

Annual Report 2021



Port Honduras Marine Reserve

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Manager's Overview

It is a great pleasure to present the Port Honduras Marine Reserve (PHMR) annual enforcement report for 2021. This report summarizes the main activities that occurred throughout the year January 2021 - December 2021. The reserve enforcement staff have remained committed in our determination in ensuring the successful management of the area by meeting conservation targets.

The team conducted a total of 636 patrols within the period, a very similar output in comparison to the previous year despite the challenges. As a result, 1 arrest was conducted and successfully prosecuted. 9 verbal warnings were distributed, 6 gill nets and 1 out of season Lobster Trap was removed from within the reserve. Almost all the patrols conducted were joint operations with the Belize Coast Guard. The ranger team also gave some support to the other enforcement teams at TIDE by conducting joint patrols. Working relationships with government agencies in 2021 such as the Belize Coast Guard, Belize Fisheries Department, Belize Police Department, Belize Port Authority, and the Belize Forest Department have continued to be improved upon.

We would like to express our sincere gratitude to the PACT, Summit Foundation and Overbrook Foundation. The great work towards the sound management and sustainable use of the marine resources would not have been possible without the financial contribution, technical assistance, and commitment from these partners throughout the year.

I must make special mention of PHMR's rangers, Edwin Cabrera, Aaron Garbutt, Byron Usher and Raphael Chee for their continued dedicated support and hard work to the conservation and protection of PHMR's natural ecosystems and its marine life. Thanks to all our resource users who have continued to be great stewards of the reserve. A special thank you to the Belize Coast Guard for their tremendous support throughout 2021 in aiding the enforcement of rules and regulations of the reserve and the security they provided for our staff and resource users. It has been a privilege and a great experience to have worked with you all for 2021 and I look forward to 2022 with great expectations.

Sincerely,



Ryan A. Moore

Protected Areas Manager

Toledo Institute for Development and Environment

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0.0 List of Abbreviations

PHMR	-	-	-	-	Port Honduras Marine Reserve
TIDE	-	-	-	-	Toledo Institute for Development and Environment
BFD	-	-	-	-	Belize Fisheries Department
BCG	-	-	-	-	Belize Coast Guard
SMART	-	-	-	-	Spatial Monitoring and Reporting Tool
MPA	-	-	-	-	Marine Protected Area
GIS	-	-	-	-	Geographic Information Systems
MMMC	-	-	-	-	Maya Mountain Marine Corridor
SI	-	-	-	-	Statutory Instrument
RZ	-	-	-	-	Replenishment Zone
MA	-	-	-	-	Managed Access
FWC	-	-	-	-	Fresh Water Cup
PACT	-	-	-	-	Protected Areas Conservation Trust
TEC	-	-	-	-	TIDE Environmental Club
YADLIT	-	-	-	-	Youth Association Developing Livelihood in Toledo

1.0 Administration

1.1 Staffing for PHMR

No.	Names	Position
1	Ryan Moore	Marine Manager
2	Edwin Cabrera	Head Ranger
3	Aaron Garbutt	Ranger
4	Byron Usher	Ranger
5	Raphael Chee	Temporary Ranger

Table 1: Showing PHMR Enforcement Staff

No.	Names	Position
1	Anthony Rash	Marine Biologist

Table 2: Showing PHMR Research and Monitoring Staff

Names	Names
Eeryn Bowden	Nicole Coleman
Genevieve Ramirez	Raphael Chee

Table 3: Showing Community Researchers who assisted in the management of PHMR

2.0 Background of the Port Honduras Marine Reserve

2.1 Introduction

The PHMR was declared by the Government of Belize on the 25th of January 2000. It is actively co-managed by TIDE with the governing authority being the Fisheries Department. PHMR is a semi-estuarine system that covers approximately 160 square miles and is an integral part of the MMMC in southern Belize. The reserve is located just off the coast of Punta Gorda and extends north up to Monkey River Village. PHMR comprises coastal wetlands, seabed, mangroves, lagoons, savannahs of Payne's Creek National Park and national lands within the area known as the Port Honduras. The general boundaries of the reserve are the Rio Grande in the south, Monkey River in the north, the snake cayes in the east and the coastal wetlands in the west. There are two buffer communities that are located adjacent to the reserve which are Monkey River Village and Punta Negra Village with Punta Gorda Town lying just outside.

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 of coral and/or rubble, and soft bottom communities. A large portion of the reserve is covered by seagrass, which also provides essential habitat and food for juvenile fish species, sea turtles and manatees. Also, within the reserve are fringing reefs, coral patches and coral heads which provide a refuge and food for marine animals.

Residents who directly depend on the reserve for their livelihood engage in commercial fishing, tour guiding and as fly-fishing guides. Of the number of fresh produces extracted from the reserve, it is quite common to advertise the product originating from Punta Gorda to as far as Corozal in the north. The most popular species include, groupers, snappers, grunts, and the barracuda. Many Belizeans from Punta Gorda frequent the reserve with the most popular activities being recreational fishing, snorkeling, and swimming. The reserve hosts over 500 vessels in and around the reserve annually engaging in numerous activities. It is also quite frequent for sailing vessels from Guatemala to stop in and enjoy safe harbor in the New Haven Lagoon or the Snake Cayes on their way to and from Placencia.

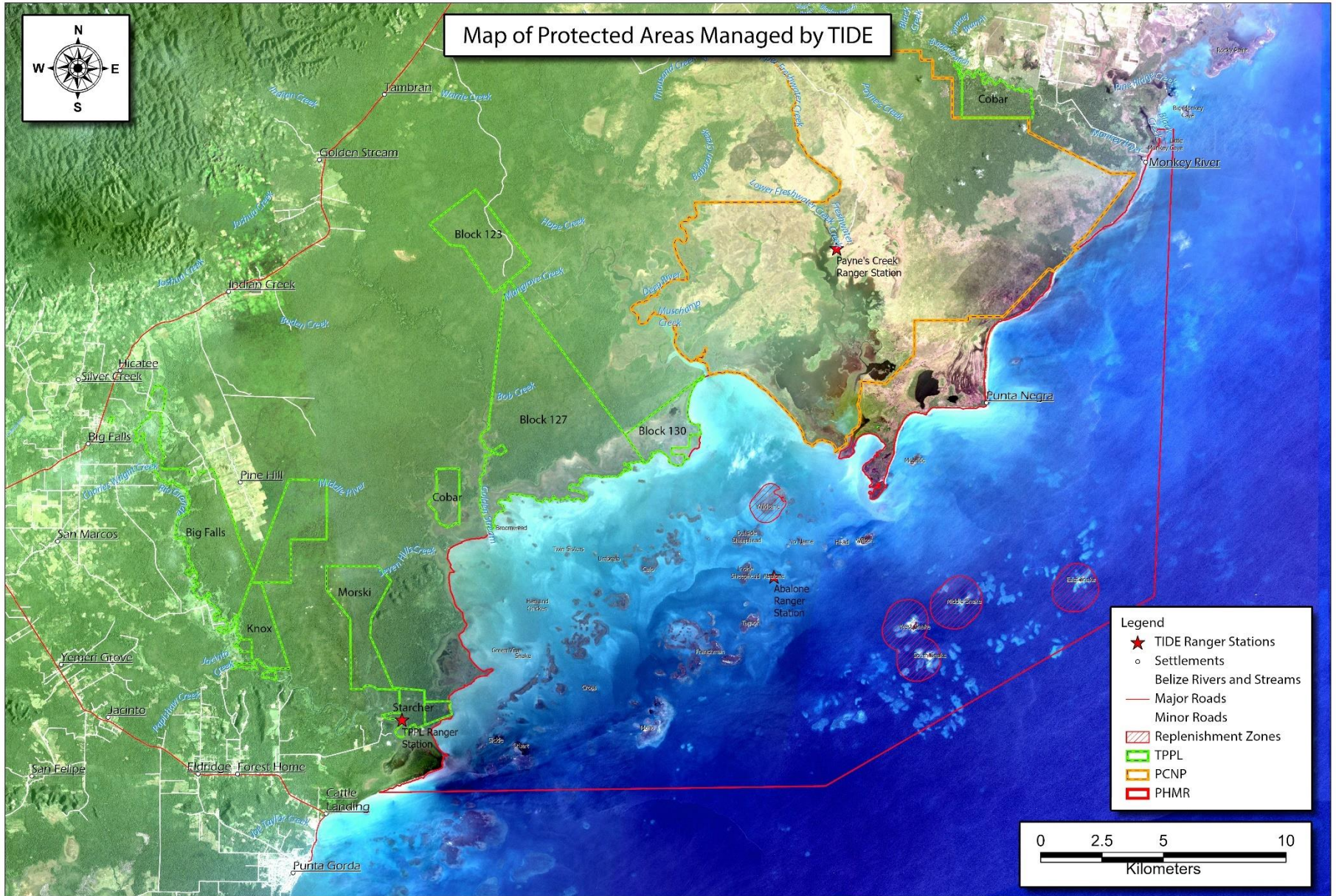


Figure 1: Map of the protected areas managed by the Toledo Instituted for Development and Environment

