

The 2004-2005 census of Andavadoaka, southwest Madagascar



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Blue Ventures 2006**

2004-2005 census of Andavadoaka, southwest Madagascar

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Recommended citation:

Langley, J., Harris, A. & Nihalani, N. (2006) The 2004-2005 census of
Andavadoaka, southwest Madagascar.

Acknowledgements

For their invaluable help in field survey design and data collection, thank you to Christophe Grenier, Bic Manahira, Daniel Raberinery, Marc Nadon, Etienne Bemanaja, Minna Epps, Thomas, Melanie Gomes, Matt Sommerville, Will Proto, Dan Logan, Henk van Rein, Katie Yewdall, Victor Bonito, Kit Gillibrand, Emma Doherty, David Griffiths, and Richard Nimmo. Thank you to Dr. Man Wai Rabenevanana and Dr. Mara Edouard Remanevy at the Institut Halieutique et des Sciences Marines for all technical assistance and their invaluable continued support in country. Finally, many thanks to all volunteers who have worked with Blue Ventures in Andavadoaka, without whom none of the information recorded in this unique region could have been collected. This work was funded by Blue Ventures, and forms part of ongoing research and monitoring being undertaken in Andavadoaka to promote conservation of the region's marine resources.

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2004-2005 Census of Andavadoaka, Southwest Madagascar

Introduction

The purpose of this report is to provide baseline socioeconomic information to be used in developing, monitoring and evaluating coastal resources management initiatives in the village of Andavadoaka,

Andavadoaka is a small coastal fishing village in Southwest Madagascar. Conservation NGOs Blue Ventures and the Wildlife Conservation Society are currently developing research and conservation initiatives in the village with the aim of conserving local marine and coastal ecosystems, developing more sustainable fisheries, and addressing barriers to resource management in the area. Projects underway include demonstrating the benefits of marine reserves, developing a more sustainable octopus fishery through rotational reserves, and a variety of capacity building and environmental education programmes. In order to determine the socioeconomic effects of these activities and to ensure that any impact on the society is positive, Blue Ventures is currently monitoring specific socioeconomic characteristics of the village.

This report details various socioeconomic aspects of the village community, which include coastal uses and activities as well as social structure, presenting the findings of the first investigation into the socioeconomic status of Andavdoaka. The basis of this report is Blue Ventures' socio-economic research programme in Andavadoaka. The main sources of data are a census carried out between 2004 and 2005, and interviews with members of the community. While this information provides a baseline for future reference in assessing project impacts, it also serves to help identify potential issues that may need to be addressed by coastal management initiatives.

Ecological surveys are being conducted concurrently with the collection of socioeconomic information presented in this report. Blue Ventures' marine environmental monitoring programme is working to assess the status of the marine environment of Andavadoaka, and includes monitoring of a wide range of biological and physical parameters. Research focuses on coral reef habitats, however project scientists are also working to assess the location, species composition and productivity of seagrass and mangrove habitats within the region.

Blue Ventures currently monitors approximately 15 coral reef sites within a 10km radius of Andavadoaka. These sites represent a broad range of reef types in a variety of conditions of health. The results of these monitoring efforts enable a detailed evaluation of reef status, providing high quality ecological data to support socioeconomic and fisheries monitoring studies, and upon which management recommendations can be made, with the overall aim of promoting more sustainable use of the marine resources upon which the Andavadoaka community depends.

1 The Village of Andavadoaka

1.1 The Setting

1.1.1 Physical setting

The village of Andavadoaka is located in southwest Madagascar, and lies approximately 150 km north of the regional capital of Toliara and 50 km south of Morombe (43°13'30 E, 22°04'22 S). Andavadoaka has developed linearly on the beach front of a sheltered bay formed by eroding limestone cliffs, remnants of former coral reefs during periods of higher sea level.

