



TIDE

ANNUAL REPORT 2019



LETTER FROM THE DIRECTOR



The Toledo Institute for Development and Environment (TIDE) continually aims at diversifying its funding sources in order to maintain the operation of its core programs. Though we have been fortunate to have commitment from a few donors over the years, we make a conscious effort to seek new funding opportunities. We are aware that it is critical for us to find innovative ways to generate a percentage of our income that could be used as co-financing of grants. This year, along with maintaining operations in all other programs, TIDE, with funding from the Oak Foundation through MAR Fund and Protected Areas Conservation Trust (PACT), focused on enhancing financial sustainability initiatives that begun in previous years.

TIDE fine-tuned its field experience packages and was in communication with university groups who had confirmed travel to Belize. The organization therefore, invested on expanding infrastructure and improving accommodation facilities at the TIDE Private Protected Lands (TPPL) and the Payne's Creek National Park (PCNP) in order to facilitate larger student groups and overnight stays. Two cabins were constructed on TPPL, along with a dining area and the house and property at Big Falls (Big Falls Retreat) were renovated and registered with the Belize Hotel Association. The organization invested heavily in enhancing the capacity of staff and other service providers from the community, for improved service delivery during field visits to the TIDE co-managed protected areas. We produced and aired a video on national television for the marketing of the Big Falls Retreat, improved the TIDE and TIDE Tours websites and carried out international marketing of the field experiences jointly with Ecology Project International. Towards the final quarter of the year, we had begun to see returns from these investments and bookings for 2020 had increased significantly so we are looking forward to a successful year.

Along with investments described above, TIDE facilitated a familiarization visit to the three protected areas for a diverse group of Belizeans living in various districts of Belize for a second year. This visit exposed visitors to the work of the organization, the beauty and value of the three protected areas in southern Belize and motivated them to contribute to the work of the organization.

Celia Mahung
Executive Director

VISION

Toledo's healthy ecosystems support biodiversity, communities and sustainable development.

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MISSION

To engage stakeholders in the sustainable management of natural resources within the Maya Mountain Marine Corridor of southern Belize for the benefit of all.



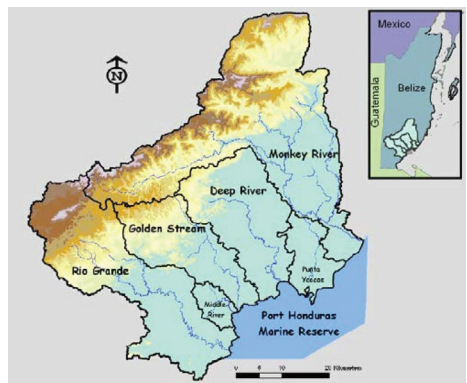
About TIDE

TIDE is safeguarding biodiversity and natural capital in one of the most pristine parts of the Mesoamerican Biodiversity Hotspot, the Maya Mountain Marine Corridor of southern Belize. Recognizing the interdependent nature of this landscape and its people, TIDE works with stakeholders to implement holistic landscape-level strategies to preserve the natural processes and habitats that sustain biodiversity and people.

Within the Maya Mountain Marine Corridor, TIDE manages three protected areas: Port Honduras Marine Reserve, Payne's Creek National Park, and the TIDE Private Protected Lands. These areas protect at least 39 species of international concern, including jaguars, yellow-headed parrots, howler monkeys, tapirs, West Indian manatees, hawksbill turtles, and great hammerhead sharks.

We are committed to building local capacity for sustainable natural resource management, and community participation is a strong feature in all four of our program areas:

- Natural Resource Management
- Research and Monitoring
- Environmental Education
- Sustainable Development



The Maya Mountain Marine Corridor is an 830,000-acre ridge-to-reef landscape that connects the Maya Mountains with the coastal waters and coral reefs of the Gulf of Honduras.

2019 Highlights

There were 1164 patrols within the three protected areas; PCNP conducted 243, PHMR conducted 677 and TPPL with 244 patrols.



Prescribed burns in Deep River Forest Reserve (DRFR) burning approximately 4000 acres to meet specific objectives. Provided basic fire management training to members of the Southern Belize Fire Working Group.

