



PCNP Annual REPORT 2020

Prepared by: Toledo Institute for Development & Environment

Submitted to the Forest Department - Belmopan



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Executive Summary

Words from the Manager:

Payne's Creek National Park saw some trials in 2020 with the COVID-19 pandemic, but despite that, staff were engaged in Fire management, Law Enforcement, Research and monitoring and capacity building for both staff and communities. With funding from the Protected Areas Conservation Trust (PACT), the staff conducted some 4000 acres of prescribed burns in Deep River Forest Reserve in February and some 3500 acres in Payne's Creek National Park in November/December - our first burns mimicking a lightning strike fire to meet specific objectives. Park staff were able to provide basic fire management training for Southern Belize Fire Working Group (SBFWG) member's staff (Forest Department) and other interested partners in the Mountain Pine Ridge Forest Reserve and staff of the Fire Department as well as assisting with training for some 16 TNC US based Fire Fighters, focusing on mainly fire suppression so the fire fighters can advance their capacity so they can move up in the fire management field by completing their tasks in their task books. Park staff also via a consultancy conducted prescribed Fire operations for Eco Futures Belize Ltd. doing our share so that other parts of the country can start to see the **GOOD FACE** of Fire

The use of SMART to collect enforcement data continues and the information is being used to target more focused patrols especially in the dry season when the access road is in good condition where people are entering into neighboring DRFR to conduct activities that can have some negative impacts on the park such as hunting and lighting of fires. Research and monitoring include Fire effects monitoring at 14 plots scattered over PCNP focusing on Pine and Palmetto and 6 plots done with a University of Florida Student focusing on fire effects on vegetation cover, YHP nest success monitoring with assistance from Belize Bird Rescue to hand-raised at-risk (Poaching, health issues, hurt from attempted predation) chicks to ensure survival and to ensure we are contributing our part in the management of this endangered species. Also, this year we partnered with ECOSUR to do Turtle Nest monitoring along the coastline of PHMR from Punta Ycacos to Monkey River which yielded great results.

On Behalf of the staff and management of PCNP we would like to take this opportunity to thanks all those who have contributed to the management of PCNP in 2020 one way or another and looking forward to your continued support in 2021 and beyond.

Sincerely

Mario Muschamp

Terrestrial Manager, TIDE

1. Protection and Surveillance:

The report below highlights the activities encountered in and around PCNP during 2020 patrols using SMART.

1.1. Surveillance/Patrols (implementation of SMART)



Payne's Creek National Park Annual Report



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Who Generated Report	Patrol Reporting Start	Patrol Reporting End
Ryan Moore	2020-01-01	2020-12-31

Total Patrol Effort by Enforcement Team

Team	Total Number of Patrols	Total Number of Patrol Hours	Total Distance (km) Travelled	Total Observations Made
PCNP	310	922.231	9812.72	409

Ranger Performance

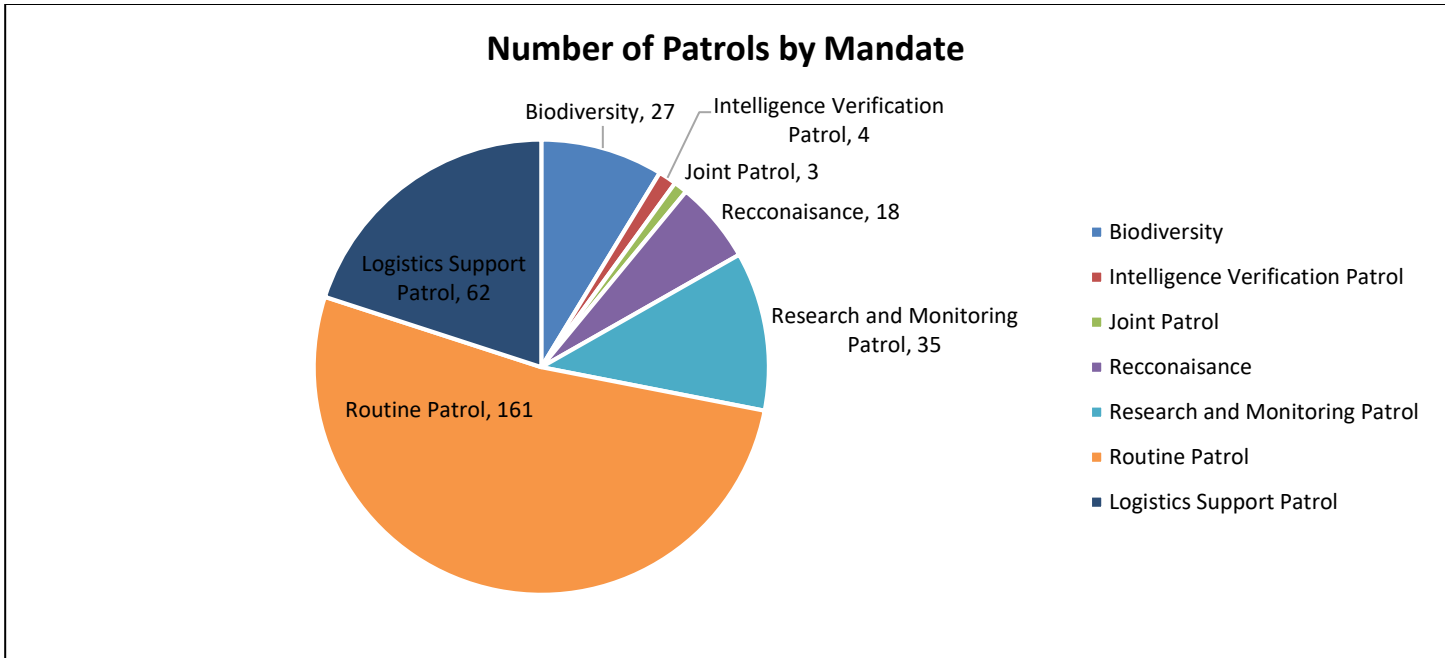
Rangers	Number of Patrols	Hours Patrolled	Distance Travelled	Number of Observations
Andrew Williams	92	263.26	2873.28	129
Augustine Pop	64	155.89	2148.66	96
Junnalio Ical	6	13.43	199	3
Leonard Williams	133	421.86	4490.89	178
Liberato Pop	109	348.31	3391.94	133
Mario Muschamp	250	787.67	7835.41	377
Mario Xi	14	22.06	456.44	14
Pedro Shol	16	60.36	284.28	9
Reymundo Chen	1	0.3	9.73	
Santiago Cucul	3	5.73	131.53	1

