	Commonwealth Scientific and Industrial Research Organization (Australia)
CTD	Conductivity –Temperature Depth meter
FAJ	Fisheries Agency of Japan
JAMARC	Japan Marine Fishery Resources Research Center (Japan)
NRIFSF	National Research Institute of Far Seas Fisheries (Japan)
RIMF	Research Institute for Marine Fisheries (Indonesia)
SBT	Southern Bluefin Tuna
WA	Western Australia
WAFIC	Western Australia Fishing Industry Council

The Fisheries Agency of Japan wishes to request permission for the Japanese vessel, *R/V SHOYO-MARU*, which will conduct marine scientific research as one of components within Scientific Research Program under CCSBT in Australian waters.

We provide the following information in support of this request. The information is listed in accordance with the format of the Guideline provided.

In addition, this information is subject to change in part. The plan of the whole cruise proposed and discussed at the Scientific Committee of the CCSBT which will be held in September 2003. Furthermore, Japan will be requested permission for this vessel which will conduct marine scientific research of spawning ground research program in Indonesian waters, so the cruise schedule conduct survey within the Indonesian waters can be developed. In case of change, a revised version will be delivered.

NOTE:

1. SBT stock has been managed under the CCSBT. At the 7th CCSBT commission meeting (held in Sydney from 18 to 21 April 2001), the draft Scientific Research Program (SRP) developed at the 5th Scientific Committee meeting (held in Tokyo from 19 to 24 March 2001) was approved. *Recruitment monitoring program* and *Development of a spawning biomass index* are one of the 9 components within SRP. Those surveys will take place as one of components within Scientific Research Program under CCSBT.

2. Regarding these surveys, Japan will present cruise proposals at the 2003 Scientific Committee meeting of CCSBT, and Japan advises that it is ready to conduct a supplemental spawning survey using *R/V DAINI-TAIKEI maru*, another research vessel.

INFORMATION IN SUPPORT OF A REQUEST BY A FOREIGN RESEARCH VESSEL TO CONDUCT MARINE SCIENTIFIC RESEARCH WITHIN THE AUSTRALIAN TERRITORIAL WATERS, EXCLUSIVE ECONOMIC ZONE, AND ON THE AUSTRALIAN CONTINENTAL SHELF

(a) Full Description of the Marine Scientific Research Project

Main objective of this survey cruise is an investigation of southern bluefin tuna reproductive ecology at their spawning area. The nature, objectives, proposed methods and means of research, and scientific equipment to be used for these projects are described as follows:

Nature:

The Southern Bluefin Tuna (SBT) is a highly migratory pelagic species and is considered to broadly distribute across the oceans of the South hemisphere. The only known spawning ground is located in an area of the south of Java, Indonesia and the northwest Australia during summer, mainly from September to April. This stock has been managed under the CCSBT.

The CCSBT developed an overall Scientific Research Program (SRP) and *Development of a spawning biomass index* is classified as one of the nine components within SRP. This survey is developed as a part of the program '*Development of a spawning biomass index*' focusing on collection of basic information on relationship of maturity and vertical behavior of large SBT, and research proposals and results have been presented and discussed at the CCSBT scientific forum.

Objectives:

Although Indonesian domestic fisheries are operating within the SBT spawning area, large uncertainties on their fishing practices, targeting, and reliability of fishery statistics make it difficult to derive a reasonable index of spawning biomass from those fisheries. Lack of detailed understandings on spatial and vertical distribution of spawners as well as a by-catch nature of SBT in the Indonesian fisheries is recognized as additional problems to treat Indonesian catch as a representative sample from spawners.

Recently, the analysis of results of the Australian-Indonesian collaborative monitoring program suggest surface aggregation of large fish and/or reproductively active fish estimated from the higher catch rate of large SBT with operations targeting shallower water (operating depth are estimated from the proportion of yellowfin tuna to bigeye tuna catch). It has been also noted that size distribution of Indonesian domestic catch is significantly larger than those of historical longline catch by Japan in the same area.

Then, we are trying to investigate the characteristics of SBT distribution with a special focus on a relationship of vertical distribution and migration corresponding to fish size and reproductive activities and various environmental factors using various

procedures including a depth disaggregating sampling, pinger-tracking, and archival and pop-up tagging. This is the fourth year of the project with this proposed survey.

