

# VILLAGE OF ANDAVADOAKA, Madagascar: Marine Reserves for Octopus

Fish stocks are dropping rapidly in number and diversity. Scientists believe the number of large fish in the oceans has fallen by 90 per cent since the 1950s. Even species at the bottom of the sea are at risk. Establishing and enforcing fishing bans in deep-sea reserves holds promise for countering this process. Marine biologists have been campaigning for marine reserves for decades, yet when they were first suggested the reaction from fishermen ranged from suspicion to disapproval. Now, more and more fishermen are convinced that reserves will help maintain their livelihoods. The case of the Village of Andavadoaka, in remote southwest Madagascar, illustrates how these new practices can be successfully adopted by a fisher community.

## Adapting to change

Fishing is the primary economic activity for 71 per cent of villagers in Andavadoaka. However, fishing pressure has been considerably exacerbated by commercialisation of traditional fisheries. Between 2002 and 2003 there was a 35 per cent increase in octopus exports to France<sup>14</sup>. Commercial collectors and exporters first arrived in the Andavadoaka region in 2003, providing ready access to a higher paying market for fresh octopus and large reef and pelagic fish species. Although fishing

methods are still traditional, the recent introduction of commercial markets for fresh fish, as opposed to the traditional dried and salted fish market, has led to an increase in the value and exploitation rates of target species such as the reef octopus. This increase has been accompanied by a change in recent years from a largely barter and subsistence economy to a fisheries-driven cash-based economy. As international fisheries businesses expand their operations in Madagascar, marine resources are being exploited at unprecedented rates to supply the global market.

Effectively managing ecosystems and conflicting needs of resource users is therefore a major challenge to environmental management decision-makers in the region. Working in partnership with Madagascar's Institute of Marine Sciences (Institut Halieutique et des Sciences Marines – IHSM), UK-based NGO Blue Ventures Conservation commenced monitoring the region's marine environment in 2003. The overall objective of the Partnership is to

*Villagers in Andavadoaka returning from octopus fishing on the day the Nosy Fasy NTZ was reopened to fishing in 2005. The octopi are much larger on average than pre-closure levels*



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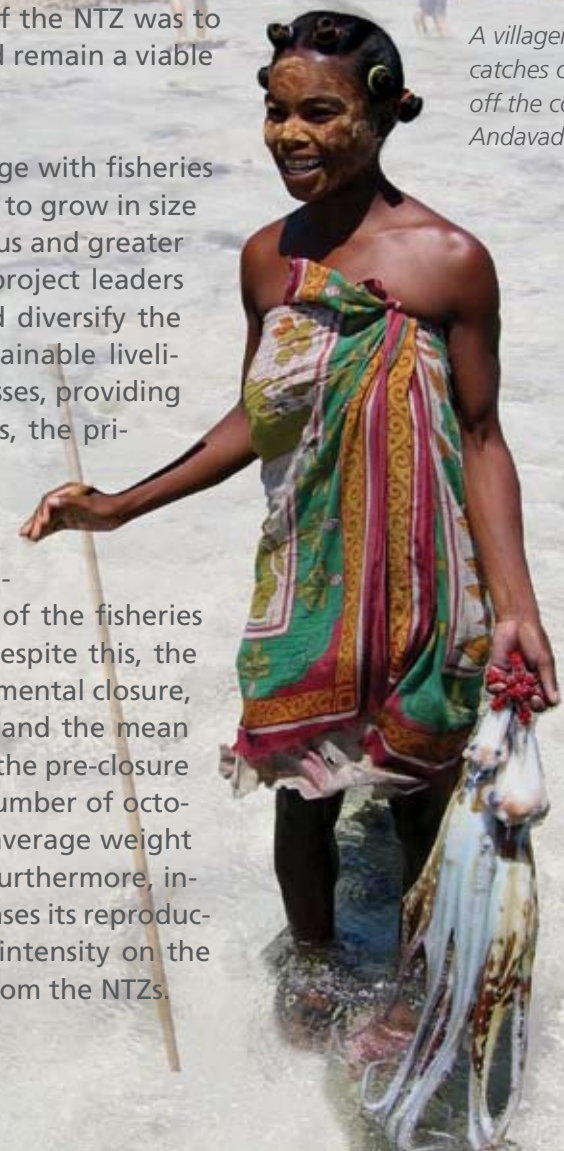
protect marine and coastal biodiversity whilst improving livelihood sustainability in the region of Andavadoaka. The coral reefs of Andavadoaka have since attracted the attention of other research and conservation NGOs and the Malagasy government as a key site for developing marine conservation initiatives in the country.

