Blue Ventures Conservation Andavadoaka, Madagascar

conservation
education
research

Twenty villages in the Andavadoaka region join forces to create a network of marine protected areas. And Blue Ventures celebrates its third anniversary with an international award recognizing its use of sustainable tourism as a conservation tool.

Research Update, July to September 2006

Blue Ventures Turns Three!
More awards and a new partnership with London's Malagasy Embassy cap off BV's most successful year yet.

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Blue Ventures celebrates third anniversary

Blue Ventures celebrated its third anniversary in September, capping off its most successful year yet. Since its founding in 2003, Blue Ventures has brought more than 300 volunteers to Madagascar, launched the world's first community-run marine protected area for octopus and received numerous awards for its work with local villages to protect threatened coastal areas across Madagascar.

As a special birthday gift, Blue Ventures learned it won the Skal International Ecotourism Award. Skal, the world's largest organisation of travel and tourism professionals, recognized Blue Ventures for its mission to use sustainable ecotourism to improve the environment.

Among the highlights for Blue Ventures over the past three years:
-- Working with the government of Madagascar to create protected areas for octopus across the country
--Becoming the first European organisation to win the prestigious SEED award sponsored by the United Nations and the World Conservation Union, in recognition of its work to deliver sustainable development and livelihoods
-- Training nearly two dozen local villagers in Madagascar as ecotourism guides

This past year also brought about a new partnership with the Embassy of Madagascar in London. Together, the Embassy and Blue Ventures plans to highlight the needs for marine protection and well-managed tourism across the African island-nation.

"In just three short years, Blue Ventures has achieved great success in protecting some of the nation's most critical and threatened marine areas," said Dr. Iary Berthine Ravaoarimanana, the Chargé d'Affaires with the Embassy of Madagascar in London.

"I look forward to working with Blue Ventures to ensure that Madagascar's incredible marine resources remain healthy and productive for generations to come."

During the past three years, Blue Ventures has brought to Madagascar more than 300 paying volunteers from across the globe. Blue Ventures trains these volunteers to conduct scientific research, community outreach and on-the-ground conservation.

Partnering with the local village of Andavadoaka, Blue Ventures staff and volunteers in 2004 helped create the world's first community-run marine protected area (MPA) for octopus. The success of the project – which placed seasonal bans on octopus fishing – has helped improve the local fishing economy and in 2005 led to national legislation that created similar protected areas across all of Madagascar.

These MPAs allow octopus to grow larger and reproduce in greater numbers, giving fishermen greater yields. MPAs also protect against over-fishing

that could permanently destroy the octopus industry in Madagascar.

Local villages are now creating their own MPAs that go beyond the national restrictions. In all, eight communities along the country's south western coast have launched their own locally-managed MPAs with the help of Blue Ventures.

These communities are also partnering with Blue Ventures to expand MPAs to other regions to prevent over-fishing and destructive fishing practices that threaten a wide variety of marine species.

"Madagascar is home to some of the most diverse marine species and habitats on earth," said Alasdair Harris, founder and executive director of Blue Ventures. "It is critical that we conserve these areas, not just for the overall health of the world's environment, but also to ensure these resources can continue to support the livelihoods of local communities."

He added: "The success of Blue Ventures and its volunteer expeditions shows that tourism can be a powerful conservation tool. Our mission is to show that economic development and environmental protection can – and must – go hand in hand."

Blue Ventures this year launched its latest project to create a community-run ecolodge in Andavadoaka. Land on which to build the lodge has been located, and Blue Ventures is now raising funds to begin construction.

The lodge, which will be fully managed by the community and will employ local villagers, will provide an alternative and sustainable income for the community that currently relies on dwindling marine resources.

Blue Ventures has received a variety of honours and awards in recognition of its work over the past three years, including the prestigious SEED award, the Enterprising Young Brits competition, and the Responsible Tourism awards.

