



**PROJECT FOR THE CONSERVATION OF MARINE RESOURCES IN CENTRAL  
AMERICA**

**Funding Agreement: (BMZ 2007 66 667)**

**Annual Operational Plan (AOP)**

**January to December 2013**

**Port Honduras Marine Reserve, (PHMR) Belize.**

**Toledo Institute for Development and Environment (TIDE)**

## **1. CONTEX AND SENSITIVE POINTS**

The Toledo Institute for Development and Environment's (TIDE) Annual Operational Plan (AOP) 2013 is design with sustainability of the marine resources, the institution and the people in mind; as such, it is critical to invest in infrastructure, equipment, people and communities surrounding the Protected Area at this point of the project. In the end TIDE hopes to accomplish several goals; to become more self-sustainable and less reliant on annual project funds to offset its operational costs; to improve stakeholders' stewardship of the resources and to increase support across Belize for conservation and sustainable management of natural resources. As TIDE enters its second year of the implementation of Managed Access - a new commercial licensing program for fishers in the Port Honduras Marine Reserve, it becomes more dependent on the full participation of the communities to ensure the program works as purported. Some of the decisions taken by the Government of Belize (GOB) can impact the implementation of the project, these points are listed below.

- The national implementation of Managed Access (A form of Catch Share) across all marine reserves in Belize. This could possibly lead to less focus on the existing pilot sites such as Port Honduras Marine Reserve as the government resources will now have to be divided among several other marine reserves. As a pilot site, it is important that PHMR continues to be developed so that other reserves can learn from our experiences here.
- There is a growing concern over the current co-management agreement between Government of Belize and some Non-governmental Organizations (NGO) for the co-management of marine reserves. GOB has recently signed 5-year contracts with a few NGOs, including TIDE for the co-management of PHMR among others. Other NGOs are refusing to sign claiming that the agreement is biased in favor of the Government. TIDE feels that in order for the smooth running of the KfW project, we must have a good working relationship with the government with respect to the co-management of the KfW project site.
- One of the main threats to the marine resources in Southern Belize is illegal fishing by both Belizeans and Guatemalans. This is a very sensitive issue given the current state of the border dispute between Belize and Guatemala and Guatemala's claim for Southern Belize. Law enforcement can be very sensitive especially when our rangers have to arrest and charge Guatemalan fishers. TIDE has been in the forefront of trying to organize Tri-national forums for fishers from Belize, Guatemala and Honduras. We will continue to engage fishers from the three countries in developing a good relationship through the Tri-national Alliance for the conservation of the Gulf of Honduras (TRIGOH) where TIDE is the chair of the alliance.

## **2. HIGHER PROJECT OBJECTIVE**

"To contribute to the conservation of the ecological functions of the Mesoamerican Reef System."

## **3. PROJECT OBJECTIVE.**

"To consolidate Marine and Coastal Protected Areas (APMC) selected in the Project region and ensure medium-term conservation and sustainable use of marine and coastal resources."

## **RESULT 1: Protection And Conservation Of Marine-Coastal Ecosystems In The Marine Area Are Secured.**

TIDE's approach to protection and conservation of marine-coastal ecosystems has always been from a sustainable development standpoint. Sustainable development takes a three prong approach focusing equally on Environmental, Economic and Social aspects. Raising the necessary funds to invest in all three equally has been a challenge for us in the past; however with projects such as this we are strengthened to broaden investments in social and economic aspects. In our 2013 AOP for Component 1 we are proposing to investment in infrastructure at the TIDE office and the marine reserve to increase the efficiency of our management. We are also proposing to invest in equipment that will allow us to enhance marine laws enforcement, environmental education, research and monitoring and financial sustainability. For Component 2, we are proposing an increase in investment particularly to enhance economic and social conditions in the coastal communities. This will be done by building capacities in coastal communities with the intention of increasing income; developing feasible business enterprises with investments; investing in some infrastructure to help existing business' become more efficient and involving communities in our research and monitoring program to build their capacity and help them earn an income.

### **4. ACTIVITIES AND SUB-ACTIVITIES**

#### **B.1.01 INVESTMENTS IN INFRASTRUCTURE**

To effectively enhance the protection and conservation of the marine ecosystems there needs to be proper infrastructure in place both at the reserve and at the main office where the administrative support is located. Congruent with the management plan for Port Honduras Marine Reserve under section **4.5.4 Infrastructure Management Program** 'The Infrastructure Management Program covers activities such as the maintenance of present infrastructure and equipment, and planning for future infrastructure and equipment needs. Site and infrastructure management is addressed under three sub-programs; **Infrastructure, Equipment and Maintenance**. Infrastructure required for this AOP is as follows; repairing of the docking facility at the TIDE office; Installation of a new solar energy system at the ranger station in the marine reserve that will replace the current defunct system at the caye, construction of a proper boat shed at the TIDE office to repair and store boats as well as a couple of storage rooms for parts, tools and research equipment, and finally an extension to the TIDE office where rangers can use to have meetings, check emails, generate reports etc on days that they are at the office.

##### **B.1.01.05 Repair dock at TIDE office**

The service dock at TIDE is over 12 years old and has been deteriorating rapidly. The dock is used by our rangers and the communities of Punta Gorda and Cattle Landing Village to load and unload goods, transport children and visitors to the marine park, recreational fishing, sunbathing by tourists, and a great area to interact with the sea.

The project will cover the cost of repairing the dock through a contract valued at \$10,000.00. TIDE will provide electricity (\$200.00), and some labor (\$800.00) to do the repairs as counterpart for a total value of \$1,000.00.

##### **B.1.01.06 New Solar system at Abalone Caye**

The core operation of the rangers is to protect the marine resources through effective patrols and surveillance. They are on the job 24 hours per day 7 days per week so communication with the TIDE office and the reserve manager is very important. In order to have reliable communication available at all times, the telephone and VHF radios need a good supply of electricity. Since the construction of the ranger station

12 years ago a solar energy system was installed; it has been repaired at least 3 times since then and has become ineffective at handling the increase demand as reserve staff and research personnel doubled over the last 5 years.

It is recommended that a new solar/wind energy supply replace the existing one as it is too costly and ineffective to replace only a few parts at a time. The project funds will be used to contract an individual to procure materials and supplies, install the new system and provide training to the rangers on how to service and maintain the system for a total value of \$20,000. TIDE will provide counterpart to transport the materials, contractor and other necessary resources to the caye, service and maintain the system as well as provide administrative support; total counterpart value is \$5,000.

#### **B.1.01.07 New boatshed at TIDE office**

TIDE office currently has a 12-year old boat shed and store room that is being used to house 2 boats and 4 store rooms. The shed is made of wood walls, metal roof and concrete flooring; however over the years the wood has deteriorated and is constantly threatened by woodlice. The store rooms are used to repair the boats, store boat and engine parts, store old used boat engines, store tools to repair the boats, as well as some equipment for research and monitoring. These storerooms are also in deplorable condition and need to be replaced.

The project funds will be used to contract a company to construct the new boatshed/storeroom at the same location of the existing shed which will be dismantled. The concrete floor and metal roof will be re-used but the wood walls of the shed and storerooms will be replaced with concrete walls. The total cost to the project is \$20,000. The area where TIDE's office is located is made up of xx individual parcels of land, TIDE's counterpart will be the value of the parcel on which the boat shed sits; it is based on market value from similar land in that area and is estimated at \$10,000. The value of the boatshed will be capitalized and added to our assets, this will include the cost of the boatshed and the value of the land combined.

#### **B.1.01.08 Extension of TIDE office for rangers' office**

Over the years of its existence, TIDE has grown in staff size from a few employees in 1997 to over 35 in 2012. The growth also included office staff, and as a result office space became very limited. Office space is now needed for the marine rangers to hold meetings, training sessions, keep up-to-date with new developments via the internet, write patrol reports, or exchange information via emails.

Through the project, TIDE will contract a company to construct an extension on the existing TIDE office that will serve as a rangers' office. The project will contribute \$35,000 and TIDE's counterpart will be the value of the parcels of land on which the office sits and is estimated at \$25,000.

#### **B.1.01.09 Erosion mitigation at Abalone Caye**

Abalone Caye in the Port Honduras Marine Reserve can be described as the hub of TIDE's marine reserve management. It houses the rangers, researchers, and volunteers all year round. It serves as a place where tourists, local visitors and fishers can get information on the management and help if needed. The TIDE rangers are on the caye 24/7 conducting surveillance and patrolling the waters night and day. Over the past 5 years massive erosion started to erode the caye rapidly threatening to literally undermine 12 years or conservation work and millions of dollars in investment. About 2 years ago TIDE started to protect the caye using large rocks in gabion cages forming a protective permeable structure around the caye. This mitigation method is proving to be the best approach as the area in which it is located is no longer eroding. Past funders of this effort included New England Biolabs Foundation, Belize Fisheries Department and MAR Fund; sadly, our funds are now very low leaving the work incomplete with the unprotected areas still eroding at an alarming rate.

In a desperate rush to save the caye and secure the fishery, TIDE is proposing to use \$15,000 of the project funds to contribute to the completion of this very important project. The funds will be used to purchase materials for the structure (Rocks and Gabion baskets) (\$5,000), transportation of these materials to the caye (\$7,000) and hiring additional help from the community (\$3,000) to expedite the process. This work will take approximately 5 months to complete. TIDE will contribute \$15,000 in counterpart divided into cash from other donors and in-kind as labor from its staff.

#### **B.1.02 INVESTMENTS IN EQUIPMENT**

Equipment constitutes a significant portion of the needs for effective ecosystem protection. In this section of the work plan there is a wide variety of equipment ranging from boat engines, to patrol kits, to research equipment and a vehicle. Much of this equipment are either directly needed to do patrols and surveillance or needed to support the protection of the marine resources. As indicated above in section B.1.01, the PHMR management plan in section 4.5.4 speaks to the investment in Equipment.

##### **B.1.02.01 Canopy for existing boat**

A canopy prevents the rangers from direct exposure from the sun and rain while on patrols. Rangers spend most of the day and at least half of the night on the waters of the Port Honduras Marine Reserve doing patrols.

The patrol boat canopy will be purchased using project funds from a local vendor in another district of Belize for a cost of \$2,800, so TIDE will cover the cost of transportation and installation as counterpart; a value of \$200.

##### **B.1.02.02 Signs for marine reserve/complete the demarcation of PHMR**

Two signs were to be installed in the 2012 AOP, however they were not printed because of reasons beyond our control. In this AOP we will install two more signs in PHMR bringing a total of 4 signs to be installed in 2013 at Abalone Caye and at West Snake Caye in one of the 'replenishment zones'. The signs will be constructed of aluminum or PVC material bearing the map of the reserve as well as the rules and regulations in Spanish. Signs are needed to increase the visibility of the marine reserve for fishermen as well as visitors. Both signs will be designed by TIDE personnel and will be contracted out for printing. TIDE rangers will then install these signs on the locations specified above. The cost of the printing of the signs for a total of \$2,300 will be charged to the project. TIDE will contribute \$600 as counterpart through the use of its boat, transportation and boat captain

In addition, TIDE will use rangers, fishers and community researchers to install the demarcation buoys purchased in 2012 under this project. TIDE has already determined the location for the buoys and will proceed to install the buoys as counterpart. One critical note to mention is that TIDE is currently working with the fishing communities to increase the size of the replenishment zone from 5 to 15%. We are hoping to get this done by the end of 2013 so we will wait until we have established the new boundaries of the replenishment zones before installing the new demarcation buoys since we will have to demarcate the new zone properly.

Demarcation of the outer boundary will commence in the first quarter completion of this activity is dependent on discussions for the expansion of the replenishment zone which is time sensitive. The entire cost of \$4,000 for the installation of buoys will be covered as counterpart so there will be no direct cost to the project. Overall counterpart to be provided by TIDE for these two activities is \$4,600.

