

COASTAL FISHERIES MANAGEMENT IN PHANG-NGA BAY

by

Jate Pimoljinda

Andaman Sea Fisheries Development Center, Thailand

1. Introduction

Phang-Nga Bay was once abundant with natural resources, dense mangrove forests, plentiful aquatic resources and a scenic environment. Utilization of these resources was not as high as present. Fisheries resources were harvested just to feed the family and for sale in the market for local consumption. Also, mangrove trees were utilized for housing, making charcoal and constructing artisanal fishing gear. Fishing gear used in the Bay were all artisanal, selective and not harmful to aquatic resources.

During the last three decades, the demand for marine products has rapidly increased due to economic and population growth in Thailand. Land encroachment, particularly in the coastal belt within 60 km. from the sea for new community settlement has been initiated, followed by infrastructure construction to support the communities and economic development. The industrial sectors from congested areas like Bangkok have also decentralized. Coastal areas have therefore been degraded, huge mangrove areas were cut and destroyed, sea water along the coast polluted by discharged urban and industrial waste and an increased tourism business. Fisheries resources have also suffered due to overfishing, illegal and destructive fishing was introduced to catch more fish, new recruitment of aquatic resources could not survive in such conditions with the mangrove areas, the main nursery grounds destroyed and the water polluted. Traditional coastal populations living by small scale fisheries, aquaculture and agriculture similarly suffered from less income, which has become insufficient for their living. They have recently been overwhelmed by migrant workers following the economic development. These workers compete with them and indiscriminately exploit coastal resources to supplement their low wages or temporary unemployment. Land has been sought by urban investors and developed indiscriminately for shrimp aquaculture which obtains relatively a high return in a short time, mangrove areas have also been encroached upon for shrimp culture purposes. Basic commodity prices have increased and growing social conflicts have led to great difficulties in solving the problems.

2. Problems to be addressed

In the past, fishing operations in Phang-Nga Bay depended on the capability of each fisherman and had no indiscriminate affect on the resources. Now the changes have not been taken into consideration. As a result, many problems have been created and are very difficult to solve. The most serious problems can be identified as follows:

2.1 Degradation of Fisheries Habitats

The fishing gear that was used in the Bay such as trammel nets, several types of gill net, traps and hook and line etc. are considered as relatively non-destructive fishing gear. When the trawler was introduced to Thailand, the coastal fisheries resources were rapidly depleted and finally became over exploited during the last decade. The catch recorded by the research vessel of AFDEC showed decreasing CPUE trends, from 160 kg/hr in 1969 to 38 kg/hr in 1988, comprising of 33.3% of commercially valuable species and 66.7% of trash fish, of this percentage of trash fish, 30.1% are of small economic species (Chantawong 1993). If the trawlers continue trawling, it can be predicted that in the near future Thai waters will have nothing left to be caught.

2.2 Fishing Conflicts

The encroachment of commercial trawlers to fish illegally in the Bay has created many problems for the small scale fishermen. Competition on fishing, scrambling for fishing grounds are a considerable problem. As the efficiency of the trawler is much higher than those of artisanal ones, the small scale fishermen lost their fishing grounds and even their fishing gear is sometimes swept away by the trawlers. Apart from the conflicts between commercial fishermen and small scale fishermen, there are also conflicts among the small scale fishermen themselves; push net and trammel net fishermen. It was observed that the areas where push nets operated at night will become less productive areas for trammel nets the following day and it was considered as a strongly destructive gear, similar to the trawler. This is the reason why small scale fisherfolk attempt to ban, or keep the trawler and push netters, out from Phang-Nga Bay.

2.3 Degradation of coastal environment

Coastal environment can be degraded by several kinds of activity which can be identified as follows:

2.3.1 Discharged waste water from urban and industrial areas into the Bay: as mention before, the economy of Thailand has grown very fast and many human settlements, communities and industrial activities have been decentralized to the coastal belt and of course all untreated waste water from these urban and industrial sites find their way, or are discharged into rivers or channels and flow into the sea. The geographic layout of Phang-Nga Bay is somewhat closed in, circulation or exchange of water in the Bay is not adequate to push the wastes and other pollutants out to sea. Continuous accumulations of these pollutants will ultimately cause water quality deterioration in the Bay and will affect living fauna and flora found in these waters.

