

TRAINING AND EXTENSION PROGRAM ON RESPONSIBLE FISHING IN INDONESIA

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Abstract

Series of research and seminars were currently carried out in Indonesia to build sufficient scientific evidences in formulating national policy on Responsible Fishing. With those activities, it is expected that suitable and proper training materials could be established. Five Fishing Training Center within the country are ready to conduct intensive training program in Responsible Fishing. Action program for this matter, is yet to be planned. A subregional or regional collaboration on research and training material provisions might accelerate the implementation of the Responsible Fishing.

1. INTRODUCTION

Training and extension programs on responsible fishing in Indonesia have not been specifically implemented yet. However, preparation for the program has been started by research and seminars activities conducted mainly by the universities, Research Institute for Marine Fisheries as well as by the Directorate General of Fisheries.

Research on trawl selectivity was first conducted by Saeger, Martosubroto and Pauly (1976) in Java Sea within the framework of Indonesia - German Demersal Fishing Project. Research on gillnet selectivity was also studied by the Faculty of Fisheries of Bogor Agricultural University starting in 1991. Other research on trawl selectivity and gillnet selectivity which had been done after 1976 and 1991 until 1995 were mentioned by Monintja *et.al.* (1995) in Experts and Industry Consultation on Selective Fishing For Responsible Exploitation of the Resources in Asia, Beijing, 12 - 17 October 1995. The research were done not only by Bogor Agricultural University, but also by the Research Institute of Marine Fisheries, the National Oceanography Institute of LIPI, Fishing Development Institute and some universities in East Java, North Sulawesi, South Sulawesi, Central Java, Maluku, Kalimantan and Sumatera. Consequently, the results of those research could be used as inputs on formulating the national policy for Responsible Fishing implementation in Indonesia. The policy could be strengthened by establishing the needed law and regulations, and followed by material constructions for any training programs. The following discussions try to reveal some research on responsible fishing done after 1995, and also the planned research for the coming years.

2. RESEARCH ON RESPONSIBLE FISHING

2.1 Research on influence of Hook Sizes of Bottom Longline on Catch

Wudianto et.al. (1995) studied on the influence of hook sizes for bottom long line in the eastern part of Bali Waters during May 1994 to January 1995. The result indicated that there were no significant different of catch among the sizes of the hooks, however, there is an indication that the small sizes hooks (Nos. 5 and 6) performed better catch rate than the big one (No. 7). The high catch rate of bottom long line was recorded in the deep fishing ground (more than 50 m) such as Takadabu Waters. The economically important species of fish caught by experimental bottom long line were dominated by snapper (*Lutjanus spp.*), grouper (*Epinephelus spp.*) and jackfish (*Caranx spp.*). The size of fish were not effected by these hook sizes.

2.2 Collaborative Research Work Between TUF on IPB

A collaborative research work titled "Approach to sustainable fisheries development in the coastal zone of West Java" was carried out between TUF (Tokyo University of Fisheries) and IPB (Bogor Agricultural University) under OECF-Loan in 1995. The activity had been done from 9 - 20 August 1995. Japanese Scientists (12 persons) lead by Dr. F. Takashima and Dr. T. Arimoto, and the Indonesian Scientists (15 persons) lead by Dr. Daniel R. Monintja and Ayodhyoa, M.Sc. Five subtitles of the research were :

- a) Detailed oceanic condition in Pelabuhan Ratu
- b) Global positioning system for oceanographic and fisheries survey
- c) Oceanographic survey on fishing ground for various fishing activities in Pelabuhan Ratu
- d) Needs assessment study for fishing machinery and technology transfer in Pelabuhan Ratu fisheries
- e) Low investment sustainable technology in Pelabuhan Ratu fisheries :
 - Bamboo-platform for lift net with light attraction (Bagan)
 - Pelagic boat seine (Payang)
 - Trammel net and encircling gillnet.

2.3 Research on Gillnet and Trammel Net Selectivity

Monintja *et.al.* (1996) studied on environmental friendly fishing gear : the gillnet and trammel net selectivity in Pelabuhan Ratu Waters : (a) to compare the characteristics of catch among nets of several different mesh sizes, (b) to determine gillnet selectivity to Tembang (*Sardinella fimbriata*) and Kembung Lelaki (*Rastrelliger sp.*) and trammel net selectivity to Banana prawns (*Penaeus merguensis*) and the *Metapenaeus* shrimp. The experiment with gillnets indicated that mesh size played an important role in determining both size and species. Larger mesh caught larger fish individuals. The Tembang was mostly caught by 1.50" mesh nets while the Kembung Lelaki was mainly by 1.75", 2.00" and 2.25" mesh nets. Considering these two fishes as the main targets of each corresponding nets, there seems to be no problem of by-catch because other catches are generally considered commercially important too, their market value are not bad.