Villages gather to create regional network of marine protected areas

Since the last research update there have been exciting developments in the creation of a network of marine protected areas (MPAs) along Madagascar's south west coast.

On 21 July, nearly 100 representatives from 20 coastal villages came together in Andavadoaka to develop a comprehensive map of proposed MPAs and other conservation reserves.

The gathering opened with representatives from four regions around Andavadoaka presenting hand-drawn maps created by villagers in each region during smaller meetings held last spring (see Apr-Jun 2006 research update).

The end result was extremely promising: a series of protected areas stretching from Bevato in the north to the Baie des Assassins in the south. The proposed protected areas encompass a variety of habitats and conservation strategies, including permanent no-take zones and rotational reserves on reefs, sea grass beds and mangrove stands.

Most importantly, the reserves include areas of key biological and aesthetic value, such as the group of small patch reefs in the Andavadoaka lagoon known as the recruitment complex, currently considered to be the most attractive and species rich reef in the region.

Once a comprehensive map was finalized, the villagers issued a joint declaration expressing their reasons for wanting the network of MPAs and calling on the government and partner institutions such as Blue Ventures, Wildlife Conservation Society (WCS) and Madagascar's marine institute IHSM to assist in the development of plans.

The final declaration, drafted by four working groups, commits all the communities involved to make the MPA network a success, both to protect the marine environment and to ensure productive coastal resources for future generations.

In the days following the declaration, members from participating villages gathered in Andavadoaka to celebrate. Dances, sketches and songs were presented, including a performance from the new Lamboara women's association about the benefits of reserves and the need to save the environment.

In the months since the celebrations, the painstaking work to implement the network of MPAs has begun, with a meeting in Andavadoaka on 23 August to discuss the creation of a management board that would include representatives from surrounding regions to oversee the MPAs.

Blue Ventures has begun gathering data on some of the lesser-known sites proposed as MPAs, conducting dives and ecological surveys of unexplored reefs to compile baseline information on the abundance and diversity of fish and benthic life.

The data will assist communities later this year when they plan to request the

Ministries of Fisheries and Environment to officially recognize the area as an MPA network and potential national park.

Popularity of fishing cooperatives spread across region

Leaders of the Andavadoaka Fishing Cooperative have begun working with neighbouring villages to help establish similar cooperatives aimed at promoting sustainable fishery management practices and improving the prices local fishermen can get when they sell their catches to large fishing companies.

On 13-14 September and 11 October, Cooperative President M. Roger Samba and Manager Josvah traveled to Lamboara to help establish the Cooperative Maritime MahaVonjy de l'Ile de Lamboara [CMMVI]. This new cooperative is headed by Mr. Rabesolo ('Chef Quartier' in Lamboara) and has 36 members, including 22 women.

Josvah and M. Roger also traveled to Tampolove on 11-12 September to begin organizing a cooperative there. Their visit coincided with a traditional festival (bilo) in the village and therefore planning has not progressed as far as in Lamboara. However, 21 potential members have been identified (all men) and elections are being scheduled to create a management committee. Other members of the Andavadoaka cooperative are planning to travel to the villages of Nosy Hao, Nosy Ve and others in the area to help organize more cooperatives.

Andavadoaka established its cooperative in December 2005. Funding to hire a manager and train the cooperative's members was provided by Blue Ventures, Wildlife Conservation Society and other conservation partners working in the area. Since its first founding, the cooperative has begun to earn enough money to pay for half the manager's salary. The cooperative also employs a purchaser and a fish dryer.

The cooperative management structure is split into three areas: events and accounts, communication, and materials. It is led by President M. Roger Samba, who also serves as Andavadoaka's village president, and Vice President M. Coco, who is Deputy Mayor of Befandefa Commune. Several women also serve on the management board.

There will soon be several changes in the management team of the cooperative. Josvah is leaving the position of manager to pursue his Master's degree in business administration at the University of Toliara. M. Roger is also expected to step down as president in order to take the position of president of the new management committee that will oversee the region's proposed network of MPAs (see story above).