Patrols by Mandate

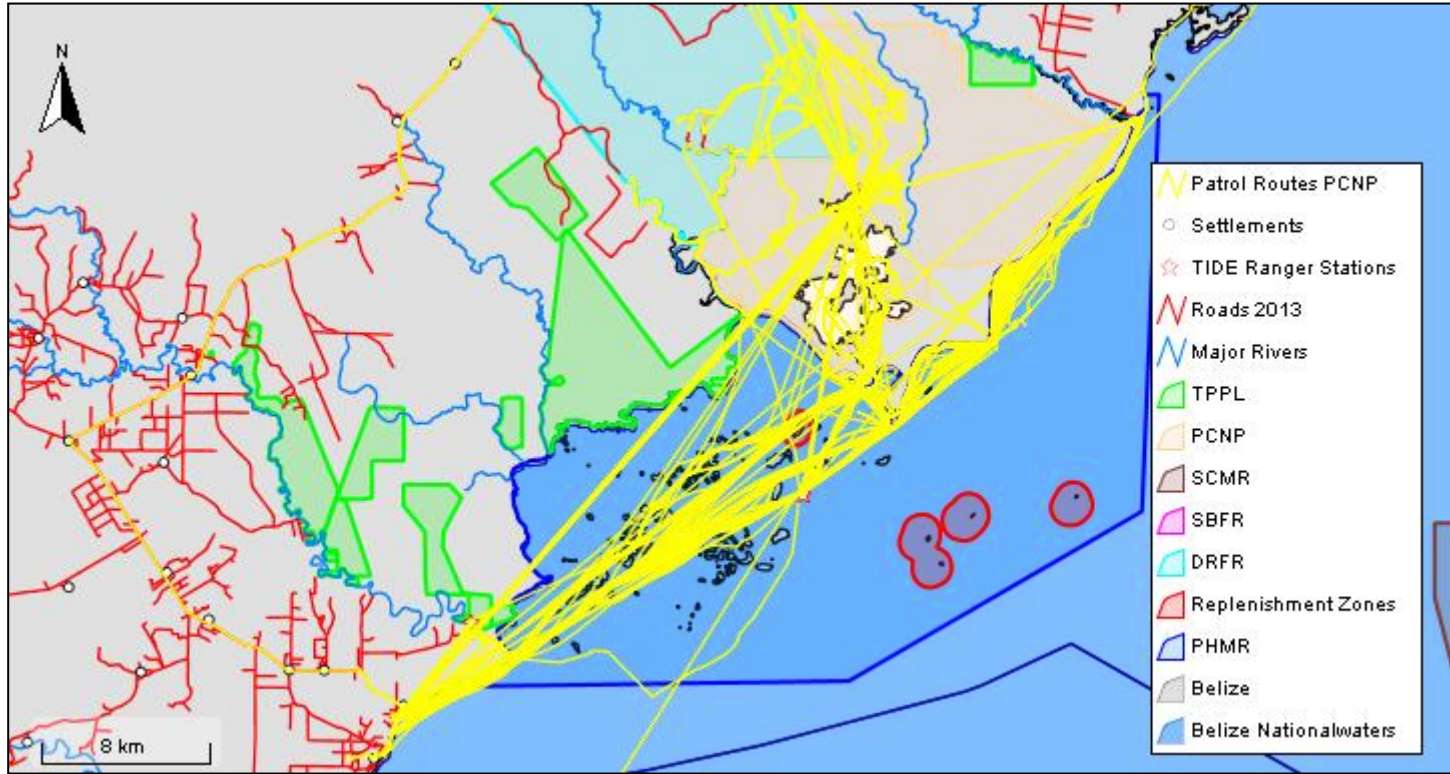
Mandate	Number of Patrols	Hours Patrolled	Distance Travelled
Biodiversity	27	178.56	408.6
Intelligence Verification Patrol	4	4.43	112.59
Joint Patrol	3	1.42	63.05
Reconnaissance	18	53.68	610.1
Research and Monitoring Patrol	35	137.2	1320.3
Routine Patrol	161	393.28	5336.48
Logistics Support Patrol	62	153.67	1961.6

Patrols by Transport

Mandate	Number of Patrols	Hours Patrolled	Distance Travelled
FOOT	18	87.74	114.33
HILUX	5	4.93	118.83
PCNP Vessel	187	386.90	6197.25
PHMR Vessel	5	5.51	85.42
TPPL Vessel	4	9.30	203.39



Map Showing Patrol Routes by PCNP Rangers

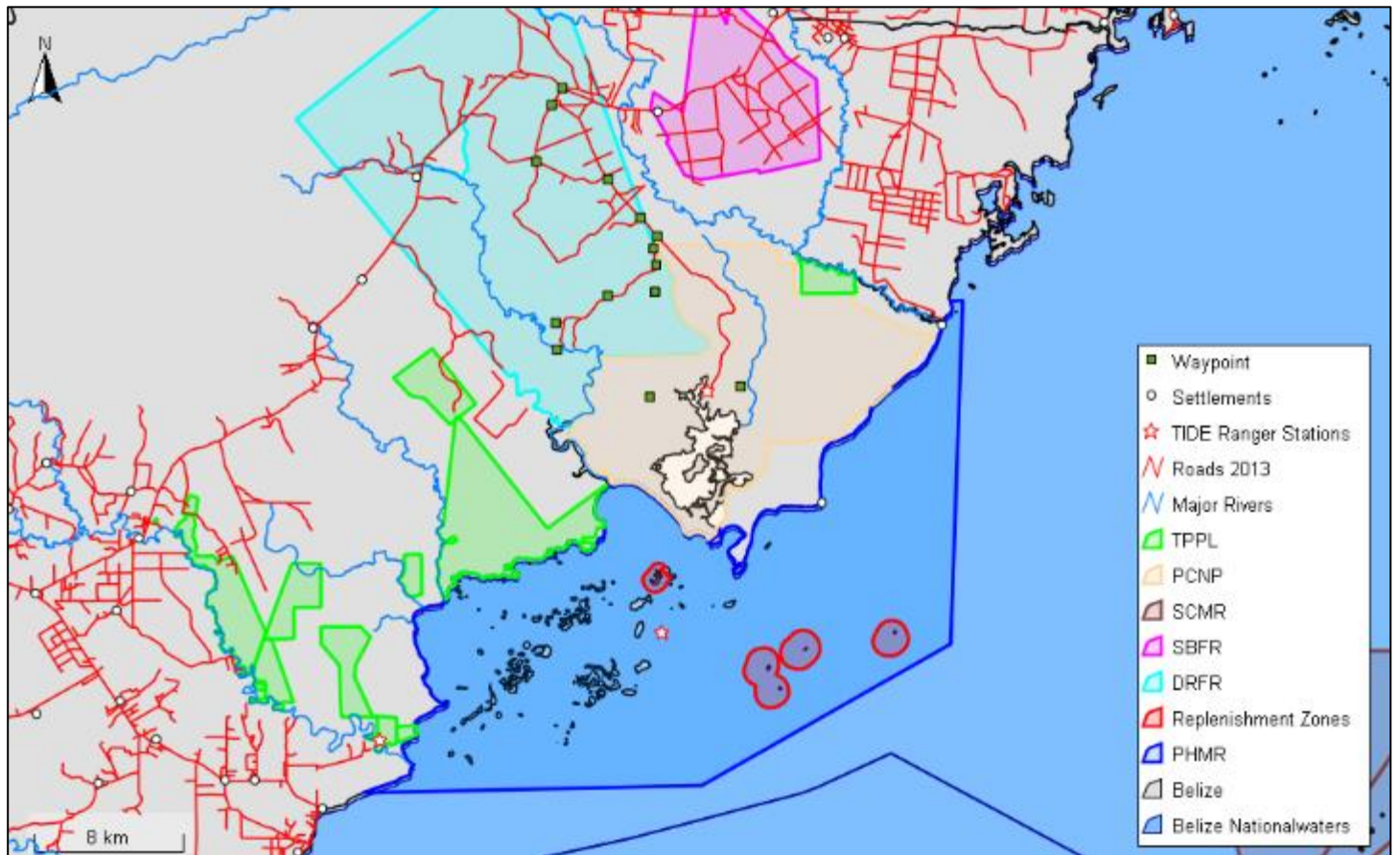


Unfortunately, at times the devices had enabled Power Saver Mode which disables the GPS and or the device had on Airplane mode which also disables the GPS. I have notified the rangers of this and have seen an improvement on the accuracy of the patrol tracks.

