



**conservation
education
research**

Blue Ventures Conservation Andavadoaka, Madagascar

A busy start to the new year, with exciting new research projects and positive results from the first national octopus fishery closure.

Research Update, January 2006 - March 2006

Pioneering biodiversity research in Andavadoaka
Biodiversity surveys in Andavadoaka, conducted by global coral and fish experts.



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World experts visit Andavadoaka for biodiversity research

In December Andavadoaka was fortunate to host coral and fish experts Doug Fenner and Gerald Allen, who carried out biodiversity studies surveying the coral and fish assemblages of Andavadoaka. The project, organised by the Wildlife Conservation Society and funded by Conservation International, has provided important new information to supplement existing biodiversity data collected by Blue Ventures, producing the most comprehensive account of marine biodiversity recorded in Southern Madagascar to date.

Doug Fenner surveyed hard corals at 10 sites around Andavadoaka. A total of 164 species of were recorded in 55 genera. Of these, 20 species had not previously been reported in Madagascar and 16 species were found outside their previously recognised geographical ranges. Observations were also made of 4 species that could not be identified beyond genus level and maybe new species to science, suggesting exciting potential



Fig. 1 – Slingjaw wrasse, *Epibulus insidiator* at recruitment reef, image courtesy G Allen

for future research. Doug's results showed that amongst the 10 sites studied the number of corals ranged from 28 – 64 species, with an average of 49 species per site. This data collected places the reefs of Andavadoaka in a medium diversity coral fauna category. This is much greater than in Hawaii, greater than Rodrigues Island, Mauritius but less than Malaysia, the Andaman Islands, American Samoa, Fiji, the Great Barrier Reef, and the Coral Triangle.

Doug also observed that the species number from Andavadoaka differs from the findings for Veron and Turak (2003) who recorded 323 species in Northwest Madagascar. It has been suggested that variation such as this could be due to the considerable damage the corals of Southwest Madagascar suffered as a result of the mass bleaching events of 1998-2000. In Southwest Madagascar there is also a lower than expected percentage cover of *Acropora* species. *Acropora* is one of the most sensitive genera to bleaching and its reduced coverage could be evidence that mass coral bleaching is responsible for species loss locally. Species diversity within certain genera was also lower than expected which may have been caused by mass bleaching. This can be seen in the genus *Montipora*, which normally has more species than *Fungia*, yet from this study in Andavadoaka was found to have 9 species compared to *Fungia* which had 10.

Doug also notes that previous mass coral bleaching events may have caused the Andavadoaka reefs to undergo a phase shift from coral to algal-dominated communities. It is possible that overfishing of key herbivore species such as parrotfish, and high levels of terrestrial runoff of organic materials into coastal and lagoonal waters, may be maintaining the algal dominance on many reef habitats, and preventing recovery of corals.



Fig. 2 – Hard coral *Turbinaria* sp., image courtesy of C. Goodman

Management recommendations suggested to improve coral recovery include reducing overfishing of herbivorous fish, and reducing levels of human waste released into lagoons.

Fortunately the impacts of coral bleaching and mortality have not caused degradation of all reefs in the region. As previous surveys have shown, the 'Recruitment Reef' patch reefs remain in excellent condition; and Doug's conclusions support existing recommendations that conservation efforts should focus around these reefs in order that they may help to reseed surrounding degraded reefs. The evidence of previous survival abilities in these patch reefs suggests that these corals may be resistant or resilient to future bleaching events, giving them a high protection value.

Following 25 hours of SCUBA diving and 3 hours of snorkelling, to a maximum depth of 25 meters, Gerry Allen recorded a total of 386 fish species belonging to 182 genera and 57 families. Combined with existing data collected by Blue Ventures, this gives a total fish fauna of at least 529 species for the Andavadoaka region. Of those identified in this study, the dominant groups in the area are Wrasses (labridae), Damselfish (pomacentridae) and Groupers (serranidae) with 55, 48 and 23 species respectively. 66 species were recorded that had not been seen in a previous rapid assessment undertaken in northern Madagascar by Conservation International in 2002, and 28 species represent new records for Madagascar.

Unlike the results of the coral surveys, the fish faunas of Southwest and Northwest Madagascar showed strong similarity, although there were no cardinal-fish *Cheilodipterus artus* and filefish *Oxymonacanthus longirostris* in the Andavadoaka region, whereas both species were recorded as present in Northwest Madagascar. These 2 species are commonly associated with coral rich areas and their absence could correlate with the significant loss of live coral habitat attributed to mass coral bleaching and mortality events.

Results show that the vast majority of Madagascar's coral reef fish species have broad distributions and fish assemblages are similar to other areas in the central and Western Indian Ocean, including Mauritius, Seychelles, Chagos and the Maldives. There are however approximately 8 reef fish species that are confined to Madagascar.

