

TRAINING AND EXTENSION ON SELECTIVE FISHING IN THE PHILIPPINES

by

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Abstract

Effective conservation and management of the Philippine fishery and aquatic resources must be given due considerations. The Code of Conduct for Responsible Fisheries specifically on Article 7, Section 7.1.1 on Fisheries Management emphasized that the States and all those engaged in fisheries management through appropriate policy, legal and institutional framework should adopt measures for long term conservation and sustainable use of fisheries resources in all political units whether at local, national, subregional or regional levels. Article 8 on Fishing Operations Section 8.1.7 mentioned also that the States should enhance the skills of fishers through appropriate education and training programs which are agreeable to international standards and guidelines; Article 8.5 on Fishing Gear Selectivity, Section 8.5.2 contain that in order to improve selectivity, States should continue drawing up laws and regulations and shall take into account the range of selective fishing gears, methods and strategies available to the industry. The marine fisheries in the Philippines at present is on its crucial stage in view of the overexploitation of majority of the fishery resources and fishing grounds in coastal areas. The fisherfolk in the coastal ecosystem suffered from the destruction caused by illegal fishing practices such as the use of active and exploitative fishing gears/accessories (e.g. trawl, halide lamp in municipal waters), occurrence of cyanide and dynamite fishing, red tide bloom and fish kills. More likely the management of offshore waters should be looked into to avoid further degradation of resources. In view of these situations, sustainable fishing operation techniques as well as programs/strategies to conserve, rehabilitate and manage the country's overall fishery and aquatic resources should be introduced through training and extension as management support strategies. The Training Program component is comprised of knowledge, skills and competencies development and upgrading; preparation of project models; establishment of pilot demonstration project and monitoring and evaluation of the project results and impacts. The Extension Program component includes technical assistance; management and operation of pilot demonstration projects; provision of support services and credit facilities.

1. INTRODUCTION

The Philippines is an archipelagic country, comprised of 7,107 islands with territorial coastal area of 26,600,000 has (12%) and 193,400,000 has (88%) oceanic areas. Given the territorial marine waters carry 220 million hectares including the 200 miles Exclusive Economic Zone and 842,247 has. of inland resources, the Philippines therefore has extensive vast fisheries resources. In CY 1996, the fisheries sector has contributed 4.5% to the country's gross national product.

Despite the abundance and magnitude of the country's marine resources, the marine fisheries sector has been confronted by several major problems such as;

- Declining fisheries production in the midst of continuous growing population, increased fishing efforts and demand for fish and fishery products;
- Diminishing resource base and overfishing in municipal sector;
- Destruction of coastline and marine resources due to water pollutants originating from various types of marine transportation;
- Underexploitation of some parts of the offshore waters whose resources have economic potentials;
- Rampant and wide-scale intrusion of illegal foreign fishing fleets in the offshore waters;
- Use of destructive/efficient fishing gears and other fishing paraphernalia both in the municipal and offshore waters which result to over exploitation of fishery resources;
- Intrusion of commercial fishers in the municipal waters.

All of the above are interrelated consequences which results to the following situations;

- Lack of knowledge and understanding on sound fisheries conservation planning and management in both municipal and commercial sectors;
- Lack of communication, facilities and poor enforcement of existing fishery laws, rules and regulations and ordinances;
- Insufficient development of coordinated and comprehensive laws on integrated ocean planning and management policies and principles;

- Lack of technical knowledge, skills and competencies in various selective fishing methods and fishing operations;
- Weak monitoring, control and surveillance program;
- Need of comprehensive and complementary Training, Extension/Outreach Programs in all fishery sectors.

The fishing industry has provided livelihood to about one million or five percent (5%) of the country's labor force and their dependents. They are comprised of fishfarmers or aquaculturist (26% (258,480); fishermen or municipal fisheries, 68% (657,677) and big scale fishermen or commercial fisheries, 6% (56,715); on which it is imperative that continuous manpower development and outreach programs must be designed, institutionalized to produce efficient and competent manpower who will carry out and implement the overall thrusts of Gintong Ani Program for Fisheries; to enhance productivity of the country's fisheries resources within the ecological and sustainable limits. Likewise, the development efforts are directed to the management of coastal and offshore resources including lakes and inland waters; development of aquaculture and the provision of infrastructure, market, transport, post harvest services and facilities.

