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Sustainable Management of brackish water shrimp farming industry in the North Western province

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Environmental issues

Brackish water prawn farming industry carried out in the western coastal region of the NWP has caused severe environmental problems.

Clearing of mangrove habitats for prawn farming has resulted in many environmental problems due to loss of their ecological functions. Mangroves, due to their extensive root system, are highly important to control erosion of the banks of water bodies. In addition, the mangroves serve as an important source of organic detritus in the aquatic environments due to shedding of plant parts i.e. leaves, floral parts, fruits, twigs, branches and bark. The aquatic ecosystems fringed by mangrove habitats are highly productive and support economically important detrital food webs. Clearance of mangroves for shrimp farming adversely affects these ecological functions. Clearance of mangroves, will contribute to an increase in the carbon dioxide content in the atmosphere due to reduction in carbon sinks and therefore, contributes for global warming too. Destruction of mangroves also results in erosion of the banks of the water bodies. Due to erosion, siltation of water bodies takes place resulting in a decrease in their carrying capacities as experienced in the Dutch canal. The reduction in carrying capacities not only reduce the volume of water available in the water body but also results in a reduction in the extent of environment available for aquatic fauna. Thus the reduction in carrying capacity will lead to a reduction in the population densities of aquatic fauna including commercially important fish and prawn species.

Increased erosion also results in an increase in the turbidity of aquatic environments due to suspended particles. As a result of increased turbidity, the amount of light penetrating into the water will be reduced. This will adversely affect the primary productivity of the aquatic environment by reducing the photosynthetic efficiency of aquatic flora including phytoplankton, sea grasses and other aquatic vegetation. Reduction in primary productivity adversely affects the productivity of the entire aquatic ecosystem. This leads to a reduction in the amount of food available to the organisms in higher trophic levels, ultimately resulting in a decrease in their abundance.

Suspended particles will clog the gills of aquatic organisms such as fish and bivalve mollusks and will also mechanically injure them. This will result in an increase in their mortalities. Further, some fish will move away from the silted area, resulting in a change in their spatial distribution pattern. This will adversely affect their fisheries.

Suspended matter will ultimately settle down on bottom covering the sea grasses and breeding sites of fish. This will adversely affect the photosynthetic efficiency of sea grasses