##### **B.1.02.03 Furnishing of Abalone Ranger station - beds, tables, chairs, etc**

Now that the rangers station is refurbished, we must ensure the furniture inside is also in good condition. The station is desperately in need of some 8 chairs, 1 table, 1 set of pots, eating utensils and 1 new

stove/oven. TIDE will allocate \$3,500 of the project funds to procure these items in this AOP. The items will be purchased from local vendors in Punta Gorda Town. TIDE will cover the cost of transporting these items to the caye as counterpart for \$100.

#### **B.1.02.04 Purchase of 2 laptop computers**

In today's environment, a computer is a necessary piece of equipment to enhance the efficiency of management. The manager of the marine reserve uses a computer on a daily basis to generate reports, communicate with office staff, government officials, track illegal activities etc. There is also a Managed Access Coordinator whose primary responsibility is to manage the Managed Access Program, this person spends 100% of their time with the fishers of the marine reserve and also uses a computer on a daily basis.

TIDE will purchase two laptop computers, one will be purchased using project funds for a total of \$1,200 and the other will be purchased using counterpart funds also for \$1,200. The purchase will be made locally from a vendor in Punta Gorda Town.

#### **B.1.02.04 Furnishing of the TIDE's office extension for Rangers.**

With the extension of the TIDE office to accommodate an office, training room for rangers, there is a need to also furnish the office space. A total of \$4,500 of the project funds will be used to procure the following items; 5 office desks, 5 office chairs, 1 small conference table with 10 chairs. Furniture will be purchased locally from vendors in Punta Gorda Town. TIDE will provide a total of \$500 as counterpart for 1 office desk and 1 chair.

#### **B.1.02.05 Purchase oxygen tank Drive 682 Lts Full medical equipment Pr9**

All of TIDE's researchers use SCUBA to conduct monitoring of the marine resources. It is very important to have a functioning oxygen provider tank in case of emergencies. The nearest decompression chamber is in San Pedro Town at the far Northern end of Belize. It would take over 4 hours to get to this chamber on a low flying helicopter. Oxygen provider tank will serve to keep individuals safe during the 4 hour journey in the event of a dive accident.

TIDE will use \$1,000 of the project funds to purchase the oxygen provider kit from a local store in Belize City. Counterpart funds of \$500 will be used to transport the equipment to TIDE's office in Punta Gorda and conduct and in-house training on how to use the equipment.

#### **B.1.02.06 Purchase of GPS Garmin map 78s**

A GPS is a standard piece of equipment needed when navigating on the ocean, in addition to storing critical points of interest (marking illegal hotspots, mapping the various types of ecosystems in the reserve, etc.) it is used to navigate at night using bearings. The Garmin 78s is waterproof and floatable which are added features required for rangers on patrols and researchers for mapping key ecosystems.

Using \$1,000 of the project funds, TIDE will purchase 2 Garmin 78s GPS'. As counterpart, TIDE will cover the cost of shipping, import duty and other taxes associated with importing the GPS' into the country for a total of \$400.

#### **B.1.02.08 Purchase of lab and field equipment and supplies for Research and monitoring program**

TIDE has been collecting data from the marine reserve on fish stock, sea grass, mangrove, conch, lobster, sea cucumber, water quality, reef health and sedimentation since 2003. Although there is a lot of data, we only recently began to streamline the program to enable us to make management decisions using the results. Because of the lack of proper equipment, the data collected in the past can only be used to make minimal decisions. TIDE has a laboratory at it office to conduct other tests such as nutrients in water from fertilizers;

however there is much more that can be done given the right equipment is available. As such, \$16,000 from the project will be used to procure the additional equipment such as;

*YSI professional plus water quality monitoring equipment,*  
*Glass Fiber Filter d/70mm, 2.7µm, pk/100,*  
*Deionized Water*  
*Gloves, Disposable, Nitrile, Medium*  
*Gloves, Disposable, Nitrile, Large*  
*Transfer Pipette, Sterile 12pk*  
*Filter, Analytical Unit, Type A, 47mm*  
*Filters, glass microfibre, 1.5µm, 47mm, 100pk*  
*Eyewash*  
*Scientech Zeta Series Lab Balance 500 x 0.001g*  
*Pump, Vacuum pressure, low capacity 115V*  
*Pump maintenance kit*  
*Lab Spec Drying Oven*  
*Centrifuge*  
*Hot Plate, Micro*  
*Dessication Cabinet*  
*Crucibal*  
*Pestle & Mortar - Scientific quality*  
*Preservative Ethanol - 1 gallon*  
*Bunsen tripod*  
*Bunsen gauze*  
*Tweezers*  
*PhosVer3, pp, 10mL pk/100*  
*Water, deionized 4 L*  
*Phosphate Std, 50 mg/L, 500mL*  
*Soap Liquid Phosphate free 25mL*  
*Hydrochloric Acid Std Sol 1:1, 6.0 N, 500 mL HAZ*  
*Phosphate Pretreatment, pp, pk/100*  
*NitraVer 5 Nitrate, pp, pk/100*  
*Sodium Hydroxide Solution, 5.0 N HAZARDOUS*  
*Sulfuric Acid, concentrated HAZARDOUS*  
*Nitrogen Nitrate Std Sol, 10mL, 500ml*  
*Sodium chloride, 454g*  
*pH Paper, 6.0 - 8.0 pH Range, pk/5*  
*Gloves, Disposable, Nitrile, Medium*  
*Cylinder, Graduated, 100 mL*  
*5908 DO Cap Membrane Kit*  
*3824 Assorted pH Buffers Case - 475 mL - (2 of each buffer value 4, 7, 10)*  
*YSI 5238 Reconditioning Kit- 10 sanding disks and sanding tool*  
*Tillex foaming tile cleaner for the conductivity probe*

Most of these items will have to be sourced from the USA, however some will also be purchased locally. TIDE will cover the cost of shipping, duty and other taxes associated with these items for a total of \$2,000. **The purchase procedure will be of a single bid due to this type of equipment is very specific and it is very difficult to find three providers for three quotations.**

#### **B.1.02.10 Purchase of 1 Yamaha 100 HP boat engine and accessories for research and monitoring boat.**

TIDE has a very extensive research and monitoring program for the marine reserve. Scientists and community researchers are out doing monitoring every other week. The research vessel has an engine that

was originally purchased for a larger vessel used for the education and outreach program. It is very essential that the research vessel is fully functional given that fact that we cannot afford to have gaps in the data.

A total of \$11,000 of the project funds will be used to purchase the boat engine and accessories – power steering kit, cables, hoses and fuel tank. TIDE will provide the counterpart funds of \$1,000 to transport the engine from Belize City to Punta Gorda Town as well as mounting the engine on to the boat. The procedure of purchase will be a single bid because there is only one provider of Yamaha in Belize.

#### **B.1.02.11 Purchase of radio communication kit**

Due to issues with energy, TIDE ranger station has been without proper VHF radio communication. The current solar energy system cannot sustain the energy needs of the radio and as a result it is causing the radios to suffer from low voltage. The radios are used to communicate between rangers using handhelds and also from the ranger station to the TIDE office. With the new proposed solar energy for the caye all problems with radio communication should be solved.

A total of \$1,300 of the project funds will be used to purchase one base radio with an antenna and two handheld radios. The radios will be purchased locally in Belize City. TIDE will provide \$200 as counterpart to cover the cost of transportation to the ranger station and the installation of the radios.

#### **B.1.02.12 Purchase of Subaquatic camera kit. Eg. SEALIFE. DC1400 pro**

One of the goals of this project is to ensure that the sea grass cover increases or remains the same within the reserve. In addition, TIDE also does many more underwater monitoring including coral reef, reef fish, conch, lobster and sea cucumber to measure management effectiveness. We are also launching a new program called 'Pay-to-Participate' where volunteers will be mapping the ecosystems and also managing the invasive lionfish. The underwater camera will be used in every aspect of the underwater monitoring program as well as the pay-to-participate program. Videos and photos captured will be used in our education and outreach program, as well as to market the pay-to-participate program which supports financial sustainability.

TIDE will purchase an underwater camera kit using \$2,500 of the project funds. The kit will include the camera and accessories such as extra batteries, lights, shoulder strap, SD cards for storage of video and photos, a wide angle lens and a hard case to store it all. These items will be purchased from the USA and TIDE will provide \$500 as counterpart funds to cover the cost of transportation, import duty and other taxes.

#### **B.1.02.13 Purchase of a butane gas refrigerator**

TIDE has to purchase ice on a weekly basis for rangers to keep their food supply fresh and prevent spoiling. A gas refrigerator will save money in the long run and will allow the rangers' ration to be fresh for longer periods, so they won't have to use 8 gallons of fuel just to venture into town to buy ice.

TIDE will use \$2,000 of the project funds to procure the gas refrigerator from a local vendor. A total of \$200 for the cost of transportation to Abalone caye and butane gas + gas tank will be provided as counterpart.

### **B.1.03 GENERATION/UPDATING OF MCPA MANAGEMENT PLAN**

The PHMR Management Plan's duration is for 5 years which started in 2012. As indicated in the plan, there needs to be an annual evaluation of the plan in order to update the plan and identify areas of delays as well as areas of strength. The PHMR management plan is based on the TIDE strategic plan which is the guiding document for the organization in accomplishing its mission and vision. Since the strategic plan is now expired TIDE will update that plan as well as others in this AWP.



### **B.1.03.03 To assess the implementation of the current strategic plan for TIDE and develop a new and improved plan for 2012-2016**

Since the current strategic plan for TIDE is now expired, there is the need to evaluate the implementation of that plan and develop a new plan to chart the way forward. A new strategic plan will assist us in long term planning especially for projects like this where there needs to be a clear vision of what it is hoping to achieve. It will also allow us to amalgamate the various planning documents that we have into the strategic plan so that there is only one master document that encompasses all the other plans.

TIDE will develop terms of reference for the assessment of the old plan and the formulation of the new plan. Bids will be obtained for the works and the best bidder will be chosen. The project will cover the cost of the consultancy for \$15,000.

### **B.1.04 SUPPORT FOR IMPLEMENTATION OF THE CONTROL AND SURVEILLANCE SYSTEM**

In accordance with the PHMR management plan, section 4.5.1 describes the Resource Protection Program. It focuses on ensuring the maintenance of healthy, functional ecosystems, through direct management of the marine environment, surveillance and enforcement and direct biodiversity management interventions. This program falls under the responsibility of the Marine Manager and rangers. Two sub programs have been identified under this program: Surveillance and Enforcement and Marine Resource Management. The program goal is 'To protect the physical and biological resources of Port Honduras through protecting and enhancing key species, habitats and ecosystem functions and services'. To accomplish this goal, 6 objectives were identified as follows;

**Objective 1:** To preserve the value of the area for fisheries, through the protection and enhancement of habitats utilized by commercially important species.

**Objective 2:** To reduce fishing pressure in the PHMR by 30% by eliminating illegal fishing and illegal fishing methods.

**Objective 3:** To maintain diverse and healthy fish populations in the rivers of the MMMC.

**Objective 4:** By 2018, increase commercial species (conch, lobster, snapper, grouper) and parrotfish to viable population levels

**Objective 5:** By 2015, increase shark numbers by 15% based on 2006 levels, and the population of large (>110cm) Goliath Grouper by 15%, in PHMR based on 2006 levels.

**Objective 6:** By 2010, have nest monitoring and protection in place for 25% of all known marine turtle nests in PHMR.

In partial fulfillment of the objectives set out in the section of the plan, activities listed under section B.1.04 will be implemented in 2013.

