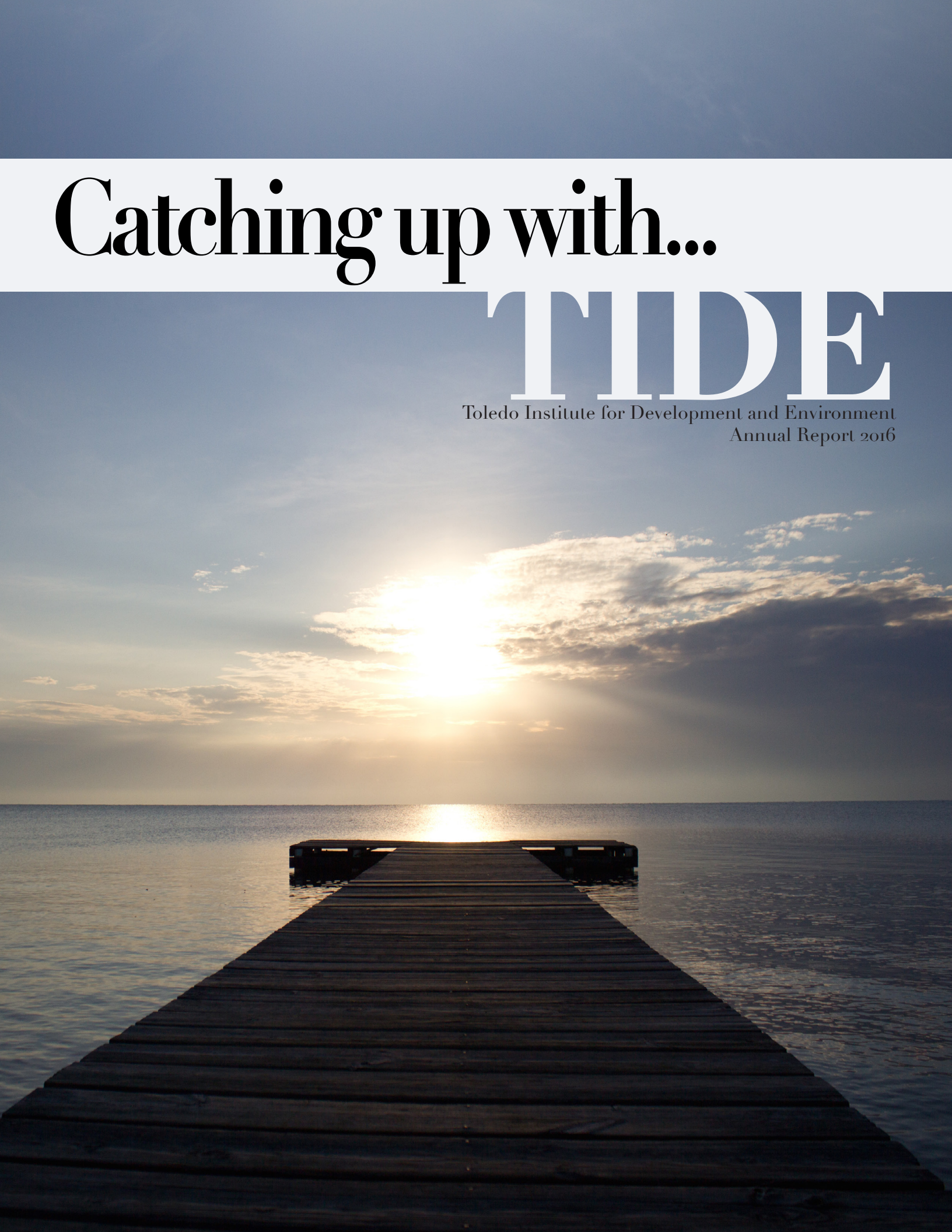


# Catching up with...

# MINDIE

Toledo Institute for Development and Environment  
Annual Report 2016





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## *Mission:*

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

## *Vision:*

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



# 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
- Sustainable Development
- Research and Monitoring
- Environmental Education