Human Activity Sightings by PCNP Team in and around the park

Waypoint Date	X	Y	Activity	Comments
30/01/20	-88.65	16.44	Forest Fire	lighted we believe by person on motor cycle
14/04/20	-88.64	16.42	Forest Fire	fire happen about 2 days ago
23/04/20	-88.68	16.36	Illegal Camp	
26/04/20	-88.63	16.33	Tracks	motor cycle and ATV we believe are hunting
30/04/20	-88.59	16.33	Forest Fire	can't tell acreage as fire is in wetlands in eastern section of the Park
01/05/20	-88.65	16.38	Hunting/Poaching	at sulphur Creek where it was cleaned.
01/05/20	-88.63	16.38	Hunting/Poaching	camp site where animals were cleaned
16/07/20	-88.63	16.41	Hunting/Poaching	sign where motor cycle entered the DRFR
16/07/20	-88.68	16.47	Tracks	heading over sulphur Creek towards park boundary a long Deep River
16/07/20	-88.63	16.39	Illegal Camp	
16/07/20	-88.63	16.38	Tracks	entered from road closer to boundary line of DRFR
16/07/20	-88.67	16.48	Tracks	it went down park boundary flying drone to see if entered Park
29/07/20	-88.68	16.35	Illegal Camp	
28/08/20	-88.63	16.40	Tracks	motor bike in DRFR we believe to hunt about a week or so ago
25/09/20	-88.69	16.44	Tracks	heading towards road that Leads to area where fire was observed