2.2 PHMR's Strategic Plan and Goals

The PHMR management strategy is based on five major goals:

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

2.3 Zoning Plan and Regulations

Three zones were established for the purpose of the regulation and control of the reserve:

1. General Use Zone (95% of the Reserve)

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

2. Conservation Zone (4% of the Reserve)

Established 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. These areas are located 0.805-kilometers (half a mile) radius around Wildcane Caye and 0.805-kilometers (half a mile) radius around East, West, and South Snake Cayes.

3. Preservation Zone (1% of the Reserve)

Established 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. Neither fishing or recreation are permitted in this area. This area is located 0.805-kilometers (half a mile) radius around Middle Snake Caye.

3.0 PHMR Activities Accomplished in 2021

3.1 Patrols and Surveillance

A total of 636 patrols were conducted for the period January 2021 to December 2021 (*Appendix 1: Patrol Routes in 2021*). The rangers travelled ~18,929km and averaged ~1577km per month, an increase from last year. This totaled ~1531 hrs. at sea patrolling with an average of ~128 hrs. per month. This was done by consuming ~3567 gallons which was only ~17 gallons more than the previous year. The team continued to use the new boat which at the end of the year was fitted with a new engine. During this period of transition, they switched over to the bigger boat which attributed to an increase in fuel consumption during that 3-week period.



Figure 2: Showing the Enforcement Team interacting with a vessel near Punta Negra

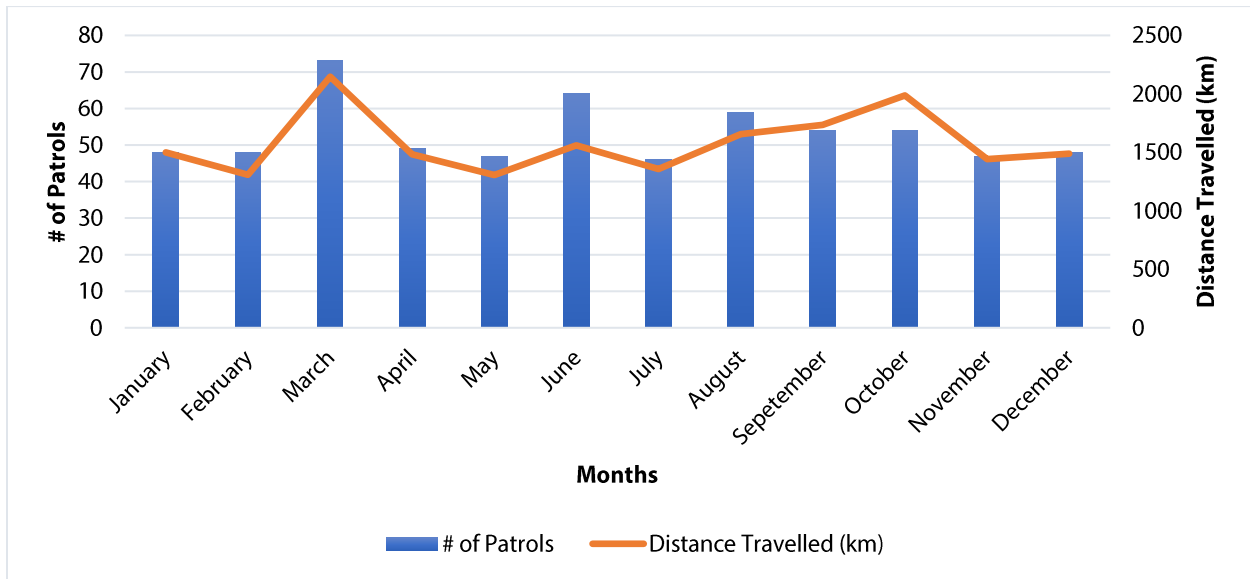


Figure 3: Showing number of patrols and distance travelled (km) by month in 2021

An average of 53 patrols were conducted each month focusing on the conservation and preservation zones around the Snake Cayes and the most eastern islands which are the primary habitats for conch and lobster. This number was a small reduction in comparison to the previous year. Other priority areas included the coastline leading up to Monkey River Village, the river mouths which empty into PHMR and the conservation zone around Wildcane Caye. A few extra patrols were done around the Sapodilla Cayes Marine Reserve and the village of Barranco to the south of Punta Gorda Town.



Figure 4: Showing the Enforcement Team accompanied by Mrs. Celia Mahung on patrol

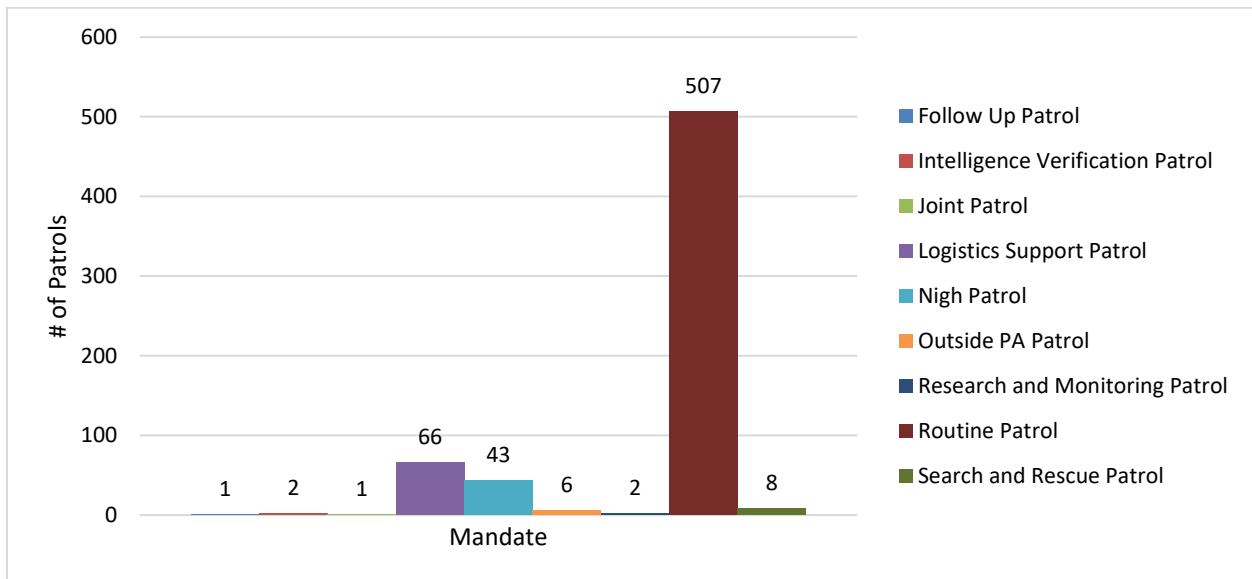


Figure 5: Showing patrols by mandate for 2021

The ranger team will continue to prioritize night patrols of the PHMR to reduce illegal transboundary infractions by Guatemalans and Hondurans as well as to target local gill net users in and around the reserve. With the adjustments made to patrols last year the ranger team was able to encounter transboundary fishing vessels more frequently around the perimeter of the reserve which led to a few unsuccessful chases and 1 arrest. Continuing into the coming year the PHMR enforcement team will continue with this strategy to completely deter transboundary fishing in the reserve as much as possible.