# Highlights



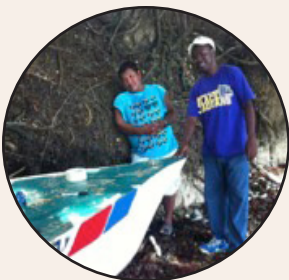
Since early 2015, the number of fires within Payne's Creek National Park has greatly decreased. In 2016, there were no wildfires within PCNP, and only one well contained wildfire in Deep River Forest Reserve. This demonstrates the success of our fire training initiatives.



In the months August through October, TIDE teamed up with the Darwin Initiative to map palmetto plots and survey palmetto harvesters. This project aims to support five communities surround Payne's Creek National Park to promote sustainable harvests from the ecologically valuable pine savannah.



TIDE teamed up with the Australian High Commission and the former climate change director of the Great Barrier Reef Marine Park Authority to pilot the Reef Guardian Program in Belize. This educational program is aimed to raise awareness and improve standards for the Mesoamerican Barrier Reef. v



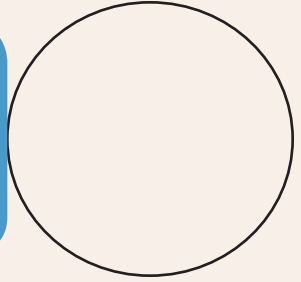
As Manages Access is expanding throughout the country, a new color coding system is being put in place in order to further Belize's goal of sustainable fishing. Belize's sea has been divided into nine sections; each fisher is permitted to fish within two sections. Color coded stripes allows TIDE rangers and coast guardsmen to easily identify legality of fishing in all regions.



After two years of research, TIDE's science team has finally completed the intensive study on Queen Conch. This project demonstrated that lip-thickness is a better indicator for maturity of conch. With this information, TIDE hopes to share their research with Belize Fisheries Department in hopes to create new law restrictions on conch.

# from 2016

In the fall of 2016, our rangers participated in a creative writing workshop taught by an ArtCorp representative. The lessons from the four-part workshop will help our rangers explain to various audiences the amazing experiences they have each day.



A very exciting year for our scholarship program this year! In 2016, 10 students who were enrolled in the TIDE scholarship program graduated high school. Another 40 students enrolled in the program continued on to successfully complete their level and move forward in school.



With the assistance of the Department of Youth Services, TIDE successfully held three skills training courses in hospitality, introduction to professional bartending as well as food and beverage preparation for at risk youths. In total over 50 students from Punta Gorda and surrounding communities took part in the three training.



Five buffer community groups surrounding PCNP have been receiving business management training to promote sustainable economies with less reliance on palmetto tree harvest. TIDE has partnered with Belize Forest Department, University of Edinburg and IIED in order to provide capacity training to each community.



This year, Ridge to Reef has seen a large increase in sales revenue due to two new partnerships with Discovery Corps and POD Volunteer, as well as new study abroad programs with Drake University and University of Alabama. This has contributed to nearly a 900% increase in sales revenue for the organization.



# Letter from the Director



# Resource Protection

## Protected Areas

2016 was an extremely successful year for the reserves managed by TIDE- Payne's Creek National Park, TIDE Private Protected Lands, and Port Honduras Marine Reserve. Over 1,000 patrols were conducted collectively through the three reserves. Our rangers were busy within each reserve to maintain security, aid with biodiversity trainings, as well as pitch in to assist with tourist groups. Within the reserves, there was little to no illegal activity occurring. In PHMR, only 1 arrest was successfully prosecuted, 4 verbal warnings were given and 14 gill nets were confiscated throughout the year. In Paynes Creek National Park and TIDE Private Protected Lands, no illegal activity was recorded. There was belief that members from neighboring community may be entering Payne's Creek National Park, which was further investigated in the year 2017.

