

**The famous Snake Cayes of PHMR**

**Port Honduras Marine Reserve**

**Annual Report 2016**

**Produced By**

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**Protected Areas Manager**

**Toledo Institute for Development and Environment**

**Words from the manager**

It is with great pleasure we present to you the Port Honduras Marine Reserve (PHMR) annual report for 2016. This report summarizes the main activities that occurred throughout the year [Dec 2015-Nov 2016]. After two years of the reserve being declared a SPAW site the staff continued with the same dedication to continue to ensure the management of the area remains first and foremost.

I am pleased to report that the field staff conducted a total of patrols 511 a decrease from 2014 and 2015 but still very effective as the patrols were based on the assessment done using data from SMART for 2015. As a result of these patrols, 1 arrest was made and successfully prosecuted, 4 verbal warnings and 14 gill nets removed/confiscated from within the reserve. Patrols were conducted jointly with the Belize Coast Guard, and personnel from other protected areas managed by TIDE. Efforts were made to strengthen the relationships with government agencies in 2016 especially with the Belize Coast Guard and Fisheries Department.

Once again, we would like to express our sincere gratitude to the Belize Fisheries Department, PHMR Advisory Committee, the Belize Coast Guard, Oak Foundation, MAR Fund and the German Corporation (KfW), Summit Foundation, The National Oceanic and Atmospheric Administration (NOAA), Environmental Defense Fund, The Nature Conservancy, Sea Grass Net and the New England Bio Lab Foundation. The great work towards the sound management and sustainable use of the reserve resources would not have been possible without the financial contribution and commitment from these partners throughout the year.

I must make special mention of our rangers, Edwin Cabrera, Egbert Valencio, Aaron Garbutt, Narciso Martinez and Allan Halliday for your continued dedicated support and hard work to the conservation of PHMR’s natural ecosystems and its organisms. A special thank you must be given to the Belize Coast Guard for their tremendous support throughout 2016 in the enforcement of the rules and regulations of the reserve and the security they provide for our staff. It has been a privilege and a great experience to have worked with you all for 2016 and look forward to 2017 with great expectations.

Sincerely,

Mario Muschamp

Protected Areas Manager

TIDE

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**1.0 ADMINISTRATIVE**

**1.1 STAFFING**

**PHMR Enforcement Staff (Table1)**

|  |  |
| --- | --- |
| **Names** | **Position** |
| 1. Mario Muschamp | Protected Areas Manager |
| 1. Egbert Valencio | Head Ranger (1st)[submitted resignation, last day of work Dec 27th] |
| 1. Edwin Cabrera | Head Ranger (2nd) |
| 1. Aaron Garbutt | Ranger |
| 1. Allan Halliday | Ranger (Temp) |
| 1. Narciso Martinez | Ranger [resign] |

**PHMR Research Team (Table2)**

|  |  |
| --- | --- |
| **Names** | **Position** |
| 1. James Foley | Science Director |
| 1. Tanya Barona | Marine Biologist |
| 1. Marty Alvarez | Managed Access Officer |

**Community Researchers and volunteers (Table3)**

|  |  |
| --- | --- |
| 1 | Fernando Rabateau |
| 2 | Allana Barillas |
| 3 | William Caal |
| 4 | Arielle Coleman |
| 5 | Curtis Hines |
| 6 | Jeni eve Ramirez |
| 7 | Jean Castellanos |
| 8 | Anthony Rash |
| 9 | Allan Haliday |
| 10 | Rasheed |
| 11 | Ishamae Gomez |
| 12 | Joshua Borland |
| 13 | Shanelle |
| 14 | Bevington Cal |
| 15 | Eryn Boden |

**1.2 TRAINING**

Staff members are given the opportunity to participate in trainings on an annual basis. Table 4 below shows the trainings accomplished for 2016. Also Table 5 expresses the training needs for 2017.

(Table4)

|  |  |  |
| --- | --- | --- |
| Area Of Training | Area of Training | List of Participants |
| Enforcement | 1. BIOPAMA/SMART hosted by Fisheries and Forest Departments focusing on using SMART as a tool for data collection on enforcement, research and monitoring activities for both marine and terrestrial | Edwin Cabrera, Leonard Williams, Delbert Pop |
| Capacity Building Workshops/ Trainings | 1. Creative Writing facilitated by Artcorp 2. Outboard engine servicing and maintenance hosted by Fisheries Dept. 3. Project Management facilitated by Sai Info Tech 4. Open Water Dive Training facilitated by James Foley 5. Advance Dive Training | All Staff  Edwin Cabrera, Santiago Cucul  Mario Muschamp  Leonard Williams, Egbert Valencio-refresher  Edwin Cabrera, Egbert Valencio, Andrew Williams, Delbert Pop |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **(Table5)**   |  |  | | --- | --- | | **Rangers** | Boat and engine maintenance training | |  | MPA Enforcement Training | |  | Tactical Defense/Weapons Handling Training | |  | Protected Areas Management Training | |  | Report Writing Training | |  | SMART/GIS Training | |  | PADI Rescue Diver/Dive Master Training | |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**2.0 Background of Port Honduras Marine Reserve [PHMR]**

**2.1 Introduction**

Declared by the Government of Belize in January 2000, the PHMR is being actively co-managed by TIDE and the Fisheries Department. PHMR covers approximately 160 square miles and is an integral part of the Maya Mountain Marine Corridor (MMMC) in southern Belize. The reserve is located just off the coast of Punta Gorda and extends to just north of Monkey River Village. PHMR comprises of all the coastal wetlands, sea, seabed, and national lands within the area known as the Port Honduras, with general boundaries being the Rio Grande in the south, Monkey River in the north, the snake cayes in the east and the coastal wetlands in the west. The reserve is rich in biodiversity, containing approximately 138 small mangrove cayes, which provide essential habitat and nursery for juvenile aquatic species. Other critical habitats include sea grass beds, hard bottom communities, and soft bottom communities. A large portion of the reserve is covered by sea grass, which also provides essential habitat and food for juvenile fish species, sea turtles, salt water crocodiles, and manatees. Also within the reserve you find fringing reefs and several coral patches and coral heads, which provide a habitat for vertebrates and invertebrates.

There are two villages located in the reserve, Monkey River Village and Punta Negra Village. The residents of each village are mostly commercial fishers, tour guides, or fly-fishing guides who depend on the reserve for their livelihood.

**Map of PHMR (Map1)**

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**2.2 Reserve’s Strategic Plan and Goals**

The PHMR management strategy is based on five major goals:

1. To protect the physical and biological resources of Port Honduras

2. To provide education and research

3. To preserve the value of the area for fisheries and other important genetic resources

4. To develop recreational and tourism services that will enhance the economic and social benefits of the area without causing environmental damage

5. To strive for sustainable financing

**Zoning Plan and Regulations**

For the purpose of the regulation and control of the Reserve, five zones were established:

1. **General Use Zone** (96% of the Reserve)

To provide opportunities for established uses and activities (e.g. fishing for conch, lobster, and finfish) under a stringent monitoring scheme

2. **Conservation Zone**

To provide an area free from commercial fishing to prevent overexploitation of fishery stock, provide an undisturbed area for recruitment of species, and enhance the value of the area for recreational and tourism activities

3. **Preservation Zone**

To provide areas within the marine reserve that is preserved in an entirely natural state and to protect areas of particularly fragile habitat or with threatened or rare species

I suggest an update on work done with zonation of NTZ!

4. **Special Management Area**

Area reserved for special projects

In an effort to improve the management of the reserve major work has been accomplished on the proposed extension of the conservation zones of PHMR. After consultations with the stakeholder communities, TIDE submitted the proposed extension map to the Belize Fisheries Department for consideration and later revision of the S.I for the reserve. It is described as follows:

**Hexagon** (South, West and Middle Snake Caye): This area is a hexagon that encompasses South Snake Caye, West Snake Caye, and Middle Snake Caye. It encompasses a bank north of Middle Snake Caye, portion of a bank found on the southeastern side of Middle Snake Caye and portion of a bank on the southeastern side of South Snake Caye. In addition, one bank on the west side of West Snake Caye was enclosed. Middle Snake Caye remains a preservation zone with the same boundaries as previously, but is now encompassed by the new zone B. The boundary is not arbitrary but encompasses areas thought to be critical conch and lobster nursery and spawning habitat in order to enhance the replenishment function of the RZ.

