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on population, environment,
and security

To Live With the Sea: Reproductive Health Care and Marine Conservation in Madagascar

By **Vik Mohan, Rebecca Hill, and
Alasdair Harris**

Christine does not know how old she is. She has 16 children and lives on a remote island off the southwestern coast of Madagascar. She and her children, like other members of the Vezo ethnic group, a semi-nomadic seafaring people, depend entirely on the ocean for their survival. Her husband, a fisherman, struggles to catch enough to feed his family, catching fewer and fewer fish even as he fishes for longer and longer periods.

In this isolated area, most girls have their first child before the age of 18, and families with 10 children or more are commonplace, due to a lack of reproductive health education and care. But since our marine conservation NGO,

Blue Ventures, launched a family planning program in 2007, couples and women like Christine are able to make their own reproductive health choices. Blue Ventures' integrated approach, which combines reproductive health care and education with conservation and alternative livelihood programs, offers these communities—and the marine environment on which they depend—the best possible chances of survival.



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Madagascar, Biodiversity Under Threat

Madagascar, the fourth largest island in the world, is among the “hottest of the hot” global biodiversity hotspots, home to 5 percent of global biodiversity and exceptional concentrations of endemic species, including 10,000 plant species, 316 reptile species, 109 bird species, and 71 primate species (Kaufmann, 2006). This unique island of biodiversity is gravely threatened by a devastating loss of habitat, as only 10 percent of the country’s original vegetation remains (Myers et al., 2000).

One of the key drivers of habitat loss and degradation around the world is the rapid expansion of human settlements and activity due to population growth and development (Gehrt, 1996; McKee et al., 2004; Cincotta & Gorenflo, 2011). Madagascar, a Least Developed Country, has one of the world’s fastest growing populations, with an average fertility rate of almost 5 births per woman and nearly half of the country’s population currently under 15 years of age (INSTAT & ICF Macro, 2010). Only 29 percent of married women have access to modern contraception, despite the exis-

tence (until recently) of a major government drive to promote universal access to family planning, and widespread acknowledgement of the effect of human demographic trends on the environment and economic development.

Southwestern Madagascar’s Coral Reefs

Southern Madagascar is home to one of the largest coral reef systems in the Indian Ocean, stretching for almost 500 km along the remote southwest coast, which fringes the arid spiny forest found further inland. Although Madagascar is perhaps most famous for its terrestrial biodiversity, the coral reefs host a great variety of aquatic species, and the marine environment supports mangrove forests, seagrass meadows, and vast offshore coral islands.

The entire Vezo ethnic group, who live along this coast, depend upon the ocean and its resources for their personal consumption, trade, and transportation. One species dominates the local economy: octopus. Ten years ago, fishing for octopus was a largely subsistence activity, with additional catch dried for sale to local markets. However, the arrival of export markets in 2002 brought about a rapid shift in local fisheries, rapidly increasing the price paid for octopus, which could for the first time be exported on ice by a network of regional collectors. This new market has resulted in a dramatic surge in fishing throughout the region, engendering widespread concern about the sustainability of the region’s only cash crop.

Due to its remoteness and prior lack of health services, reliable health statistics for the region are sparse. Before 2007, couples had little or no access to contraceptive services or to sexual and reproductive health education; Blue Ventures staff found the availability of condoms, awareness of sexual and reproductive health, and use of contraception very low. According to Blue Ventures data, this lack of knowledge and services spurred higher population growth in the region than in the country as a whole. This demographic trend poses a severe threat to the sustainability of the area’s extensive coral reefs and other marine habitats, and threatens to undermine ongoing conservation efforts.

Blue Ventures’ clinical technician monitors a patient’s heart rate (Photo: ©Matthew Erdman).