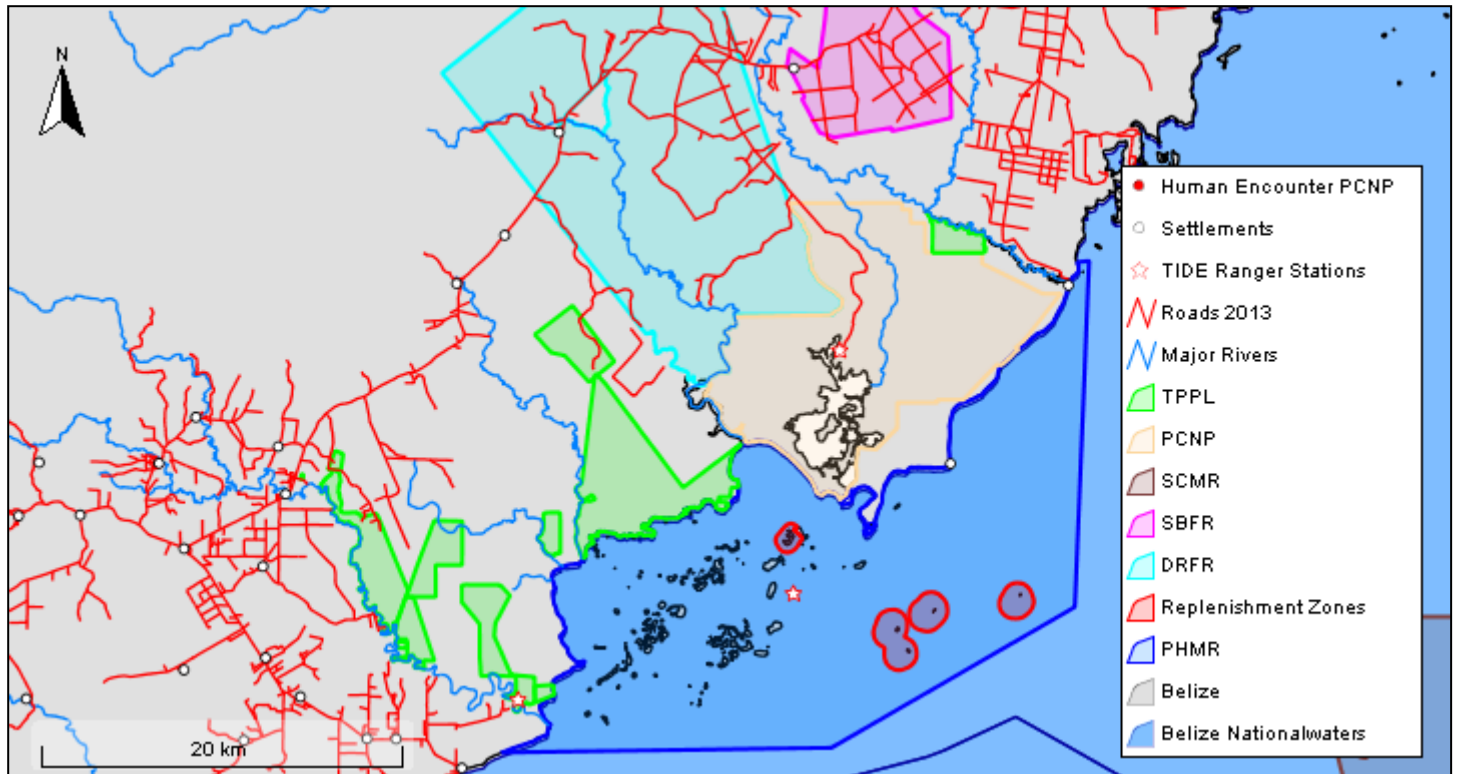
Map Showing Human Activity Sightings



Human Encounters by PCNP Team

Waypoint Date	X	Y	Name of Person	Activity engaged on	Action Taken	Comments
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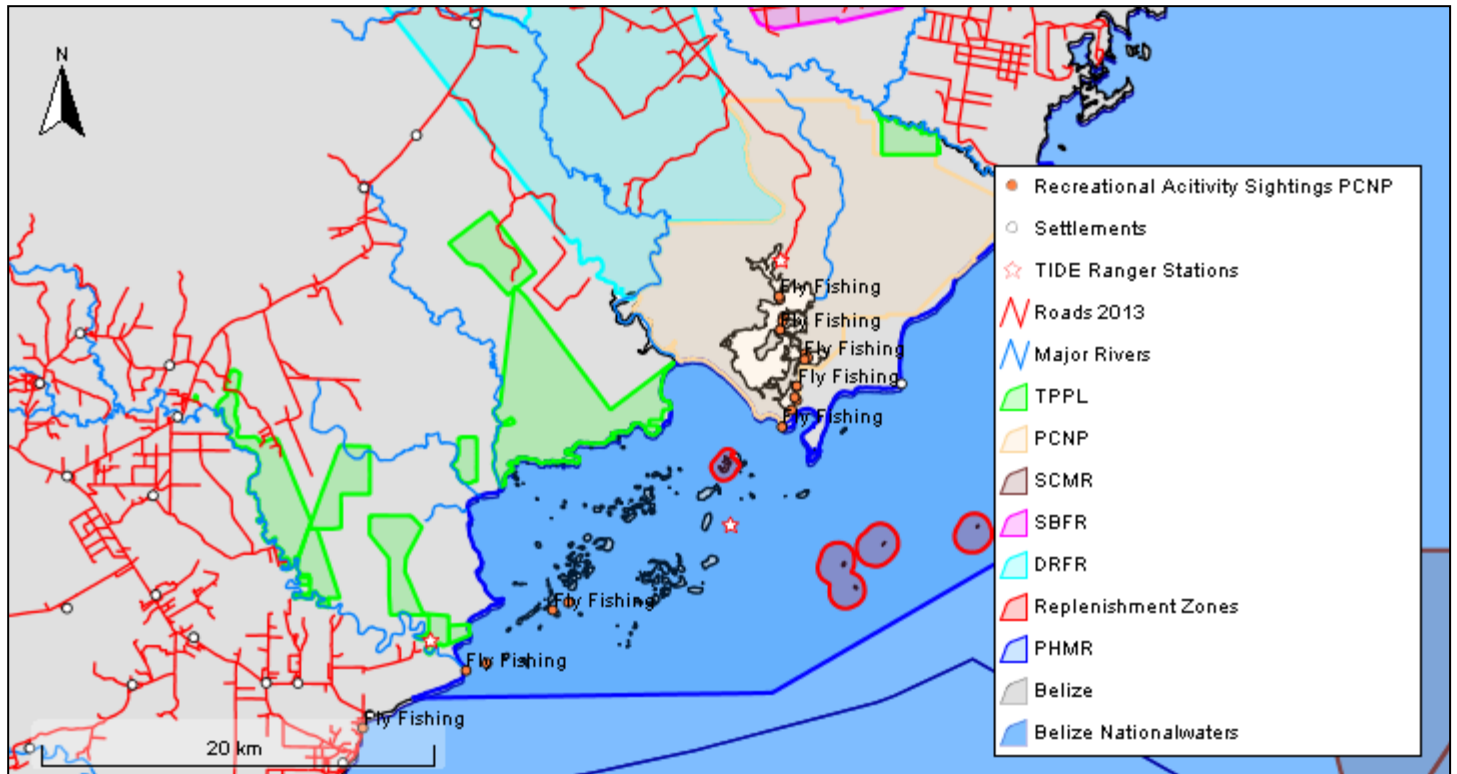
Map Showing Human Encounters by PCNP Team



Recreational Activity Sightings

Waypoint Date	Activity
Dec 3, 2020	Fly Fishing
Oct 22, 2020	Fly Fishing
Feb 7, 2020	Fly Fishing
Feb 7, 2020	Fly Fishing
Feb 7, 2020	Fly Fishing
Feb 24, 2020	Fly Fishing
Oct 15, 2020	Fly Fishing
Oct 21, 2020	Fly Fishing
Oct 15, 2020	Fly Fishing
Oct 15, 2020	Fly Fishing
Oct 28, 2020	Fly Fishing
Mar 11, 2020	Fly Fishing
Mar 11, 2020	Manatee Watching
Feb 10, 2020	Fly Fishing
Oct 16, 2020	Fly Fishing
Oct 16, 2020	Fly Fishing
Oct 19, 2020	Fly Fishing
Oct 19, 2020	Fly Fishing
Dec 3, 2020	Fly Fishing
Feb 28, 2020	Fly Fishing

