

THE PHILIPPINE NATIONAL AQUASILVICULTURE PROGRAM¹

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Abstract

The Philippine National Aquasilviculture Program (*PNAP*) is a banner program of the Department of Agriculture (*DA*) being implemented by the Bureau of Fisheries and Aquatic Resources (*BFAR*). To implement the *PNAP*, a Memorandum of Agreement was executed by and between *BFAR* and the Commission on Higher Education (*CHED*) on December 16, 2011. The program concept is primarily mangrove resource rehabilitation and livelihood provision to help address climate change, food security and poverty among municipal/artisanal coastal fisherfolk. To achieve its goals and objectives, the *BFAR* identified three strategic interventions, such as: (1) replanting of destroyed mangrove resources; (2) establishment of community-based multi-species hatcheries (*CBMSH*), and (3) provision of aquasilviculture livelihood projects to fisherfolk-beneficiaries throughout the country. As envisioned, the *BFAR* shall provide support funds for the establishment, operation and management of the *PNAP* while *CHED* shall provide logistical support during program implementation. The program covers at least 71 State Universities and Colleges (*SUCs*) and 61 provinces throughout the country. Potential areas targeted by the *PNAP* are abandoned, undeveloped and underutilized (*AUUs*) fishpond lease agreements (*FLAs*) and Department of Environment and Natural Resources (*DENR*) identified areas (*Key Biodiversity Areas, reforestation areas and co-management agreement areas*) from *BFAR* coastal regions 1 to 13 and *ARMM*. Participating agencies are *DA-BFAR* Regional Fisheries Offices (*RFOs*) and Provincial Fisheries Offices (*PFOs*), *CHED* (*SUCs*), *DENR* Provincial Environment and Natural Resources Offices (*PENRO*) and Community Environment and Natural Resources Offices (*CENRO*), and the Local Government Units (*LGUs*) in the provinces and municipalities. Target beneficiaries for the aquasilviculture livelihood projects are at least 1,000 coastal fisherfolk and for the community-based multi-species hatcheries are 64 *SUCs* who were signatories to the *MOA*. For mangrove rehabilitation, the *PNAP* will involve the coastal fisherfolk in the planting of 100 million propagules for the next 3-4 years. Funding supports from *BFAR* are P6.00 per surviving propagule, P1.2 million each per *SUC* for the establishment and operation of *CBMSH* and P65,000 per aquasilviculture project. As part of the over-all management strategy, a National Steering Committee (*NSC*) was formed to formulate policy guidelines of the *PNAP* while Regional Steering Committees (*RSCs*) were created to oversee policy implementation in the regions. Program Management Offices (*PMOs*) were formed to implement and supervise program implementation in the provinces. Community Organizers (*COs*) were hired in each province to assist in the implementation of daily activities. The *PNAP* implementing guideline was approved on March 12, 2012 detailing the procedures to follow both relating to the technical and administrative operations of the program.

¹ A country paper presented during the SEAFDEC-AQD International Workshop on Resource Enhancement and Sustainable Aquaculture Practices in Southeast Asia, 5-7 March 2014, Punta Villa Resort, Iloilo City, Philippines.

OVERVIEW

The Philippines is an archipelago of more than 7,100 islands with a marine habitat hosting one of the world's richest aquatic biodiversity (BFAR Primer). It has a total land area of 300,782 square kilometers representing only one-seventh of its total territorial water area (*including the Philippines Exclusive Economic Zone, EEZ*) of 2.2 million square kilometers, excluding inland aquatic resources estimated at 496,000 hectares (Figure 1). The Philippine coastline stretches to around 36,000 kilometers (Philippine Fisheries Profile, 2011).