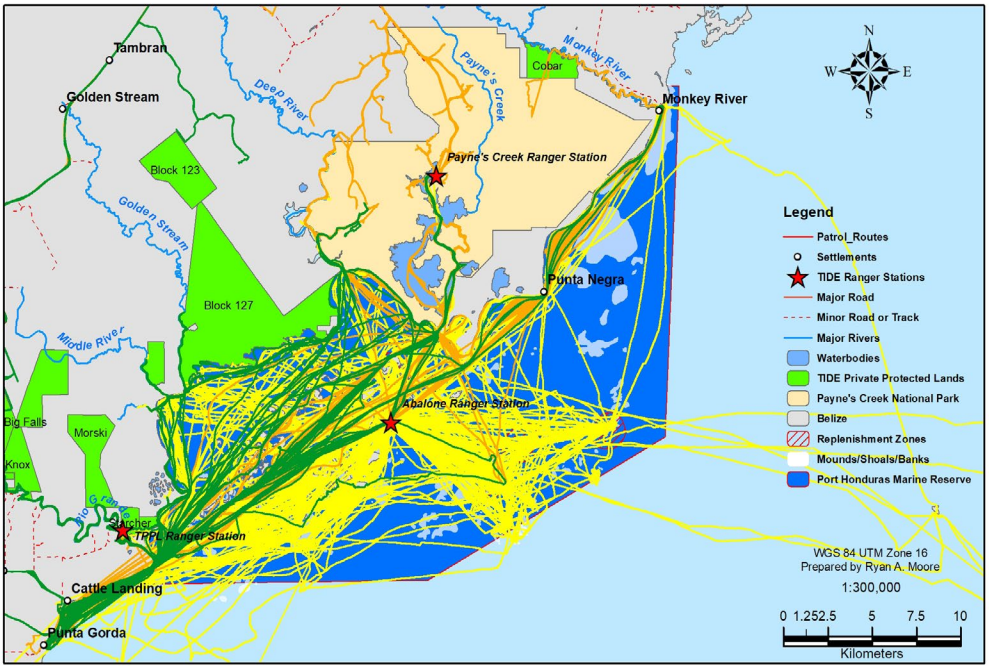
Compared to 2016 data, bookings has increased 100% with a total of \$41,668.21 which was reinvested in TIDE's and TIDE Tour operations and salaries.



19 schools from buffer communities around TIDE's protected areas for a total of 606 students who were directly involved in TIDE's Freshwater Cup program.

24 persons trained in marketing; 17 persons trained in customer service; 19 persons trained in small business management; 16 persons trained in cocoa husbandry; 7 women trained in sewing machine use, maintenance and repairs;





Resource Protection

TIDE co-manages the Port Honduras Marine Reserve (100,000 acres) with the Fisheries Department and the Payne's Creek National Park (38,000 acres) with the Forest Department. TIDE also manages over 20,000 acres of Private Protected Lands.

PHMR Enforcement

Number of Patrols by PA

PCNP: 243 Patrols
PHMR: 677 Patrols
TPPL: 244 Patrols

2019 was a successful year for TIDE's three protected areas. There were 1164 patrols within the three protected areas with few illegal activities. The patrols in PHMR yielded 33 infractions observed the results of which are as follows: 1 arrest with pending prosecution, 1 written warning issued, 12 verbal warnings issued and 16 gill nets and 10 fish traps were removed from within the reserve.

SMART was implemented in PHMR in 2014 and in PCNP and TPPL in 2018.

2019 was the first year in which all protected areas utilized the SMART (Spatial Monitoring and Reporting Tool) in over 95% of their patrols. This data is managed and stored in house with training sessions being conducted regularly to ensure that individuals are kept abreast on the latest advancements. They also learned protocols for pine/palmetto monitoring and Yellow Headed Parrot monitoring. Rangers also became certified bird handlers with hopes of one day soon establishing MOSI sites within the PAs. Our ongoing education activities focused on understanding the need for compliance of protected areas regulations within our education and outreach program.

Through the European Union project, "Restoring Fisheries in the Mesoamerican Barrier Reef System," TIDE has continued with Managed Access activities as well as laying the groundwork for a bright future in Managed Access nationally.

A fishing forum was held at Marian's Bayview Restaurant and was jointly for Area 4 and Area 5 fishers. This forum saw an increase over previous forums and was well attended. Topics of discussion included the new fisheries bill, recreational fishers, alternative lively hood projects and other issues affecting the Sapodilla Cayes Marine Reserve. To culminate the forum, a small football marathon was held at the Cattle landing Football Field. This activity was well received and saw for positive interactions amongst fisherfolks of different areas.

Managed Access

120 fishers utilize the resources provided by the Port Honduras Marine Reserve commercially.