**Rectangular Shape** (East Snake and Wild Cane Caye): Within the old SI the RZ zones of East Snake and Wild Cane Caye were based on a circular buffer zone scaling 4 coordinates. Within the new SI it is proposed that a rectangle is used as opposed to a circle, scaling the same coordinates. Using a rectangle will make the boundary clearer and therefore aid enforcement. After reviewing the coordinates of the previous SI for Wild Cane Caye it was found that in order to generate a suitable rectangle the original coordinates would need to be altered. This alteration will not add to the area currently covered by the RZ. By making the no-take zones in this area into a rectangle there is only a small increase in the RZ, both fishers and TIDE agree that a square shape is easier for both parties to know where extraction is legal and where it is illegal.

Map 2: Proposed expansion of PHMR replenishment zone. The old boundary is represented by BERDS perceived boundary (http://www.biodiversity.bz/mapping/warehouse/) and the enforced SI coordinates: FISHERIES ([PORT HONDURAS MARINE RESERVE) ORDER, 25th day of January 2000.

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**3.0 PHMR Accomplishments 2016**

**3.1 Patrols and Surveillance**



**Joint patrol with Belize Coast Guard**

A total of 511 patrols conducted for the period Dec 2015 to Nov 2016 is reported on in this 2016 report. As a result of these patrols 14 gillnets were confiscated within the boundaries of the reserve [7 from the Monkey River area, 1 from Punta Negra area, 4 from the Rio Grande/Pork N Dough Boy Point area, 2 from the Golden stream area] 6 of which were confiscated due to reports from concern fishers [3 from Monkey River, 2 From Golden Stream, 1 from Rio Grande/Pork N Dough boy Point area], 3 verbal warnings were given to local fishers from Punta Gorda for using harpoon in the reserve and for fishing in the reserve without his license on person. One (1) local fisher Edgar Randas from Santa Ana on the Moho River was arrested and summons to court with successful prosecution for fishing in the reserve with a restricted gear [gill net]. Rangers along with members of the Belize Coast Guard apprehended vessel with 5 Guatemalan Nationals in PHMR and took them into Immigration Office in Punta Gorda as their documentation [sarpe] for entering Belize was not stamped by Immigration Officials. All 5 were deported back to Guatemala.

Table 6 summarizes the number of patrols, warnings written and verbal as well as summons issued and arrests made and, gill net confiscation done at night and day both in and outside the reserve for the period Dec 2015 to Nov 2016. All patrols were done jointly with the Belize Coast Guard.

**Table 6**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Patrols by PHMR Rangers 2016** | | | | | | | | | |  |  |  |  |  |  |  |  |
|  | **Inside PHMR** | |  | **Outside PHMR** | |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **Day** | **Night** |  | **Day** | **Night** | **Total patrols** | **Total hours** | **Number of arrests or warnings** | **Results of patrols** | |  | | --- | |  | |  |  |  |  |  |  |  |
| **Jan** | 39 | 7 |  | 1 | 0 | **47** | **126** | **0** | 17 vessels with managed access fishers, 3 vessels conducting tourism related activities and 5 vessels doing recreational fishing in the reserve |  |  |  |  |  |  |  |  |
| **Feb** | 30 | 5 |  | 2 | 0 | **37** | **106** | **1** | Verbal warning to Julio Williams for having harpoon in vessel in the reserve. 9 vessels with managed access fishers, 2 conducting tourism related activities and 4 vessels conducting recreational fishing in the area |  |  |  |  |  |  |  |  |
| **Mar** | 36 | 4 |  | 5 | 0 | **45** | **143** | **0** | 10 vessels with managed access fishers, 10 vessels conducting tourism related activities and 6 vessels doing recreational fishing. 1 gill net confiscated near Rio Grande |  |  |  |  |  |  |  |  |
| **Apr** | 39 | 9 |  | 0 | 0 | **48** | **145** | **0** | 11 vessels with Managed Access Fishers, 7 vessels conducting tourism related activities and 4 vessels doing recreational fishing in the area |  |  |  |  |  |  |  |  |
| **May** | 32 | 3 |  | 2 | 0 | **37** | **140** | **0** | 14 vessels with Managed access fishers, 3 vessels doing tourism related activities and 5 vessels doing recreational fishing in the area |  |  |  |  |  |  |  |  |
| **Jun** | 33 | 14 |  | 6 | 1 | **54** | **123** | **0** | 13 vessels with managed access fishers, 3 vessels doing tourism related activities and 4 vessels doing recreational fishing in the reserve |  |  |  |  |  |  |  |  |
| **Jul** | 33 | 7 |  | 5 | 1 | **46** | **154** | **0** | 8 vessels with managed access fishers, 3 vessels doing tourism related activities and 8 vessels doing recreational fishing in the reserve. 1 gill net confiscated near Rio Grande |  |  |  |  |  |  |  |  |
| **Aug** | 28 | 7 |  | 2 | 0 | **37** | **128** | **1** | Verbal warning to Harrison Young for not having license on person while fishing in the reserve and 4 gill nets confiscated near Monkey River, 4 vessels with managed access fishers and 3 vessels conducting tourism related activities in the reserve |  |  |  |  |  |  |  |  |
| **Sep** | 29 | 10 |  | 3 | 0 | **42** | **112** | **0** | 12 vessels with managed access fishers, 2 vessels conducting tourism related activities and 5 vessels doing recreational fishing in the reserve. 2 gill nets confiscated near Monkey River |  |  |  |  |  |  |  |  |
| **Oct** | 33 | 9 |  | 3 | 0 | **45** | **156** | **1** | Verbal warning/information sharing to Modesto Martinez for hand line/recreational fishing in conservation zone at West Snake Caye. 19 vessels with managed access fishers, 1 vessel conducting tourism related activities and 3 vessels recreational fishing encountered on these patrols |  |  |  |  |  |  |  |  |
| **Nov** | 23 | 7 |  | 1 | 0 | **31** | **122** | **1** | 18 managed access vessels, 3 vessels conducting tourism related activities, 8 vessels recreational fishing encountered on these patrols. 5 gill nets confiscated from within the reserve and 1 person arrested and successfully prosecuted [Edgar Randas] for fishing with illegal gear in the reserve. He was able to get back his 4 gill nets but was fined $800. |  |  |  |  |  |  |  |  |
| **Dec-2015** | 25 | 9 |  | 7 | 2 | **43** | **130** |  | 1 Gill net confiscated near Monkey River, 10 boats with Managed Access Fishers, 1 boat conducting tourism related activities and 3 boats recreational fishing recorded on these patrols.. |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Totals** | **380** | **91** |  | **37** | **4** | **512** | **1585** |  |  |  |  |  |  |  |  |  |  |

**Maintenance of patrol Equipment**

The upkeep of the patrol equipment such as the regular cleaning of patrol vessel, regular servicing of the outboard engine [engine oil and oil filter change, gear oil change, freshwater wash and re-grease] were done by rangers and coast guard personnel] major repairs and any technical problems were done by mechanic in Monkey River.

**3.3** **Infrastructure**

**Maintenance**

The repainting of the ranger station and upkeep of the ranger station was done by the rangers and personnel from the Belize Coast Guard station at PHMR, as well as the maintenance of the mooring and demarcation buoys. Monitoring and maintenance of solar system was done by rangers and major issues and quarterly checks were done by Christopher Nesbitt who designed and installed the system.

**3.4 Partnerships**

The PHMR staff continues to work with local and partner organizations, these partners include Southern Environmental Association, the Fisheries Department, the Police Department, the Belize Defense Force, the Belize Coast Guard, the University of Belize and Tour Guide and Fishermen Associations from the buffer communities of the reserve.