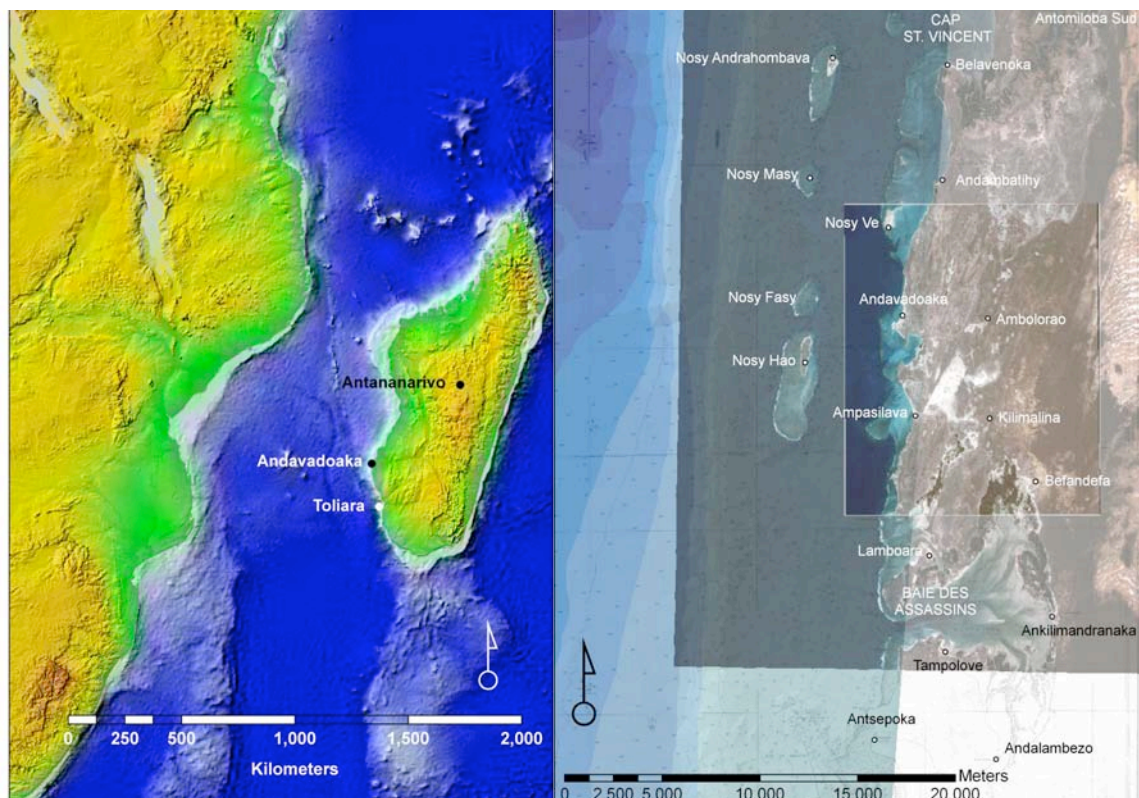


Fig 1 (left) – Location of Andavadoaka; and **Fig 2** (right) – Composite satellite and bathymetric image of Andavadoaka and surrounding villages.

The climate is tropical with distinct winter and summer seasons. Mean air temperatures for the region range from 22 °C in July-August to 25 °C in January-February. Rainfall is largely restricted to short episodes during summer months

with a very low regional average of only 35 cm of rain per year. Andavadoaka is occasionally affected by cyclones, though not as severely as the coast further north (Cooke et al. 2000). The wind is predominantly from the southwest all year and is relatively mild with wind speeds of 14 km/h on average (unpublished data) and about 340 days a year with wind speeds lower than 10 km/h (Cooke et al. 2000).



Fig 3 (left) – Aerial photograph of Andavadoaka village looking north; and
Fig 4 (right) – Aerial photograph of Andavadoaka and surrounding area looking southeast.

1.1.2 Coral Reefs and Fish

The small fishing village of Andavadoaka (22°07S, 43°23E, Figs. 1-4), situated at the extreme northern end of the Grand Récif de Tulear reef system, lies on the edge of a shallow lagoon, protected from the open ocean by extensive coral reefs. In addition to the fringing reefs that characterise much of the coastal marine environment of the south west, several banks rise up in the lagoon, and a series of offshore islands, uninhabited islets and submerged barrier reefs also support substantial coral growth, providing a vital resource base for local traditional and artisanal fisheries. The area is characterised by two distinct fringing and barrier reef systems separated by a 5 km wide lagoon and several patch reefs situated inside the lagoon (Fig. 5).

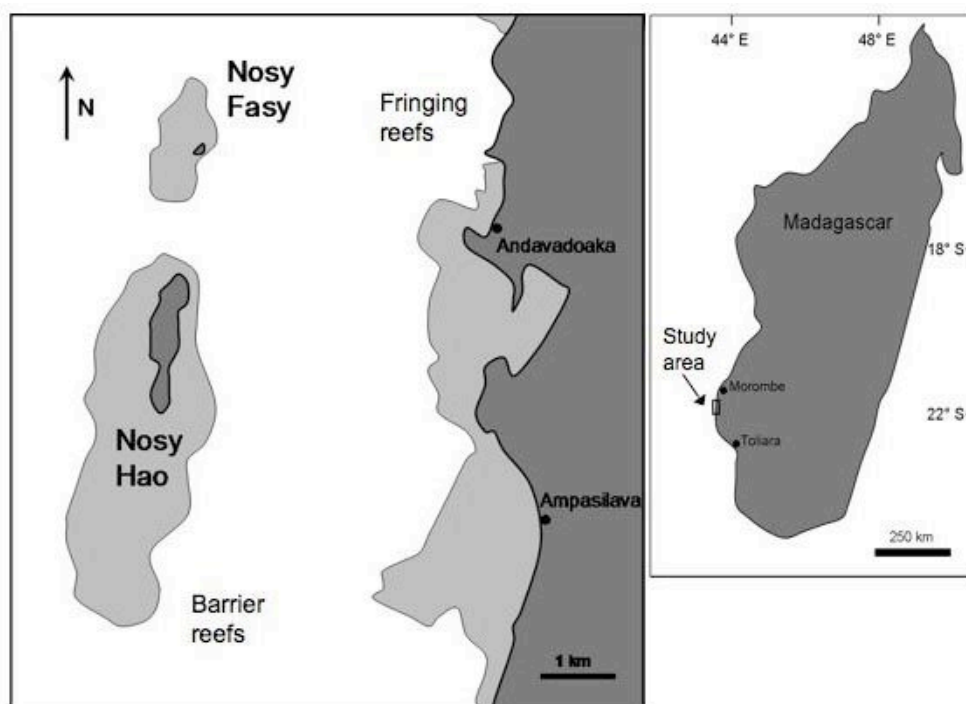


Fig 5 – The two principal reef systems of the Andavadoaka region (fringing and barrier).

No data have yet been published detailing reef fish assemblages for the northern reefs of south west Madagascar, however Gillibrand and Harris (2005) conducted a study to provide baseline ichthyological data for this poorly known region. During the study a total of 334 species, representing 58 families were observed. Of these, 7 species were cartilaginous (Class Chondrichthyes), while the remaining 327 species were bony fish (Class Osteichthyes). While it is true that the reefs of Andavadoaka show relatively little impact from direct anthropogenic impacts (Blue Ventures, unpublished data), it is likely that the species richness of the area has been affected by the degraded state of some reef areas after the bleaching events of 1998 and 2001 (Cooke, 2003).

1.2 Historical, political and cultural context

1.2.1 Population and Settlement Pattern

The population of Andavadoaka originally came from the village of Antanga approximately three kilometres to the north. According to the oral history of the

village historian, Nahoda Noely, the ancestors' time in Antanga occurred during the rein of King Taninandrovola.