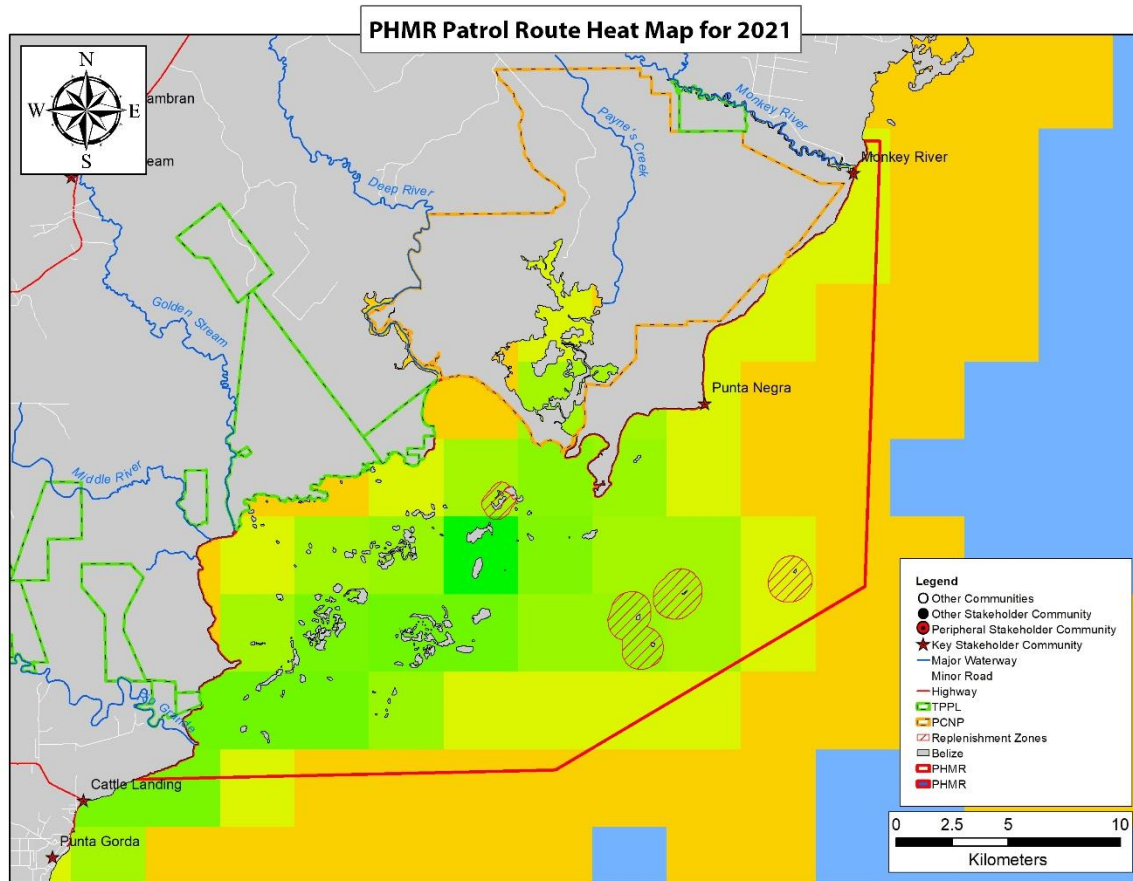


Figure 6: Showing a Patrol Heat Map showing where patrols were focused in 2021

3.2 Patrol Infractions for 2021

The patrols in PHMR yielded 16 infractions observed and the results of which are as follows: 9 verbal warnings were issued, 6 gill nets and 1 lobster trap were removed from within the reserve. All nets were handed over to the Fisheries Department to be destroyed.

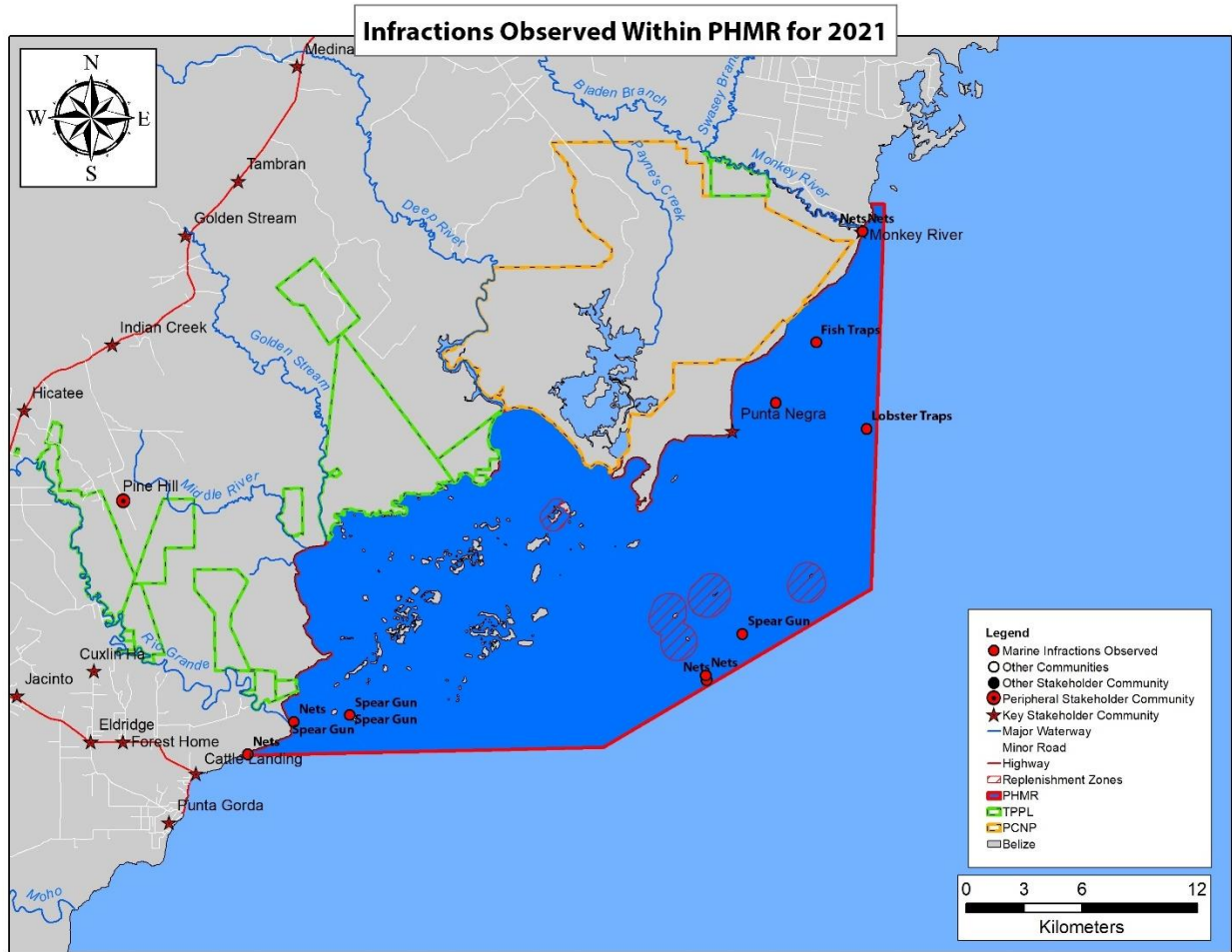


Figure 7: Showing infractions within PHMR for 2021

1 Arrest was accomplished which resulted in 6 charges (banned gill net, possession of nurse shark, possession of 8 parrot fish, 1 berried lobster, no vessel license and no personal fishing license) for 2 individuals from Guatemala which they both pled guilty to. This resulted in individual fines of \$8,530.00. They were both handed over to the immigration department who had also levied charges which resulted in additional fines of \$1,000.00 each.