The various DA-BFAR Divisions/Units have conducted multidisciplinary researches and studies which were developed and packaged into matured technologies for technology transfer and dissemination either thru training, information exchange and extension services. Hence, the technology packages have been compiled, consolidated and prioritized for implementation and in accordance with the availability of the resources and its responsiveness to the need of the fishing industry.

The training and extension programs implemented have involved multiagency participation as represented by the Local Government Units (LGUs), National Government as well as private sector participation and interaction to ensure that the overall resource conservation, management development and environmental components of the fishery and aquaculture resources are given due and appropriate importance.

The implementing strategies on training and extension components have been improved to ascertain that productive outcomes/accomplishments can be immediately measured thru tangible results such as establishment and operation of prototype integrated fisheries pilot livelihood projects for technology transfer adoption and replication.

The pilot projects which at the same time serve as show windows or viable demonstration livelihood projects shall provide direct benefits to fisherfolk and shall be the support projects in the availment of credit facilities to put up and expand livelihood projects.

2. PROGRAMS/STRATEGIES TO CONSERVE, REHABILITATE AND MANAGE THE COUNTRY'S OVERALL FISHERY AND AQUATIC RESOURCES; BFAR FISHERIES ; HOLISTIC APPROACH.

2.1 Research and Development

An integrated approach to Research and Development Management which includes a unified, updated, area-based and client responsive Research and Development scenario within the framework of the National Fisheries and Aquatic Resources Research Agenda 2000 will be preserved.

2.2 Training and Extension Networking

An effective training and extension system is a major ingredient towards increased production and ultimately to food security. The system facilitates technology transfer for adoption of the fisherfolk.

2.3 Marketing Assistance

Continuous institutional support is needed to build the capabilities of fishermen's organizations to undertake marketing functions and provision of support services such as extensive market information system. An effective marketing system influences the behavior of prices that fisherfolk receive and consumer pay.

2.4 Credit Delivery and Rural savings Mobilization Services

As support mechanism, provision of credit and mobilization or rural savings are directed both to improved income diversification/inherent among marginal coastal fisherfolk as well as to intensify aquaculture productivity.

2.5 Public Information Campaign and Conservation Support

Dissemination of technologies, plans, accomplishment which are significantly needed by the stakeholder to develop/enhance awareness, education and motivation.

2.6 Data Based and Management Information System

This will strengthen fisheries information and statistical data based as well as the monitoring and evaluation activities through the full implementation of Fisheries Information System (PHILFIS)

The stated comprehensive programs/strategies are basically the responses to attain the overall program thrust on enhancing productivity thru sustainable growth and development and the upliftment of the socio-economic living conditions of the fisherfolk. However, the discussion of this paper will focus on the training, extension and support services on Responsible Fishing particularly in the Marine Fisheries Sector.

3. MAJOR POLICIES WHICH CONCERNS MARINE FISHING TECHNOLOGY

- Fisheries Administrative Order No. 155 and 155-1 Regulating the use of fine meshed nets in fishing
- Fisheries Administrative Order No. 156 implementing Letter of Instruction No. 1328 Prohibiting the Operation of Purse Seine and Trawl within 7 km. radius from the shoreline
- Fisheries Administrative Order No. 163 Prohibiting the Operation of Muro Ami or Kayakas in Philippine waters
- Fisheries Administrative Order No. 164 Rules and Regulations governing the operations of Hulbot-Hulbot (Danish Seine) in Philippine waters
- Fisheries Administrative Order No. 170 Prohibiting the Operation of Sudsod (Scissor or push net) in Panguil bay
- Fisheries Administrative Order No. 188 Regulations governing the operation of commercial fishing boats in Philippine waters using tuna purse seine nets
- Fisheries Administrative Order No. 190 Regulations governing paling operation in Philippine waters

Corrolarily hereto are the comprehensive training extension and support programs to carry out the objectives of the existing Fisheries Administrative Orders and the appropriate articles and sections of the Code of Conduct for Responsible Fisheries to ensure conservation and management of the resources.