**Communications**

Communication among the staff of PHMR improved in many ways during 2016. With the assistance of Art Corp, a United States base organization, the rangers receive training to improve internal and external communication which is helping in improving the team spirit and building relationship with the users of the reserve. The staff has improved with the help of technology as well. The internet modem purchased and signed along with a computer at the station is helping with reporting etc.

Raising awareness of the importance of the marine reserve and of TIDE’s work in general is also very important. In 2016 the staff continues to play their role in the financial sustainability initiative, Ridge to Reef. This year the initiative focus on more promotion and the reserve hosted field visits from potential group leaders from foreign universities etc. showcasing the experience the participants would have when they take the expedition. As a result, Ridge to Reef Expedition have bookings every month from October 2016 to June 2017.

**4.0 Erosion of Abalone Caye**

In an effort to continue to the work started in 2011 and 2014, additional gabion baskets and rocks were purchased and transported to Abalone Caye. Major work has been done concentrating on the eastern and southern sides of the island, shown here in the picture provided.

With funding through our MARFUND and German Cooperation project, a team was hired to transport rocks out to the island. Rangers and Belize Coast Guard personnel on duty assisted by constructing gabion baskets which were placed in strategic locations and filled with rocks, in addition to setting rocks behind the gabion baskets. This work will continue in 2017 with an aim to complete the entire island.

**Seawall Construction at Abalone Caye**

**5.0 Community Education and Outreach**

**Reef Guardian project**

Reef Guardians Belize (RGB) was conceptualized to elevate the status of the Belize Barrier Reef in the public consciousness by building awareness and appreciation for the reef systems in Belize. This approach has proven successful in Australia’s “Reef Guardian Schools” program which has been highly effective at motivating stewardship of the Great Barrier Reef. In Belize, Reef Guardians was developed by the Toledo Institute for Development and Environment through a partnership with the Australian High Commission and former climate change director of the Great Barrier Reef Marine Park Authority Dr. Paul Marshall, the achievements made and lessons learnt during this project will be summarized in this report.

This project was piloted in three schools in Punta Gorda town to improve standards in coral reef education and reduce their impacts on the reef. Schools, teachers and students under the project benefited with enhanced educational resources, capacity training including opportunities to engage with coral reefs through virtual learning and field trips as well as mini-projects that improve school environments while lessening impacts on the reef.

**OBJECTIVES**

Reef Guardians Belize was designed with three specific goals: 1) ≥60 students at three schools in Punta Gorda have enhanced awareness and appreciation of the Belize Barrier Reef System. 2) The three schools and ≥60 individual students have taken steps to reduce their impacts on the Belize Barrier Reef. 3) A Reef Guardian Schools program appropriate for Belize has been designed with the participation of students, teachers and the Ministry of Education and is ready to scale up. Its long term goal is for the majority of the Belizean public to value the Belize Barrier Reef dearly, and to be aware of and applying best practices to protect it. To achieve these objective, the project has been designed with four work packages.

**Work package 1: Design a Belizean program based on Australia’s Reef Guardian Schools.**

**Work package 2: Pilot the program by supporting three schools in Toledo to become Reef Guardian Schools.**

**Work package 3: Promotion of Reef Guardian Schools via media and direct communications.**

**Work package 4: Monitoring, Evaluation and Learning**

The achievements made under each package are as follows:

*Work package 1: Design a Belizean program based on Australia’s Reef Guardian Schools*.

Reef Guardians Belize Program was presented to three selected schools in Punta Gorda Town: Punta Methodist Primary School, St. Peter Claver Roman Catholic School and St. Benedict Roman Catholic School. The Toledo Institute for Development and Environment (TIDE) made initial contact with the three selected primary school from October 15th to 20th 2015. During this initial meeting each school committed to participating in the project and identified two Reef Guardian teachers that volunteered to participate in the project.

Following this initial contact, TIDE hired an Environmental Educator to be directly responsible for the executing the project. He re-established contact with the schools through a series of introductory visits that serve to introduce the Environmental Educator to the teachers and school administrators. Due to the Christmas holiday and school being suspended for three weeks, activities did not resume until January 2016.

During this period, the Environmental Educator established a working relationship with Art Corp (Now, The Creative Action Institute C.A.I). They expressed an interest to working with the participating teachers to help them create communicative activities that complemented their lesson plans using a creative student centered approach. This approach aims to integrate creative interactive in class and outdoor activities and guide teachers to develop the capacity to create lesson plans with student centered activities that recap the content seen in any particular lesson being covered under their Reef Guardians lesson plans.

Upon resuming classes, participating teachers were invited to a teacher-training workshop. This workshop aimed to present a detailed project overview and to present the teachers with a set of deliverables. These were divided into three packages: program design, resource package design and branding activities. Under program design, teachers contributed to the program’s framework by creating a timeline for deliverables (See figure I.) that best fit their work schedule. They were also tasked to assist in setting the criteria for becoming a Reef Guardian School (by raising reef education standards and improving environmental performance) and identifying the benefits provided by the program to the schools. These observations and recommendations were essential in the development of a Reef Guardians Schools Resource Guide

*Resource Guide*

An official Reef Guardians Belize resource guide was successfully completed. This document is a compilation of all lesson plans and in-class activities piloted in each of the three participating school. It also included additional resource material such as lesson reinforcement activities, posters and a how to video for becoming a Reef Guardian school in Belize. This guide will be packaged with all materials mentioned above. Twenty packages are currently being printed and will be distributed to all schools, partners and other interested parts for future implementation and possible replication of Reef Guardians Belize in other coastal communities with directly reliance on the reef system.

*Guide design and development*

During a teacher training workshop held on January 16, 2016, seven reef guardian teachers were provided with samples of lesson plans and unit of works developed by Reef Guardians Australia and an environmental lesson plan package done by an independent consultant for TIDE. Both lesson plan packages included lessons catered for children 8 -12 years old which coincide with the age range for Belize’s middle division primary school students. Considering that the Teachers taught different levels within the middle division, they were asked to select lesson plans based on the lesson’s ease to be modified for all three levels in the middle division. Each teacher selected five lesson plans that would work for their corresponding level and they were then asked to document the use of any additional resources, changes or modifications made to lesson plans and behavioral changes noticed in the classroom. This feedback was crucial when selecting additional resources and the teaching approach used in the final design process for the resource package. All changes and observations made by teachers were recorded on a notebook journal and electronically using a USB flash drive that was provided to each of them. All notes and observations collected were then discussed through meeting with the Environmental Educator and taken into consideration when finding additional material to be included in the guide.

All illustrations and resource guide layouts were done by a local illustrator following natural reef scenes of Belize. The guide is divided into three sections. It includes a lesson plans followed by lesson plan interactive reinforcement activities and an additional materials section which provided teachers with all materials needed for the lesson plus other education links and activities that will be helpful for lesson plan development.

*Work package 2: Pilot the program by supporting three schools in Toledo to become Reef Guardian Schools and Work Package 4: Monitoring, Evaluation and Learning*

During the first Teacher Training Workshop a time line for deliverables was created, from January 25 to February 13, 2016 (see figure I) teachers selected lesson plans and established links between their plans and the National Primary School Curriculum units of work. These findings were to be presented in a follow up meeting on February 13, 2016. This meeting had to be postponed due to inclement weather to February 20, 2016. The objectives for this follow up meeting were to discuss lesson plan progress, provide input in designing a logo, reflect on a slogan and present mini-project ideas. Due to poor attendance, these objectives were only partially met; as a result, corrective actions were implemented to fulfill the desired outcome. These corrective actions required the Environmental Educator and a representative from C.A.I to visit each school directly to check on lesson plan progress and re-establish the timeline for deliverables (see figure II.). Branding activities were not discussed during this time since the time allotted for each visit was one hour given the teacher‘s schedule. During these visits, a second desired outcome was implemented; teachers were asked to come up with new dates to pilot one lesson plan with the assistance for C.A.I representatives.

Figure 1. The time line below illustrated the dates selected by teacher for deliverables.

JANUARY

Monday 25th:

-Lesson plan package was sent to teachers for the first draft of lesson plans.

- Teachers also reviewed the first draft of the Reef Foot Print Quiz.

- In consultation with Environmental Educator teachers develop a rubric for selecting 10 Reef Guardians champions.