The experiment with trammel net showed a decreasing trend of catch of Banana and *Metapenaeus* shrimp as larger mesh were used, lower catches were obtained from larger mesh nets and vice versa. Statistical analysis, however, did not indicate a significant difference in the prawn catch among the five mesh sizes. On the other hand, nets of 1.50" and 1.75" significantly caught more fish than nets of smaller mesh sizes. Currently, prawns are the main target of trammel net operation. Hence, the fish caught can be regarded as the by-catch.

Considering the amount of target species and by-catch, the operation of trammel net had a more serious by-catch problem than the gillnet. Trammel net with 2.00" seems to be appropriate for responsible fishing, i.e. less by-catch.

2.4 Research on Purse Seine Selectivity

Nasution (1997) is doing study from April 1997, and will be ended in April 1999 on the selectivity of purse seine concerning purse seine fishing sustainability in the waters of Malacca Straits and Nusa Tenggara. Purse seine is an active fishing gear and known as an unselective fishing gear, caused by the very small mesh size of net. The study on purse seine selectivity is done by field experiment, to determine the optimum mesh size. Also morphometrics identification and catch composition will help determining the *Stolephorus* purse seine mesh size.

2.5 Research on Vertical Line Selectivity

Barus (1997) is doing study from April 1997 and will be ended in April 1998 on "improving effectiveness of tuna vertical line near by FAD". The efficiency and effectiveness of line fishing depend on kind and size of the hook, also line and bait used on. The research is on going in the waters of Teluk Tomini / Gorontalo and Labuhan / Maluku.

2.6 Research on Pelagic Net Selectivity

Mulyadi (1997) is going to study in the next April 1998 (for two years long), on “the effect of light intensity and net mesh size to the selectivity of “ORAS” pelagic seine net for catching squid”. Concerning the sustainability of squid resources, the data of squid size which first mature gonade is very useful. Also the light intensity and net mesh size which are optimized in catching the first mature gonade squid. In fact in Selat Alas waters the net mesh size is equal or less than 0.5 inch.

2.7 Research on The Effect of Rebon Fishery to The Sustainable Stock of Penaeid Shrimp

Suman (1997) is going to study in the next April 1998 (two years long) on “ the effect of “Rebon” fishing to the sustainable stock of Penaeid shrimp in the North Java Waters”. “Sudu” as a traditional gear with mesh size 1.6 mm catching “Rebon” in the North Java Waters assumed catching also the juvenile of Penaeid shrimp. The research result will render input to manage the Rebon fishery so that will not endanger the sustainable stock of Penaeid shrimp.

3. TRAINING AND EXTENSION PROGRAM ON RESPONSIBLE FISHING

Although specific training on responsible fishing have not been done intensively, the Government of Indonesia has established fishermen training centers in the country that can be used for this purpose. There are five centers for training fishermen in Indonesia, these are the BKPI (Fishermen Training Center) at Tegal in Central Java, BKPI-Belawan in North Sumatera, BKPI-Ambon in Maluku, BKPI-Banyuwangi in East Java, and the BKP-Aertembaga in North Sulawesi. More information could be seen in Table 1.

In this Fiscal Year 1997, the Directorate General of Fisheries is going to trained 40 fisheries officials due to responsible fishing in Indonesia. So, it is training the trainers, and will be followed by the trainers will be training the fishermen. Also there are programs for the fishermen designing and applying artificial reefs, will be done by the BPPI (Fishing Technology Development Center) Semarang. Also the training program for the 60 GT (on vessel) boat fishermen to using the Fishing Log Book, it means that training the fishermen to be using to record all the information needed which will be useful for managing the responsible fishing.

The training activities for the fishermen used to be carried out by the Bureau of Education and Training under the Department of Agriculture. The bureau has several mobile training units and a sufficient amount of instructors. Yet, this potential units is waiting for materials to be used for the Responsible Training Programs.

Extension program is among the main functions of the Directorate General of Fisheries. The banning of trawl gear, and the prevention destructive exploitation methods such as the explosives and the potassium cyanide were intensively socialized in

the fisheries communities and companies. The coral reefs conservation program and the prohibition of catching the protected species are among the extension materials carried out by the Directorate General of Fisheries.

4. DISCUSSION

The research on selectivity fishing just sporadically started in Indonesia in late 1970 s for the trawl fisheries. Lately the research activities were focussed on the gillnet and longline fisheries, as those gears become important in Indonesian fisheries and relatively more workable for fieldwork studies. All research due to selectivity of fishing gears and stock assessment, together with seminars, workshops, studies, exhibitions are forming the scientific evidences needed for Responsible Fisheries Programs. These should pushed legal aspects issuing on responsible fishing. These all should be the material and concepts for developing the training and extension programs for the fisheries officials, teachers, fishermen, fisheries companies. Lack of scientific evidence would delayed the progress of legal aspects and training and extension programs.