3.3 Advisory Committee Meetings

For 2021 there were two Advisory Council Meetings held which were both successful and fruitful in the discussions held. On May 20, 2021 the first meeting was held with attendance of some members virtually. Discussions included on the status of Finfish within the reserve, use of fish traps still within the reserve, on how to improve data collection from products captured within the reserve, stress brought on by sport fishing to permit and tarpon, and ongoing community development work by TIDE through the PACT project. On December 7, 2021, a second advisory council meeting was held with presentations from Mr. Nicanor Requena from the Environmental Defense Fund and a consultant conducting the Sapodilla Cayes Marine Reserve management plan.

3.4 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, oil filter change, gear oil change, freshwater wash and re-greasing) were done by rangers; major repairs and any technical problems were done by a mechanic in Punta Gorda Town. In December the new engine purchased under the ongoing PACT project was installed after fiberglass repairs were accomplished. The middle seat was upgraded which allowed for an increase in capacity of 2 individuals.

3.5 Infrastructure Maintenance

The upkeep of the ranger station was done by the rangers and personnel from the Belize Coast Guard (BCG) stationed at PHMR. Additionally, a wind turbine was installed at the ranger station which was located at PCNP. The rangers also started with the construction of a new dock to the back of the station and repaired a window in the tower.



Figure 8: Showing infrastructure maintenance done at Abalone Caye

3.6 Trainings Accomplished by PHMR Enforcement Staff

Staff members were given the opportunity to participate in two trainings through the year. The first training was in CPR held in Punta Gorda Town by past community researcher Willie Caal. The second training was also held in Punta Gorda Town by the Fisheries Department. The second training, lead by Mr. Lyndon Rodney focused on recently enacted regulations, hot pursuit chases at sea, but focused mainly on Case file preparation.



Figure 9: CPR Training in Punta Gorda Town held by Willie Caal and attended by rangers of TIDE



Figure 10: Fisheries Enforcement Training

3.7 Training needs for PHMR enforcement staff

	Needed Trainings	Plans
1.	Advance Boat and Engine Maintenance Training	None scheduled however will standardize current required skills and produce a manual
2.	Fisheries Regulations Training (continuous)	Follow up training by the Fisheries Department
3.	Vessel Boarding Procedures	Follow up training by the Fisheries Department, will coordinate w/ the Belize Coast Guard

4.	Arrest Techniques Training (practical)	Follow up training by the Fisheries Department
5.	Case File Preparation Training Advanced	Follow up training by the Fisheries Department and Internal training
6.	Special Constable Training	None scheduled

Table 4: Showing training needs for PHMR Management Staff

3.8 Partnerships

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

This year TIDE assisted the Belize Audubon Society with Drone Training. Previously TIDE had made commitments to assist during the European Union Project, “Restoring Fisheries in the Mesoamerican Reef System.” Protected Areas Manager Ryan Moore provided the training to Ranger Mordacayo Mis and Kevin Tsao over a 3 day period at the TIDE Private Protected Lands Ranger Station.

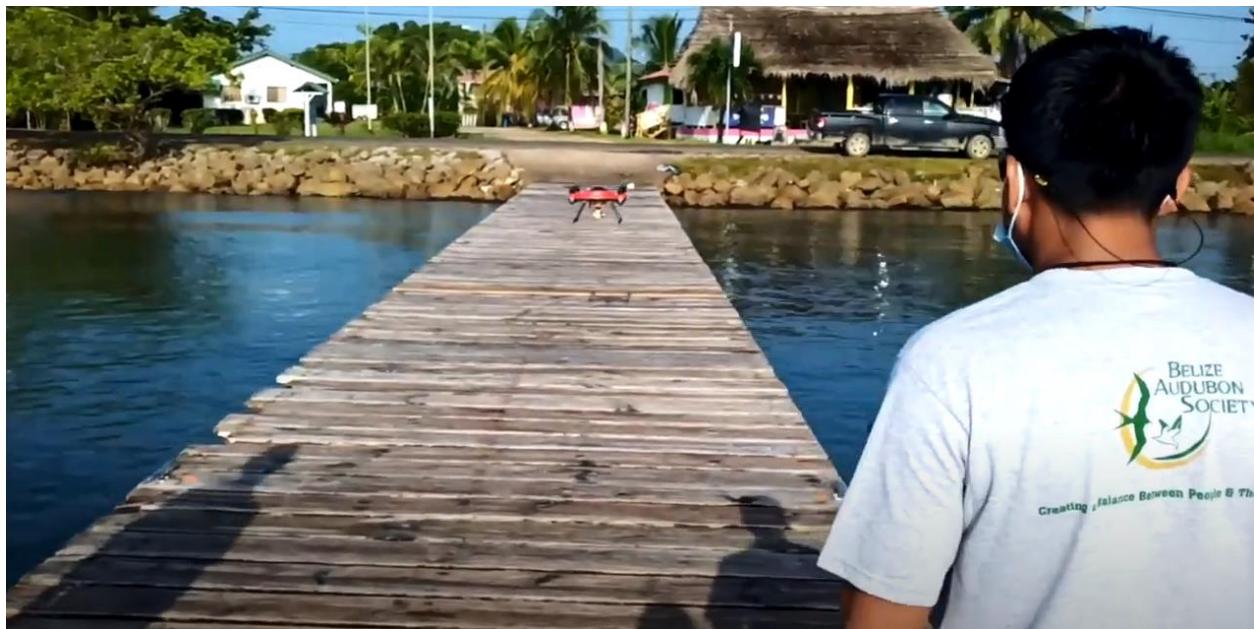


Figure 11: Showing Mordacayo Mis piloting the drone on the last day

4.0 Communications

This year TIDE hired a Communications Officer by the name of Jose Sanchez who assisted in producing videos and content for the TIDE Facebook page and on national television and radio. There were multiple videos produced which aired nationally on television and radio covering issues such as two instances of Gill Nets in PHMR, Community Development Projects in Punta Gorda, Turtle Nest Monitoring, World Ranger Day – Highlighting the TIDE Ranger Team, Underwater drone deployment, PADI Dive Training for community members, Drone Training provided to the Belize Audubon Society, Book Scholarship, Multiple videos on the TIDE Environmental Clubs and the 2021 Conch Season. More videos can be found on TIDE's YouTube and Facebook page.



Figure 12: Showing Thumbnails of a few videos produced in 2021

5.0 Erosion of Abalone Caye

Abalone Caye continues to suffer from erosion brought on by climate change. Unfortunately, no long term solution has been identified however some material was purchased last year with intentions of transporting it to Abalone Caye to help to mitigate the effects.



Figure 13: Showing Aerial View Abalone Caye

6.0 Community Education and Outreach

6.1 TIDE Environmental Clubs

18 of 22 Community Clubs	Club Color	Number of Participants	Males	Females
Indian Ville Eco-Group	Red	12	7	5
Eldridge Ville Triple P's	Aquatic Blue	11	7	4
Jacinto (ROOTS) Resourcing Our Own Trees for Survival	Neon Green	12	6	6
Yemeri Grove Nature Minions Warriors	Yellow	25	10	15
Laguna Birding Club	Medium Grey	16	11	5
San Marcos Triple R's	Kelly Green	16	8	8
Big Falls Eco-Warriors	Cardinal	21	11	10
Mafredi Wildlife Conservation Group	Clover Green	13	7	6
Rio Grande River Keepers	White	28	12	16
Beyond Earth Energy (BEE) Squad	True Royal	18	10	8
Youths for Tomorrow	Carolina Blue	29	19	10
Indian Creek Agape Restoring the Environment (ICARE)	Sangria	17	12	5
Golden Stream Environmental Keepers (G-SEK)	Light Blue	32	18	14
Medina Bank Environmental Club	Purple	14	8	6
Bladen Green Spillers	Sapphire	21	9	12
Trio Environmentalist Strikers	Heather Athletic Maroon	12	6	6
San Isidro Survivors Squad	Jet Black	13	8	5
Monkey River Delta	Coyote Brown	18	10	8
Cattle Landing Village				
Forest Home Village				
Cuxlin Ha Village				
Hicattee Village				
Total	18	328	179	149

Table 5: Showing Reef Week 2021 logo and national activity schedule

A total of 18 clubs were fully established from the 22 communities that buffer TIDE's 3 Protected Areas comprising 179 males and 149 females from various ethnic backgrounds and age ranges. Youth clubs were provided with hygiene, educational and sports kits to incentivize their united front in battling environmental issues while engaging in formal and informal sessions via online and face to face sessions to build their capacity in conservation, family violence and youth empowerment. A total of 346 face to face and online meetings were held during 2021 with all active environmental clubs. Some entities that were able to provide sessions with clubs included the Department of Youth Services, Human Development, Ya'axche Conservation Trust, Humana People to People Belize, and REDD+ Belize.