Other changes are expected in the cooperative's management structure – including the possible election of a female treasurer – in the coming months.

The cooperative started buying octopus and squid from its members and selling it to the international fishing company Copefrito on 26 April 2006. In June, the cooperative expanded its dealings to include lobster and dried fish. The cooperative pays its members 1,100 Ariary per kilo for octopus and sells it to Copefrito for 1,300 Ariary per kilo, making a 200 Ariary per kilo profit.

Along with the revenue generated from selling octopus and other seafood, money has been raised through various fundraising events including a village ball on the 29 May. Profits go toward the salaries of the cooperative's employees and to buy fishing supplies and other materials that can be used by members. Through the cooperative, members earn more money for their catches than if they dealt with private 'sous collecteurs' – middlemen who sell the seafood to larger fishing companies and take a larger chunk of the revenue. The cooperative also provides a solid organizational structure for local fishermen, allowing them to have a stronger voice in the fisheries market.

The popularity of fishing cooperatives is spreading across the region, despite some growing pains experienced by the inaugural organization in Andavadoaka. That cooperative had hoped to generate enough revenue to fully fund the manager's salary during the past six month. It, however, has been able to provide only half the funds, with the rest coming from conservation partners. The cooperative's failure to generate sufficient revenue is partly due to bad weather and strong winds that have limited fishing activities.

The cooperative also has been unable to persuade all of its 99 members to sell their catches to the group rather than to private sous collecteurs who are often related to members of the cooperative. The cooperative is launching various initiatives to encourage members to sell their catches to the group, including offering prizes for the most octopus caught on certain days, free cups of rice for anyone who sells their catch to the cooperative and discounted squid lures.

So far these initiatives have been well received and it is expected that more and more members will begin selling their catches to the cooperative in coming months.

Pilot algae farming venture launched in Andavadoaka

There are few ways villagers can earn a living in Andavadoaka. Some sell peanuts and bok bok on the street while others run epi-bars or work as carpenters. But the vast majority of the population relies on fishing for their livelihoods. This dependence on fishing, combined with a rapidly growing population, has placed enormous pressure on local marine ecosystems and created an urgent need to develop alternative economic opportunities in the area.

The most viable alternative to destructive over-fishing is tourism. Blue Ventures is working closely with Andavadoaka to develop a well-managed eco-tourism industry and re-

cently began promoting pirogue trips to the barrier reef island of Nosy Hao to visit a newly-built whale watching platform. Those trips have already generated funds that will help build a new well for locals living on the island, and the number of visiting tourists is expected to grow greatly next season.

Blue Ventures also is working with Madagascar's marine institute IHSM to develop a mariculture business in Andavadoaka. A pilot algae farming project has been launched and is being funded by the French "Fonds Competitifs pour la Recherche Appliquée" (FCRA). If the pilot is successful then a full scale commercial operation will be considered, employing local people to tend the 'fields' and operate a processing plant to extract gel from the algae which can be used for everything from cakes to makeup.

Blue Ventures is monitoring the algae crops in order to determine the best locations and strategies for establishing a permanent mariculture site. The IHSM is analyzing samples of the algae for growth rate and to determine if chemical content is sufficient for a full-scale commercial operation. If monitoring and testing prove that algae farming is viable in the region, it could become a critical tool to alleviating local poverty and easing human impact on the marine ecosystem.

Fish Aggregating devises launched off Andavadoaka coast

One of Blue Ventures' main objectives is to develop alternative sources of income for local villages that currently rely on near-shore fishing practices that can damage coral reef systems. Among the tools being use to prevent such destructive activities are Fish Aggregating Devices (FADs).

FADs attract deep-sea fish far from shore, allowing local fishermen to find catches away from fragile coral reef areas. Two FADs were officially launched on June 5, one located between Nosy Ve and Andvadoaka and one between Lamboara and Ampasilava.Blue Ventures, the Wildlife Conservation Society and local villages worked together to determine the placements of the FADs as well as to assemble and deploy them. The villages will also help monitor and maintain the structures.