### **B.1.04.03 Support surveillance and patrols program in PHMR**

TIDE has a long-term resource protection program that includes surveillance and patrols in the PHMR. Patrols and surveillance are done on a daily basis and sometimes at night to protect the marine fisheries from illegal harvesting. This program is in collaboration with the Belize Fisheries Department, which is the legal authority for fisheries management in Belize. TIDE operates this program from Abalone Caye in the marine reserve, where it employs eight law enforcement rangers equipped with two boats and a surveillance tower to monitor the area. The KfW project will support this year's operational plan through the provision of \$12,000 to cover about 22% percent of the cost of fuel and oil. A total of \$40,500 as counterpart funding and support will be provided by another donor and TIDE. TIDE will also conduct servicing of boat engines, procurement of engine propellers and oil filters as counterpart. The support of the KfW project will increase the number of patrols in the area by 10%. TIDE keeps a record of the number

of infractions in the reserve, which will be included in the annual report to the MAR Fund. **The purchase procedure will be of a single bid due to the fact that there is only one gas provider in Punta Gorda town.**

**B.1.04.06 Boat navigation and boat engine maintenance training for PHMR Rangers.**

Rangers need to know how to navigate in the shallow areas of PHMR and among cayes during patrols at night as well as during the day. They are required to service the boat engines frequently to ensure long engine life. This is an annual training that involves both theory and practice and will be held at the ranger station on Abalone Caye for all 12 TIDE rangers. The training is to refresh rangers' capacity on boat navigation and boat engine maintenance and will last for one day only. A total of \$100 of the project funds will cover the cost of food, supplies and materials. TIDE will provide the cost of transportation, instructor, and the boat for a total of \$200 as counterpart.

**B.1.04.06 Dive training for 8 Marine Reserve staff**

TIDE rangers are not just involved with law enforcement, but they are well rounded individuals with many skills. With the exception of one ranger, they all have open water dive certificates and while open water divers can do some marine work they are still limited in what they can do. This dive training which will last for 5 days will allow the 8 marine staff to achieve the next level in SCUBA certificate, some rangers will become trained in advance dive certificate while others will advance to rescue diver and dive master. In addition, the biologists will also advance to dive master.

TIDE will use the project funds to hire a contractor to conduct the training for \$1,000 and \$500 for food and training materials. A total of \$2,500 as counterpart for the use of dive tanks, dive compressor, dive gear and boat transportation will be provided by TIDE.

**B.1.04.06 Oxygen provider training**

Linked with activity B.1.02.05 above, there is a need to conduct training in how to administer oxygen to a diver in the event of a dive accident. All eight divers will participate in this training which will occur at Abalone caye in the marine reserve for one day only.

A total of \$200 of the project funds will be used to cover cost of food and printed materials, and TIDE will provide \$250 to cover the cost of transportation and instructor as counterpart.

**B.1.04.06 Public Relations training for TIDE rangers**

Rangers are considered first line employees, in many cases they are the face of the organization and visitors' perception of the organization is based on their first impression. Over the past there have been cases where fishers and visitors alike have had negative experiences with a few rangers. To mitigate such incidences, prevent future occurrences and build better relationship with the general public rangers need to be trained in public relations.

A total of \$500 of the project funds will be used to cover the cost of a consultant to train 10 rangers in this field. The training will last for 2 days and will be done at the TIDE office. TIDE will provide \$300 to cover the cost of transportation, food, materials and venue for this training as counterpart.

**B.1.04.11 Visit to Punta Allen, Mexico for 8 TIDE Rangers**

One of the most effective ways of motivating employees while teaching them as well is to conduct visits to other Protected Areas in the region. One of the main reasons for taking rangers on a regional site visit is because of the implementation of Managed Access – a form of Catch Share. In particular, Punta Allen in Mexico has been implementing a quota system for lobster for over 10 years. Fishers in Punta Allen have now embraced the opportunity to be involved in the management of a resource that they depend on for

their livelihoods; they have become stewards of their resources resulting in a very low demand for law enforcement personnel. The goal of this site visit is to ultimately train rangers to become educators as well as law enforcers that will help the fishers of Southern Belize to become stewards of their own resources and make law enforcement easier.

TIDE will use \$3,000 of the project funds to conduct the site visit. It will cover the cost of meals, accommodation, charter of a local bus to and from Punta Gorda to the Mexican border, and transportation to and from the Mexican border to Punta Allen. It is estimated that the visit will take 4 days; one day travelling to Punta Allen, 2 days visiting the park and speaking with fishermen and community leaders and 1 day return travel to Belize. A total of 8 people including 7 rangers and the park manager will participate in the visit. We already have established contacts that will assist us in speaking with the right people and getting a tour of the fishing grounds. TIDE will provide \$500 as counterpart for per diem for the rangers.

#### **B.1.05 SUPPORT FOR THE IMPLEMENTATION OF MONITORING AND EVALUATION SYSTEMS**

In section 4.5.2 Research and Monitoring Program of the PHMR management plan; the plan speaks of providing ongoing information on the state of the marine resources, to providing information for adaptive management, to assisting in prioritizing monitoring and research activities, and to informing management decisions. This Program falls under the responsibility of the Science Director, and consists of four sub programs:

- Research Program
- Monitoring Program
- Staff
- Communication and Collaboration

To implement a clearly documented research and monitoring program that supports ecosystems planning and management in the Port Honduras Marine Reserve and the wider Maya Mountain Marine Corridor, the following key objectives are essential;

- To monitor viability of conservation targets and water quality
- To provide information on the ridge to reef connectivity of the Maya Mountain marine Corridor
- To effectively assess success of no take areas, managed access and PHMR as a whole in maintaining viable populations of key conservation species
- To identify sites/coral species resilience and develop recommended adaptations for climate change
- To establish comprehensive datasets and effective data management and analysis for providing information for informing adaptive management strategies and assessing the management effectiveness of the marine protected area
- To improve engagement of stakeholders of PHMR through involvement in research and monitoring activities within the Marine Reserve, to build capacity and improve support for conservation activities.
- To improve capacity and ability of staff, rangers and community researchers to conduct research and monitoring within PHMR

The Monitoring Program incorporates the following activities as set out in the management plan to achieve its objectives:

##### **B.1.05.01 Proposal to develop the methodology to determine the baseline of mangrove and and seagrass (marine grassland) cover in PHMR.**

To measure the higher objective indicators of the project for mangrove and seagrass cover in PHMR, through the project, TIDE will hire a consultant to synthesize existing information on the state of mangrove

and seagrass cover in PHMR. A total of \$2,500 of the project funds for this consultancy will be used. The consultant will collect existing information from TIDE, the University of Belize and other sources and analyze it to determine whether or not there is already sufficient information to establish the baselines. The consultant will propose a methodology and approximate cost to establish this baseline, which will be done in AOP 2.

#### **B.1.05.01 Generation of a baseline of mangrove cover and marine grassland in the four MCPAs**

After a consultation with experts from CATHALAC, TIDE decided that remote sensing is the most feasible way to conduct this activity. Using satellite imagery, we can determine the extent of mangrove and sea grass cover in the marine protected area; however this will need to be verified on the ground through a process called ground-truth. This process requires that the marine reserve be divided into 5 zones with each zone having 6 sample sites. Each zone will take 5 days to ground-truth to determine the type of habitat represented in the satellite image and will be distributed over a period of 6 months. TIDE expects that because of frequent cloud cover and murky waters in Southern Belize, the entire process will have to be distributed over that period of time. We expect to start the process in March by securing a GIS specialist student through an internship with Texas A&M University to start working in April. The GIS specialist will have 1 month to obtain clean high resolution satellite images and also analyze the images to help in determining the various habitat types. We are proposing to pay a stipend of \$300 per month to the intern using project funds for 7 months (total \$2,100). A total of \$1,000 of the project funds will also be used to cover the cost of satellite images if and when necessary (we will try to obtain free images as much as possible). Four community researchers and at least 2 volunteers will work closely with the intern, the local community researchers will receive training in analyzing satellite image and ground-truth the results of the analysis; each community researcher will be paid \$937.50 for the 5 week period totaling \$3,750; \$2,500 of that cost will be charged to the project and TIDE will provide \$1,250 as counterpart. The project will also cover the cost of food for 8 people for 25 days @ \$10/day (\$2000) and transportation 46 gallons of fuel per trip (\$1,750). In addition to the \$1,250 as counterpart for community researchers, TIDE will provide \$2,000 for the use of boat, compressor, dive tanks, dive gear and materials and equipment.

#### **B.1.05.07 Marine monitoring package that includes water quality, fisheries assessment, sedimentation and sea turtle monitoring**

In this marine monitoring package, all of the following monitoring activities will be carried out during one trip to PHMR each month: water quality, fisheries assessment, sedimentation and sea turtle monitoring. Water quality is monitored using electronic probes that measure temperature, dissolved oxygen, acidity, salinity and conductivity. Water is collected and tested in the laboratory to measure various parameters. Fish stock assessments include measuring and documenting fishermen's catch at sea and at landing sites. Sedimentation assessments are done through the collection of sediment from traps that are brought back to the laboratory, dried and weighed to determine the rate of sedimentation. Sea turtle nesting is monitored by scouting the beach for evidence of nests. All low-lying nests are relocated to higher elevation to ensure survival. The trip normally lasts four days and is done each month using four paid community researchers. The objectives of these monitoring activities are to gauge management effectiveness of PHMR as well as to monitor critically endangered species. This activity is done internally by TIDE's scientists and using TIDE's boat and captain. All the costs (\$12,640) associated with these activities are funded by another donor and are considered counterpart support to this project.

#### **B.1.05.07 Monitoring of queen conch population density and dynamics in PHMR**

Queen conch is one of the main commercial species harvested in Belize for export to other countries. It is important that TIDE continues to monitor conch population densities and dynamics in PHMR to ensure fishers do not over fish this species. TIDE scientists monitor this species twice per year, once at the end of the closed season and once at the end of the open season. For this AOP only one of these monitoring

activities will be done. This is done by diving along predetermined belt transects and counting and documenting all queen conch. This activity is being funded by another funder and is considered counterpart (\$4,330) for this project.

#### **B.1.05.07 Conduct coral reef health monitoring in PHMR**

Coral reef health is important as most of the commercial fish species spend a large portion of their lifecycle on the reef. If reefs are unhealthy, commercial fish species will be unproductive, resulting in decreased or low income for fishing families. Reef health monitoring is done using established protocols as per the Mesoamerican Barrier Reef Systems Project (MBRS). This protocol is used across the Mesoamerican Barrier Reef in Mexico, Belize, and Honduras. MBRS monitoring is done twice per year in the reserve using paid community researchers along with the TIDE biologist and research assistant. All costs (\$4,845) associated with this activity are being funded by another funder and is considered counterpart for this project.

#### **B.1.05.07 Conduct monitoring of sea cucumber population in PHMR**

Sea cucumber is one of the newest commercial marine species to be harvested from PHMR. Licenses to harvest sea cucumber were issued without a proper assessment on the fishery and populations in other parts of the world have been quickly overexploited following commencement of harvesting. Furthermore, current open and closed seasons are not based on biological factors. Hence, it is important that TIDE closely monitors this species to alert the Belize Fisheries Department and fishers of the dynamics of the population. This monitoring activity uses paid community researchers along with TIDE's biologist and research assistant. This activity is being funded by another funder and is considered counterpart (\$1,770) for this project.

#### **B.1.05.07 Monitoring of sea grass in PHMR**

For the past 8 years TIDE has been conducting sea grass monitoring in PHMR looking specifically at sea grass biomass. Sea grass biomass is useful to determine the health of an area as it provides food for planktons as well as manatees. Sea grass also filters the water by trapping sediments resulting in improved water clarity necessary for coral growth.

TIDE will continue to monitor sea grass twice per year on an annual basis. All the costs (\$1,770) associated with sea grass monitoring will be provided by another funder and will be considered as counterpart for this project.

#### **B.1.05.07 monitoring of mangrove litter fall (Productivity)**

Mangrove litter fall is one way of measuring the productivity of a marine system. Mangrove litter falls to the ground and gets swept out into the ocean during high tide events. The litter becomes the foundation of the food supply chain for commercial fish species. Mangrove litter fall is also affected by water quality so maintaining healthy waters is very important.

