Blue Ventures Conservation Andavadoaka, Madagascar

conservation education research

Blue Ventures launches shark and whale monitoring programmes to help protect threatened species, and a new study shows that marine protected areas could hold the key to keeping global fishing industry healthy and profitable

Research Update, October to December 2006

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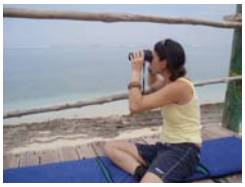

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No-take zones result in huge increases in octopus size and populations

A new study by Blue Ventures shows massive increases in the size and number of octopus caught around Andavadoaka following the implementation of no-take zones. The results suggest that marine protected areas may hold the key to keeping global fishing industries healthy and profitable.

The study looked at a community-run no take zone (NTZ) in southwest Madagascar that implemented seasonal fishing closures for octopus, the major economic resource for villagers in the region. When the closed areas were reopened to fishing after seven months, the study found, the number of octopus caught by villagers increased 13 times while the total weight of octopus caught jumped 25 times.

"The increase in octopus numbers and weight was far greater than we ever expected," said Alasdair Harris, scientific director of Blue Ventures, the marine conservation group that conducted the study. "This study shows that NTZs not only serve as a powerful conservation tool helping species thrive, but can also be a powerful economic tool helping fisheries remain productive and profitable."

Overfishing poses a major threat to the world's oceans, causing many economically-important marine species to disappear. Various studies have estimated that between 60 to 70 percent of the world's fisheries are depleted or nearly depleted even as more and more people depend on healthy fish stocks for food and livelihoods.

The study, authored by Blue Ventures scientist Frances Humber, looked at an NTZ that was launched in 2004 in coordination with Blue Ventures, the Wildlife Conservation Society, the village of Andavadoaka and the IHSM, Madagascar's principle marine institute.

The groups worked together to implement the NTZ after local fishermen reported drops in their octopus catch in the wake of the arrival of international fishing companies that were collecting octopus for the global market.

The study looked at the size of octopus caught by villagers following the reopening of two closed fishing periods implemented by the NTZ, the first between November 2004 and June 2005, the second between December 2005 and April 2006.

The increase in octopus catch following the opening of the second closure more than quadrupled compared to the number caught immediately before the second closure. The weight of octopus caught after the second closure was seven times greater.

The increased size and weight of octopus catch continued for one month following the opening of the first closure and for two months following the opening of the second closure, before dropping to pre-closure levels.

"While the results of the NTZ were extraordinary in the initial months,

local fishermen also turned out in greater numbers on the opening day of the closures, reducing the long-term benefits," Humber said. "This shows the need for ongoing management plans in addition to NTZs to reap continuing benefits."

Village leaders from Andavadoaka placed tighter restrictions on the amount of fishing following the second reopening, which resulted in longer-term benefits.

When no-take zones were reopened after seven months in Andavadoaka, the number of octopus caught by villagers increased 13 times while the total weight of octopus caught jumped 25 times. Similar zones could help improve fisheries' production elsewhere in the world where overfishing is a threat.

Andavadoaka is still developing plans to ensure long-term benefits from future closures. African nations are increasingly becoming major suppliers of octopus to the global market.
But as international demand continues to grows, many of Africa's octopus fisheries have peaked and are beginning to decline. For example, the artisanal fishery of Mauritania exported 9,000 tonnes of octopus in 1993, but only 4,500 tonnes in 2001, despite twice as many active boats within the fishery.

Madagascar's fishing industry is relatively undeveloped compared to other countries in East Africa and the Western Indian Ocean region. But the country has seen a rapid increase in fisheries production and export over the last 20 years with a doubling in the number of fishers working in Madagascar.

While there are growing threats from overfishing, Madagascar currently is one of the few African nations that are increasing its octopus fishery output. Between 2002 and 2003 there was a 35 percent increase in octopus exports to France.

"The success of Andavadoaka's NTZ shows there is hope that well-managed fishery practices, such as no-take zones, can prevent Madagascar from suffering the damaging effects of overfishing that so many other African nations are dealing with today," Humber said.

To see the entire study, visit http://www.blueventures.org/research/BV%20report%20Frans%20Octopus_web.pdf

Strategies to manage the octopus fishery more sustainably continued in December with the second closure of the octopus fishery throughout the southwest region.