During this time invaders of the Masikoro tribe sent a representative to inform the Vezo of Antanga that the Masikoro would invade in two days. Afraid of this provocation, the people of Antanga fled to the neighbouring islands of Nosy Ve, Nosy Andambatihy, and Nosy Masay. However, before fleeing the people of Antanga tried a tactic to prevent future invasions. The tactic used was to catch toxic fish such as lionfish and gobies. These fish were cooked and spread around the village. When the Masikoro arrived they did not see any inhabitants but saw the cooked fish, which they consumed. After eating the toxic fish many of the invaders died. After the invasion the Antanga residents returned to their village and saw the dead. The residents of Antanga were pleased and said '*Tratna amy moroy*,' meaning, 'the dead of moroy'. From this the name Antsatsamoroy was used for this village.

Still fearful of future invaders the Vezo sought a safer and more stable place, hiding in the forests of Lamoty (Flacouratia) in a place now called Andamotibe. During this time (approximately 1890) the French had colonised Madagascar. As the Vezo of Andamotibe still had enemies within other tribes they asked the head of the French canton for permission to move to another, safer site. However since the colonisers claimed ownership of all land the Vezo were no longer free to relocate as they wished. Only certain sites were permissible for settlement, and the fleeing Vezo chose the site that is now Andavadoaka because passing French ships passing would provide an increased level of safety.

The site of Andavadoaka is very flat yet surrounded by hills that shield the village from being seen by travellers on the main routes between Monombo and Morombe. It is claimed that historically when visitors asked where the village was located the reply was that it could be found in the depression (lavaka) between the hills. The question 'Lavaka aiza' with the answer 'lavaka loaka' provided the name for the village 'Andavadoaka'. It is thought that around 1910-1920 approximately 100 Vezo settlers from the Manofohy, Kimija and Omalagny clans established Andavdoaka.

1.2.2 Ethnicity

Anthropologists and ethnographers now accept that today's eighteen ethnic groups in Madagascar are the descendants of several waves of immigrants who arrived in the 5th century, predominantly from the Indonesian and Malaysian islands and African mainland. Each ethnic group inhabits a particular geographical region, for the Vezo this is the southern and western coast of Madagascar - an area extending from Morondava in the north to Itampolo in the south. The Vezo are generally described as having evident genetic similarities to ethnic groups from mainland Africa, and this population is regarded as an ethnic group by the Vezo themselves, as well as by neighbouring peoples (Koechlin 1975; Marikandia 2001). The Vezo use and depend on the sea for food and transport, as such they are rarely found further than an hour's walk from the coast.

Koechlin (1975) describes the Vezo as semi-nomadic marine people and predators of the coral reef, of the mangrove swamps and of the forest adjacent to the coast. Grandidier describes them as marine people, devoted to fishing, who spend a lot of time at sea and live along the coast (1971, cited in Astuti, 1995a and 1995b). Through discussions with villagers (Linnekar, 2004), it can be ascertained that Vezo identity is not gained through the simple act of being born, or by descent, or by being inherited from the past. It is an identity that is created in the present, in context, through the act of doing. In order to be Vezo a person must act in the present and it is only from the present that the Vezo identity can be gained.

The term "Vezo" indicates proficiency at fishing and sailing, and is used to indicate admiration in someone's fishing or seafaring skills (Astuti, 1995a; Iida, 2005). All these things reflect the heavy dependence of the Vezo on fishing for their livelihood

1.2.3 Religion

Traditional beliefs in Madagascar have led to a form of ancestor worship where the dead are commonly consulted, particularly in times of hardship, and must be appeased in times of illness, misfortune, and prior to the use of a variety of natural resources (see for example Astuti, 2002). Other major religions in Madagascar include Christianity and Islam, with Christianity being the more widely practiced.

The first Christian group to settle in Andavadoaka arrived soon after the establishment of the village. In 1910-1920, the first Christian mission, the Norwegian Protestant Lutheran evangelists, arrived in the village. The Pastor Philibert came from Anbotibe and was the first religious teacher of protestant laws for the Vezo of this region who were willing to set aside their traditional beliefs (pers com, village historian, 2005).

In 1930 the Protestant mission ended. There were several contributing factors to this, the most significant of which is thought to have been the growth of a separate catholic mission, which attracted a growing congregation, in part by providing gifts and donations to the village such as clothes and materials. In addition, the Catholic Mission, unlike the protestant mission, did not require the Vezo to cease their traditional beliefs and ceremonies. From 1940 onwards the catholic community grew in significance. The catholic mission church had been built from *vonjo*, a local reed, and wood until approximately 10 years ago when the existing Eglise Sainte Famille was constructed in its current form.

Currently, approximately 50% of the village consider themselves Christian, the majority of whom is Roman Catholic. The presence of the Catholic Mission exerts a strong influence over the community through its religious teaching and worship as well as through the education and health services provided by Mission staff. However, during most major ceremonies and occasions in the village such as important celebrations and deaths, community elders will adhere to traditional belief systems by consulting the ancestors (*razana*), rather than adopting Christian conventions.

1.3 Local governance and institutions

1.3.1 Administrative Structure

In addition to the main village, Andavadoaka also comprises, within its 'cartier', four nearby hamlets - Antsatsamoroy, Amdambatihy, Nosy Hao and Nosy Ve. As such, Andavadoaka is the largest of 12 villages whose cartiers encompass a total of 27 hamlets in the commune of Befandefa. This report focuses on the village of

Andavadoaka whose population is 1200 according to estimates by the village president (pers. com. Samba Roger). Andavadoaka is dependent on nearby Morombe, the prefecture or district capital located some 50km north of the village, for a variety of services including the police and gendarmerie. Morombe, in turn is within the southern Madagascar province of Toliara, whose regional capital is the city of Toliara, located some 200km south of Andavadoaka.