Map showing Recreational Activity Sightings by the PCNP Enforcement Team



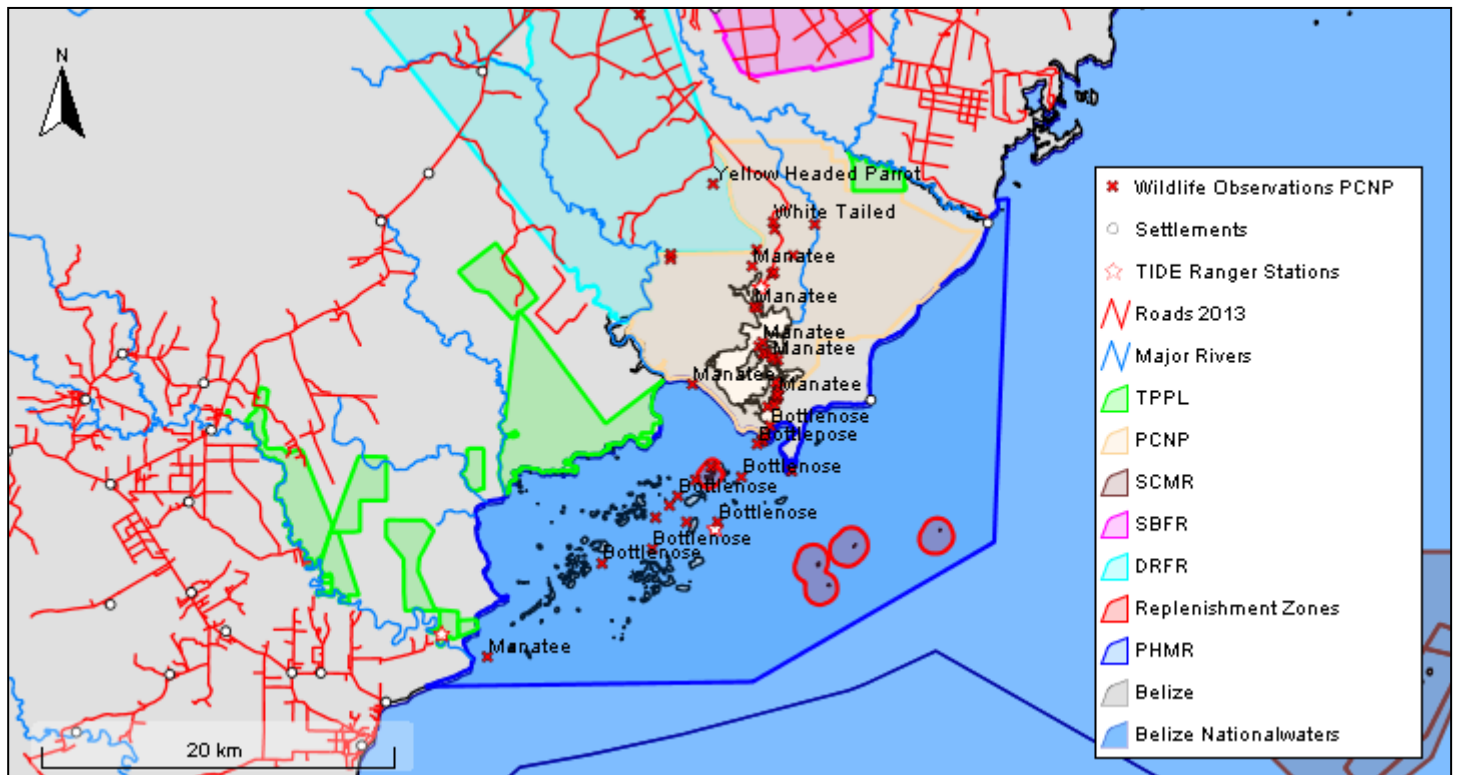
Wildlife Sightings by PCNP Team

Waypoint Date	Species	Number of Animals	Mode of ID	Behaviour
09/01/20	Jaguar	1	Other	Walking
28/01/20	Jaguar	1	Tracks	Walking
26/02/20	American Saltwater	1	Sighted	Resting
28/02/20	Yellow Headed Parrot	2	Sighted	Nesting
28/02/20	Yellow Headed Parrot	0	Nest	Other
28/02/20	Yellow Headed Parrot	1	Sighted	Nesting
28/02/20	Manatee	1	Sighted	Feeding
14/04/20	Manatee	1	Sighted	Feeding
20/04/20	Bottlenose	6	Sighted	Feeding
23/04/20	Manatee	2	Sighted	Other
25/04/20	White Tailed	1	Sighted	Walking
06/05/20	Manatee	1	Sighted	Feeding
06/05/20	White Tailed	1	Sighted	Walking
10/05/20	Bottlenose	6	Sighted	Feeding
11/05/20	Bottlenose	3	Sighted	Feeding
11/05/20	Manatee	1	Sighted	Feeding
23/05/20	Bottlenose	6	Sighted	Feeding
26/05/20	Manatee	1	Sighted	Feeding
26/05/20	Bottlenose	10	Sighted	Feeding
28/05/20	Manatee	1	Sighted	Feeding
05/06/20	Sedge Wren	12	Sighted	Feeding
08/06/20	Bottlenose	4	Sighted	Feeding
09/06/20	Bottlenose	1	Sighted	Feeding

Waypoint Date	Species	Number of Animals	Mode of ID	Behaviour
12/06/20	Manatee	1	Sighted	Feeding
12/06/20	Manatee	1	Sighted	Feeding
16/06/20	Manatee	1	Sighted	Feeding
01/07/20	Manatee	4	Sighted	Feeding
20/07/20	Bottlenose	4	Sighted	Feeding
24/07/20	Bottlenose	4	Sighted	Feeding
24/07/20	Manatee	1	Sighted	Feeding
29/07/20	Manatee	1	Sighted	Feeding
26/08/20	Manatee	1	Sighted	Feeding
09/09/20	Manatee	1	Sighted	Resting
22/09/20	Bottlenose	4	Sighted	Feeding
29/09/20	Bottlenose	4	Sighted	Feeding
08/10/20	Manatee	1	Sighted	Feeding
08/10/20	Bottlenose	2	Sighted	Feeding
19/10/20	Manatee	2	Sighted	Feeding
19/10/20	Manatee	1	Sighted	Other
24/10/20	Manatee	1	Sighted	Feeding

Waypoint Date	Species	Number of Animals	Mode of ID	Behaviour
27/10/20	Manatee	3	Sighted	Swimming
27/10/20	American Saltwater	1	Sighted	Resting
27/10/20	American Saltwater	1	Sighted	Swimming
29/10/20	Manatee	1	Sighted	Swimming
03/12/20	White Tailed	1	Sighted	Resting
03/12/20	White Tailed	1	Sighted	Feeding
03/12/20	Bottlenose	6	Sighted	Feeding

Map Showing Wildlife Sighted by the PCNP Team



1.2. Maintenance of Patrol Equipment

The Regular maintenance of our outboard engine was done based on the maintenance schedule in the owners' manual such as engine oil and oil filter change, gear oil change, cleaning and changing of spark plugs, replace camshaft seal etc. as well as the regular cleaning of patrol vessel ensuring it was available for water based patrols when needed as well as assisted with research and monitoring activities.

2. Institutional Management and Strengthening

2.1 Capacity Building

2.1.1 Customer Service Training

Park staff participated in a Customer Service Training offered through BTB and organized by TIDE Tours for those who work with Groups visiting TIDE Co-Managed Protected Areas via bookings from TIDE Tours held on 24th February at TIDE's conference Room. The training was facilitated by Mr. Javier Gutierrez and focused on Attitude towards Guests, presentation to Guests, punctuality, attire etc. This training was very helpful for those who deal directly with guests to their respective sites. The session will help with improving services we provide to our guests which should help with improving visitors' satisfaction to these areas.

2.1.2 Bird banding Training (field practical to build competency)

Liberato Pop, PCNP Ranger and future team leader, attended field practical session with ERI during data collection at Cockscomb Basin Wildlife Sanctuary from Jan 13th to 17th January focusing on Ageing, Molting etc. for resident and migrant species with an aim to build staff capacity so we can start doing Bird Banding at PCNP and TPPL. Liberato will need to further his training up to the Banders' level. In December 5 staff participated in a field practical session at TREES to build competency in the Team that will be responsible for doing the data collection at sites set up in both PCNP and TPPL.

2.1.3 Conflict Resolution Training

Two park staff (Leonard Williams and Liberato Pop) participated in the Conflict Resolution Training Basic Level and the Trainers Level from 29th Jan to 1st February held at PCNP.

2.1.4 Burn Scar Classification and Mapping

Two TIDE staff (Ryan Moore - Protected Areas Manager and Norman Andrew Williams Field Officer) participated in this training organized by the Forest Department to assist partners with building their capacity to map burn scars using satellite imagery to determine extent and location of burns which along with some ground truthing can measure the impact of that specific fire. This is valuable training for us that will help with improving our fire management program.

2.2 Administration

2.2.1 Staffing

Due to the COVID-19 Pandemic, we had to do some restructuring of staff at the organization which had both positive and negative impacts on operations here at PCNP. Park staff had to take on additional duties to accommodate for the shortfalls with the loss of a few employees but in the end, it made it possible for us to get through what we hope the rougher times of this pandemic.

2.2.2 Report Writing

Terrestrial manager and park staff produced Quarterly reports that were submitted to TIDE Board of Directors to update them on projects and project activities being implemented in the park as well as provide inputs into project reports to donors.

2.2.3 Hurricane Preparedness

Park staff reviewed and revised the park's Hurricane Preparedness Plan and submitted changes to management for inclusion into the organization's Hurricane Preparedness Plan for the 2020 hurricane season. This year we had to implement activities from this plan with the threat from Hurricane Nana and 2 tropical storms that passed just south of Belize. Thankfully, none of these storms caused any damage to property or assets.

2.3 Park Improvement

2.3.1 Trail Development

With assistance from two interns, work on designing installation of two new short trails near the park's facilities for guests to use when visiting the station, commenced in 2020. Park staff did the clearing of the trails while the interns worked on the signs etc. for the trails. This will be completed in 2021.

2.3.2 TIDE's Fire Management Consultancy

TIDE's Fire Management Expert and Terrestrial manager was contacted by Eco Futures Belize Ltd. to submit a quote for conducting Prescribed burns on their property in the Sittee River Forest Reserve/Wildlife Sanctuary which was done and was approved. Park staff did a site visit to collect information needed to develop burn plans, after which plans were developed and submitted to the Forest Department for approval. Approval was granted and burns were conducted in July led by a team of three TIDE staff. The major results of this type of consultancy are the capacity building in fire management at the national level, building of partnerships for greater collaboration, the management of fire dependent ecosystems for the conservation of biodiversity, and the mere fact that we will now start to see as a country the GOOD FACE OF FIRE.