Philippine Marine Jurisdictional Boundaries

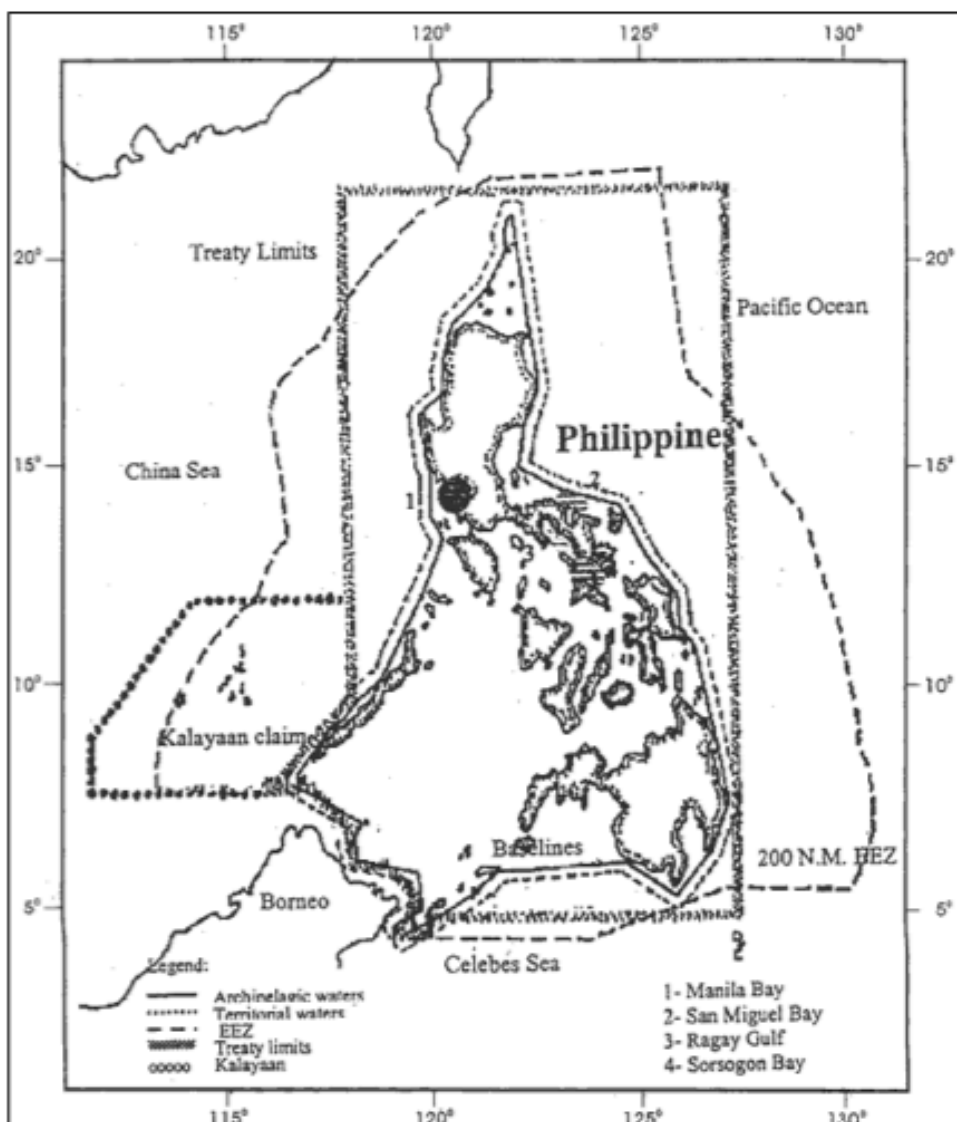


Figure 1. Map of the Philippines showing the limits of archipelagic, territorial waters, treaty limits, Exclusive Economic Zone (200 N. M. EEZ) and Kalayaan claim.

The Bureau of Fisheries and Aquatic Resources (BFAR) of the Department of Agriculture (DA) is the government agency mandated to ensure the development, management and conservation of the country's fisheries and aquatic resources. It is also committed to contribute in achieving food security for the Filipino people and improve quality of life of fisherfolk through rational and equitable utilization of fisheries and aquatic resources; empower fisheries stakeholders enabling them to adapt to changing environmental conditions and global trade and regional fisheries management regimes; and improve productivity of fisheries and aquaculture within ecological limits (BFAR Strategic Management Plan, 2011). Therefore, one of the strategies to realize these missions is the implementation of the Philippine National Aquasilviculture Program (PNAP), a fishery livelihood and conservation program. The PNAP is a banner program of DA-BFAR jointly undertaken with the Commission on Higher Education (CHED) through a Memorandum of Agreement (MOA) signed on December 16, 2012. The program covers the 15 coastal regions of the country. The participating agencies include the BFAR, with its Regional and Provincial Fishery Offices; CHED, and its participating State Universities and Colleges (SUCs); the Department of Natural Resources (DENR), with its Provincial Environment and Natural Resources Offices (*PENRO*) and Community Environment and Natural Resources Offices (CENRO); and the Local Government Units (LGU). The fisherfolk are the primary beneficiaries of the resource rehabilitation and protection and aquasilviculture projects while the participating SUCs are the beneficiaries of the community-based multi-species hatcheries.

THE PROGRAM

The concept of PNAP is to come up with self-sufficient fisherfolk families who are advocates of fisheries resource protection through mangrove habitat rehabilitation, promotion of aquasilviculture and establishment of community-based multi-species hatcheries.

The PNAP has three (3) components, namely: (1) resource rehabilitation and protection; (2) aquasilviculture and (3) community-based multi-species hatchery. The first two projects are being implemented under the guidance of the BFAR-National Brackishwater Fisheries Technology Center (NBFTC) Pagbilao, Quezon while the last component is under the BFAR Inland Fisheries Aquaculture Division (IFAD).