Convention dictates that the village of Andavadoaka appoints a President who is usually already considered a village elder, or *nahoda*. This appointment is largely decided by the *fokonoly*, a council of village elders, although in some cases the whole village, or *fokotany*, may be involved. The village President has many roles that include land allocation, conflict resolution and mediation, as well as representing the interests of the village at the commune and district level. The President does not make all decisions unilaterally, instead he holds meetings with a vice president and council of elders for many decisions.

1.3.2 *Formal and informal community institutions*

The Catholic Mission and its church L'Eglise Sainte Famille, play an important role in the village. However, the relationship between the village and the mission has been difficult, even acrimonious, on many occasions. Recent problems have mainly concerned the Catholic Mission's primary and secondary schools and have been in relation to teacher salaries and payment of school fees. There has also been discord concerning the management of the mission's infirmary, which run by the mission's nuns who are responsible for the distribution of medication. Conversely, the church is effective in bringing together the catholic community of the village on Sundays and religious festivals. In addition, its choir provides young people with one of the few structured leisure activities available. The village's protestant church has a smaller congregation and plays a much less active role in the community.

Seecaline, a public health agency operating health initiatives in Andavadoaka, runs a wide range of programmes, many of which are for maternal and infant welfare but also involve sanitation.

1.3.3 Governance of coastal activities

Madagascar is a signatory to the United Nations Convention on the Law of the Sea (UNCLOS, 1982) and as such recognises the 200 mile Exclusive Economic Zone and has a territorial sea of 12 nautical miles. There is no formalised allocation of access rights but fishing communities have traditional fishing grounds determined by proximity to the village and ease of access. The Malagasy government currently grants access to foreign vessels for shrimp trawlers, and pelagic long line fishing. There are several marine reserves and managed marine and coastal areas elsewhere in Madagascar, which include the Masoala Reserve in the Bay d'Antongil in NE Madagascar, and Nosy Ve near Anakao south of Toliara. In Andavadoaka, a seasonal closure for octopus fishing has been carried out for two consecutive years and there are plans to develop a rotational closure system to assist in the management of the octopus fishery.

1.4 Infrastructure

1.4.1 Timeline of infrastructure development in Andavadoaka

1930 Daya, the father of Bano (of Indian origin), and Bomba (Vezo) build the first grocery/general store, or 'Epi-bar'. This family of mixed Indian/Malagasy heritage is still present in the south of the village adjacent to the beach.

1950 Construction of the village hospital, shortly followed by the arrival of the first nurses. Construction of local administrative office as an annexe to the office of the Mayor of the commune.

1960s Private Catholic Mission primary school introduced through the private funds of Catholic Mission priest Pere Kissling.

1981 Construction of the Coco Beach Hotel by Hedra (of Indian origin, the father of the current owner of the hotel, Ilias).

1981 Construction of concrete/cement wells funded by a local development agency FID.

1995 Construction of the current building of the Catholic Mission church, Eglise Sainte Famille

2000 Andavadoaka receives money to build the first public school 'Ecole Public Primaire' (EPP) from FID - a local development agency based in Toliara. Until then only Befandefa, the central village in the commune of which Andavadoaka is a part, had a public school. Befandefa used to have a public secondary school (CEG) but the creation of the Catholic Mission's secondary school, also in 2000, prompted most students in the commune to travel to Andavadoaka for secondary education. The Befandefa school no longer operates, consequently children from the Befandefa commune not studying privately in the Andavadoaka mission school commonly leave the commune to study further afield, usually in Morombe or Toliara.

1.4.2 Physical infrastructure

There are no paved roads leading to Andavadoaka. Two cleared unmetalled tracks lead to Morombe to the north and the coastal road to neighbouring Ampasilava and eventually Toliara in the south, however their condition is extremely poor. There is no formal public transport network. Consequently, villagers are generally only able to travel by sea, usually in outrigger priogue canoes powered by sail and paddle, or the infrequent traditional cargo sail ships, *boutres*, which trade with coastal villages.

By road, the few transport options available include occasional delivery or fisheries collection vehicles running between Andavadoaka and Morombe, a 4 x 4 vehicle available for hire locally, and the supply vehicles of the Catholic Mission and Protestant Church. None of these options run at regular intervals, or can be relied upon for passenger transport to or from the village. Consequently, villagers will commonly make the journey to the district capital Morombe on foot or by pirogue.

Once in Morombe, there is a regular (usually daily) taxi-brousse service travelling on the inland Route National linking Morombe and Toliara, with typical journey times taking up to 15 hours. During the rainy season (December-March) vehicular access to

the village can be extremely difficult, and routes are often impassable because of surface water and poor conditions. Taxi brousse journey times between Morombe and Toliara during the rainy season commonly exceed three days.

An alternative and more direct route to Toliara, avoiding Morombe and the inland Route National, is the coastal road linking Vezo villages between Andavadoaka, the Baie des Assassins and Manombo. South of the Manombo river this road runs inland and joins the Route National, skirting the villages of Mangily and Ifaty alongside the Baie de Ranobe, before crossing the Firinena river north of Toliara. Although shorter and more direct, this route is only passable to strong 4 x 4 vehicles, and consequently is generally not a viable option to villagers. After heavy rains this route is impassable to all vehicles at the Manombo river, and vehicles must wait for waters to subside before attempting the crossing.

1.4.3 Communication

There is no access to telephone or e-mail in the village. There are two BLU longwave radios which allow communication within Madagascar provided by the Coco Beach Hotel and the Catholic Mission. There is no postal service.

1.4.4 Power supply

There is no public electricity provision. All electricity comes from privately owned generators run on either diesel or gasoline. A few wealthy homes have gas for cooking but most cooking takes place on fuel wood and occasionally with charcoal. For lighting, most families use candles, although some use fuel lamps.