TNC Wildfire Suppression Training

Between February 11th – 22nd, we hosted some 16 US based fire fighters and did training in wild fire suppression tactics etc. to assist participants with completing their tasks from their tasks books to take them to the next level of firefighter in the US. All participants completed all their tasks from the books they had to complete, and are now more advanced fighters. Also included in the training were four Belizeans, three personnel from the Forest Department, and one from the Agriculture Department.

2.3.3 Upgrade to water system

With funding from PACT, MASS Audubon and Overbrook Foundation we were able to upgrade our water supply at the park's facility this year with the drilling of a 60ft well and the installation of a submersible solar pump to provide potable water to park's facilities. Funds are already secured for a new metal water tower to complete the water system up to the standard we need in 1st quarter of 2021.

2.4 Networking

2.4.1 Management Meetings

The park manager attended the regular management team meetings on a weekly basis, and park staff also attended the all staff meetings which take place bi-annually where the management team is updated on projects being implemented at protected areas and to discuss where resources can be pooled to effectively and efficiently implement the projects. These meetings are also accompanied by project review meetings where we look at all projects and update their progress and see where resources can be pooled to improve the implementation where needed. These meetings assist with the smooth implementation of the projects being implemented and assist with the reporting to co-management partner and donors. Also during these meetings, the revision process for the organization's Strategic Plan commences, up to the end of December the management team have had two sessions with the consultant doing the revision of the Strategic Plan focusing on Sustainable Financial Initiatives, Mission and Vision etc. Due to the COVID-19 pandemic, the majority of these meetings after March took place virtually.

2.4.2 Assist at PHMR/TPPL

On occasions, park staff are called upon to assist at the two other protected areas managed by TIDE. At these protected areas, staff assist with patrols and surveillance, boundary line maintenance, research and monitoring, education and outreach, riparian reforestation among other activities. The time spent at the other protected areas are beneficial to us as we get to know the protected areas better, build healthy relationship with the staff and the communities that buffer these areas and allow for deeper appreciation of the work of field staff. Joint patrols are also advantageous as a strategic way to address certain areas of concern.

2.4.3 Advisory Council Meetings

Payne's Creek National Park Management Committee and the Port Honduras Advisory Council have merged to form one group to advise TIDE on the management of both PCNP and PHMR. For 2020, the committee held two meetings to discuss the implementation of projects and overall management at both sites. Originally, three meetings were planned for 2020 but only two of these meetings were held due to the ongoing pandemic. These meetings help with keeping key stakeholders engaged in the management of these areas.

2.4.4 SBFWG Meetings

The Southern Belize Fire Working Group (SBFWG) held two meetings for 2020; One in January at the beginning of the year prior to the opening of the fire season, and the 2nd in October to report on what happened with each member at their respective sites and plans for the upcoming fire season (Prescribed Burns needed, Training needs etc). All members expressed need to conduct prescribed burns in their respective sites, training for members staff etc. Members also expressed interest in addressing what is expected for 2021 fire season based on what we saw in 2020. Members expressed that they would like to see more awareness on the impacts of fire to community and the general public, capacity building to improve fire management capacity at the national level, and acquisition of much needed equipment for fire management purposes, improved coordination and collaboration to respond to fire incidents, and improved infrastructure to aid in fire detection at an early stage to increase the chance of suppression and lessen negative impacts.

2.4.5 Meetings/workshops with Forest Department and partners

2.4.5.1 Update Belize's Threatened Species List

TIDE's Terrestrial manager Mario Muschamp participated in the sessions with a consultant conducting the consultancy for revising Belize's Threatened Species List. The session held on October 20th focussed on parrots of which the Scarlet macaw and the Yellow headed parrots are the most threatened in Belize and need more human interventions if we are going to save these species.

2.4.5.2 Update NBMP meeting

TIDE's Terrestrial manager participated in a meeting with personnel from the National Biodiversity Office to get our input into the revision of the National Biodiversity Monitoring Plan. One of the terrestrial manager's suggestions was to focus on fire management and its impact on biodiversity, which we did not see in current plan, especially using Integrated Fire Management as a tool for the management of Fire Dependent ecosystems.

2.4.5.3 Revision of National Coastal Zone Management Plan

TIDE's Terrestrial manager attended the Coastal Zone Management Authority and Institute's virtual meeting held on 2nd October to revise the Integrated Coastal Zone Management Plan. At this meeting we looked at the section for the southern region and discussed the possibility of reviving the Coastal Advisory Council for the southern region before we moved into the revision of the document. All those who participated were interested in participating in the CAC. A date was set for another meeting, but it was postponed and is still pending. We are looking forward to commencing this process with the new government in place and possible new people at CZMA&I.

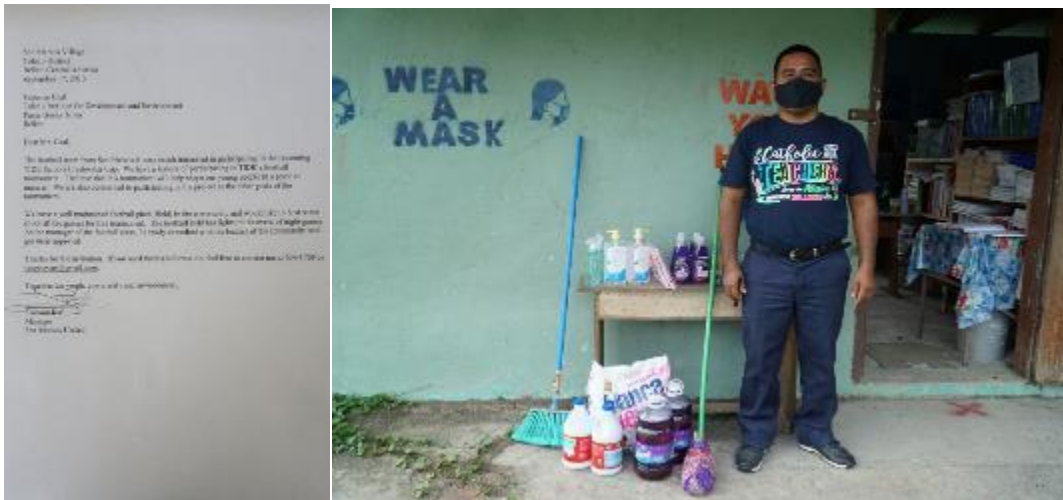
3.0. Public Use Planning, Recreation Management, Visitor Safety and Control

3.1 Visitors to PCNP

Keeping up with getting accurate data on visitation to PCNP continue to be a challenge due to the many access points into the protected area. From patrols conducted in the estuary system, park staff encountered some 20 vessels with some 34 guests conducting tourism related activities in the area such as fly fishing and manatee watching via Punta Gorda, Monkey river and Placencia. We know that there are more guests that are not captured in the data doing fly-fishing, due to us not being able to do daily water patrols to capture all fly-fishing taking place in the area. Most of the visitors currently accurately accounted for are those via TIDE Tours/Ridge to Reef Expeditions, amounting to 30 for 2020.

