

**Lessons from the Equator Initiative:
Community-based Management of the
Port Honduras Marine Reserve,
Belize.**

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International Development Research Centre (IDRC)
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Summary

This technical report examines lessons learned in the development and management of the Port Honduras Marine Reserve in the Toledo District of Southern Belize. The management of the Reserve is the responsibility of the Toledo Institute for Development and Environment (TIDE), which was awarded the 2002 UNDP Equator Prize as a successful example of integrated conservation and poverty reduction. The results presented here are based on field research conducted between June and September, 2004.

The report begins by introducing the research objectives, methodology and the study's theoretical background. This is followed by a short description of the study site and the initiative. The third component of the report then involves a presentation of major findings and discussion.

The report's findings and discussion are divided into five sections. The first examines community organisation and associated factors leading to the initiative's creation. Specific focus is given to knowledge sources, learning, and the key persons and organisations involved. The discussion then turns to cross-scale institutional linkages by identifying the major stakeholders involved, their organisational levels, and the project's key institutional relationships. The next two sections continue with a description of the initiative's impact on environmental health, and livelihood activities in the area. The report then concludes with a general examination of the study's findings, culminating in a discussion of the lessons learned.

The examination of lessons from the initiative is divided into transferable and non-transferable sections. Transferable lessons included: tailored capacity building; using complementary livelihoods as an entry point; managing community expectations; the creation of collaborative institutions and mechanisms; marketing enterprise development; appropriate distribution of resource jurisdiction; community-based monitoring and enforcement; and working across scales. The non-transferable lessons discussed were: outside threats stimulating community support; supportive social conditions; involvement of charismatic and commitment individuals; and consistent support from partner organisations. The report closes with the last lesson, which argues that "success" may come down to the right ingredients, in the right context, at the right time.

List of frequently used acronyms

CREP	Caribbean Regional Environmental Programme
FI	Freshwater Initiative
MMMC	Maya Mountain Marine Corridor
PACT	Protected Area Conservation Trust
PCNP	Paynes Creek National Park
PHMR	Port Honduras Marine Reserve
PLI	Private Lands Initiative
TIDE	Toledo Institute for Development and Environment
TNC Local	TNC Toledo Office
TNC	The Nature Conservancy
TRIGOH	Tri-national Alliance of Non-governmental Organisations of the Gulf of Honduras
UNDP	United Nations Development Programme
UNEP	United National Environmental Programme
USAID	United States Agency for International Development

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1. Introduction

1.1 *Brief description of research*

Community-based management has emerged as the dominant approach to integrated conservation and development. This approach often strives to reduce poverty through the conservation and sustainable use of biodiversity. Community-based management has had mixed results, and has failed to live up to expectations in many cases. Some argue that this failure is due to the impracticality of integrating the goals of conservation and development (Redford and Sanderson 2002).

How can community-based conservation reduce poverty through the sustainable use of biodiversity? We propose to address this question by identifying and understanding the conditions under which community-based conservation is successful. For this research we focused on a number of conservation and development projects short listed by the UNDP's Equator Initiative. Two cases were subsequently chosen for research and comparison, including the North Rupununi District Development Board (NRDDDB) in Guyana, and the Toledo Institute for Development and Environment (TIDE), in Belize. While facing similar challenges, these initiatives seem to have developed unique and innovative approaches to conservation and poverty reduction.

This research is one of several EI case studies in a coordinated team project at the Natural Resources Institute, University of Manitoba, in partnership with the New York office of the United Nations Development Programme (UNDP), supported by the International Development and Research Centre (IDRC). By documenting how biodiversity conservation and economic development can be simultaneously achieved, the research findings will be used to further the theory and practice of community-based conservation.

1.2 *Purpose*

The purpose of this study is to research the lessons learnt from the NRDDDB and TIDE initiatives in how biodiversity conservation and economic development can be simultaneously achieved. This technical report, however presents the research findings related to TIDE's community-based work in Belize¹. Rather than examining all of the projects under the TIDE umbrella, the study focused specifically on the TIDE's involvement the Port Honduras Marine Reserve (PHMR) and the associated implementation of a gillnet ban. The research findings will also include some general discussions of TIDE as an organisation, including a summary of TIDE's broader institutional relationships.

1.3 *Research Objectives*

The objectives of this study are:

1. To document the role of self-organisation in the development of the initiatives.
2. To identify the cross-scale institutional linkages that facilitated project development and functioning.

¹ For NRDDDB report see http://www.umanitoba.ca/institutes/natural_resources/nri_cbrm_projects_eiprojects.html

1.4 Methods

Fieldwork was conducted in the communities of Monkey River and Punta Gorda from June to September 2004. Research methods involved a combination of Rapid Rural Appraisal techniques, including an archival review, informal and semi-structured interviews, and participant observation. These approaches were used to examine: TIDE's history and the process leading to the establishment of the PHMR; changes in fishers' livelihoods following the Reserve's creation; community organisation in response to the Reserve; and institutional relationships key to the initiative's development and current efforts.

Informal discussions with key informants and an archival review were initially used to understand the local context, project histories and changes in local livelihood activities. This was followed by an interview phase, where twenty-six (26) fishers and tour-guides from the three (3) communities adjacent to the Reserve participated in semi-structured interviews. Additional interviews were conducted with the local representative from the Department of Fisheries and three (3) key TIDE personnel. Informal interviews and participant observation were also employed during community meetings, monitoring patrols, community meetings and other TIDE activities.

1.5 Theoretical Background

Complex social and ecological systems cannot be understood by examining any one organisational level in isolation. Effective management must take place at multiple scales, and involve institutions linked across space (horizontally) and across different levels of organisations (vertically) (Barrett et al. 2001; Berkes 2002). Horizontal linkages may include community networks involved in resource management initiatives, and the learning that results from this interchange. Vertical linkages refer to the relationships between different organisations at multiple levels, as in co-management. These horizontal and vertical institutional interactions are known as cross-scale linkages (Berkes 2002).

Cross-scale conservation must therefore start at the lowest level of the organisational hierarchy, with planning being "bottom-up" (Berkes 2004). Effective conservation in countries with legacies of centralised resource management will require the strengthening of local-level institutions in order to facilitate increased cross-scale interaction (Berkes 2002). Since governments often retain the majority of power in developing countries, state support and interventions are vital in achieving effective community-based management. These interventions may include state recognition of local institutions; development of enabling legislation; cultural revitalisation; capacity building; and local institution building (Berkes 2002; Ostrom 1990). However, empowerment of local communities is often difficult, since there is little incentive for governments to relinquish their power (Lele 2000). That said, some Governments also recognise that power-sharing with communities can lead to cost savings, better enforcement and more effective compliance (Berkes, in prep.). The challenge is therefore convincing Governments' to support local-level institutions, and to transfer resource use rights to the community.

Self-organisation, learning and adaptation are also central to the concept of complex systems, and hence efforts to achieve sustainability. Holling et al. (1998) suggest that

self-organisation is a primary evolutionary characteristic of both the social and environmental components of resource management problems. They go on to argue that the diversity, widespread occurrence and long track records of local management institutions suggest that many traditional social systems evolve and respond to ecological change. This leads to feedback learning and the generation of locally devised and adaptive management practices (Folke et al. 2002; Holling et al. 1998). Self-organisation in these traditional social systems thus allows them to cope with environmental changes before they accumulate and pose a threat to the community's social well being. This adaptive characteristic demonstrates that social and ecological systems "...can change qualitatively to generate and implement innovations that are truly creative..." (Holling et al. 1998:361). Self-organisation can therefore provide social systems with opportunities for innovative co-operation, built on feedback, learning and adaptation.

This multiplicity of scales is often ignored by state level, "one size fits all" conservation (Barrett et al. 2001). Such a centralised approach is incapable of incorporating feedback from management outcomes and ecosystem change into future management. This mismatch of scales results in the loss of ecosystem resilience and the movement of natural systems towards thresholds of collapse (Berkes 1996). Centralised management is thus often identified as a primary obstacle in attempts to achieve sustainable resource management and conservation (Holling et al. 1998).

2. Situational Background

2.1 Port Honduras basin and the surrounding communities

Belize is a small, English speaking country covering approximately 22,960 square kilometres of Central America's Caribbean coast. It is known for its relatively small population (approximately 266,440), Mayan Temples, 93% forest cover, and the second largest barrier reef in the world. Over 42% of Belize has been designated as protected areas and reserves.

The Port Honduras coastal basin lies at Belize's southern tip (Figure 1). The basin stretches along the coast from Punta Ycacos River to the Rio Grande, and includes 3 rows of approximately 138 mangrove cayes or islands. The area functions as a lagoon and is made up of three ecological components, including the main marine lagoon, coastal and estuarine mangroves, and the cayes with their associated sand banks. These ecological components provide habitat and serve as a nursery for both fish and marine invertebrates. The area's shoreline is also used as a corridor by a number of migratory fish species.

Sullivan (et al. 1996) identified 70 species of fish in the coastal zone of Port Honduras, 40 of which had some commercial value. Most of the species belonged to the snapper (*Lutjanidae*), grunt (*Haemulidae*), parrotfish (*Scaridae*), and mojarra (*Gerreidae*) families. The area is also known for its lobster and conch beds, and is frequented by the endangered Hawksbill sea turtle (*Eretmochelys imbricata*). The sea grass communities found throughout the basin also supports a population of West Indian manatees (*Trichechus senegalensis*).

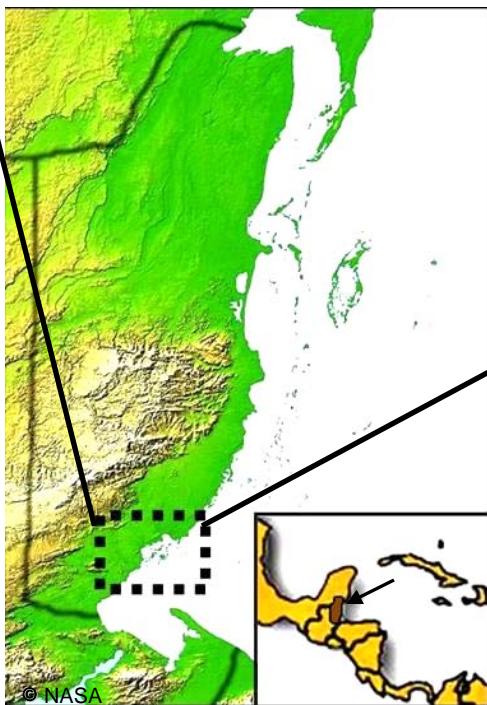
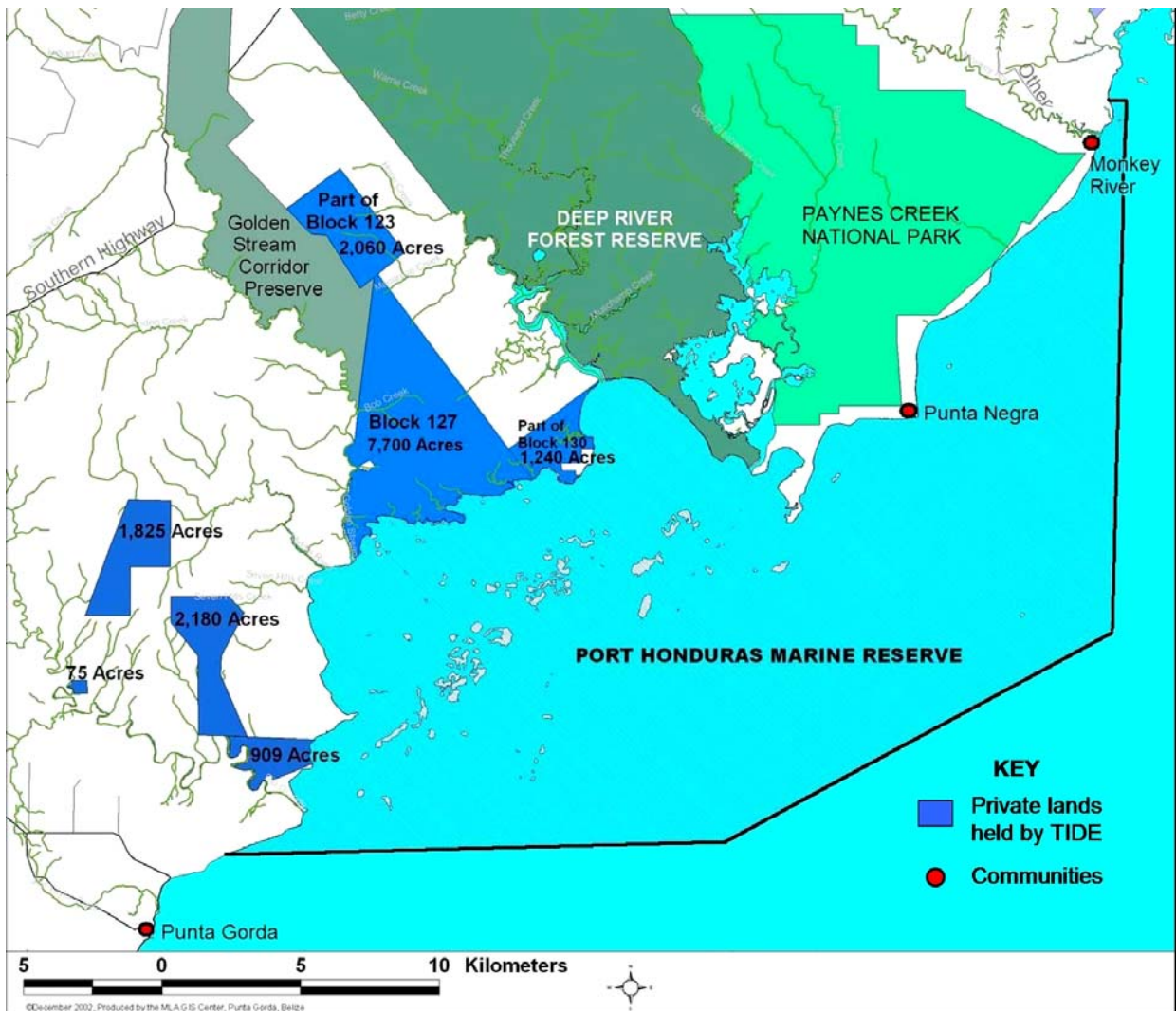


Figure 1 – Map of the Port Honduras Marine Reserve and nearby communities and reserves

There are 3 primary settlements in the Port Honduras area, including Monkey River, Punta Negra and Punta Gorda. Both Monkey River and Punta Negra are relatively small, with approximately 300 residents in total. These residents belong to the Kriol² and Garifuna³ ethnic groups and are mostly involved in local tourism and the commercial harvest of lobster, conch and some fish species. Bordering the PHMR to the south is Punta Gorda, the Toledo District's capital, with a mixed population of over 5,000 people.