Figure 14: Showing activities held throughout the year with the TECs

Some of the major activities accomplished were community and river-ways clean-up, tree planting, signage creation and installation, indoor and outdoor learning sessions, poster competitions, summer camp, reef week activities, key species awareness, and assisting the elderly and single parent families with small chores.



Figure 15: Showing TIDE Environmental Clubs in clean up sessions held throughout the year

6.2 Environmental Clean-ups

There were 54 cleanups organized within 18 communities in 2021. This resulted with a total of 720 bags of trash removed and disposed properly at the local landfills while others were upcycled for flowerpots and other uses. Most of the trash was done from in the rivers which ensured a reduction of farm and household waste being emptied in the Port Honduras Marine Reserve. A nursery was created in Jacintoville using by upcycling containers collected through waste discarded in the environment. The number of youths participating in clean up campaigns was high due to sporting activities being held immediately after. This was made possible by the purchase of sports

equipment. Club members were able to have fun and exercise as often as possible while also conducting planning exercise for future community initiatives.

6.3 Reforestation Activities



Figure 16: Reforestation done in the communities by the TECs

A total of 548 saplings were planted along river and creek banks, open spaces in communities and other playgrounds in 18 communities. These areas were identified with the help of village leaders and club members. Two hundred forty of the seedlings were provided by REDD+ Belize Project. Youth were eager to plant changes for their community to improve shade along creeks and provide fruit trees in areas where birds and other species can enjoy in the future.

6.4 Summer Camp



Figure 17: Summer camp activities held with the TECs

Twelve environmental clubs ran summer camp with over 150 children ages 10-14 with the theme “Maintaining Ecosystem Services for Life.” Youth buffering Payne’s Creek National Park, TIDE Private Protected Lands and Port Honduras Marine Reserve were able to receive information through different engagements and share with their immediate families and friends. Four clubs were able to do face to face sessions and others shared learning packages prepared and called children on last day to review the content in groups of 10. Children and parents welcomed clubs who organized face to face sessions in San Isidro, Jacinto Ville, Big Falls and Silver Creek. No field trip was organized for camp 2021.

6.5 Outreach to Village Leaders

Before the establishment of groups within the communities' meetings were held with all community leaders when available ensuring that both the chairman and alcalde gave their support. At those meetings means of collaboration between TIDE and the village were discussed. TIDE also continued its support for schools within those communities and 24 schools received COVID packages which included alcohol, sanitizer and liquid-soap as schools were scheduled to be reopen for which the schools were grateful for.



Figure 18: Showing Federico Caal, Education and Outreach Coordinator, meeting with fisherfolks during the opening of conch season

6.6 Outreach to Fisherfolks

Throughout 2021, outreach was done to 55 commercial fisherfolks through various means. 2 boat to boat outreach activities were held. One was done at the start of the conch season whereby fishers expressed satisfaction for their catch with many having boats overflowing with conch. Another was done at the start of the Lobster season which yielded similar results however fishers expressed concerns of insufficient compensation for their catch. They felt that it wasn't a bad year in terms of the catch but did not see high offerings from the cooperatives and companies exporting lobster. Some indicated that it would be more lucrative to sell on the local market.

7.0 Community Development

TIDE has continued to invest in community development priorities in the three key communities that buffer the Port Honduras Marine Reserve in 2021. Following the update of the community development plans for the three key stakeholder communities of Punta Gorda, Monkey River, and Punta Negra in 2020, TIDE has invested in a range of development initiatives.

7.1 Community Development in Punta Negra

In Punta Negra, the pandemic continued to impact livelihoods which previously depended on revenue from a restaurant in the village. Investments were made in equipment that will enable the community to produce coconut oil for distribution in Belize. A logo and product labels were also designed and printed to help with promotion and sales.

7.2 Community Development in Monkey River

To enable Monkey River Village Council to generate revenue, a large ice machine was purchased and installed in 2021 which is helping to generate funds for community initiatives and ensure a reliable source of ice for fishers to store their catch.

7.3 Community Development in Punta Gorda



Figure 19: Showing piggery at YADLIT

A number of initiatives were implemented in Punta Gorda in 2021, where capacity building and livelihood projects were identified as two pressing needs even before the pandemic. Training courses in cleaning and sanitation and home gardening were provided which benefitted over 40 residents of Punta Gorda. In partnership with Reef Adventures, 20 youths became PADI SCUBA certified, taking their first fin-kicks towards futures in research, tourism or environmental management. TIDE has also been pleased to invest in a community organization called YADLIT, who have established a local piggery to sell fresh local pork meat. Having invested in piglets and feed, the group is now making weekly sales and expanding operations.

7.4 TIDE's Scholarship Program

TIDE's Scholarship Program continued in 2021 with 35 students receiving book scholarships and 5 receiving other types of support towards their continued education. TIDE is grateful to Mass Audubon for their continued support of this program which supports families and youth throughout the Toledo District.

7.5 Other Community Development Work



Figure 20: Showing recipient of award for completing training on food preparation and cake decoration

TIDE supported seven women from coastal communities who attended food preparation and cake decorating training courses provided by the Young Women's Christian Association. TIDE will continue to support community development in our buffer communities, and in 2022 will be looking to identify priorities in some inland communities. Building resilient communities that do not rely on unsustainable harvesting of natural resources is critical in protecting ecosystems and wildlife.

8.0 Research and Monitoring

Research and monitoring continues to be an integral part in the management effectiveness of the Port Honduras Marine Reserve (PHMR). Monitoring for the year 2021 included lobster surveys, conch surveys, sea cucumber surveys, coral health surveys, reef fish surveys, reef benthic habitat surveys and coral bleaching surveys. A detailed analysis of these surveys can be found in PHMR's Biological Report(s) for 2021.

Reintroduced in 2020 was the monitoring of Turtle Nests. This was led in the field by Mario Muschamp and rangers from the PCNP and TPPL teams. They monitored along the Punta Ycacos coastline up to Monkey River where they made frequent checks during routine patrols. For the 2021 turtle nesting season, there were ~7,284 eggs laid at 53 nesting sites. Of those ~4,689 hatchlings emerged successfully. ~904 eggs were infertile and ~507 eggs damaged by roots. 1 nest succumbed to total inundation. 9 nest sites were predated or ~1093 eggs. 7 sites were completely destroyed due to predation with only 2 sites being partially predated. 7 of the total sites were predated by Grey Foxes, 1 site by crabs and 1 site by racoons.



Figure 21: Turtle hatchlings making their way to the sea

The rangers at PHMR monitored West Snake Caye which seemed to be the only active sight for turtle nests at the Snake Cayes. Unfortunately, the nests which were monitored at West Snake Caye were destroyed due to erosion of the beaches during seasonal shifts.