TIDE will continue to monitor mangrove litter fall once per year as has been done in the past. The cost (\$1,775) of the monitoring is covered by another donor and will be considered as counterpart for this project.

#### **B.1.05.07 Monitoring of sea bird population in PHMR**

Seabirds are an important indicator of marine health and biodiversity. Seabirds feed on small to medium size fish; some seabirds scavenge and do not necessarily dive and hunt for fish. In any case they all rely on the abundance of fish in an area for their survival. Chances are that if seabirds are scarce, so are the juvenile fish species.

TIDE will implement a structured seabirds monitoring program for the first time since its existence in 1997. All costs (\$1,250) associated with this monitoring will be borne by another donor and will serve as counterpart to this project.

#### **B.1.05.07 Monitoring of lobster population in PHMR**

Lobster is by far the most profitable commercial fish species in Belize. Although lobster habitats are not very high in PHMR many fishers are now creating artificial habitats that increase yields. TIDE monitors lobster population twice per year in the general use and no-take zones of the PHMR. Ever since this monitoring started in 2003 we have seen a continuous decline in population density. It is expected that the population will increase with the implementation of Managed Access combined with the increase in the no-take zones from 5 to 15%.

TIDE will bear all cost of this monitoring using counterpart funds for \$4,400.

#### **B.1.05.08 Conduct a research into the impacts that the current dumpsite is having on the Rio Grande River and Marine Reserve and propose the best method to mitigate the impacts**

Punta Gorda's garbage disposal has always been, and continues to be an open dump site located in a wetland area approximately 1 mile from the Rio Grande River that empties into the Port Honduras Marine Reserve. There are many speculations suggesting that because the wetland drains into the river, many toxins have leached into the river and out to the marine reserve. Assuming that this is true, many of the marine animals may have high levels of toxins within them such as heavy metals (Lead, mercury, etc) which would make them a serious health hazard to the locals and visitors alike.

With \$5,000 of the funds from this project we will contract an individual with expertise to assess the impacts that the open dumpsite is having on the aquatic life of the river and the ocean. Once the impacts have been quantified, the consultant will also propose the best method to mitigate the impacts. TIDE will provide \$1,000 for logistical support and transportation to the site as counterpart.

### [B.1.06 PROTECTION OF FRAGILE ECOSYSTEMS](#)

With increase visitation of more tourists to PHMR via 2 small cruise vessels and propose extension of the replenishment zone of PHMR there needs to be mooring buoys installed to assist in visitor management and ensure they don't create unnecessary damage to the coral reef or sea grass beds. In accordance with the PHMR management plan additional mooring buoys need to be installed in the areas most visited by tourists, e.g. all of the snake cayes in the reserve. For this AWP TIDE will invest in the installation of mooring buoys in strategic areas.

#### **B.1.06.02 Purchase of mooring kit**

In the 2012 AOP TIDE purchased some demarcation buoys to clearly demarcate the boundaries of the reserve. The demarcation buoys are to ensure fishers are aware of when they are in the different zones of the reserve and for others to know when they are in the reserve. In addition to the demarcation of the reserve, it is also important to install mooring buoys in the coral reef areas so that recreational vessels do not release anchors on the reef causing irreversible damage.

The mooring kit will be purchased using \$5,000 of the project funds and will comprise of the mooring buoys (To be sourced in the USA), ropes, shackles, footing etc to be purchased locally. TIDE's counterpart of \$1,000 will be in the form of the cost of transportation, import duty and other taxes for the mooring buoys, construction of the buoys footing, transportation of buoys to site and installation of buoys at key areas in the reserve.

## B.1.08 INSTITUTIONAL STRENGTHENING FOR AREA MANAGERS

One of the key investments in TIDE is its human resources. Without a properly trained staff TIDE would not be able to successfully accomplish its goals and objectives. On an annual basis, TIDE seeks opportunities to increase the capacity of its staff through various trainings, conferences and workshops.

A part of strengthening of the organization is also to ensure that the work the organization does is highly publicized to increase the visibility of the organization in the community. Because TIDE works in a dynamic community it is important that we utilize several means of communicating with our various stakeholders. In this AWP TIDE is proposing to use printed materials, radio and television to cover all local and national stakeholders, as well as the internet to reach international stakeholders.

There is also the need for TIDE to become more financially sustainable. This is a relatively new approach that TIDE is taking with the hope of decreasing dependence on financial grants from donors. All these aspects of institutional strengthening are discussed below.

### **B.1.08.01 Develop, print and distribute PHMR brochure**

One of the ways in which we communicate with our stakeholders and the general public is through printed materials. In Southern Belize, only a small percentage of the population has access to internet, about half the population has a television with local cable and about 80% has a local radio. With these statistics, it is essential to have printed materials to distribute to communities not only around the marine reserve but to the wider district of Toledo.

TIDE will develop a brochure bearing information on the Port Honduras Marine Reserve and how people can become involved. A total of \$2,500 of project funds will be used to print 1000 copies of the brochure. The brochures will be distribute to local communities in Southern Belize, but will also be used to market TIDE and the Marine Reserve internationally as a tourism destination at tourism trade shows and taken along when TIDE staff visits other countries. TIDE will contribute \$500 in transportation cost to get the brochures to Punta Gorda and to distribute them to various stakeholders.

### **B.1.08.02 National radio show on TIDE and PHMR**

As part of our Education and Outreach strategy, reaching out to everyone via national radio/tv is a priority for us. It is estimated that at least 80% of the population in Toledo has access to a radio. This then becomes a very useful means of communication for us and provides a medium through which we can communicate information regarding this project and everything else that TIDE is involved in. It is also an opportunity to market our fund raising event- the Annual Fisherman Festival.

The project funds will be used to cover the cost of 1 of 2 national shows on radio and television. One show will be held in Belize City at the radio station and one will be held at the TIDE office in Punta Gorda. A total of \$2,000 of the project funds will be used to cover the cost of the show in Punta Gorda which will be a contract with the radio station. TIDE will cover the cost of transportation and per diem for the show in Belize City for \$500 as counterpart for the other show.

### **B.1.08.02 Official launch of the KfW project in Belize**

It is important that the general public in Belize is fully aware of the KfW project and all the partners involved. The launch will provide an opportunity to promote the important intervention and support for conservation and marine habitat protection in Belize by the KfW, MAR Fund, PACT and TIDE. TIDE will organize an official project launch in Punta Gorda Town. Invitees will include the media, government officials that include the Mayor of Punta Gorda Town, the Minister of Forestry, Fisheries and Sustainable Development, Fisheries Department personnel, the Area Representatives of Toledo, the Minister of Natural Resources, Protected

Areas Conservation Trust personnel, MAR Fund representatives and other key community representatives of Punta Gorda, Monkey River and Punta Negra.

The cost to the project will include transportation for 7 individuals (7 air tickets; 5 from Belize city and 2 from Dangriga) to Punta Gorda by air for four government and 2 PACT officials from Belize City and Dangriga respectively and one media personnel; snacks for invitees (50 people), lunch for 20 officials and representatives, materials and supplies, and a project banner. A total of \$3,000 of the project funds will be used to implement this activity. TIDE's counterpart valued at \$1,000 will be in the form of providing boat transportation for coastal communities, organizing the event, logistical support and administrative oversight.

#### **B.1.08.02 Implementation of communication strategy for TIDE**

TIDE uses a variety of media to increase the visibility of its work not only in communities that buffer PHMR, but also nationally and internationally. These include newsletters, annual reports, a Facebook fan page and a website. In the 2012 AOP project funds were budgeted for a professional web designer to revamp the TIDE website ([www.tidebelize.org](http://www.tidebelize.org)) and to purchase information technology items (IT office chair, internal hard drives for computers, wireless routers, mice, etc.) to aid with internal and external communication. Using \$6,000 of the project funds TIDE plans to increase communication via the printing 150 copies of our annual report for 2012 for distribution costing \$375, printing of promotional items such as 150 aluminum water bottles costing \$975, 100 caps costing \$750, 500 rubber wrist bands costing \$810 and 100 copies of a 2014 calendar costing \$1,290. Graphics for all the promotional items will be designed in-house as counterpart. In addition a professional photographer Tony Rath will be hired to visit the Marine Reserve to capture professional photos which will be owned by TIDE to be used to promote TIDE and for the 2014 calendar costing 1,800. TIDE will provide \$500 in transportation for the photographer to the reserve, administrative and logistical support as counterpart.

#### **B.1.08.03 Microsoft Access Training for Research team**

TIDE's research team, made up of a Science Director, a biologist and a research assistant handle large volumes of data on a monthly basis. The monitoring data comes in every two weeks from the field and is currently being entered into a Microsoft Access database that was created 3 years ago. One of the main issues with the database is that it was not properly designed and as a result data analysis has been very limited. With the training in Microsoft Access it will allow the team to design a proper database that will allow the kind of analysis needed to make informed management decisions.

Using \$1,250 of the project funds, TIDE will hire the services of a consultant to train the 10 individuals from the research team (5 TIDE staff and 5 community researchers) on how to design and develop a proper Microsoft Access database that will not only allow analysis of the type of data that we are currently collecting, but will also be designed with future monitoring in mind. The training is expected to last for 3 days and will be done at TIDE's office. In addition, \$250 of the project funds will also cover the cost of food and materials for the training. TIDE will provide \$500 being the cost of venue and transportation for the research team as counterpart.

#### **B.1.08.03 Introduction to GIS training for Researchers and rangers**

Geographic Information System (GIS) is a powerful tool that, in addition to many other uses, can evaluate spatial relationships between various features across a given geographic region. For example using mapping we are able to see the differences between the qualities of the water in the marine reserve from the coast to the reef. A map showing this relationship can easily be printed and shared with community members who would have no issues understanding it. TIDE plans to include this activity in future work plans for this project with each year being a more advance training. At the end of the project, the research team will be thoroughly trained and able to do various mapping techniques and analysis.



Using \$1,500 of the project funds, TIDE will hire a local consultant to conduct the training (\$1,000) for 12 staff which will be held at the TIDE conference room for 4 days. A total of \$500 of those funds will also be used for food and materials. TIDE's counterpart of \$500 will be in the form of venue and transportation for the rangers.

#### **B.1.08.04 Support two TIDE staff to attend an international workshop on marine enforcement**

With the implementation of a new fisheries management tool in PHMR (Managed Access), participation of stakeholders (Managed Access licensees) is critical. A total of \$1,800 of the project funds will be used to support one PHMR staff member to attend an international workshop in USA, in order to learn about innovative ways in which Managed Access licensees can participate in enforcement of fishing regulations. The training is expected to last for 1 week. The project fund will cover the following costs: one international flight, one local flight, food and accommodation. TIDE will secure \$1,800 as counterpart funds to support the other staff member to attend the workshop.

#### **B.1.08.05 Pay-to-participate program (Marketing and Implementation)**

In these financially difficult times, non-profit organizations like TIDE find it difficult to sustain its programs. There is great pressure to become financially sustainable so that our reliance on grants is minimized. TIDE has already started a new income generating program called 'Pay-to-Participate' (P2P). This program started late 2012 due to the high number of volunteer requests TIDE receives annually. Our research indicates that volunteers pay high prices to foreign volunteer organizations like Pro-World, and Blue Ventures to get authentic experiences. These volunteer organizations usually place these volunteers at places like TIDE who are directly involved in resource management where the volunteers are sure to get an authentic hands-on experience. TIDE does not earn anything income from the volunteers except the benefit of the work they do. The P2P program involves hiring someone to coordinate the activities, communicate with volunteers, make arrangements for volunteers housing, make arrangements for the activities that the volunteers will be involved in, ensure all necessary equipment, supplies and materials are available for the volunteers, etc. TIDE's biologist and research assistant will lead the volunteers' expedition in the marine reserve to conduct various activities. In 2013 the main activities for volunteers will be monitoring of large marine vertebrates such as dolphins, manatees and sea turtles. In the future, volunteers will be involved in all aspects of marine monitoring and ecosystem mapping in the reserve. We are estimating for 4 volunteers in 2013 and increase that number by 2 every subsequent year.