As mentioned above, fishing is both a commercial and subsistence livelihood activity in the communities surrounding the Port Honduras area. However, only an estimated 156 fishers are residents of the 3 aforementioned settlements (Heyman & Graham, 2000). Many groups of fish are in the area, including species of Snapper, Mackerel, Jack, Snook and Grunt. Many fishers are also involved in the lucrative lobster and conch fisheries, which are subject to National size limits, and an annual harvest season. Local fishers use a collection of fishing gears (Figure 2) in order to target a variety of species and maximise their effort (Heyman and Graham 2000). Although similar amounts of fishers used gillnets and long lines, the use of gillnets tended to be familial or "crew" based, and were often the primary gear used, whereas long lines were usually used in tandem with other gear.

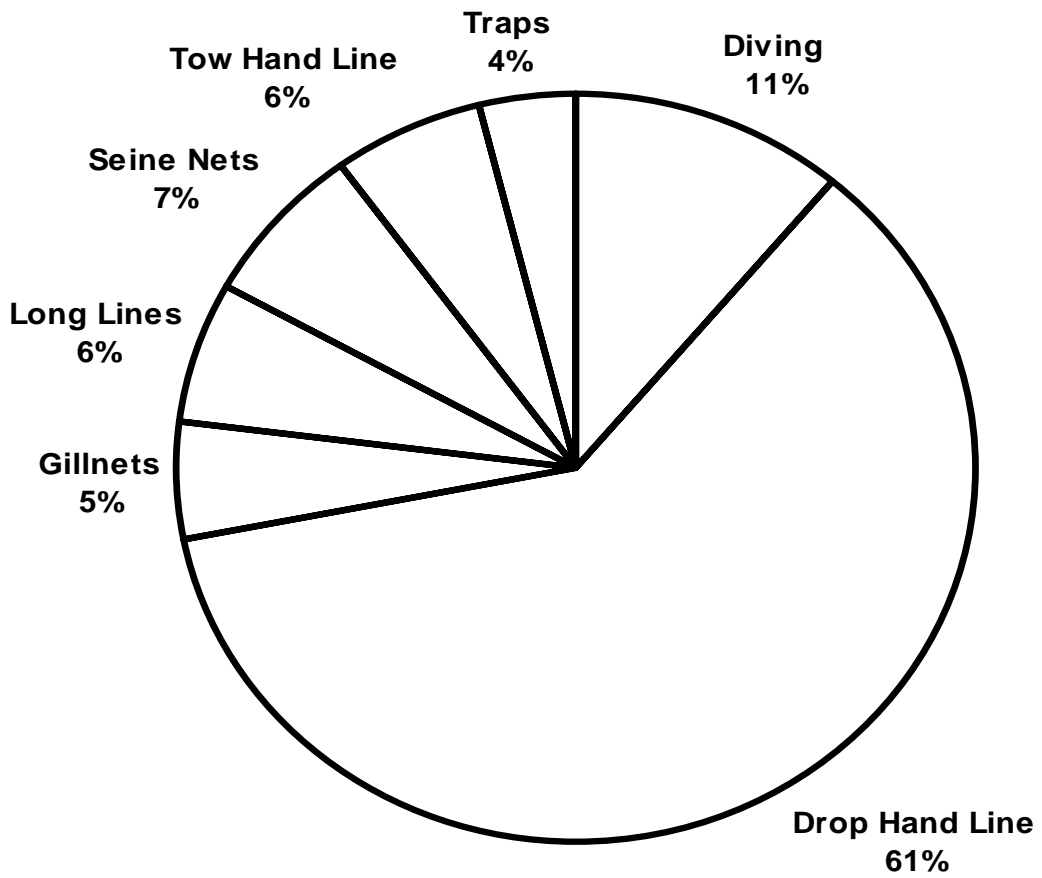
Commercial fishers from neighbouring Guatemala and Honduras also frequent the area, in many cases illegally, and account for more than half of the fishers active in Port Honduras (Heyman and Graham 2000). These foreigners, referred to locally as "Aliens", specialise in the use of gillnets near river mouths, and the off-season or under-size harvest of lobster and conch, since their home countries lack these restrictions. They have also been blamed for the harvest of manatees and sea turtles for sale in neighbouring countries.

2.2 Toledo Institute for Development and the Environment

It was partly in response to this illegal fishing that the Toledo Institute for Development and the Environment (TIDE) was created in 1997. TIDE's mission is "*to research and monitor Toledo's natural resources, to assist in protected areas planning and management, and to lead the development of responsible tourism and other environmentally sustainable economic alternatives by providing training and support to local residents.*" TIDE's organisational structure (Figure 3) reflects the multifaceted aspects of its subprojects, which include the Caribbean Regional Environmental Program, the Private Lands Initiative, the Freshwater Initiative, and TIDE Tours. It also co-manages the Port Honduras Marine Reserve and the Paynes Creek National Park with the Government of Belize. The PHMR has been one of TIDE most ambitious efforts, and has a long history of conservation and development interventions.

² Generally refers to descendents of Africans brought to Belize as slaves.

³ Distinct cultural group resulting from fusion of Carib and African cultures on the Caribbean island of St. Vincent in the 16th century.



**Figure 2 – Percentage of fishing gear used by Southern Belizean fishers
(Source: Heyman & Graham 2000)**

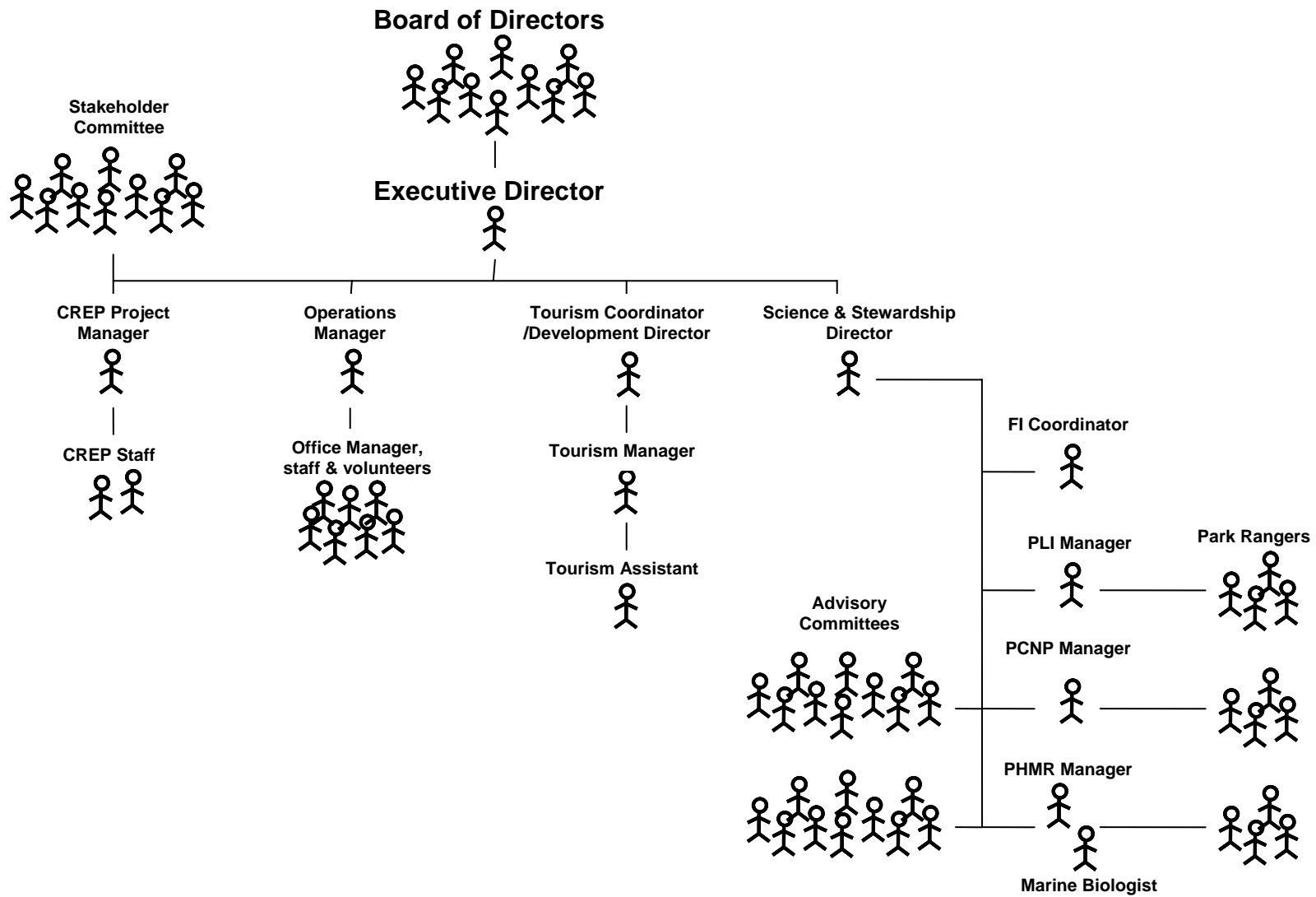


Figure 3 – People behind the TIDE: Organisational structure of the Toledo Institute for Development and Environment

Figure 3 (continued) – Description of positions and structures

Individual or group	Description
Board of Directors	Highest decision making body of the organisation. Made up of 11 individuals from communities in Toledo district. Includes businessmen, guides, fishers, farmers, University faculty, TIDE personnel and public servants. Oversees TIDE's management, current activities, plans and policy.
Executive Director	TIDE's founder. Has directed the organisation since its inception in 1997.
CREP Project Manager	Manages the Belizean sub-project of the Caribbean Regional Environmental Programme (Box 2).
Operations Manager	Coordinates staff, logistics and office activity.
Tourism Coordinator /Development Director	Manages Tide Tours (Box 1) and community development projects, including training and capacity building activities.
Science & Stewardship Director	Oversees all of TIDE's research activities and oversee all of TIDE's protected areas.
FI Coordinator	Coordinates TIDE's Freshwater Initiative (Box 6).
PLI Manager	Manages the Private Lands Initiative (Box 5).
PCNP Manager	Manages the Paynes Creek National Park (Box 5).
PHMR Manager	Manages the Port Honduras Marine Reserve (Section 2.3).
Stakeholder and Advisory Committees	Composed of community members, Government officials, civil sector representatives and TIDE personnel. Reviews current management activities, management plans and makes policy recommendations.
Rangers	Involved in the monitoring of both fishers' activities and ecological parameters and are the primary enforcers of the Parks' regulations.

2.3 The Initiative: The Port Honduras Marine Reserve

The Port Honduras Marine Reserve was declared in 2000 and incorporates an area of approximately 1300 km² within the larger Port Honduras Basin. Its boundaries extend from the coast to the Snake Cayes in the east, and from the northern bar of the Monkey River, southward to the Rio Grande (Figure 1). It was created under a co-management agreement between TIDE and the Belizean Government, and its management is overseen by a stakeholder committee made up of community members, TIDE personnel and government representatives.

The Reserve is zoned into three categories, including: the General Use Zone, where commercial fishing is allowed; the Conservation Zone (no take); and the Preservation zone (no entry). Although most of the Reserve is classified as “general use”, the use of gillnets and long lines are prohibited in all zones. TIDE has also implemented a number of projects linked to the Reserve’s development and management, including tour-guide training and certification programmes, the buy-back of used gillnets, and the creation of a secondary school scholarship fund for local children. Because gillnet fishers often relied solely on their nets for fishing, TIDE, and this study, focused primarily on initiatives involving this group.

3. Major Findings and Discussion

3.1 Community organisation

3.1.a *Origins of the project* (see Appendix 1 for Project timeline)

- i. *Date of community initiation*: Local concerns were raised in the 1990s over the overharvesting of certain fish stocks, linked particularly to the increased use of gillnets in the area. These concerns were documented during research in the area conducted by the Belize Centre for Environmental Studies (BCES)⁴. The work of the BCES eventually precipitated TIDE’s establishment in 1997. Upon its creation, TIDE developed and implemented a number of projects in the Port Honduras Basin, and was the lead agency in lobbying the Government to establish the PHMR.
- ii. *Date of formally established (EI date)*: TIDE was founded in 1997; while the PHMR was declared in 2000.
- iii. *What inspired or precipitated the project? What were the sources of inspiration for the project?*

Whose idea was it?