1.4.5 Education services

In Madagascar primary education is compulsory and usually begins at age 6 years and continues until 10-12 years. Primary schools are still new to many communities and few villages have secondary schools. In Andavadaoaka, the Catholic Mission, through financial support of the priest Pere Kissling, introduced French-language primary schools to the commune. The schools began during the 1960s and the public school was established in 2000. The Catholic Mission also built a secondary school in 2000.

1.4.6 Health services

The Catholic Mission operates a dispensary run by its nuns. There is also a medical clinic run through government funding with very limited supplies. Patients must pay for medicines privately. The nearest hospital is in Morombe, however its facilities are very limited, therefore many cases are referred to the hospital in Toliara. Seecaline runs a village maternal and childcare health programme and there is regular inoculation programmes operated in the village. In October 2005 a village-wide polio inoculation programme took place.

1.4.7 Sanitation

The village has no solid waste management system. Currently domestic animals, including pigs, goats and zebu, eat most organic waste, and other waste is burnt on the outskirts of the village. The medical clinic uses a burn pit for disposal of its used materials, however this is not lined and contains hazardous medical waste.

There is no sewage system and there are only a few septic pits, none of which are maintained or emptied. Most villagers use the beach or scrub forest for personal waste.

1.4.8 Water supply

Fresh water in Andavadoaka is provided by a shallow aquifer which becomes salty towards the end of the dry season. There are also five wells in the village, one of which has a pump built by Toliara's development agency.

2.0 Census Methodology

2.1 Aim

The aim of this community census was to provide information on age structure, migration, and gender within Andavadoaka. The initial census provides a baseline to enable future monitoring of growth and change in the demographic, social and economic characteristics of the population. These data provide important socioeconomic indicators against which the impacts of future conservation and development projects in the area can be assessed.

2.2 Method

A census of all households in the village of Andavadoaka was undertaken. Questions covered age, gender, occupation, village of origin and year of arrival in the village. During data collection, a Malagasy social scientist interviewed the head of each household and any other family members present. The census began in March 2004 and ended in April 2005, and included 170 households. Table 1 below shows a sample of the data collection instrument. The main difficulties experienced during data collection relate to general village characteristics such as seasonal migration to distant fishing grounds to fish for valuable commercial species such as shark and lobster (see for example Iida, 2005)

Question	Sample Response
Household Reference Number	1
Gender of head of family	M or F
Date of arrival in Andavadoaka	2004
Gender	M or F
Year of Birth	1970
Place of Origin	Morombe
Number of children	3
Primary Occupation	Fisherman
Secondary Occupation	None
Tertiary Occupation	None

Table 1 – example entry from socioeconomic questionnaire used in census.

3.0 Results: social structure

3.1 Village Demographics

The census covered 1144 individuals, of whom 52% were women, distributed in 174 households. This report represents the demographic status accurate to April 2005. The lack of registers of births and deaths and the lack of data on migration limit the ability to state important demographic indicators of birth rate, death rate, population growth rate, and migration rate. A socioeconomic study carried out for the Plan Communal de Development (PCD) for the commune of Befandefa, a document that the National government requires each commune to produce, contains estimates for some of these indicators. However, the PCD has limited accuracy and precision due to the low accuracy of the methods used. Other potential sources of demographic data, the Catholic Mission and the Seecaline health programme do not monitor these data in the village. The Mayor's office of the Commune of Befandefa does not currently have the capacity to collect demographic data. Blue Ventures is trying to establish this as a matter of urgency but has yet to formalise a viable mechanism to ensure that communities can accurately record such information.

3.1.1 Age Structure

As with many developing countries Andavadoaka's population is pyramidal (see Figure 6), with over half (53.6%) the village consisting of children 15 or under. The national population of 18 million has a similar age distribution to that of Andavadoaka. Nationally, 44.7% of the population are under 15 (UNDP Human Development Reprt, 2003), although for Andavadoaka this is higher at 52.5%. Madagascar's working population is 52% (15-64 years old) but for Andavadoaka it is 46%. 1.5% of Andavadoaka's population are over 65 but nationally this figure is 3%. The consequence of this is that 46% of the population support economically the remaining 54%. This places a large economic burden on the working population.

Age Category	*National estimates	Andavadoaka
0-14 years	45%	52.5%(17% under 5)
15-64 years (working age in Madagscar)	52%	46%
65 years and over	3%	1.5%

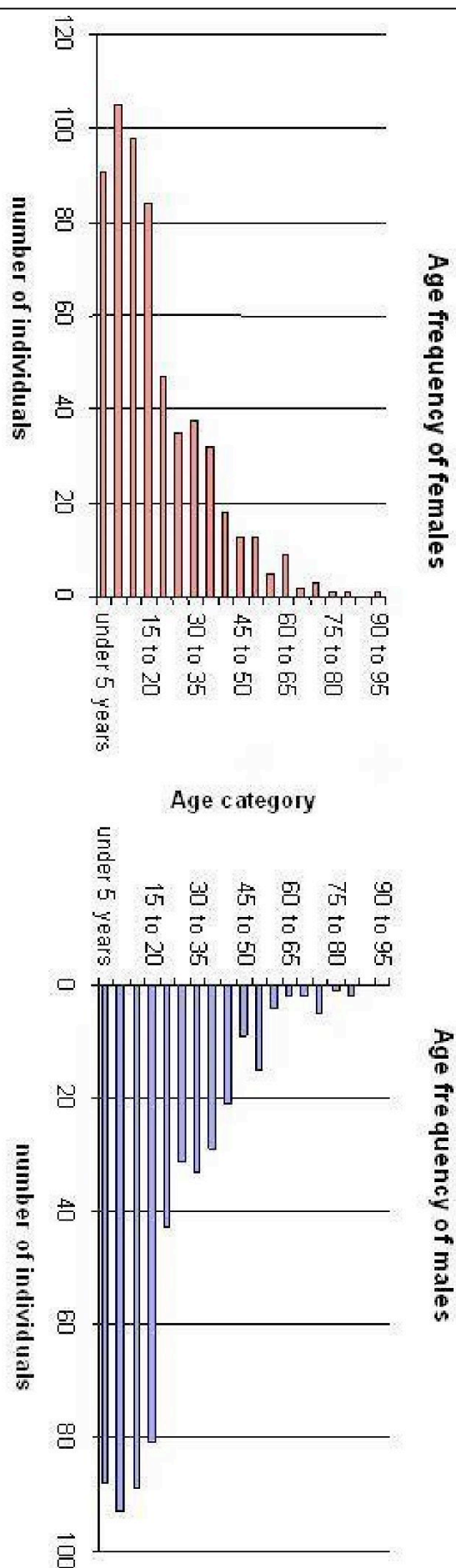
Table 2 - Age categories for Andavadoaka's population (source - UNDP Human Development Report, 2003)