Proposed methods and equipment to be used:

- **Longline operations with two different configurations:** In order to examine the influence of different configuration of gears, longline operations with two different configurations will be conducted. Targeting depth of longline operations are usually determined with number of hooks per basket. Longline gears to be used in this survey will have two sets of baskets with 5 hooks (shallow setting: similar to Indonesian domestic operations) and one set of basket with 15 hooks (deep set: similar to Japanese historical operations) alternatively in sequence. Total number of hooks will be about 1000. All SBT caught will be measured and weighted and reproductive organs, stomachs, and otoliths will be sampled for biological examination. Detailed catch information of other species will be recorded.
- **Monitoring of depths and environments for hooks set:** A certain number of time-depth-recorder will be deployed to branch lines of some hooks. This device will record time, depth, and water temperature every 10 seconds to monitor gear depth and behavior from the gear setting to retrieval. When fish is caught by hooks in the vicinity of these recorders, the time of fish hooked and fish died can be obtained together with depth and temperature data.
- **Deployments of various tags:** SBT caught by longline in a vigorous condition may be released after deploying pingars, archival tags or pop-up archival tags, according to fish condition and circumstances.
- **Pinger tracking:** SBT released with pinger deployed will be tracked by deploying pinger on fish in order to collect information on detailed spatial and vertical behavior of spawning fish. XBT or XCTD will be cast in a regular interval to examine an oceanographic environment during a tracking. Archival tag will be also deployed when releasing a fish.
- **Tagging of other large pelagic fish:** When yellowfin tuna, bigeye tuna, billfish, swordfish and sharks are caught in vigorous condition, those fish will be released with conventional tags. Tagging to bigeye tunas will be conducted as a collaborative activity with the IOTC Tagging Program.
- **Net sampling of tunas larvae:** Sampling with plankton net may be held to confirm spawning activities by collecting SBT larvae. Potential nets to be used include surface MANTA net, and oblique BONGO tows.
- **Oceanographic observations:** CTD will be cast up to approach the sea bottom to obtain a general oceanographic feature around the western Australia. Water samples will be taken for analysis of chlorophyll and other chemical characteristics. Additional XBT and XCTD may be cast depending on conditions.
- **Observation of Indonesian through flow:** To conduct CTD observations up to just above sea bottom every 1-degree of latitude along 105°E and 115°E from the most northern point of survey area to 20°S. This activity constitutes of part of

long-term global oceanographic observations.

- **Continuous Observations:** Salinity, temperature and size distribution of small organisms in surface layers will be continuously monitored with EPCS during the cruise. Underwater current will be also monitored with ADCP. However, because of a resonance problem, the ADCP must be switched off while the survey with acoustic devices will be conducted.
- **WOCE Observations:** During its navigation from Japan to the Indian Ocean, XBT, XCTD or CTD will be cast at every one-degree latitude as collaboration to the WOCE works.

(b)Vessel Information

Vessel Name	“Shoyo-maru” (R/V owned by Ministry of Agriculture, Forestry and Fisheries)
Means of Propulsion	Diesel engine: 3000ps x 620 rpm x 2sets Electric engine: 350KW x 900rpm x 1set
Configuration/Dimensions:	LOA (87.60 m) Breadth (14.00 m) Depth (7.25 m) Gross tonnage (2,118 t ; IGT 2,494 t) Compartment (49 persons)

(c)Frequencies of Devices (Appendix 1)

(d) Deployment of Equipment

No deployment of equipment will be planned during this cruise except daily deployment and retrieval of fishing gears.

(e) Proposed Itinerary (tentative)

Yr	Mo	Day	Schedule
2004	1	15 (Thr)	Lv. Tokyo (Japan)
			Survey activity: Jan. 27 to Feb. 12
	2	16 (Mon)	Ar. Fremantle (Australia)
	2	20 (Fri)	Lv. Fremantle (Australia)
			Survey activity: Feb. 24 to Mar.11
	3	23 (Tue)	Ar. Tokyo (Japan)

Note: Port schedule may be adjustable according to conditions.