2019 saw research being conducted by Catie Alves with the title: 'Searching for the win-win: Can community based fisheries management restore ecological function and improve the livelihoods of Belizean fishers?' Main takeaways included that a majority of fishers surveyed were 41-50 years old, and fishing is 81-100% source of income for most. Most fishers support Managed Access in the long run and think that it's benefitting their livelihoods, and is improving marine resources. These fishers believe that enforcement, and the perceived effectiveness, are big issues and that most fishers perceived that catch has not improved, nor has the time they're spending at sea decreased, under Managed Access. Overall, there is a need to improve empowerment of fisher communities.



Managed Access researcher Catie Alves.

PCNP Enforcement

The year 2019 was very busy for the staff of Payne's Creek National Park. Eight infractions were recorded in the park and surrounding areas (of the ten recorded in SMART two were in areas outside of the park boundary). Infractions included two forest fires, poaching of yellow headed parrot chicks from nests, and tracks in areas away from tourism activities.

Fire Management

In PCNP there were four wildfires started by hunters accessing the area via Deep River and Monkey River. These hunters were burning grassland on the eastern banks of Deep River, and burnt approximately 2500 acres of pine savannah and 550 acres of the wetlands in the eastern section of the park. PCNP park staff, with assistance from Thomas Gomez and Sons Lumber Limited and Rangers from TIDE Private Protected Lands, were able to contain the fires to limit their extent and damage.



Fire Management Training

The staff conducted prescribed burns in Deep River Forest Reserve (DRFR) burning approximately 4000 acres to meet specific objectives. Basic fire management training was provided for Southern Belize Fire Working Group members', which included staff from protected areas co-managed by TIDE, Ya'axche Conservation Trust, Belize Audubon Society, and the Belize Forest Department. The team also led training for 16 of The Nature Conservancy's U.S.A based fire fighters, which focused on fire suppression which enabled the participants to advance their capacity and move up in the fire management. Park staff also provided Basic Fire training via the Key Biodiversity Areas project for community residents from the Belize River Valley Area, and at Monkey Bay Wildlife Sanctuary, where the training also included some fire effects monitoring training. These trainings built capacity in other parts of the country.



YHP Monitoring

A total of 37 active nests were found within PCNP & DRFR. A total of 17 chicks were extracted for the 2019 season from PCNP & DRFR. High poaching risk, or overcrowding in nests (nests with more than two chicks) were reasons for extraction, and done with the recommendation and approval of TIDE's Terrestrial Manager. All chicks were taken to Belize Bird Rescue (BBR) for captive rearing.

Predation was prevalent in PCNP and DRFR, being identified by evidence of feathers and other remnants, and accounted for nest failure in nine nests. Predators of the YHP include owls, hawks, falcons, snakes and iguanas, all of which have been noted in the areas. Abandonment was also recorded in four instances. Only three incidents of poaching were reported in the area this year. However, the nests that were targeted were much deeper into PCNP that previously noted, which gives cause for concern. In one particular instance on May 28th, the BBC field team encountered the poachers in the act of stealing a chick, after having torn down the nest box. The chick was saved, although the poachers managed to flee the scene.

Camera Trapping

Biodiversity monitoring using camera traps continued in 2019, completing the assessment of the first four camera trapping sites in the broadleaf forest of the park. Cameras were at these sites for 3 months and collected valuable data to assist us with establishing baseline for Jaguar and jaguar prey. Jaguars were captured on camera at all four of the sites assessed to date.





Sustainable Development

Power to Grow

24 persons from the above community groups trained in marketing;
17 persons trained in customer service;
19 persons trained in small business management;
16 persons trained in cocoa husbandry;
7 women trained in sewing machine use, maintenance and repairs;

TIDE was able to secure funding through a project “Power to Grow: The Innovation Challenge by La Red de Innovación e Impacto,” which provided tools, materials and supplies, and built the capacity of community groups who had creative self-developed business plans to enhance sustainable livelihoods and take pressures off farming incursions into the Maya Mountain and Columbia River Forest Reserves in Toledo, Belize. The enterprises actively involved in this project from the beginning were Adventures in the Last Corridor, San Isidro Farming Agroforestry Association, Xibe, United Hands, Hibiscus Art and Craft Cooperative and Toledo Ecotourism Association from Laguna, San Miguel and San Antonio. Throughout the project cycle there were six trainings offered to eight micro-enterprises. The training include Customer service, communication, marketing, agroforestry, small business management, sewing machine repairs and maintenance. A total of fifty persons were trained in these areas who have applied to improve the use of technology and management practices. The training achieved a total of 508 persons hours.

