

# COASTAL FISHERIES MANAGEMENT INTERRELATED TO ENVIRONMENTAL ASPECT

by

**Ampan Pintukanok**  
**Chief of Marine and Coastal Resource Sub-division, Thailand**

## ABSTRACT

Fisheries have played a dominant role as foreign exchange earner of Thailand's economy. Illegal practices, in particular, have caused damage in reefs, the marine habitats for living and non living organisms. Degraded coral reefs loss the diversification in species and decline a number of catch. A National Coral Reef Strategy for Thailand was developed to manage coral reefs according to their different ecological and economic values in order to maintain a balance of uses. Zonation of reefs was provided along with measures given for controlling an environmental impact. Likewise, public awareness building was suggested to satisfy a gap of implementation caused by lack of law enforcement.

### 1. Introduction

Fisheries share a large number of agricultural products. As an important economical activity, fisheries earn high value foreign exchange to Thailand each year. In sustaining the local livelihood, small scale fishing gears and subsistence harvesting are generally found in local communities. This includes the traditional sea people and other inhabitant of small coastal communities who depend on coral reefs for subsistence with small fish, mollusks and other invertebrates. Use of reefs by these activities had brought about the decline in the abundant of reefs communities especially, shell and ornamental fish collectors and wholesale shell and ornamental fish dealers.

### 2. Damage of Corals by Fisheries

Coral reefs, a wonderful home for marine living organisms provide exotic underwater scenery. Corals keep the ecological balance by providing natural habitats, shelters, and nursery areas for stocks in which a number of species is increased. Reefs protect against strong wave and heavy storm to keep shore firm. Coral colonies

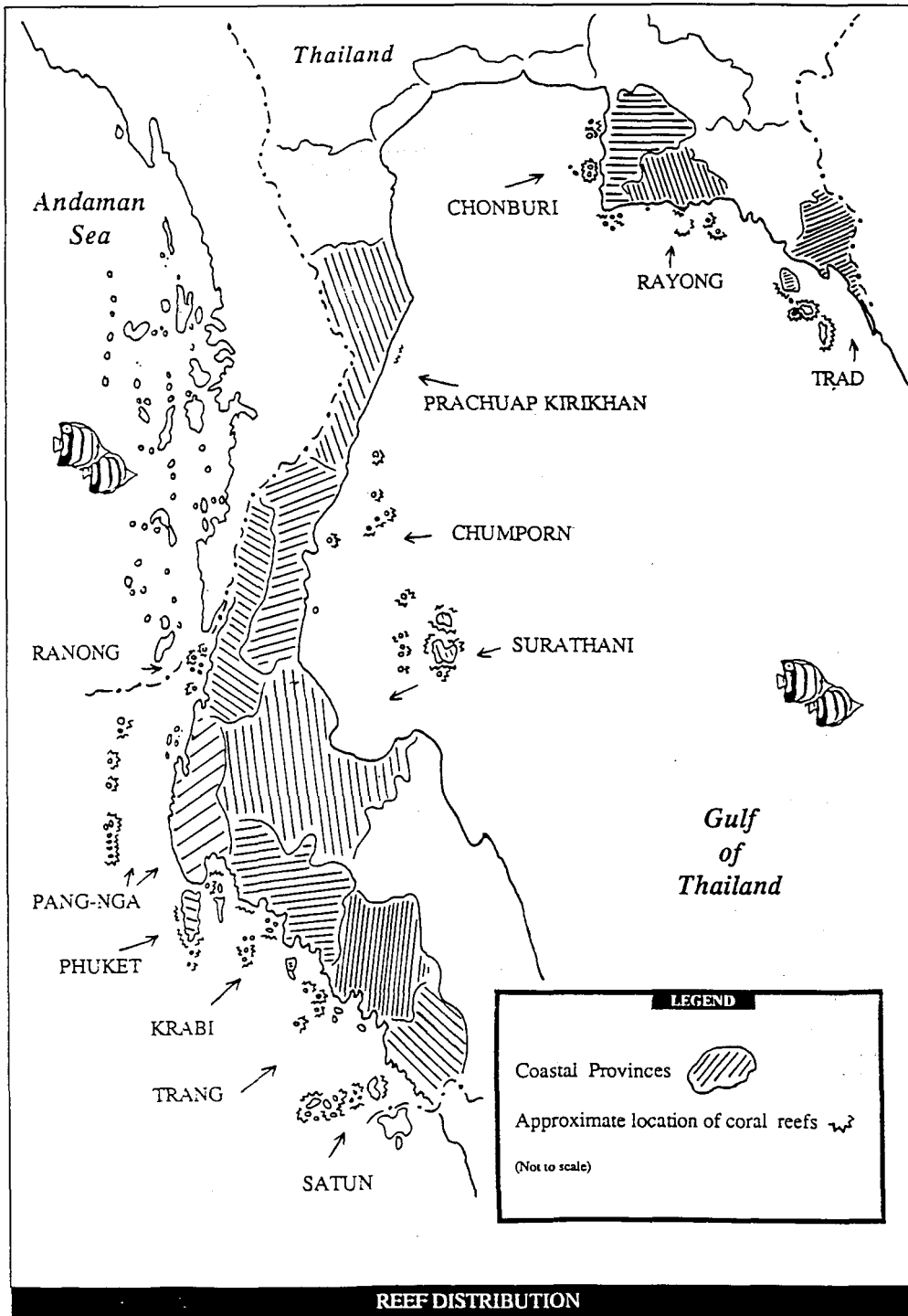
bewitchingly grow in many forms which attract tourists and general people to come to see them and the economic growth has resulted.