Recent results of studies on the Resource and Ecological assessment of major bays and gulfs in the Philippines indicate that major fish stocks are over exploited. Existing information as well as the experience of those with long associations with the fisheries sector showed that most of the fisheries resources are not sustainable under current arrangements. One of the causes is primarily attributed to the works of fishers and the efficiency of gears. Hence, the problem is compounded to losses and degradation of productive habitats such as coral reefs, mangroves and seagrass areas as well as the difficulties in achieving and compliance with existing fisheries management laws. Likewise, as a contribution to the Code of Conduct for Responsible Fisheries, the BFAR thru the National Marine Fisheries Development Center has spearheaded the introduction of Selective Fishing Technologies among its clientele. Said BFAR Fishing Technology are already matured for dissemination. To mention selective fishing methods on purse seining/ring netting are based on the results of Mesh Size Studies and other adopted technological improvements. The most recent species on selective fishing

gears which are studied and shall be introduced to the fishing technology trainees are as follows:

- 1) Bottom Set Longline for specific species
- 2) Trawl Operation using square meshed cod end
- 3) Danish Seine using square meshed cod end
- 4) Trawl using big size meshes in the wings and belly
- 5) Tuna Longline
- 6) Increased Mesh Sizes for Tuna and Sardine Purse Seines
- 7) Regulation on fine meshed nets

4. TRAINING PROGRAMS ON RESPONSIBLE FISHERIES

The training courses are consist of short term training courses on specialized areas of marine, aquaculture, post harvest technologies, law enforcement and support activities. The duration for specialized/skilled training programs range from one (1) week to five (5) months to focus on both theoretical (20%) and practical fields (80%) to insure practical applications and subsequent technology adoption.

4.1 Marine Resources Management

4.1.1 Municipal Fisheries:

- a) Integrated Fishery Livelihood Projects for Small Scale Fisherfolk (combination of line fishing with the aid payaw and mariculture technologies such as seaweeds; fish cages and fish pens)
- b) Coastal Resources Management Concepts for Organized FARMCs
- c) CRM Planning and Implementation
- d) Community Organizing
- e) Stock Assessment

4.1.2 Commercial Fisheries:

- a) Integrated Fishery Livelihood Projects for Small Scale Fisherfolk on offshore fisheries

- b) Training on the Design, Construction and Maintenance of Commercial Fishing Gears (Purse Seine/Ring Net, Line Fishing Gears including Longline)
- c) Fishing Technology and Marine Engineering courses
- d) On-the-Job Training on Fishery Technology and Resource Conservation and Management for graduating marine fishery students
- e) Training programs on operation, repair and maintenance of marine engine; deck and hydraulic machinery
- f) Training on practical navigation and seamanship
- g) Scuba Divers Training Course
- h) Training on Practical Electricity and Refrigeration
- i) Stock Assessment

4.1.3 Law Enforcement:

- a) Fishery Law Enforcement Training
- b) Orientation-Seminar and Deputation Fish Warden
- c) Fish Quarantine Seminar and Orientation
- d) Examination of Fish and other fishery products
- e) Orientation and Consultation Workshops on the management Responsibilities of the LGUs over the fishery resources within their territorial jurisdiction
- f) Monitoring, control and surveillance
- g) Training on CITES (Convention on International Trade on Endangered Species)

4.1.4 Post Harvest Technology:

- a) Integrated Fishery Livelihood Projects for Small Scale Fisherfolk (Fish Processing, Product Development, Fish Vending and other related areas of studies)
- b) Skills Training on Fish Handling and Processing

- c) Training on Value-Added Product Development
- d) Training on Hazard Analysis Critical Control Points (HACCP)
- e) Red Tide Detection thru Mouse Bio-assay

4.1.5 Support Training Programs:

- a) Trainer's Training on Cooperative Education
- b) Trainer's Training on Value Formation

4.1.6 Extension Programs:

With the transfer of monitoring and extension functions to the Department of Agriculture Regional Field Units and to its devolved employees in the municipalities and barangays, a Unified Extension Program for national implementation will be conceptualized and operationalized. As of to date, intensive training and orientation programs on the latest program thrusts on Fisheries thru the Gintong Ani for Fisheries is being institutionalized to all DA Regional Field Units to come up with a National Fisheries Extension Program. Initially, the Extension Services are rendered directly by the personnel of the DA Regional Field Units and the devolved Municipal/Agricultural /Development Officers at the municipalities and barangay levels whom in turn will extend technical services to the fisherfolk/clientele..