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Blue Ventures' Matthew Erdman spoke at the Woodrow Wilson Center in March 2011 about integrating population, health, and environment (PHE) programs in Madagascar, along with Lisa Gaylord of Wildlife Conservation Society and Kristen Patterson of The Nature Conservancy. Video, summary, and powerpoint: http://www.wilsoncenter.org/index.cfm?topic_id=1413&fuseaction=topics.event_summary&event_id=679789

Pirogues in the village of Andavadoaka
(Photo: ©Garth Cripps)

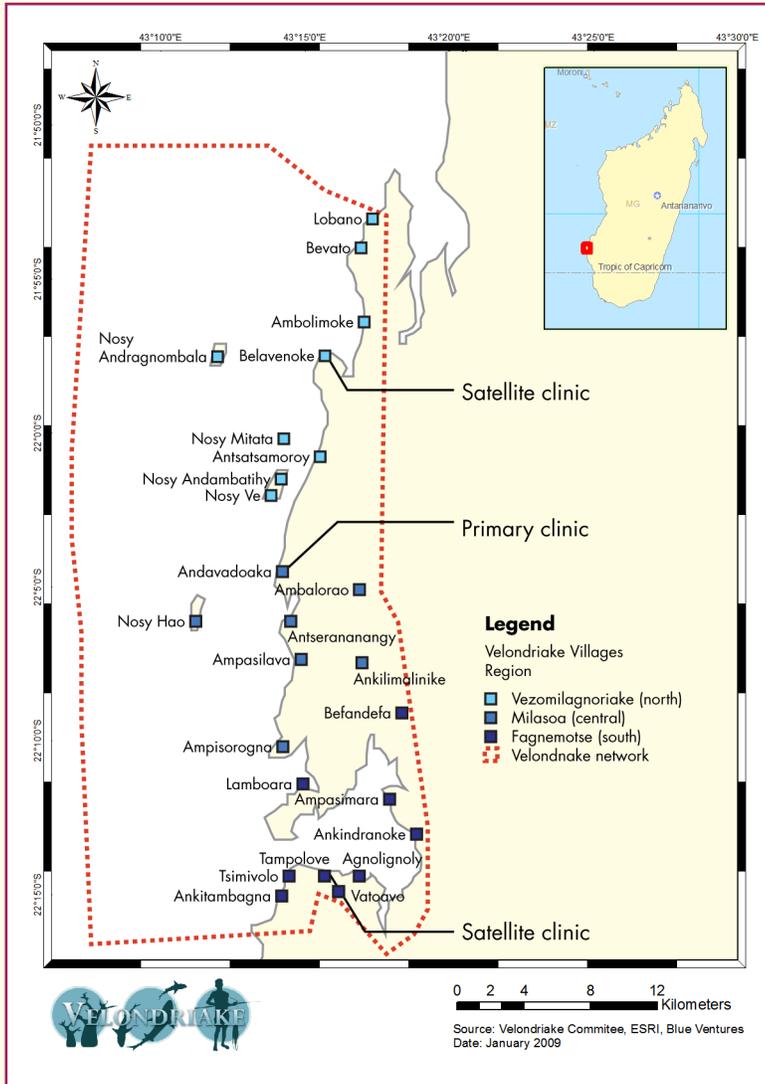
Blue Ventures' online video library includes an overview of its integrated approach to family planning and conservation, narrated by author Rebecca Hill: <http://blueventures.org/gallery/videos.html>

"Paradise Lost? Lessons From 25 Years of USAID Environment Programs in Madagascar," a 2010 report by Karen Freudenberger, reviews the country's progress and challenges in environmental policy, protected areas, and sustainable economic growth, but finds that "time is running out for the prized biodiversity Madagascar holds in its charge": http://www.usaid.gov/locations/sub-saharan_africa/countries/madagascar/paradise_lost_25years_env_programs.pdf

"An Assessment of USAID's Population and Environment Projects and Programming Options," a 2007 report by John Pielemeier, Lori Hunter, and Robert Layng, evaluates the benefits and challenges of integrated PHE projects in Madagascar and the Philippines: http://pdf.usaid.gov/pdf_docs/PDA432.pdf

Learn more about volunteering for a Blue Ventures expedition to Madagascar:
<http://blueventures.org/expeditions/madagascar-expeditions.html>





Map of the Velondriake region, indicating primary and satellite clinic sites

Learning to Live With the Sea

Blue Ventures works with coastal communities to protect the threatened marine environments upon which they depend and promote the sustainable use of vulnerable marine and coastal resources. Our efforts led to the development of Velondriake, the largest locally managed marine area in the Indian Ocean. Meaning literally “to live with the sea,” Velondriake encompasses 24 villages along over 40 km of coastline, with a population of more than 8,000 Vezo people.