4.0. Community Development and Education

4.1 TIDE Freshwater Cup 2020



TIDE planned to promote the holistic development of 1,245 primary and secondary school students ages 8-17 from 19 communities in capacity building, focus group competitions and environmental activities in 2020. Additionally, with funds from UNICEF, TIDE had reengaged the adult sector of Society to participate in our TIDE Freshwater Cup event. A total of 320 adults from 16 teams submitted their letter of interest which included 12 male and 4 female teams to address Family Violence in their communities. All 19 school teams submitted their letter of interest and were involved in addressing environmental issues in their communities from removing litter, installing bins to making environmental signs in their respective communities. Tournament schedules were issued to each team and the events were set for March to May, 2020 for youth and adults. Unfortunately, COVID-19 changed the scheduled games and notice was sent to coaches and principals on the cancellation of the tournament for 2020. Nevertheless, all 19 schools were provided with COVID-19 cleaning supplies to continue fight the virus before it affected households. These packages were used at the schools when parents visit to collect learning packages for their children.

4.2 Reef Week



Another engagement for the 19 institutions was the annual Reef Week Events. Schools were sensitized on the importance of the coral reef and all participated in a poster and book competition. The posters and books illustrated their knowledge of the reef and highlighted their major importance to biodiversity and livelihoods. Top posters were from St. Peter Claver RC, St. Benedict RC and Indian Creek RC. School. Toledo Community College and Julian Cho Technical High School both submitted well put together books with illustrations on the significance of the reef. Students from the said schools were awarded with boxes of stationaries that were shared among participants.

The signature Reef Week Fair was scheduled in Placencia Village but due to the number of COVID-19 cases within the area, TIDE was not represented.



Posters submitted by St. Benedict RC/ St. Peter Claver RC and 1st Place Book entry by Julian Cho Technical High School

4.3 Rising TIDE Talk Show

With COVID-19 in our midst, TIDE's outreach activities were shifted to our Social Media Live event called the Rising TIDE Talk-show and regular posts on TIDE's Facebook page. There was a total of 103 posts made on TIDE's page in 2020 which focused on environmental messages, invitations to activities and live shows for continuous communication with stakeholders. From this, there were a total of 10 Live events highlighting Reef Week, Fire Management, Watersheds, Freshwater Cup and other topics. The live events had key messages on COVID-19 and addressing environmental issues in communities of viewers. It was a year of trials and purchasing gadgets to meet the clarity of the live event for audiences of various ages, and we will continue to invest in and improve this method of communication in 2021.



Host and Co-host of Show 2020

4.4 Summer Camp

Due to COVID-19, there were no camp activities in any of the Communities buffering our Protected Areas in 2020. TIDE's Education and Outreach Coordinator maintained communication with schools and communities throughout this time to maintain those relationships for future activities.

4.5 Support to Monkey River Watershed Association

TIDE's Terrestrial manager, and resident of Monkey River, who is currently serving as president of the Monkey River Watershed Association along with TIDE's Outreach Coordinator, continued with their support to this group by participating in group meetings, project implementation and development etc. As president for 2020, we completed the implementation of our first project entitled "Developing a Road Map to restore the functionality of the watershed so it can become the conveyor of sediments, nutrients and clean water into the Port Honduras Marine Reserve and the coastline associated with the watershed". Currently we are seeking funding for the implementation of the Road Map that seeks to address the activities impacting the watershed functions, that include sediment transportation to the coastline that is impacting the communities of Monkey River and Punta Negra, where families are losing their properties to the sea. Activities from the Road Map are currently included in two larger proposals to World Bank, IDB, GCF etc. as national projects.

5.0. Natural Resource Management

5.1 Integrated Fire Management

Integrated Fire Management is a management tool use in the management of fire dependent ecosystems across the world and in the park's largest and fire dependent ecosystem - its pine savannas. It's a tool that brings together all stakeholders and incorporates local knowledge, science and technology to conduct safe fire operations.

5.1.1 Development of Prescribes Burn Plans

We developed and submitted prescribed burn plans for 5 units totaling approximately 3500 acres in PCNP. The purpose of these burns was mostly for ecological benefits such as fuel reduction to decrease incidents of wildfires, pine regeneration survival, biodiversity conservation, and preparing ground for seed fall. These were our first set of wet season burns mimicking that of a natural cause fire (lightening) late in the evening, so that we had the coolest fire intensity and calm fire behavior in order to get our desired fire effects that met our objectives. Fires were left to burn and with cooler temperature and high Relative Humidity the fires went out during the night. Preliminary results look positive but we will gather more information during the data collection at our Fire Effects monitoring plots in 2021.

5.1.2 Conduct Prescribed Burns

Prescribed burns for the 2020 fire season were done in February as part of the Fire Suppression training done with The Nature Conservancy and with assistance of UB/ERI student group. Five Units in the concession held by Thomas Gomez and Sons, covering approximately 4,000 acres, were burnt to meet various objectives. The implementation of the burns was led by trained Burn Bosses from SBFWG Group members trained in 2014 and 2017. Within PCNP, our prescribed burns for 2020 were carried out in December, due to analysis of data gathered from our plots that show that we need to burn under wetter and cooler condition to meet our priority objective to restore the pine stands to an uneven age structure. Wet season burns mimic natural cause fires, by mimicking a lightning strike late in the evening and then leaving it to burn during the night. When the weather reaches its dew point, it closes the combustion window, and the fire therefore goes out. This approach seemed to work well for our year using this method, and provided the science and data collected from the pine plots continues to show that this is the best method – we will continue prescribed burns in this manner in future.





5.1.3 Wildfire suppression and Use

Between April 26th to 29th, park staff supported wildfire suppression efforts in the Toledo District by first attending a meeting with Forest, Fire, Agriculture and Police departments, as well as the BDF, TAA and MLA on the 26th to plan for addressing the fires across the district. The team also assisted with suppression efforts at Ground Fire in Hopeville, fires in western Toledo, and in the Deep River Forest Reserve in the Wood Stop concession. Park staff also monitored a wildfire in the park's wetlands west of Monkey River that burnt most of the wetlands along the coast between Monkey River and Punta Negra in May. This fire we believe was started by hunters accessing the area from the Monkey River.

5.1.4 Fire Effects Monitoring

PSP data collection focusing on pine and palmetto

With Assistance from a UB student Group and Terrestrial Ecologist Fanny Tricone, we did data collection at the 14 Permanent Sample Plots set up under the Darwin project focusing on fire effects on Pine and Palmetto. Data is showing that we need to burn under wetter conditions if we want to improve the pine stocks in the park, thus the need for us to change the burn schedule to wetter months and after fruiting trees that are food source for wildlife have completed their crop for the year so as not to affect wildlife food source. At this time, conditions are also more favorable for pine seedlings survival especially those in the more open grassland areas.

University of Florida student study:

Managing fire for biodiversity and sustainable resources is a critical focus of TIDE's fire management program. The savannas in Payne's Creek National Park are essential habitat for the yellow-headed parrot, which nests in mature Caribbean pine trees. Fires in the savanna need proper management so enough pine seedlings can survive and become mature nest trees for the parrots. With strong support from TIDE's staff, Dr. Jennifer Fill and Dr. Raelene Crandall from the University of Florida (UF) have been researching how fires affect the growth and survival of pine seedlings, as well as the grasses that grow alongside them.



Photo 1. TIDE rangers and University of Florida researchers search for surviving Caribbean pine seedlings. Pine seedlings were measured, mapped, and tagged in areas of PCNP. TIDE rangers lit experimental fires in the wet season and the early dry season to see if fires at different times of year are better for pine seedling survival.