Figure 6: Proportion of residents in each age category by gender

3.1.2 Population Growth

Research has begun to record deaths in the village however this data has not yet been collected for a full 12 month period and it remains unclear to what extent infant deaths can be recorded due to cultural sensitivity and the complexity of people's village of origin.

Andavadoaka's Vezo women often leave their marital home to give birth in their own village of birth or in the home of a female family member. Women generally remain secluded from their husbands for varying periods of up to several months, depending on the traditions and beliefs of the maternal family.



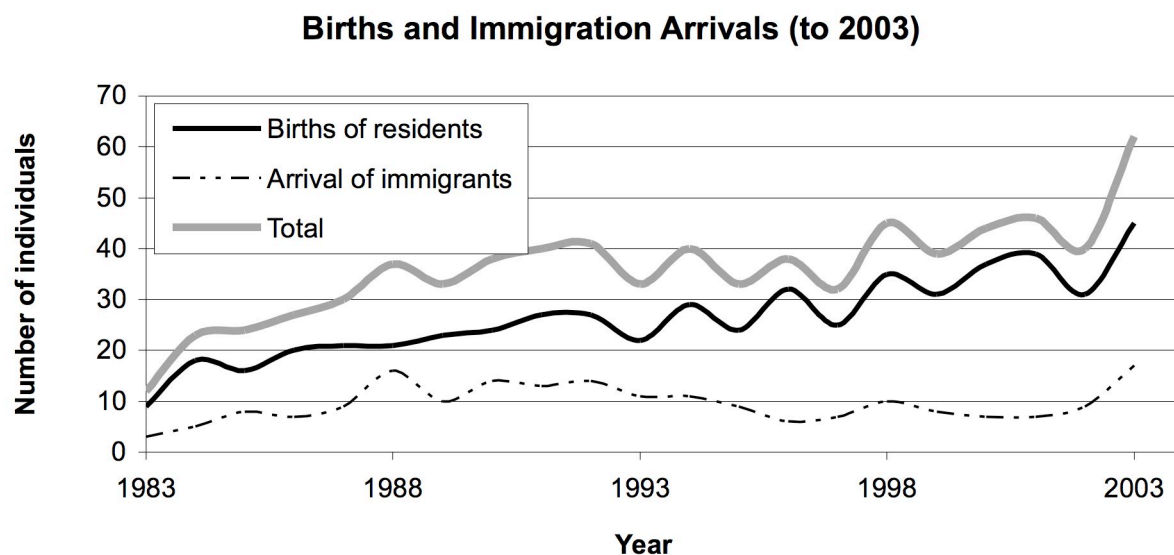


Figure 7 - Population input over the last 20 years up to 2003.

3.1.3 Migration and origin

70% of Andavadoaka's population was born in the village, 9% in Morombe, 2% in Toliara, and most of the remainder in other villages in the commune. Table 3 shows the principal sources of migrants. The five most important places of origin (after Andavadoaka itself) are all located in Southwest Madagascar, areas inhabited by the Vezo. Of the top 10 most important places of origin after Andavadoaka only Fianarantsoa is outside the area inhabited by the Vezo. Fianarantsoa, the capital of the Betsileo tribe, is an important market for Vezo dried and salted fish. Betsileo fish traders come to Andavadoaka to buy salted fish and have done this for many decades. Interviews with elders have highlighted the importance of inland trade for salted fish going back generations during times when barter for agricultural produce from inland peoples such as the Betsileo has always been economically important.

Unfortunately, there are currently no data on emigration from the village, however informal discussions and interviews explain that there is a pattern of seasonal migration to other fishing grounds, and villagers regularly move elsewhere due to marriage, educational needs, and in search of employment. Seasonal migration includes fishing to the nearby barrier reef island of Nosy Hao and to uninhabited areas in the north towards Morondava. The length of stay and time of migration are dictated by fish reproduction cycles and weather patterns. Historical trends in seasonal migration of fishers from the neighbouring village of Ampasilava are well documented by Iida (2005).

Provenance (village of origin)	Men	Women	Total	% total	Note
Andavadoaka	401	410	811	70.89%	(non immigrant population)
Morombe	43	55	98	8.57%	c. 48km north, district capital and important market town
Ambalorao	15	16	31	2.71%	In Commune of Befandefa
Toliara	11	14	25	2.19%	c. 200km south, regional capital and largest city in southern Madagascar
Antsepoke	14	9	23	2.01%	In Commune of Befandefa
Lamboara	12	9	21	1.84%	In Commune of Befandefa
Ambahikily	7	9	16	1.40%	In Commune of Befandefa
Ankilimalinike	3	12	15	1.31%	In Commune of Befandefa
Befandefa	2	8	10	0.87%	In Commune of Befandefa
Befandriana sud	5	4	9	0.79%	In Commune of Befandefa
Fianarantsoa	2	7	9	0.79%	Large city 500km north east

Table 3 - Ranking of the origin of Andavadoaka's inhabitants

3.2 Occupations

As explained in section 1 the local artisanal coral reef fishery is an integral part of Vezo identity, food security and household income. Consequently, the majority of occupations in Andavadoaka are related to the fishing industry. For the purposes of this report occupations are defined as activities on which an individual's time is spent. Occupations can be broken down into income generating activities, subsistence activities and other activities. The latter category includes housework, education and retirement. In Andavadoaka, people may have several occupations. Consequently, in the context of this report occupations have been broken down into primary, secondary and tertiary activities based on time spent at these occupations. This order is usually correlated to relative economic importance of activities, however this is not always the case. For example, a village housewife may spend most of her time looking after her household thus having fishing as a secondary occupation, despite it being her primary economic activity. For this reason results of both occupation and economic activities are presented. Both are important to understanding current social and economic dynamics within households, the village and the region.