Fishers noticed a decrease in fish stocks during the 1990s, and had begun to discuss among themselves the need for some form of management in the area. In 1990 a Critical Habitat Study was conducted by the BCES, which showed that Port Honduras was biologically unique and warranted protection. In 1996 the BCES also reported the identification of 36 manatee slaughter sites in the Port Honduras area. With support from The Nature Conservancy’s (TNC) local office (“TNC local” from here on), the BCES had begun to prepare a management plan for the area when they went defunct in 1997. Wil Maheia, a

⁴ A defunct conservation NGO that was based in Belize City and focused on environmental research, policy and planning. It received major support from TNC and worked with local and international consultants.

former BCES consultant and local resident, then took up the cause for the Reserve by establishing TIDE, again with key support from TNC Local.

Trigger event

TIDE, and later the PHMR, was created primarily in response to an escalation in the slaughter of manatees in Port Honduras. This had been linked to reports of increased illegal foreign fishers, and gillnets, in the area during the 1990s.

Catalytic element

The commitment of TNC Local and TIDE's founder to the management of the Port Honduras area was crucial in TIDE's development. With sufficient resources at its disposal, a young TIDE was able to generate enough local support, through letter writing campaigns and signature drives, for the creation of the PHMR. With local fishers and community representatives on board, and with TNC Local's support, TIDE was able to effectively lobby the Government to establish the Reserve.

Other

Many fishers saw the creation of the Reserve as a means of addressing the influx of foreign fishers into their fishing areas. Although local fishers had misgivings about the Reserve's creation, they felt that the "Aliens" posed the bigger threat to their livelihood. This coincided with the beginnings of tourism in the area, hinting at the possibility of new livelihoods. According to one fisher and guide from Punta Negra, "*We started to catch a little picture of tourism, and we start easing on the nets. Spanish people had a lot of nets, we realize that they would out-fish us, and the Reserve was to stop 'Alien' fishing.*"

3.1.b Knowledge

i. Sources of knowledge

Early projects conducted by the BCES and TNC Local generated significant data on PHMR's ecology and the current condition of its resources. This data provided the hard proof that was crucial in convincing Government, and fishers to a lesser extent, of the need to protect the area.

Involvement with the BCES also afforded TIDE's founder the experience of working for a non-profit research and conservation organisation. He states that the knowledge he gained was crucial in setting up TIDE, and that he "*...learnt a lot of what not to do in running an organisation*".

Local and international scientists and collaborators also contributed knowledge and expertise during TIDE development, and later in the formation of PHMR. These early contributors were primarily from Programme for Belize and TNC.

Knowledge used in TIDE's alternative livelihood training came primarily from foreign specialists. For instance, Fly-fishing experts from the US were brought in to train local fishers as sports fishing guides. Fishers trained in this initial workshop have acted as instructors for subsequent training programmes.

Some of the participants in this training, particularly those from Monkey River, did have some existing knowledge and experience in sports fishing. These individuals had worked outside of the area, and had benefited from informal apprenticeships with established sports fishing guides, particularly in the nearby city of Placentia.

ii. *If there is local knowledge and if relevant, who holds this knowledge?*

The PHMR's manager, and most its rangers, either belong to a family of former gillnet fishers or are former gillnet fishers themselves. They thus have a significant understanding of gillnet sites and the movements of gillnet fishers. Decisions concerning where and when to conduct patrols in the Reserve are therefore based heavily on their knowledge and experience. As a result, the rangers are better at preventing illegal fishing in the Reserve, therefore facilitating the effective management of the PHMR.

Many of the local sports fishing guides are practicing or former commercial fishers. They thus came into training with a significant existing knowledge base of the habitats and seasonal movement patterns of particular sports fish species.

iii. *If there is outside knowledge used in the project, was there capacity building?*

Who was involved in providing capacity?

TIDE, the PHMR, and associated programmes have benefited significantly from outside knowledge and expertise. In particular, research by personnel from TNC's local office has contributed to a better understanding of socio-economic and ecological issues in the area. Along with TNC Local, the BCES conducted two Rapid Ecological Assessments (REA) in the area, and subsequently funded research to document fishers' livelihoods and perceptions in surrounding communities. TNC Local scientists also played a key supportive role in the development of the PHMR's management plan, and TIDE in general.

TIDE's training programmes involved significant capacity building and knowledge transfer from outside sources. Because of the gillnet ban in the PHMR, TIDE has focused primarily on training of local fishers in alternative livelihoods. These training programmes have relied on knowledge from partners like The Orvis Company (sports fishing guides), and the Belize Tour-guide Association (general tour guiding).

In establishing the PHMR, TIDE drew on the experiences of other established Protected Areas in Belize. TIDE even facilitated visits by local fishers to communities surrounding the Hol Chan Marine Reserve to the North of the country. The visits were meant to expose local fishers to the management of a protected area and its associated benefits. There have been additional fisher exchange programmes since, including a 2003-2004 exchange between local fishers and Maine lobster fishers, which was funded by the Quebec-Labrador Foundation.

3.1.c *Leadership and key people*

i. *Individuals: What role did they play? How did their role change during the course of the project?*

Wil Maheia: Most interviewees felt that Mr. Maheia was the dominant force behind TIDE and the PHMR, and was commonly referred to as "*TIDE's biggest cheerleader.*" He is from the Toledo District and has worked in the area since 1984, most notably as a consultant with the BCES. After establishing TIDE, Maheia pushed for the creation of PHMR by lobbying Government officials and promoting the Reserve in the surrounding communities. He currently serves as TIDE's Executive Director, and is heavily involved in fund raising activities,

and increasing TIDE's visibility both nationally and internationally. As Director he seems very cognisant of the multiple actors and institutional levels involved in local conservation and development initiatives. This is demonstrated in his ability to link international concerns with local needs, and in doing so, gain Government's support and transfer of management jurisdiction.

Will Heyman: This former TNC Local scientist has played a key supportive role in the development the PHMR. He has conducted a number of social and biological research projects in the area since the early 1990s. He was also involved in developing the PHMR's Management Plan and the associated alternative livelihood training programmes.

Reserves' Managers: The managers of both the PHMR and PCNP are from Punta Negra and Monkey River respectively. These individuals are important members of their communities, and were involved in early community outreach activities. They were also involved in the development of TIDE and the creation of the Reserves. Their involvement with the organisation increased community awareness, and ownership to a certain extent, of TIDE projects and the Reserves.

Philip Gabriel: Mr. Gabriel was initially chairman of the Rio Grande Fishing Cooperative in Punta Gorda. He helped to organise the early community petitions in support of TIDE and the PHMR. These petitions were used to assuage Government fears of major community resistance to the initiative. It seems likely that this demonstration of local support was the last step in securing the Government's stamp of approval for TIDE's co-management of the PHMR. Mr. Gabriel now acts as a community liaison officer in one of TIDE's subprojects.

ii. *Key organisations: What role did they play? How did their role change during the course of the project?*

The Nature Conservancy's local office was a major partner in TIDE's creation, and has played a key role in the organisation's growth. TNC acted as both a donor as well as a funding link for TIDE's and many of its early projects, primarily those related to the PHMR. TNC Local assisted a young TIDE with personnel, technical advice, and organisational support. As TIDE gained greater international visibility, and established alternative funding sources, the relationship between the two organisations has become less interlinked, with TNC Local occupying more of a supportive role.

Other groups that were central to the development of TIDE and the PHMR include: USAID; the AVINA Foundation; the Wallace Foundation; and the Oak Foundation. Support from these organisations has been primarily in the form of funding. In addition, funding from the Protected Areas Conservation Trust⁵ currently covers a portion of TIDE's operations budget.

⁵ Established in 1995 as Belize's National Conservation Trust Fund. Under the 1996 PACT Act, a conservation fee of BZ \$7.50 (USD \$3.75) is charged per visitor, along with a 20% commission from cruise ship passengers. This funding is used to finance "activities on the protected areas that foster conservation, sustainable development and management of the area."

3.1.d *Learning*

i. *What learning processes did the project go through?*

Once the PHMR had been created, the biggest challenge was finding ways to implement the gillnet ban without impoverishing fishers in the process. Nets were used by a number of families living on the PHMR's cayes, and in the three communities adjacent to the Reserve. There was thus significant opposition to the Reserve's exclusion of this fishing gear. As a result, TIDE's policy on enforcement in the early stages of the Reserve was one of "informing and educating" the offending fisher, rather than confiscating nets or charging the fisher. TIDE also used four distinct interventions in an attempt to address this issue (Figure 4). They first focused on co-opting gillnet fishers by offering some individuals fulltime or seasonal employment as rangers. Understandably, only a limited amount of fishers could access direct employment, due to financial and organisational constraints.

Prior to, and following, the Reserve's creation TIDE also offered training programmes focused on building the capacity of fishers to access alternative livelihoods. These courses focussed particularly on training the fishers as guide in catch-and-release sports fishing. The training involved many of the fishers and has since become a major aspect of TIDE's community development projects.

However, some fishers were intimidated by training courses and the legally required certification process for tour-guides in Belize. Some therefore chose not to participate in the programmes. They also argued that the income generated from their nets was primarily used to pay their children's secondary school fees. TIDE's answer to this was offering to purchase nets from fishers, and creating a scholarship fund for local children that qualify to attend secondary school. The net buy-back programme, as it is called, was aimed at providing the fishers with capital for investment in new fishing gear or alternative activities. This also was met with a mixed response, with some fishers suggesting that the price offered for their nets could not compensate for their lost income without the nets. Therefore, some fishers are still opposed to the PHMR and, according to some reports, occasionally set nets in the Reserve.

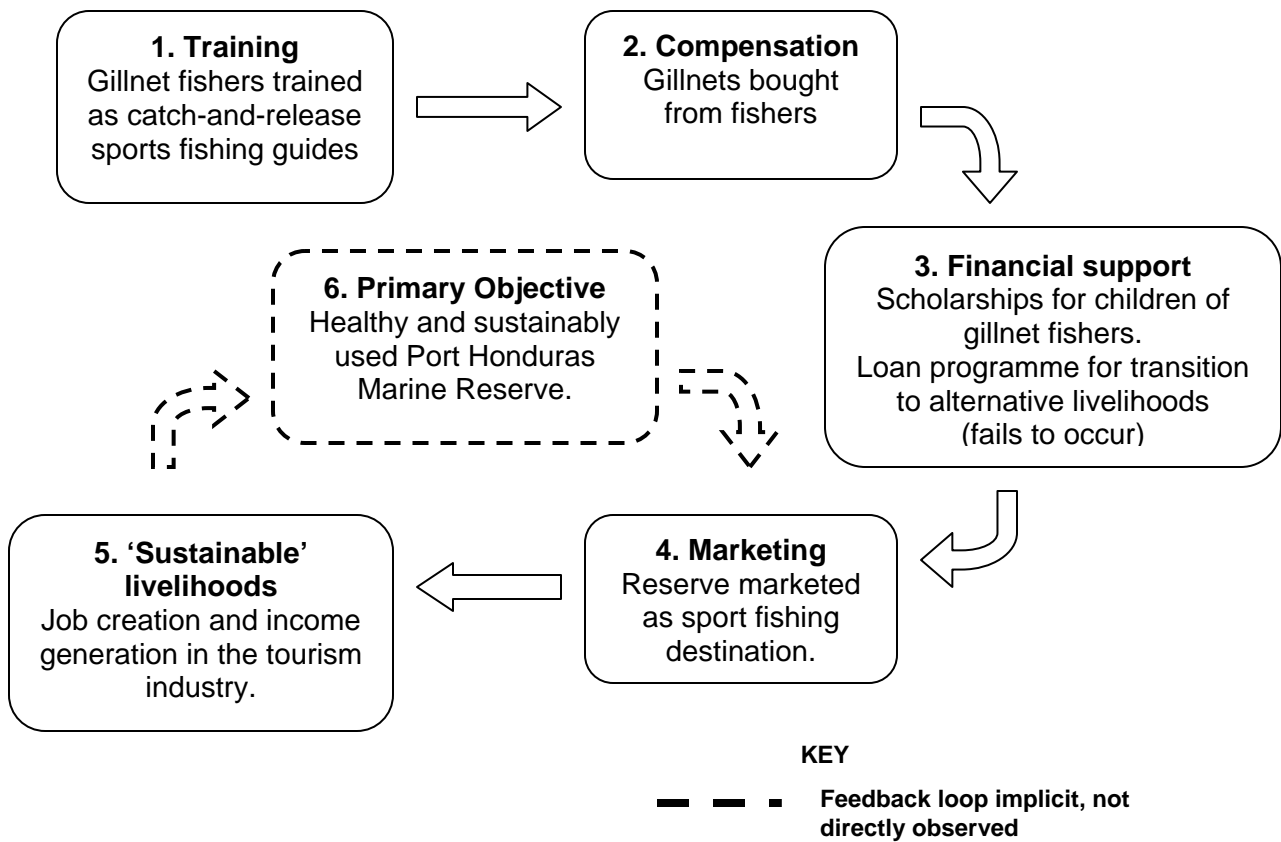


Figure 4 – Interventions used by TIDE to reduce impact of Reserve on local gillnet fishers.