- Teachers review the rubric.

FEBRUARY

Monday 1st:

- Teachers email comments and feedback to Environmental Educator.

Friday 5th:

-Finalized lesson plans are sent to CAI representative for review.

Monday 8th:

- Teachers Pilot and implement lesson plans as follows:

- Monday 8th: Ms. Juarez and Mr. Edwards (St Peter Claver)

- Tuesday 9th: Mr. Ical (St. Peter Claver)

- Wednesday 10th: Mr. Chun (St. Benedict)

- Thursday 11th: Ms. Rodriguez (PG Methodist)

Saturday 13th:

- TENTATIVE workshop to: Discuss lesson's progress,

- Design logo, discuss promotional items,

- Discuss mini project proposals,

- Brian storm mini project ideas,

- Hand out mini project criteria.

MARCH

Monday 14th:

- Teachers select 10 "Reef Guardian Champions"

- Teachers request prizes from TIDE

Friday 18th:

- Reef Guardian Champion are awarded prizes

- Event advertised in local media

- Teachers submit final project outline

- Mr. Cruz send permission slips, and release forms

- Facebook session update

APRIL

Monday 1st:

- Mr. Cruz send feedback, comments and go ahead for mini projects

- Mr. Cruz develops criteria along with teachers for selecting the final 20 reef guardian students who will be participating in the final trip.

Monday 11th:

- School visit to check on project status, lesson plan implementation and to collect permission slips etc. - Final comments and observations from teachers - Clarifies any doubts concerning mini project.

MAY

Friday 27th:

- Mini project are complete and ready for evaluation and presentation

- Teachers select 20 reef guardians’ students per school and submit a list of participants to Mr. Cruz

JUNE 13th - 17th

- Tentative dates as above for field trip

- Students should have all promotional items to promote their school and the project.

***Figure II. Represents the new dates selected by teacher for the piloting of lesson plans according to each school.***

\*St. Peter Claver Primary\*

Lesson: Monday, February 29th 1:00PM- 3:30PM

Lesson: Tuesday, March 1st 1:00PM- 3:30PM

Lesson Wednesday, March 2nd 1:00PM- 3:30PM

Mini Project Planning Meeting: Monday, March 4th 1:00PM-3:30PM

\*PG Methodist Primary\*

Lesson: Wednesday, April 6th- 1:00PM-3:30PM

Lesson: Wednesday, April 13th 1:00PM- 3:30PM

Mini Project Planning Meeting: Wednesday, April 20th 1:00PM-3:30PM

\*St. Benedict's Primary\*

Lesson: Monday, April 11th 1:00PM- 2:30PM

Lesson: Tuesday, April 12th 1:00PM- 2:30PM

Mini Project Planning Meeting: Monday, April 18th 3:30PM- 4:30PM

***Lesson plan implementation***

St. Peter Claver Roman Catholic School (Annex IV) was the first school to pilot three lessons under Reef Guardians. Each teacher created or modified a lesson plan based on their current unit of work and linked the lesson’s objective to integrate the intended reef ecosystem and conservation awareness component (see Annex III). These lessons were linked to the approved national primary school curricula’s various content areas; science, health and family life, social studies and arts and literature (see Annex I, Image set A.).

The other two participating school piloted their lessons based on the schedule above (Figure II.) after the Easter school break. Once all lesson plans were implemented they were reviewed by the environmental educator, TIDE, and CAI representatives. The lessons developed formed the core of the teacher resource package and were complemented with all resources needed including additional relevant information. An illustrator was then contracted to design the layout of the package and provide all necessary artwork to be included in the guide. The final resource package is currently being printed, and will be included along with other relevant materials in a package to be delivered to all Reef Guardians School and other relevant stakeholders of the project.

*Work package 3: Promotion of Reef Guardian Schools via media and direct communications.*

*Branding and Promotional Activities*

The first exposure Reef Guardians Belize had to the general community was through series of activities held to celebrate Reef Week. RGB joined efforts with Oceana-Belize and C.A.I to celebrate Reef Week, 2016 under the theme ***“Not just my reef, but our way of life***”. An activity entitled ‘The Council of all beings’ (Annex III) was planned to showcase Reef Guardian students. This activity required two contact sessions, one, to guide the students in preparing masks that embodied a critical reef organisms and a second session to rehearse their roles for a presentation at the main park in Punta Gorda Town. The activity was spearheaded by the students of Punta Gorda Methodist School and involved participation of St. Peter Claver RC school students. St. Benedict, the third participating school, could not attend due to transportation issues. This activity culminated in a parade held on Friday March 11, 2016. (*Please refer to the activity description attached in Annex III and images in Annex II)*

This activity was used to expose to the general public of the main objectives of the project and to start promoting Reef Guardians as a recognizable local brand. Following this activity a project launch was organized on April 22, 2016 for Earth Day.

*Project Launch*

Project launch was planned for Earth Day to maximize the reach of the event to not only RGB schools but also other invited educational institutions and the community at large. TIDE staff collaborated with RGB schools to develop a theme for the event and a series of activities that merged the Earth Day theme with RGB objectives.

The theme for this year’s Earth Day was “Trees for the Earth”. The RGB team and TIDE staff showcased the interconnectivity between healthy mangrove forests and the reef. Hence the theme for the event is “A healthy Earth makes a Healthy Reef”.

The main activity highlighted for the project launch was a trash creature competition. The concept behind a creature competition was to use beach trash, Sargasso and other discarded safe reusable materials to create a creature whose life begins in the mangroves to later bloom as a critical or representative reef creature.

Each participating school submitted entries for the competition. The event culminated in a showcase of creatures each coupled with a presentation answering: why mangroves play an important role in the selected organism’s life cycle, why is the organism important to the reef, why did they choose to represent the organism and a summary of its elaboration including the percentage of beach trash and other reusable materials used. All RGB schools presented, St. Peter Claver was the winner and Punta Gorda Methodist School placed second (see Annex VI).

St. Peter Claver the winning school submitted a sculpture made with over 80 percent trash. The focused in a commercially important species (Megalops atlanticus). The sculpture was coupled with a presentation answering the questions stated above an informational stand highlighting important fact of the organism life cycle and importance as a species exploited for recreational fly-fishing.

Punta Gorda Methodist School was awarded second place. They focused on the parrot fish as a critically species important to reef health. The sculpture was made of over 60 percent trash and was coupled with a presentation using mostly plastic bottles. The school presented an esthetically pleasing sculpture but failed to elaborate on their presentation and were hence awarded second place (Annex VI).

Reef Guardians Logo Competition

In preparation for the event, the Environmental Educator and Earth Day management team scheduled a motivational presentation for each reef guardian class from the 6th to 7th April 2016. The presentation focused on the concept behind earth day, the theme for the event, details of the logo and creature competition, prizes and incentives, and the criteria for evaluating each competition.

All RGB students were asked to submit one entry to the competition. All entries were collected by April 19, 2015 and winner was chosen (Annex VII). Once a winner was selected, the logo was then digitized and placed on the official RGB T-Shirts. These were delivered on the April 21, 2016 to all RGB students and teachers. During the event the official Reef Guardians Belize Logo was unveiled and the winner was awarded with a prize and a Cocoa tree (*Theobroma cacao*) to be planted at their school compound.

The prizes selected for the winner was a trip to the barrier reef for the first place winner, and a set of school supplies for the second place winner. A special prize was awarded to the winner of the logo competition. Valuable footage was also collected during the event. This footage is being used to develop the final ‘how-to-video/promotional RGB video’.

*Networking and Promotional/ How-to- Video*

A media manager was subcontracted to facilitate the creation of an RGB how-to-video and guide teachers in setting an RGB Facebook page and as technical support during activities such as group video conference calls and recording relevant footage.

To communicate the role of the media manager and prepare teachers for networking activities, on May 25, 2016 a RGB networking meeting was held. The objectives for this meeting were to

* To prepare and guide teachers for them to connect with fellow Reef Guardian teachers from Grenada and Australia.
* Create a Reef Guardians Belize Facebook page.
* Finalize mini project ideas, complete mini project proposal and discuss MOU for the disbursement of funds with each RGB school.
* Finalize dates for end of project trips and trips awarded to the Earth Day competition winners.
* Select dates and activities for further recording footage to be included in a Reef Guardians Belize promotional video.