The challenge of effectively using FADs is to place them near enough to shore to be accessible to local fishermen in pirogues but in deep enough water for the FAD to generate significant numbers of pelagic fish such as tuna.

New fish aggregation device (FAD) will help local fishermen catch fish away from fragile reef systems

While large fish have been seen around the devices, many local fishermen have been unable to sail out to the FADs, about 17km off shore in the case of Andavadoaka. Blue Ventures is working with local fishermen to improve access to the FADs and Andavadoaka's Fishing Cooperative has begun bringing fishermen to the FADs in the motorised pirogue.

Shark, swordfish, tuna, carangue, cabot, capitaine have all be captured around the FADs, but the methods and tackles used by many local fishermen are not effective enough to catch large numbers of fish. Blue Ventures is working with local fishermen to help develop the best types of tackle that needs to be used to successfully catch fish that are congregating around the FADs.

Once the best fishing techniques are identified and catch levels increase, Blue Ventures will then work with villagers and other partners to develop marketing plans for the catches.

New survey finds damage from coral bleaching

A comprehensive coral reef monitoring and biodiversity survey was conducted at Andavadoaka during November and December 2005.

News of the survey, which discovered severe damage from coral bleaching as well as several areas of resilient reefs, was reported by more than 50 news services globally. Among the media outlets that carried the story were Fox News, CBS News, The Washington Post online, LA Times, Forbes and National Geographic online.

The survey, conducted by an international team of taxonomic experts, assessed reefs for benthic cover, fish biomass, hard corals and macro-invertebrates at nine permanent sites across three main reef types with preliminary information collected at a tenth site (a deep offshore patch reef).

The survey team found severe damage from coral bleaching on shallow reefs less than 10 metres in depth. These nearshore fringing reefs were generally in poor condition with low numbers of hard coral cover, high levels of non-calcified algal cover and low levels of reef fish biomass.

Seaward facing barrier reefs were found to be in better condition with slightly higher coral cover and reef fish biomass. Patch reefs below 10 metres depth were in the best condition with high coral cover, high structural complexity and the greatest reef fish biomass.

Total reef fish biomass (14 main families) was similar to levels found for moderately fished reefs in East Africa and Beheloka, southwest Madagascar. Biomass for some herbivorous fish families

Researchers found some reefs where 99% of coral cover was destroyed by bleaching

was low on fringing reefs (Acanthurids) whilst Scarid biomass was reduced across all sites surveyed. Macro-invertebrate density varied between the main reef types with higher densities of herbivorous urchins and seastars (Linckia spp.) on fringing reefs and higher densities of giant clams, holothurians and large Cypraeads on offshore reefs. ß Biodiversity assessments re-

vealed medium biodiversity levels for hard corals and reef fish and high biodiversity for marine molluscs. Some hard coral genera were recorded less often than expected which is likely due to bleaching mortality. Specialist reef fish associated with rich coral areas were also absent, also because of damage from coral bleaching.

Biodiversity assessments showed that in order to adequately conserve the maximum number of species it is necessary to protect the full range of coral reef habitats across the different reef types present in the region. In particular the patch reef complex and the southern end of Nosy Hao reef are recommended for full protection.

A number of recommendations for protecting these reefs have been proposed including the use of multiple zones for marine protected and resource-use areas, restrictions on destructive fishing practices, development of alternative livelihoods for fishers and building capacity for community based management within local villages. It is crucial that development and management of any marine protected areas in the region is made with the full co-operation and continuous support of the local communities.

Blue Ventures partners with French firm Copefrito to study impacts of fishing industry

Between August and September 2006, Loic L'Haridon, a former economist with the international fishing company Copefrito SA in Toliara, worked with Blue Ventures in London as part of a collaborative study of the commercialisation of fisheries in southwestern Madagascar.