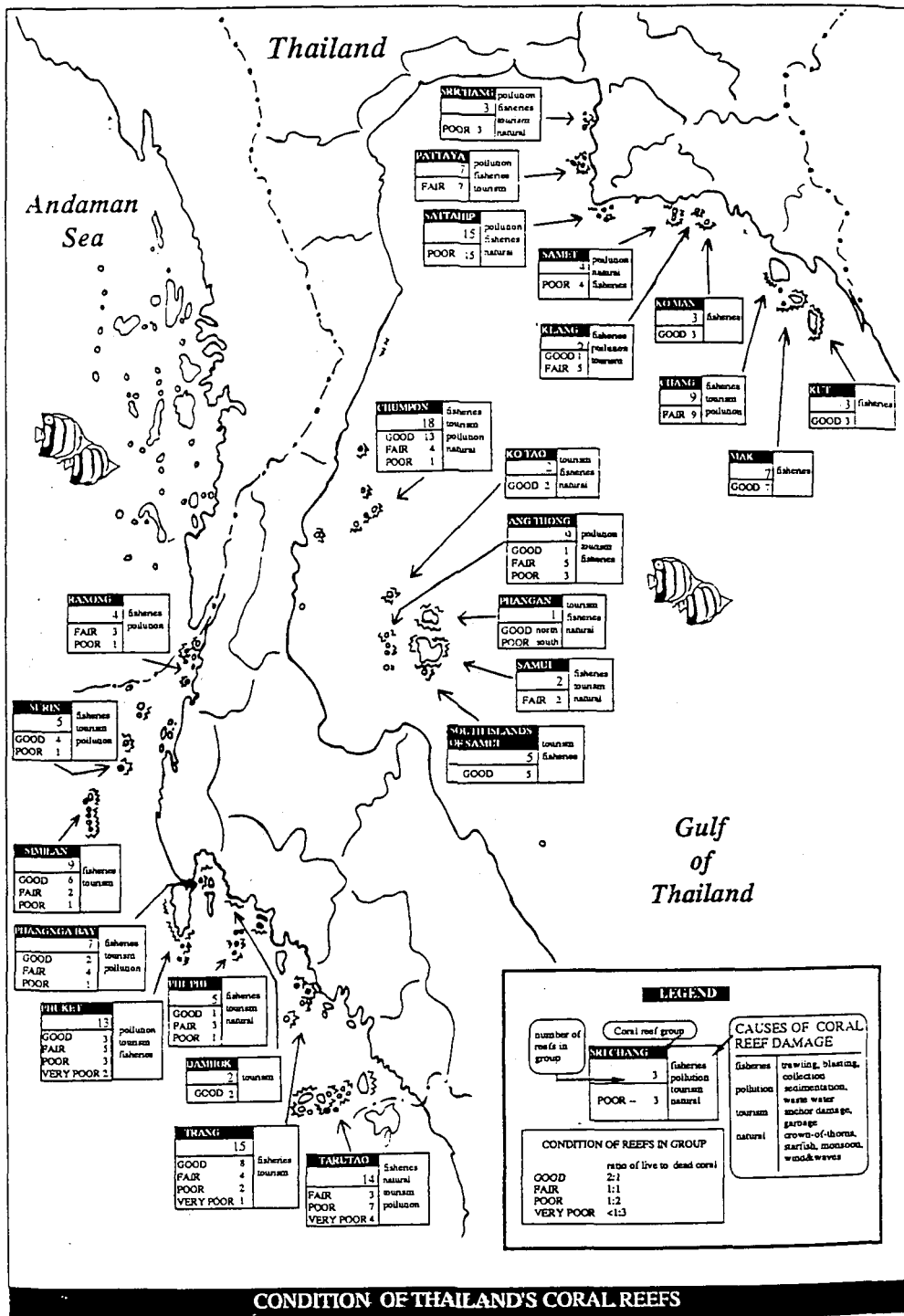
With no public awareness and no law enforcement, the destruction of coral reefs is intensified due to illegal practices. It was suggested that a more effective administration of coral-related laws and regulations shall be achieved by providing relevant government agencies with more manpower and equipment, promoting interagency cooperation, revising unclear and outdated law and regulations and adopting new ones and including local participation in coral reef management. (The Integrated Management Plan for Ban Don Bay and Phangnga Bay, Thailand, 1992.)