The fishery will remain closed for 6 weeks until end of January 2007, with no commercial collections taking place throughout this time. This closure replicates the first regional experimental closure of the octopus fishery during the same period in 2005-2006.

The effects of this closure on the fishery continue to be monitored by Blue Ventures' octopus catch monitoring programme.

Monitoring sharks to prevent overfishing

Blue Ventures has launched a new project that will monitor exploitation of threatened populations of shark.

The three-year project, funded in part by the SeaWorld & Busch Gardens Conservation Fund and the PADI Project Aware Foundation, will monitor the number and species of sharks killed each year by fishermen in southwest Madagascar and develop conservation plans to prevent destructive overfishing practices.

"Shark populations around Madagascar are in rapid decline," said Stephanie Pédron, marine biologist for Blue Ventures. "Their disappearance would have devastating impacts on marine habitats and the local communities that rely upon those habitats for survival."

Pédron is leading the shark monitoring project with Blue Ventures' marine biologist Volanirina Ramahery.

Because fishing is the primary source of income for communities in the region, Blue Ventures will collaborate closely with village leaders to develop management plans for shark conservation and sustainable fishing practices.

Thousands of sharks are caught each year in Madagascar, and local fishermen are beginning to report declines in shark populations. A collapse of the shark industry would threaten the economic stability of the region and pose a critical threat to the broader marine ecosystem.

There is growing concern that shark stocks are being depleted around the world and numerous international

resolutions have been enacted calling for greater research into the status and threats of sharks globally and for improved conservation action to protect them.
Little research has ever been conducted to determine the full extent of shark fishing in southwest Madagascar and the rate at which populations are declining.

Shark populations are declining around the world due to overfishing. Above two silky sharks are caught in Andavadoaka.

This project will gather the data needed to determine what type of management plans are needed to keep shark populations healthy and local fisheries productive for generations to come.

Blue Ventures Builds Whale Watching Platform

In order to better understand populations of threatened humpback whales migrating along Madagascar's south west coast, Blue Ventures has constructed a whale watching platform that will be used to gather critical information about the whales and their annual migration habits.

The platform, which stands six metres off the ground, allows staff and volunteers to locate whales swimming miles off the coast and to record such information as the whale's size and approximate age, direction of migration, swimming speed, feeding habits and dive duration.

Volunteers, who staff the platform three to six hours per day, have been able to gather significant data, sometimes observing up to 10 individuals each day. Along with using the platform to collect data, Blue Ventures is also surveying local fishermen about whale sightings.

Together, the information is crucial to determine the status of whale populations and to develop effective conservation plans.

Whales in the Southern hemisphere were brought to the brink of extinction last century following massive commercial whaling activities that took place from the late 18th century until 1963. It has been estimated that 200,000 whales were killed during this time, reducing the population to around 3000 individuals.

But populations are starting to make a come back. A 10-year study conducted along Madagascar's east coast in Baie d' Antongil estimated there are now 1000 to 2000 humpbacks visiting the area.

Blue Ventures constructed its whaling platform on the western shore of the island of Nosy Hao. The area west of Nosy Hao, expanding seawards into the Mozambique Channel, is known to be used by large numbers of migrating humpbacks during the austral winter.

Before beginning construction, Blue Ventures approached the president of Nosy Hao, M. Dantesse, to get approval for the platform's construction. Blue Ventures informed members of the island's 40 strong community of plans to eventually open the platform to paying tourists with all money directed back to the island.
The ultimate goal is to incorporate the stunning island of Nosy Hao in the network of regional nature reserves being developed by local communities, Blue Ventures and other conservation partners in the region. Once permission was granted, Blue Ventures worked with Dantesse to determine the platform's location, ensuring that it would not be built on any "fady" (prohibited area) and that it would not be so high as to be an eyesore.

Timber was brought from Morombe and Tampolove and the local Catholic mission sawed the wod into planks. The wood was then floated to Nosy Hao towed behind boats. With a little help from Blue Ventures staff and volunteers, local carpenters were able to erect the impressive structure in just six days.

Once complete, village elders conducted a traditional ceremony called a "fomba" in order to thank their spiritual ancestors for allowing the platform to be built.

Blue Ventures is monitoring the migration patterns, as well as size, age and speed, of whales. Some 200,000 whales were killed by commercial fishing companies in the Southern hemisphere between the late 1700s and 1963.