Monitoring of octopus reproductivity

Over the last 12 months, Daniel Raberinary, a marine and fisheries scientist from the University of Toliara, has played an active role in Blue Ventures' octopus fishery monitoring programme. Alongside his work supervising octopus catch monitoring carried out in conjunction with the octopus no take zones he has undertaken additional studies to identify

the peak reproductive periods of *Octopus cyanea*, the most abundant and economically important octopus species in the Andavadoaka region.

Daniels's sampling method looks at gonad maturity to determine sexual maturation and breeding period of octopus landed by fishers. Having an accurate knowledge of the reproductive seasons of this species will be critical to conservation plans aiming to advise periods and durations of future octopus no take zones. Initial results so far suggest that the approximate weights at sexual maturity for male *Octopus cyanea* are between 200g and 500g, and between 750g and 800g for females. Analysis of results continues, and it is hoped that the conclusions of this study will be incorporated into management plans at local and national levels, to help establish an agreed minimum catch size for octopus and prevent fishing of sexually immature juveniles.

Cyclone Boloetse



Fig. 3 - Regional satellite image showing location of tropical cyclone Boloetse on 3rd February 2006, centrepont latitude 21°18.47S, longitude 40°57.21E (image courtesy NOAA)

In the first week of February, Andavadoaka was hit by severe tropical cyclone Boloetse, which had damaging impacts both on land and underwater. In particular, the Valleys and Fish Bowl reef survey sites were heavily impacted. Surveys carried out in the aftermath of the storm show the Valleys site suffered severe abrasion of its corals caused by loose boulders being washed over the reef and scouring the benthos. Almost all hard corals were destroyed in the

groove structures common at these reef sites, with the exception of certain massive stony corals such as *Diploastrea heliopora* that managed to survive the impacts. Corals growing on reef spur structures, located above the deeper grooves, were less damaged by the storm.

The Fish Bowl site was also dramatically altered by the cyclone: an estimated 70% of hard coral was broken from the underlying substrate by the high energy wave action caused by Boloetse (figures 4 & 5). In addition, the area of reef around the fixed transect lines used for permanent monitoring of the site was completely destroyed. This has resulted in rapid covering of the damaged areas and dead coral by a proliferation of fast-growing turf algae.

A knock on effect of this change in benthic composition may have been an additional shift in the balance of fish assemblages, reducing numbers of coral feeding and coral dwelling species (most notably butterflyfish, chaetodontidae, which were noted to be abundant at the site before the cyclone), and increasing numbers of algal grazers (such as surgeonfish, acanthuridae). Rapid assessment surveys were carried out to look at the impacts of the cyclone on the benthic communities of these reefs. As with the Valleys site, all permanent transect lines fixed to the reef were destroyed by the cyclone. The results of the pre and post cyclone surveys carried out at Fish Bowl are shown in figures 4 and 5.



Stormy weather in Andavadoaka in the aftermath of severe tropical cyclone Boloetse

Fig. 4 – Fish Bowl benthic and substrate composition from replicated point intercept transects carried out the last time fixed survey lines were surveyed prior to the cyclone.

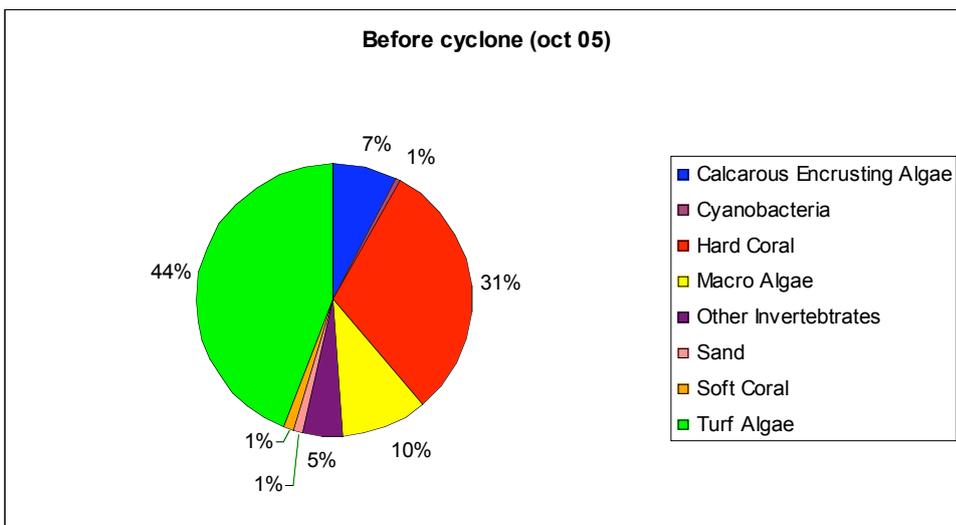
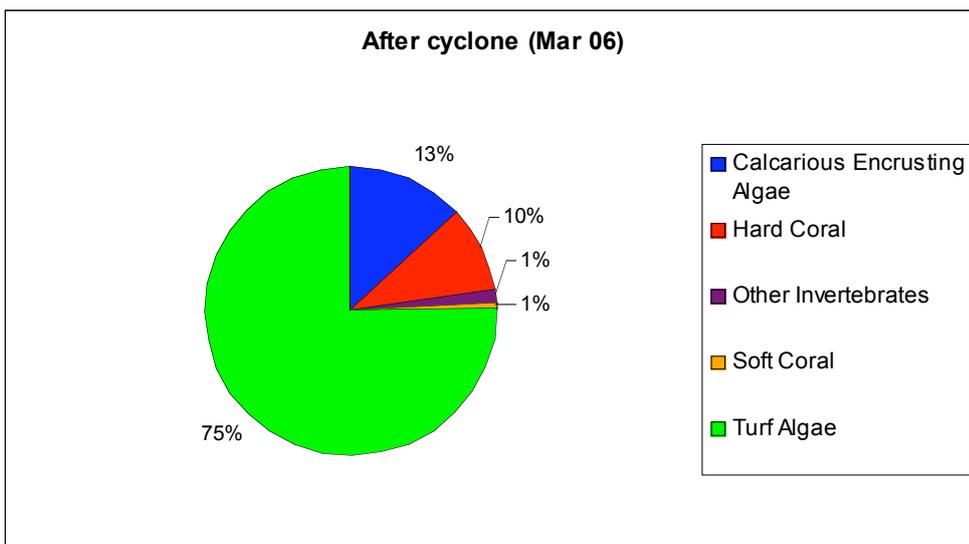