2.3.2 Destruction of mangrove forests: mangrove forests not only help to filter or absorb toxic substances dissolved in the waste water discharged but is

also an important nursery ground for the larvae and juveniles of aquatic organisms such as finfish and shellfish. When mangrove is destroyed, it also affects directly, the other resources and coastal environment in that area, thus losing its healthy condition and biodiversity.

2.3.3 Garbage and wastes from tourist services: in Thailand, the tourist business has expanded rapidly. Every kind of human comfort and pleasure has been sought to entertain the tourists, for instance, tourist barges, floating restaurants and shorebased resorts and restaurants on land etc. These indiscriminate entertainment facilities are all sources of waste and garbage and some of these are discharged into the sea as can be seen at present on many beaches, particularly on some isolated island beaches that are covered with accumulated garbage coming from the sea by wave and wind action, especially plastic bottles, plastic bags, etc.

These problems can not be solved by any one single organization individually. It needs a good organizational set up and cooperation from both the government and private agencies concerned, including the tourists and all other beneficiaries.

3. Coastal Fisheries Management Policy and Strategies

The Department of Fisheries recognizes all these problems and has attempted to study them to obtain more information in order to set up the necessary management measures and strategies to reduce pressures and degradation of the coastal environment and fisheries resources. Many management measures and mechanisms have been established for the management and rehabilitation of coastal fisheries resources as follows:

3.1 National legislation on Fisheries : many fishery laws, ministerial acts and regulations have been implemented for controlling fisheries in Phang-Nga Bay to promote orderly and sustainable production without destroying the young population of aquatic organisms, for instance, the regulation on prohibiting of any kinds of trawlers and push nets in a 3000 m area from the shoreline; prohibiting of any kinds of trawler and push nets to operate in Phang-Nga Bay; prohibiting of some types of fishing gear such as trawls, purse seniers, to operate during spawning and nursing season in the area of Phang-Nga and Krabi from 15 April to 15 June, each year, etc.

3.2 Law enforcement: to strengthen the enforcement of fisheries management measures, the conservation units equipped with patrol boats have been stationed in many coastal provinces to carry out surveillance on illegal fishing boats in the Gulf of Thailand and on the Andaman Coast.

3.3 Implementation of small scale fisheries development projects: in order to upgrade the standard of living of small scale fisherfolk who live in poverty, many activities have been implemented in the fishing villages, for example, the provision of

essential infrastructures like landing sites, piers, gear repair halls, fresh water stocking tanks etc. as basic amenities.

3.4 Demonstration and training: new technologies on fishing operation, boat engine repairing, fish processing, and other topics concerning fisheries have been introduced to the fisherfolk by regular training schemes. Posters, VDO and media to help give a better understanding in conservation have also been disseminated in the fishing communities.

3.5 Installation of artificial reefs: two types of artificial reefs have been installed along the coast. The first type is a small cluster of reef to cover an area of about 0.125 km² constructed in front of a fishing village to serve as a new fishing ground for the fishermen. The second type is a large cluster of reef to cover an area about 15 km² constructed along the shoreline about 3-5 km offshore as a barrier to prevent encroachment of trawlers to fish illegally in the prohibited areas, and also to serve as a fishing ground for small scale fishermen. Several clusters of reefs have already been installed in Phang-Nga Bay.

3.6 Closed areas and seasons: Phang-Nga Bay has been considered as one of the most important areas for producing new recruitment of pelagic and demersal resources. The Bay is currently being impaired by various kinds of fishing activities. Thus, closed areas and seasons during the spawning and nursing of larvae from 15 April to 15 June every year have been declared in Phang-Nga and Krabi since 1982 (Figure 1). This measure is generally used to restore pelagic species, but it was found that demersal resources have similarly been effected. The catch rate recorded by AFDEC research vessel shows a very satisfactorily increasing trend from 34.66 kg/hr in 1986 to 136.77 kg/hr in 1995 (Table 1).

3.7 Limited entry of fishing boats: to reduce the pressure of overfishing and degradation of fisheries resources, registration of fishing boats and fishing gear (fisheries census) especially trawlers and push netters has been implemented to determine the actual number of fishing boats and fishing gear with the aim to control the number of these gear.

4. Constraints on Fisheries Management in the Past

4.1 Weakness in law enforcement due to a limited number of personnel and patrol boats caused rampant illegal fishing in Phang-Nga Bay. Surveillance by patrol boats seems to be not so successful because most of the fishing boats have installed modern communication equipment like radios and mobile telephones etc. to evade patrol boats. When the patrol boats start moving, all illegal fishing activities also stop their operation and disperse.