(f) Scientific Research Areas (Map: Appendix 3)

The survey area (**See Appendix 3**) is encompassed with Indonesian territorial border and 20° S, and 100 °E and 130 °E , including within the Australian and Indonesian EEZ waters, except all national park areas and Territorial water in the Indian Ocean:

(g) Sponsoring Institutions and Related Information

Sponsor Agency	Fisheries Agency of Japan (FAJ) Director General: Fumio TAHARA
Supervisors on Scientific Project	National Research Institute of Far Seas Fisheries (NRIFSF), Chief Scientists: Sachiko TSUJI Fisheries Research Agency (FRA) Director: Hiroshi HATANAKA
Operator Agency	Fisheries Agency of Japan (FAJ)
Contact Persons	Section Chief: Hajime Taguchi (FAJ)
Master of the vessel	Captain: Kazuo Tsukiyama
Owner of the vessel	Fisheries Agency of Japan (FAJ)

(h) Results of the Survey

Preliminary and final results of the survey and relevant researches will be reported to the scientific forum of the CCSBT and the annual workshops of the Recruitment Monitoring Program.

Data and samples collected during the Survey can be shared with Australian and Indonesian scientists on request following to the agreement of appropriate arrangements on use of those data and samples as well as rules relating to publication. Interested scientists are requested to contact the Chief Scientist.

(i) Relationship & Agreements between Australia, Indonesia and Japan

The Survey will be conducted as one component of the Scientific Research Program (SRP) under the CCSBT. Australia is one of the most active members of the CCSBT and has participated in all discussions reviewing proposals and results of this survey. Contact points within Australia relating to CCSBT scientific issues are John KALISH and James FINDLEY of the BRS. Indonesia has stated its intention to collaborate with the CCSBT and support scientific work to be held under the CCSBT as a co-operative non-member. Drs. MERTA and WUDIANTO of RIMS have reviewed this proposal.

SBT mortalities caused through this survey will be covered with the Research Mortality

Allowance (RMA) of the CCSBT. Government of Japan is responsible for securing appropriate RMA with CCSBT's approval before the initiation of this proposed cruise.

(j) Sharing the Benefits

Neither commercial nor financial benefits are expected from this survey. However, when such benefits are recognized, Japan is happy to develop ways to share those benefits to satisfy both sides.

(k) Manipulation on the Australian Continental Shelf

Only biological samples will be taken from the Australian and Indonesian waters, which include catch of SBT and other pelagic species. SBT mortalities caused through this survey will be covered with the Research Mortality Allowance (RMA) of the CCSBT as mentioned above.

No manipulation on continental shelf is planned in this survey.

(l) Radio Active/Hazardous Materials On-board:

No radioactive or hazardous substances are on board.

(m) Others:

A limited number of berths are available for interesting scientists to join to the Survey with a condition that the participating party should carry the cost for participation. Interesting scientists are requested to contact to the Chief Scientist.

Part I (A)

(a) Itinerary for Australian Port Visits :

- Fremantle 16-20 February, 2004

Maximum period staying within the Australian waters:
20 January, 2004 – 18 March, 2004

(b) Radio Frequencies:

Attached as Appendix 1

(c) Australian Scientific Organization and Contact Persons:

John KALISH, or James FINDLEY (BRS).

(d) Onboard crew and Investigators

-Crews

Attached as Appendix 2

-Scientists and Field Technicians

Name	Birth Date	Birth Place	Period Aboard
Tomoyuki ITOH (Chief Scientist)	Aug.12, 1967	Tokyo, Japan	15 Jan. – 23 Mar.
Hiroyuki KUROTA (Scientist)	Sep.16, 1973	Hyogo, Japan	15 Jan. – 23 Mar.
Field Technician (To be determined)			15 Jan. – 23 Mar.
Field Technician (To be determined)			15 Jan. – 23 Mar.
Field Technician (To be determined)			15 Jan. – 23 Mar.

Frequency List of SHOYO-MARU

1. Compulsory Equipment

	Type	Frequency(kHz)			Power(W)	Note
MF/HF	F1B	2169	2187.5		250	
		2177	2189.5			
	F1B	2147	2174.5		250	
	F1B	4207.5	6313	25209.5	800	
		6312	8415.5	4180.5		
		8414.5	12578	6275.5		
		12577	16805.5	8391.5		
		16804.5	18899	12521		
		4208	22375	16721		
		6312.5	25209	18872		
		8415	4209	22318		
		12577.5	6313.5	25175		
		16805	8416			
		18898.5	12578.5			
		22374.5	16806			
	25208.5	18899.5				
	4208.5	22375.5				
	F1B	4-25MHz			800	4001-4019, 6001-6034 8001-8040, 12001-12156 16001-16193, 18001-18045 22001-22135, 25001-25040
	A1A	2007.5	2075	3317.5	400	
2030		2091	3612.5			
2070		2457				
A1A	4-22MHz			800	T1S,U2S,W1S,W2S,W3S 07S,48S,51S	
A1A	4-16MHz			800	49S	
J3E	2028.5	2394.5	2785	200		
	2130	2543.5	3302			
	2150	2575	3739			
	2182	2638				
J3E	4-25MHz			800	401-427, 601-608, 801-833 1201-1241, 1601-1656 1801-1815, 2201-2253 2501-2510	
J3E	6-12MHz			200	92	
VHF	F2B	150MHz			25	70
	F3E	150MHz			25	CH1-CH28, CH60-CH69 CH71-CH74, CH77-CH88
		F3E	158.17MHz	158.57MHz		25
		159.21MHz				
Two-way VHF Radiotelephone	F3E	150MHz			0.8	CH15-CH17
Satelite EPIRB	G1B	406.25MHz			5	
	A3X	121.5MHz			0.05	
Rader Transponder	Q0N	9350MHz			0.4	