Fig. 5 – Fish Bowl benthic and substrate composition from replicated point intercept transects carried out (in the same reef area as the destroyed fixed survey lines) after the cyclone



As well as the damage caused by Boloetse to Andavadoaka's coral reefs, the cyclone caused significant damage to the village, destroying a number of houses and canoes adjacent to the beach. Tireless rebuilding efforts by members of the community saw most of this damage repaired in the weeks after the cyclone.

Bleaching

Corals are extremely susceptible to thermal stress, and exhibit a stress response known as bleaching when ex-

posed to unusually hot sea surface water heated above the normal seasonal range. Bleaching results in loss of the symbiotic algae, or zooxanthellae, upon which corals depend for much of their food. If sea surface heating is particularly severe, or prolonged for periods longer than one or two weeks, corals are often unable to recover from the bleaching stress, and extended periods of bleaching will often result in complete mortality of corals.

Abnormally warm surface waters, related to a severe El Niño event, affected the western Indian Ocean region par-

ticularly badly in 1998 and caused widespread coral bleaching in the north of Madagascar. Coral bleaching during this period extended to the other reefs of Madagascar, in particular those in the southwest, however unlike the north of the country, no data exist to document the extent of bleaching and related mortality in this region. Anecdotal reports from Madagascar's national marine research institute, the *Institut Halieutique et des Sciences Marines* (IHSM), suggest high levels of mortality occurred in most corals in fringing and barrier reefs throughout the Toliara and southwest region to a depth of approximately 15m, with some reefs appearing to have lost up to 100% of their coral cover.

Other bleaching episodes have been reported by the IHSM and by dive operators in the Baie de Ranobe (approximately 200km south of Andavadoaka) in February and March 2000 and 2002, and in Antongil Bay and the Masoala Peninsula in the northeast in March 2005. Bleaching events that may have occurred between 1998 and 2003 are likely to have gone unreported, due to the low levels of research, monitoring and recreational diving being carried out

in the region. No major bleaching events were recorded in the southwest of Madagascar between the time Blue Ventures arrived in the region in 2003 and the beginning of this year. However, by early February sea surface temperatures had remained above 30°C for several weeks, and a number of genera of corals were reported to be bleached when diving operations recommenced in Andavadoaka in the aftermath of cyclone Boloetse.

Surveys carried out in mid February showed that all corals from the genus *Pocillopora* were bleached at all depths and all sites visited. A number of other genera showed occasional bleaching of colonies, varying in severity from patchy bleaching to complete loss of zooxanthellae. These included *Stylophora*, *Acropora*, *Galaxea*, *Favia*, *Favites*, *Monitpora* and *Porites*, although none showed bleaching as widespread or for as long a period as *Pocillopora*. Bleaching was also recorded in anemones and soft corals during this period.

Sea temperatures returned below 30°C in early March, however most *Pocillopora* colonies, having experienced sustained bleaching for several weeks, had

suffered mortality before water temperatures cooled. Fortunately most other bleached corals were able to regain zooxanthellae and showed recovery from the bleaching event. Detailed bleaching studies were carried out throughout February and March by research volunteer Monika Wilhelm, who is currently working to identify variations in levels of coral bleaching between different reefs and different reef depths.

One hypothesis for the high levels of bleaching of *Pocillopora* colonies is that this genus contains some of the fastest-growing hard coral species, a characteristic often associated with high susceptibility to bleaching. However, other fast growing genera such as *Acropora* showed only minor levels of patchy bleaching, and no *Acropora* colonies were seen to have expelled all of their zooxanthellae. A second hypothesis to explain why *Pocillopora* was so heavily affected is that this is the only coral present in abundance on shallow-water reefs that reproduces by brooding rather than spawning. Previous studies have shown that larvae derived from asexually reproducing brooding corals are often able to settle more rapidly than those derived from sexually reproducing spawning corals, and some authors have suggested that there could be a trade-off between short-term local abundance and long-term survival.