An eco-tourism community micro business group in Medina Bank village. This group received prior support from the Global Environment Facility (GEF) Small Grants Programme to reforest community riparian zones and improve agroforestry farms. After restoring these areas, the community have agreed, and launched a community business to use these areas for small-scale ecotourism activities that include agroforestry farm visits, cultural tours, caving and river tubing. Adventures in the last corridor started operation in May, 2018. They have since documented a little under 100 visitors and generated approximately \$ 1,500 in profits. Potential for future development is very high with the site located less than 1 hour from the cruise tourist port that can easily be added to the available tour package.

Is a small livestock rearing and agroforestry community business group in San Isidro. The group built and manages a chicken coop rearing poultry to earn startup capital within a substantial area of mixed agroforestry planting. SIFAA will start operation by planting 4,000 cacao saplings for their agroforestry business. Eventually, they will add farm tours and demonstrations for visitors to their farms.

Is a Mayan women's catering and craft business group in San Isidro village. It currently operates a small snack shop near the community primary school providing snacks to school children, farm workers and visitors -with group members preparing meals at home and selling them through the small snack shop. Xibe benefitted from training sessions funded by the project.

Is a largely Mestizo livestock rearing and agroforestry community business group in Trio, that obtained a sow(female pig) and constructed a small pig sty. Currently the group's activities involve rotational pig feeding using local feedstock and cleaning. This project aimed to fund the establishment of 10 acres of cacao trees for the group to start their agroforestry business. United Hands plans to establish farms including cacao bean that will be sold to exporters, but will also create hiking trails for farms tours and medicinal plants for tourists.

TIDE and United Hands Cooperative have been collaborating in project activities for over five years. They have been involved in the project from August to December 2018. In December of 2018 their leader was in an accident and died. He was a strong leader and his death had some negative impact on the group stability. He was the one that used his personal resource example vehicle to mobilize the group. His previous training in leadership, development and conflict resolution allowed him to keep the group together. The about scenario was some of the major contribution to the loss of the group to the project activities.

Adventures in the Last Corridor

San Isidro Farming Agroforestry Association (SIFAA)

Xibe

United Hands

Hibiscus Maya Art and Craft Cooperative

This cooperative is a 10-member women's group formally registered in 2014 that focuses on creating traditional Mayan clothing, Cuxtal (a traditional Maya bag), jewelry, and household items (bowls, cups, plates, etc.) made from natural materials. The cooperative established a craft center and restaurant in Santa Cruz Village, Toledo in 2014, but it was destroyed by fire in 2015. Currently, the women travel to various tourist destinations in southern Belize to sell their crafts. Their annual income with the craft center was around \$3,000 on average. Their current income without the craft center averages \$2,000/year due to transportation and food costs to get to the various tourist destinations. The cooperative gets about 200 visitors per year mainly from the USA and Canada as well as a few backpackers from Europe.



Toledo Ecotourism Association (TEA)

The TEA is made up of 10 communities in Toledo that focus on providing cultural experiences to visitors. Each TEA is made up of about 10-20 members. Once a visitor books an experience with the TEA, the TEA rotates the hosting to ensure each village benefits from the program. Visitors can participate in the daily lives of the Mayas including farming, fishing, traditional cuisine, music etc. This project worked with three of the 10 groups including TEA in San Antonio, San Miguel and Laguna villages as these villages are the most active members of the TEA. The project planned to include 3 individuals from each of the three groups in capacity building in marketing and customer service, small business management and communications.



Research and Monitoring

TIDE continued with bi-annual fisheries independent monitoring efforts for commercial benthic fish species (conch, lobster and sea cucumber) since 2009 and throughout 2019.

Results of underwater monitoring revealed that though species population vary between the years (some years are better than others) the overall trend has shown a constant decline in population for all commercial benthic species between 2013 and 2017. Conch densities have begun increasing to an average of 72 conch per hectare in 2019 with some sites recording numbers as high as 94 conch per hectare.

TIDE and other partners are collating data on conch lip-thickness as a proxy indicator of sexual maturity to recommend science-based policy amendments for conch harvesting. The decreasing trend in PHMR is similar to trends in other MPAs in Belize indicating that though fishers are complying with shell length legal size limits the conch fishery is still suffering from overfishing. This could be due to the harvesting of large juvenile conch. The goal of these network meetings is to formulate a case for change in policy for Belize from conch shell length to shell thickness to determine legal harvesting. This will enable large (legal size) juvenile to be protected and mature into adults capable of reproducing and replenishing the stock.