However, the number of these individuals seems to have decreased significantly over the years, possibly because as more fishers become trained tour-guides, there is more community resistance to the setting of gillnets. Many of the tour-guides interviewed see gillnets as a threat to their livelihood. TIDE's most recent effort at addressing fishers' concerns is a new and diversified round of alternative livelihood training. The training includes small business management, general tour guiding, kayak guiding, and bird identification.

Recognising the need for development of the local area tourism sector, TIDE initiated the creation of the for-profit TIDE Tours (Box 1) subsidiary in 1999. The primary objective of TIDE Tours was to provide alternative means of livelihood for the area's residents and thus facilitate sustainable community development and poverty reduction. It was also seen as a potential source of financial support for the larger parent TIDE. Adding to TIDE Tour's efforts is the new established Caribbean Regional Environmental Program (CREP) project (Box 2). This project is still in its early stages, but aims to support TIDE's community development programmes. Planned activities under the project include fish stock assessments, ecotourism and small business training, and the development of a honey project for local communities.

The creation and development of TIDE itself also involved significant learning. For instance, the involvement of TIDE's founder with BCES allowed him to work with a non-for-profit research organisation. According to him, it was a "learning-by-doing" experience where he learned firsthand what worked and what did not. In working with BCES, TIDE's founder was also able to establish

Box 1 – TIDE Tours

The primary objectives of **TIDE Tours** are to "provide an alternative and sustainable means of livelihood for area residents, to help reduce poverty in the Toledo District by introducing more profitable economic opportunities, and to generate funding for TIDE's conservation work." This subsidiary functions as an in-bound tour operator service, marketing and coordinating package tours of the Toledo District. It hires individual tour-guides and small-scale tourism businesses to provide guest and hospitality services, attempting to rotate employment and distribute community benefits equitably. It owns kayaks, snorkeling gear, and other sports equipment that it provides to local tour-guides to assist in operating their tours.

Box 2 – The Caribbean Regional Environmental Programme (CREP)

CREP is a €9.1 million regional sustainable development initiative funded by the European Union and authorised by the Caribbean Forum of African, Caribbean & Pacific States (CARIFORUM). It was developed in 1999 with the primary objective of enhancing "the contribution of natural areas of biodiversity and economic significance (Amenity Areas) to the sustainable development of the CARIFORUM Member States." CREP is currently implementing projects in 13 CARIFORUM States.

The Port Honduras Marine Reserve and Paynes Creek National Park (Box 3) were identified as the Demonstration Sites in Belize. The Ministry of Natural Resources, Environment, Commerce and Industry along with TIDE were selected as the project's implementing organisations, and a stakeholder advisory board has been established. So far TIDE's CREP team has conducted consultations in developing the project workplan, facilitated professional development training courses for TIDE staff, and has purchased a boat for monitoring activities. Other proposed activities include the installation of mooring buoys, demarcation of boundaries, training in ecotourism and business development for local communities, a honey development project and fish stock assessments.

relationships with government officials, donor organisations and other local NGOs, which became a personal “network of friends”. This network of pre-existing relationships proved crucial in assisting with early organisational support and funding for TIDE and the PHMR.

This multi-stakeholder structure of TIDE’s Board of Directors has been partly attributed with the organisation’s success, and was used as a model in the development of the initiative’s subprojects. The Board oversees the management of TIDE and its initiatives, and is made up of local businessmen, scientists, senior local guides, community members and TIDE personnel. Four such advisory committees are currently involved in the management of the PHMR, PCNP (Box 3), PLI, and the CREP project.

ii. Was there adaptive management (learning-by-doing)?

Although the PHMR management plan does not explicitly incorporate “adaptive management”, the plan does include an extensive “Monitoring and Research” section. It includes a categorized discussion of monitoring and research needs and priorities, as well as a comprehensive implementation strategy. However, the Monitoring Protocol is still in the early stages of implementation, with management of the Reserve still focused primarily on the enforcement of Park regulations.

The different management interventions, discussed under item 3.1.d.i above, also demonstrates the use of adaptive management in working with fishers to implement the gillnet ban.

iii. Were there learning networks?

An informal “network of friends” was utilized by TIDE’s founder in the early stages of the organisation. These individuals supported a young TIDE with technical advice, problem solving, funding and links to other groups. Most of the “network” however involved bilateral relationships between TIDE and the network’s members, rather than a working group.

The PHMR’s Advisory Committee can also be seen as a learning network, with its multi-stakeholder composition. The Committee reviews current management activities, management plans and makes recommendations for management policy. The creation of the committee, and the selection of its members, was outlined in the Memorandum of Understanding between TIDE and Government for the co-management of PHMR.

Box 3 – Paynes Creek National Park

This Park was declared a nature reserve in May 1994 and a national park in 1999. The Park covers 31,000 acres of forest, mangroves and pine savannah in the Maya Mountain Marine Area Corridor (MMMAC). It also includes the submerged remains of four Mayan archaeological sites. The park is co-managed by TIDE and the Government, with the input of a stakeholder Advisory Committee.

Sections of the Park were important resource areas for the community of Monkey River. However, the threat of development in the early 1990s led the community to join forces with BCES and TIDE to lobby the government for protected status. Its main rivers are frequently used by local guides for sports fishing, kayaking tours, and birding.

TIDE also recently entered into a partnership with Belize Lodge and Excursions (BLE), a private tourist business, and Ya'axche Conservation Trust⁶ to coordinate management activities along the border of the three reserves. This partnership has thus far translated into rangers conducting joint patrols and sharing information. BLE has also agreed to contribute a guest fee toward TIDE, once the lodge begins operating.

TIDE is also a founding member of the Tri-national Alliance of Non-governmental Organisations of the Gulf of Honduras (TRIGOH) (Box 4).

Box 4 - TRIGOH

TRIGOH is a federation of eleven non-governmental organizations from Belize, Guatemala, and Honduras, established in 1995, that implements conservation initiatives in the Gulf of Honduras shared by the three countries. TRIGOH promotes "the sustainable management of fisheries, the protection of threatened species, the development of ecotourism projects, and the design of contingency plans for the prevention of disasters which could damage the natural resources in the Gulf of Honduras and in the Central American region in the region"

3.1.e Funding

- i. *If there was funding for initial community organisation, who provided the funding?*

Funding for the development of both TIDE and the PHMR were sourced primarily from the Programme for Belize, The Nature Conservancy Belize, the United States Agency for International Development, the AVINA Foundation and the Oak Foundation. Additional funding for the net buyback and scholarship programmes was provided by The Long Island Chapter of the TNC. Private donors, including visiting tourists, expatriates and some local residents, have also contributed significantly to a number of TIDE's initiatives. For instance, the start-up funds used to establish TIDE Tours came primarily from private sources.

- ii. *If there was capacity building, including training workshops, who funded it?*

In 2000, The Orvis Company Inc., through links with TNC Local, funded a fly-fishing training program for local fishers. US fly-fishing experts were brought to Belize, and fly rods were provided for the training exercise. A follow-up fly-fishing training course was funded by El Pescador, a local resort that caters to mostly foreign fly fishers. The fly-fishing guides trained earlier by TIDE acted as the instructors for the training exercise.

Additional training, including hospitality and small business development, general tour guiding, SCUBA diving and kayaking were also conducted by TIDE, and funded by the Meso American Ecotourism Alliance, the Conservation Tourism Initiative, and TRIGOH. A similar series of training courses will be organised and funded under the CREP project. UNEP-CAR/RCU⁷ also recently funded a training programme for PHMR's Coral Reef Monitoring Project. The programme resulted in the training and certification of

⁶ An indigenous conservation and development NGO. It manages the Golden Stream Corridor Preserve (GSCP) and works with surrounding Mayan communities, with primary support from Flora ad Fauna International

⁷ Regional Coordinating Unit of the Caribbean Environment Programme of the United Nations Environment Programme

10 individuals, including TIDE rangers, fishers and students, in SCUBA diving, reef fish identification, reef coral identification and reef monitoring techniques.

- iii. *If there was funding for office, office personnel, or vehicle; who funded them?*
Start up funds from Programme for Belize, TNC, USAID, and private donors covered the salaries, office space and operational costs of a young TIDE. The building currently housing TIDE's Head Office was built with funding from a private donor, and is owned outright by the organisation. Funding received through the UNDP's Equator Prize in 2002 was also used to extend the Office building, with the addition of a library and a conference room. Salaries and operational costs are currently covered by project funding from a number of sources.

3.1.f *Human resources for initial organisation (in-kind work as opposed to money)*

i. *Volunteer support from pre-existing groups*

TIDE's relationship with the UK conservation charity, Trekforce Expeditions, resulted in the building of the PHMR's ranger station on Abalone Caye. This project received co-funding from Seacology and the British Department for International Development (DFID). TIDE has benefited from technical advice and expertise from a number of sources, most notably the "network of friends", including individuals from BCES, Programme for Belize and TNC Local. They also seem to have gained significantly from a regular flow of volunteers, interns and visiting researchers.

ii. *NGO and Government personnel providing their time or services for free*

TNC Local has been one of TIDE's most committed partners. They have contributed to the organisation in terms of technical advice, proposal writing, information sharing, linking with outside contacts, communicating with funding groups.

iii. *Were there pre-existing relationships between these groups and the community?*

The informal "network" used by TIDE's founder was made up of pre-existing links established during his earlier professional activities. TNC Local and their personnel had also worked extensively with the BCES and local fishers in the area prior to the Reserve's declaration. However, relationships between TIDE and most of the international donors were established through linkage organisations like TNC.

3.1.g *Use of free facilities?*

TIDE hosts a one hour radio program called "The Rising TIDE" every week on the local Wamalali 106.3FM station. It is the longest running program on the station, having begun in March 1997. The show's aim is to increase awareness of local environmental issues and provide updates on TIDE's activities. The programme is currently sponsored by the Protected Areas Conservation Trust of Belize.

3.2 Cross-scale linkages

There are a number key stakeholders involved in the PHMR and its management (see Table 1). These actors operate at different levels of organisation and interact across different scales. Examining this cross-scale interaction is therefore essential in understanding the development and functioning of the project.

3.2.a Institutional linkages related to the project

i. What were the key linkages facilitating/enabling the project?

The development and growth of TIDE as an organisation has benefited substantially from relationships with other institutions (Figure 5). As with TIDE, the key institutional linkage in the development of the PHMR was the TNC Local partnership. Although USAID and the Programme for Belize contributed funds to a young TIDE, TNC Local provided both financial and organisational support. TNC Local personnel assisted in developing management plans, funding proposals, project planning and conducting research. TNC Local also served as a major fund raiser and important link between TIDE and other supportive organisations and donor agencies. For instances, it was active in establishing contacts and accessing funds from The Orvis Company and the TNC Long Island Chapter (Figure 6). TNC Local also helped to increase TIDE's international profile and thus increased its ability to source funding. However, as TIDE established independent links to more donors and supportive organisations, TNC Local's involvement in TIDE's projects has declined, and it has taken on more of a supportive role. TIDE has also benefited substantially from private sources. Operational expenses, infrastructure and building costs, and many TIDE initiatives have all benefited in some form from private donations.

Government approval of the plan was the last, and most critical, step in the PHMR's creation. TIDE's relationship with the Government is based primarily on its co-management agreements with the Fisheries Department. According to these co-management agreements, the Fisheries Department is the overall management authority, with ultimate decision-making power. However, this power has never been used by the State. Government's contribution to the Reserve's management has thus far included participation in the Advisory Committee and sporadic joint patrols with TIDE rangers. In effect, TIDE has taken almost sole responsibility for the Reserve's management.

TIDE's relationship with the communities is formalized through the various advisory committees associated with the Reserves it co-manages. The members of these groups are all residents of the district, with most living in one of the three communities adjacent to the Reserve. This relationship is also maintained through employment and ongoing training initiatives. For instance, of the twenty-six (26) fulltime employees falling under TIDE's umbrella, only one (1) is not from the area. Trained fishers, on the other hands, receive seasonal employment as guides with TIDE Tours. In return these tour-guides, along with TIDE employees, seem to act as informal advocates in their constituent communities for TIDE, tourism and Protected Area management. They are also very active in monitoring and reporting illegal activities in the Reserves.

