MANGROVE FOREST DEFORESTATION, SHRIMP FARMING AND FISHERIES DEVELOPMENT IN THE GULF OF THAILAND

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Fish has traditionally been the main source of animal protein for the Thai people and an important source of income for coastal fishermen and farmers. The Gulf of Thailand is a shallow estuary with a surface area of 350 000 km^2. It's long coastline and climate provide ideal conditions for year round shrimp culture. Extensive or traditional shrimp culture in mangrove areas first began around 1935. Intensive shrimp farming has developed rapidly since 1987 and turned Thailand into one of the largest exporters of shrimp. However, shrimp farming is considered to be the major cause for mangrove forest losses in Thailand and in 1993, only 25% of the original mangroves remained in the Gulf of Thailand. Although, the rapid increase of aquaculture in Thailand has contributed significantly to export incomes for the country, effects from declining mangrove cover has not been taken into account.

This study examines possible links between mangrove deforestation, shrimp farming and fisheries in Thailand taking into consideration ecosystem services provided by mangroves.

Mangrove ecosystems provide a number of ecological services to the human community such as erosion protection and breeding grounds for shrimp and fish commercially harvested in both coastal and offshore fisheries. Mangroves serve as a link between marine and terrestrial ecosystems and are also important for the stability and maintenance of adjoining marine ecosystems, especially seagrass beds, coral reefs and also offshore ecosystems. Several marine fish species migrate into the sea to spawn but fish larvae such as those of the milk fish migrate back into the estuary and the mangrove areas for feeding. Other marine fish spawn within the mangrove area, their eggs floating as a mucous mass or attaching to rocks or roots of aquatic plants. Due to its nursery function mangroves also provide an abundant food supply for larger predatory fish.

In the Gulf of Thailand and the Andaman coastal sea approximately 30 families comprising more than 300 species of demersal fish of economic value have been identified. Most of the demersal fish are caught by otter board or pair trawlers down to 50m depth. The major prawn fishing grounds are situated in shallow waters less than 40m deep adjacent to coastal mangrove vegetation. Thus, for both demersal fish and

shrimp, most of the fishing effort is concentrated to the nearshore areas along the coastline in waters less than 50m.

Aggregate statistics of the Thai marine fish harvests in Thai and foreign waters show a tenfold increase in total catches in the last thirty years. However, within Thai waters total marine catches have declined with 10-15 per cent since mid 1980:s and catches of wild shrimp by Thai vessels have declined with some 30 percent since 1982.

The reduction of mangrove cover is also a consequence of abandonment of shrimp ponds due to diseases or gradual reductions of pond productivity. As much as more than half of the ponds has been estimated to lie idle in some parts of the country. Thus, to sustain the present shrimp production, new areas continously needs to be cleared for establishing new shrimp ponds. Further, the decrease of mangrove ecosystems implies replacing a natural renewable resource and functioning ecosystem with a system dependent on humans replacing these inputs. Sectorized management of one natural resource component of the coastal zone, can result in significant ecological and economic losses elsewhere, such as fisheries.