Fig. 6 – Sea temperature variation at 15m depth at 007 North patch reef from August-05 to March-06.

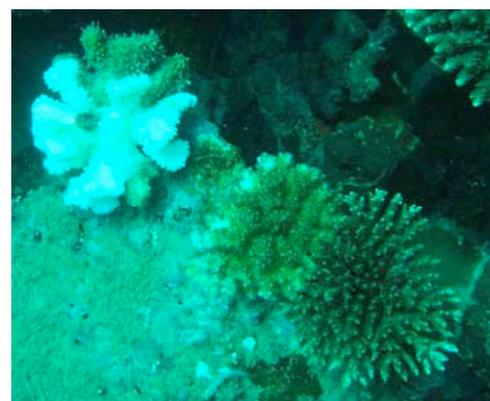
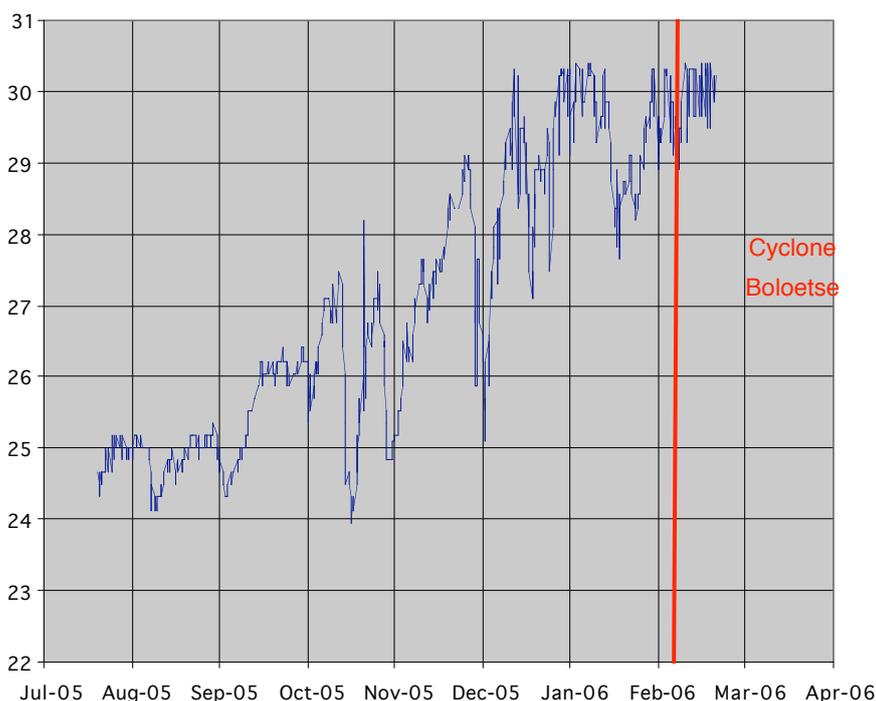


Fig. 7 – Bleached *Pocillopora* colony, February 2006

Parasitic worm affecting corals

Recent surveys have shown common infections of *Porites* corals with what is believed to be the larval stage of a

parasitic flatworm, the digenetic trematode *Podocotyloides stenometra*. After infecting a coral colony, the coral tissues expand and turn pink, whereupon they are eaten by reef fish, which are attracted by the prominent swelling of the coral tissue. Consumption by the fish continues the complex life cycle of the worm. The parasite is not thought to cause significant damage to its coral host. The trematode was originally discovered in Hawaii and has been reported from other areas of the Indo-Pacific. Dr Greta Aeby, coral disease expert from the Hawaii Institute of Marine Biology, has provided preliminary confirmation of the identity of the sightings in Andavadoaka, an observation which if proven will greatly expand the known range distribution of the species.

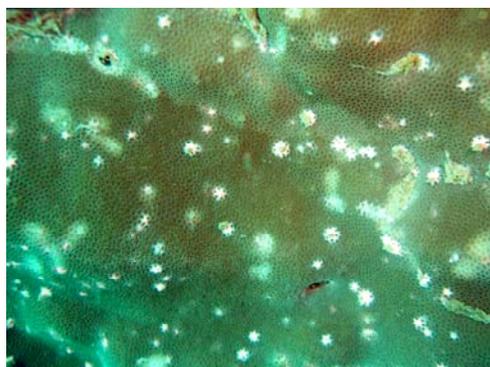


Fig. 8 – First recording in Indian Ocean of unusual trematode parasite affecting *Porites* colony, February 2006

Results of first bird surveys in Andavadoaka

Peter Long and Richard French-Constant, ornithologists from the University of Bath (UK), visited Andavadoaka in November 2005 to carry out the first detailed surveys of the region’s birdlife. Their studies focused on a number of important bird habitats, including saltmarshes, mangroves, *Euphorbia* scrub, spiny forest, beaches and offshore islands.