Table 1 – Primary stakeholders involved in the management of the Port Honduras Marine Reserve

Main Stakeholders	Community	District	National	International
Fishers	X			
Tour Guides	X			
Community Tour Guide Assocs.	X			
Rio Grande Fishing Cooperative		X		
TIDE		X		
Hotels and tour operators	X	X	X	
Fisheries Department			X	X
PACT			X	
The Nature Conservancy (Local)		X		
TRIGOH				X
Private donors	X	X	X	X
International donors				X

X

Level at which institute is based

Level at which the stakeholder is currently active in relation to the PHMR

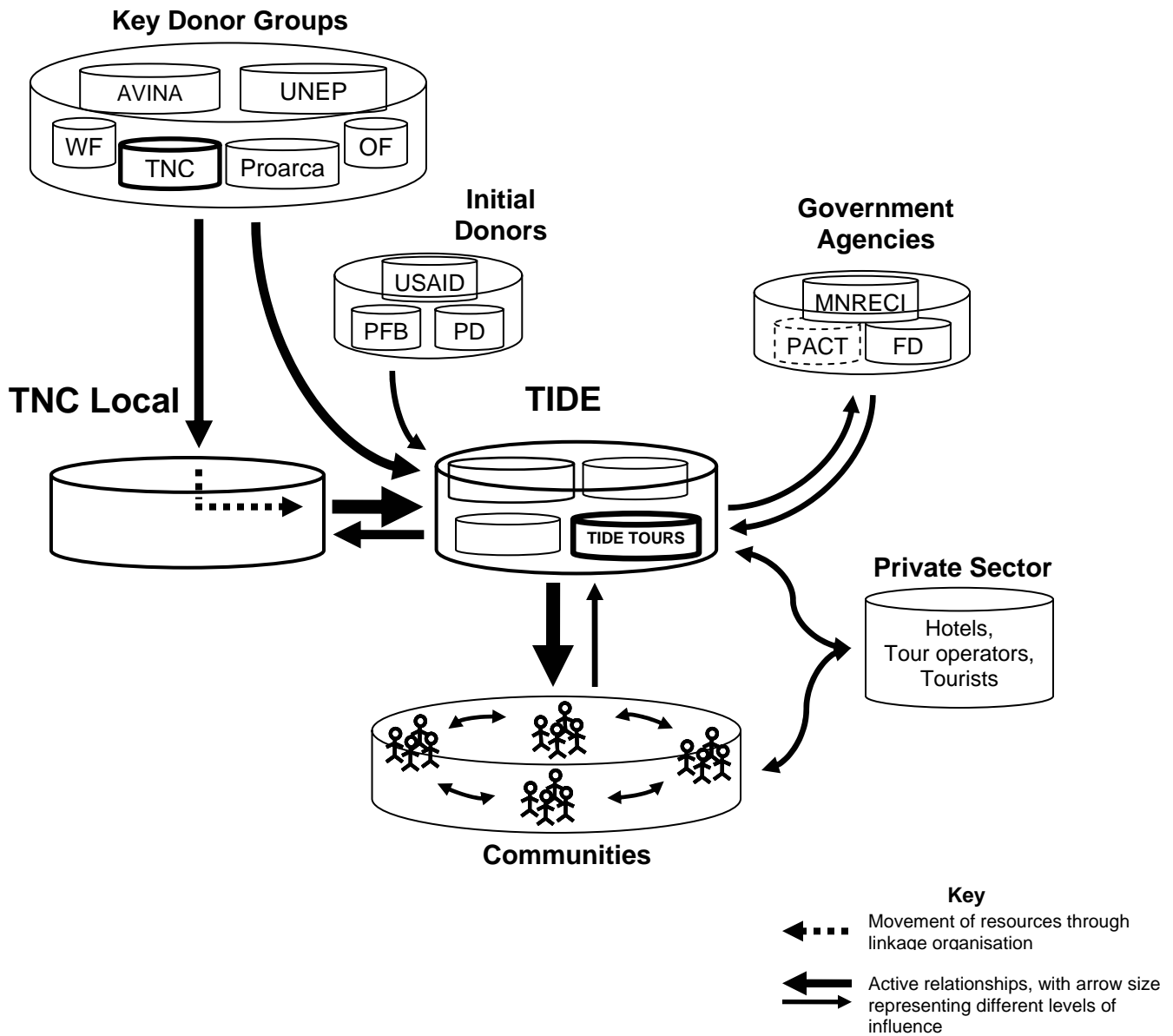


Figure 5 - Key institutional linkages in the creation and development of the Toledo Institute for Development and Environment

Figure 5 (continued) – Key to acronyms

Group	Full name
Initial Donors	
USAID	United States Agency for International Development
PFB	Programme for Belize
PD	Private Donors
Key Donor Groups*	
AVINA	The AVINA Foundation
UNEP	United National Environmental Programme
Proarca	The Environmental Program for Central America
TNC	The Nature Conservancy (International)
WF	Wallace Foundation
OF	Oak Foundation
TNC	The Nature Conservancy
Government Groups	
MNRECI	Ministry of Natural Resources, the Environment, Commerce and Industry
FD	Fisheries Department
PACT**	Protected Area Conservation Trust
TIDE	Toledo Institute for Development and Environment (See figure 3)

* includes only a selection of the total number of donors involved

** PACT's ultimate governing body is its board of directors, not a Government agency.

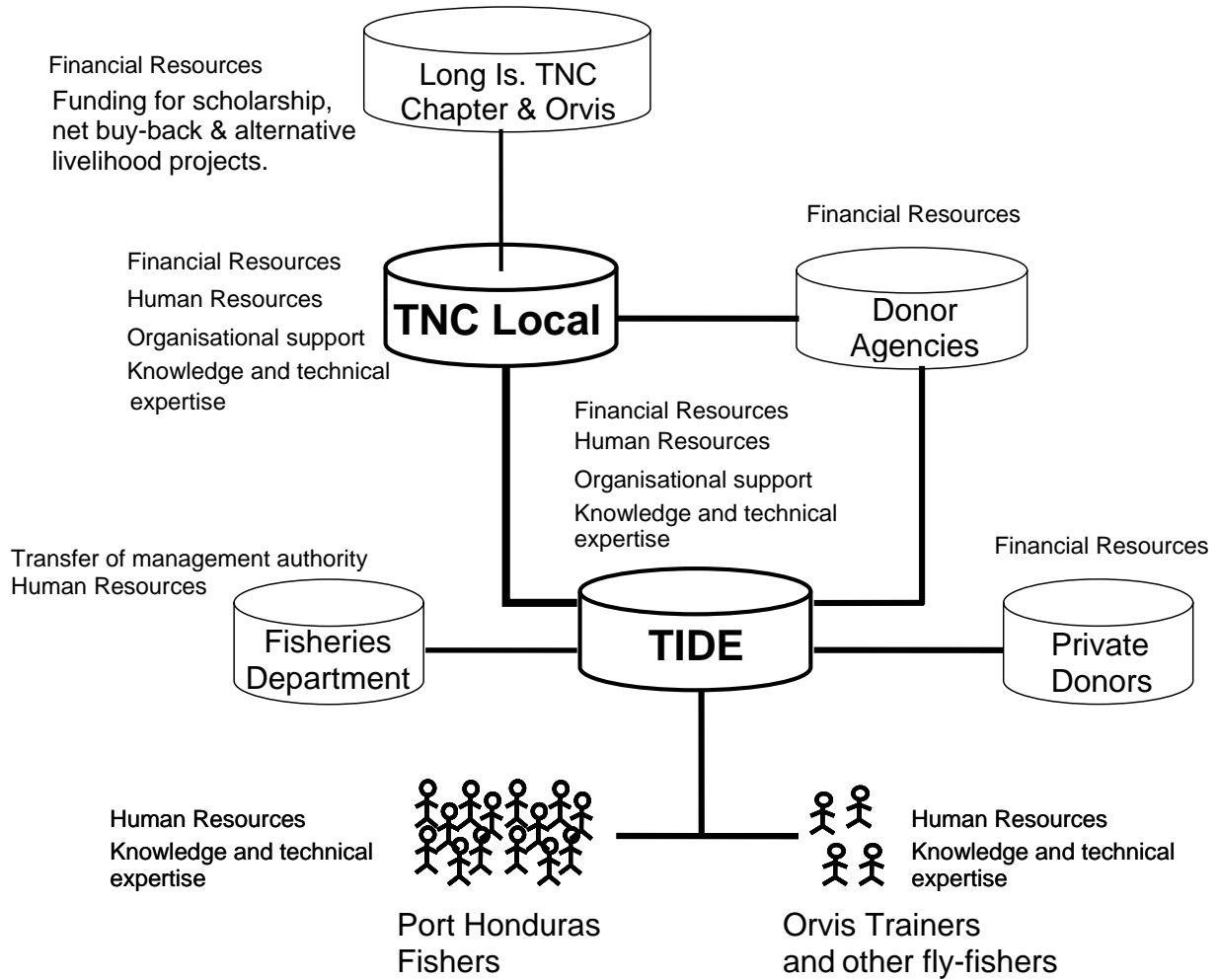


Figure 5 – Key institutional linkages that facilitated PHMR’s creation and associated livelihood projects.

ii. *Whose initiative established these linkages?*

TIDE's founder, through his prior work with BCES and other initiatives, had links with TNC Local and some other early donors. He was then quite effective at utilizing these links to facilitate TIDE's creation and development. The organisation's relationship with TNC Local was also critical in establishing key links with new organisations and funding agencies. Although TNC Local took the initiative to create these links in some cases, TIDE's success may be partly due to the significant and consistent efforts of its employees at networking and fund raising. The sourcing of funds and building links with partner organisations continues to be a high priority for TIDE, claiming a significant amount of staff hours and effort.

iii. *Key horizontal institutional linkages (i.e., linkages across space and sectors, such as networking with other community groups, NGOs, development agencies)*

Horizontal institutional linkages, in the form of an informal network of individuals and partner organisations, played an important role in TIDE's early funding and development. The Tri-national Alliance for the Conservation of the Gulf of Honduras (TRIGOH) (Box 4) also represents a substantial attempt at networking among the NGOs of the Gulf of Honduras countries. However, TRIGOH has yet to have a significant effect on PHMR initiatives, TIDE or regional environmental policy.

iv. *Key vertical institutional linkages (i.e., linkages across levels of organisation, such as linking with key Government agencies)*

TIDE's relied on a number of donors and patrons during its creation and development. However its relationship with TNC Local has arguably had the most significant impact on TIDE as an organisation. Aside from direct support, TNC Local was also a key link to other funding sources, including The Orvis Company and the Long Island TNC Chapter.

v. *How does the policy environment impact the project? (e.g., policies, legislation, political space for experimentation)*

Tourism is a major contributor to Belize's economy, second only to Agriculture, and as a result the Government has a number of conservation and environmental policies aimed at protecting the country's tourism "assets". The country's pro-environment policy has manifested in the prevalence of protected areas, which currently account for 40% of Belize's territory.

There is also a strong NGO presence in the country, with scores of both national and international groups jostling for positions in the county's conservation, development and environmental advocacy arenas (Chang 2003). The Government, suffering from the usual human and financial resource shortages of a developing country, has drawn significantly from this pool of NGOs to manage the country's National Parks. The government has entered into a number of co-management agreements with these NGOs, including TIDE. Once TIDE had secured enough local support (through letters and signature drives), the country's co-management friendly policy environment facilitated the establishment of PHMR.

vi. *What change did the project trigger in Government legislation or policy?*

No direct policy change can be attributed to TIDE. However, it did play a key role in initiatives like the Government's "Debt for Nature Swap" with the U.S. Government (Box 5). It is also a founding member of TRIGOH, which attempts to coordinate and streamline policies in Belize, Guatemala and Honduras, which impact activities in the Gulf of Honduras.

3.2.b *Unusual interactions among Government agencies, NGOs, development agencies that impact the project positively or negatively.*

There is no shortage of NGOs in Belize. For instance, in the Toledo District alone it is estimated that there more than 60 active NGOs (Collins 2004). Many of these NGOs claim grass roots status, and share similar mandates of poverty reduction and environmental preservation. There is thus significant competition for development and conservation funding coming into the Toledo District, where TIDE's operates. TIDE was fairly effective in avoiding this fray of NGOs by establishing a strong early partnership with TNC Local, and then using this partnership to source additional partnerships and funding. TIDE's diverse range of initiatives also gives it access to a number of different donor groups, and can be tailored to meet the requirements of many funding grants. That said, the competition for funds, at both district and national levels, is still a significant challenge for TIDE.

A legacy of "fly-by-night" development and conservation NGOs in Toledo District has also left many community members disillusioned. It was apparent that many fishers harbour suspicion and distrust of organisations claiming to be grassroots and interested in community development. The residents of the communities associated with the PHMR spoke negatively of many projects leading up to and including TIDE. From its inception, TIDE has been confronted with community resistance and has focused on outreach and education in an effort to change these perceptions. It appears that local involvement (employment and Advisory Committees) and alternative livelihood training have been key in gaining community support and buy-in for TIDE and PHMR initiatives.

Box 5 - Private Lands Initiative

This initiative involves the acquisition of private lands in the Maya Mountain Marine corridor for conservation and management. This project emerged from a TNC facilitated "debt-for-nature swap" between United States and Belizean Governments in 2001. Under the Programme the U.S. Government and TNC will collectively provide approximately \$5.5 million towards forest conservation in Belize. In return, the Belizean Government will issue \$7.2 million in local currency obligations to TIDE and other conservation groups for the protection of 23,000 acres of forest. This exchange will facilitate the writing off of approximately \$1.4 million of Belize's U.S. debt.

TIDE's obligation under the agreement was to purchase 8,000 acres of vulnerable forestlands and to manage the approximately 11,000 acre Golden Stream Corridor Preserve currently under Government control. It has already acquired a number of properties and has begun building nature trails and other tourism infrastructure in some locations. TIDE has also commenced a series of meetings with small communities that currently practice cultivation in some of these private holdings. The meetings were used to address the land issues and management issues, with the ultimate goal of phasing out the use of the land and developing alternative activities for the farmers.

3.3 Biodiversity conservation and environmental improvements

3.3.a Conservation/improvement of what target resources?

No conclusive biological data is available to determine the impact of the Reserve on fish, lobster, turtle and manatee populations. However, since the PHMR's creation, five years ago, there has been no documented slaughter of manatees.

3.3.b Changes in resource state

According to Collins' (2004) survey of residents in the 3 PHMR communities, a large number of respondents (98% of non-fishing households, and 96% of guides and fishers) felt that the Reserve's marine environment was either "ok" or healthy (Table 2). This perception is somewhat more positive compared to a similar study in 2000 (Heyman and Graham 2000), which found that 70% of local fishers felt that the fisheries resource had decreased over the preceding five years.