The major types of extension/outreach programs are as follows:

- a) Community-Based Extension Service
 - Inventory of sectoral fisheries resources and identification of feasible pilot areas for project establishment
 - Intensify and strengthen linkages with the RFUs LGUs; POs NGOs and other concerned institutions
 - Organization of FARMCs and other fishermen's organizations
 - Establishment of Prototype Pilot Demonstration Projects
 - Project management and Monitoring

- b) Pilot and Livelihood Projects Visitation and Advisory Services
- c) Technology Packaging, dissemination and strengthen Interagency Linkages with Technical Offices

4.2 Credit Support Facilities

To ensure effective application of technology practices from the training and extension programs implemented and to provide livelihood projects/programs to the fisherfolk, the BFAR has conceptualized and operationalized a Nationwide Integrated Livelihood Program for Fisherfolk. Said program is the Credit Component of the Gintong Ani for Fisheries (GAF) Program and in support to the Social Reform Agenda Program of the Government to uplift the socio economic living conditions of our coastal fisherfolk including the fishing families and their dependents. This program complements the on-going implementation of the fishery resource management program in various fishing communities of the country to equitably provide both technical and financial stability among our fisherfolk thru provision of alternative livelihood projects. The beneficiaries of the project maybe individual fisherfolk or organized associations/cooperatives with fisherfolk members. The livelihood programs have a built in training and extension components which are critically and essentially needed prior and after the availment of the loan and on the overall livelihood projects management and operation.

An initial Credit Funds of P25 million has been provided by the Department of Agriculture Credit Funds and was transferred to QUEDANCOR (Quedan and Rural Credit Guarantee Corporation) who shall manage the fund and provide credit for identified livelihood projects of the beneficiaries. The interest rate of the credit fund is 8% for cooperatives /associations/borrowers and 10% for individual borrowers.

The project was launched last April 16, 1997 of which 28 qualified beneficiaries were awarded with a loan ranging from P10,000 to P200,000, a total amount of more or less P1,000,000.00.

4.3 Credit Support Fund/Targets

The coverage of the program shall directly target 5,000 fisherfolk/dependents to avail of the project representing all Regions of the country and depending upon the availability of the fishery and aquatic resources. The priority target areas are preferably the Social Reform Agenda Convergence Areas comprised of coastal municipalities and selected fishing villages and communities nationwide.

In view of the general restriction on overfished coastal areas and depleted resources, and to minimize fishing efforts to properly conserve and manage the fishery resources, the nationwide Livelihood Projects are comprised of aquaculture/marine based; agri based and non agri based activities namely;

4.3.1 Aquaculture/Marine-Based:

Spirulina Contract Growing

Spirulina is a microscopic form of blue green algae which can convert inorganic compounds from the water and air into valuable nutrient matter, such as protein, carbohydrates, fats, vitamins and minerals through the process of photosynthesis. Spirulina can be easily grown in idle rice lands during the dry season or on collapsible circular plastic tanks for at least three months in a year.

The contract growing of Spirulina will entail the following activities:

- signing of Contract Growing Agreement between Microbials International, Inc. (MII) the contract buyers, and the fisherfolk family of fisherfolk cooperative (the contract grower);
- Hands-on training of contract growers, setting up of spirulina growing facilities in fisherfolk's backyard, and growing operations with periodic monitoring of the Spirulina Foundations of the Philippines, Inc. (an NGO).
- Harvesting, drying and delivery of dried spirulina to MII. Price will be according to product grad, Food Grade A at P700/ kg or Feed Grade B or C at 350/ kg.

Cage Culture of Milkfish

Milkfish or bangus is a major aquaculture fish species cultured in brackishwater fishponds and in freshwater pens. The demand for milkfish is increasing population, hence the need to enhance production.

In 1990, cage culture of milkfish in marine waters gained popularity in Region I, particularly in Lingayen Gulf, Pangasinan. This milkfish culture system can be a substitute to mussel farming as an alternative livelihood.

Crab Fattening

This project involves the stocking of lean mud crabs (marketable size of 150-200 gram) in cages and feeding with trash fish for about two weeks by which time they will have been fattened and will command a very much better price in the market.

Lapu-lapu (Grouper) Culture

The cage culture of lapu-lapu is a popular method of rearing the fish in the sea coast. This technology utilizes relatively small physical facilities and space and the scale of operation can easily be adjusted to fit the available resources.

A floating cage is made up of a floating unit from which a single cage or a series of net cages are suspended. This is mobile and can be easily towed. A stationary cage on the other hand is tied to a fixed pole at the corners or anchored.

Grouper fry are stocked and fed with trash fish. Grouper are more widely reared due to their high market demand specially when sold alive.