42% of Andavadoaka's population are involved in income generating activities, of these workers 8% fall outside the 15-64 national working age range, as presented in national economic statistics. The average age of the income generators is 31 with a range of 10 to 81. The fact that women work as non-income earning housewives and that there are secondary school students in the village accounts for the reason why the working age population, 45%, is larger than the number of people actually earning income. Of the population earning income 52% are men, representing 45% of the male population or 48% of the working age population.

3.2.1 Income-generating activities

Figure 8 shows a breakdown of income generating activities in Andavadoaka. Fishing accounts for 71% of income-generating activities in the village. As people have multiple occupations Table 4 shows that that less than half of the village generates income. This places a heavy economic burden on the working population. The average age of those earning income is 31. The average age for those not earning income is 7 years, a low value because a large proportion of this category are infants and schoolchildren

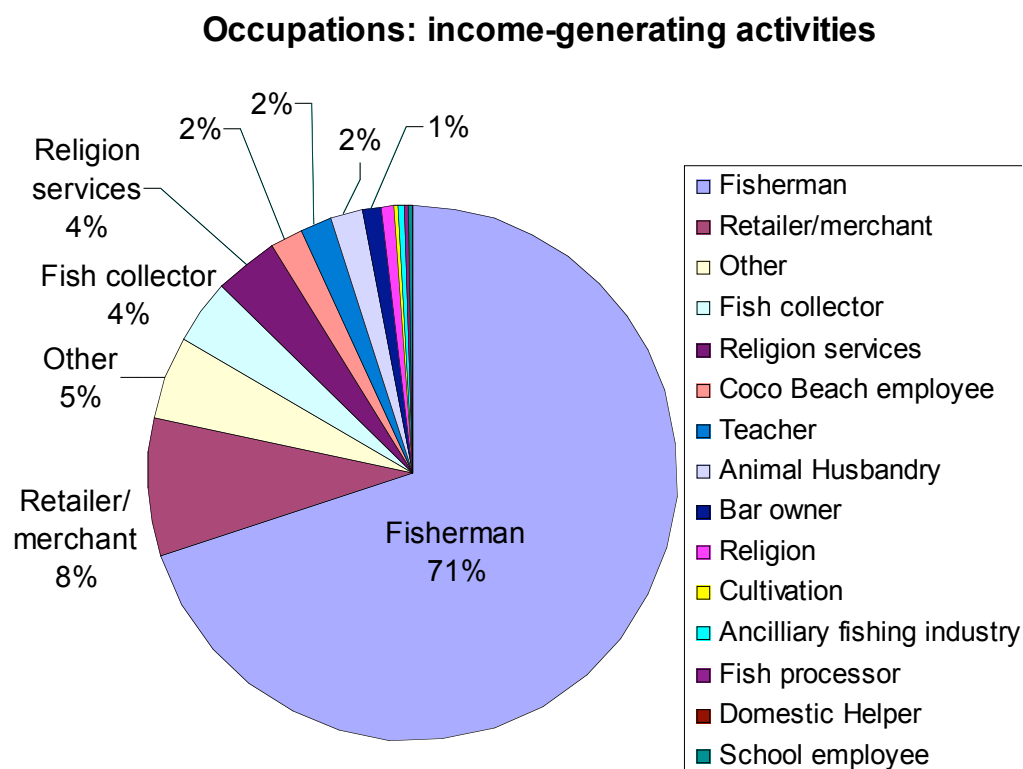


Figure 8 - Income-generating activities in Andavadoaka

Occupations	Primary occupation only		Total	% of population
	Male (%)	Female (%)	1st, 2nd & 3rd occupations	
Total for Income-generation			511	44.7%
Fisherman	35%	9%	357	31.2%
Retailer/merchant		2%	43	3.8%
Other	2%	1%	26	2.3%
Fish collector	1%	<1%	20	1.7%
Religion services	3%	1%	20	1.7%
Coco Beach employee	1%	1%	10	0.9%
Teacher	1%	1%	10	0.9%
Animal Husbandry			9	0.8%
Bar owner	1%	<1%	6	0.5%
Religion	<1%	1%	5	0.4%
Cultivation			1	0.1%
Ancilliary fishing industry	<1%			0.1%
Fish processor			1	0.1%
Domestic Helper			1	0.1%
School employee		<1%	1	0.1%

Table 4 - Income-generating activities in Andavadoaka in order of importance.

For the purposes of this report, the term primary occupation refers to the principal source of income or the major time use activity. Table 5.3 shows that fishing is the primary source of income for 35% of men but only 9% of women. In contrast, looking at secondary occupations, fishing is a secondary source of income for 2% of men but 17% women.

3.2.2 Characteristics of fishers

There are 357 fishers, or 31 % of the village, of whom 43% are women and 57% are men. The average age for male fishers is 28.9 years and the average age for female fishers is 29.3 years. There are fishers outside the national working age range, this represents 31 of the 202 male fishers and 9 of the 155 female fishers. For the working age population, 69% of working age men fish and 53% of working age women fish.