9.0 Commercial Fishing, Recreational Fishing and Tourism in PHMR

9.1 Vessels in PHMR

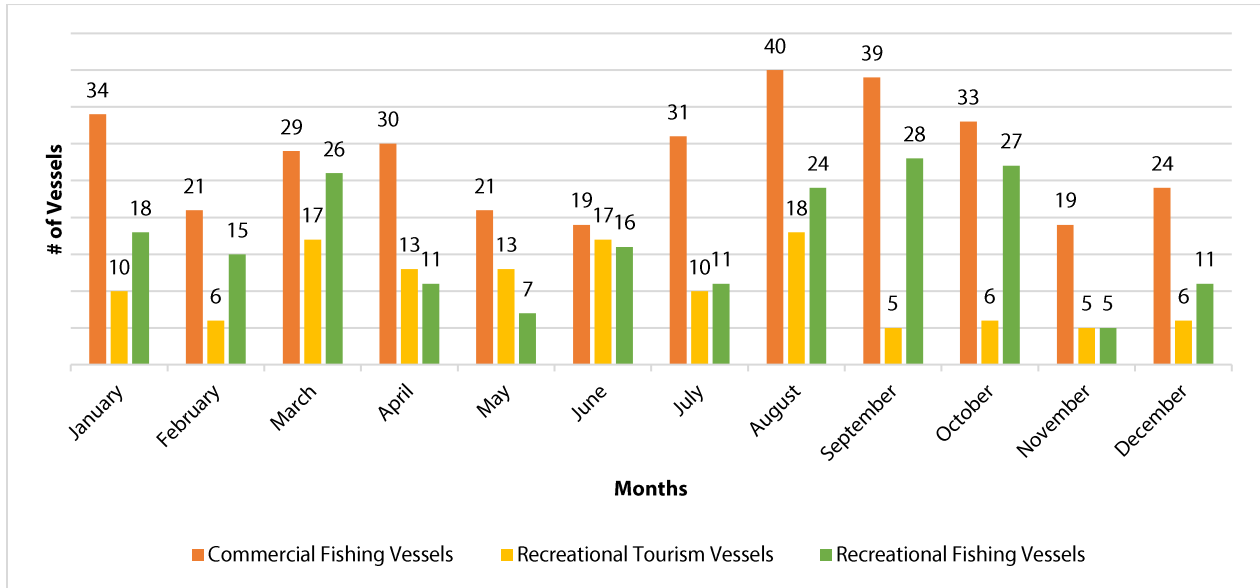


Figure 22: Showing vessels sighted in PHMR for 2021

In 2021 the rangers through the Spatial Monitoring and Reporting Tool (SMART) logged over 665 vessels in the reserve an increase of 13% from the previous year and an increase of 275% over the last 5 years. Of these vessels 340 were commercial fishing vessels, 126 were recreational tourism vessels and 199 were recreational fishing vessels either transiting the area or conducting other activities.

9.2 Commercial, Recreational and Tourism Users in PHMR

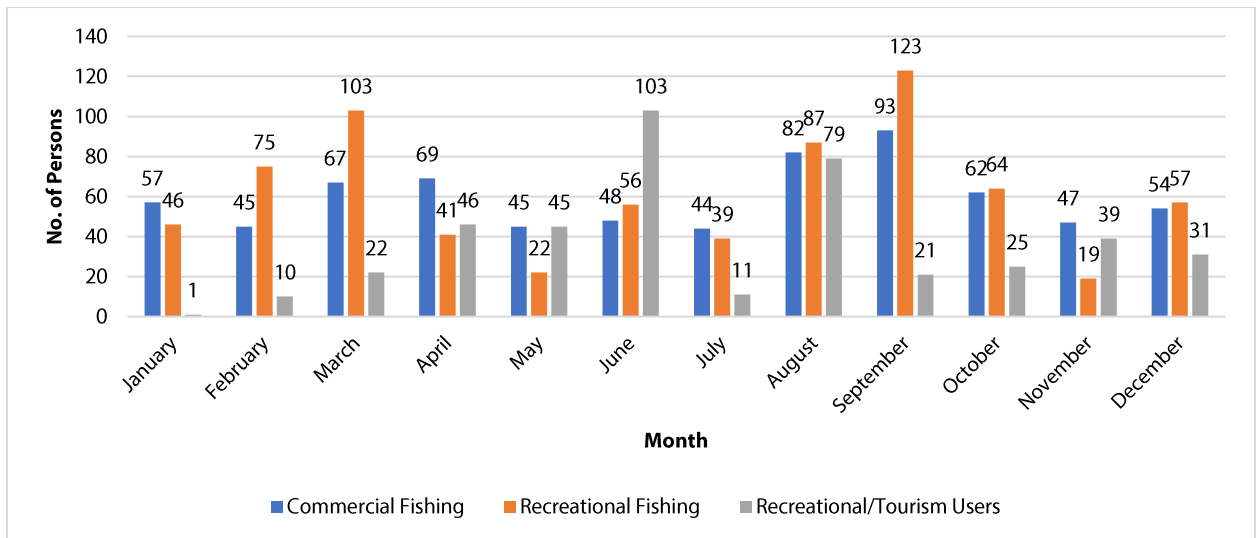


Figure 23: Showing the resource users observed by month for 2021

In 2021 TIDE Port Honduras Marine Reserve enforcement team, through SMART, logged 715 commercial fishers and 732 recreational fishers and 440 tourism users in the reserve not counting the locals on the tourism vessels.

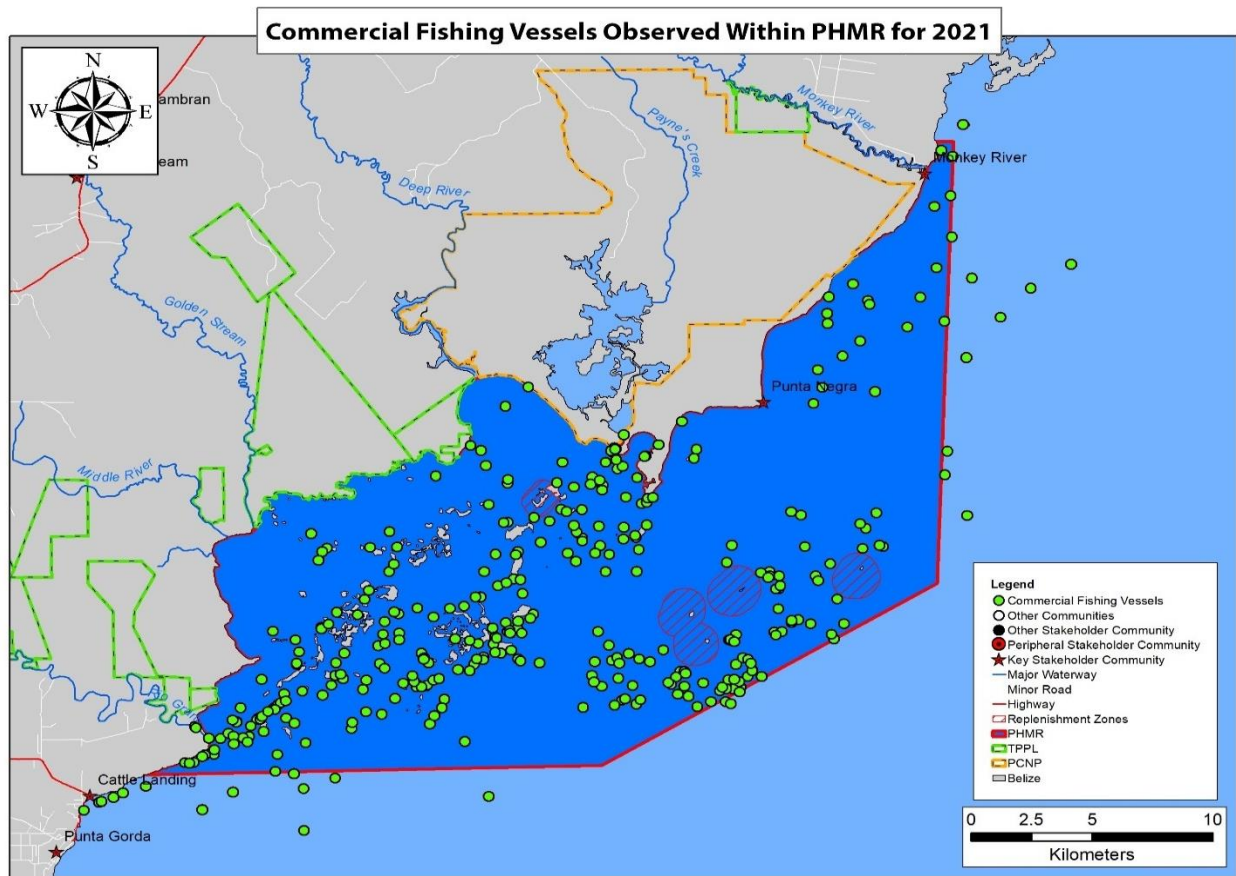


Figure 24: Showing Commercial fishing vessels in PHMR for 2021

The map above shows the approximate location for commercial fishers within PHMR (*The GPS coordinates are taken at the location of the patrol vessel unless the rangers are directly interacting with the commercial fishers*).