Along with the favorable reports within the reserves, our rangers were also busy participating in a number of trainings throughout the year. Many TIDE Rangers have obtained their dive certification, some as high as PADI Advanced Rescue Divers, which is intended to help them detect illegal activity within PHMR and provided assistance underwater when needed. Along with diving courses, majority of the ranger team participated in a creative writing workshop. In this workshop, the rangers completed activities that furthered their storytelling abilities in hopes of raising awareness of their activities on a daily basis and drawing in an audience for extraordinary events.

# Palmetto

Palmetto (*Acoelorrhaphe wrightii*) is a vital species that grows in Belize savannas. This tree is not only crucial to the ecosystem as they provide food for the endangered yellow-headed parrot, but also because the berry grown by the palmetto trees is an increasingly important economic crop. Many communities surrounding Payne's Creek National Park have begun to export the berries in order to extract healthy chemicals from within. Therefore, TIDE has teamed up with the University of Edinburgh, Belize Forest Department, and the International Institute for Environment and Development (IIED) in order to increase community awareness of harvesters as well as increase participation in savanna fire management. Overall, TIDE hopes to encourage community participants to begin harvesting palmetto berries in a more sustainable manner in order to promote the longevity of yellow-headed parrots while using safe wildfire management practices.



# Fire Management

It has been an outstanding year for our fire management program. In 2016, there have been five prescribed burns that have taken place just outside of the perimeter of Payne's Creek National Park. Overall the prescribed burns covered roughly 5,000 acres. This program has aided numerous communities in learning to practice safe fire management. Fire is a critical part of the reproductive cycle of the pine savanna in southern Belize, as it promotes regeneration. Therefore, it is crucial in the life cycle, but in the past has led to escaped, dangerous fires. TIDE is proud to report that this year there have been no escaped fires in Payne's Creek, and only one escaped fire in neighboring Deep River Forest Reserve. This is a clear indication on the success of this program. Local communities are now more aware of the impact that fire could have on their livelihood and other crops when not used in a controlled setting.



# Managed Access

After the success of the pilot Managed Access program in Port Honduras Marine Reserve, TIDE has been busy helping expand the program on a national basis. Our Managed Access liaison has been busy working with fisheries department to spread news and aid on the expansion. This has included numerous meetings throughout the year, where TIDE has teamed up with Belize Fisheries Department in order to share the news of the success of the program as well as the continued benefits received from sustainable fishing. This included four Manage Access forums held in Punta Gorda, in which important topics were discussed- such as science, policy, and changes to the program. One of the largest changes experienced from the expansion has been the color-coding areas throughout the country. There are currently nine areas of Belize national waters, of which fishers have been able to choose to fish in two of the areas between areas one and eight- all fishers are permitted to fish in area nine, which is deep seas. This is a great representation on how successful the Managed Access program is continuing, which is largely due to the diligent work of the TIDE staff in piloting the program.

Along with the spread of Managed Access on a national level, TIDE has had multiple international groups visit this year in order to raise attention of the success of the program. This year visitors from Indonesia, Jamaica, St. Kitts and various other countries in the Caribbean joined TIDE and the Belize Fisheries Department to learn all about the sustainable fishing occurring in southern Belize. This was a wonderful opportunity for TIDE to raise awareness on the hard work our rangers, science and managed access team do in order to ensure the longevity of our fishery.

In June, two visitors from the Trinacional Golfo de Honduras (TRIGOH) lead a youth Managed Access fisher workshop and training. The goal of this training was to encourage collaboration and discussion amongst young fishers from the tri-national program. Young fishermen from Belize, Guatemala, and Honduras attended this workshop and discussed the importance of the Bay of Honduras. Not only did the group discuss what this area meant to them, but also discussed the negative impacts on the area, while highlighting the importance of sea grass, mangroves and coral reef ecosystem in hopes of demonstrating how important it is to protect all areas.





