

TIDE Community Researcher Program: Empowering Coastal Communities to Become Agents of Change in Marine Conservation in Belize

TIDE Programa de Investigación Comunitario: Capacitar a las Comunidades Costeras para Convertirse en Agentes de Cambio en la Conservación Marina en Belice

TIDE Programme de Recherche Communautaire: Former les Communautés Côtières à Devenir des Agents de Changement dans la Conservation Marine au Belize

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EXTENDED ABSTRACT

Introduction

The Toledo Institute for Development and Environment (TIDE) empowers coastal communities to manage marine resources using data collected by local youths trained under its internationally recognized Community Researcher program. Since 2011, TIDE has developed a comprehensive course to prepare young people from disadvantaged stakeholder communities of Port Honduras Marine Reserve (PHMR) for careers in conservation and resource management that would otherwise be inaccessible to them. The course comprises scuba training and fieldwork methods training at three progressive levels, taught by TIDE's research staff to strengthen teamwork and site-specific fieldwork skills. Research methods taught include monitoring of water quality, conch, lobster, coral reefs, fish, sea grass, turtles, and lionfish. Foundation courses are taught in environmental science, reef ecology, fisheries, climate change and human impacts. The program generates young ambassadors of conservation who become agents of change in the developing world by fostering stewardship, building local capacity for conservation, offering alternative livelihoods and personal development opportunities - all while addressing challenges faced by PHMR managers. This approach builds trust between PHMR stakeholders and scientists, fostering integration of local knowledge and science into decision making for management of PHMR and generating consensus over MPA regulations in an environment of limited enforcement capacity. Local fishers are now more receptive to the idea that resource management can be done by the community for the community due to their own family members collecting data, and report having more confidence in the use of scientific research as a basis for MPA management.

Background

The Toledo Institute for Development and Environment (TIDE) is a community-based, non-governmental organization managing three protected areas in southern Belize, and dedicated to empowering coastal communities to sustainably manage natural resources via research, education & capacity building. TIDE implements a comprehensive, long-term conservation program focusing on the Maya Mountain Marine Corridor (MMMC) in the Toledo District of southern Belize. This 3,237 km² area includes Port Honduras Marine Reserve (PHMR), Payne's Creek National Park, and protected lands privately owned by TIDE. PHMR comprises 40,470 hectares (404 km²) encompassing over one hundred small, mangrove-fringed cayes, and benthic habitats comprising seagrass beds, fringing reefs, patch reefs, and mudflats which together support a multi-species fishery of critical economic importance to local communities.

Management Challenges

A key objective of TIDE is to ensure effective management and long-term sustainability of the natural resources in PHMR - depended on directly by the neighboring coastal communities of Punta Gorda, Monkey River Town, and Punta Negra for its fisheries and tourism revenue. Achieving this requires an adaptive management approach, whereby future management decisions are informed by high quality monitoring of habitats, ecosystems, key species, and environmental conditions that support these ecosystem services.

A team of only five TIDE rangers carries out management and enforcement throughout PHMR. As enforcement capacity is limited, it is critical that stakeholders participate in informed decision-making to generate consensus for adoption and compliance with management recommendations generated from research combined with local ecological knowledge (LEK). As is typical among data-deficient small-scale fisheries in developing countries, the cultural and knowledge gaps between PHMR fishing communities and scientists has been difficult to bridge in the past, with fishers lacking a foundation and trust in the scientific process as a tool to evaluate ecosystem health, and with scientists, often from outside Belize, being unacquainted with the wealth and value of LEK possessed by PHMR fishers of fishing behaviour, changes in fishing resources over time, and impacts that regulations have on fishers' livelihoods.

Prior to 2010, TIDE rangers, who had no formal scientific training, were also responsible for scientific data collection in PHMR. This was due to difficulties in finding qualified personnel, as few young people in Toledo were pursuing careers in science. However, the ranger team was already over-stretched with managing and enforcing reserve regulations in such a large area, and this affected the quality, consistency, reliability, and utility of the data collected.