The research showed that Andavadoaka and its surroundings possess a highly diverse bird community. The saltmarsh habitats, located inland just south of the village, are particularly important, supporting high densities of breeding Madagascar plover, a threatened shore-

bird which is endemic to Western Madagascar. It is likely that Andavadoaka’s saltmarsh is one of the most important sites in the country for this threatened species. The marshes also provide excellent habitat for the Madagascar sandgrouse, another rare sight. Local mangroves are home to small passerine birds such as the green jerry, the bright red Madagascar fody and the Mascarene martin, with feeding shorebirds such as the curlew sandpiper and white-fronted plover on the outskirts. Pied crows, whimbrels, ruddy turnstone and yellow billed kites were found along the beach. Closer to the village, the very dry coastal *Eurphorbia* scrub is exceptionally rich in birdlife, in particular for larger species such as the Madagascar kestrel and the Madagascar buzzard. The spiny forest, dominated by baobab trees and ‘octopus trees’ of the genus *Didieraceae*, is home to the Madagascar coucal, chabert’s vanga and the Madagascar magpie-robin.

In collaboration with the Malagasy league for bird conservation (ASITY), Peter and Richard are working to develop a Madagascar-wide bird monitoring scheme. Blue Ventures volunteers will be involved in data collection, with the aid of the new illustrated guide ‘Birds of Andavadoaka’ (figure 9), identifying the most common birds in the five terrestrial habitat types around Andavadoaka. This guide, as well as Audio files of birdsong recordings in Andavadoaka, can be downloaded from the Blue Ventures website.

Deployment of 2 new offshore Fish Aggregation Devices (FADs)

One of the primary objectives of the Andavadoaka project is to conserve biodiversity, safeguard natural resources and improve the livelihoods of the local population. In the long-term, it is hoped that this will be achieved by designating a marine protected area (MPA) which will provide sufficient marine resources (fish and invertebrates) for the Andavadoaka community as the marine habitats within the protected area recover from the previous effects of over-exploitation. However this will inevitably

take some time (5-10 years), and alternatives to fishing within potential areas designated for protection are needed in the more short term.

One technique that can provide an alternative source of fish protein for personal consumption or sale is the use of Fish Aggregating Devices (FADs). These are floating devices specifically designed and located to attract tuna and other pelagic fish so that fishers can find and catch them more easily. FADs have successfully been used in deep waters off the coast of Toliara in a project organised by IHSM and the Fisheries Directive. Two experimental FAD modules implemented in the Andavadoaka region in October 2003 were seen to attract large numbers of commercial fish species in a relatively short period of time, indicating the region’s effectiveness for supporting FADs. Unfortunately these trial FADs were both lost in the strong storms that hit the region in December 2003 (see BV research update March 2004).

Blue Ventures has worked with the Wildlife Conservation Society and other project partners, funded by the British Government’s Department for International Development (DFID), to install two FADs in deep offshore waters so that if a future MPA is closed to fishing there may be a viable alternative for local fishers. By providing new, alternative fishing grounds away from the reefs, it is hoped that this may help to ensure that the MPA is respected whilst at the same time providing fishers with food and a high quality product to sell to the commercial fisheries collection companies.



Fig. 11 - FAD being transferred by 2 pirogues to its deployment site

Fig.9 – Plate from the new ‘birds of Andavadoaka’ field guide

Birds of Andavadoaka

Oiseaux d’Andavadoaka



Saltmarsh



Charadrius thoracicus
Madagascar plover
Pluvier à bandeau noir



Charadrius pecuarius
Kittlitz plover
Pluvier pâle



Petrochelidon personatus
Madagascar sandpiper
Ganga de Madagascar



Egretta dimorpha
Dimorphic egret
Aigrette dimorphe



Upupa marginata
Madagascar hoopoe
Huppe de Madagascar



Bubulcus ibis
Cattle egret
Héron garde-boeufs
vano

Mangrove



Neomixis viridis
Green jery
Éroesse verte
farlotramena



Calidris ferruginea
Curlew sandpiper
Bécasseau cocorli

Marécageuse



Charadrius marginatus
White fronted plover
Pluvier à front blanc



Foudia madagascariensis
Madagascar fody
Foudi rouge
horovana

Alankonko



Phedina borbonica
Mascarene martin
Hirondelle des Mascareignes
ololy

Islands/Beach



Corvus albus
Pied crow
Corbeau pie
fininabe



Numenius phaeopus
Whimbrel
Courlis corlieu



Arenaria interpres
Ruddy turnstone
Toumeperre à collier



Apus barbatus
African black swift
Martinet du Cap
tsidintsidina

Nosy/Fasika



Milvus aegypticus
Yellow-billed kite
Milan à bec jaune
hitsikisa

Euphorbia scrub



Falco newtoni
Madagascar kestrel
Crécerelle malgache
roatelo



Buteo brachypterus
Madagascar buzzard
Buse de Madagascar
tsiparahorovana



Oena capensis
Namaqua dove
Tourtelette masquée



Dicurus forficatus
Crested drongo
Drongo malgache
tsingetry



Nectarinia souimanga
Souimanga sunbird
Souimanga malgache
zafndrasity



Coua ruficeps
Red-capped coua
Coua à tête rousse
taïso



Ploceus sakalava
Sakalava weaver
Tisserin sakalava

Broussailles d’Euphorbia

Spiny forest/Baobab forest



Centropus toulou
Madagascar coucal
Coucal toulou
taïtoaka



Copsychus albospectularis
Madagascar magpie-robin
Shama de Madagascar
voromasialaka