4.2 Limited fishermen's participation in implementing small scale fisheries development activities in the past is partly due to insufficient public relations efforts of the project. The objectives of project activities, responsible government implementing agencies, project maintenance and management authorities, fishermen

beneficiaries, were not well specified and remain unclear to the target beneficiaries. A good illustration of this lack of clarity is the use of DOF constructed facilities in the fishing villages. The fishermen were not using the DOF facilities even though they were available for their use. Furthermore, extension workers did not spend enough time in the communities as they worked according to official working hours which are too short compared to the working styles of the NGOs who work full time with fishermen. The difference in working style also leads to unsuccessful implementation.

4.3 Educational opportunities for the old generation of fishermen were very low. In general, they studied only up to primary school level, some even had no opportunity to study due to the poverty of their families. Moreover, most of fisherfolk still respect or believe the knowledge transferred from the older generations. Therefore, to change their attitude or to introduce some new fishing technology seems to be very difficult and takes a long time unless they have the opportunity to learn at first hand and practice by themselves.

4.4 Limitation of investment capital: many fishing communities live in poverty, their earnings are just enough for their daily needs; there is no extra money for saving. Expenses for fishing are provided by the investor who is able to provide everything for them, boat, engine, gear, oil, fuel and even medical fees and other family expenses when they face a money shortage. The only commitment is that all the catch has to be sold to the investor according to a price determined by the investor. Therefore, the investor looks like a permanent supporter of the fisherfolk. To change their way of living, government has to subsidize huge amounts of budget to recover their debt and provide long term support.

4.5 Limited entry of new fishing boats in the country could be considered not as successful because the authority to license the building of new boats rests with the Harbor Department. DOF is responsible for issuing fishing license only; fishing boats that want to apply for a fishing license must show a boat license and this causes an uncontrolled entry of new boats. Some fishing boats are constructed even without permission and fish illegally. The up-to date records of the number of fishing boats shows only one third having registration.

4.6 Extension workers who are responsible for implementation are not clear in their responsibilities and act as the leaders of fishermen instead of as supervisors and allow the fisherfolk carry out activities by themselves. Thus, participation of fisherfolk in implementing activities is not as high as it should be. Extension workers in fact, have to encourage fisherfolk to be involved in implementing all the activities and try to increase their responsibility in implementation. Those activities should come from the needs of fishermen and not be imposed by extension workers, convincing them on conservation measures, stimulate them to show some initiatives on resource conservation management and when they realize that those activities are beneficial they will feel a sense of ownership and learn how to sustain the utilization of coastal resources in their responsible area. This is a indicative sign of community-based fisheries management.

5. Community-based Fisheries Management

The small scale fisheries development schemes, initiated since 1985 have met with some success. Facilities constructed, and artificial reefs provided to the fishing communities are tangible benefits. However, the benefits of resource management and conservation are not as clear or as understandable. Failures of fishery management programmes in the past were due to the fisheries resources being considered as common property. In discriminate exploitation in the past has degraded them. Thus, the strategy on a community approach initiated and improved upon community-based fisheries management has been implemented in many different areas particularly in the Phang-Nga Bay under collaboration with the Bay of Bengal Programme. The project has been conducted since late 1995 for a five year period. This project is aimed to change the perceptions and attitudes of fisherfolk from being a user to being a manager of the future. Activities on grouping, training, social development programmes (such as reforestation of mangrove, replanting of sea grass, fish stock enhancement/sea ranching, etc.), fish landing site management which unites fisherfolk, including awareness building to build up their awareness and participation in resource conservation have been implemented in the target villages. Regular meetings among the working committee of each village have been organized every two months to monitor the progress and problems of implementation in each village. Visits to the target villages have also been carried out regularly. When the fisherfolk learn how to manage and conserve the fisheries resources for sustainable utilization in the near future, laws governing the provision of fishing grounds in front of their village or group of villages as part of village property as a source of their livelihood, in other words, certain fishing rights, will be extended to them.