Copefrito SA, which has been working with Blue Ventures in Andavadoaka since 2003, is one of two principal fishing companies working along Madagascar's southwest coastline between Morombe and Itampolo. The second company is Murex International.

During his time in London, L'Haridon analysed data from Copefrito and Murex to track the development of fish collection since 1996 (in terms of quantity, composition and average sizes of catch) and the annual variations in collection sizes (in terms of quantity, composition and average sizes).

Amongst other things, L'Haridon's report confirmed previous findings by Blue Ventures biologist Daniel Raberinery showing the times of peak spawning periods of reef octopus Octopus cyanea. Accurate knowledge of octopus spawning periods is critical to develop effective conservation plans such as marine no-take zones and national fishery closures.

The study, which highlighted the lack of reliable data on trends in commercial fishery collections in the region, emphasised the need for ongoing collaborations between collection companies and research groups. Such independent analysis of data from private businesses provides accurate and objective insight into the evolution of fisheries in the region and critical data for advising future management decisions.

This study also serves as an important first step towards developing a more collaborative approach between NGOs and private sector organisations to work towards promoting more sustainable exploitation of marine resources, particularly octopus, reef fish and squid. Blue Ventures is sincerely grateful for the support of M. Chan Kit Waye of Copefrito SA and M. Vassant of Murex International for providing data for analysis in this study.

New report sheds light on fishing practices in Andavadoaka

It's not all about octopus! Blue Ventures has just completed a new report on fin fish fisheries in Andavadoaka.

The report, based on a study conducted from Sept. 2004 to Sept. 2005, sheds light on the region's fisheries in terms of geographic range, gear use, family composition of catch, fishermen's catch per unit effort (CPUE), and seasonal variations in landings.

Results show that nearly half of the fisheries' catch by weight was obtained from the Valahantsaka area, North of Andavadoaka. This is attributed to the large numbers of sardines caught in this region in May.

The study also showed that net fishing is the dominant technique – contributing to more than 50% of total catch by weight – used in the winter months of November to February, while line fishing dominates in the summer months. The most common type of fish caught in the Andavadoaka region is the clupeidae (sardines & herring) making up 34% of the total catch sampled.

The next most common fish caught is carangidae (jacks) comprising 22% of the catch, followed by lethrinidae (emperors) at 14%. Each type of fish has seasonal peaks, with the clupeidae peaking in April & May, carangidae peaking in August and the Lethrindae peaking in November. The Siganidae (rabbitfish), which comprises 8% of the total catch by weight, show a peak abundance in January.

The Catch per Unit Effort (CPUE) values for the region for all gear types vary throughout the year, but lie within the general boundaries (0.6 - 2kg/hr) identified in previous fisheries studies in the region (Laroche, 1997). Effort levels were estimated based on fishing trips rather than specific time intervals due to difficulties experienced in accurately estimating trip duration. Fishing nets yielded the largest CPUE of any gear type used, on average proving 10 times more return than line methods in terms of fish weight caught per person (4835g/

New study reveals trends in fishing practices and species caught

person/trip compared to 466g/person/trip respectively).

Monitoring of the fin fish fishery in Andavadoaka continues alongside ecological monitoring programmes carried out by Blue Ventures and partners in the region. Results obtained from this study will contribute to an improved understanding of fin fish fisheries in the region, providing a baseline against which the results of future monitoring in the region may be compared.

Volunteers study seagrass and mangrove areas

Former Blue Ventures volunteer Micah Stanbridge conducted a survey of the extensive seagrass beds surrounding Andavadoaka. The study looked into human threats to seagrasses, the incorporation of seagrass beds into marine protected areas and the possibility of using seagrass beds as sea cucumber farms. Seagrass beds are home to a huge variety of marine organisms and may be one of the most important ecosystems in coastal areas. However, seagrass ecology is a relatively new area of study and no research has been conducted into the impacts of fishing on seagrass ecosystems in the Andavadoaka region.