*Outcomes of the meeting*

Prior to the meeting teacher were asked to come prepared with images, anecdotes and experience that they were willing to share on the RGB Facebook page. The media manager then set an official RGB website (https://www.facebook.com/ReefGuardiansBelize/?fref=ts&ref=br\_tf) along with them and show them how to update, edit and maintain the page. Teachers then made post and shared comments and established contact with other Reef Guardians related pages from around the world. Posting of event and activities will be the teacher’s responsibility with monitoring the page regularly.

Video conferencing options were discussed and it was decided that a videoconference using Skype call would be made in May based on the response of both Reef Guardians Grenada and Australia. The Environmental educator had made contract with Mr. Paul Marshall to laisse with Reef Guardians Australia and Ms. Danielle Ince to contact Reef Guardians Grenada. Both communication lines were established. Reef Guardians Belize then took the role of the coordinating body for this call. Contact was re-establish with Reef Guardians Grenada and Australia and the date selected was communicated to them. Reef Guardians Grenada through its coordinator Ms. Christabelle Andrews. Who then expressed that a later date had to be chosen since the one selected was not convenient due to prior project commitments. She has yet to verify on a final date. Paul Marshall, Reef Guardians Australia has yet confirmed on a date for us to connect with Reef Guardians Australia. All equipment and contacts have been established and ready to conclude this activity once a date is finalized and communicated to RGB by both parties.

**RGB Mini Projects.**

During the networking meeting all RGB schools presented their mini project proposal. The TIDE staff, Environmental Educator and School administration reviewed all mini-project ideas. All proposed projects had to show how they would minimize the negative impacts school children have on the reef and improve student life on each school compound. These were then conceptualized on a mini project proposal format that was finalized at the end of the meeting. Each school then signed an MOU for the disbursement of funds. Video footages were progressively collected at different stages of the project.

*Other promotional items and events*.

The Toledo district is local known as the chocolate capital of Belize. An annual Chocolate Festival is held to showcase chocolate product but also serves as an opportunity for several businesses and NGO to reach out to the public who visit this event at large. Reef Guardians Belize teams and TIDE staff prepared an informational booth for this event.

In preparation, several promotional stationary items were ordered to give away as prizes for an educational plink trivia game aimed at school children but inclusive of the general public if they wanted to participate. All items purchased showcased the RGB logo as well as those of our donors.

The booth was maintained from 9:00 am to 3:00 pm and was well received with approximately 300 visitors including children and adults. Two target species were selected to be showcase in this event 1. The Cocoa Damsel fish was selected to showcase the importance of reef algae grazers for reef health and the lionfish to show the impact of invasive species to the reef.

**Reef Guardians Farmers**

On the January 21, 2016 a meeting was arranged with World Wildlife Fund representative Mr. Mejia to discuss and share information concerning best practices for banana farmers in the southern Belize. Mr. Mejia advices that the production of a manual for better practices is a better term to be use due to the lack of flexibility and long term applicability of a best practices manual. According to Mr. Mejia, the local Banana Growers Association is working towards Rain Forest Alliance certification under which the inclusion of environmental friendly better practices is a major component and advised in holding a meeting with the National Representative of Banana Growers Association (BGA) and Fyffes National Representative. A meeting was scheduled with both parties on February 11, 2016 at main Fyffes office at Big Creek Port.

Main outcomes of the meeting were a verbal note expressing the two party’s willingness to cooperate with project and a request for the sharing of information including water quality data from TIDE. Some the areas for potential cooperation voiced by both parties include sharing of water quality data, open review of Fyffes environmental policy in Belize, a review of the Rain Forest Alliance guideline, assistance with garbage collecting in stakeholder communities and sharing information about audits already conducted by WWF and Rain Forest Alliance. Both parties also expressed an interest of being included in discussion towards the creation of the Monkey River Watershed Association.

Following this meeting, an independent consultant, Mr. Foreman was contracted to evaluate further areas of cooperation and review material provided by BGA, Fyffes and WWF. During a planning meeting with Mr. Foreman, TIDE Director, Reef Guardians Environmental Educator and other staff members, a scope for the consultation was decided upon.

The consultant made several made visit to all communities adjacent to the Monkey River and recorded their level of interest in several topics the outcomes of these meeting and level of participation in community is summarized in (Annex X). Upon completion of the consultation the following recommendations were presented for best Management practices for Banana production to minimize negative impact on Monkey River Watersheds and our Belize Barrier Reef, Reserve System World Heritage Site, requires the following to be in place.

**Worker awareness and education on social and environmental system**

* A production system must have policies and procedures to execute operations in a manner that will foster the implementation of best management practice. Workers must be aware and educated on these policies and procedures.
* Workers must be 18 years old to work in the field or apply any pesticides.
* Anyone applying pesticide must have a license from pesticide control board.
* Farm must provide all protective gears to employee to applying pesticide.
* Only approved pesticide must be used, no application in drainage or during rain or possibility of rain.
* Triple rinsing of pesticide application equipment must be done and residue apply within production area. Empty pesticide containers must also be triple rinse and properly store and later returned to suppliers.
* No obsolete pesticides are to be used.
* Application rates and reentry must be as indicated on product label.
* Only person applying pesticide with all PPE is allowed to be in the area. Sign indicating product application and danger must be put up.
* All application must be documented showing application date, product commercial name, active ingredients of product, rate of application, area of application, amount of product and water used, person applying the products.

**Soil Management and conservation**

* Farm must continually improve its soil to support sustainable agriculture production.
* Farmers must always have a soil erosion and control program that minimizes the risk of erosion and reduces existing erosion. Special emphasis must be place on controlling runoff and wind erosion from newly tilled or planted areas as well preventing sedimentation of water bodies.
* Farmers devised a fertilization program after soil and leaf samples are done by a competent and impartial authority.
* Organic or non-organic fertilizers are applied properly to avoid any potential negative impact on the environment.
* All fertilizers applied are documented, date of application
* Residues generated by the area used as organic fertilizers.
* Farm uses ground cover to reduce erosion and improve soil fertility
* (legumes)
* Farm promotes fallow areas with natural or planted vegetation recover natural fertility and interrupt pest life cycle.
* Burning to prepare land is not allowed

**Water Conservation**

* All farms have a water extraction license for irrigation water from river and for drill well used for processing from hydrology department.
* Farm documents daily volume of water used and report back total monthly volume used to hydrology on a monthly basis.
* All farms have a water conservation program to ensure the rational use of water resources. For irrigation farm measures soil moisture to apply only needed water.
* All farms that discharge effluent has an effluent discharge license from DOE.
* All packing plants have waste traps that prevent the discharge of solids from washing and packing into the canals.
* Black water and grey water are collected into septic tanks.
* Waste water discharge are analyzed twice per year at a legally recognized and accredited laboratory to meet these minimum standards as part of our quality monitoring system.

**Monitoring Evaluation and Learning**

Several evaluating instruments were developed as activities unfolded. A reef foot print quick was developed to access previous knowledge about the impact each student has on the reef by measure their daily carbon footprint. This was included as part of the resource guide.

Lesson plan evaluation was done in class by the teachers. This direct evaluation instrument is included in each lesson. All evaluation criteria used for project competitions or activities was developed by the RGB team and accessed by TIDE.

A consultant was hired to conduct a final project evaluation. The consultant is currently doing preliminary data collection to finalize this document. All finding will be added to this document upon submission.

Image A. The images below portray the teachers in discussion to select lesson plan for integration into their curricular content for the Teacher Training Workshop.

Image set B. Portrays lesson plan implementation at St. Peter Claver Roman Catholic School under the guidance of Annalisa Sevaly, CAI Representative.

ANNEX II

Images below portray a Reef Guardian Students preparing for a parade and community presentation in celebration of Reef Week, 2016 under the theme “***“Not just my reef, but our way of life***”.