TIDE has facilitated several well-organized visits by the researchers to collect data. Drs. Fill and Crandall began their study in 2019, during which they tagged, mapped, and measured individual pine seedlings and two species of grasses in PCNP's savannas. TIDE's skilled rangers implemented two experimental prescribed fires, one in October 2019 and another in March 2020, in the areas with the plants (Photo 1). The researchers returned in January 2020 to count and measure surviving pine seedlings and grasses. Although the pandemic prevented a visit during Fall 2020, TIDE's well-qualified rangers collected additional data for the project in September 2020, and the TIDE staff ensured that the data were relayed to the university researchers.

Preliminary results suggest that how often fires occur and their season affect pine but not grass survival. Areas with less frequent fire (that is, not every year) allow more pine seedlings to survive. The time of year that fires burn might also affect pine survival with wet season fires making it more likely that some pine seedlings will not burn, or experience less intense fire, and thus survive (Photo 2). Grasses are likely to survive fire and regrow from underground roots no matter how often and when during the year they are burned (Photo 3). Data collection and analysis continues and both data and results will be shared with TIDE to bolster the effectiveness of their fire management efforts.



Photo 2. One of TIDE's rangers poses with a large Caribbean pine seedling that survived a fire in the wet season. The large size of the pine seedling, lower fire intensity near the shrubs, and lower grass competition also likely increased the chances of survival for this young pine.



Photo 3. Grasses in PCNP tend to survive and regrow very quickly after fires. This tagged grass individual was burned in October 2019. Here it is being re-measured in January 2020, just 3 months later.

5.1.5 Basic Fire Management and Fire Effects Monitoring Training

The team conducted Basic Fire Management and Fire Effects Monitoring Training for the Forest Department and other partners' staff in the Mountain Pine Ridge Forest Reserve between January 21st to 24th. A total of 25 participants from FD, the Fire Department, Bull Run, Pine Lumber Company and several Resorts in the area attended. The training includes both classroom and field practical sessions with an aim to improvement fire management in the area.

5.1.6 Fire Awareness

TIDE's Protected Areas Manager appeared on Channel 5 Open Your Eyes Morning Show with The Fire Management Liaison officer at the Forest Department in January and again on National Radio and Television in December (LOVE FM/TV) to share information on the importance of managing our fires, especially targeting farmers who use fire as a tool for clearing land for farming. The messages we send inform people on safe fire practices and the laws pertaining to the agricultural fires.

6.0. Research and Monitoring

6.1 Yellow-headed Parrot Nest Monitoring

The 2020 nesting season started in January with the replacement of damaged nest boxes and installation of new boxes (replaced 7, installed 5 new), followed by subsequent monitoring up until the end of June. Some 27 of our nest boxes were active this year with a total of 69 eggs laid, of which 53 hatched but only 36 of those survived to fledglings. This year we lost 2 nests to poaching (4 chicks) and 13 chicks/eggs were predated but overall it was a good season. When we found signs of poaching the chicks from within the immediate area and those at risk of poaching were extracted and taken to Belize Bird Rescue (BBR) for hand raising. These chicks will later return to park for release back into the wild. Some 18 chicks (9 DRFR/9 PCNP) were extracted and sent up to BBR. One of those chicks were hurt from attempted predation which was left blind in one eye and will not be able to return to the wild.



6.2 Participate in annual Christmas Bird Count for the Punta Gorda Circuit

Terrestrial Protected areas staff participated in the annual Christmas Bird Count for the Punta Gorda Circuit held on January 4th 2020 where a total of 134 species were recorded on the Rio Grande River the area the Ranger Team covered. That was 18 species less than the 2 previous years but include 2 new species for this area (Bare-crowned Antbird and white throated Thrush).

6.3 Yellow Headed Parrot Population Assessment (Roost Count)

With assistance from EPI students in the February we were able to do the nesting season count at 2 roost sites in PCNP. Site 1 had an estimated number of about 60 birds and site 2 the estimate is about 270 birds. Monitoring done during the non-breeding season at the same 2 sites shows an estimate of about 120 birds at site 1 and over 450 birds at site 2. These figures are showing an increase in the number of birds roosting at these sites (site 1- 50 birds/site 2- 270 birds) suggesting that the population in this area is increasing.

6.4 Sea turtle nest monitoring assisting Marine Research Team

Park staff were able to assist the Marine Research Team with conducting monitoring of marine turtle nests on the coastline beaches of PHMR from Punta Ycacos to Monkey River.



6.5 Avian Monitoring

This year at TIDE we started an avian monitoring program using the MOSI protocol for the monitoring of bird species within the two terrestrial protected areas we co-managed with the Forest Department. For 2020 we started with the implementation at TPPL with an aim to build the team competency, build team's capacity at bird handling, extraction from nets, identification, ageing and molting etc. and did one pulse of data collection in December for that site. The plan is to set up a site in PCNP to start data collection for the 2021 migration (Nov 2021-Mar 2022). Those involved in the bird monitoring program attended a workshop at the Toucan Ridge Ecology and Education Society (TREES) to further their monitoring skills in December, in preparation for bird bander certification which we hope team members will obtain in 2021.



7.0. Infrastructure Management

7.1 Maintenance of Park's infrastructure, solar system and grounds

The staff is responsible for the upkeep of the park's facilities making sure they are clean at all times. Park staff engage in the daily cleaning of the facilities, the minor repairs such as replacing broken screens, ensure that running water is available at all times by checking water lines for leakage on a regular basis and repair where needed and servicing of water pump. We also do the maintenance of the solar/wind hybrid system that supplies us with power for lighting, charging communications equipment and running our computer. Staff also engages in the cleaning of the grounds around all park's facilities that include the ranger station/visitors center, kitchen, lodge, storage room, toilet facility and water tower to protect them from fire damage in the event of a wild fire or during prescribed fire operations. During 2020 with assistance from local contractors from Punta Gorda we did some repairs on Ranger station, Bunk house and cabanas as well as repairs to storage shed, constructed a new stand for rain water catchment, and other small repairs.

8.0 Financial Report

**Toledo Institute for Development and Environment
Payne's Creek National Park Income Expenditure Report
January through December 2020**

Income	Total BZD
Grants	\$260,000.00
Other income	\$1,891.50
Total income	\$261,891.50
Expense	
Equipment	\$23,065.83
Buildings	\$16,319.58
Salaries/Wages & Benefits	\$132,255.42
Travel & Transportation	\$292.59
Cleaning & Sanitation	\$438.61
Insurance, Licensing & Permits	\$5,117.01
Postage & Delivery	\$70.00
Professional Fees	\$2,000.00
Public Awareness & Env. Ed.	\$3,296.95
Repairs and Maintenance	\$16,558.38
Supplies	\$6,505.11
Training	\$5,344.06
Telephone, Comm. & Internet	\$386.64
Bank Charges	\$2,256.01
Reserves & Parks Improvement	\$8,486.02
Net Working	\$142.56
Institutional Strengthening	\$35.00
Research & Monitoring	\$1,312.48
Surveillance, Patrol & Enforcement	\$29,000.05
Community Development	\$1,098.61
Total Expense	\$253,980.91
Net Ordinary Surplus	\$7,910.59
Net Income Surplus	\$7,910.59