Most of the fishers interviewed during the study (on which this technical report is based) felt that many of the commercial fish species affected by gillnet fishing are recovering, particularly Snook, Tarpon and Mackerel. However, many are still concerned about the state of the lobster and conch fisheries, which are felt to be in steady decline due to overfishing by foreign nationals.

3.3.c Indicators of biodiversity conservation or improvement

Many of the fishers interviewed claim that most large shoal and migratory fish species are coming back due to reduction in net fishing.

3.4 Poverty alleviation

3.4.a Indicators of poverty alleviation.

Local residents that have benefited from TIDE's activities and the PHMR have done so in four primary ways:

- Firstly, TIDE and its projects currently provide full-time employment for 25 residents of either Punta Gorda, Monkey River and Punta Negra. In addition, many additional residents are seasonally employed (including five temporary rangers), have been employed by TIDE in the past, or serve regularly as guides for TIDE Tours.
- TIDE has also provided training for a number of residents. Documentation is inconsistent, but it was estimated that approximately 150 fishers have received training as sport fishing guides. Additionally, TIDE has offered training in kayaking, bird and fish identification, tour guiding, SCUBA, and hospitality and small business development.
- TIDE also conducted a net buy-back programme in an effort to reduce the impact of the gillnet ban on net fishers. However, funding for the buy-back was limited, and was granted on a "first come, first serve" basis. As a result, only 15 fishers benefited from the programme, with a number of persons not receiving compensation for their loss. Others were not willing to turn in their nets because they felt the prices paid were insufficient, or were still unsupportive of the gillnet ban.
- A scholarship fund was also created for children of fishers and other resource users. Records are unclear, but it appears that approximately 10

children from 5 major gillnet families have benefited directly from the programme. It should be noted that the scholarship is only available to children with a certain level of academic standing.

Collins (2004) recently conducted study on fishers perceptions of the PHMR (Table 3). A total of 68 non-fisher households and 27 commercial and sport fisher households were questioned about the impacts of PHMR on their income and livelihoods. When asked about the impact of the PHMR, 93% of the fishers interviewed stated that it had either no effect, or a positive effective on both their income and livelihoods.

3.4.b *Improvements in community well-being (e.g., access to clean water, new village school, waste management etc.)*

Most interventions associated with TIDE and the PHMR seem to have benefited local communities primarily at the individual level. Monkey River has seen some improvements at the community level, with the creation of a computer equipped tour-guide office funded by membership fees, donations and grants from Friends of Nature and UNDP. Although links with TIDE and the PHMR seem to have helped the community to access outside funding, village projects were directly related to local leadership and initiative.

Table 2 – Community perceptions of PHMR marine environment (Collins 2004)

Responses	Households, n=68 (non-fisher)	Fisher. n=27 (guide and commercial)
Condition of PHMR Marine environment	percentage (number)	percentage (number)
Healthy	45% (26)	52% (14)
Fairly healthy	18% (10)	22% (6)
OK	35% (20)	22% (6)
Fairly poor	2% (1)	4% (1)
Poor	0% (0)	0% (0)

Table 3 – Community perceptions of PHMR’s impact (Collins 2004)

Responses	Households, n=68 (non-fisher)	Fisher. n=27 (guide and commercial)
Effect of PHMR on income	percentage (number)	percentage (number)
Very positively	0% (0)	0% (0)
Positively	8% (5)	30% (8)
No effect	89% (58)	63% (17)
Negatively	3% (2)	7% (2)
Very negatively	0% (0)	0% (0)
Effect of PHMR on livelihood		
Very positively	2% (1)	7% (2)
Positively	11% (7)	33% (9)
No effect	84% (55)	53% (14)
Negatively	3% (2)	7% (2)
Very negatively	0% (0)	0% (0)

3.5 Analysis of the initiative

3.5.a Mechanisms, dynamics, drivers

i. Analysis of catalytic element that made the initiative work

The PHMR's achievements can be attributed to significant personal investment by individuals involved, and consistent commitment from supportive organisations. TIDE's founder, Wil Maheai is a very charismatic personality, and seems genuinely dedicated to community involvement in local conservation and development. His links to funding groups, such as TNC Local, prior to TIDE's creation were also critical to the project. TNC Local's ongoing commitment to the PHMR and TIDE provided the supportive foundation used to source other key partnerships, and in the end increased TIDE's financial security.

ii. Decision-making process

Most of TIDE's subprojects are overseen by stakeholder groups, which are supposed to represent the interests of primary stakeholders in TIDE's decision-making processes. TIDE itself is administered by a Board of Directors, consisting entirely of individuals from the Toledo District. The Board receives regular reports of TIDE's activities, and meets through the year to review new subprojects and TIDE's management performance. Both the PCNP and the PHMR have advisory committees that meet three to four times a year to discuss issues related to their respective reserves. The purpose of the committee is to review current management activities, current management plans and make recommendations for management policy.

However, like most NGOs, TIDE depends heavily on international donors, which makes them susceptible to outside agendas and objectives. Although the stakeholder committees are in place to counteract this, it is not clear how effective these institutions are in fully and equitably representing the interests of their constituencies. Some community members complain about a lack of two-way communication with TIDE, and argue that they do not have a genuine voice in the PHMR's management. Some of TIDE's personnel argued that, with more inclusion of fishers' representatives on TIDE's various advisory boards, this communication will improve

iii. Conflict-management mechanisms

The Board of Directors and the Advisory Committees are also meant to serve as conflict management mechanisms, by including primary stakeholder groups in decision-making. From all appearances, these groups include all of the major stakeholders involved in the management of the parks, and thus create a forum where the different perspectives are allowed to vet major initiatives and decisions that would affect their various constituencies.

That said, conflict is still common over issues like the net ban and TIDE's unfulfilled commitments (small loans). There is also growing tension between fishers and sports fishing guides. Some tour-guides have expressed concern over the commercial harvest of sports fish species, which commercial fishers see as an attempt to undermine their livelihood.

iv. What were the roles of horizontal and vertical institutional linkages in the development and success of the project?

Vertical linkages were critical in TIDE's development. Again, the link between TIDE and TNC Local was key. TNC Local acted as a technical and financial partner, a link to other funding sources, and TIDE's advocate, both nationally and internationally. TIDE's relationship with the Government was formalized through the Memorandums of Understanding for the co-management of the PHMR and PCNP. This legal endorsement gave TIDE the authority to monitor the Reserve and enforce regulations that the Government was otherwise unable to implement.

Horizontal institutional linkages, also not very visible during TIDE's early growth, are beginning to play an increasing role in TIDE's initiatives. TIDE Tours is beginning to network more with local tour operators, in the hope of increasing access to jobs for trained guides. TRIGOH is also a critical step towards an integrated regional conservation and development policy for the Gulf of Honduras. This is particularly relevant, since approximately 50% of the fishers in the PHMR come from other Gulf of Honduras countries (Heyman and Hyatt 1996).

v. *Conflict resolution and enforcement*

Most major decisions made by TIDE are vetted by the Board of Directors and the Advisory Committees. If a consensus cannot be reached by the group, majority voting is used to resolve the impasse. From most accounts, decisions are usually made by consensus or with unanimous support.

The enforcement of the PHMR regulations falls on the rangers, which are certified supernumerary constables. Illegal fishing by foreign nationals, along with some net and long line fishing, seems to be the most pressing issues for the rangers. Early in the Reserve's history, locals caught setting nets were usually given a warning and information regarding the rules of Reserve. This continued for two years following the Reserve's creation, prompting calls from some funders for more severe action to be taken against the fishers. There have been a number of nets confiscated in the Reserve since 2002, with most being attributed to Guatemalan and Honduran fishers. From all available reports, the number of nets seen and confiscated in the area has fallen significantly since the Reserve's creation.

There have been a few cases of net fishers being brought before the courts, including the arrest of four Guatemalans in 2003. They were charged for four different offences including: having conchs out of season; vessel not licensed for commercial fishing; fishing in the conservation zone; and not having a fisherfolk license. Their boat and engine were confiscated and they were charged \$500 each for fishing in the conservation zone, and \$200 per person for each of the other offences bringing the total charges to \$4400.

3.5.b *Learning and Adaptive Management*

i. *How did previous observations lead to project formation and development?*

TIDE's founder had worked with communities in Southern Belize since 1984. The experience gained from this work, particularly his stint with the BCES in the 1990s, had a significant impact on how TIDE was structured. As Mr. Maheia put it, "*Most of their (BCES) money came from donors like USAID and*

TNC and so. So one of the things I was saying that if I was to get involved with a NGO or a Non-profit organisation, one thing that I said must happen is that we must strive for sustainability because there are hundreds of NGOs, and fly-by-night organisations that start one year and by the next year they're dead and this district is known for that."

TIDE's decision to focus on guide training and ecotourism in developing alternative livelihood initiatives was based on the success of similar programmes in other parts of Belize, and the growth of the tourism industry in the country. Visits to the Hol Chan Marine Reserve and the linked tourism industry in nearby San Pedro town, contributed to TIDE's efforts in developing the PHMR.

ii. *How was experience incorporated into subsequent steps of the project?*

Since the creation of the PHMR, TIDE has placed increasing emphasis on addressing the impacts of activities in the surrounding mountains and freshwater systems. With the development of the Freshwater Initiative (Box 6) and the Maya Mountain Marine Corridor (Box 7) TIDE has broadened its original focus on the PHMR to include more of a landscape level approach to management.

TIDE early initiatives focused specifically on the PHMR and its management. In recognising the link between the use of gillnets, damage to the habitat and fish stocks, and local people's livelihoods, TIDE took steps to lessen the impact of the ban on local people's livelihoods. Four distinct interventions were used to avoid improvising net fishers, including formal employment as rangers and managers, a gillnet buyback programme, a scholarship fund for the high school children of some net fishers, and a series of alternative livelihood training and capacity building programmes. Aside from providing direct employment, TIDE saw the aforementioned programmes as a series of interlinked interventions

that, supposedly, would be part of a sequential effort to redirect net fishers into more sustainable livelihoods.

Box 6 – Fresh Water Initiative

TIDE is currently implementing a freshwater program aimed at preserving the watersheds in the MMMC (Box 7). This project was developed under TNC's Fresh Water Initiative and involves a monitoring, assessments and mitigation of threats to the area's watersheds. So far, the project has involved annual kayak trips along the area's 5 main rivers, where TIDE's freshwater coordinator, community members and University of Belize interns record water quality and map (using GPSs) associated human impacts. In addition, investigations of the banana and shrimp farming practices in the Monkey River watershed were also carried out. Data on pesticides, herbicides and fertilizers, and water quality samples were collected. TIDE's future plans include implementing a riparian management strategy that focuses on education and outreach, riparian zone restoration, and improved livestock management.

In addition, it appears that TIDE rangers were intentionally slow in enforcing the Reserve's gillnet regulations on local fishers, instead spending almost two years trying to educate fishers found violating the ban. They however, confiscated most of the unattended nets found in the PHMR, or those belonging to illegal foreign fishers.

Box 7 – The Maya Mountain Marine Corridor

The MMMC includes nearly a million acres of land and a thousand square miles of sea in Southern Belize; stretching from the Maya Mountains massif to the Belize Barrier Reef. The corridor includes a collection of protected areas, including the Bladen Nature Reserve, Maya Mountain Forest Reserve, Payne's Creek National Park, Port Honduras Marine Reserve and Sapodilla Cayes Marine Reserve. The area is also characterised by a low population density.

The concept of an integrated, watershed approach to conservation in the MMMC was proposed by TIDE and the TNC. Working in partnership, these organisations developed a draft Site Conservation Plan for the MMMAT in 2002. A number of supportive institutions are also working in the area, including the Toledo Watershed Association. While the corridor is not entirely protected, TIDE has focused on developing forest, marine and coastal conservation initiatives (see Box 5).



iii. What was the role of experimentation?

TIDE has experimented with a number of interventions (training, net buy-back, scholarship fund) aimed at implementing the gillnet ban, and reducing its socio-economic impact on local fishers. This, along with the use of media outlets (meetings, radio, newsletters and pamphlets) to get the message to the communities were also the result of learning and innovation. TIDE is now diversifying its training programme to include small business development and a variety of tour guiding disciplines.

iv. Role of memory, novelty, innovation

Recognising the lack of employment for an increasing population of trained guides, TIDE took steps to develop and market the Reserve as a tourist destination. This took the form of TIDE Tours, which was conceived as an innovative means of providing alternative income to local fishers, and potential funding for TIDE in the long run.

v. How monitoring informs the project

Fishers' perceptions of fish stocks and anecdotal reports of manatee slaughter were initially used as justifications for the PHMR's creation. The PHMR's West Indian manatee population has always been used as a measuring stick for TIDE's efforts at managing the Reserve. A small survey was conducted in early 2005, with 8 manatees sighted in the two day period. However, other than the lack of reported harvest, there is no available data on the condition of PHMR's manatee populations.

TIDE also conducted a general baseline study of Port Honduras Marine Reserve in 2003, which was supported by The Oak Foundation and The Nature Conservancy. Following this study, TIDE rangers and scientists implemented a regular monitoring regime that included water testing and the surveys of sea grass meadows, mangroves, benthic reefs, some fish species, lobster and conch.

vi. *Barriers to Community-based Conservation, and how they were overcome*

Community suspicion of TIDE and the proposed PHMR was significant during the early stages of the initiative. Aside from the negative experiences of the communities with previous, mismanaged projects and NGOs, the community felt that their livelihoods were being directly threatened by the PHMR's gillnet ban. TIDE attempted to appease these suspicions through a series of community meetings and outreach initiatives. The organisation argued that the Reserve's creation would lead to significant community benefits, including training and capacity building, increased jobs and income, and small loans to assist fishers in the transition from fishing to guiding. TIDE also arranged for local fishers to visit Marine Reserves and associated tourist areas in other parts of the country to see the potential benefits first hand. With the stage set, TIDE used alternative livelihood training as an entry point in engaging community involvement and support. With the increasing threat of foreign fishers, local fishers were particularly receptive to TIDE offer of alternative livelihoods and effective management of the area.