This participatory marine management area restricts destructive fishing practices and includes

both temporary and permanent reserves (see box on page 7). Local communities take responsibility for overall supervision and ensuring compliance. Community development initiatives provide socially and economically viable alternatives to fishing, including ecotourism and community-based aquaculture farms, where seaweed and sea cucumbers are grown for international export.

Safidy: Freedom to Choose

In 2007, in response to requests from its partner communities, Blue Ventures launched a sexual and reproductive health service to meet the region’s huge unmet need, beginning in the village of Andavadoaka in the geographical center of Velondriake.

The region’s first family planning clinic offers sexual and reproductive health education and counselling, two types of oral contraceptive pills, a three-month contraceptive injection, and condoms. By 2009, the program expanded to encompass all of the 24 villages within the Velondriake region, enabled by a rolling program of satellite clinics and the establishment of two more fixed-site clinics to the north and south of Andavadoaka. Through a close collaboration with Marie Stopes Madagascar, Blue Ventures began offering long-acting and permanent methods of contraception in September 2009, while a recently launched program, in partnership with Population Services International, trains community members to dispense contraceptive methods and deliver basic sexual health messages through a community-based distribution program.

From the outset, Blue Ventures used innovative and entertaining approaches to deliver important messages about sexual and reproductive health, most notably community theater and sporting events. For example, a recent football tournament—dubbed “FISAbol”—provided an excellent opportunity to draw crowds, particularly men, to learn about sexual health. Tailoring interventions to specific gender and demographic groups within the community, and using a broad range of methods, such as focus groups, personal testimonies, and peer education, have all been key to our success.

Today, the program, dubbed “Safidy” (“freedom to choose”), reaches all of the communities within the Velondriake region. It continues to employ fun and novel outreach approaches, ranging from promotional calendars and leaflets to branded T-shirts and beauty pageants—and even a sailboat that travels to satellite clinics with our mascot “Captain Kapoty” (Captain Condom) emblazoned on its sail.

Family Planning Success

On opening day at the first family planning clinic in Andavadoaka, 60 women sought contraception—a remarkable turnout from a village of just 1,200 people, especially given the lack of advertising. A similar story unfolded everywhere a new clinic opened, demonstrating the overwhelming demand for sexual and reproductive health services in the region. Client consultations have increased from a first year total of 226 to 1,216 just two years later. This rapid uptake and replication, and the pace at which the services have been integrated into our conservation work, is due to the strong existing relationships between the staff and members of the coastal communities, as well as Blue Ventures’ existing capacity and infrastructure.

The community education program has helped raise awareness about issues relating to sexual and reproductive health, including the benefits of using contraception and the risks of HIV/AIDS, with a corresponding change in behavior. In an unpublished 2009 community survey conducted by Blue Ventures, 85.5 percent of those surveyed in Andavadoaka correctly identified condom use as an HIV/AIDS prevention method, compared to only 59.2 percent of a similar population that had not been exposed to our community education program. Men from Andavadoaka also reported using condoms significantly more often than men from the outlying villages.

The last three years have witnessed a dramatic increase in the use of contraception in Velondriake. According to our survey, the proportion of women of reproductive age in Andavadoaka using some form of contraception rose from 9.4 percent to 36.3 percent from 2007–2009. As a result of this remarkable increase in contraception use, the birth

ABOUT THE AUTHORS

Dr. Vik Mohan is a practicing doctor with an interest in reproductive health and a passion for marine conservation. On his first visit to Madagascar as Blue Ventures’ medical officer in 2005, he was impressed by the excellent marine conservation work but struck by the total lack of access to health care, and reproductive health care in particular. Since opening the region’s first family planning clinic in 2007, he has overseen the development of a comprehensive sexual and reproductive health care and health education program for the Velondriake region.