TIDE is proposing to use \$11,200 of the project funds to assist in marketing the program in places such as the UK and the USA. Marketing will include developing and printing 1,500 brochures (including application forms) as promotional documents costing \$3,750. The digital copy of the brochure will also be available on our website. In addition, \$6,250 of the project funds will be used to procure some equipment and supplies for the program, these include; 6 binoculars (\$1,500), 6 fiberglass measuring tapes (\$120), 2 GPS (\$1,080), 10 sets of snorkeling gears (masks and fins) (\$500), 12 life vests (\$900), 2 -12 volts LED spot lights (\$500), 6 raincoats (\$450), 10 LED Maglite flashlights (\$600), 2 waterproof digital cameras (\$600) and 12 tents (\$1,200). There is also a plan to use past interns to travel to various universities in the UK and USA to promote the program and get volunteers to sign up. TIDE will cover the cost of the interns' travel, food and accommodations while promoting the program. For this year we plan to use at least 3 interns in the USA and 3 in the UK. Interns will be given all promotional items and signup sheets. TIDE will also contract the P2P program coordinator for a period of 8 months. In addition, TIDE already secured the counterpart funds to cover the following costs; a 28ft marine vessel with outboard engine, additional equipment and supplies for camping at our ranger station and for conducting the various activities, as well as administrative support and program oversight. The total counterpart support from TIDE is \$20,000.

#### **B.1.08.05 Support TIDE annual fisherman Festival (Fishing tournament prizes, lionfish culling/cooking competition)**

TIDE's annual fisherman's festival accomplishes two main goals; one, to build support for TIDE through a fun friend raiser event, and two, to earn a small income that can be used to support the organization. The festival is a 3-day event that starts with a seafood gala on a Friday night followed by a conservation competition on a Saturday night and finally a family fun day on Sunday filled with various activities such as games, a fishing tournament and cultural presentations. Last year we added a lionfish culling competition, where the person who kills the most invasive lionfish is given a cash prize; this is one way in which we are managing the lionfish population in PHMR.

TIDE will use \$1,000 of the project funds to provide the prizes for the fishing tournament, the lionfish culling and lionfish cooking competition. A total of \$15,000 as counterpart funds will be used to cover the remaining activities mentioned above.

#### **Result 2. The participation of civil society Best in the best management practices and sustainable use of coastal and marine resources has been promoted**

To work toward realizing this result, for this AOP, various activities will be carried out that focus on awareness-raising, capacity building and provision of supplement livelihood options for fishers. The KfW project in Belize will be launched at an official opening with media and influential stakeholders to galvanize support for the project. TIDE's new and improved communications strategy will be launched with the revamping of TIDE's website. Learning visits will be carried out for fishers and a TIDE staff member to develop their capacity in natural resources management and law enforcement, respectively. Finally, fishers will be supported to establish supplemental livelihood options that will improve their economic well-being while reducing fishing pressure in PHMR.

#### **B.2.01 DEVELOPMENT OF THE PRODUCTIVE FABRIC OF COMMUNITIES/ASSOCIATIONS**

Under the **Sustainable Development Sub-Program** of the PHMR management plan, TIDE is engaged in strengthening community alternative livelihood options. This is done through targeted projects that fall within its remit that will reduce pressure on the natural resources, strengthen sustainable development and/or contribute towards alternative livelihoods. TIDE works with the communities to identify specific, community-driven projects that fill identified needs, locating funding for these community efforts.

Identified initiatives include:

- Location of new / alternative markets for fishers, providing greater value for products.
- Providing a link between restaurants and fishers.
- Providing materials and labors for rehabilitation of the fish market in Punta Gorda – also a place for distributing fisheries management messages / education
- Establishment of a barber shop in Punta Gorda
- Establishment of Mangrove Honey Production Apiary in Monkey River
- Establishment of 2 Seaweed farms (1 in Punta Negra for Women's Group and 1 in Monkey River)
- Installation of a freezing facility for traditional fishermen in Monkey River
- Construct a Multipurpose Centre in Punta Negra, where women can cater for tourists, sell crafts etc.
- Development of resource center and library in Monkey River and Punta Negra
- Provide a boat and engine to Punta Negra to facilitate community access
- Construct a dock at Punta Negra
- Assist communities in developing Community Development Plans

In this AWP TIDE will contribute to existing developments but also conduct feasibility studies to expand those developments.

#### **B.2.01.01 Support supplemental livelihood projects for the fisherman wives in Punta Gorda Town**

There are many instances where fishermen wives ask TIDE to do catering of food for events that we host such as workshops, meetings etc., but because of our policy of only hiring people that have a food handling certificate, we are unable to assist these women. Through this project we are proposing to hire a professional individual to train 10 fisherman wives in the safety and health standards of food preparation and handling. At the end of the training these women will have a certificate that allows them to do catering and prepare food for public consumption. TIDE will then use these women to do catering for events that we plan as a way of sustaining the program. These women will also be qualified to open small restaurants or work of larger restaurants if they choose. For this training, \$1,000 of the project funds will be used hire the trainer and \$200 will be used to cover the cost of food, materials and supplies. The training will be for 2 days and will be held at the TIDE office. TIDE's counterpart will be \$200 for the use of venue and fuel to transport participants to and from the training.

#### **B.2.01.04 Hospitality and tourism management training in Punta Gorda and Monkey River**

Many residents from Monkey River Village and Punta Gorda Town are venturing into tourism related enterprises as a means of earning an income. Unfortunately, they don't all have the skills and technical knowledge to be successful in this type of business. These two destinations have great potential and are getting their share of tourists, but much more can be done to enhance visitors' experience. One of the ways in which this can be improved is to ensure the people who are involved in tourism receive training in hospitality and tourism management. These can be long university courses but we believe that even with a few pointers they would benefit greatly.

Using \$600 of the project funds a consultant will be hired to deliver training in hospitality and tourism management for 20 people in Punta Gorda Town and 10 persons in Monkey River Village for one day each. A total of \$200 will also be spent from the project on food, materials and supplies for both training sessions. TIDE will provide \$500 to cover the cost of organizing the sessions (phone calls and travel) and venue, and Monkey River will provide \$300 for venue and community time as counterpart.

#### **B.2.01.04 Product development and marketing plan for traditional and cultural activities for established tourism destinations in Punta Gorda and Monkey River**

Monkey River Village and Punta Gorda Town are being visited by tourists; however most of the tourists are confined to doing snorkeling at sea or visit the Maya temples inland. There are many other activities that locals can become involved in such as cooking, coconut husking, hand-line fishing, drumming, cast net throwing, storytelling, lobster trap making, craft making from natural resources, etc to increase income and enhance tourists' experiences.

A total of \$10,000 of the project will be used to cover the cost of hiring a consultant to develop a tourism product and its marketing costs from the activities listed above and will determine the cost of improving and marketing the existing tourism services/products.

#### **B.2.01.05 Craft making course for Punta Gorda and Monkey River communities**

One of the most common souvenirs bought by tourists is hand-made craft that represents a culture or a people. In both Punta Gorda and Monkey River people are engaged in some sort of craft making, however it is usually of low quality and not very creative or representative of their culture. This type of tourism product has great potential but it must meet certain standard.

TIDE is proposing to conduct a craft making training for 10 people (7 from Punta Gorda and 3 from Monkey River) using natural resources and low technology in Punta Gorda and Monkey River. From the project, a total of \$4,000 will be used to hire an international craft maker from Guatemala, and \$1000 of that cost will also go towards food for participants, materials and equipment such as carving knives, sandpapers and other craft making utensils and transportation for participants from Monkey River. The training course is expected to last for 5 days. TIDE and Monkey River will provide \$500 as counterpart for venue and raw materials as counterpart.

#### **B.2.01.05 Development and implementation of lobster shade project and extension of replenishment zones of PHMR along with the Rio Grande Fisherman Cooperative**

In the latter part of 2011 TIDE started a consultation process to extend the size of the replenishment zone from 5 to 15 % of the reserve. A full proposal was developed and submitted to the Fisheries Department detailing the possible area of the extension and the results of the consultations after 1 year. TIDE has now identified the fishermen of the Rio Grande Fisherman Cooperative as the specific group of fishers that are using the proposed extension area. TIDE and the cooperative have a signed agreement that the cooperative will give up their fishing grounds in return for TIDE's assistance in building the cooperative's capacity for creating value added products to increase their income from fish sales. In addition, TIDE will replace their lobster shades located in the proposed extension area and assist them in deploying the new shades in suitable lobster habitats in the general use zone of the reserve. TIDE has already secured counterpart funds in the amount of \$50,000 for the implementation of the project so there will be no cost to the KfW project.

#### **B.2.01.06 Conduct a feasibility study of a business enterprises for Punta Negra, Punta Gorda and Monkey River and develop business plans for the enterprises.**

For the last 3 years the villagers of Punta Negra have been asking TIDE to assist with developing a tourism business for the village. Punta Negra was once a thriving fishing village, however due to depletion in fish stocks and high cost of living many villagers relocated to Punta Gorda Town and other areas in search of better opportunities. The few villagers that choose to remain are determined to create opportunities for themselves as they can see the potential that the village has for tourism related business. In the case of Monkey River and Punta Gorda, there are some tourism activities occurring, but there needs to be a feasibility study to determine the best type of business enterprise for these communities.

TIDE propose to use \$20,000 of the project funds to hire an expert to conduct a feasibility study of business opportunities in Punta Negra and Monkey River and develop business plans for the most feasible business enterprises for those villages.

### **B.2.03 INVOLVEMENT OF ORGANISED COMMUNITY GROUPS IN THE MANAGEMENT OF NATURAL RESOURCES.**

TIDE's mission is to foster community participation in resource management. TIDE achieves this through various programs such as 'Community Researchers Program' where youths that have graduated from high school or college are trained in marine resource monitoring by TIDE, and they are also hired to assist with research and monitoring. TIDE also has a 'Community Stewards Program' where fishers are trained on the various marine and fishing laws; they are given incentives for reporting catch and assisting rangers with resource protection. The community stewards are also tasked with the responsibility of teaching other fishers about the various marine ecosystems and how to document catch data for Managed Access Program. TIDE has an annual summer camp where children are granted an opportunity to learn about conservation and visit the various protected areas managed by TIDE. In this section of the AWP TIDE will work with Managed Access fishers, community leaders, other NGOs and children as a way on involving them in the management of the natural resources.

### **B.2.03.01 Conduct 3 Managed Access Forums in Punta Gorda**

Communication with the fishers of the Port Honduras Marine Reserve is very important. In 2012 TIDE started a quarterly forum for Managed Access fishers, the forums proved to be very essential for fishers as they were all very well attended. Fishers shared their concerns with Managed Access, made recommendations to TIDE and the Fisheries Department, exchange ideas with other fishers and learn from each other in the process. The goal of the forums is to change fishers' mentality of seeing TIDE and the Fisheries Department as the sole managers of the reserve, eventually they will begin to see that they need to be more actively involved in the management (including protection) of the resources that they depend on for their livelihoods.

TIDE will use \$5,000 of the project funds to cover the cost of 2 forums such as meals, accommodation, travel, materials and supplies. Based on the attendance from 2012 forums, it is expected that 40-50 fishermen will attend the forums. Forums last for one day only and focus on the implementation of Managed Access with an aim to improve the program and make it easy for fishers to comply. Some Government officials will travel by air, some fishers will travel by land and others will travel by sea. TIDE will provide \$2,500 to cover the cost of the additional forum and logistical arrangements as counterpart.