Conch



Lobster

Over the same period, lobster density is showing a similar trend with densities in 2019 recorded as 4 lobster/ha in the General Use Zone and 5/ha in the Replenishment Zone in February (at the closing of the season) and 5/ha in the General Use Zone and 6/ha in the Replenishment Zone at the start of the open season in June. There has been fluctuations with some years seeing an increase in density, but then the population is shown to decrease again. There are many factors that can attribute to fluctuations in lobster density, including gender ratio, sea temperatures and fishing pressure, but continued trend of low population density is of concern with longer periods of lower density and less successful regeneration during times of increase. Lobster shades may also be limiting the number of lobsters seen at survey sites, which is discussed below. The 2019 results show that the population is mostly maintained, except for the population in the General Use Zone which fell to 4/ha during surveys in February.

TIDE's monitoring sites are in the traditional lobster habitats, but lobster shades are not monitored. We currently do not know the location of these shades. The Belize Fisheries Department (BFD) conducted a lobster shade study for Belize. In the very least, they were able to gather a list of number of shades in each protected area, but this has not been completed by BFD as to date. When TIDE receive information on the location of these shades, then we can conduct lobster shade studies; habitat preference and/or mark and recapture studies.

Lobster fishers often record higher lobster catch from their shades so TIDE's scientists believe that there is a possibility that lobsters may be migrating from their natural habitats to the artificial shades for better protection. The migration of lobster could account for the decrease in sightings in the natural habitats where they are normally monitored. This theory obviously needs to be tested through a mark and recapture study that TIDE hopes to implement in 2021.

By the end of 2019, the sea cucumber population showed no signs of recovery despite the 2017 moratorium. This may be due to a low chance of encountering mates in all zones due to low population levels, poor juvenile recruitment and/or illegal fishing. Continuous monitoring and data analysis of the sites are ongoing. The data gathered gartered will be used as a means of quantifying and predicting the current and future population levels of these important fishery species. With continued collaboration with compliant managed access fishers, stakeholders, continued enforcement presence and continuation of the moratorium the seas cucumber and population trends over time are expected to rise.

Data for conch and lobster will be made available for national science-based fisheries management plans that have yet to be developed by the Belize Fisheries Department. That activity is ongoing with several planning meetings between MPA networks completed. TIDE expect that within the next year, these fisheries management plan will be developed using the Adaptive Management Framework (AMF) approach.

It is clear from the fishermen forums that fishers are concerned about the decrease in conch populations and are willing to take the necessary steps to protect the species even if it means a moratorium for a period of time. TIDE has approached fisheries department with this recommendation but the department feels it was not yet feasible. They urged us to conduct more national research to find similar trends and revisit the moratorium recommendations once the data has been collected.





Education and Outreach



Engagement and development of communities buffering TIDE's protected areas is vital in ensuring the longterm sustainability of TIDE's work. With children and youth being the most influential group in terms of behavioral change, much of TIDE's Education and Outreach program focuses on youth programs. TIDE also engages communities through development programs, livelihood projects, and capacity building, which seek to reduce the pressure on natural resources from local communities.

The 2019 TIDE Freshwater Cup (FWC) program was funded by the International Community Foundation & Protected Areas Conservation Trust, and activities focused around the theme "Beat Plastic Pollution". The program engaged 19 schools from buffer communities around TIDE's protected areas. Each of these communities have plastics introduced into the local environment via vehicles traveling along highways or by poor waste disposal in the villages. Many of the schools involved are situated along river ways and coastal communities that also contribute to the issue of marine debris and can be key actors to a unified solution.

TIDE Freshwater Cup

TIDE promotes primary and secondary schools in the holistic development of children ages 8 -17 from 19 institutions. For this program a total of 606 students were directly involved in the soccer tournament.

School children are contributing to a cleaner, brighter future. To properly understand the issue of plastic pollution, TIDE partnered with JICA and OCEANA to sensitize all 19 schools on plastics, marine litter, and their impacts on the environment. Schools designed and implemented their own projects that tackled this theme. For schools to be eligible to take part in the football competition, completion of these projects was essential.