# Sustainable Development

## LEAP Training and Climate Change Adaptation

TIDE has been working closely with the coastal community of Monkey River to address climate change adaptation. Monkey River is a prime example of how climate change and sea level rise is affecting coastal communities. Over the past 10 years, this village has seen massive erosion of up to 200 feet in some areas, families have been displaced and prime properties have been lost leading to negative economic and social impacts. TIDE, with technical and financial assistance from The Nature Conservancy and Gulf and Caribbean Fisheries Institute respectively, has developed a Local Early Adaption Plan (LEAP) through highly participatory workshops for the community of Monkey River. We are happy to report that the community has taken ownership of this plan and are making the first steps in its implementation albeit the existential threat on the community of Monkey River.

# Fish Festival

Another successful year for TIDE's annual Fish Festival. This year there were roughly 2,500 attendees on the compound during our weekend of fun and awareness. The theme of this year's event was "Our planet at the crossroads: Be the change." The weekend was packed with a cocktail night on Friday, cycling race and youth conservation competition on Saturday, and the all day fair on Sunday. It was a weekend full of entertainment, and a wonderful way for TIDE to raise awareness for the work done in promoting conservation and sustainability.

## Checking in with Negra Bar and Grill

It took a number of years to convince donors that in order for women and children to continue residing in the beautiful coastal fishing community of Punta Negra, where they own valuable land, they needed to supplement their livelihood. With funding from MAR Fund and the German Cooperation, TIDE built a small restaurant, equipped it so it could be operational and hired a mentor to work with four women on the management of the business. In a conversation with the executive director, one of the women said, 'The restaurant has helped us to use our cooking skills, and increase our income by far.' Guests from all over, including tourist operations Sabal Beach, TIDE Tours, and Garbutt's Marine, come to the restaurant for the delicious Belizean food. The main dish is stew chicken or fish cooked in a variety of ways, accompanied with rice and beans, salad and fried plantains. In this restaurant, you do not want to miss the homemade desserts such as coconut fudge, banana cake, coconut pie, and bread pudding. Not only is their restaurant known for its incredible food, but also recognized for the sustainable practices in which they acquire their fish. The women of the Negra Grill and Tavern, use kayaks to catch their own fish using hand lines within Port Honduras Marine Reserve. Not only is the practice more economically responsible, as they are saving money by not purchasing fish or gas, but also more sustainable because there is less pollution in the water and the women only take from the reserve what is needed each day in the restaurant. Not only through example of this practice do the women promote sustainable fishing, but also Paula and Suzette are two of the most influential fishers in our Managed Access group. Ms. Suzette has said, "if we did not have the restaurant, we would certainly do much more fishing to make an income." However due to the success of the restaurant, the women have been able to decrease their amount of fishing greatly, and take some of the stress off of the fishery. There four women are demonstrating how hard work and dedication can lead to successful alternative and sustainable livelihoods, and ensure the longevity of PHMR.



# Darwin Community Business Training

With funding from the Darwin Initiative, a team made up of TIDE employees and partners from the UK and United States are working on a number of projects to aid and support local communities in using the natural resources available to them. Training in small business management was completed for 28 people from five different neighboring communities. Through constant communication and follow up, these individuals were able to identify computer skills as a necessary training to enhance and complement the small business training. An additional training course was designed and completed over 3 days in order to build the capacity of the participants to use computers, develop business plans and maintain financial records. Further training will be completed in 2017 with these groups to build on their skills and knowledge.

# Community Researchers

Our community researcher program has continued to change the lives of many locals in southern Belize. Since 2011, TIDE has led a group of five community members from various stakeholder communities through its internationally acclaimed Community Researcher training program to prepare them for careers in conservation and resource management. The training program is comprised of scuba training and scientific fieldwork, and is taught over three different levels of training. In March of this year, TIDE successfully trained three existing community researchers in their Advanced Open Water Diver certification and level two of research methods training. This program continues to benefit the members involved by teaching them crucial knowledge within the field of conservation and resource management.