### **B.2.03.02 Field visit to PHMR for school children.**

TIDE has a strong environmental education program that has been on-going for the past 10 years. The goal of the program is to raise environmental awareness across a wide cross section of the communities in southern Belize. This project will support our program by increasing the opportunity for youths to visit the marine reserve. We plan to make four visits to the marine reserve for children from inland communities during their regular class sessions during the year. TIDE will use \$2,800 of the project funds to cover the cost of four trips for classes of 15 children from schools in the following inland communities to visit PHMR; Bladen Village, Forest Home Village, San Marcus Village and Big Falls Village. The cost for this trip will include charter for bus to transport students from school to the TIDE dock; Fuel for TIDE boat to take children out to the marine reserve and lunch for students and 5 teachers/parents. TIDE will provide \$400 to travel to these communities to arrange the trips and for the use of boat as counterpart.

### **B.2.03.03 Networking - PHMR advisory council meetings, APAMO, Coral Reef Network, TRIGOH, SPAGs, etc**

One of the best ways to ensure protection of fragile ecosystems is to effect policy changes and drafting of new policies that may eventually become laws. It is with this reasoning that TIDE sits on a few critical national networks such as the Association of Protected Areas Management Organization (APAMO), the Coral Reef Network, the Tri-national Alliance for the Conservation of the Gulf of Honduras, the Spawning Aggregation Group and others. TIDE is proposing to use \$2,750 of the project funds to cover air travel to participate in approximately 12 (1 per month) one-day work sessions and/or meetings mainly in Belize City.

Another very important aspect of decision making with respect to the management of the Marine Reserve is the involvement of the Advisory Councils. They represent the interest of the communities, the business community, institution and the government and they can recommend certain rules regulations for the management of the marine reserve. TIDE is proposing to use \$500 of the project funds to cover the cost of 3 of the advisory meetings; these costs will include reimbursement for travel and provision of food for community members. A total of 12 community members representing the stakeholder communities of Punta Negra Village, Monkey River Village and Punta Gorda Town sit on the Advisory Council for the management of the marine reserve. TIDE will provide \$250 to cover the cost of 1 advisory committee meeting and for the use of venue for meetings as counterpart.

**B.2.03.05 Support 15 participants from PHMR to attend the fourth Tri-national Fishermen Forum in Honduras**

Fisheries management in the Gulf of Honduras is critical for Belize, Guatemala and Honduras. At these tri-national fishers' forums, fishers from all three countries get together for 2 days to find common solutions for fisheries management and also to network and build relationships. This activity was deferred to 2013 AOP because the organizers of the event decided to postpone it until 2013. For this activity the participants from Belize will need 2 days for the forum and 1 day to travel after the forum.

A total of \$2,625 of the project funds will be used to support transportation, accommodation and a stipend for meals and incidentals for 10 fishers. TIDE will secure \$1,313 as counterpart funds to pay for transportation, accommodation and a stipend for the other five participants.

**B.2.03.09 Dive training for 9 community researchers**

Along with the TIDE staff, 9 community researchers will also participate in the dive training. A few of the community researchers that are certified open water divers will be trained in advance diving; the new community researchers will be trained in open water certificate. Community researchers are vital in assisting TIDE with marine research and monitoring. They are provided with the training and in return they have to commit to assisting TIDE with its research and monitoring for at least 3 monitoring sessions. Subsequent to their free assistance to TIDE, they are paid for every dive they do with us; this is one way in which TIDE involves the communities in resource management while they still earn an income.

TIDE will use \$1,000 of the project funds to cover costs such as materials supplies and food during the training. As counterpart, TIDE's Science Director, who is a dive instructor, will conduct the training, and TIDE will provide the transportation, use of dive tanks, compressor and dive gear for a total counterpart of \$3,200. The training will last for 5 days.

**B.2.03.11 Support 15 participants from PHMR to attend the festival of the sea in Guatemala**

In 2011 the Tri-national Alliance for the conservation of the Gulf of Honduras (TRIGOH) organized and held the first ever 'Festival of the Sea' in Puerto Barrios, Guatemala. The festival featured educational displays and interactive booths from Belize, Guatemala and Honduras. The festival also provided a great opportunity for fishers from the three countries to interact with each other and share experiences, discuss issues and how to resolve some of them. The general public from all three countries attended and learnt a lot from the various displays at the event. In the past, the tri-national fishermen forum was held along with the festival; however, the plan is to have these events separately to allow fishers and other participants to fully experience both events. The festival is for 2 days and 1 day travel for participants from Belize.

A total of \$3,000 of the project funds will cover the cost of the 15 participants from PHMR to attend the festival in Puerto Barrios, Guatemala. Costs will include travel, accommodation and food allowance.

**B.2.03.12 Support TIDE annual summer camp (4 school trips, boat & bus charter and food)**

TIDE hold summer camps for children from at least 15 communities. The camps are usually for 2 weeks focused around an international theme and for 2013 that theme is 'International Year of Water Cooperation'. On 11 February 2011, the UN General Assembly, in its resolution 65/154, decided to proclaim 2013 International Year of Water Cooperation. Resolution 65/154 calls on the United Nations system and all other actors to take advantage of the Year to promote actions at all levels, including through international cooperation, as appropriate, aimed at the achievement of the internationally agreed on water-related goals. At TIDE we will take it a step further and educate children on how freshwater impacts the coral reef. There are many fun and learning activities along with trips from the rivers out to the marine reserve and the coral reef.

In 2013 we are proposing to use \$2,800 of the project funds to cover the cost of 4 school trips to the reserve. We are expecting a total of 80 children participating in the summer camp. These children will be divided into 4 groups of 20 children each per trip. The costs for the trips are charter for bus, transportation to the marine reserve and food for the children. TIDE will provide \$1,200 as counterpart through logistical arrangements (Travel to schools to organize camps) and the use of boats.

#### **B.2.04 STRENGTHENING OF COMMUNITY/ASSOCIATIONS**

As indicated above, TIDE's mission is to foster community participation in resource management. TIDE achieves this through various programs such as the Community Researchers Program, the Community Stewards Program, the Freshwater football conservation competition (Freshwater cup), annual summer camps and building the capacity of fishing associations/groups in governance, program implementation, planning etc. In this section of the AWP TIDE will work with Managed Access fishers and community leaders involving them in the management of the natural resources.

##### **B.2.04.04 Boat navigation skills and safety at sea training for 10 fishers**

One of the recommendations from the Advisory Committee of the marine reserve is to hold a training to teach fishermen about navigation and safety at sea. Accordingly, many of the new fishers are not fully aware of all the safety precautions needed while at sea and a few are also in need of navigation at sea training. This is one way in which TIDE is directly assisting the fishing communities. A professional officer from the Belize Port Authority will be hired to conduct this two-day training and will be paid \$500. Project funds (\$100) will also cover the cost of materials, supplies and food for the training. TIDE will provide \$200 for the cost of boat transportation and logistical arrangements for the training as counterpart.

##### **B.2.04.05 Completion of dock for Punta Negra Village**

The project funds will be used to complete the dock at the village as the only means of accessing the village is by boat. Any business venture or mobilization contemplated by the villagers will require the use of a proper docking facility. In 2012 TIDE was able to start the construction of the dock, however we were only able to fund 30ft of the facility. Through this project we hope to extend the dock an additional 60ft where it will be in waters deep enough to allow boats to dock safely. Punta Negra Village is made up of only women and children, all the men left in search of better opportunities but some women chose to remain and are insistent on improving their lives at the village. For a total of \$10,000 the project will cover the cost of materials, supplies and a stipend for a contractor to supervise the extension of the dock. TIDE will get those villagers from Punta Negra who are now living elsewhere and volunteers to help build the dock at Punta Negra for an in-kind contribution valued at \$3,000 as counterpart.

##### **B.2.04.06 Consult with the National Solid Waste Management Authority in Belize to recommend a proper temporary holding facility for waste management at the Punta Gorda fishermen market**

Many of the fishers in Punta Gorda still use the market to sell freshly caught fish on the local market. This is perhaps one of the most secured markets for fresh seafood in Punta Gorda Town; however there is a growing concern over the cleanliness of the market. There is not a proper facility to dispose of the waste from cleaning fish products and for temporary storage of garbage before it is taken to the town dump by the town council. Fishers basically dispose their waste in an open concrete container immediately behind the seafood market. The open container is also being used by the meat vendors to dispose their waste products as well. This practice has attracted unwanted scavengers (john crows) and flies that carry loads of bacteria.

TIDE will consult with the national Solid Waste Management Authority in Belize to recommend a method of disposal as well as to educate vendors on the health issues surrounding this practice. A contractor will be

hired to construct the temporary holding facility before final disposal by the town council; this contract will be for \$2,000 and will be paid for by the project. TIDE will seek labor assistance from the town as in-kind donation valued at \$1,000.

**B.2.04.07 Provide 20 scholarships to third and fourth year high school students of the Managed Access Fishers for one year**

As a way of assisting the Managed Access fishers who are struggling to earn an income from fishing, for the past 10 years TIDE has been awarding scholarships to those fishers' children who are attending high school. The program has been very successful in giving the children the option to take up a new career if they choose not to go into fishing. It has also brought relief to the fishers who are struggling to make ends meet.

Using the project funds, TIDE will expand its scholarship program to include 20 additional high school children who are in third and fourth years. The scholarship will cover the cost of tuition, books and other small fees for the students. Each student is expected to assist TIDE with conservation projects such as summer camps, clean up campaigns, tree planting events etc. They will present their semester reports to TIDE at the end of the semester, if their average is below the passing score, the scholarship will be revoked. A total of \$375.00 will be used to fund items for each student for a total cost of \$7,500 to the project. Since the students attend various high schools, is not possible to have 3 quotations as the cost of tuition, books and fees vary among schools. The contribution by the students will be considered as in-kind and is valued at \$200 each for a total of \$4,000.

**B.2.04.08 Formulate community development plans for Punta Negra and Punta Gorda communities**

One of the realities of communities buffering protected areas is that they are often affected by the rules and regulations of the protected area. In many instances they cannot continue to do 'business-as-usual' because some of those usual businesses are now illegal. This has led to a decrease income for them, but with a guarantee that the resources will eventually become more abundant and sustain themselves for many more years to come. Many of these coastal fishing communities lack alternative sustainable development to offset the loss of income suffered from establishing a protected area. Through this project TIDE hopes to increase sustainable development in these communities. Before any development is considered, there needs to be a plan detailing all aspects of development and identifying the needs based on the capacity of the communities.

For a total of \$11,500 funded by the project a consultant will be hired to formulate 2 development plans for each of the communities listed above. The consultant is expected to work directly with the communities, with the Government of Belize and with TIDE to formulate comprehensive plans.

As part of the material to be used for the Punta Gorda Community Development Plan, the consultant should include the document 'Looking to the Future A Strategic Direction for the Punta Gorda Fishermen Association 2011 – 2016', developed in 2010.

**B.2.05.02. Cost of wire transfer of project funds for payment of goods and services under the project**

With every wire transfer of funds from the project account held by TIDE for payment for services or goods acquired under the project, there are bank charges. These charges can become significant depending on the number of transactions involving wire transfer. TIDE will use \$500 of the project funds to offset this cost in order to ensure the vendors get the exact amount of funds as per their invoices.

**5. SUSTAINABILITY STRATEGY**

The global economic downturn over the past couple of years isn't showing any signs of improvement. Many of the donors that TIDE relies on have decreased their funding over the last 3 years. Coupled with the decrease available grant funds is the rise in cost of living mostly due to the rise in fossil fuel



cost. TIDE's Board of Directors has been adamant in guiding the organization to become financially sustainable. This goal remains difficult to achieve but one that TIDE's board and employees are determined to obtain.

TIDE is in the process of developing a sustainability strategy which will be used to guide our activities and ensure that everything is done with sustainability in mind. Ongoing sustainability activities include building the capacity of the staff and the community members around the protected areas, engaging in activities that allow us to earn an income such as sustainable tourism and a pay-to-participate program, implementation of activities that promotes the general improvement of the environment, the use of appropriate technology in communities to ensure they have the capacity to maintain such technology to their benefit and engaging community members in activities that promote sociocultural sustainability such as marine monitoring using SCUBA diving, manufacturing of craft from natural and available materials, promotion of the activities of the daily lives of fishermen through competition at events such as the TIDE's Fisherman Festival.