Stage I. Participating PG Methodist School students prepare mask representing reef organism of critical importance and rehearse for a presentation at the main town square

Stage II. Parade followed by presentation at the main town square.

Stage III. The parade around the main town square followed by a presentation at the park

**Summer Camp**

**Overview of 2016 TIDE Summer Camp**

|  |  |  |
| --- | --- | --- |
| Community | Children Involved | Volunteers Involved |
| Bella Vista | 20 | 3 |
| Big Falls | 20 | 3 |
| Bladen | 20 | 3 |
| Monkey River | 18 | 2 |
| Punta Gorda | 50 | 6 |
| Punta Negra | 11 | 2 |
| Trio | 20 | 4 |
|  |  |  |
| Total | 159 | 23 |

This year marks the 10th consecutive environmental summer camp at the Toledo Institute for Development and Environment, in the Toledo District of Belize.

The camp was offered to children aged 7-13. The TIDE Summer camps were held from July 18-29 (half days) in Punta Gorda, and from July 18-22 (full days) in the following communities: Bella Vista, Big Falls, Bladen, Monkey River, Punta Negra, and Trio.

TIDE and the Toledo communities are very thankful for the sponsorship from UNICEF which made it possible for 159 children to be involved in the 2016 camp. When these children are involved and engaged in programming such as summer camp, they are less likely to fall victim to crime and violence.

**Highlights and Key Achievements of 2016 Camp**

**Be The Change**

TIDE summer camp has a different theme each year. This year’s theme was “be the change” and the main objective of this camp was to help the children to develop an appreciation for their personal impact on the environment. This theme was inspired by the 2016 IUCN World Conservation Congress theme “Planet at the Crossroads”.

**Camp Objectives**

The TIDE summer camp built on the established theme by accomplishing the following objectives:



**Figure 1:** Students at TIDE Summer Camp in Trio creating upcycled sculptures.

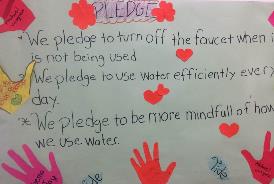
1. Foster an appreciation for and knowledge of personal impact on the environment
2. Develop a greater understanding of freshwater resources and water scarcity
3. Define climate change and sustainability
4. Highlight everyday actions that affect the environment (positively and negatively)
5. Involve equal numbers of girls and boys in camp, enhancing self-esteem, improving interpersonal skills, and involving them in healthy outdoor activities to promote a healthier lifestyle

**Camp Focus**

To promote hand washing and good hygiene behaviors at the camps, each location was provided with hand soap and toilet paper, and access to washroom facilities was ensured. Children were encouraged to wash their hands after using the restrooms and before eating during camp.

Sports and outdoor activities were incorporated into the lessons each day. These sports foster greater inter-personal and communication skills (team sports), and help the children let off extra energy so that they can behave and focus better during lessons and activities.

A “Green Team” was established at a few of the camp locations. This team was made up of a different group of campers each day. These children helped the others to remember to turn off the water while washing their hands, made such no litter was left behind, and collected items to create up-cycled art.



**Figure 2:** Water pledges, created by children attending the TIDE Summer Camp in Punta Gorda.

One of the major lesson topics this year was the importance of freshwater resources (water scarcity). The facilitators at each camp did an activity with each of the children in small groups, where water was poured out into different containers to show just how much (little) usable freshwater there really is on earth. Following this activity, the children worked in small groups to create water pledges (see figure 2 for an example of one of the water pledges created during camp). These posters listed promises the campers made to ensure that they make “every drop count” when using water.

**Campers Participate in Field Trips to Local Sustainable Farms**

To complement the lessons and enforce this year’s camp theme, the campers went on field trips to local sustainable farms. On these field trips, the children learnt about how local farmers are sustainably growing food in a productive, profitable, and ecologically sound fashion. Thank you to Mr. Santiago Cuz of San Miguel, Mr. Eugenio Ah of San Antonio, and Mr. Burton Caliz of Mafredi for sharing their farms and inspiring the campers.



**Figure 3:** Children from Trio walking to summer camp field trip in San Marcos to learn about local sustainable farming practices.

The trips to the sustainable farms were the perfect way to see local people practicing what had been taught in the lessons during the camp. Learning outside of the classroom can be much more memorable as the children are able to experience and connect with the environment with all their senses; this creates a much stronger connection and learning experience than traditional learning from a classroom. Creating an appreciation for the local environment is increasingly important as more and more people are becoming disconnected from the natural environment. The children enjoyed their experience, and will pass on new ideas and information on to the older generation when they tell them about their experience.

**Over 20 Volunteers Committed to Facilitating 2016 Camp**

Camp would not have been possible without the help of 23 volunteer facilitators from Toledo communities. The team of volunteers was made up of high school students, University of Belize students, and teachers. These volunteers acted as mentors to the children participating in the camp and further developed their own self-esteem and interpersonal skills by taking on this role.



**Figure 4:** 2016 volunteers from Punta Gorda, Big Falls, and Bladen, following the summer camp training session at TIDE headquarters.

Volunteers were recruited throughout the month of June. A training session was held one week before camp began. The training session included a briefing on the objectives of the camps, rules to ensure the safety of the children during their time at camp, and an overview of the lessons to be taught during the camp.

During the camp, the volunteers arrived before the children each day, delivered lessons, involved the children in activities relating to the lessons, and accompanied the children on field trips. Involvement of local adolescents and adults in the TIDE Camps improves local human and social capital.

Many of the volunteers involved this year had attended the TIDE summer camp as a child. These teens had positive experiences as children and as camp volunteers. Bianca Maheia said “I’ve attended TIDE’s summer camp since I was about 7. I really enjoyed camp and decided it was time to give back and be a counsellor.” “We taught the children about being the change for future generations” remarked Cindy Salam, and Ludwig Palacio added that, “it is good to teach the children about these issues now so that we can have a stronger tomorrow”.

***5.1 Managed Access in PHMR and other Fishing areas of Southern Belize***

***Overview***

For 2016 the main focus of the managed access program was education and outreach on National Managed Access Roll out, the new vessel colour coding system and fishing areas to be implemented with the national roll out, National Replenishment Zone Expansion as it relates to Deep Sea fishing and updates on the analysis done on data collected from catch logs and from research and monitoring done in PHMR as well as to get their input into the revision of PHMR management plan. This outreach was done through 3 managed access forums and social event [football marathon] done in March, June and September, Fishers meetings and visits to the buffer communities. During the community visits as it relates the fishing areas Monkey River fishers were concerned as their two main area of fishing is areas 3 & 4 but that they also use and live in PHMR or area 5. It was clarified that at the Fisheries Department it was a given that Monkey River fishers is a special case and should have access to PHMR and as such will only need to use the colours of areas 3 and 4 and there should be no problem with them using area PHMR.

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**Forums and meetings on Managed Access Rollout etc./football marathon with MA fishers**

**Vessel Colour Coding**

The commencement of the painting of vessels under the new colour coding system with a total of 36 vessels painted for the southern region namely from Monkey River, Punta Gorda and surrounding communities. Monkey River fishers said they prefer to use gelcoat or stickers their colour coding so additional visits will be needed to see how we can help to ensure this is done.





**Vessel painting with new colour coding in the southern region**

**Capacity Building**

With the national roll out of managed access and the changes made to the new log books it was imperative we did some training in data recording with fishers. On May 19th and 29th training was done in Monkey River and Independence respectively for some 15 fishers from each of the communities on data entry using the new logbook.

**Networking**

On the 22nd of September a Managed Access meeting was held with eight fishermen in Barranco village. The purpose of the meeting was to bring about awareness of the Managed Access program. This was Barranco’s first ever Managed Access meeting. Other objectives included vessel color coding and a logbook training session. The meeting began from 2:30pm and concluded at 3:15pm. The meeting included the Managed Access presentation with a specific section for what it means for Barranco Village. Fishers from the village are now aware of the new legislative fishing laws in Belize and will now start data submission. Their fishing vessels are now painted (area 4, two blue stripes) and they are now a part of the national Managed Access framework.

