

## Utilisation and Knowledge of Biodiversity in the Ranong Biosphere Reserve, Thailand

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Mangrove biodiversity conservation and its sustainable utilisation by traditional coastal communities has become a central aim of mangrove forest ecosystem management in Thailand and many other Asian countries.

The Ranong Biosphere Reserve (RBR) on the Andaman Sea Coast of Southern Thailand was studied as a good example of a recently protected coastal area, where research into the utilisation and knowledge of different species is needed to ensure that conservation management in the reserve is not only effective, but also sensitive and responsive to the traditional ways of life of the local communities. The RBR includes traditional communities of different ethnic/ religious backgrounds (Thai Buddhist, Thai Moslems, Sea Gypsies and Chinese).

The main objective of this study was:

To record the utilisation and knowledge of mangrove-associated plant and animal species by local communities living in and around the Ranong Biosphere Reserve.

Several hundred people utilise the natural resources of the Ranong Biosphere Reserve. The mangrove forest ecosystem provides local people with a wide range of species and materials, ranging from mangrove wood products used for fuelwood (firewood and charcoal), fishing gear and housing, to fish, molluscs, crustaceans and other aquatic species which are eaten or sold for income. Many species of molluscan shellfish (mainly oysters, mussels, cockles and clams) are gathered by hand, especially by women and children, while men are mainly engaged in fishing and crab collecting. More than twenty mollusc species alone are taken from the Ranong Biosphere Reserve. Oyster collecting is most important to the livelihoods of the poorest families who are sea gypsies living at a remote site on Koh Lao island. Fishing methods range from primitive spear fishing (also done by the sea gypsies) to

cast netting and the setting of barrier nets, long lines, baited traps and fixed "V" traps. Mud crabs (*Scylla olivacea*) and small shrimp (*Acetes*), which are processed into a shrimp paste ('kapi') as a cottage industry, are the crustacean species most identifiable with the mangroves, as well as being very important in the local economy. There is also a high level of exploitation of mangrove sesarimid crabs for export to Bangkok as salted crab.

Groupers are the single most valuable fish group associated with the Ranong mangroves. Grouper fingerlings are trapped in cages for sale to the owners of floating fish cages, who rear the fish to marketable size to supply the export market for live marine fish. Many fisher families now have their own cages and on-rear grouper fingerlings and other species as a supplementary occupation to fishing/collecting. Aquaculture development has great potential to benefit local fisher families who are faced with declining catches from fishing. Mud crab culture to produce soft shell crab and meat crab products is also expanding rapidly in Ranong and the first mussel farm in the RBR started recently. However, such developments in aquaculture need to be carefully controlled to avoid competition between wealthy investors from outside the RBR and the local communities. Water pollution and aquatic disease problems are other potential risks if aquaculture development continues to be unregulated.

Although there is an effective regulation banning the cutting of mangrove trees in the RBR, the aquatic biodiversity belongs to a common pool open to many competing interests. There is no resource allocation and where regulations do exist (e.g. the ban on motorised push net fishing) there is no enforcement. Exclusion of non-traditional users of the mangrove ecosystem is not possible in practice and there are no incentives to conserve or protect aquatic resources.

Local people still have little understanding about the objectives of the RBR and have so far not been involved in its management. The local people within

the RBR need to be better informed about the mangrove forest, its resources and its ecological and economic benefits. They must be made aware of the permitted and non-permitted activities in the RBR, and the reasons for these and other environmental regulations.

A co-management approach is needed which can strengthen cooperation between the government agencies involved with the RBR, and the local people. With greater cooperation, some forms of Stewardship may also be possible to give the local communities a stronger feeling of ownership and responsibility in the conservation management of the mangrove ecosystem they depend on for their livelihoods.

### Reference

Macintosh, D.J., Ashton, E.C. and V. Tansakul, 2002. Utilisation and Knowledge of Biodiversity in the Ranong Biosphere Reserve, Thailand. ITCZM Monograph No7.



Mr Peh inspecting grouper production