While achieving more and more scientific evidences, the Indonesian fisheries could arrange a breakthrough program such as establishing joint program on responsible fishing with regional and international training and extension institutes. In preparing the training materials, the training institute can make joint preparation with the universities and also the research institutes. These should be accelerating the developing training and extension program on responsible fishing in Indonesia.

For the training purposed, Indonesia has already owned five Fishermen Training Centers, That will accommodate the program sufficiently. Whenever the material for responsible fishing is completed, it also can be put in the teaching material for the Fisheries Academy, as well as for the universities.

A flow chart for responsible fishing program in Indonesia could be seen in Figure 1.

The information of what has been and will be done due to Indonesian responsible fishing is presented in Table 2.

5. CONCLUSION

Eventhough sporadically, training and extension program for responsible fishing in Indonesia has been started. Currently, activities on obtaining scientific evidences needed for the program are being stimulated by the government through the research institutions and universities. The research products will be used to issuing management regulations, and in turn to be the training materials.

A sub regional or regional collaboration in research and information exchange could accelerate the training activities.

6. REFERENCES

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Table 1. Five Centers for training fishermen in Indonesia

No.	Training Centers	Student Capacity (person)	Trainer (person)	Job and Service Area	Head in charge and Address
1.	BKPI Belawan	80	15	Aceh, North Sumatera Lampung, South Sumatera	- Ir. Apul Sinurat - Jl. Makam Pahlawan 10, Belawan, Medan.
2.	BKPI Tegal	60	42	West Java, Central Java, Yogyakarta, Kalimantan	- Muchtar Gama, M.Ed. - Jl. Martoloyo PO. Box 22 Tegal, Jawa Tengah
3.	B K P I Banyuwangi	60	26	Bali, East Java, NTB, NTT, East Timor	- M.L. Tursilo Wisanto, M.Ed. - Desa Bangsring KM. 17 PO. Box 8 Banyuwangi 68402
4.	BKPI Aertembaga	60	5	North Sulawesi, Central Sulawesi, Southeast Sulawesi	- Ir. Mulyono Sartiman, M.Ed. - PO. Box 18 Bitung, Sulawesi Utara
5.	BKPI Ambon	60	13	Maluku, Irian Jaya, South Sulawesi	- Ir. Suparta Darongke - PO Box. 3, Poka, Ambon

Tabel 2. What has been and will be done due to Indonesian responsible fishing.

1. Scientific Evidences :	
1.1 Researches :	
1995 :	Influence of hook sizes of bottom longline on catch
1995 :	Exploration and exploitation of living marine resources in Pelabuhan Ratu and adjacent Indian Ocean.
1996 :	A Study on environmental friendly fishing gear : gillnet and trammel net selectivity in Pelabuhan Ratu Waters.
1997 :	Improving effectiveness of tuna vertical line near by FAD
1997 :	The Selectivity of purse seine fishing sustainability in the Waters of Malaca Straits and Nusa Tenggara
1998 :	The selectivity of purse seine fishing sustainability in the Waters of Malaca Straits.
1999 :	The effect of light intensity and net mesh size to the selectivity of "ORAS" pelagic net catching the squid.
2000 :	The effect of "REBON" fishing to the sustainable stock of Penaeid shrimp in the North Java Waters.
1.2 Seminars :	
1996 :	Scientific Discussion : "Fish Resources Utilization in the Indonesia EEZ dan Trawl Fisheries Problems in Indonesia", held on 8.1.1996 in Faculty of Fisheries, IPB, Bogor.
1996 :	Paper presentation : "Optimization of environmental friendly fish resources utilization", Dr. Daniel Monintja in Fisheries Agribusiness PENAS IX PERTASI KENCANA 1996 Seminar, held on 15.6.1996 in Faculty of Fisheries IPB, Bogor.
1996 :	Seminar : "Bycatch discards in Japanese capture fisheries" presented by Dr. T. Matsuoka from Faculty of Fisheries, Kagoshima University was held on 20.11.1996 in Faculty of Fisheries IPB, Bogor.
1.3 Meeting :	
1995 :	Fishing technologist meeting in 25.8.1995 in Jakarta, issuing IFTERN : Indonesia Fishing Technology Research Network
2. Legal Aspect :	
2.1 1997 :	Regulation on exporting <i>Napoleon</i> fish.
2.2 1985 :	Indonesian Government Law No. 9 1985 : Fisheries
1990 :	Indonesian Government Regulation No. 15 1990 : Fisheries Business
1990 :	Minister of Agriculture, Decree No. 815 : Licence of Fisheries Business
1990 :	Minister of Agriculture, Decree No. 816 : Licence of Fishing Boats
199... :	Indonesian Government Regulation on Fish Resources and Environmental Management (still a concept)
3. Training and Extension :	
3.1 1997 :	Training fisheries officials on responsible fishing by the Directorate General of Fisheries
1997 :	Training the fishermen on designing and applying artificial reefs by the BPPI Semarang
1997 :	Training the 60 GT (or more) fishing boat fishermen on using the fishing log book.