# Research and Monitoring

## Queen Conch

After two years of research TIDE's science and research team has completed the Queen conch (*Lobatus gigas*) project, and what was discovered could influence populations drastically. This large gastropod is an important commercial species throughout Belize. What once was a prevalent species with high population densities, has now demonstrated drastic population decreases. Since 2009, TIDE has been monitoring population sizes throughout PHMR to determine whether the species is being fished sustainably. Recently population trends have been seen to drop drastically, even though fishers within the region are fishing legally and following regulations. In 2016, conch densities were seen to decrease in all zones in PHMR, and now are even more critically low than previous years. This has led our research team to begin questioning whether shell length is the best indicator for maturity of the species. After the study was completed in October of 2016, results indicate that in fact lip thickness is the best determinant of maturity of the species. As we move into the new year, TIDE aims to work with the Belize Fisheries Department to change the regulation of Queen conch for fishers to begin measuring lip thickness instead of shell length to determine the maturity of the species

# Sea Cucumber

Since 2011, sea cucumber has increasingly become an important commercial species within Belize. However, this group of species is also vital to coral reef health as they filter harmful bacteria out of the water to increase water quality. Therefore in order to ensure the preservation of the species found within PHMR, TIDE continues to monitor sea cucumber. In 2016, some interesting trends were observed within all zones of PHMR that both demonstrated positive and negative population trends. Within general use zones, population densities showed signs of population recover after the drastic drop in population sizes in 2015. However, the replenishment zones did not have as much success in 2016. Data shows that at the start of closed season population densities were 35 per hectare, but at the end only 12.5 individuals per hectare by the end of closed season-the lowest since records began. This clearly demonstrates something is not right with our sea cucumber. This could be due to a number of issues. Either the individuals are having a problem with encountering a mate due to overfishing during open season or illegal fishing occurring during closed season. No matter the issue, TIDE hopes to get down to the bottom of the issue during 2017.



# Lobster

Lobster monitoring in 2016 has indicated that populations may be in trouble within all zones of PHMR. This year, the abundance of individuals decreased in all zones and the lowest number of individuals within general use zones was recorded. What does this mean? Well it could mean that populations are under more pressure and could be less stable than we thought between 2013 and 2015. In order to ensure the sustainability of this important commercial species, TIDE will be looking into more monitoring of lobster within all zones. While populations are still in better shape than conch and sea cucumber, the trends demonstrated in 2016 have caused concern within our fishery. Moving into 2017, TIDE's research team hopes to get down to the bottom of this problem by increasing the size of replenishment zones, conducting studies to determine the efficiency of shades in replenishment zones, and strive to increase the number of night patrols. These changes will help TIDE gain a better understanding of population trends of lobster within PHMR, and maintain a sustainability of the fishery.





# Education and Outreach

## Youth Summer Camp

Celebrating our 10th annual environmental camp, TIDE hosted seven children's camps across the Toledo district (Punta Gorda, Bella Vista, Bladen, Big Falls, Punta Negra, Monkey River and Trio). The theme of this year's summer camp was "Be the change," and focused on ways that the children could decrease their negative impacts on the environment. Overall, 170 children attended between the ages of 8 and 13. This successful summer camp could not have been achieved without the gracious help from our 22 volunteers who lead each day of camp. They taught the children lessons on topics including climate change, sustainability, and fresh water resources. Helping to reiterate the lessons from the classroom, the campers went on field trips to various local sustainable farms. During these farm visits, the children learned about the importance of a balanced ecosystem and why sustainability is vital to our world today. We hope the children enjoyed their time in summer camp, and learned quite a bit on the importance of their impact on the environment. A large thank you to UNICEF- the major sponsor of our kids camp. We look forward to next year's summer camp!