2.Other Equipment

	Type	Frequency(kHz)			Power(W)	Note
MF	A2B	2331.5			3	
MF/HF	A1A	2007.5	2075	3612.5	500	
		2030	2091			
		2070	3317.5			
	A1A	2457			100	
	A1A	4-22MHz			1KW	T1S, U2S, W1S, W2S, W3S
						07S, 48S,51S
	A1A	4-16MHz			1KW	49S
	J3E	2028.5	2430	3302	50	
		2130	2543.5	3739		
		2150	2575	3889		
		2182	2638			
		2394.5	2785			
	J3E	4-16MHz			1.2KW	421, 424, 606, 816, 833
						1205, 1625
	J3E	4,8-16,22MHz			1.2KW	61,62,63,66,67
	J3E	6-12MHz			200	92
	J3E	4-16,22MHz			200	65
	J3E	27018.5	27198.5	27434.5	25	
		27022.5	27246.5	27462.5		
		27030.5	27254.5	27470.5		
		27062.5	27206.5	27478.5		
		27066.5	27230.5	27314.5		
		27070.5	27266.5	27318.5		
		27082.5	27210.5	27334.5		
		27086.5	27234.5	27346.5		
		27090.5	27262.5	27350.5		
		27094.5	27214.5	27362.5		
		27098.5	27238.5	27374.5		
		27110.5	27258.5	27386.5		
		27126.5	27218.5	27394.5		
		27130.5	27242.5	27398.5		
		27138.5	27250.5	27402.5		
		27146.5	27310.5	27414.5		
		27026.5	27338.5	27422.5		
		27202.5	27342.5	27442.5		
		27226.5	27354.5	27454.5		
		27150.5	27358.5	27458.5		
		27054.5	27366.5	27466.5		
		27058.5	27370.5	27438.5		
		27166.5	27378.5	27450.5		
		27174.5	27382.5	27859		
		27274.5	27418.5			
		27490.5	27426.5			
	H3E	27524			6	
Radar	P0N	9375MHz			50KW	
	P0N	3050MHz			60KW	
On-board system	F3E	457.525MHz			1	
		457.55MHz				
		457.575MHz				

3. Radio Buoy

	Type	Frequency(kHz)	Power(W)	Note
Radio Buoy	120KV1B	42.59MHz	1	
GPS Buoy	A1A	1920	3	
Transducer Buoy	A1A	1922.5	3	

4. Remote-controlled Observation System

	Type	Frequency(kHz)	Power(W)	Note
		150MHz zone	4	tentative
		2.4GHZ zone	4	tentative

