



Reef stewardship in Belize: TIDE community researcher program



A case study developed for the



AUSTRALIA CARIBBEAN
CORAL REEF COLLABORATION



Environmental monitoring and compliance with MPA rules are among the most challenging aspects of coral reef management. Managers of the Port Honduras Marine Reserve in southern Belize have developed a program to tackle both of these issues simultaneously. By training young people from local fishing communities as community researchers, TIDE is building capacity of their monitoring team, increasing environmental stewardship among local communities and strengthening support for MPA regulations.

Background

The Port Honduras Marine Reserve is a national protected marine reserve in the Toledo district of Belize. It covers 40,470 hectares (100,000 acres) of mangrove and coastal ecosystems, and encompasses over one hundred small, mangrove-fringed cayes, benthic habitats comprising soft-bottom seagrass beds and fringing reefs.

A team of TIDE rangers carries out management and enforcement throughout the reserve, and until recently, had also been primarily responsible for monitoring in the reserve. However, the large area and limited staff resources made monitoring and effective enforcement difficult.

The challenges

Monitoring fisheries, endangered species, ecosystem health and water quality over 100,000 acres of water in the Port Honduras Marine Reserve is not without its challenges – the most obvious being logistical. Prior to 2010, monitoring was undertaken by rangers with no formal scientific training. It was difficult to find qualified personnel as few young Belizeans were pursuing careers in science, and already stretched to manage and enforce such a large area, this affected not only their efficiency, but also the quality of the data.

The other main challenge was building support for the Marine Protected Area and fisheries regulations among its stakeholders. Until the Port Honduras Marine Reserve (PHMR) was founded in

2000 and TIDE and the Fisheries Department began to enforce regulations, local fishers were unaccustomed to regulation. Fish stocks were, and still are, in a relatively healthy state, making it difficult to convince fishers that regulation was required. In particular, the ban of gill nets in the MPA was perceived as having a negative economic impact, increasing conflicts and hindering efforts to build stewardship.

What was done

Each year, for the past three years, TIDE has selected 5 young people from communities adjacent to PHMR to help its marine biologist conduct monitoring of fisheries, endangered species, ecosystem health and water quality in the reserve.

Participants received comprehensive training, including SCUBA certification and instruction in various environmental monitoring techniques. Those that displayed superior skills and stewardship qualities were then employed to conduct ongoing monitoring in PHMR as part of the TIDE research and monitoring team. Community researchers now conduct monitoring of:



- Coral reefs
- Seagrass
- Water quality, nutrient + sediment analysis
- Mangrove ecosystem productivity
- Turtle nests
- Lionfish
- Fisheries assessment (conch, lobster, sea cucumber and finfish by underwater, catch and market surveys)
- Collection and observation of fish otoliths

Through the program, the community researchers are trained in:

- SCUBA diving (PADI Open Water Diver)
- GPS use and basic GIS analysis
- Emergency first response
- Basic environmental science, including basic coral reef ecology, land-sea interconnectivity and the impact of human activities
- Scientific monitoring and assessment.

How successful was it?

The programme was extremely successful in fostering stewardship among local youth, building capacity for conservation, offering alternative livelihoods and personal development opportunities for the local community - all whilst addressing the key challenges faced by managers of the PHMR.

Zoe Walker, an independent assessor, concluded that *'the Community Researcher programme provides a good model for other organizations, with integration of community researchers into the science programme activities, and capacity-building targeted to ensure reliable data collection.'*

Fostering stewardship

The initiative instilled passion for conservation and responsibility for protection of the reef in its young participants. Community researcher Willie Caal was studying to be a primary school teacher when he joined. Within six months, he had switched to natural resource management and is excited about furthering a career in conservation.