Along with monitoring whales from the platform, Blue Ventures is also talking with the Wildlife Conservation Society (WCS) about collaborating on a broader whale project. That project would combine data collected from the platform with data from WCS's boat-based study located 200 miles south near the city of Toliara.

By comparing survey data from the two sites and taking yearly biopsy surveys of whales, scientists would be able to calculate migration speeds and routes for individual humpbacks. Such a project would also be able to determine whether the same whales travel down Madagascar's coast each year and if there are several genetically distinct populations.

Physical characteristics such as colouration and dorsal fin scarring serve as whale "fingerprints" allowing researchers to follow individual migration patterns and speeds over many years. Some research has shown that it may also be possible to identify separate populations of humpbacks by the complex songs of the males.

Humpback whales (*Megaptera novaeangliae*) are found in all of the world's oceans, breeding in low latitudinal areas during the winter months before returning to high latitudes to feed in summer. Fully mature females can reach up to 19 metres in length and weigh more than 40 tonnes.

Socio-economic surveys improve community conservation activities

To improve conservation planning around Andavadoaka, Blue Ventures recently conducted the first socio-economic study of the region, surveying local perceptions of conservation activities and how communities view and rely upon marine resources.

The study will allow coastal managers to better understand and incorporate community needs, desires and concerns into the creation of a network of marine protected areas (MPA) in the Andavadoaka region. The MPA network will involve 21 communities.

The socio-economic assessment and monitoring was conducted in three of these villages: Andavadoaka and the adjacent fishing communities of Lamboara and Ampasilava.

Blue Ventures conducted the socio-economic assessment and implemented a long-term monitoring programme under the Socioeconomic Monitoring Guidelines for Coastal Managers of the Western Indian Ocean (SocMon WIO). The SocMon guidelines were tailored to the needs of the local community.

The final report with results of the survey will be available on www.blueventures.org/research_update.htm in the coming weeks.

Through socio-economic monitoring, researchers can analyze community perceptions of natural resources and conservation activities. Such information will allow conservationists to better understand and incorporate community needs into resource management plans, improving both local livelihoods and conservation effectiveness.

International conservation organizations often promise social and economic benefits to local communities as a direct result of the creation of national parks and protected areas. But because these conservation activities often restrict the exploitation of natural resources, local communities rarely benefit unless they are provided alternative incomes or directly compensated for their economic losses. Marine conservationists must therefore strike a balance between conservation and meeting the socio-economic needs of local communities.

The Andavadoaka survey, conducted from April to July 2006, will help conservation planners monitor the distribution of benefits that result from the MPA network and understand community perceptions of management initiatives already in place.

The survey had the added benefit of increasing involvement of the local communities and allowing Malagasy scientists to practice collecting, entering, analyzing and interpreting socio-economic data – skills they will need for continued monitoring and conservation planning.

Blue Ventures conducted the survey with the generous support of CORDIO East Africa, based in Kenya. SocMon WIO is a regional initiative that works to improve marine and coastal resource management in the Western Indian Ocean based on site-level monitoring systems with community participation.

The initiative is a product of substantial collaboration among social scien-

tists and coastal managers in the region whose activities are coordinated by the Swedish International Development Agency, the University of Kalmar, NOAA, IUCN, WIOMSA, WWF, the World Bank, and the International Coral Reef Initiative.

Communities meet with scientists to create network of marine protected areas

Plans to create a massive network of marine protected areas (MPA) across the Andavadoaka region are progressing as conservation managers and scientists from Blue Ventures and the Wildlife Conservation Society held a series of meetings in December with leaders from 21 villages that will participate in the network.
Also participating in the meetings was Roger Samba, President of the Velondriaka Association, the community organization created in October to oversee the MPA planning process. Velondriaka, which means "to live with the sea," is the proposed name of the MPA network.

The MPA network, which will stretch across 21 villages from Bevato in the north to the Baie des Assassins in the south, will encompass a variety of habitats and conservation strategies, including permanent no-take zones and rotational reserves on reefs, sea grass beds and mangrove stands. (see Research Update July to September 2006).

The objectives of the December meetings were to update communities about the creation of the Velondriaka Association and explain its structure and goals.