5. Others

Inmarsat B
Inmarsat C

6. Reference

Vessel Name and Call Sign: SHOYO-MARU/JLOJ
MMSI: 431465000

CREW LIST

1.Name of ship			2.Port of arrival				3.Date of arrival	
M.V. "SHOYO MARU "								
4.Nationality of ship			5.Port arrived from / Port of destination				6. Seamen's passport	
JAPAN			TOKYO					
7.No	8. Family name, given name	9. Rank or Position	Sex	10. Nationality	11.Date of Birth	12.Place of Birth		
1	TSUKIYAMA KAZUO	Captain	M	JAPAN	22-Aug-48	NAGASAKI JAPAN		
2	HONBO TSUTOMU	Chief Engineer	M	JAPAN	05-Jun-49	ISHIKAWA JAPAN		
3	TATSUMI SHIGEO	Chief Officer	M	JAPAN	07-Sep-55	OSAKA JAPAN		
4	SAWADAISHI SHIRO	1st Officer	M	JAPAN	16-Jan-55	KANAGAWA JAPAN		
5	KUMAGAI YUKIO	2nd Officer	M	JAPAN	02-Jan-60	IWATE JAPAN		
6	KOGA JUNJI	Sr. 3rd Officer	M	JAPAN	20-Nov-64	FUKUOKA JAPAN		
7	SHIMOOKA NAOSUKE	Jr. 3rd Officer	M	JAPAN	27-Dec-74	YAMAGUCHI JAPAN		
8	MAEDA HIROYUKI	1st Engineer	M	JAPAN	09-Jun-58	TOKYO JAPAN		
9	FUKUTA KOZO	2nd Engineer	M	JAPAN	06-Nov-67	AICHI JAPAN		
10	URA KEISUKE	3rd Engineer	M	JAPAN	26-Nov-69	NAGASAKI JAPAN		
11	DAIKOKU FUKUTARO	Chief Operator	M	JAPAN	02-Aug-51	IWATE JAPAN		
12	TOHI JUNYA	2nd Operator	M	JAPAN	09-Oct-81	HIROSHIMA JAPAN		
13	ICHIWAKI MASAHARU	Purser	M	JAPAN	23-Jul-49	GIFU JAPAN		
14	KATAYAMA RYUJI	Medical Officer	M	JAPAN	11-Mar-68	FUKUOKA JAPAN		
15	SASAKI AKIRA	Technical Officer	M	JAPAN	10-Nov-64	AOMORI JAPAN		
16	NOZAWA SYOJI	Boatswain	M	JAPAN	23-Apr-45	CHIBA JAPAN		
17	TANOHATA YASUTAKA	Deck Store Keeper	M	JAPAN	10-Nov-51	KAGOSHIMA JAPAN		
18	KURONUMA YOSHIYUKI	Deck Store Keeper	M	JAPAN	13-Apr-55	KANAGAWA JAPAN		
19	SUZUKI AKIRA	Quarter Master	M	JAPAN	26-May-53	TOKYO JAPAN		
20	MURAKAMI SATORU	Quarter Master	M	JAPAN	20-Jun-65	HOKKAIDO JAPAN		
21	NATUBORI YASUO	Quarter Master	M	JAPAN	09-Feb-66	AOMORI JAPAN		
22	NODA TAMOTSU	Sailor	M	JAPAN	11-May-69	KUMAMOTO JAPAN		
23	GONDAI CHIKUMI	Sailor	M	JAPAN	04-May-72	HOKKAIDO JAPAN		
24	MURAKAMI HIDEKI	Sailor	M	JAPAN	26-Dec-74	YAMAGATA JAPAN		
25	HARASAWA KAZUE	Sailor	F	JAPAN	26-Jul-78	GUNMA JAPAN		
26	KOBAYASHI YUTAKA	No1. Oiler	M	JAPAN	17-Dec-45	HOKKAIDO JAPAN		
27	YOSHIDA SHIGERU	Engine Store Keeper	M	JAPAN	12-Mar-48	CHIBA JAPAN		
28	GORAI TORU	Engine Store Keeper	M	JAPAN	29-May-53	IBARAKI JAPAN		
29	ABE MICHIIYA	Fitter	M	JAPAN	27-Jan-57	MIYAGI JAPAN		
30	HINO MASAHIRO	Oiler	M	JAPAN	10-Jul-74	MIYAGI JAPAN		
31	NAKAMURA YUJI	Oiler	M	JAPAN	24-Jan-77	MIYAGI JAPAN		
32	YAMADA AKIHIRO	Oiler	M	JAPAN	21-Apr-79	HOKKAIDO JAPAN		
33	DEGUCHI NORIO	Chief Steward	M	JAPAN	02-Dec-47	CHIBA JAPAN		
34	NISHIDA ATSUSHI	Chief Cook	M	JAPAN	12-Dec-56	YAMAGUCHI JAPAN		
35	JUMONJI HIROMITSU	Cook	M	JAPAN	10-Aug-57	MIYAGI JAPAN		
36	KONNO KANEO	Cook	M	JAPAN	31-Jan-61	MIYAGI JAPAN		
37	SAWARA HIROYUKI	Steward	M	JAPAN	24-Jun-72	HOKKAIDO JAPAN		

**Proposed Survey Area (R/V Shoyo-Maru)
The Spawning Ground Survey**