2019 Freshwater Cup female champions St. Peter Claver School



TIDE continues to engage communities buffering its three protected areas in Summer Camp activities, and in 2019 the camp took place in Punta Gorda, Big Falls, Medina Bank and Monkey River with a total of 105 young stakeholders between the ages of 10 and 13. Medina Bank and Monkey River are both important buffer communities of PCNP, and a total of 59 children took part from those two communities. Volunteer organizers from JICA and POD Volunteer (through TIDE Tours) helped TIDE's Education & Outreach Coordinator to ensure the camp was a success. This year's camp focused on the theme, "Be the Solution to Plastic Pollution". During each camp, participants were taught the effects of plastics on marine animals and their long-term impacts on the environment. Activities engaged participants in reducing, recycling, reusing, removing and refusing single use plastics, to create healthy marine and terrestrial ecosystems. The youth were engaged in fun indoor and outdoor activities that built their self-esteem and knowledge. The participants also had the opportunity to share fun games, and used their creativity to construct and showcase their views on plastic pollution through art pieces. Participants pledged to be keepers and protectors of their environment through plastic free snacks, and will extend this to their families and friends.

Summer Camp



Financial Sustainability

Local competition from marine tour operators has increased in recent years, with two new specialised marine tour operators in the Punta Gorda area that are undoubtedly reducing income to TIDE Tours.

In 2019 TIDE welcomed new partners through its educational program. POD Sea Cadets was a group that took part in a range of tour and activities that included research and monitoring. EPI is a new partner that focuses on research programs only, where participants get hands on with marine research, which has positive impacts for TIDE's financial sustainability as well as the marine research and monitoring program.

The capacity of TIDE and TIDE Tours staff improved to better deliver service within TIDE managed protected areas. Marketing of these sites are in progress. Compared to 2017, TIDE Tours met its 10% profit target in subsequent years. This trend is expected to continue. The marketing of the Big Falls house on Airbnb came into full effect until April of 2019; compare to 2016 data, the booking has increase 100%. A total \$41,668.21 was reinvested in TIDE's and TIDE Tour operations and salaries (\$17,417.14 and \$24,251.07) respectively. These funds came from TIDE Tours overall operation. Income from Big Falls house was minimal before project investment. With the investment made, income to TIDE Tours surpassed its 3% target for new markets in 2019. While these investments have contributed to increase income, greater impacts are expected in the future.



Governance

TIDE has an active board of directors consisting of seven members. Two of the members are elected by the co-managed parks, Port Honduras Marine Reserve and Payne's Creek National Park advisory councils every two years.

Aside from reviewing and approving annual budgets and work plans along with audit, and financial reports, the board focused on updating the organization's policy and procedures manual. The section on financial processes and procedures was redone to reflect online banking that TIDE is fully utilizing. The manual also incorporated FIU compliance requirements to guide the organization in meeting NGO standards.

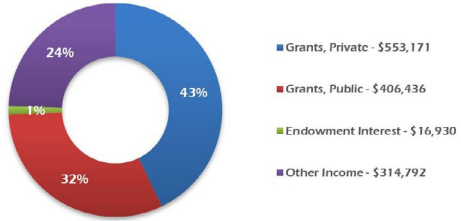


Finances

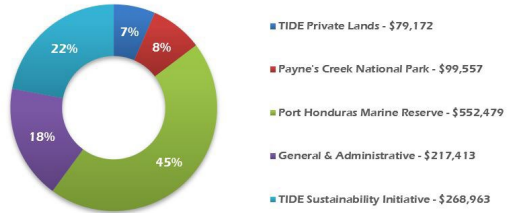
The total 2019 income was US\$ \$1,291,330 and came from private grants (43%), public grants (31%), endowment interest (1%), and other income (24%). We are extremely grateful for the support of all our 2019 main funders, including the European Union, Protected Areas Conservation Trust, Government of Belize through the Tropical Forest Conservation Agreement, Mass Audubon, Oak Foundation, MAR FUND, Overbrook Foundation, World Environment Center, Summit Foundation, and WWF.

2019 expenses were US\$ 1,216,963 comprised of Port Honduras Marine Reserve (45%), Payne's Creek National Park (8%), TIDE Private Protected Lands (7%), TIDE Sustainability Initiative (22%) and General & Administrative at (18%).

2019
Income
(USD)



2019
Expense
(USD)





TIDE

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Toledo Institute for Development and Environment
1 Mile San Antonio Road
Punta Gorda
Toledo District
Belize, Central America
Tel: 501-722-2274/2431
Fax: 501-722-2655
<http://tidebelize.org>