During the meetings, community leaders also had the opportunity to meet new Blue Ventures staff members Garth Cripps and Volanirina Ramahery, both of whom will be playing an active role in the planning process throughout 2007. During the meetings, community members discussed the need to create an environmental education programme for villages within the Velondriaka area as well as the need to develop alternative sources of income for villagers during periods when protected areas are closed to fishing activities.

Blue Ventures scientists are working with 21 villages across the Andavadoaka region to create a massive network of protected areas that will help conserve coral reefs, mangroves, sea grass beds and other threatened habitats.

Village leaders also asked to be updated following each meeting of the Velondriaka Association and discussed the existence of illegal octopus and lobster fishing in Bevato and Andavadoaka.

Communities ultimately plan to request the national Ministries of Fisheries and Environment to officially recognize the Velondriaka area as an MPA network and potential national park.

New study shows rapid growth of octopus collection around Andavadoaka

Blue Ventures recently collaborated with Copefrito, one of the largest fishing export companies operating around Andavadoaka, to study the growth of commercial octopus fishing in the region.

The study, which analysed Copefrito's fishing activities from 1996 to 2004, found that the market price for octopus has risen at a rate far higher than national inflation.

The high value of octopus compared to other seafood products, combined with the relative ease of catching octopus from reef flat, has led to a rapid growth in both the number of fishers operating and the amount of octopus caught in the region.

While the rapid increase in octopus collection does not seem to have impacted the population of octopus in the area, there has been a slight reduction in the weight of octopus since 2003. This could indicate overexploitation, since the areas of collection have not changed during this period.

The study also shows that the most intense reproductive periods for octopus are October to November and January to February. These results support the need to close fishing grounds during these times of reproduction and create "no-take zones" similar to those implemented by Blue Ventures and the village of

Rising prices for octopus, along with the ease of capturing it, have prompted rapid growth of octopus fisheries around Andavadoaka

Andavadoaka since 2004, in order to allow replenishment of stocks.

Protecting and rejuvenating stocks is critical in order to maintain and increase revenues earned by local fishers, as well as to ensure the ecological and economic sustainability of octopus fisheries.

Maintaining an economically viable and sustainable octopus fishery has additional ecological benefits to the coral reefs of southwest Madagascar. Octopus can reproduce quickly and in large numbers, providing a profitable alternative to the capture of more fragile coral reef fish species.

Without a sustainable octopus fishery, locals would likely begin to target herbivorous fish that help keep coral reefs healthy by eating damaging algae. Overfishing of such fish would greatly threaten the health of local coral reef systems that have already been weakened by recent bleaching events due to climate change.

While the study supports the critical need to create management plans for octopus fisheries around Andavadoaka, it also highlights the lack of information currently available on fisheries' in the region. This study is the first to look at the issue.

Additional surveys and monitoring are recommended – in particular studies of fish markets and the demand they create – to ensure a better understanding of the impact of fishing activities on the region's marine systems. There is also a strong need undertake similar analyses for other marine products of the area, in particular squid, fish and lobster.

New website promotes Andavadoaka's unique cultural and natural heritage

Blue Ventures has launched a new website that highlights the cultural, environmental and social traits of Andavadoaka, the tiny fishing village along Madagascar's southwest coast where Blue Ventures has conducted conservation activities for three years.

The website, www.andavadoaka.com, is aimed at promoting Andavadoaka as an eco-tourism destination.

Blue Ventures is working with village leaders to develop a well-managed eco-tourism infrastructure that will provide locals with a sustainable economic alternative to destructive fishing practices. Eco-tourism also provides villagers with economic incentives to protect the beauty and health of local natural habitats in order to attract visitors to the region.
Andavadoaka this summer plans to open a community-run eco-tourism lodge that will be fully owned and managed by the village. The lodge will include a restaurant, a bar and bungalows providing accommodation for 25 visitors. Ultimately it is hoped that the site will be powered by sustainable energy solutions, including solar and wind generators, which will also provide some access to clean energy to the broader village.

The website includes a range of information on ecosystems and fauna of the Andavadoaka region, including details about spiny forests, baobab trees, coral reefs and tropical fish.

Visitors to www.andavadoaka.com can also learn about the Vezo culture as well as information about how to visit Andavadoaka and the surrounding area.

The new website www.andavadoaka.com will educate visitors about the unique culture and habitats of the Andavadoaka region.