Toledo Institute for Development and Environment



# Ridge to Reef

In an effort to raise more awareness for reef health, TIDE teamed up with the Australian High Commission and Dr. Paul Marshall- the former climate change director of the Great Barrier Reef Marine Park Authority- in spearheading the Reef Guardian education program. Did you know Belize is home to the second largest barrier reef system in the world? Therefore, one of TIDE's major efforts is to ensure the health and longevity of the reef. After the success of Australia's "Reef Guardian Schools" program, TIDE decided it would be a great way to promote reef health and piloted the "Reef Guardian Belize" program. The program was administered in three schools in Punta Gorda, with the goals of enhancing awareness and appreciation, as well as reducing impact on the Belize Barrier Reef System. Once completed, the idea was to create a program that could be repeated and conducted throughout the country. Through a series of lessons created by TIDE's Environmental Educator, and an ARTCorp representative, the Reef Guardian Program was created and successfully reached XX number of children. TIDE is hopeful this program will be as successful in other areas of the country, and will demonstrate to children the importance of protecting the reef and how their impact affects the health of the Belize Barrier Reef.

Not only were school children targeted in the Reef Guardian program, but another aspect of the program was to promote awareness in the farming community on the negative impacts the industry has on water quality in the reef. With the support of Mr. Mejia- the World Wildlife Fund representative- TIDE worked with the local Banana Growers Association to promote more sustainable practices. The banana industry in southern Belize is one of the largest agricultural products, and currently the Banana Growers Association is working towards a certification with the Rainforest Alliance. In order to achieve this certification, this group of farmers will need to reduce their environmental impacts drastically. Therefore through the Reef Guardian program, TIDE was able to work with the group to reduce their negative environmental impacts on water quality, soil erosion and water conservation.



# Scholarship Program

In 2001, TIDE began its annual scholarship program that provides materials and some tuition funds to local children in primary and high school. When the program first began, ten students were offered scholarships. Today, the program has greatly expanded to including forty students and ten high schools. Last year, ten of the students participating successfully passed and graduated from high school. Along with the graduates, the other forty students involved passed their respective grades to advance into the next level. TIDE offers both partial and full scholarships to all students. Each of these students live within communities TIDE is currently involved in through various community service projects (possibly give examples). This program is a wonderful way for TIDE to continue outreach and support for these important communities. However, we would not be able to continue this program if it were not for the generous donors. Currently under the German Cooperation KFW Project, 18 students who's parents work with managed access are fully sponsored, which means their school fees and books are completely funded. Through the support of gracious donors such as Mass Audubon and James Lord, 21 high school students are sponsored and received their books for the school year. In order for the students to fulfill their scholarships they must complete sixty hours of community service work, they must pass their classes, and they cannot receive more than twelve demerits during the school year. Through this scholarship program, TIDE is supporting students to be leaders within their community through hard work and dedication to improvements in their communities and lives through education.



# Goliath Grouper Outreach

This past December, TIDE's research assistant and communications intern joined forces to raise awareness for the IUCN Red List Critically Endangered species Goliath grouper. Currently, there are no regulations in place for this species that is on the brink of extinction. The mangroves found in southern Belize are one of only three nursery areas for the species, and therefore is a vital area for the continuation of the species. In order to draw attention to these facts, TIDE- with the support of United States Fish and Wildlife Services- carried out a campaign in Punta Gorda for a variety of ages. In order to raise awareness at the elementary level, a presentation on the Goliath grouper was given to standards 3 through 5 at the six primary schools in town. During the presentation, the children were encouraged to participate and received promotional material that stated "Extinction makes me grumpy! Protect Goliath Grouper," and each classroom was left with an educational poster in hopes to leave a lasting impression on the kids. Along with educating the youth, at the last Managed Access Forum of 2016 a presentation and discussion took place with the fifty fishers present to raise awareness and begin conversing about potential regulations on the species. At the forum, fishers were given promotional t-shirts aimed to draw attention to the species around town as well. A skeleton of a 300 pound Goliath grouper was also constructed into a display to be used at events. Overall, this campaign reached roughly 600 people total, and in the end TIDE hopes to raise enough attention to the change regulations on this critically endangered Goliath grouper.