Community researcher Alana Barillas, who was trained in 2013, felt similarly. *'It makes you appreciate the environment more. It makes you see what's really happening. [For example,] you see what is affecting the sea grass and the benefits that sea grass brings in terms of the nursery and controlling sedimentation. Knowing that makes you want to cherish it.'*

Those community researchers who are also fishers say they have improved their practices. *'I have more commitment to practicing the right things that will benefit the environment,'* said one.

The effects don't end with the community researchers – change is rippling through the wider community. Local fishers now have more confidence in the use of scientific research as a basis for MPA management. One recently commented that he believes TIDE's research results more now because his own daughter is involved in the data collection – she has seen it with her own eyes.



'I come from a fishing family,' says Willie Caal. *'My family loves to see me working in this kind of field. They ask me about the abundance of conch and lobster in the sea. I tell them... they are more abundant in the conservation zones and they are reproducing there.'*

As ambassadors for conservation and sustainable management, the community researchers communicate with resource-users about human impacts on ecosystems in a way they can understand.

Building this rapport has created a deeper understanding and greater stewardship. Fishers are starting to buy-in to the idea that resource management is something that can be done by the community, for the community.

Building capacity for conservation

The programme has increased TIDE's research and monitoring capacity in two important ways. Not only has it enabled the monitoring of more sites more often, the surveys are conducted to a higher standard than ever before.

The capacity built in the young community researchers has also benefited the conservation community at large, enabling them to assist other organisations with their own monitoring and conservation efforts. The TIDE community researchers have conducted monitoring work for Healthy Reefs for Healthy People Initiative in Belize and collaborated on projects with Blue Ventures and the University of Belize.



Employment opportunities and alternative livelihoods

Up to 10 community researchers are currently employed by TIDE on a part-time basis. As a result of the training, participants are found to be more employable, with a unique - and highly sought after - skillset to add to their resumes. This is enabling participants to find good salaried positions in the local community, for instance in the Belize Coast Guard and at a local dive resort.

"Becoming a community researcher can actually change your life. It changed me because I got more chance[s] to be in the ocean. I'm now more interested in conservation, in protecting the environment."

Willie Caal, Community Researcher

Over the coming years, it is expected that more participants will find jobs with the other local institutions such as the University of Belize, the Fisheries Department and other NGOs around Belize.

Personal development

The initial tranche of community researchers were difficult to motivate without some form of financial compensation. Now most volunteer for extra duties because they care about the work and the research results, they want to gain more experience and they enjoy being there.

The research and monitoring program now makes for an exciting environment to work in and the community researchers have been a big part of that. It has meant the opportunity to work alongside likeminded people passionate about the environment, enjoy greater exposure to innovative projects and mix with international volunteers.

TIDE's science director, James Foley has enjoyed watching the community researchers develop their skills and grow on a personal level. *'It's really cool to see someone like Willie have their horizons broadened, getting invited to visit friends in Texas who he met through TIDE, going on national TV... He is becoming an expert in his own right. [These are] not just kids doing a side job but young conservationists embarking on a career. They have been bitten by the bug!'*

Next steps and future planning

TIDE is planning a Level 2 Community Researcher course, in which their community researchers will be trained to PADI Advanced Open Water Diver, learn more ecology theory, basic data analysis, laboratory techniques and communications skills.

They plan to get the community researchers to go out to schools to tell children about life as a community researcher and what it means to protect the environment. They plan to give them media training and seek further media exposure so that their passion can spill over and help build reef stewardship across the whole of Belize.

Advice for replicators

Whilst it is acknowledged that every project, team and tool will be different, knowledge sharing and lessons learned can help program developers to identify common approaches and characteristics that can be replicated to other projects to maximise the chance of success. With stewardship projects such as TIDE's community researcher program, we've identified five key elements for success.