Forêt épineux/Forêt de baobab



Leptopterus chabert
Chabert’s vanga
Artamie chabert
torotoroka



Neomixis tenella
Common jery
Petite Éroesse
siketrite

Alan-Tsilô/Zaha



Cisticola chenina
Madagascar cisticola
Cisticole malgache
voromborona

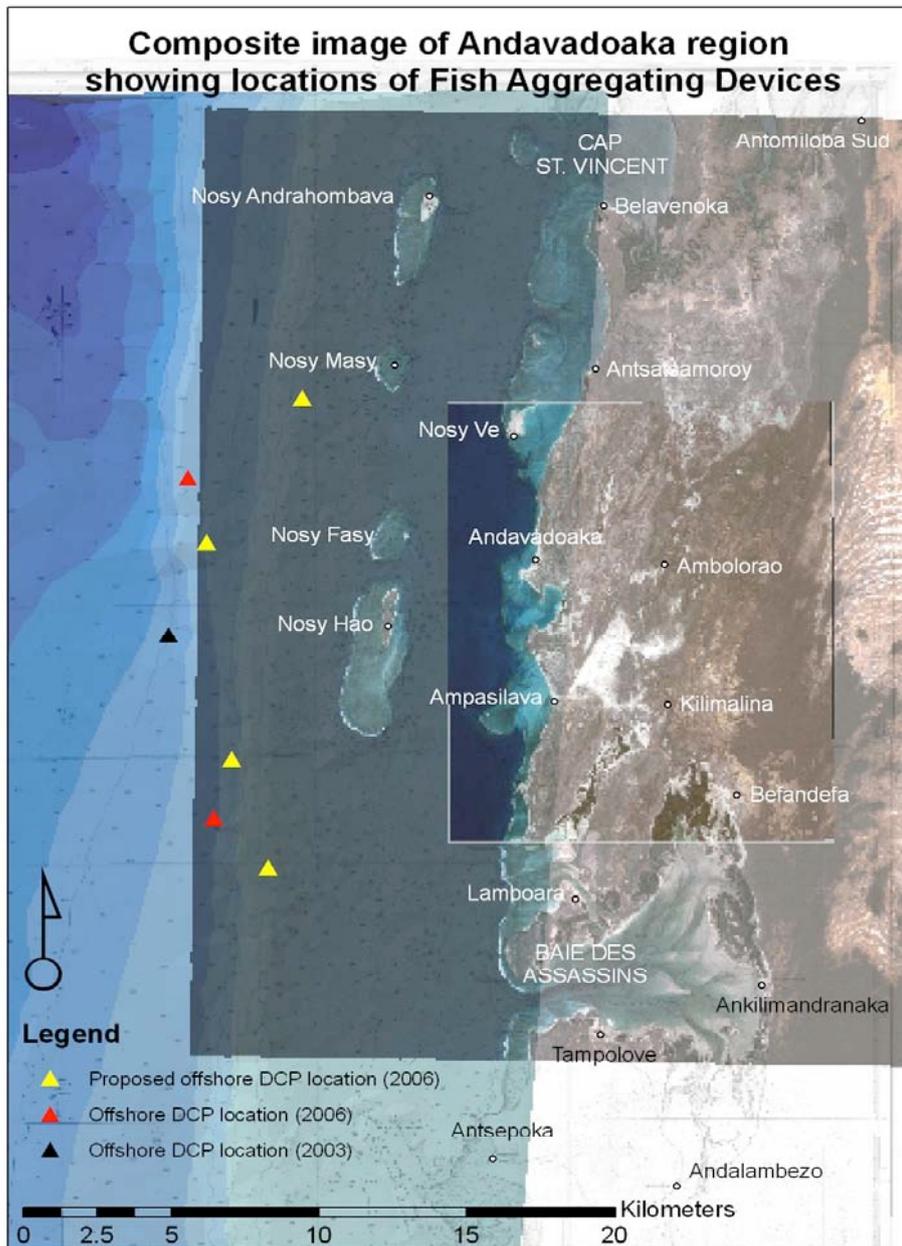


Fig. 10 - map showing locations of experimental FADs deployed in Andavadoaka in 2003 and 2006.