### **5.1 Institutional Sustainability**

TIDE's strength lies in the capacity of its employees to effectively perform their duties. Over the years TIDE invested in training and capacity building not only for its staff, but also for the community members surrounding the Protected Areas TIDE manages. Staff has been trained in various disciplines ranging from technical capacities to basic manual capacities. The staff is evaluated on an annual basis where their capacities are noted; any increase in salary or benefits is based on capacity and performance so it is imperative that training occurs annually.

The field staff also participates in exchange visits to other protected areas to broaden their knowledge and appreciation of conservation and sustainable development. In this AOP, the TIDE rangers will visit Punta Allen in Mexico as a site that has been very successful in meeting community needs as well as being sustainable in resource harvesting. Visits to these types of sites are planned annually throughout the life of the project.

In addition, TIDE invests in building the capacity of the community members around the protected areas it manages. TIDE's mission is to foster community participation in resource management and sustainable use of those resources by the communities. TIDE works on the premise that empowering community people will result in their effective participation in resource management along with TIDE; therefore, the communities also help in institutional sustainability.

### **5.2 Financial sustainability**

It has been documented in various institutional assessments that TIDE plays a key and vital role in the unbiased development of the people of the Toledo District in Southern Belize and by extension the rest of the country. It is noted that TIDE, one of the largest employers in Toledo fills certain financial and gap that otherwise would have been critically lacking; therefore TIDE must continue to exist. Parallel to other non-profit, non-governmental institutions, TIDE relies on donations to sustain all of its programs. In the current economic climate, it is becoming increasingly difficult to fundraise to sustain these programs; as a result, TIDE must strive to become financially independent to continue filling this critical gap in this society.

Currently, TIDE has a tour operating arm called TIDE Tours where its income is primarily from tourism. Profits from TIDE Tours are used to fund TIDE's education and outreach activities. Over the past 10 years, TIDE Tours profits has been minimal due to the many challenges with tourism not being as lucrative as it used to, as well as our vision of empowering communities while at the same time trying not to compete with local tour operators in the community.

In 2012, TIDE initiated a program called 'Pay-to-participate' or P2P for short. P2P targets students from universities who must do an internship as a part of their curriculum as well as other students

who plan to volunteer and get experiences that make them more competitive and marketable. Students would pay a fee to TIDE to get the experience they need and TIDE would get some of its work done as well as earn a profit in the process.

At least 3 volunteer organizations are currently benefitting from such programs in Belize. In fact some of these volunteer organizations are using TIDE as a way of marketing their program since they send volunteers to TIDE to get field experience. TIDE does not benefit from the income paid by volunteers, but rather just from the work the volunteers do. Income earned by these volunteer organizations for sending their volunteers to TIDE should be earned by TIDE instead.

### **5.3 Environment**

TIDE's focus is environmental protection and conservation; its 4 program areas are based on conservation at all levels so consideration for the environment is of outmost importance. All of the planned activities at TIDE, for this project as well as others fall under either one of the following program areas; (1) Resource Protection – Where rangers conduct patrols and surveillance, install signs with the rules and regulations of the reserve as well as training in law enforcement etc, all towards the protection and conservation of natural resources; (2) Education and Outreach – Increasing conservation and sustainable development awareness in community members from children to adults through a variety of ways including school visits, community meetings, school trips, summer camps and conservation athlete's program; (3) Research and Monitoring – to inform management of the status of the resources used for commercial purposes or the status of the biophysical parameters that affect the productivity of the resources that communities depend on for their livelihoods; and (4) Community Development – A relatively new program that seeks to invest in communities through capacity building to create marketable individuals, building support for conservation through the creation of community stewards, creating employment opportunities in specialized fields such as using SCUBA to do marine biodiversity monitoring and investment in infrastructure that supports sustainable development.

### **5.4 Appropriate technology**

With respect to the use of technology, TIDE ensures that with every new investment in the communities that a feasibility study is carried out to ensure community members are able to adequately benefit from those investments and that the planned activities are using available resources so that they can be sustainable. One activity worth mentioning here is the feasibility study for a business enterprise to be implemented in Punta Negra Village. Punta Negra doesn't have electricity; there is one solar panel that powers the village telephone so any business investment here has to take that limitation into consideration, hence the need for the feasibility study.

Other investment at TIDE office and ranger station that has 24hr electricity can be more updated with current technology that can be sustained over time.

### **5.5 Sociocultural sustainability**

For years the people of the communities along the border of the marine reserve have been saying they want better opportunities to earn a secure income and increase their living conditions. In Southern Belize, there is no industry that has high employment rates or many opportunities for people to create their own jobs simply because they are not qualified to access funds from lending institutions. In the district with the highest poverty rate in Belize, and an extremely unbalanced distribution of wealth, people need affordable loans or grants to sustain themselves.

TIDE has been managing the marine reserve for over 12 years, and though there hasn't been a significant increase in the population of harvestable marine resources, there hasn't been a drastic loss of resources either. In reality, if there were no management of the marine resources, there would be

nothing left to manage today. The proposed investments in this AOP place high considerations for the sustainability of the sociocultural aspects of the communities in which they are being implemented. Coastal community members that have always been interacting with marine resources are being trained in SCUBA diving and marine biodiversity monitoring. These trainings and capacity building sessions adds value to something that they have always been a part of so naturally they will appreciate it even more.

TIDE also organizes an annual Fisherman Festival where sociocultural activities in the daily lives of fishers such as coconut husking, cast net throwing, fishing etc. are promoted through competition. The fest is attended by over 2,000 individuals from all over Belize and even visitors from abroad so it is an ideal way for other people to know a little about the lives of fishers.

To ensure the investments are not gender biased fishermen as well as women will benefit directly. A women's group from Punta Negra will benefit from a business enterprise tailored to suit their capacities and needs.

6. PROJECT DEVELOPMENT TABLE

Objective	Expected result	Main Activity	Sub-activity	Unit of time												Performance indicator	Impact indicator	Sources of verification	Suppositions Risks	% Execution	
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec						
Consolidation of the Marine-Coastal Protected Areas (MCPAs) selected in the region of the Project, with conservation and sustainable use of marine and coastal resources secured in the medium term	Result 1. Protection And Conservation Of Marine-Coastal Ecosystems In The Marine Area Are Secured	B.1.01 Investments in infrastructure																			
			B.1.01.05 Repair dock at TIDE office																		
			B.1.01.06 New Solar system at Abalone Caye																		

			B.1.01.07 New boatshed at TIDE office												TIDE's fixed assets inventory registers the new boatshed	This activity does not have a direct impact on the reserve, however if boat repairs are done in a timely manner and unused boats are not damaged from extreme weather conditions boats will have a longer 'shelf life'	Boat servicing and log book	No natural disasters destroys the boatshed	
			B.1.01.08 Extension of TDE office for rangers office												TIDE's fixed assets inventory registers the extension to the office	Rangers' overall performance improves	Rangers' staff evaluation	No significant risks or assumptions	

			B.1.01.08 Erosion mitigation at Abalone Caye													Erosion rate at Abalone cay decreases	TIDE ranger station on Abalone cay remains the hub of operation for the management of PHMR resulting in no increase in illegal activities and no decrease in fish stock.	Patrol reports; fish stock assessment reports	No natural disaster destroys the ranger station and the cay	
		B.1.02 Investments in equipment	B.1.02.01 Canopy for existing boat														Canopy is being used on the existing patrol boat	Rangers do more patrols because they are more comfortable doing patrols in unfavorable weather conditions	Ranger patrol logs	No major risk or assumptions identified
		B.1.02.02 Signs for marine reserve/Complete demarcation of PHMR														Two PHMR signs in Spanish established on Abalone and West Snake Caye	Visitors and fishers adhere to the rules and regulations of the reserve as stated on the signs	Infraction reports	Visitors and fishers will be able to read Spanish	

																Rangers at the station on Abalone caye are more comfortable with proper furniture	Rangers are more satisfied with living conditions and their performance increases	Rangers annual evaluations	No risks of assumptions identified	
																The park manager reports and communications are timely	A laptop in itself does not have a direct impact on the reserve, however by having such an equipment the manager of the reserve can perform more effectively	Reserve manager annual evaluation	The computers are free of factory defects	
																Rangers are more comfortable having their own space at the main office	Rangers reports are timely and their performance improves	Ranger annual evaluation	No major risk or assumptions identified	
																Rangers are marking illegal fishing hotspots, points of interest, wildlife etc	Daily patrols are more effective since they are concentrated on the hotspots	Ranger daily patrol logs	The GPS are free of factory defects that prevent them from working accurately	

			B.1.02.08 Purchase of lab and field equipment and supplies for Research and Monitoring program												TIDE's biologist, research assistant and community researchers are collecting high quality data using the new field equipment	Data set is analyzed and is informing management decisions	Resolutions/decisions passed/taken as noted in board meeting minutes	Weather permits the collection of data		
			B.1.02.10 Purchase 1 100HP Yamaha boat engine and engine accessories													The research and monitoring vessel operates smoothly	There are no gaps in the data of the research and monitoring program.	Ranger daily patrol logs	No criminal activity, accidents or negligence causes harm to the engine	
			B.1.02.11 Purchase of radio communication kit													Radio call logs records all on going fishing activities	All illegal activities are acted upon and arrests and convictions are made resulting in decrease illegal activities in the reserve	Ranger daily patrol logs; arrest/conviction reports	No major risk or assumptions	



			B.1.02.12 Subaquatic camera kit. Eg. SEALIFE. DC1400 pro												TIDE has new underwater video footage and pictures	Children, community members and volunteers support TIDE's work after seeing the videos and pictures	Volunteers increased; visitors and children leave positive feedback in log book after visit	The camera is free from factory defects		
			B.1.02.13 Gas refrigerator												Rangers ration are kept fresh for longer periods of time	Less money is spent on ice and fuel to obtain ice from town	Fuel requests	The refrigerator is free of factory defects		
		B.1.03 Generation/up dating of MCPA management plans	B.1.03.03 Assess the implementation of the current strategic plan for TIDE and develop a new and improved plan for 2012-2016												TIDE staff and key community members are making recommendations on the way forward for TIDE	Most of the stakeholders are benefitting from a properly managed reserve	Income reports from Managed Access fishers.	All stakeholders participates to their full capacity in developing the strategic plan		
		B.1.04 Support for implementation of the control and surveillance	B.1.04.03 Support surveillance and patrols program in PHMR												Patrol logs demonstrate that patrols have been carried out	Decreased number of illegal activities per unit of enforcement effort	Ranger daily patrol logs	Equipment and human resources continue to be available		

system	B.1.04.06 Boat navigation and boat engine maintenance training for PHMR Rangers													Attendance of rangers at boat engine maintenance training session	Rangers are skilled in boat engine maintenance	Practical test results	Sickness or other reasons do not prevent trainer or trainee attendance	
	B.1.04.06 Dive training for 8 Marine Reserve staff													8 marine staff receives dive certificates	Marine monitoring data collected by rangers are of high quality and is being used to make management decisions	Minutes of Board meetings	All rangers pass their SCUBA examination	
	B.1.04.06 Oxygen provider training													Rangers are accurately providing oxygen to dive accident victims	No major dive accidents occurs as a result of the unavailability of oxygen	Dive log reports	All rangers pass the oxygen provider test	
	B.1.04.06 Public Relations training for TIDE rangers													Rangers are courteous to visitors and fishers in the reserve	Visitors and fishers support TIDE in the conservation and management of the marine resources	Records of donations from visitors and records of participation from fishers	Rangers are able to internalize the training and use it on and off duty	

