## **Artificial reefs**

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## Increasing biodiversity and long term coastal fisheries in the Tuticorin region, Tamil Nadu, India

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*Massive coral recruitment* (2008) on artificial reefs near one of the holes in the slab (upper right corner of the photo) in a short period of less than five years. (photo: SDMRI)

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## Summary

In 2002, a community-based artificial reef programme began, which aimed to restore a lost fishery and to increase marine biodiversity within the framework of a Netherlands-Indian coastal cooperation. The artificial reefs were constructed locally and placed in the Gulf of Mannar (Tamil Nadu).

In total 105 artificial reef modules were made of ferro-cement and deployed, spread over three stations located around Vaan and Koswari Islands.

The effects were monitored and show conclusively that artificial reefs enhance coastal fishery stocks, coral recruitment and help create new food chains. It also became clear, that although designed for a variety of biological uses, artificial reefs can provide important services and resources to user groups. This ultimately enhanced the socio-economic status of the poor, traditional fishermen who gradually became more enthusiastic about the positive effects of the artificial reefs.

Awareness raising programmes informed the fishermen and their families in the two target fishery villages about increased species diversity and density in the artificial reefs stations. They were impressed by the fishery yield in the artificial reefs area. The villagers of Tharuvaikulam and Vellapatti requested the deployment of additional artificial reefs, around the islands in the Tuticorin region, in order to increase fish production. This would also enable them to fish more easily and help avoid inshore trawling.

Eco-tourism opportunities are clearly present in the Tuticorin coastal area; however, these have not yet been followed up. There are indications that eco-tourism could play a greater role in this area in the near future. If this happens, artificial reefs could play a major role in attracting diving tourists, which in turn would help to support the livelihood of the local fishermen and strengthen conservation initiatives.

The success of this project can be deduced from the fact that the monitoring of the artificial reefs, essential for evaluating the results of the programme, continued after the Dutch assistance ended in 2006, and that the reefs continue to provide a high yield of fish in a flourishing marine environment.



**The Gulf of Mannar** with the locations of its 21 uninhabited islands. In total 105 artificial reef modules were placed and monitored in three locations around the Islands of Vaan and Koswari, near Tuticorin. (source: Patterson Edward, J.K. et al,2008)



*Development of Catch Per Unit Effort (CPUE)* for fish and crustaceans, the two most important groups for the fishermen, from the artificial reef area (2003-2008). (source: SDMRI)





Artificial Reef Modules: transport of modules parts (slabs) on raft and assembling the modules parts prior to deployment in three locations at water depth between 3 - 6 m. (photos: SDMRI)