## 2.1 Gulf of Thailand

An increase in the demand for catch in Chumporn, reef blasting, netting/trawling, trapping and use of cyanide are consequently occurred. Coral reefs at various islands for Chumporn are quite expansive coverage with most healthy condition in the Gulf of Thailand. This condition will become worse if these activities have not yet been controlled with proper measures. Corals around Ko Luk, Ko Rat and Ko E-An of Prachuab Kirikhan are degraded. The major threat to reef is subject to small fishing gears and reef blasting. Rapid increase in a number of coastal community in Samed Archipelago National Marine Park of Rayong, mainly through encroachment, is leading to reef deterioration caused by reef blasting and trawling. In Surat Thani, approximately 50% of coral reefs are found in Anghong archipelago National Marine Park with moderately healthy condition.

Illegal practices including reef blasting, trawling, small fish trawling (Katak) and coral collecting degrade reefs both in the park and in the adjacent areas like Ko Tao, Ko Nang Yuan, Ko Samui and Ko Pa Ngan. In Chonburi, Ko Lan and Ko Sak are known as coral spots for recreation of tourists. Intensive use in reefs to satisfy the need for fisheries and tourism activities has intensified the coral destruction problem. Fishing activities include trap operating, reef blasting, netting, anchoring by fishing, use of cyanide for aquarium fish trapping and collection of corals. In Trad, most of healthy corals can be found in the National Marine Park of Chang archipelago where is remote from the shore. It was noted that reefs found in this area are of most abundant in the east coast of Thailand. Depletion of reefs is however caused by reef blasting, trawling, netting, anchoring of fishing boat, collection of shells, catch of aquarium fishes and use of cyanides





## 2.2 Andaman Sea

In the Andaman Sea, coral conditions are mostly healthy due to which are located in the national marine park. Traditional fishermen for such example at Lee Peh Island, Satun Province sustain their livelihood by small scale fishing. Since this area is abundant of nutrients valuable for marine organism, a considerable amount of catch has resulted. In keeping reefs abundant, national marine park such particularly as Phang-nga Bay, Had Nopparat Tara- Pi Pi (Krabi), Similan, Surin (Phang Nga) and Chac Mai (Trang) have played an important role in protecting against man-made impact. Use in reefs exists and illegal practices are continued and subject to coral damaging. Reef damage found in this area can be ranking in the order of reef blasting, trawling, catch of lobster, aquarium fishing, collection of corals, use of cyanides, use of small scale fishing gears such as rock netting, trapping, light netting and angling.