What TIDE Did

TIDE therefore sought a strategy that would ensure consistently high quality data collection and bridge knowledge gaps between fishers and scientists in reaching consensus on fisheries management approaches, as well as create new employment opportunities in the area. In 2011, with support from multiple grant agencies, TIDE's Community Researcher program (CRP) was established to bridge this gap. Since 2011 TIDE has trained over 25 local youths as TIDE Community Researchers, many from fishing families, to scuba dive and conduct underwater research in return for financial compensation pledged by donor organizations – a critical strategy in retaining long-term personnel and thereby maintaining continuity in data quality.

Participants receive comprehensive training including SCUBA certification, instruction in environmental monitoring techniques, and foundation courses including environmental science, coral reef ecology, land-sea interconnectivity, impacts of human activities on the natural environment, GPS use, GIS, first aid, health and safety, and emergency action planning. Community researchers now routinely conduct monitoring of coral reefs, seagrass, water quality, nutrient and sediment analysis, mangrove ecosystem productivity, turtle nesting, lionfish, and fisheries stock assessments by means of underwater surveys, landings surveys, gonad and otolith analysis. TIDE has now begun implementing a Level 2 Community Researcher course, in which participants are trained to PADI Advanced Open Water Diver level, and learn advanced ecology theory, data analysis, laboratory techniques, and communications skills. In addition, optional modules are available in boat operation, boat engine mechanics, dive equipment repair and maintenance, and media production for those wishing to build on their foundations to diversify and specialize according to their personal strengths. A level 3 course is also under development, including PADI Rescue Diver training, advanced data analysis skills, report writing, tour guiding, and educational group leadership. TIDE has produced a comprehensive training manual containing presentations, handouts, quizzes, exams, teaching guides, and logistical advice for each course module.

TIDE's Community Researcher Program has several aims; firstly, to generate and sustain local capacity to conduct high quality, reliable fieldwork to inform protected areas management. It aims to create opportunities for young local community members to receive financial compensation and gain experience in environmental research, while inspiring local people to care about the environment and providing access to environmental careers otherwise unavailable in southern Belize. Furthermore, it aims to bridge the gap between conservation NGOs and stakeholder communities through the creation of young ambassadors to conservation and sustainable resource management who are integrated into these communities through family and friends.

How Well It Worked

The CRP has enabled TIDE to build trust among local fishing families in science as an approach to inform

fisheries management, since it is their own children collecting data, acting as ambassadors for conservation in their communities, and educating their families on sustainable fisheries management – in turn leading to improved understanding and willingness to comply with regulations. Consequently, fishers are starting to buy in to the idea that resource management is something that can be done by the community, for the community. By investing training in young members of local fishing families, TIDE has provided skills and experience to unlock their talent and empower local people to become agents of change for the future, instilling passion for conservation and responsibility for protection of the reef in its young participants. By selecting people strategically with links to the fishing community and other stakeholder groups, the CRP has been successful in fostering stewardship among local youth, building capacity for conservation, and offering alternative livelihoods and personal development opportunities for the local community - all while addressing the key challenges faced by managers of PHMR.

The CRP provides a model for other organizations, with integration of participants into science program activities, and capacity-building targeted to ensure reliable data collection. Currently, 12 community researchers are 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. TIDE's CRP is now recognized nationally as producing suitably qualified and experienced research staff capable of providing support to other marine protected areas management organizations in Belize that periodically require personnel for monitoring activities. As such, participants have gained exposure to research work and built professional networks in Bacalar Chico, Lighthouse Reef, Gladden Spit & Silk Cayes Marine Reserve, South Water Caye Marine Reserve, and Sapodilla Cayes Marine Reserve. The program has also enabled some members to move into full-time occupations that would have otherwise been inaccessible to them, with some now employed in the Belize Coastguard, as tour guides, dive masters, and SCUBA technicians, while some have gone on to complete Bachelor's degrees in Natural Resource Management at the University of Belize and subsequently take up full-time positions in local NGO development work. In future, it is expected that more participants will find employment with other national institutions such as the University of Belize, the Belize Fisheries Department, and other NGOs around Belize.

Where to Find Out More About This Case Study

For more information about the TIDE CRP, contact: Celia Mahung or James Foley
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