Prior to the introduction of FADs in the region, WCS and Blue Ventures research teams visited the villages of Andavadoaka, Ampasilava, Lamboara and Nosy Ve in order to explain to communities the aims of FADs, their potential benefits, expected results and time scales, as well as the steps involved in FAD installation. Detailed discussions were also held with groups of experienced fishers from each village in order to ascertain the best location for the modules: positioning of FADs requires a balance between ensuring they are deployed in water sufficiently deep to maximise their effectiveness, whilst at the same time ensuring they are sufficiently close to shore to enable easy and

safe access by local fishers. Following these discussions a final meeting was called in which representatives from all the villages were brought together to participate in the assembly of the FADs.

On 28th March the modules were transferred to the deployment sites (shown in figure 10), with their heavy anchors being released by opening trapdoors in platforms suspended between canoes. A 'Fomba' (local ceremony) was carried out by village elders to mark the occasion. The project received widespread support from local communities and national fisheries authorities, and it is hoped that these modules will provide a viable sustainable

alternative to near shore reef fishing over the months ahead.

National Octopus Closure: 15th December 2005 to 31st January 2006

The first national octopus closure on the west coast of Madagascar took place between the 15th December 2005 and the 31st January 2006. The closure was timed to coincide with what is currently thought to be the spawning season for octopus. The commercial collection following the opening on the 1st February lasted for the full spring tide period of 4 days, during which time the total catch in Andavadoaka was 793kg. The average weight of the octopus caught was 1.3kg, with the average fisher catching 12.5kg of octopus. Results indicate that fishers are positive about the effects of the opening, since they were able to catch as many octopuses each day during the first spring tide after the opening as they were previously catching during a whole spring tide normally. Unfortunately, due to an error in the planned collection time by fisheries collectors, 1.2 tons of products, including octopus, from the villages to the North of Andavadoaka were accidentally wasted and not sold.

Overall, the national closure was respected with only a small number of cases of infringement involving isolated occurrences of female fishers gleaning for octopus during the closure period. This is encouraging, since there were no surveillance or monitoring programmes put in place by the government. However the strong adherence to the closure is likely to have been due to the fact that there was no commercial export market for octopus during this period since neither of the region's seafood collection companies were permitted to collect octopus. The national closure appears to have been a success, seeing encouraging support from local fishers, when the size and number of octopus was seen to increase after the opening. Long term results of the national closure and local no take zones (NTZs) are currently being analysed and will feature in future research updates.

Following closure of the three octopus NTZs in the Andavadoaka region in November (see Research Update September – December 2005) the reserves are due to be opened in April 2006, and results from this will be discussed in the next research update.

Village research feedback workshop

On 18th February Blue Ventures' research team met with 79 men and women from the village for a workshop to discuss ongoing conservation activities work in the region, and to provide an opportunity to exchange lessons learned and ideas with community members. This workshop was organised in response to requests from villagers who wanted to gain a better understanding of ongoing research work and activities.

Research staff gave a series of presentations discussing progress made with ecological, socioeconomic and fisheries monitoring projects to date. Fisheries scientist Daniel Raberinary discussed key findings from the octopus catch monitoring, summarising data from all the villages involved in the NTZ and catch monitoring programmes. He also introduced the findings of his research monitoring the reproductive period of

octopus, describing how this might impact future management strategies.

Research assistant Georges 'Bic' Manahira outlined coral reef ecological monitoring work, explaining how this is carried out and results that had been obtained so far. Socioeconomic researcher, Patricia Hajasoa, described the objectives of ongoing community studies, with a fascinating overview of results obtained from recent census and traditional ecological knowledge (TEK) surveys.

Socioeconomic research coordinator, Minna Epps introduced planned changes to the finfish catch monitoring programme. From May onwards, proposed changes to this research project will see a shift from random sampling of fish landings (currently carried out sporadically by Blue Ventures research volunteers) to regular sampling carried out twice each month by women from the village who will be employed by Blue Ventures to record catch data.



Fig. 12 – Octopus catch being weighed in Andavadoaka after the end of the national closure period on 1 February.