Aquarium Fish Culture (Export-oriented Freshwater Aquarium Fishes)

The aquarium fish industry is one of the profitable aquaculture enterprises in many ASEAN countries. The demand for aquarium fish continues to grow and it is foreseen as one of the leading edges in the fisheries sector that could be developed into an export product.

The culture of freshwater aquarium fish was started by PCAMRD of DOST in 1989 resulting in proficient rearing of the Japanese "koi". Demonstrated was the integrated culture system for "koi" carp from broodstock development of fry/fingerling production to marketable size.

Rearing of freshwater aquarium fish is being recommended as one of the alternative livelihood because it is manageable, relatively inexpensive and the technology is available.

Seaweeds Culture

Seaweeds culture in the Philippines is at present primarily dependent on farmed seaweeds. Commercialization of seaweeds has proceeded very rapidly as a result of successful development of *Eucheuma* farming technology, *Gracilaria* culture technology and the country's capability of processing seaweeds.

Culture of *gracilaria* is being recommended as an alternative livelihood project in the red tide affected areas and other suitable areas.

Gillnets, handline fishing, fish pots, traps

The marine-based capture fishing methods recommended are the passive gears such as gill net, handline, fish pots and traps which are environment friendly and do not significantly add to fishing effort.

4.3.2 Agri-based Projects:

Swine-fattening

Under the hog fattening program of BAI the piglets will be procured from the NSPRDC (Tiaong, Quezon), a production center for the BAI or any commercial fishery farm.

The animal will be fattened to market age. This recipient should pay the book value of the animal (price of the animal at the time of acquisition) after marketing the said animals, which should not exceed six months from the day of delivery.

Other alternative agri-based projects are as follows:

- Swine Breeding
- Poultry Raising (includes feeds/housing)
- Food Processing (meat & fish)
- Fish Vending/trading/marketing
- High Value Crops & Cutflower Industry

The BPI shall prepare and implement relevant training and livelihood program for fresh and processed forms of high value crops and cutflower.

4.3.3 Non-Agri-Based Projects:

- Welding, electronics/appliance repair, etc.
- Operation of a Sari-Sari Store
- Buy and Sell of RTW
- Dressmaking and Embroidery

The agri-based and non-agri-based projects were conceptualized as alternative livelihood projects to give way/ ample time in the implementation of

fisheries conservation and rehabilitation measures in support to Fisheries Management Program and the Code of Conduct for Responsible Fisheries.

To complement the training program implementation, the Integrated Livelihood Project for Fisherfolk has been introduced as part of the Extension and Credit Facilities availment. Said approach is an improvement of previous programs implemented in the late 70's to the early part of CY 1996.

The effective training extension and credit systems are major elements towards enhanced production to attain food security and uplift socio-economic living conditions of our fisherfolk. The three way system shall encourage fisherfolk to undergo training and adopt matured/proven technologies, avail of technical credit assistance and extension services to insure efficient management, operation and expansion of livelihood projects and provides concerned extension officers with feedback mechanisms on the technical problem and needed solutions. This system can be effected through an extension networking from the national to regional, to the municipal and barangay levels.

5. CONCLUSION

- 1) The roles of training and extension on responsible fisheries must be strengthened and complementary to the sustainable use of the fishery resources within the ecological limits thus promote effective fisheries management, protection and conservation.
- 2) The integrated approaches in the conduct of training and extension programs to develop/upgrade individual knowledge, skills and competencies and encourage technology adoption and replication thereof must be designed to reach a critical mass approach or multiplier effects among the fisherfolk beneficiaries at the national , regional, provincial, municipal and barangay levels. Hence, a comprehensive and nationwide training and extension programs must be conceptualized and operationalized to meet the national standards and guidelines. The technology practices on fishing operation techniques must be selective and environment friendly.
- 3) The training and extension programs designs must have a balance focus on fishery resources conservation and management and technology enhancement programs and entrepreneurship,
- 4) The training and Extension Programs must be responsive to resolve the issues on declining fisheries production and demand for fish and fishery products. Both programs must provide direct assistance to the workforce of the fishing industry, the fisherfolk and other interested clientele.

- 5) The need to intensify and maintain mechanisms to strengthen and enhance better linkages and coordination works with the local government units, DA-RFU's, etc.
- 6) The need to conduct regular periodic monitoring and evaluation of the training and extension programs implemented.

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