Rebecca Hill is currently attending the London School of Hygiene and Tropical Medicine and serves as Blue Ventures’ public health advisor. Having initiated the first educational program in the Velondriake region, she became project manager of Blue Ventures’ PHE program after winning the Vodafone World of Difference Programme in January 2010.

Alasdair Harris established Blue Ventures’ first coral reef initiative in the region in 2003. He is a member of the World Commission on Protected Areas, recipient of the 2010 IUCN World Conservation Union’s Young Conservationist Award, winner of the 2009 Condé Nast Environment Award, an Ashoka Fellow, and an ambassador of Australia’s penguins.

The authors would like to thank the project staff, all volunteers, and fundraisers, with special thanks to Maggie Flanagan and Tracy Ware.

“Marine resources are running out. If we keep giving birth so frequently, there won’t be any food left for us and we’ll suffer. Using family planning allows us to limit our births so that doesn’t happen.”

—Maso, 32

rate in Andavadoaka is much lower than the rest of the Velondriake region, with 127 live births per 1,000 females aged 15-49, compared with 268 for the region as a whole. Preliminary analysis of unpublished 2010 data suggests that the proportion of women using contraception is now even higher, and has reached these high levels throughout the Velondriake region.

Benefits of an Integrated Approach

By integrating family planning into more conventional biodiversity conservation activities, Blue Ventures is able to enjoy economies of scale, share resources and opportunities, and create synergies that we believe will enable more effective achievement of both health and conservation outcomes, as reported by similar projects (Castro & D’Agnes, 2008; D’Agnes et al., 2010). We have benefitted from the guidance of Marie Stopes and Population Services International in developing our family planning services, and will continue to build on this strong foundation.

These synergies also include reaching wider audiences and securing greater community support for both conservation and health. For example, engaging men in family planning and women in natural resource management is challenging

for many stand-alone projects. However, by combining sexual and reproductive health and environmental education, Blue Ventures has garnered greater acceptance and engagement by both men and women, as have other integrated projects (Pielemeier, 2007; Pielemeier et al., 2007). In addition, we leveraged the strong relationships and trust developed through our existing conservation work to ease the way for rolling out the reproductive health program.

Through the sharing of resources and opportunities between our projects and partners, conservationists and communities alike are able to develop a clearer understanding of the linkages between reproductive health, population growth, resources use, food security, and marine conservation. Integrated population, health, and environment (PHE) messages help communities recognize the important links between these different components, enabling them to base decisions on an understanding of how population growth affects their livelihoods or how their environment impacts their health. By having a greater choice about the size and timing of their families, we hope individuals will develop a greater sense of control and empowerment about their use of natural resources, as well.

Challenges and Next Steps

The geographical isolation of Velondriake, with poor communication systems and no public transportation, has proved the biggest challenge to implementation. There are no paved roads in the region; most of the villages and all of the offshore islands are only accessible by sailing canoe, and travel is therefore at the mercy of the winds and seas. Mobile telephone communication only reaches a handful of villages.

To help overcome the challenges of serving this isolated area, Blue Ventures is improving access to long-acting methods of contraception, which require less medical supervision than shorter-acting methods, as well as implementing a community-based distribution system. In addition, as the region’s cell phone coverage improves, we are exploring the use of mobile phones to support the community-based distributors.



OCTOPUS RESERVES: A NOVEL APPROACH

To maintain sustainable levels of the region's cash crop, in 2004 Blue Ventures suggested that octopus stocks might respond favorably to short-term closures (between 2-7 months) of specific fishing sites. The first pilot "reserve" in Andavadoaka produced a demonstrable increase in octopus size and numbers, leading neighboring communities to adopt this approach for their own reefs. The government of Madagascar used the results to create new national fisheries legislation for the species, and over the last seven years the model has been used at over 100 short-term reserves. Fisheries monitoring and stock assessments indicate clear biological, economic, and social benefits from this novel approach to community-based fisheries management.

Octopus fishers bring in their catch (Photo: ©Blue Ventures).