Vezo communities in Andavadoaka and surrounding villages have also understood that the livelihoods and economic security of community members are inextricably linked to the health of local marine systems. Witnessing the growing threats to the region's coastal ecosystems, the village of Andavadoaka decided to take control of its marine resources. Community leaders worked to develop and launch the country's first community-managed marine no-take zone (NTZ) for octopus. The goal of the NTZ was to ensure that octopus, the region's most vital commodity, would remain a viable resource for years to come.

Village elders and local fishers combined traditional knowledge with fisheries science to implement seasonal fishing bans and allow octopus to grow in size and number. The strategy ensures long-term survival of octopus and greater yields for local fishers when the bans are lifted. In parallel, project leaders have been working with local communities to stimulate and diversify the local economy through the development of alternative sustainable livelihoods, including eco-tourism and mariculture (Note a) businesses, providing financial alternatives to overexploitation of natural resources, the primary non-climate-related threat to the region's biodiversity.

The project remains vulnerable to other outside forces beyond local community control. Hence, commercial trawlers regularly operate within the shallow coastal waters, unmindful of the fisheries restrictions that have been agreed by local resource users. Despite this, the results have been strikingly positive. Following the first experimental closure, the number of octopus caught by locals increased 13 times, and the mean sum weight of octopus caught jumped 25 times, compared to the pre-closure levels. Following a second closure several months later, the number of octopus caught was more than four times pre-closure levels and average weight of octopus caught was more than double pre-closure levels. Furthermore, increasing the average size of the octopus population also increases its reproductive output. Results have confirmed that decreasing fishing intensity on the opening days can increase the duration of fisheries benefits from the NTZs.

*A villager catches octopus off the coast of Andavadoaka*



The project has fed technical reports and policy briefs to local and national governments, as well as international networks (particularly the Western Indian Ocean Marine Science Association (WIOMSA), Coral Reef Degradation in the Indian Ocean (CORDIO), Indian Ocean Commission, and the newly-formed Western Indian Ocean Marine Ecoregion (WIOMER) MPA Managers' Forum. Whilst the precise circumstances of the Velondriake

project may not be directly replicable beyond the Vezo communities of southwest Madagascar, the bottom-up approach to community-management and partnership processes employed in the project's development have provided Madagascar's first potentially replicable blueprint for community-centred marine and coastal conservation planning. In doing so this initiative is expanding national capacity for biodiversity conservation and improving the availability of data, lessons learned and best practice guidelines.

*Villagers from Andavadoaka and neighbouring communities develop maps for the Velondriake project, designating specific areas they would like to protect*



Photo: Blue Ventures Conservation

### Replicating success

The project has proved so successful that neighbouring villages have requested support in establishing their own NTZs for octopus and the government of Madagascar consulted the project's results when it created in 2005 a seasonal closure area across the southwest of the country. By early 2006, a network of four short-term octopus NTZs had been implemented.

As a result of ongoing requests for project expansion, Andavadoaka's village elders are now working with 23 neighbouring villages, Blue Ventures, IHSM, the Wildlife Conservation Society (WCS) and fisheries collection and export companies to expand conservation projects to promote the long-term sustainability of a variety of marine and coastal species and habitats. A regional marine conservation plan is now being developed with local communities stretching along the coast over 20 kilometres south and north of Andavadoaka, as a means of protecting threatened marine resources through the cooperative endeavours of villagers (Note b).

The conservation plan, named Velondriake (which means 'to live with the sea'), is a network of marine and coastal protected areas aimed at protecting the area's biodiversity from



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unsustainable overexploitation and ensuring that these marine systems remain healthy and productive for future generations. The marine conservation intervention was made possible by the full participation of the local community, brought about by a multi-stakeholder approach establishing accepted local laws.

It remains to be seen what the long-term ecological and fisheries effects of the octopus NTZs will be. The rapid growth of the number and area of the reserves incorporated within the network, although encouraging, has meant that the detailed and rigorous monitoring that was prioritised through the first phase cannot be continued at the same focused level across the broader Velondriake region, due to limitations of human and financial resources available for the project.

## Next steps

In addition to its central role in the Velondriake process, Andavadoaka is working to build an Ecolodge that will be fully owned and managed by the community. The eco-lodge will serve as an economic incentive to conserve the region's natural beauty and resources while providing villagers with an alternative source of income to fishing. The village has designated 21 acres of beach-front land for the location of the lodge.

## Note:

- Mariculture is the cultivation of marine organisms in their natural environment.
- Blue Ventures, IHSM, Copefrito and aquaculture research group Aqualab are working together to establish a sea cucumber farm in the region. The partnership currently provides Andavadoaka's Women's Association with 250 juvenile sea cucumbers every 3 months. The Association is then responsible for farming the juveniles into marketable products that Copefrito has agreed to buy for sale to international markets.