However, fishers still harbour some resentment towards TIDE and the process leading to the PHMR's creation. A lot was said of unfulfilled promises, particularly the lack of the small loan programme promised by TIDE during the Reserve's early stages. This pledge was based on anticipated funding from the Inter-American Development Bank, which eventually fell through. According to TIDE's director, this was due to disagreements over the size of the loans, as well as IDB wanting "*the [local] Bank to manage the funds, and charge the same high interest rates*". Although TIDE has tried to move away from this issue, the lack of loans is still a sensitive topic for some fishers.

Gaining Government support and buy-in were also major challenges for TIDE. This was overcome through a combination of community advocacy and the affiliation of a large international NGO (TNC) with the project. TIDE lobbied the Government for the declaration of the Reserve through a series of meetings and signature drives (which produced over 500 signatures). In addition, the international recognition given to the initiative by TNC also indirectly put pressure on the Government to create the Reserve and present a positive international picture of Belize's environmental policy. The Government was not pressed much by the Park's creation, since TIDE was taking on most of the management policy and leading local development initiatives. In essence the initiative did a lot for the Government's local and international image, without much actual investment by the State. However, by bringing the Government onboard, TIDE risked the appearance of being co-opted by these larger forces. TIDE has managed this risk well, by keeping their distance from the political process, while at the same time courting Government officials and gaining the State's stamp of approval for most of their initiatives.

Funding has also been a challenge. However, TIDE works hard at maintaining a network of donors, with significant time and effort invested in proposal writing and fund raising.

vii. *Combining knowledge systems to solve problems*

In developing alternative livelihood options, TIDE focused initially on fly-fishing guide training. This initiative facilitated the integration of fishers' existing knowledge and experience on the sea with the specialized knowledge of expert fly-fishers, including casting, fly tying, and catering to customers. By combining these knowledge and skill sets, the training was able to produce community members able to participate in a high income livelihood with very little environmental impact. As such, fly-fishing was not just an alternative income source for the fishers, but it also complemented their existing livelihood.

3.5.c Community benefits from biodiversity conservation and environment improvements

i. What direct benefits were observed (e.g., improvement in resource base to be further exploited; alternative income sources (e.g., tourism))

Although quantitative data is currently not available, the reported reduction in the gillnetting would lead to an implicit increase in certain fish species, sea turtles and manatees. Other benefits include direct employment, alternative livelihood training, local organisation and the establishment of direct links between communities, funders, and Government (e.g., Monkey River Tour-guide Association sourcing funding from UNDP to conduct free tour-guide training in the community).

ii. What indirect benefits were observed (e.g., awards and recognition; publicity; increased funding opportunities for conservation)

The PHMR and its associated projects have brought TIDE significant national and international recognition.

TIDE's was first recognised in 1999 as the Belize Tourism Board's Environmental Organisation of the Year. They also received The Nature Conservancy Clifford Messinger Award for Achievement in Conservation a year later. In 2002, they were nominated by TNC to the UNDP's Equator Initiative Prize. They were eventually awarded the US \$30,000 prize along with 6 other finalists. This money was used in the expansion of the TIDE office building to include a library and a board room, which are both available to most local individuals and organisations upon request. In 2003, TIDE was also selected from several Belizean applicants as a partner in the implementation of a Caribbean Regional Environmental Programme (CREP) Demonstration Site, "...to serve as a model for how equity between the needs of environmental management and economic development can be gained." It was also apparent during the research that TIDE's director and staff actively pursue this recognition, investing significant effort in promoting TIDE and the PHMR both nationally and internationally. Outside recognition and increased visibility seem to be actively pursued by TIDE's Director and staff members. This was apparent from the investment of significant personnel time in public awareness activities targeting both local and international audiences.

3.5.d Livelihood strategies, coping and adapting

i. How did involvement in the project affect other livelihood pursuits, negatively (e.g., time, resources) or positively (e.g., synergies, increased capital)?

It was quite apparent that TIDE's training programmes have allowed fishers access to complementary livelihoods and increased income. That said, the ban no doubt had a negative affect on the livelihoods of some long-line and gillnet fishers, particularly those unable to access key TIDE interventions (Figure 4). However, finding these marginalized fishers proved difficult; since most of the former gillnet fishers identified during the study had participated in at least one of TIDE's programmes. A few interviewees also actively resisted participating in training because of unresolved animosity towards the organisation, stemming from the creation of the Reserve. These individuals finally participated in a TIDE fly-fishing workshop towards the end of the research period. Most commercial fishers seem to have readjusted to the net ban, spending more time using their existing collection of fishing techniques.

Others, while trained, argue that they have not been able to access jobs as guides. The reasons given for this were either an inability to afford boats and equipment, or their intimidation by the process of tour-guide certification. Local concerns point to an increasingly important question that needs to be addressed by TIDE; can the local tourism industry accommodate the number of guides being trained?

3.5.e Resilience of communities, livelihoods and management systems

i. Did the project add options (e.g., livelihoods, alternative management possibilities, new coping and adapting strategies)?

Creating alternative livelihood options was the major developmental focus of the initiative. For some fishers, the initiative serves as full or part time employment. However, the initiative's most significant impact has been the furnishing of local fishers with the training necessary to participate in the tourism industry. Training gave local fishers access to a new livelihood, which led to increased income and livelihood security. Tour-guiding taps into global markets and are thus vulnerable to external influences beyond the community level. Also, guiding is a seasonal activity, and is only lucrative during the tourist seasons, which runs from November to May. As a result, many of the fishers continue to fish in the off season, but at a reduced intensity. Therefore, the initiative has added livelihood opportunities for many fishers, while leaving most of their original livelihood activities intact. Also, the gillnet ban implicitly led to a healthier resource base, which increased the potential for the development of more livelihood options in the long run.

On the other hand, the PHMR's creation meant less livelihood options for the commercial fishers not involved in guiding. Without nets they had to rely heavily on less efficient fishing methods, like hand lines and fish traps. The ban has also changed the type of fish harvested, with significant quantities of certain species inaccessible using other gear. It should be noted however, that many local commercial fishers had already shifted their focus to the lucrative, high value lobster fishery, which did not require gillnets. This was in response to both market pressures and the transfer of technology. In the case of Monkey River, this technology "transfer" was precipitated by community mobilization

and serious conflict with illegal fishers (Box 8). All things considered, the project seems to have reduced the vulnerability of many resource users to environmental and socio-economic forces.

ii. *Did the project create learning opportunities (see under learning)?*

Aside for direct training and capacity building, the project also exposed community members to the processes of fund raising and proposal writing. For instance, the interaction between TIDE and individuals from the Monkey River Tour-guide Association led to a successful funding proposal to the UNDP for guide training and tourism infrastructure development in the Monkey River Village.

iii. *Did the project create self-organisation opportunities?*

Since the Reserve's creation there have been a few instances of community-organisation around a shared cause. For instance, when the resort El Pescador opened in 2003, they hired TIDE trained fishers as tour-guides for visiting fly-fishers. These trained local fly-fishing guides got together and agreed on certain terms of their contract with El Pescador, including using locally owned and controlled boats, standard trip prices and a fixed number of guides. TIDE also assisted in a

Monkey River community initiative to gain control over nearby forests used by outside tour-guides. With help from TIDE, the Monkey River Tour-guide Association was able to access funds to purchase an area along the Monkey River known to have a high population of Black Howler Monkeys. The area had become a regular stop for trips by tour operators from the town of Placentia, to the north of Monkey River. As a result, tour operators from Placentia will have to pay a user fee and employ a local guide from the community when visiting the area. The Monkey River Tour-guide Association also arranged free tour-guide training in the community, and rents equipment to local guides. The Association is also in the process of developing and marketing a Monkey River tour package. All of these initiatives have been developed with organisational support and technical advice from TIDE.

Box 8 – Conflict and learning: A Monkey River narrative

"I think it was around 1990. The government give permission for a big foreign group to do some lobster fishing with traps, and it was supposed to be outside the reef, but they start fishing inside the reef and start catching a lot. It was taking away lobster from Monkey River fishermen, taking them from the deep before they reach the shallow by our nets. My cousin was a police them times and he come in, and then went to Belize [City] and find out what de going on. When we contact him, he say that they not supposed to be fishing inside the reef and he say that we could do whatever we want to deal with them. So the fishermen get together and start raiding they traps and clean out [take] all the lobsters. Then we start to cut the cables and take away the whole trap. After about 3 or 4 weeks they move. But we done had most of the traps so what they could do? We even fire couple shots at the boat to scare them.

That is how we first end up with traps. We look at how they work and start building we own. We change it a little bit, make them a little bigger, a little heavier, flat on the bottom so they sit at the bottom [of the sea] good....We used to set nets for a few years. We see how much damage it was causing. When we set net for lobster we used to catch a lot for about 2 years, then it drop. We realize it was nets destroying all the lobster. With the traps now you didn't need nets anymore, so most of the fishermen in Monkey River start to use the traps."

Excerpt from interview with Monkey River fisher

3.5.f *Lessons from this EI case*

i. *Which lessons were likely transferable?*

Training and capacity building

“That’s when [declaration of Reserve] I decide to really get into tour guiding, because it really hard to make a living...you just got to work yourself around it and try to survive. I took kayak training from TIDE, and tour-guide training from Belize Tourism Board”

- Punta Gorda guide, former gillnet fisher

The primary thrust of TIDE’s community development programmes is training and capacity building, and has played a major role in the PHMR’s achievements to date. For instance, former gillnet fishers are now earning significantly more as tour-guides, and have actually become advocates for conservation and the PHMR in their respective community. In addition, TIDE’s Rangers (all former fishers) continue to benefit from training exercises like law enforcement, SCUBA and coral identification, to name a few. This knowledge and skills were very practical from the Ranger’s perspective, and complemented their existing “knowledge of the land”.

It would seem that the training has contributed to more effective monitoring and enforcement by both the Rangers, and tour-guides at the community level. As a result, the Reserve is in very capable hands and benefits in the long run. Involvement with the project has also increased some community members’ understanding of the management and funding process, increasing their capacity to self-organise and, in the Monkey River case, undertake their own initiatives.

Complementary livelihoods as an entry point

“I used to shoot gibnot (local bird) and get a \$20. Now you can leave that same gibnot and take people to see it and you get \$200. No sense shooting them now when you can make your little money.”

- Punta Gorda guide, former gillnet fisher

In pursuing livelihood alternatives, TIDE initially focused exclusively on training gillnet fishers to be sports-fishing guides. This turned out to be a very important entry point in gaining the fishers support for the Reserve. This was because sports-fishing did not represent a major departure from their primary livelihood, thereby allowing them to stay on the water and use their pre-existing knowledge and expertise. Only now they had an additional fishing technique that gave them access to a totally new industry. This demonstrates the importance of focusing on complementary livelihoods, rather than just alternative ones when developing training programmes. These complementary livelihoods can serve as a fairly effective entry point in generating community support for Protected Area’s, particularly in cases where traditional livelihoods are restricted.

Managing community expectations

“At first we agree because of what they paint in front of you, but after it was something completely different...”

- Caye fisher

“The training is not the solution, the solution is if you can find a job”

- Monkey River fisher

Early in TIDE’s drive to get the PHMR declared, it made a number of commitments to local communities. Most of these commitments related to loan provisions, job creation and income generation. Although job creation and income generation have occurred, some fishers have been left out. The promised loan program also never materialised, with some trained fishers unable to finance their transition to guiding. Understandably, these individuals are still very vocal critics of PHMR and TIDE.

It is important that TIDE recognises the market limits in its training approach to community development. TIDE has begun to diversify its training program, but issues of trainees needing initial capital to get certified and equip themselves as guides still persist. This lesson is critical when engaging communities in discussions of potential benefits to conservation and development. Project personnel should be careful to paint a realistic picture of what benefits communities can expect, because they will be held to their promises. Unfulfilled promises can isolate communities and quickly turn local support into animosity.

Collaborative institutions and mechanisms

It’s good that they have the [Advisory] Committee to include the people, but they still could do more

- Punta Gorda guide, former gillnet fisher

A number of stakeholder groups have been incorporated into TIDE’s institutional and management structures. These structures are intended to oversee the organisation’s initiatives and represent the interests of local stakeholders. These Advisory committees are made up of everyone from TIDE personnel, to government representatives, to community fisher and tour-guide groups.

It is not clear how much decision-making power is vested in these groups. Many interviewees complained of poor communication between TIDE and communities. They argue that TIDE personnel should facilitate more in-community meetings to facilitate direct feedback. However those involved in the committee are pleased that there is a formal forum where local representatives can voice their concerns about the management of the Reserves. Although TIDE has some ways to go in achieving true collaborative decision-making, they have begun to actively engage local stakeholders through these Committees, and thus generate critical community support for the Reserve and TIDE in general. This support is critical to any genuine attempt at community-based conservation or protected areas management.