Photo: ©Garth Cripps

Another challenge is the communities' low level of awareness about sexual and reproductive health, and even basic biology. For example, most people in the region had never seen a condom before. Very quickly, fishermen figured out that condoms could be an excellent waterproof cover for flashlights, enabling night-fishing for squid and sea cucumbers and threatening to undermine ongoing marine conservation efforts. In response, project staff conducted demonstrations to encourage appropriate condom use.

Madagascar's 2009 military-backed coup and ongoing political unrest have also posed major challenges, disrupting transportation and supply chains, requiring personnel to leave the country, and undermining the financial security of the project. Thanks to dedicated, hardworking, and resourceful project staff and partners, both in Madagascar and beyond, Blue Ventures has managed to weather this political storm, which has engendered real resilience within the organization.

Today, Blue Ventures enjoys financial security, thanks to a grant from the United Nations

Population Fund. Initially, the project relied upon the goodwill of conservation staff and the efforts of a network of volunteers. Thanks to their generosity, the project was launched at much lower cost than comparable, stand-alone health interventions.

Blue Ventures is scaling up its successful program by expanding both the geographical area covered and the services provided. A new three-year grant from the MacArthur Foundation supports the introduction of maternal and child health services to the Velondriake region, while the U.S. Agency for International Development will provide funding to expand current services to 28 additional villages along the coast and inland into Mikea National Park. USAID is also funding Blue Ventures to bring WASH (water, sanitation, and hygiene) products and services to these communities. An additional small grant from the United Nations Population Fund will enable us to develop the capacity and expertise to scale up this work even further.

Lessons Learned and Recommendations

- **Conservation organizations are well-placed to offer family planning in remote regions, where an unmet need for this service drives the population pressures that threaten biodiversity:** Conservation organizations, by definition, often operate in remote parts of the world with limited access to health care services. Established conservation groups can utilize their existing infrastructure and links with local communities to facilitate the delivery of health services where a need has been identified.
- **Collaboration with regional government institutions and other key stakeholders can help to ensure sustainability of the program:** Velondriake's PHE program has always sought to maintain good working relations with regional government authorities and institutions. Collaborating with other key stakeholders, such as Marie Stopes Madagascar and Population Services International, has helped us build our capacity, learn from existing best practices, draw upon partners' expertise, and ensure Velondriake's sexual and reproductive health services dovetail with regional services and health care priorities.
- **Empowering both women and men is key:** Enabling women to control their own fertility is essential to women's empowerment and equality (Potts & Fotso, 2007). With this control, women can play an active role in the sustainability of their environment, while improving their health and the health of their children. Empowering men with the knowledge and means to engage in safe sexual practices, as well as helping men to see the benefits of family planning, in turn ensures continued support for our work and enhances the well-being of all (IGWG, 2006). By developing key messages that are tailored to different target groups, it is possible to empower diverse gender and demographic groups to make responsible sexual health choices.
- **More research is needed to understand and quantify the benefits of this integrated approach:** To further influence conservation and development

"My parents have nine children and therefore can't support my education. It's good that we have a family planning clinic here, so I can protect myself from early pregnancy. When I have a husband, I can choose when to have children and how many."

—Zaina, 16

policy and change the architecture of sustainable development, the widely held belief that there are real benefits to taking an integrated approach needs to be supported by rigorous evaluation of these programs. The encouraging initial research findings require corroboration from analogous PHE projects to allow best practices to be identified, shared, and communicated, in order to influence policy- and decision-makers to enable replication of this model wherever it would be of benefit (De Souza, 2009; D'Agnes et al., 2010; Clarke, 2010).

Conclusion

Within communities such as the Vezo, poverty drives environmental degradation, which is in itself a driver of poverty, reinforcing a feedback loop that locks communities in a cycle of resource degradation. This problem is exacerbated when rapidly growing populations compete for dwindling resources, as is the case in the Velondriake region. Yet our experience in this one small region of Madagascar shows that there are ways to break this cycle. This integrated PHE initiative is helping deprived communities create their own path out of poverty and towards sustainability, by offering couples control over their own fertility and equipping them with the skills to manage their coastal resources in a sustainable way.

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Young women receive condoms after participating in FISAbol, the Blue Ventures' family planning soccer tournament (Photo: ©Matthew Erdman)



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