Changes in mean weight of octopus from the fishing site Nosy Hao

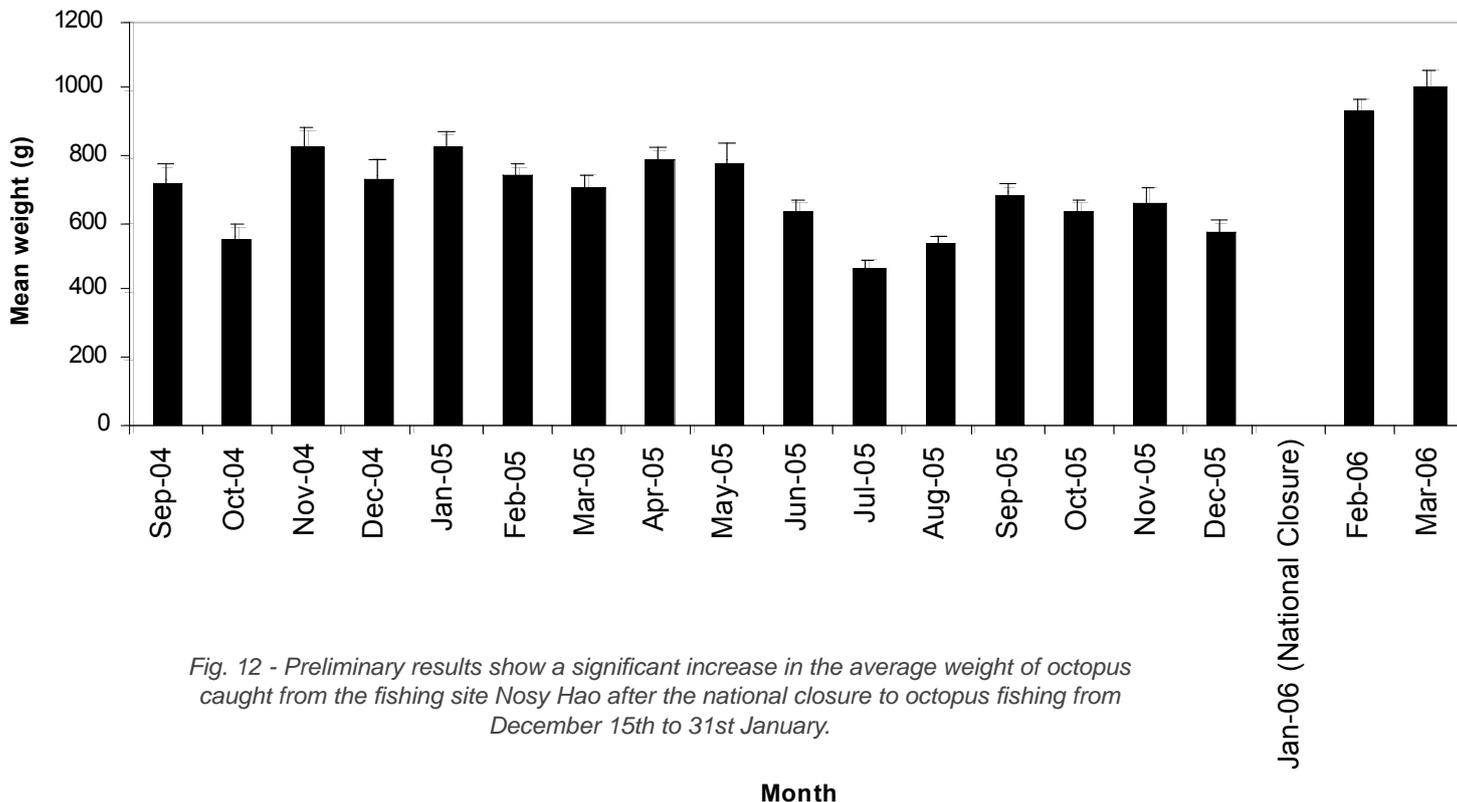


Fig. 12 - Preliminary results show a significant increase in the average weight of octopus caught from the fishing site Nosy Hao after the national closure to octopus fishing from December 15th to 31st January.

The opportunity for involvement in this programme will be open to all women in the village, and it is hoped that this approach to data collection will promote greater understanding within the community of ongoing fisheries research.



Fig. 13 - Andavadoaka socioeconomic research team at work (left to right): Minna Epps (socioeconomic research coordinator), Bic Manahira (research assistant), Francisco Ramananjato (WCS research assistant), Gildas Fanomezantsoa (BV research assistant)

Questionnaires were distributed at the beginning of the meeting to assess villagers' perceptions of Blue Ventures' activities, as well as current marine resource management initiatives. The questionnaires provided a useful basis for discussion, promoting a rewarding dialogue between researchers and community members.

The meeting was considered to be a great success, with a balanced representation of family groups, and equal numbers of men and women present. Participants expressed keen interest in research groups continuing to develop a more participatory approach to research and monitoring activities. Village president Roger Samba concluded the meeting expressing hope that the partnership that has developed between the research team and the community of Andavadoaka will continue over the months and years ahead.

New patch reef survey sites discovered in Andavadoaka lagoon

Two important new reef habitats have been discovered by divers in nearshore lagoonal sites southwest of Andavadoaka.

The sites, named Ambatobe and Lovobe, are popular fishing areas consisting of patch reefs situated at 6-16m depth. Ambatobe comprises a small patch reef colonised predominantly by corals for the genus *Goniastrea* as well as diverse and unusual sponges. This site also has an abundance of snappers, groupers and parrotfish.

Lovobe is a larger reef with abundant soft corals and sea whips, home to large numbers of adult mangrove jacks. The site also exhibits numerous overhangs sheltering sweepers, cardinalfish and rudderfish. The close proximity of these reefs to the research site will enable detailed ecological studies to be carried out, even in turbulent weather conditions that might otherwise prevent access to more exposed offshore sites.



Fig. 14 Hard coral-*Galaxea astreata*, at newly discovered patch reef Lovobe

Andavadoaka census report now online

A full report of the 2004-2005 census of Andavadoaka can now be seen on the Blue Ventures website, at www.blueventures.org/research_update.htm