

Mountain

To Sea

Kung Krabaen Bay Royal Development Study Centre



KUNG KRABAEN BAY ROYAL DEVELOPMENT STUDY CENTRE

Thamai Chanthaburi Province



Kung Krabaen Seawater irrigation
for Coastal Aquaculture



The natural resources had been degraded that the major obstacles to development. The main natural resources degradation are mangrove destruction, decline of coastal fish stocks, and saline water intrusion into agricultural lands, which not only cause environmental deterioration but also adversely affected the way of life of the local fishermen and farmers

The Royal Initiative



His Majesty the King visited Chanthaburi Province and gave the first Royal initiative to Chanthaburi governor on December 28, 1981, The Royal Initiative is:-

“ To consider a suitable area for development of Fisheries and Agricultural activities on Chanthaburi coastal zone ”

Two days later, His Majesty the King gave the second Royal initiative on December 30, 1981, The Royal Initiative is:-

“ To select deforested area or public land in order to establish a Royal Development Study Center. ”

The kung krabaen Bay Royal Development Study Centre was established in 1981, at Tha mai District in Chanthaburi Province

Project area

The total implementation area of the Kung Krabaen Bay Royal Development Study Centre covers 13,090 ha (81,813 rai), divided into 640 ha (4,000 rai) of the centre area 8,559 ha (53,491.5 rai) of the implementation areas outside the centre and 3,891 ha of the expanded area which also include the 33 surrounding villages.



Objective

- 1.To promote the effective management of coastal fishery, as well as agricultural and occupational development in the eastern coastline.
- 2.To provide the effective programme of environmental conservation and to examine problems and find solutions related to mangrove destruction in the coastal environment using an integrated approach.
- 3.To increase the income of the surrounding villagers and farmers and improve their standard of living.
- 4.To promote the dissemination of knowledge, skills and appropriate techniques on aquaculture, coastal environmental protection and conservation, agriculture and animal husbandry, through the use of "demonstration projects" and provision of training based upon the study, research and experimentation work conducted at the Centre



Coastal Resources Management of Kung Krabaen Bay

The coastal resources management of Kung Krabaen Bay is done by several government agencies in an **"INTERDISCIPLINARY"** manner. The activities started from the mountains downward through agricultural lands to coastlines and the sea. The activities conducted at Kung Krabaen Bay which mainly focus on the preservation of nature and its ecosystem include occupational development. These activities are relatively managed together using integrated approaches to create an understanding among the local people of the means to use coastal resources which create sustainability as well as promote development-oriented tourism. The activities are as follows:



1. Preservation of Natural Resources on Mountains



The Kung Krabaen non-hunting office was established on a mountain in order to preserve the natural resources and prevent degradation of forest, soil and freshwater. The natural resources rehabilitation activities, such as forest planting and prevention of soil erosion, are always conducted by the

local people. An upland forest natural trail to promote eco-tourism is a means to build an awareness among the visitors, the local people and the teenagers to recognize the advantages of forest. These activities will reduce the impacts of natural degradation of agricultural lands and coastlines.



2. Agricultural Extension on Lowland

Through promoting the local people's cooperation and participation, the



Kung Krabaen Bay RDSC intends to improve their standard of living. The centre develops an effective database of several agricultural activities undertaken. The most suitable techniques, knowledge and useful materials are promoted and distributed among the farmers. They can

apply the agricultural knowledge gained and involve in the preservation of natural resources by joining the agro-tourism activity.



3. Management of the Coastal Zone

Since most activities implemented at the Kung Krabaen Bay RDSC and its surrounding areas may negatively affect the mountains, the agricultural lands and the area of the centre itself, the centre utilizes the natural approaches, known as the "nature save nature" approaches, to solve the problems caused by human activities.

3.1 Reallocation of Deteriorated Mangrove Areas for Coastal Aquaculture Activities.

The 116.48 ha (728 *rai*) of deteriorated mangrove areas around Kung Krabaen Bay have been developed for shrimp culture project since 1987 with initial members of 113 families who were provided with land. Later in 1999, a sea water irrigation was incorporated in the project.