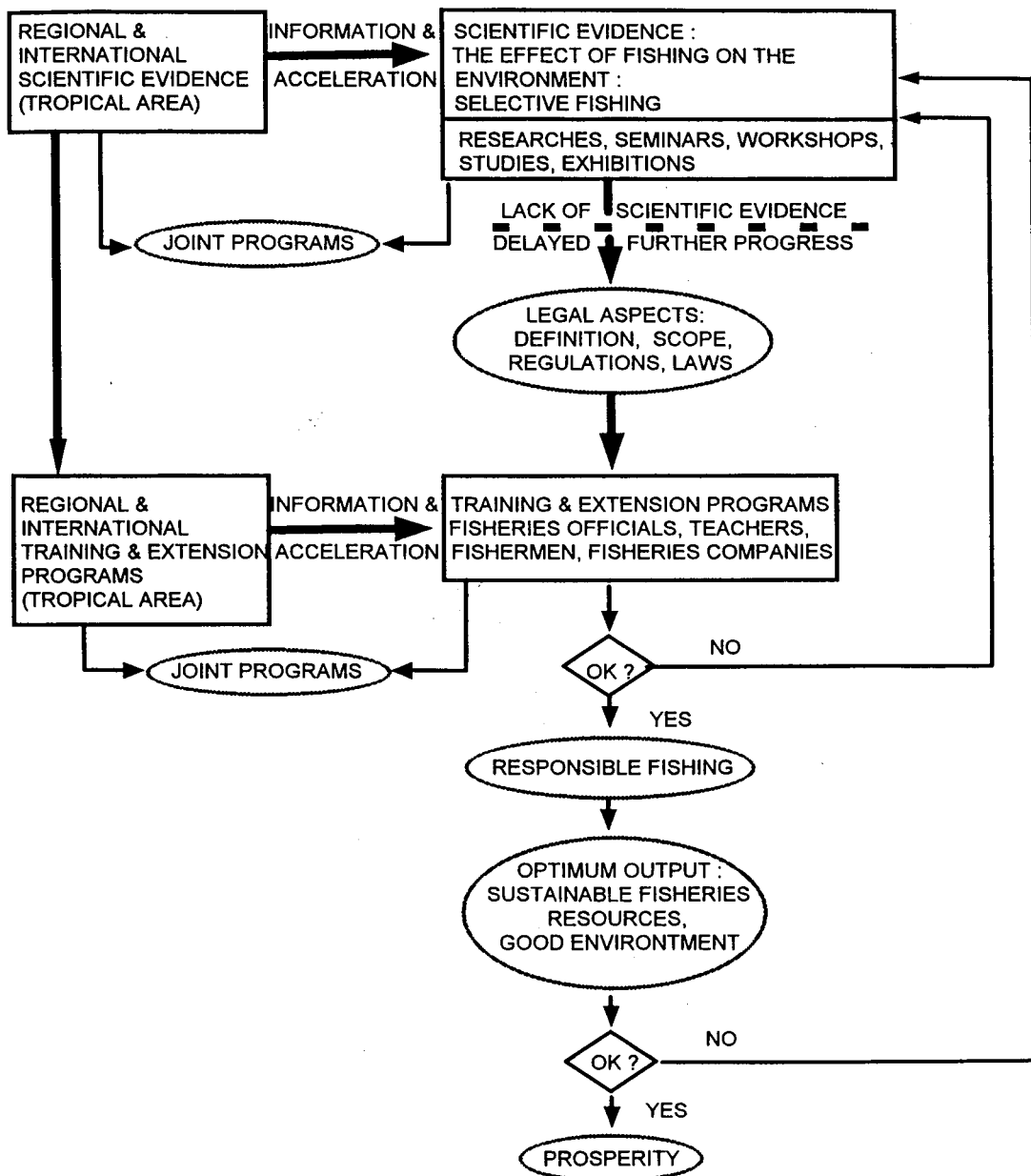


Figure 1. Flowchart for responsible fishing in Indonesia