			B.1.04.11 Visit to Punta Allen, Mexico for 12 TIDE Rangers												Pictures and videos of the rangers visit to Punta Allen	More fishers are becoming stewards of the marine resources	TIDE community stewards program	Weather conditions permit the visit	
			B.1.05.01 Proposal to develop the methodology to determine the baseline of mangrove cover and marine grassland in PHMR												Available data on mangrove and seagrass cover in PHMR has been synthesised and methodologies are available for monitoring of such	Suitable scientifically valid methodologies for monitoring of mangrove and seagrass cover are available to TIDE and other implementing agencies in Mexico, Honduras and Guatemala	Report summarising existing data on mangrove and seagrass cover in PHMR and recommending methodologies for determination of such during AOP2	The consultant honours the contract	

																Volunteers and community researchers are collecting data for mangrove and sea grass cover in PHMR	Knowledge of the status of mangrove and sea grass cover in PHMR is improved	Baseline report of mangrove and sea grass cover in PHMR	Weather condition permits satellite to obtain image of the area. Volunteers and community researchers engage in data collection	
																Quantity and quality of data regarding water quality, sediment, sea turtle populations and fish stocks	Utility of results of monitoring activities for informing adaptive management	Research and monitoring reports	Weather conditions permit monitoring	
																Quantity and quality of data regarding conch population density and dynamics	Utility of results of monitoring activities for informing adaptive management	Research and monitoring reports	Weather and sea conditions permit monitoring	
																Quantity and quality of data regarding coral reef health	Utility of results of monitoring activities for informing adaptive management	Research and monitoring reports	Weather and sea conditions permit monitoring	

			B.1.05.07 Conduct monitoring of sea cucumber population in PHMR												Quantity and quality of data regarding sea cucumber population	Utility of results of monitoring activities for informing adaptive management	Research and monitoring reports	Weather and sea conditions permit monitoring		
			B.1.05.07 Monitoring of sea grass in PHMR													Quantity and quality data regarding sea grass health in PHMR is collected	Results of the monitoring are used to make informed management decisions	Research and monitoring reports	Weather and sea conditions permit monitoring	
			B.1.05.07 Monitoring of mangrove litter fall (Productivity)													Quantity and quality data regarding mangrove productivity in PHMR is collected	Results of the monitoring are used to make informed management decisions	Research and monitoring reports	Weather and sea conditions permit monitoring	
			B.1.05.07 Monitoring of sea bird population in PHMR													Quantity and quality data regarding seabirds in PHMR is collected	Results of the monitoring are used to make informed management decisions	Research and monitoring reports	Weather and sea conditions permit monitoring	
			B.1.05.07 Monitoring of lobster population in PHMR													Quantity and quality data regarding lobster population in PHMR is collected	Results of the monitoring are used to make informed management decisions	Research and monitoring reports	Weather and sea conditions permit monitoring	

			B.1.05.08 Conduct a research into the impacts that the current dumpsite is having on the Rio Grande River and Marine Reserve and propose the best method to mitigate the impacts												Report on impacts of dumpsite on the marine resources and approved method of mitigation	Marine resources including water quality is healthy	Marine resource and water quality monitoring report	Proposed mitigation measures are sufficient to reverse the pollution		
		B.1.06	Protection of fragile ecosystems.	B.1.06.02 Purchase of 10 mooring buoys - buoy, footing, shackles, etc												Tour boats are safely anchored on mooring buoys in the reef area of the reserve	Coral reef cover and health improves	Annual reef assessment report	No natural disaster destroys the reef	
		B.1.08	Institutional Strengthening for Area Managers	B.1.08.01 Develop, print and distribute PHMR brochure											Brochures are distribute to communities, schools and the general public and increases awareness of PHMR	There is a greater appreciation and support from students, communities and the general public for the management of PHMR	Records of community's participation in the management of PHMR. Records of students participating in conservation activities organized by TIDE	All community members are able to read and understand the brochure		

			B.1.08.02 National radio show on TIDE and PHMR												TIDE management is reaching out to thousands of Belizeans via radio and TV	Resource users of PHMR are changing attitudes toward conservation and resource management	Records of arrests and or convictions	Resource users understand and adhere to the messages delivered through the radio and TV shows	
			B.1.08.02 Official launch of the KfW project in Belize												Attendance of government officials and other stakeholders to project launch	Improvement of government officials and other stakeholders knowledge and attitudes toward KfW project	Photographs, testimonials from informal interviews	Weather conditions Government officials are willing to participate	
			B.1.08.02 Implementation of communication strategy for TIDE												Communication items such as caps, water bottles, wrist bands and calendar are distributed to stakeholders	Increased visibility of TIDE and its mission in the local and international community	Website analytics; feedback reports	No major risk or assumptions identified	

			B.1.08.03 Microsoft Access Training for Research team												A new Microsoft access database developed by the research team is being used to store and analyse data	Management decisions are being made based on accurate data analysis	Board meeting minutes	All research personnel pass the access training course		
			B.1.08.03 Introduction to GIS training for Researchers and rangers													GIS software is being used by research team to create maps of and analyse the monitoring data	Management decisions are being made based on accurate data analysis	Board meeting minutes	All research personnel pass the GIS training course	
			B.1.08.04 Support two TIDE staff to attend an international workshop on marine enforcement													Attendance of staff member at international workshop	Capacity of staff member in marine enforcement	Report from staff member	Sickness or other reasons do not prevent attendance	
			B.1.08.05 Pay-to-participate program (Marketing and Implementation)													At least 6 volunteers pay to volunteer at TIDE	TIDE is more financially sustainable and less reliant on grant funds	Annual budget	Volunteers are willing to pay the required amount	



			<b>B.1.08.05</b> Support TIDE annual fisherman Festival (Fishing tournament prizes, lionfish culling/cooking competition)												Check or cash is given to the winners of the fishing and cooking tournaments	More people support the management of PHMR as a result of the fishing tournament. Lionfish population remains stable as a result of lionfish culling	Records of the number of fisherman that participates in the fishing tournament. Lionfish population report	Weather conditions permit the fishing tournament and lionfish culling and cooking	
		<b>B.2.01</b> Development of the productive fabric of communities/associations	<b>B.2.01.01</b> Support supplemental livelihood projects for the fisherman wives in Punta Gorda Town												Number of fisherman wives participating in the training in food safety and preparation	Fisherman family's income is diversified as a result of catering services done by his wife so he is not fishing as much as before thereby decreasing fishing pressure	Fisherman catch data log	Fisherman wives take advantage of the training	

			B.2.01.04 Hospitality and tourism management in Punta Gorda and Monkey River												More individuals involved in tourism are trained in hospitality and tourism management	Overnight stays of tourists increases	Belize Tourism Board annual tourism report	Those involved in tourism participate in the training courses and successfully complete the courses		
			B.2.01.04 Tourism product development and marketing plan for Punta Gorda and Monkey River													Number of entrepreneurs using the marketing plan to market their business	Standard of living increases in Punta Gorda and Monkey River	Vital statistics records	Tourists arrival and overnight stays increases	
			B.2.01.05 craft making training from natural resources													Additional income is earned from the sale of crafts	Standard of living increases in Punta Gorda and Monkey River	Vital statistics records	Tourists arrival and overnight stays increases	
			B.2.04.04 Development and implementation of lobster shade project and extension of replenishment zones of PHMR along with the Rio Grande Fisherman Cooperative													All stakeholders agree to extend the replenishment zone of PHMR from 5 to 15%	Fishing quotas are increased because the replenishment zone is functioning properly	Fishing quotas	All fishermen agree with the extension of the replenishment zone	

			B.2.01.06 Conduct a feasibility study of a business enterprises for Punta Negra, Punta Gorda and Monkey River and develop business plans for the enterprises												At least one working business enterprise is identified in each of the communities and business plans exist for the identified business	Community members are more qualified to access cash from lending institutions because a business plan exists	Business plan document	Community members use the plan to develop their business		
			B.2.03 involvement of organized community groups in the management of natural resources																	
			B.2.03.01 Conduct 4 Managed Access Forums in Punta Gorda												All Managed Access fishers participate in all of the fisherman forums	Manage Access design and implementation has improved due to feedback from fishers who attended the forums resulting in more sustainable catches	Revised Managed Access design	All Managed Access fishers participate fully in all of the forums		
			B.2.03.02 Four field visits to PHMR for school children												Attendance of students on field visit	Improvement of students' knowledge and attitudes toward PHMR and marine biodiversity	Student tests and feedback	Weather conditions permit school visits. Parents give permission for children to participate		

			B.1.06.02 Networking - PHMR advisory council meetings, APAMO, Coral Reef Network, TRIGOH, SPAGs, etc														Critical decisions regarding protection of the sensitive ecosystems are being made at network meetings	The overall health of the ecosystems and commercial fish species is better off	Research and monitoring reports	The decisions made at network meetings are beneficial to the resources and ecosystems				
			B.2.03.05 Support 15 fishers from PHMR to attend the fourth Tri-national Fishermen Forum in Guatemala																Attendance of PHMR fishers at the Tri-national Fishermen Forum	Capacity of 15 PHMR fishers to engage in sustainable fisheries management for the Gulf of Honduras	Fishers' testimonials	Fishers are willing to participate. The forum goes ahead as planned		
			B.2.03.09 Dive training for 9 community researchers																	9 community researchers receive SCUBA certificates	TIDE's research and monitoring data collected by community researchers is of high quality and is reliable	Research and monitoring reports	All community researchers pass the SCUBA training course	
			B.2.03.11 Support 15 participants from PHMR to attend the festival of the sea in Guatemala																	Attendance of PHMR fishers at the festival of the sea in Guatemala	Fishers are engaged in sustainable fisheries management for the Gulf of Honduras	Fishers' testimonials	Fishers are willing to participate. The festival goes ahead as planned	

			B.2.03.07 Support TIDE annual summer camp school trips												Children's participation in summer camp trips to the marine reserve	Children's knowledge on environmental science has improved	Children's semester reports	Weather conditions permit school trips	
	Result 2. Best Practices Are Applied To Management And Sustainable Use Of Marine-Coastal Resources	B.2.04 strengthening of community /associations																	
			B.2.04.04 Boat navigation skills and safety at sea training for 10 fishers												10 fishers receive certificate of completion for training course in boat navigation and safety at sea	Fishers are using all safety precaution at sea and are spending less since there are not damages to their boat or engine caused by ignorance of navigation	No reports of accidents at sea involving fishers in rangers patrol logs	All 10 fishers pass the course and that weather conditions permit the training	
			B.2.04.05 Completion of dock in Punta Negra												Number of boats that dock at Punta Negra per month	Visitation to Punta Negra is increased along with income from tourists and other visitors	Evidence in living standard	Tourists and other visitors visit Punta Negra	
			B.2.04.06 Consult with the National Solid Waste Management Authority in Belize to recommend a proper temporary holding facility for waste and a bathroom at the Punta Gorda fishermen market												Solid waste from seafood and human waste at the Punta Gorda fish market are properly disposed of	Overall health of the fish market facility increases	Ministry of Health inspection reports	The fishers and consumers utilise the waste facility and bathrooms	

			B.2.04.07 Provide 20 scholarships to third and fourth year high school students of the Managed Access Fishers for one year												Managed Access fishers are sending their children to high school without financial strain	High school students are finding different jobs and are not pressuring the marine resources	Commercial fishing license issued	All children on scholarships graduates from high school		
			B.2.04.08 Formulate community development plans for Punta Negra, Monkey River and Punta Gorda communities													TIDE and other development institution and government know what are the development plans for the three coast communities buffering the PHMR	There is no unplanned development in these communities	Local government's (Town and village councils) record of developmental approval	Local governing bodies adapt and institutionalize the plans	
			B.2.04.08 Implementation of business plan including completion of dock for Punta Negra Village													Business enterprise for Punta Negra is working	Overall standard of the villagers of Punta Negra living increases	Annual national statistics report	Tourism increases in Punta Negra Village	