Hosted a group of fishers from the Caribbean Islands such as St. Kitts & Nevis and Jamaica on site visit to Belize namely PHMR to get a first- hand look at how the managed access program is working especially as it relates to fishers’ involvement in the decision making and how this has help combat some of the issues the fisheries were facing.

On May 12th Southern region Managed Access Officer attended the Managed Access Ad hoc Communications Committee Workshop in Belize City. The main goal of the meeting was to introduce the Managed Access program to new partners that were going to assist the Fisheries Department in implementing the program in their area. The main topics included: Managed Access components, frequently asked questions, next steps for Managed Access. I felt very experience at this workshop because PHMR has been a pilot site. Different organizations asked me how I managed to get fishers to submit their data, how often I entered it and what some of the challenges I faced. The workshop answered a lot of uncertainty I had regarding the Managed Access program. I then use that knowledge to better relay information to fishers.

On 13th of June managed Access Officer for the southern region Marty Alvarez accompanied by Anna Ramirez Jr and Fidel Audinette attended the Managed Access National Roll in Belize City. The ceremony included: Managed Access history, key note address by the fisheries administrator, fishermen testimonials and unveiling of the fishing areas.

**TRIGOH/ TIDE Young Fishers Workshop**

March 17th was the initial start of the young Managed Access fisher folk program (TRIGO) for 2016 with coordinator Mario Salazar with assistance from southern region managed access officer conducting house interviews with the young fishers. Interviewees were Omar Westby and Dervin Williams. This was followed up on the 23th and 24th of June 2016, where Mario Salazar and Jorge Orandez from TRIGOH in Guatemala facilitated a young Managed Access fishermen workshop and training. **The main goal of the TRIGOH training was to have young fishers from Guatemala, Honduras and Belize collaborate with each other to conserve a common resource which is the marine environment.** They went over the importance of the Bay of Honduras, how Belize, Guatemala and Honduras use the area for their livelihoods. Mario also touch the fact that there are huge rivers that were polluted in Guatemala affecting Belize. The main objective of the training was to highlight the importance of sea grass, mangroves and coral reef ecosystem and how they are all interconnected. Marty Alvarez (TIDE’s Managed Access Officer) helped with acquiring videos and assisted in practical exercises to better bring across Mario’s point.

On August 30th and 31st a workshop on the Research Protocol for young fishermen with specialists of TRIGOH and presentation of the Descriptive Video of the Project Puerto Barrios was held. Two fishers from Punta Gorda Town (Alexander Leonardo, Fidel Audinette) had a great opportunity to learn about the marine environment and share their experiences with fishers from Cuyamel Honduras and Cocoli Guatemala. All the fishers engaged in several activities during the workshop which depicted their town daily routine. The two fishers from Punta Gorda have a better appreciation of fisheries in Belize. They personally expressed to me that we need to do more. They found out that within the Gulf of Honduras, only Belize has a viable population of Goliath grouper.

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**Young Fishers Workshop**

**Research and monitoring**

TIDE continues to do regular monitoring of marine resources such as water quality, sediments, sea turtles, fisheries assessment, queen conch, lobster, sea cucumber and fin fish population and dynamics, mangrove productivity, sea grass health, coral reef health including coral bleaching and conch lip thickness study to determine conch maturity which can assist in changing policies to improve the conch fishery. TIDE’s Science Director is currently working on comprehensive reports for the various monitoring that we do. This report will be completed in January 2017 and copies will be sent to the Fisheries Department.

**6.0 Visitors to PHMR**

From the data collected at the field station, the number of Belizean visitors has increase over 2015. A total of one hundred and nine Belizeans visited our ranger station and received a presentation from the rangers. Americans and other nationals also continue to visit our field station, a total of 249 stopped by the station also an increase from previous year.

A brief analysis of the data shows a decrease in the number of visitors comparing 2014 and 2015 data. This is shown in Figure 3.

Table 7 below provides you with visitation data depicting the number of visitors per month and country of origin for 2016.

**TABLE 7: Visitation to PHMR for Dec 2015 to Nov 2016 by Country (Data from the Logbook at Abalone Ranger Station)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **country** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sept** | **Oct** | **Nov** | **Dec 2015** | **Totals by Country** |
| **Belize** |  |  | 23 | 2 |  | 37 | 38 |  | 1 | 1 | 4 | 3 | **109** |
| **USA** | 38 | 8 | 19 | 18 | 2 | 14 | 4 | 4 | 14 | 4 | 27 | 29 | **181** |
| **Italy** |  |  |  |  |  |  |  | 2 |  |  |  |  | **2** |
| **Canada** |  | 2 |  | 5 |  | 1 |  | 2 |  |  |  |  | **10** |
| **United Kingdom** |  |  | 5 |  |  |  |  |  |  |  | 4 | 2 | **11** |
| **Germany** |  |  | 4 |  |  |  |  |  |  |  |  | 2 | **6** |
| **New Zealand** |  |  | 3 |  |  |  |  |  |  |  |  |  | **3** |
| **Ireland** | 1 |  |  |  |  |  |  |  |  |  |  |  | **1** |
| **St. Lucia** |  |  |  |  |  | 4 |  |  |  |  |  |  | **4** |
| **St. Vincent** |  |  |  |  |  | 2 |  |  |  |  |  |  | **2** |
| **St. Kitts & Nevis** |  |  |  |  |  | 3 |  |  |  |  |  |  | **3** |
| **Guatemala** |  |  | 3 |  |  |  |  |  |  |  |  |  | **3** |
| **Antigua & Barbuda** |  |  |  |  |  | 3 |  |  |  |  |  |  | **3** |
| **Norway** | 1 |  |  |  |  |  |  |  |  |  |  |  | **1** |
| **Grenada** |  |  |  |  |  | 2 |  |  |  |  |  |  | **2** |
| **Indonesia** |  |  |  |  |  |  |  |  |  | 6 | 1 |  | **7** |
| **Poland** |  |  |  |  |  |  |  |  |  |  | 2 |  | **2** |
| **Total** | **40** | **10** | **57** | **25** | **2** | **66** | **42** | **8** | **15** | **11** | **38** | **36** | **350** |

There are visitors that venture direct to West Snake Caye an island within the Conservation Zone and conduct sport fishing within the reserve, and do not visit the ranger station so a record of their visit is not recorded in the log book but are captured in the ticket sale record.

**PHMR Ticket sale Jan-Nov 2016**

|  |  |  |
| --- | --- | --- |
| **Date** | **Description** | **Amount** |
| 01/05/2016 | |  |  | | --- | --- | |  | PHMR Ticket Sales | | 400.00 |
| 01/07/2016 | |  |  | | --- | --- | |  | PHMR Tickets | | 570.00 |
| 02/02/2016 | |  |  | | --- | --- | |  | PHMR User Fees Ticket Sales | | 310.00 |
| 02/02/2016 | |  |  | | --- | --- | |  | PHMR User Fees Tickets Sales - Chk#001783 | | 180.00 |
| 02/10/2016 | |  |  | | --- | --- | |  | Payment for Inv315-16 - Belcampo Belize Ltd. - PHMR Tickets | | 1,000.00 |
|  |  |  |
| 02/25/2016 | |  |  | | --- | --- | |  | PHMR Entrance Fee Ticket Sales | | 90.00 |
| 02/25/2016 | |  |  | | --- | --- | |  | PHMR Entrance Fees Ticket Sales | | 370.00 |
| 03/01/2016 | Payment for Inv#26-16 - Belcampo Belize Ltd. - PHMR User Fees tickets #1715 - 1814 - CHk#009703... | 1,000.00 |
| 03/17/2016 | Payment for Inv#40-16 - Belcampo Lodge - Tickets for PHMR (1814 - 1914) - Chk#9744 dated 14-Mar-16 | 1,000.00 |
| 03/24/2016 | PHMR User Fees ticket Sales (1550 - 1553, 1412 - 1415, 1543 - 1549, 1596 - 1597, 1576, 1556 - 1562) | 250.00 |
| 04/01/2016 | PHMR Ticket Sales | 310.00 |
| 04/08/2016 | Payment for Inv#50-16 - BELCAMPO Lodge - Tickets for PHMR (Temp Tickets 1915 - 2016) | 1,000.00 |
| 04/22/2016 | Payment for Inv#56-16 - Garbutt's Marine - PHMR User Fees Tickets (2167 - 2216) | 500.00 |
| 04/22/2016 | Payment for PHMR User Fees Tickets | 500.00 |
| **05/13/2016** | **Payment for Inv#67-16 Belcampo Belize Ltd. 100 Tickets for PHMR Check No. 009968** | **1,000.00** |
| 05/20/2016 | PHMR Ticket Sales | 180.00 |
| 07/01/2016 | PHMR User Fees Ticket Sales | 130.00 |
| 08/17/2016 | PHMR Entrance Fees Ticket Sales | 360.00 |
| 08/17/2016 | PHMR Entrance Fees Ticket Sales | 150.00 |
| 08/29/2016 | Payment for Inv#-Belcampo Belize Ltd. - 20 PHMR Entrance fees tickets - Chk#10307 dated 26/08/16 | 500.00 |
| 08/29/2016 | Payment for Inv#113-16 - Dennis Garbutt - 20 PHMR Entrance Fees tickets (2218 - 2237) | 200.00 |
| 09/28/2016 | PHMR Ticket Sales (2250, 2249, 2248) | 30.00 |
|  | **Total** | **10,030** |