Akeem Williams	Daniel Castellanos	Hilbert Cuevas	Luis Cabrera	Rodan Cabrera
Alan Buchub	Daren Castellanos	Jared Garbutt	Marvin Westby	Ronald Martinez
Alex Leonardo	David palma	Jason Garbutt	Minor Melgar	Reinaldo Roy Ramirez
Alexander Garbutt	Dennis Usher	Joel Casimiro	Minor Perez	Ruben pais
Alonzo Reymundo	Dervi Williams	George Ramirez	Narciso Martinez	Victor Cuevas
Andy Jones	Eloy cuevas	Joseph Romero	Nelson Bahadur	Wilfred D Usher
Ange pais	Evan Cuevas	Josselyn Cabrera	Oliver Rojas	Winsley Cuevas
Anna Ramirez	Fidel auddinnet	Kevin Castellanos	Oscar Lira	Aaron Burgess
Apolonio westby	George Garbutt	Leonardo Castro	Percival gordon	Winston A Thompson
Byron Paiz	George Logan	Leonel Delcid	Perseval Gordon	Yonardo Cus
Carlos Bardalez	George Ramirez	Leslie Williams	Persival Garbutt	
Carlos Ramirez	Harrison Logan	Lionel Delcid	Rafael Ramirez	
Clive Garbutt	Harrison young	Lionel Sanchez	Ray Jacobs Sr.	
Curtis Molina	Gerson coleman	Lloyd A Williams	Ray Jacobs Jr.	

Table 6: Showing commercial fishers sighted in PHMR for 2021

10.0 Recreational Tourist Visitation to Abalone Caye

Overall, the Port Honduras Marine Reserve saw ~1015 foreign visitors in 2021, this number was derived through ticket sales. This was during the period January – December 2021 whereby COVID – 19 regulations and lockdown continued.

The TIDE management team came to the decision to not reopen Abalone Station to visitors for 2021. Throughout the year, visitation was sporadic however it increased as the year progressed. Some tour operators and captains have continued with commercial fishing supplementing their lost income.

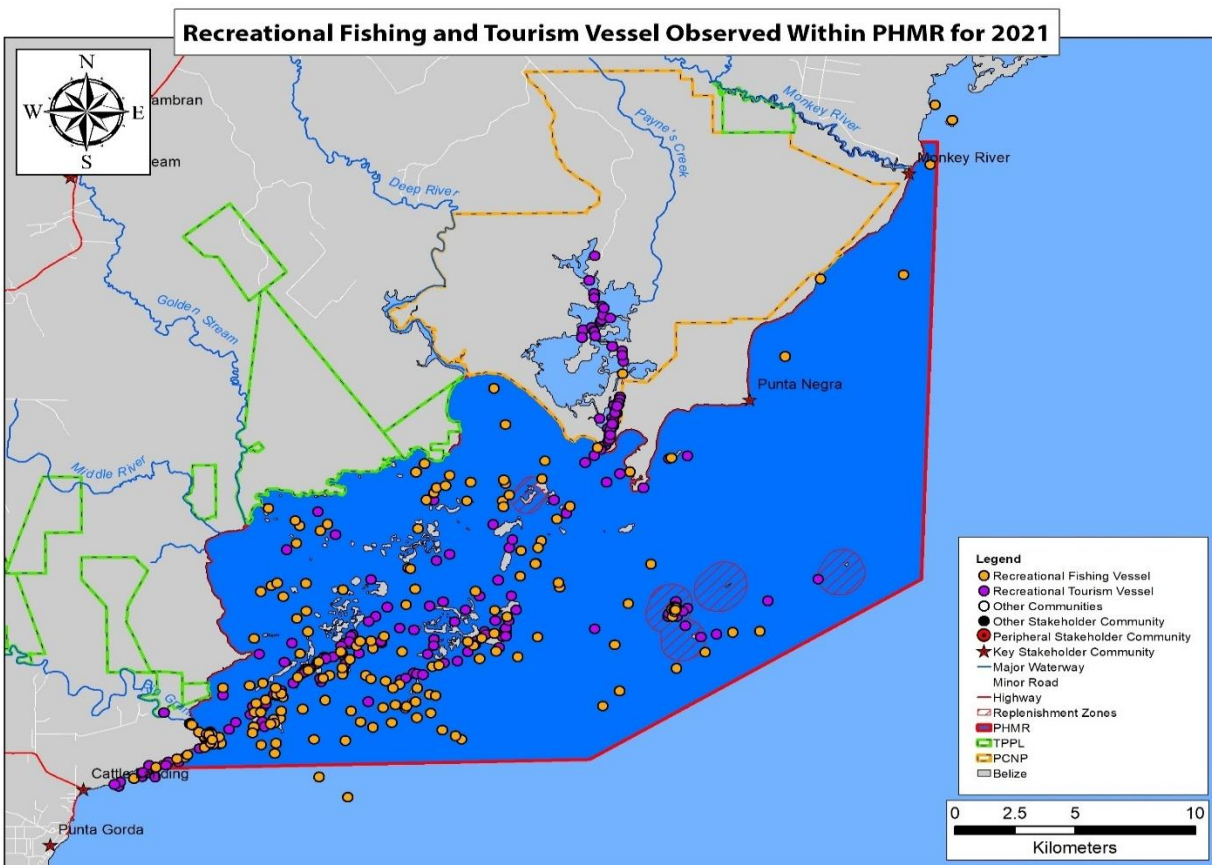


Figure 25: Showing Recreational and Tourism vessels sighted in the reserve by Rangers and logged using SMART

The map above shows that most of the reserve is being used for both recreational fishing and tourism related activities. Areas north of the reserve shows little to no activity for these types of vessels although it must be noted that there are less patrols in these areas.

From the map it can be shown that multiple recreational fishing vessels can be seen around the snake cayes in the conservation zone although no fishing is allowed. It must be noted that although these vessels are primarily conducting recreational fishing, it is customary for the individuals to also stop by at the cayes to either have lunch, snorkel and/or swim as a part of their daily visit.

11.0 Conclusion and Recommendations:

2021 was a successful year for PHMR however with the continuation of COVID-19 we had prolonged periods where the team was not as effective due to staff turn over through the year. Overall, the team was able to accomplish 106% (600) of planned patrols with 36 additional patrols. We had a slight reduction from our numbers from the previous year despite the challenges faced by the team, but we were able to accomplish 1 arrest for which the two individuals involved were fined \$19,060 and all equipment and the vessel were forfeited to the Government of Belize.

The team was able to increase their efficiency by continuing to optimize their fuel consumption. Through the continued use of drones, we were able to be more effective in its use through our search and rescue operations, routine patrols, and mapping of islands within the reserve. We also received an underwater drone towards the end of the year with which we hope to start the removal of fish traps, gill net and other illegal gear.