### **3. Impact of Fisheries on Environment**

As described, reef blasting is ranked first in illegal fishing practices and is mostly found over the country. It was noted that reef blasting has caused damage in 65% of Thailand coral reefs and is the predominant cause of damage in 51% of the reefs. Reef blasting results in severe and extensive damage to coral reefs. The explosive change can uproot coral heads, indiscriminately kill adult and juvenile fish and other reef organism, and increase turbidity. Reefs that have been blasted are no longer productive for fisheries and their recreational value is greatly reduced (A National Coral Reef Strategy for Thailand Vol.1, 1991)

Trawling, the second coral damage ranking, is affecting mainly on the fishing ground. Use of fine mesh nets, small fishes and young juveniles is captured, incidentally losses fishing stocks. When dragging, trawlers destruct the fragile substrate, by the way, capture endangered species like sea turtle. Trawling is, further more, increasing a huge number of suspended solid through turbidity.

In the Andaman Sea, there is evidence that spiny lobster populations are depleted. In the Gulf of Thailand, stocks of snapper and grouper are significantly decreased in a number. Due to heavy collection, several invertebrates such particularly as cowries, cone shells and giant clams are becoming rare.

### **4. Effect on Environmental Impact Resolution**

There are Ministerial Regulations and Notifications issued pursuant to the Fisheries Act. These still lack of law enforcement, hence, the problems are reported. Measures were addressed accordingly to that of previous identification including:

- Prohibition of the possession on use of explosives, toxic substances or electricity for fishing;
- Prohibition of sale of fish caught by illegal practices;

- Prohibition of the collection or export of corals;
- Prohibition of the collection of sponges;
- Prohibition of the collection of sea turtle eggs or sea turtle except by permit; and
- Prohibition of trawling and push-net operations within 3 km. from shore

Office of Environmental Policy and Planning in cooperation with concerned agencies had drafted the National Coral Reef Strategy. This paper was drawn upon a pilot study of Phuket Coastal Resource Management Project. Implementation of the project showed somewhat required its implementation to a greater extent to which the destructed reefs should be taken into account over country. The strategy had received the approval from the Government as the Cabinet Resolution issued on 3 March 1992. Such the strategy was aimed at reducing conflict use of reefs with emphasis on the need to development in harmony with conservation (A National Coral Reefs Strategy for Thailand Vol.2, 1993). As such, three zones of reefs were identified to suit each purpose as follows:

### ***Local Management Zone***

Reefs zoned in this area is good or fair condition located in primarily rural areas. People depends on reefs include villagers for fisheries and local fishermen who have gained from reefs at subsistence level. Fishing activities include traditional reef harvesting and small scale fishing. Reefs were destructed mostly by reef blasting.

This category is objective to encourage people to participate in coral strategy by community-based reef management.

Given measures in coping with conflict use, all reef activities were allowed under general laws and regulations. Only non environmental impact fishing gears are allowed.

### ***Tourism Zone***

#### **Intensive tourism**

Reefs are sited in poor to fair condition closely located to beach resorts and are intensively used by tourists.

These reefs are managed with the need to promote tourism activity. Such activity must, however, be requested for restoration of reefs, scenic beauty and enhancing the recreational use of reefs within carrying capacity.