1. Recruit right

Make the effort to recruit the right people for the job – invest time thinking about the type, mix and skillset of the project team. Using a widely publicized competitive application process including an application form and interview will maximise your chances of finding good quality candidates. The TIDE program looks for people who not only represent the community but also have a commitment to the environment and the right aptitudes. To be eligible, a few criteria must be met:

- Come from the local community

Teething challenges

At first, some of the participants were a little immature, a bit 'too cool for school'. During the initial training, one seemed very disinterested. It was as if someone had forced him to be there, even though he had applied. Through his time out on the water with TIDE's marine biologist, though, he really started to love the life that goes with being a community researcher. He quickly became very familiar with the local sea life and learned important seamanship skills. Now he offers himself up for more responsibility, is extremely reliable and upholds standards by correcting newer team members.

- Be aged 18+
- Have graduated from high school
- Be able to swim
- Be contactable by phone and email
- Demonstrate an interest in the environment and a willingness to learn

2. *Put due effort into training*

As with selecting the right participants, the training and educational aspects are integral to success. Get the training right and everything that follows will be easier. TIDE uses 'continual reinforcement' throughout the training. *'Essentially, you tell the trainees what you'll teach them, then you teach them, then you tell them what you've taught them. Then you teach them again in a different way!'* explains Foley.

Provide handouts to avoid note-taking and enable trainees to listen. Most importantly, make the trainees learn by doing. The best way to learn anything is to do it and practical, hands-on training works best for most people. Allow the trainees plenty of time to practice techniques under supervision and be prepared to throw out your initial data as practice runs. Even classroom lessons can be interactive – don't just tell students facts, get them to discover concepts for themselves by asking them the right questions.

3. *Don't reinvent the wheel*

Save yourself time and resources by using teaching resources from other organizations. Find out what monitoring methods other organizations in your area are using. Standardize methods with them and see what they can offer in terms of training – they may be able to provide methods training or at least materials.

A lot of useful materials are already available – for example, TIDE took one of their coral health monitoring methods and their protocol for monitoring mangrove productivity straight from the Mesoamerican Barrier Reef Survey manual. The Healthy Reefs Initiative has training materials for the AGGRA method and ECOMAR provides training and materials for turtle nest monitoring. There are a lot of useful resources out there and you can save yourself a lot of work.



4. *Quality always over quantity*

To ensure a high quality of data collection and management, quality control checks must be performed at multiple stages. TIDE uses the following mechanisms. Firstly, trainees must pass theoretical and practical exams to qualify as TIDE community researchers.

Secondly, all research and monitoring activities are carried out under the supervision of an experienced marine biologist. The supervisor performs duplicate measurements alongside the community researcher on the first occasion that they use each technique and at random intervals thereafter. Any discrepancies between the results are discussed and problems resolved. All data entry is double-checked and there is an accountability trail for all data (the names of the people who collected, input and checked the data are recorded). Only community researchers who demonstrate competence and reliability continue to be employed.

5. *Safety first, every time*

Although it seems like common sense, it is worth noting that Health and Safety should be the first priority at all times, and form an integral part of participant training. A serious accident could jeopardise an entire programme, and it's obvious any accidents should be avoided at all costs. A solid set of health and safety policies is a good place to start, and should be communicated clearly to all involved.

TIDE's community researchers receive training general health and safety, emergency first response, and also practice implementing an emergency action plan. The research vessel is equipped with O₂ and first aid kits. They also ensure that a rescue diver is present on all monitoring trips involving diving and insist that community researchers submit their dive logs before they can get paid.

Where to find out more about this case study

For more information about this project and other initiatives, contact James Lord at the Toledo Institute for Development and Environment (TIDE) info@tidebelize.org, on +501 722 2274, or by visiting www.tidebelize.org

Where to find more case studies and resources

The Australia Caribbean Coral Reef Collaboration www.climateandreefs.org has hand-picked the most useful resources available for coral reef managers in one easy-to-use portal.

The Nature Conservancy's Reef Resilience program www.reefresilience.org offers innovative in-person and online training courses and resources for coral reef managers.

The CaMPAM Network and Forum offers a training of trainers program for coral reef managers and a host of other resources www.campam.org



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