Statistic	Men	Women	Total
Mean age	28.9	29.3	28.6
Median age	25	26	25
Modal age	20	20	16
Range for age	70	66	71
Maximum age	80	75	80
Minimum age	9	9	10
Count of fishermen	202	155	357
Percentage of fishing population	57%	43%	31%
Percentage of working population by gender	69%	53%	
Percentage of total gender	37%	26%	
Percentage of total population	18%	14%	

Table 5 - Characteristics of Fishers in Andavadoaka**3.2.3 Non-income generating activities**

The primary occupations for 70% of the population do not generate any income. These occupations include school attendance, housework, and retired people. School-aged children are divided into those attending and not attending school.

	Primary occupation			% of population
	Men (%)	Women (%)	Total	
Non-income generating occupations	54%	84%	828	72.4%
Student/schoolchild	33%	35%	386	33.7%
Infant	18%	18%	203	17.7%
Housework		27%	179	15.6%
Children not attending school	3%	3%	36	3.1%
Apprentice		1%	10	0.9%
Retired	<1%	1%	7	0.6%
Unknown occupation	<1%	1%	7	0.6%

Table 6 - Non-income generating activities in Andavadoaka

3.3 Education

The census provided information on children currently enrolled in school for the 2004-2005 school year. Table 7 shows the school-age population with the data for Andavadoaka's schoolchildren and students in parentheses. The data show that almost 40% of the population are of school age. Of the primary school-age children, 77% are at school. Of the secondary school-age children 57% are at school. The average age of school children is 10 years. It is important to note that parents with families in larger towns or with enough money to pay for boarding costs will send their children to these towns for education. Limited scholarships are available and children may go to Morombe, Toliara or even Antananarivo.

		No. villagers per age category	No. villagers per age category attending school	
Age Category		Count	Count	Percentage
Under 5 years	Infant	178	6	1%
5 to 11	Primary school age	271	209	18%
12 to 18	Secondary school age	279	161	14%
19 to 64	Post-school working age	398	7	1%
65 or more	Retirement	17		
Total		1044		

Table 7 - Comparison of school-age children to actual schoolchildren

4.0 Discussion

4.1 Applications of baseline socioeconomic data

The demographics of the village are similar to national averages and follow expected developing country models. The age structure is pyramidal and the importance of the artisanal fishery for generating income is similar to the reliance of developing countries on primary industries in the initial stages of development. Planned ongoing monitoring will allow Blue Ventures to identify the trends in socio-economic change.

The census results provide a baseline starting point against which to measure future change. The village will continue to experience changes due to general regional economic and social developments, however it is hoped that with this baseline data future change attributed to conservation initiatives may be identified. Continued monitoring of socioeconomic parameters in this village and surrounding communities will provide information needed to identify benefits brought to Andavadoaka benefits by current and future environmental management interventions.

4.2 Problems encountered in socioeconomic data collection

Growing local and national awareness of research and conservation initiatives being developed in Andavadoaka has brought about the initiation of increasing numbers of research programmes in the region. In recent years, large numbers of researchers have visited the village focusing on a range of subjects including fisheries, socioeconomics, marine and coastal ecology, Vezo anthropology, environmental management, and aquaculture.

Visiting researchers have included scientists, journalists, film crews, students, teachers, and members of the government and private sector, representing local and foreign academic institutions, NGOs, IGOs, government departments, and fisheries export companies. Several years of repeated meetings, interviews and surveys by a variety of individuals and research groups has caused survey and interview fatigue in Andavadoaka.

Blue Ventures has found that despite inviting community members to observe research activities and participate in meetings, many villagers now claim ignorance of research initiatives and of the results of work conducted in the area. Despite organising regular open days, meetings to explain project aims and results, regular discussions with the village president and elders, and the construction of a village noticeboard with explanations of project results, villagers now commonly seek compensation for participation in research interviews, or decline to answer questions. Researchers operating in Andavadoaka have yet to find a satisfactory solution to this problem.

In order to avoid and mitigate future survey fatigue it is critical that all socioeconomic and community-based research undertaken in the region is carried out in a participatory fashion, fully explaining research goals to the community, as well as providing regular feedback of progress and results. Furthermore, all research projects must be planned, coordinated and communicated appropriately in order to prevent unnecessary overlap or replication of studies.

If not addressed properly, these problems threaten to compromise village support for future community-based research initiatives, including replication of this census study.

5.0 References

Astuti, R. (1995a) People of the sea: identity and descent among the Vezo of Madagascar. Cambridge studies in social and cultural anthropology. Cambridge University Press.

Astuti, R. (1995b) The Vezo are not a kind of people'. Identity, difference and 'ethnicity' among a fishing people of western Madagascar. London School of Economics research online.

Cooke, A. (2003) Marine and coastal ecosystems of Madagascar. In: Goodman S.M. & Benstead, J.P. (eds) The Natural History of Madagascar, University Of Chicago Press 1728 pages.

FID (2003) Plan communal de développement : Befandefa, p. 150. Commune de Befandefa, Madagascar.

Grandidier, A. (1971) Souvenir de Voyages (1865-1870). Association malgache d'Archéologie, Antananarivo.

Iida, T. (2005) The Past and Present of the Coral Reef Fishing Economy in Madagascar: Implications for Self-Determination in Resource Use. SENRI ETHNOLOGICAL STUDIES **67**: 237-258 Indigenous Use and Management of Marine Resources. Edited by Nobuhiro Kishigami and James M. Savelle

Koechlin, B. (1975) Les Vezo du sud-ouest de Madagascar. Contribution a l'étude de l'eco-système de semi-nomades marins. Cahiers de l'Homme, XV. Paris: Mouton.

Linnecar, M. (2004) A threat to traditional society? A case study of the threat of tourism to the traditional fishery of Andavadoaka, South West Madagascar. Blue Ventures Conservation.

UNDP - Human Development Report 2005 (<http://hdr.undp.org/reports/global/2005/>)