1. Mangrove resource rehabilitation and protection

Mangroves are valuable sources of forest products and aquatic resources. Both offshore and inshore fisheries depend on mangroves as natural habitats. Melana and Courtney (2000) reported that parallel with the decline in the mangrove areas of the Philippines is the significant reduction of fishery resources. The loss of mangrove forests in the Philippines is also correlated with decreasing fisheries production in municipal waters and the depletion of larval and juvenile stages of shrimps and milkfish which are seed

sources for pond aquaculture (Camacho and Malig 1988 as cited in ADB 1990).

In 1918, Brown and Fischer estimated the mangrove forest to be as much as 400,000 – 500,000 ha. However, the mangrove areas were indiscriminately alienated for other uses such as conversion to fishponds during the 1960s and 1970s, reclamation for residential and industrial development, over-harvesting of mangrove trees for charcoal or fuel wood and urbanization. In 1994-1995, mangrove forest was estimated at 120,000 ha (Primavera and Esteban, 2008). Long and Giri (2011) conducted the latest study on the aerial extent and spatial distribution of Philippines' mangrove forest. They estimated that the total area of mangrove forest of the Philippines was 256,185 ha circa 2000.

The rapid decline of mangrove forest is alarming considering the ill effects that may be brought about by climate change in archipelagic countries, like the Philippines, with little mangrove cover. Thus, restoration of mangrove forest is essential to mitigate or build the country's resiliency to climate change. To achieve this, BFAR has targeted to plant 100 M mangrove trees in 3-4 years to bring back health to its degraded coastal cover. To achieve this, participating fisherfolk will be encouraged to collect, plant and nurture mangrove propagules. As an incentive, he will be paid P1.50 for every propagule collected, P 2.00 for every propagule planted and P 2.50 for every fully-grown plant.

2. Aquasilviculture

Aquasilviculture is a multi-purpose production system that allows production of fish in a mangrove reforestation project. It is a mangrove-friendly aquaculture technique of producing fish in a watered area enclosed with net but does not allow cutting of any mangrove tree. A model of aquasilviculture is showcased at the BFAR-NBFTC Pagbilao, Quezon. The design for the project follows a 70:30 ratio of mangrove to water canal area. This system provides a source of additional income and at the same time increases fish production that is easily adaptable for municipal/artisanal fisherfolk. The fisherfolk-beneficiary who participated in the resource rehabilitation activity shall be the primary beneficiary of the aquasilviculture project.

3. Establishment of community-based multi-species hatchery

The community-based multi-species hatchery (CBMH) is a facility for spawning gravid fish or crustacean, such as blue crab, caught in the wild to save its offspring that might otherwise be lost due to misuse. The hatchery will be able to contribute to stock enhancement and eventually become a source of fingerlings and seed stock for aquasilviculture and other aquaculture projects. Moreover, the CBMH will serve as a working laboratory of fisheries students of the participating State Universities and Colleges. CBMH

may be land-based or holding cages (“lying-in”) for gravid, ready to spawn crabs.

STRATEGIES

Implementing Guidelines

A comprehensive implementing guideline was prepared and approved by the National Steering Committee (NSC) to ensure the success of the implementation of the PNAP. It defined the organizational structure and strategies of implementation of the program.

The NSC was created to provide over-all policy directions and guidelines. The convenors of the NSC are the DA Secretary and CHED Chairperson; Co-chaired by the BFAR Director and CHED Commissioner; and members composed of 3 BFAR Regional Directors and 3 SUC Presidents representing Luzon, Visayas and Mindanao; BFAR-Assistant Director; DENR-Forest Management Bureau (FMB) Director and DENR-Protected Areas and Wildlife (PAWB) Bureau Director. The activities of the NSC are being managed and coordinated by the BFAR-NBFTC-based National Program Secretariat.

At the regional level, a Regional Steering Committee (RSC) was created to supervise policy implementation and oversee the Program Management Office (PMO). It is composed of the BFAR Regional Director and SUC Presidents. The PMO was also created to oversee the operations and implementation of the program in the province. The BFAR Provincial Fisheries Officer (PFO) heads the PMO as over-all Project Coordinator. The members of the PMO are the authorized representative of the SUC President and the Provincial Agriculturist. In addition, the PMO engaged the services of a Community Organizer (CO) who directly implements the program in the field.

Capacity Building

BFAR and SUC coordinators, PFOs, focal persons, COs and fisherfolk beneficiaries were given technical training on the three components as well as constituency building, value formation and leadership development. Training of implementers was done at BFAR-NBFTC while that of the beneficiaries was done at the BFAR Regional Fisheries Training Centers (RFTCs). CBMH training was done at BFAR Guiuan Station.