6. Conclusion

DOF continues to pay special attention and place emphasis upon the important role of coastal fisheries management from the beginning. As resource degradation is not only caused by fisheries, it is rather difficult to address just this problem alone. A sea rehabilitation programme has therefore been proposed and has been approved by the Prime Minister early this year and is now under detailed formulation of the work plan and mechanism. This integrated programme aims to achieve greater participation of all concerned agencies to cooperate in the management and rehabilitation of coastal resources and environments. In the field of fisheries, community-based fisheries management has been implemented in many fishing villages along the coast to prepare the fisherfolk for the new Territorial Use Rights in Fisheries (TURFs) management system which will be enacted in the near future.

7. References

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Table 1. CPUE of trawler in Phang-Nga Bay in 1986, 1990, 1993, 1994 and 1995 surveyed by AFDEC Research vessel, Pramong 10

Year	Total CPUE	val. Fish	trash fish	mackerel (big)	mackerel (small)	No. operation
1986	34.66	16.42	18.25	0.15	-	119
1990	39.95	15.36	24.60	0.29	-	39
1993	49.9	22.53	27.38	0.54	-	38
1994	55.95	19.68	36.31	0.77	0.04	32
1995	136.77	34.28	102.49	0.98	0.07	44

Note : val. fish - valuable fish

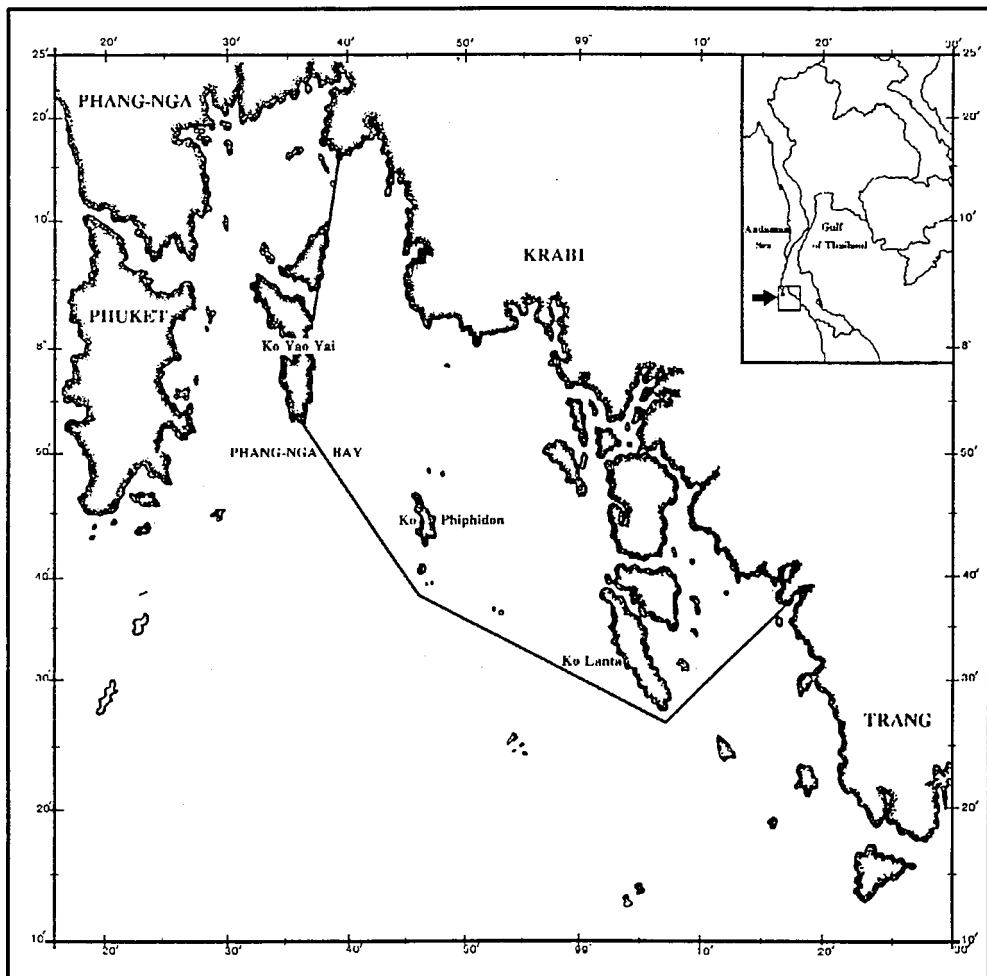


Figure 1 Illustration of close area for all kinds of trawlers, purse seiners, gill netters of mesh size less than 4.7 cm. during 15 April to 15 June each year (Ministerial Regulation issued 11 April, 1985).