**7.0 (Table: 8) Users of the Reserve and vessel names for 2016**

|  |  |
| --- | --- |
| **Names of Fishers** | **Boat Name** |
| Eloy Cuevas sr. | Trouble |
| George Gordon/Anthony Coleman | Parrot Fish |
| Percival Gordon | Barracuda |
| Mystic | George Garbutt sr. |
| Ameerah | Darren Castellanos |
| Evan Cuevas | Fugitive |
| Alexander Garbutt jr. | Wildlife |
| Victor Cuevas | Monica |
| Jason Garbutt | Jaylan |
| Damian Garbutt | Vibzs |
| Winsley Garbutt | Dania |
| Apolonio Westby | Big Wave |
| George Ramirez | Walrus |
| Carlos Ramirez | Slice of Life |
| Lionel Decid | Gilda |
| Yonardo Cus | Igloo |
| Roy Ramirez | Tesha |
| Toribio Parchue | Moharita |
| Angel Paiz | Danto |
| Minor Perez | Mission |
| Servando Canelo | Melissa F |
| Roberto Caal | Killer |
| Elmer Saldivar | Kismet |
| Rafael Ramirez | Mullet |
| Mr. Winston Thompson | D Tour |
| Kent Audinet | Admiral |
| Martin Reyes | Charity |
| George Alford | Lobster Pot |
| Gerson Coleman | Julianna |
| |  | | --- | | Alonso Raymundo | | Carino |
| Joel Casimiro | Irie |
| William Maheia | Binky |
| Ray Arzu/Greg Morgan | Kelly |
| Armando Ramirez | Blue Shark |
| Allan Perez | Blue Fury |
| Louis Cabrera | Joselyn |
| Leslie Williams | Queen Bee |
| Julio Williams | Julissa |
|  |  |
|  |  |

***(Table: 8) Sport Fishing/tour guides and their vessel names 2015***

|  |  |
| --- | --- |
| **Names of Guides** | **Vessel Names** |
| Thomas Garbutt | Unity |
| Eworth Garbutt | Destiny |
| Oliver Garbutt | Sealife |
| Alex Leonardo | Splash |
| Lionel Martin | Fish Lies |
| Victor Jacobs | Mandingo |
| John Young | Cursoe |
| Eloy Cuevas | Trouble |
| George Garbutt | Mystic |
| Ian Cuevas | Opportunity |
| Bruce Leslie | Nervous Wata |
| Wayne Castellanos | Supreme |
| Daniel Castellanos Jr. | Xavi |
| Daniel Cabral | Danika |
| Earl Godfrey | Teresa G |
| Kirk Godfrey | Tarpon |
| Kevin Modera | Bad Tide |
| George Alford/Kenworth Martin | Good Times |

**8.0 TIDE Board of Directors**

|  |  |  |
| --- | --- | --- |
| |  | | --- | | Albert Gabriel Roches (Chair) | | Public Officer (Public Health) |
| Jerry Enriquez | *Local Businessman* |
| Alexander Garbutt | *Local Fisherman and Tour Guide in Monkey River* |
| Marie Aleman | *Entrepreneur* |
| Dale Gomez | PCNP Advisory Council Representative |
| Dennis Garbutt | PHMR Advisory Council Representative |
| William Tate | *Entrepreneur* |
| Celia Mahung | Executive Director (Ex-Officio) |

**8.1 TIDE Staff**

**Management Staff – support to PHMR**

|  |  |
| --- | --- |
| Celia Mahung | Executive Director |
| Joseph Villafranco | Program Manager |
| Stephene Supaul | Operations Manager |
| James Foley | Science Director |
| James Lord | Development Director |
| Norman Budna | Education and Outreach Coordinator |

**Administrative staff**

|  |  |
| --- | --- |
| Danny Hun | Financial Administrator[resign] |
| Kimberly Lawrence | Accounts Clerk/Financial Administrator |
| Ishamae Gomez | Receptionist/Janitor |
| Paul Etienne | Information Technology Officer |
| Alaine Nunez | Accounts clerk |

**8.2 PHMR Advisory Committee**

|  |  |
| --- | --- |
| Dennis Garbutt/ Alex Leonardo | BTIA/PG Tour Guide Association |
| Armando Ramirez | Rio Grande Fisherman Cooperative |
| Richard Pitts/Daniel Castellanos | Monkey River Village Council/ Fishers Assoc. |
| Hon. Michael Espat | Area Representative |
| Mrs. Fern Gutierrez | Mayor Punta Gorda Town |
| Mrs. Paula Jacobs | Chairperson Punta Negra Village Council |
| Mrs. Celia Mahung/Mario Muschamp | TIDE Executive Director/Protected Areas Manager |
| Dr. Phillip Morgan/ Roy Polonio | University of Belize-Toledo Campus |
| Mr. Lyndon Rodney/Victor Vasquez | Fisheries Department-PG |

**9. 0 PHMR Donors**

|  |  |
| --- | --- |
| 1 | The Oak Foundation |
| 2 | |  | | --- | | National Oceanic and Atmospheric Administration (NOAA) | |
| 3 | The Summit Foundation |
| 4 | MARFUND/German Cooperation |
| 5 | Environmental Defense Fund |
| 6 | MAR Fund |
| 7 | New England Bio-labs Foundation |
| 8 | National Fish and Wildlife Service |

**10.0 Conclusion and Recommendations:**

In conclusion we have address some of the recommendations from the 2014/15 list especially as it relate to the expansion of the replenishment zones by providing inputs into the revision of PHMR Si and submitted it to the Fisheries Department for approval and the revision of the reserve’s management plan for the next 5 years [2017-2021]. We have completed research on Conch with the conch lip thickness study to determent conch maturity which we hope will assist with improving regulations on the species in order to improve this fishery that is rapidly declining and will need urgent attention in order to save this fishery.

For the coming year 2017, it is recommended we follow up on concerns raised by fishers pertaining to bait fishing, and recreational fishing as it is believed that recreational fishers are extracting quite a bit of the marine resources and that record is not being collected or submitted so we can track what is coming out of the reserve.

**Recommendations**

* Continue to collect socioeconomic data of the communities adjacent to the MPA to determine level of impact from management of the Reserve.
* Revised PHMR Carrying Capacity Document to ensure it is relevant to current and future conditions especially with the development of cruise tourism in the south.
* Continue evaluate success derived from activities or trainings that created local jobs to demonstrate MPA´s contribution to the sustainable development in the area as well as identify gaps and opportunities for sustainable livelihood development activities.
* Continue to build staff capacity and Improve in technology to be more cost effective in the management of the protected areas.
* Continue to monitor and lookout for new development in and around to the reserve that can pose serious threat to the integrity of the protected area and ensure the EIA process is followed for the development and implementation of those projects.