## A closer look at a TIDE staff member: Ishiamae Gomez

Since February 2014, TIDE has been lucky enough to have Ishiamae Gomez as a member of the team. As one of the hardest working and dedicated individuals at the organization, TIDE has ensured the professional development of Ishiamae throughout her three years here. After graduating high school in 2013, Ishiamae had hoped to attend college. However due to financial circumstances, she decided to take some time off in hopes of gaining some professional experience and save money before starting classes. When searching for prospective jobs in Punta Gorda, Ishiamae stopped by TIDE and offered her assistance in the receptionist area. While she had originally studied business during school, Ishiamae had heard of the work the organization did through visits to the annual FISH Festival and respected the organization. She said “that becoming a volunteer at TIDE was the best thing that has ever happened to [her].”

In this position Ishiamae worked diligently to ensure the organization was running as smoothly as possible, which included aiding the operations manager in any tasks needed while keeping the schedules and phones organized. Ishiamae was not in this sole position for long. After about a month, a custodian position opened at the organization. When offered, Ishiamae accepted the position, which has permitted her to stay at the organization for three years. She has said that “TIDE has taught [her] a lot.” With her business background, she has even been able to help our financial team a bit on top of her other responsibilities as the receptionist and custodian.

However, that is not all Ishiamae has been fortunate enough to learn at TIDE. After working at the organization for about a year, she learned about the community researcher training program. She said, “I had been wanting to try it. When I was a kid I wanted to be a marine biologist, but in high school I was a bit afraid and decided to instead study business.” After applying, she was accepted into the program and began training on the 23rd of September 2015. She said her favorite part of the pro-gram was being down at the sea floor. She said, “it is fascinat-ing to be surrounded by sea life.” Her most recent trip to sea was this past winter she went out with the research team during the holiday. She said one day she hopes to get far enough along in the program that she will actually get to record the data.

It is clear that Ishiamae has been a vital part in TIDE operations since joining the team in 2014, and TIDE has supported Ishiamae and invested greatly in her future. In August of 2014, our executive director Celia Mahung informed Ishiamae of the fantastic news that she would be supporting her schooling by paying for her tuition to attend university. “It had always been a dream of mine” Ishiamae said, “I just was not sure it would be possible due to financial reasons.” However, with the support of TIDE, Ishiamae is close to finishing her studies at the University of Belize on the Punta Gorda campus, that way she can continue her work with TIDE- the organization she knows and loves.



# Sustainable Tourism

## Ride to Reef

In 2016, a number of improvements were made to the infrastructure within TIDE's protected areas, to enhance the visitor experience and accommodate new tourism ventures. These have included the completion of new cabanas at Payne's Creek National Park and improvements to the property TIDE owns in Big Falls, part of the TIDE Private Protected Lands. The upgrades to these two facilities allowed Ridge to Reef Expeditions to host its first two university study abroad programs in 2016, from Drake University and the University of Alabama, alongside participants from new agents – Discover Corps and POD Volunteer. Ridge to Reef Expeditions saw a sales increase of over #####% in 2016, a tribute to the hard work and investment in the program since its inception in 2014.

At the end of 2016, the Ridge to Reef Expeditions program formally became a program of TIDE Tours, which will increase efficiency within the business going forward. TIDE Tours also saw an increase in revenue in 2016 of #####%, and continues to deliver premier eco-tours throughout Belize, working with existing and new travel partners, and diversifying tours to include more wildlife and educational tours.

# Waluco's Bar and Grill

With the increase in sales revenue from the tour business, TIDE was able to relieve itself of the added stress of managing Waluco's Bar and Grill, and passed on the management in November. This was a wonderful venture, contributing to the engagement of the local community in TIDE's efforts, but it was a positive decision to allow TIDE staff to focus on other tasks within the organization.





# Finances

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