Marketing and enterprise development

“We work on contract with TIDE Tours...it brings in work, although they could do more”

- Punta Gorda guide, former gillnet fisher

Developing alternative and sustainable livelihoods depends largely on the presence of supportive markets, and the ability of resource users to access those markets. In this case, the tourism market was well established in Belize, but was concentrated in other high profile and well marketed regions of the country. During the early stages of the PHMR, guiding was therefore not a feasible option for most local fishers.

TIDE’s approach to linking its alternative livelihood program with accessible tourist markets was the establishment of the for-profit TIDE Tours. Along with other groups, TIDE Tours played a key role in establishing tour-guiding as viable livelihood for local fishers, and contributed significantly to tourism development in the region. The organisation was able to bridge vastly different scales by packaging and marketing local tours at the national and international level. Following TIDE’s lead, other local tour operators and resorts have also begun contracting the services of trained, local guides. TIDE Tours has even gone so far as to compile a database of local restaurants, transportation and certified guides for the use of tourists, and tour operators. Once it has achieved financial self-sustainability, Tide Tours can also potentially contribute funding to TIDE and its sub-projects. TIDE Tours can thus be used as a model institution for similar efforts in developing countries with poor tourism infrastructure and market links.

It is important to note that market dynamics can also be the undoing of many enterprise-based conservation projects. Firstly, access to global tourism markets can be impacted by forces outside the control of local-level organisations (for example, travel warnings, a bad historical reputation or low demand for product). Even established tourism markets can be notoriously unpredictable, as TIDE Tours experienced firsthand following the World Trade Center attacks. Although tourism presents significant development potential in many cases, relying too heavily on this industry can put community-based initiatives and local communities at the mercy of unpredictable global market forces, and thus significantly increase their vulnerability.

Government and the transfer of management jurisdiction

“I think [it is important] meeting [and] establishing, not only foreign donors, but like people in Government, because at the end of the day is Government run things.

They are the bosses of the natural resources. So you have to make sure that you maintain that balance, meeting with the relevant government agencies that will support you.”

- TIDE’s Director

In managing natural resources, jurisdictional boundaries should to be aligned as close to the geographical distribution of the resource as possible. In Belize's case, the Government seems aware of its financial constraints and has accommodated many co-management arrangements in its Protected Area system. Tourism is big business in Belize, and the Government is supportive, at least vocally, of community-based ecotourism initiatives. They however, lack the resources required to truly co-manage their protected areas. TIDE took advantage of these conditions to effectively lobby the Government for the Reserve's creation. They completed a management plan for the PHMR and were able to source funding to fulfil most of the plan's requirements under the management plan. They also met with local and national representatives and ministers to push their cause. This was reinforced by community meetings that led to letter writing campaigns and signature drives supporting the Reserve's creation. It is fair to say that the link between TIDE and the TNC, a powerful international group, contributed to the lobbying effort. In the end, this multifaceted approach to acquiring Government support was extremely effective. TIDE has also approached its relationship with Government cautiously, ensuring that they maintain State approval, while at the distancing themselves enough to preserve their independence in the eyes of the community.

Community-based monitoring and enforcement

"The rangers themselves used to do it [net fishing], so they know the operation.

- PHMR Ranger, former gillnet fisher.

"If I stop commercial fishing, they will have more product to show the tourists, and that will be a benefit to me, and to the area, and the country. Several guides have picked up net when they out there"

- Caye guide and former gillnet fisher.

Community members have been brought into the management process primarily through the Advisory Committees, as rangers and as tour-guides. Outreach and awareness campaigns also generated support among fishers and community members in general. Of particular note was the initial focus of TIDE rangers on educating fishers found using gillnets rather than confiscation and prosecution.

As potential beneficiaries in the PHMR and the linked tourism industry, many community members have become more involved, both formally and informally, in the monitoring of the Reserve. For instance, on two occasions I observed community members (always tour-guides) calling into the TIDE offices to report gillnets in the Reserve. From other accounts it appears that this local level monitoring and social enforcement has increased since community fishers began working as guides. With their livelihoods increasingly dependent on the health of the PHMR, the broader community also seems to have developed a sense of ownership towards the Reserve, even if they do not always agree with management interventions.

There is also growing tension between fishers and sports fishing guides. Both sides see each other's activities as potential threatening to their respective livelihoods. There has thus been some animosity expressed between fishers and tour-guides in particular communities. However, as the ranks of local tour-guides increase, this animosity is giving way to cooption, with former anti-TIDE/anti-PHMR fishers coming on board and pursuing guide training opportunities.

Tackling cross-scale tensions

"... there was a big delay [in enforcing the gillnet ban], in fact we were getting hassled by the international NGOs. But at the end of the day I'm always telling people, I am from this stock of people... so I can't go against them, we have to make the change together."

- TIDE's Director

In order to achieve its objectives, TIDE has had to act as a linkage institution, bringing together different actors at multiple scales of organisation. This is particularly challenging, with actors at each scale having different objectives and constituencies. To compound the challenge, many PHMR initiatives attempt to integrate conservation and development, which is often seen as a dichotomy by actors on both sides of the fence. In TIDE's case, most of its funding comes from environmental groups at the international scale, with conservation as their primary objective. At the other end of the spectrum lies the community, with job creation and livelihood security higher on their agenda.

TIDE has been fairly effective at manoeuvring in this menagerie of scales. On one hand, they have been able to satisfy the conservation needs of their international funders by implementing the gillnet ban and reducing the intensity of commercial fishing in the area. At the same time, they have begun to address the community's local development needs by providing training and high-income livelihood alternatives for some fishers and local residents. All projects attempting integrated conservation and development have to make compromises between the two at some point, particularly when most of your funding comes from outside donors. For instance, TIDE may have to emphasise specific sub-projects, particularly those focused on conservation, when marketing themselves to foreign donors. Although TIDE does appear to be more conservation focused, they still seem to fairly effective in presenting local needs to an international audience, and balancing their conservation and development objectives.

ii. Which lessons were not transferable?

Outside threats encouraging community support

“The reserve and what TIDE is doing is a good thing. Before, you used to get a lot of ‘alien’ fishing in them areas, and they traveling long distance, so they got to make back they money. So when they come they catch out everything; small conch, lobster, fish, even out of season. Everything was getting scarce. Now qith TIDE and the patrols, things start to come back. Even if people still netting little bit, it not enough like before to done out everything.”

- Punta Gorda guide, former gillnet fisher

Being able to gain and maintain community support for protected areas is challenging to say the least, particularly if it involves livelihood restrictions like PHMR’s gillnet ban. TIDE has employed a number of previously mentioned approaches in its efforts to gain community support for PHMR. However, the threat of illegal fishing by foreign nationals (most using nets) meant that fishers were more receptive to the Reserve than would have otherwise been. Although not pleased with the PHMR’s restrictions, many community members have accepted it as a means of keeping foreign fishers out and increasing their livelihood security.

Social conditions

“Like, now, if we see somebody taking 10 conch, we would take out our 10, otherwise he would take out 20. If we had these alternatives, we would say ‘Hi, you can’t take out these conch!’”

- Punta Negra guide, former gillnet fisher.

Most of the communities surrounding the Reserve are small, with kinship and informal relationships affecting behaviours and local activities. The size and close-knit nature of these communities makes it easy for rangers and tour-guides to participate in informal and in-situ education and awareness campaigns. This has led to the aforementioned increase in community-level monitoring and social pressure to adhere to the ban.

Charismatic and committed individuals

“Wil [TIDE’s Director]used to take us out on trips...use the time to talk to us. It’s just the way he talk to you, you feel like you could do it. I thank Wil for that attitude, it rubs off.”

- Punta Gorda fly-fishing guide, former net fisher

TIDE’s institutions and management structures seem to consist largely of very committed leaders and community members. This commitment was apparent in the time spent writing grant proposals, taking donors and Government officials on tours of the Reserve, speaking with community members, and trying to increase TIDE’s both nationally and internationally. Aside from TIDE’s core

personnel, many influential community members believe in tourism as a mechanism for local development, and see the link between tourism and conservation. They have thus become integral in generating community support for both the PHMR and TIDE as a whole. Above all, most of the main local actors seemed to genuinely believe in community-based conservation and appear committed to local involvement. Unfortunately, commitment and charisma are usually non-transferable resources.

Strong primary partnerships

“People that really came through with money were people like the Program for Belize, then TNC and USAID, those are the big three and then through the TNC we tapped into other foundations and donor agencies. We went to them and said ‘What are we going to provide for these community people? We want to tell them to stop using nets but what are we going to give them?’ So then TNC and USAID said ‘Well, we got to look for ways and means of (doing that).’”

- TIDE’s Director

Strong and committed partners played a key role in both the creation of TIDE and the development of the PHMR. The Nature Conservancy in particular has served as TIDE’s primary partner since its establishment. The commitment of TNC Local to TIDE’s initiatives over the years has given TIDE the space and time to grow into its own, without the constant risk of financial collapse. The partnership has also meant extensive technical and organisational support, along with the creation of links with other support organisations and funding sources. TNC Local’s presence no doubt also lent some weight in building the relationship between TIDE’s and the Government.

Although TNC Local’s role has declined over the years, its contribution to the early development of TIDE and the Reserve has been instrumental in TIDE’s achievements to date. This kind of partnership and support seems critical in developing successful community-based conservation initiatives.

The right ingredients at the right time

“Is a whole set of things really”

- TIDE’s Director

The conditions that have facilitated the growth and development of TIDE and the PHMR can not be seen as a series of separate lessons. They represent a series of events, interventions, learning cycles and innovations all framed by the context of local conditions. Many of the successful aspects of the initiative depended largely on the people involved, the policy environment, and the sequence in which projects were developed and implemented. In other instances it depended largely on the intervention of an outside group at an opportune time, as was the case with funding from the Long Island TNC Chapter. It is within these complex, and highly contextual, series of events that many of the initiative’s successes lie.

As with natural systems, these projects have properties that only emerge as time goes on, and in these emergent properties may rest the answers to the question “What makes community-based conservation work?” Although this report outlines very relevant lessons learned from the project, determining what exactly “made the project work” takes on the ground experience with years of mistakes and learning. What TIDE and the PHMR does demonstrate, however, is that the potential benefits of community-based conservation are worth both the time, and the mistakes. As a guide and former gillnet fisher from Punta Negra put it “*We can’t forget about the community, because this is what it is about. They need to get real alternatives, they need to own it.*”

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Appendix – Timeline of events leading up to creation of TIDE and declaration of the PHMR

Date	Event
1990	Critical Habitat Study of Port Honduras Basin conducted by Belize Center for Environmental Studies (BCES).
May 1993	Rapid Ecological Assessment (REA) conducted by BCES, funded by Environmental Project for Central America (PACA).
1994	Second REA conducted.
1994	Designation of the Proposed Port Honduras Marine Reserve by the Fisheries Department (1 st formal step towards establishment of a marine reserve). Fisheries Department mandates BCES to prepare draft management plan.
1996	BCES conducts a series of community meetings in Punta Gorda, Punta Negra, and Monkey River. Columbia University Branch of Center for Environmental Research and Conservation (CERC) offers to fund the proposed Port Honduras Marine Reserve. Plans never materialize due to BCES' collapse.
Jan. 1997	BCES defunct (first draft of management plan completed).
Sep. 1997	TIDE formed by former BCES consultant. Work resumes on formalizing draft of management plan. TIDE offers local fishers courses in fly-fishing, sea kayaking, birding, and natural history. More than 40 locals participated and received certification.
Feb. 1998	TIDE invited 24 fishers to visit several existing national marine protected areas.
May 1998	TIDE carries out community meetings in Punta Gorda, Punta Negra, and Monkey River.
Jun. 1998	Management submitted to Fisheries Department.
Oct. 13, 1998	24 fishers from of Punta Negra send letter to Minister of Natural Agriculture and Fisheries with intention of speeding Reserve declaration process.
Nov. 4, 1998	Letter from Mayor of Punta Gorda to Minister of Agriculture and Fisheries announcing support for the Port Honduras Marine Reserve and TIDE. Calls for facilitation of the process of officially declaring the Marine Reserve.
Nov. 20, 1998	Letter from President of Golden Stream Corridor Preserve to Minister of Agriculture and Fisheries, announcing support for TIDE's achievements concerning the Port Honduras Marine Protected Area.
Mar. 1, 1999	Chairman of TIDE's Board of Director sends letter to the Minister of Agriculture and Fisheries requesting emergency meeting on the Port Honduras Marine Reserve. Concerns raised regarding "a small, but vocal group of opponents to this Reserve in Toledo. They are using Government inaction on the legislation as a 'proof' that there are broader national concerns regarding it that have not been fully share with Toledo residents."

Mid 1999	Deputy Prime Minister and Minister of Natural Resources and the Environment, Minister of Tourism, and Minister of Rural Development and Culture all advocate the establishment of the Reserve. Chairman of the Toledo coastal communities and Mayor of Punta Gorda and the Coastal Management Authority reaffirm support for Reserve.
Nov. 1999	Evidence allegedly surfaces that the Area Representative paid people in Forest Home, Elridge, and Punta Gorda communities to spread false rumours about the Reserve; and increase local opposition.
Jan. 25, 2000	Official declaration of Port Honduras Marine Reserve.
Jan. 2000	PHMR Advisory Committee formed. Memorandum of understanding with Government drafted (not signed).
Mar. 2000	Chairman of Southern Fisherman's Cooperative and other fishers collected over 500 signatures from community members in support of Reserve declaration and TIDE's management.
Jun. 2000	Three Rangers hired for PHMR.