11.1 Recommendations

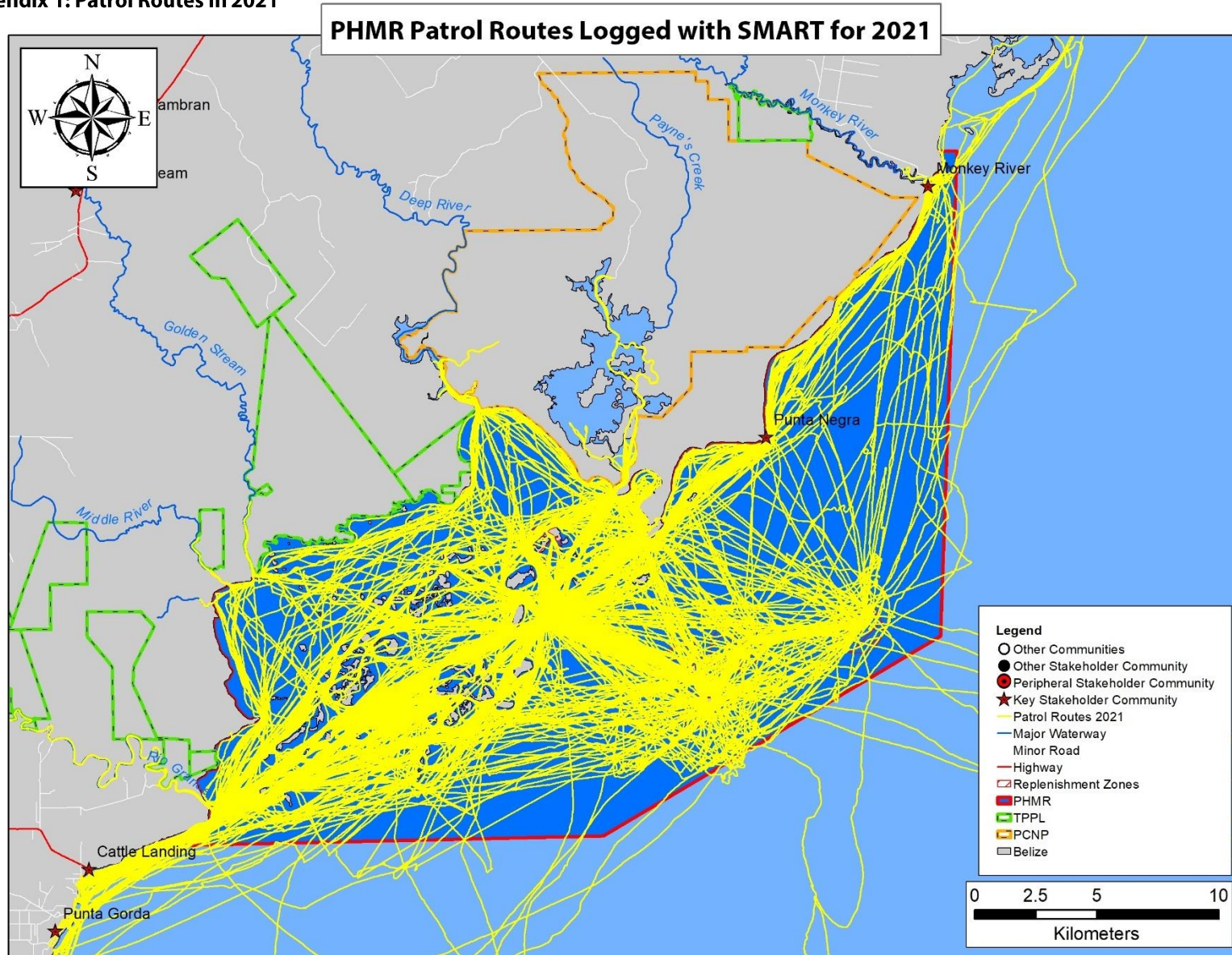
- Develop a means by which outreach activities are tied to Managed Access fishers to show effectiveness in its use in increasing compliance.
- Update the SMART report to start to use spatial analysis by fishing zones which were established in previous years along with catch sampling.
- Increase efficiency and effectiveness guided by the SMART tool through increase documentation of patrol activities and resource user activities.
- Incorporate research and monitoring activities where possible to increase the capacity of rangers.
- Continue to build staff capacity and introduce new technology to be more cost effective in the management of the protected areas.
- Continue to monitor for new developments in and around the reserve that can pose serious threat to the integrity of the protected area and ensure the Environmental Impact Assessment process is followed for the development and implementation of those projects.
- Increase the use of signage around the reserve, increase the number of virtual shows and produce and distribute a brochure to ensure that stakeholders are knowledgeable of the rules of the park.
- Continue with the implementation of the Community Development Plans and ensure that stakeholders can benefit as much as possible from investments made through these plans.
- Develop a strategy to identify and market alternative products from within the reserve to relieve the pressures brought on from commercial fishing.
- Advocate for the introduction of regulations for recreational fishers.

The challenges continuing to be brought on by COVID-19 have highlighted the importance of being more cost-effective with the limited resources afforded to us. The organization continues to experience low revenue from ticket sales and a cut in planned projects. TIDE and the team at Port Honduras Marine Reserve remain committed

in ensuring that the ecosystems and the services provided to the numerous stakeholders are maintained for years to come. We would like to express our deepest gratitude to all those who have made the management of PHMR a success in 2021.

12.0 Appendix

Appendix 1: Patrol Routes in 2021



Appendix 2: The TIDE Team

11.1 Board of Directors

Mr. Gabriel Roches (Chairman)	Retired Public Officer (Public Health)
Mr. Jeremy Enriquez (Director)	National & International Relations
Ms. Nancy JudyAnn Gomez	Business Representative
Dr. Jay Coombs (Director)	Academia
Mrs. Marie Aleman (Vice-Chair)	Entrepreneur/Community Representative
Mr. Leonardo Castro (Director)	PCNP Advisory Council Representative
Mr. Victor Jacobs (Director)	PHMR Advisory Council Representative
Mrs. Celia Mahung (Secretary)	Executive Director (Ex-Officio)

11.2 TIDE Office Staff

11.2.1 Management Staff

Celia Mahung	Executive Director
Leonardo Chavarria	Development Director
Stephene Supaul	Operations Manager
Caroline Oliver	Program Manager
Ryan Moore	Protected Areas Manager
Mario Muschamp	Terrestrial Manager
Federico Caal	Environmental Education Officer/ Community Development Officer
Cecillia Guerrero	Project Manager

11.2.2 Administrative Staff

Darius Avila	Accountant
Kimberly Lawrence	Financial Administrator
Alaine Noralez	Accounts Clerk
Ishiamae Gomez	Front Desk
Paul Etienne	Information Technology Officer

11.3 PHMR Advisory Committee

Mr. Victor Jacobs	PG Tour Guide Association
Mr. Armando Ramirez	Rio Grande Fisherman Cooperative
Mr. Daniel Castellanos	Monkey River Village Council/ Fishers Assoc.
Hon. Michael Espat	Area Representative
Mrs. Paula Jacobs	Chairperson Punta Negra Village Council
Mr. Roy Polonio	University of Belize-Toledo Campus
Mr. Lyndon Rodney/Victor Vasquez	Fisheries Department-PG
Mr. Charles Selgado	PG Town Council
Mr. Leonardo Castro	Monkey River Village Council
Mrs. Celia Mahung	Executive Director
Mr. Mario Muschamp	Terrestrial Manager
Mr. Ryan Moore	Marine Manager

11.4 TIDE Private Protected Lands Staff

Christopher Ical	Ranger
Reymundo Chen	Ranger
James Choc	Ranger
Martin Ack	Ranger/Tour Guide

11.5 Payne's Creek National Park Staff

Mario Muschamp	Terrestrial Manager
Leonard Williams	Head Ranger
Augustin Sho	Ranger
Liberato Pop	Ranger
Norman A. Williams	Field Officer

Appendix 3: Financials

Toledo Institute for Development and Environment Port Honduras Marine Reserve Income & Expense Report January through December 2021

Ordinary Income/Expense	
Income	
4001 · Grants	950,000.00
Total Income	<u>950,000.00</u>
Expense	
3001 · Equipment	82,123.92
5001 · Salaries/Wages & Benefits	309,201.29
5002 · Travel & Transportation	1,824.09
5003 · Cleaning & Sanitation	619.91
5004 · Donations	210.03
5005 · Dues & Subscriptions	
5006 · Insurance, Licensing & Permits	10,993.13
5007 · Postage & Delivery	587.52
5008 · Professional Fees	84,775.00
5009 · Public Awareness & Env. Ed.	75,777.44
5010 · Repairs and Maintenance	77,860.93
5011 · Supplies	21,732.18
5012 · Training	18,277.99
5014 · Board/Advisory Board Expense	593.75
5015 · Utilities	2,440.14
5016 · Telephone, Comm. & Internet	5,759.26
5017 · Bank Charges	6,422.11
5019 · Reserves & Parks Improvement	17,496.54
5020 · Net Working	1,632.34
5025 · Institutional Strengthening &	2,557.23
5026 · Research & Monitoring	97,425.42
5027 · Recruitment	270.00
5035 · Surveillance, Patrol & Enforce	65,104.79
5036 · Disaster Preparedness & Management	
5037 · Community Development	56,412.32
Total Expense	<u>940,097.33</u>
Net Ordinary Income	9,902.67
Net Suplus(Excess)	<u>9,902.67</u>