3.2 Extension of Shrimp Culture With Environmental Conservation

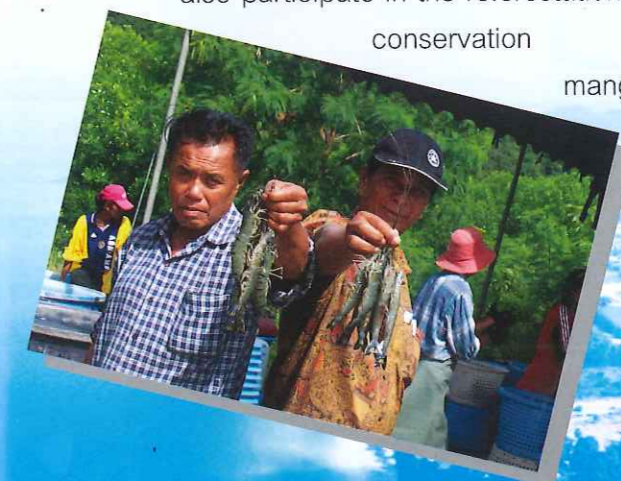
Since Kung Krabaen Bay is highly suitable for aquaculture activities, the deteriorated areas around the bay have been developed for shrimp culture practice. The shrimp culture project was initiated in order to protect fertile mangrove forest which stretches along the shoreline from human destruction. The deforested mangrove areas were



converted into shrimp farms and mangrove reforestation areas. The total area of 1.6 ha (10 *rai*) of each family is divided into 2 parts. The first area covers 0.96–1.12 ha (6–7 *rai*) for shrimp rearing ponds and the second area covers 0.48–0.68 ha (3–4 *rai*) for housing and reforestation. The farmers who were given the lands for shrimp culture will not only learn about suitable techniques of shrimp culture but also participate in the reforestation and conservation of



mangrove forest along the Kung Krabaen Bay shoreline



3.3 Mangrove Forest Conservation

Mangrove forest covering an area of 97.6 ha (610 *rai*) along the Kung Krabaen Bay shoreline is still the most fertile mangrove forest in Chanthaburi Province. Among the many tasks under the Kung Krabaen Bay RDSC, one is the dissemination of knowledge on the importance of coastal resources to the local people and another is the method for integrating shrimp culture with mangrove forest conservation. The local people will be continuously aware of disadvantages of the natural ecosystem which resulted from destruction of mangrove forest by human activities. In order to create an awareness among the local people of the necessity for mangrove forest conservation and restoration, it is necessary to identify the human activities that cause unbalanced and excessive nutrients in the natural ecosystem. The mangrove forest conservation methods can be applied to improve or absorb excessive nutrients from the shrimp culture activity.



The mangrove forest nature study trail was constructed passing through the real mangrove forest. Along the trail, information boards and signs explaining the ecosystem of the mangrove forest are displayed. It is very useful for serving as a "living natural museum" which attracts tourists to visit and learn how to integrate between the mangrove forest and shrimp culture.



3.4 Mangrove Reforestation

In order to regain the balance of the natural ecosystem, the Kung Krabaen Bay RDSC has continuously developed an additional area of mangrove reforestation located behind the shrimp pond and in the inner part of the Kung Krabaen Bay. Currently, it covers 110.4 ha (690 *rai*) with mangrove trees planted by participants and volunteers. This activity is aimed to improve the quality of the water discharged from shrimp ponds as well as serve as a breeding and nursery ground for marine life.



3.5 Seagrass Conservation and Management



The central area of Kung Krabaen Bay is dominated by 160 ha of seagrass which is important to the ecosystem in that it serves mainly as a breeding and nursery ground. Moreover, the seagrass can improve water quality by

absorbing excessive nutrients released from the shrimp culture activity. The Kung Krabaen Bay RDSC has also persuaded the local people to conserve and replant seagrass in order to achieve sustainability for the coastal resources.



3.6 Oyster Seed Bed Development and Hanging Culture in Outlet Canals

The centre has developed oyster seed beds in Kung Krabaen Bay in order to increase oyster seeds which not only supports the oyster culture occupation but also controls the amount of plankton and improve the quality of the water discharged from the shrimp culture activity.