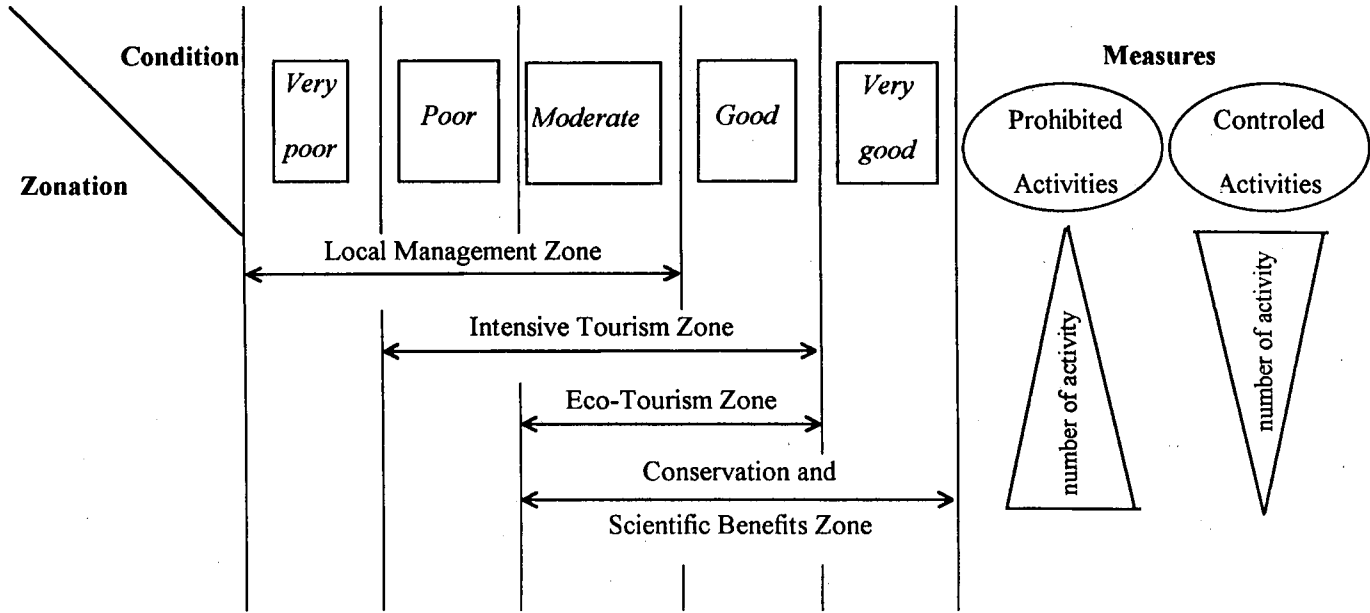


Fig. Coral Reefs Zonation Categorized According to Reef Conditions and Their Measures

All activities are allowed under general laws and regulations.

### Ecotourism

Reefs are sited in fair to good condition with moderate. Many of these reefs are in marine national parks, but are not actively managed.

Reefs are managed based on nature-oriented tourism.

All activities are allowed under general laws and regulation. Prohibited activities are more than that of the earlier zones.

### *Ecological Conservation and Scientific Benefits*

Coral reefs in this zone are outstanding ecological value and known as scientific interest. These reefs are located around remote offshore islands.

Management of this category is to conserve and rehabilitate reefs as well as to promote research and monitoring program to keep marine ecological balance.

No activity is allowed in this zone except for activity related to national ecological and scientific benefits.

## **5. Conclusion**

Aware of marine habitats loss has led to an environmental protection program development. National Coral Reef Strategy is one of such the program. This requires great support from both central and local concerns to make the program implemented. It was realized that lack of public awareness and that population pressure provoke the damage in reefs, suggestions are, thus, provided as follow:

- Technical assistance in small-scale fisheries
- Improvement in post-harvest techniques
- Decreasing losses in ornamental fish collection
- Alternatives to rare shell collection and handicrafts
- Community involvement in management decision of fisheries
- Community reef reserves
- Training and skill development aimed at expanding employment opportunities for small-scale fishermen



- Build on public awareness
- Get involvement of local group in marine conservation program

In response to the above ecological management guidelines, many activities have been applied, among other things, public awareness strengthening and training program, to the local. These efforts are becoming more increasingly important to which are implemented as routinely work by concerned agencies.

## 6. References

Thailand Coastal Resource Management Project. 1991. A National Coral reef Strategy for Thailand Vol.1 : Statement of Need. Office of Environmental Policy and Planning. Bangkok, Thailand.

Thailand Coastal Resource Management Project. 1991. What Future for Phuket?. An Action Plan to Maintain Environmental Quality in Patong, Karon and Kata Phuket Province, Thailand. Office of Environmental Policy and Planning and University of Rhode Island/USAID.

United States Coastal Resource Management Project. 1992. The Integrated Management Plan for Ban Don Bay and Phang Nga Bay. Office of Environmental Policy and Planning. Bangkok, Thailand.

Thailand Coastal Resource Management Project. 1993. A National Coral Reef Strategy for Thailand Vol.2 : Policies and Action Plan. Office of Environmental Policy and Planning. Bangkok, Thailand.