Results from the study indicate that the lagoons around Andavadoaka support considerable areas of seagrass of varying densities, and that these areas are fished extensively by the villagers of Andavadoaka. Six species of seagrass were found to be widespread in the region (Thalassodendron ciliatum, Thalassia hemprichii, Cymodocea Spp., Syringodium Isoetifolium, Halophila Ovalis and Halodule Spp.), with T. ciliatum and T. hemprichii being the most abundant.

Micah found that despite their importance to local artisanal fisheries, current human pressures on local seagrasses appear to be minimal. The weighted seine nets used by local fishermen seem to have only a small impact upon these habitats but seagrasses are at risk from the potential increase in population and tourism in the region.
Micah's work highlighted the importance that Blue Ventures and its partners at Wildlife Conservation Society (WCS) and the University of Toliara (IHSM) work with local villagers to ensure suitable legislation is put in place to minimise the impacts these changes will have on marine resources and villagers' livelihoods.

Micah also found that some the area's seagrass beds could provide suitable habitats for sea cucumber farms, although further analysis is needed before selecting an exact location.

Research by IHSM and Aqualab in Toliara is investigating the potential for such farms to be developed as a sustainable livelihood initiative for local villages while also helping prevent the overharvesting of natural sea cucumber populations.

Another Blue Ventures volunteer, Radhika Dave, recently completed a report from a three-week study of mangroves in the Baie des Assassins area of Southwest Madagascar, located some 20km south of Andavadoaka. Radhika's work aimed to assess how local communities use these ecosystems and whether this use poses any threats to mangrove health.

Madagascar is home to more than 3200 square km of mangroves, and communities across the nation rely heavily on these ecosystems for wood supplies, fuel and as breeding grounds for fish. Despite this, there has been little research looking into the health of the country's mangrove systems and how human activities impact them.

As the Malagasy government works toward tripling the amount of land currently under protected status, the Baie des Assassins may form part of a multiple-use conservation site. If this occurs, data must be gathered so there can be a clear understanding of the forest structure as well as its significance to the community.

Radhika's study, which was submitted as a Master's theses to the Yale School of Forestry and Environmental Science, found that small-scale, selective extraction of individual mangrove trees in the Baie des Assassins appears to have little effect on the entire mangrove ecosystem, but it does kill individual trees and some species do not resprout after cutting. Since the local mangrove forest is composed of at most five species of trees supporting a variety of faunal assemblages, drastic reduction in a single species could potentially reverberate throughout the ecosystem.

The research found no indication of widespread destruction or indiscriminate clear cutting of the mangrove forests, however Radhika recommended further multi-year data collection on forest structure and human use to obtain conclusive information to determine if the forests surrounding local villages are

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undergoing a species shift that may ultimately be detrimental to the needs of the people, as well as to the fragile ecology of the region.

Other news around Andvadoaka

Andavadoaka Peace Day
Blue Ventures and Andavadoaka celebrated UN International Peace Day on 21 September with a week long series of events, including musical performances and a play from the Children's Club Alo Alo about destructive fishing practices. Community members held a pirogue "race for peace" complete with medals for the winners and speeches made by village leaders. Community members and Blue Ventures staff also conducted a beach clean-up to celebrate International Coastal Cleanup Day on 16 September.

Educational Funding
Former volunteer Gabrielle Johnson has been working with the Monterey Bay Aquarium in California to secure sup-

plies for school children in Andavadoaka. The Aquarium has agreed to send various books, posters and other items demonstrating the importance of marine conservation and highlighting the diversity of marine species in North America and around the world.

Blue Ventures also is raising money to buy for school supplies for Andavadoaka. Volunteers and staff have been contributing money for the purchase of books, pens and other materials. Half the cost of attending school is in the materials and as volunteers contribute money to the cause, it is a fantastic demonstration of the benefits tourism can provide the community.