3.7 Marine Seed Production

The main marine life seeds cultured by the Kung Krabaen Bay RDSC are Tiger Prawn, White Shrimp, Seabass, Grouper and Swimming Crab. More than 20 million seeds have been released into the Kung Krabaen Bay and the surrounding sea each year by visitors. The seed restocking activity will increase the fishery resources and maintain the natural ecosystem.



3.8 Placing of Artificial Reefs

Most of the natural coral reefs which are usually correlated with fishery were destroyed by illegal fishing. This occurrence causes a problem of fishery degradation both at present and in the future. Accordingly, the Kung Krabaen Bay RDSC built artificial reefs along the shoreline for increasing the habitat for aquatic fauna. This activity is advantageous to fishermen, especially small-scale fishermen, since they will benefit from the artificial reefs while helping to preserve the coastal resources in a sustainable fashion.

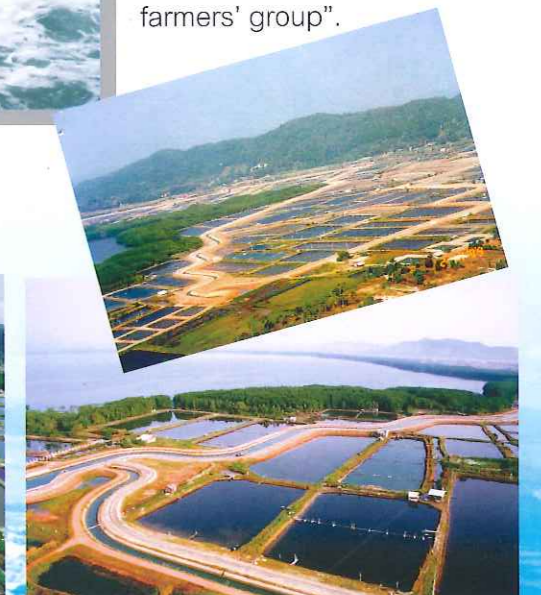


3.9 Seawater Irrigation for Shrimp Culture

Since the shrimp culture activity will inevitably affect the environment, especially the water quality in the Bay, because the farmers do not pay attention to the discharged water which is composed of organic matters, excessive nutrients, and other elements, the Kung Krabaen Bay RDSC has designed a biological treatment to solve this problem. The treatment,



known as the "Seawater Irrigation for Shrimp Culture" method, is aimed to promote sustainability of shrimp culture. Moreover, the centre supported the local farmers to form the "shrimp farmers' group".





3.10 Production of Shrimp Sludge Fertilizer

Due to the nature of shrimp sludge composing of excessive organic matters and nutrients which are useful to plants, the Kung Krabaen Bay RDSC has collected shrimp sludge from members of the shrimp farmers' group to be transformed into fertilizer. This activity has protected the Kung Krabaen Bay from the negative environmental impacts.



4. Development-oriented Tourism



Fortunately, the fertility of the natural resources in Kung Krabaen Bay and the suitable management of the natural resources on the mountains downward to the sea, especially mangrove forest and human activities, supports "development-oriented

tourism". This is one way which shows the centre's awareness of the importance in disseminating the knowledge about the advantages of the natural resources and their utilization for sustainability.



All activities of the centre have been incorporated in the development-oriented tourism which is related to the culture and the way of life of the local people as well as to eco-tourism and agro-tourism. This provides the visitors with the knowledge of agriculture, fishery, livestock and conservation of the



natural resources while at the same time promoting recreation. There are more than 200,000 tourists each year continuously visiting the centre. According to the evaluation, the tourists are fully satisfied with the development tourism. Moreover, the centre has

been awarded with the "Excellent Tourism Award 2000" and the "Best Tourism Award 2002" from the Tourism Authority of Thailand.



Kung Krabaen Bay Royal Development Study Centre

Tha mai District , Chanthaburi Province 22120

E_mail : cf-kung_krabaen@dof.in.th

www.fisheries.go.th/cf-kung_krabaen