

# Ridge to Reef Conservation and Sustainable Development in Southern Belize



**Toledo Institute for  
Development & Environment (TIDE)**  
**Annual Report 2007**

The Toledo Institute for Development and Environment (TIDE) is pleased to present this brief Annual Report to update our stakeholders and supporters on our accomplishments during the period January through December 2007.

For more detailed information, please visit our web sites at:

<http://www.tidebelize.org>; and <http://www.tidetours.org>

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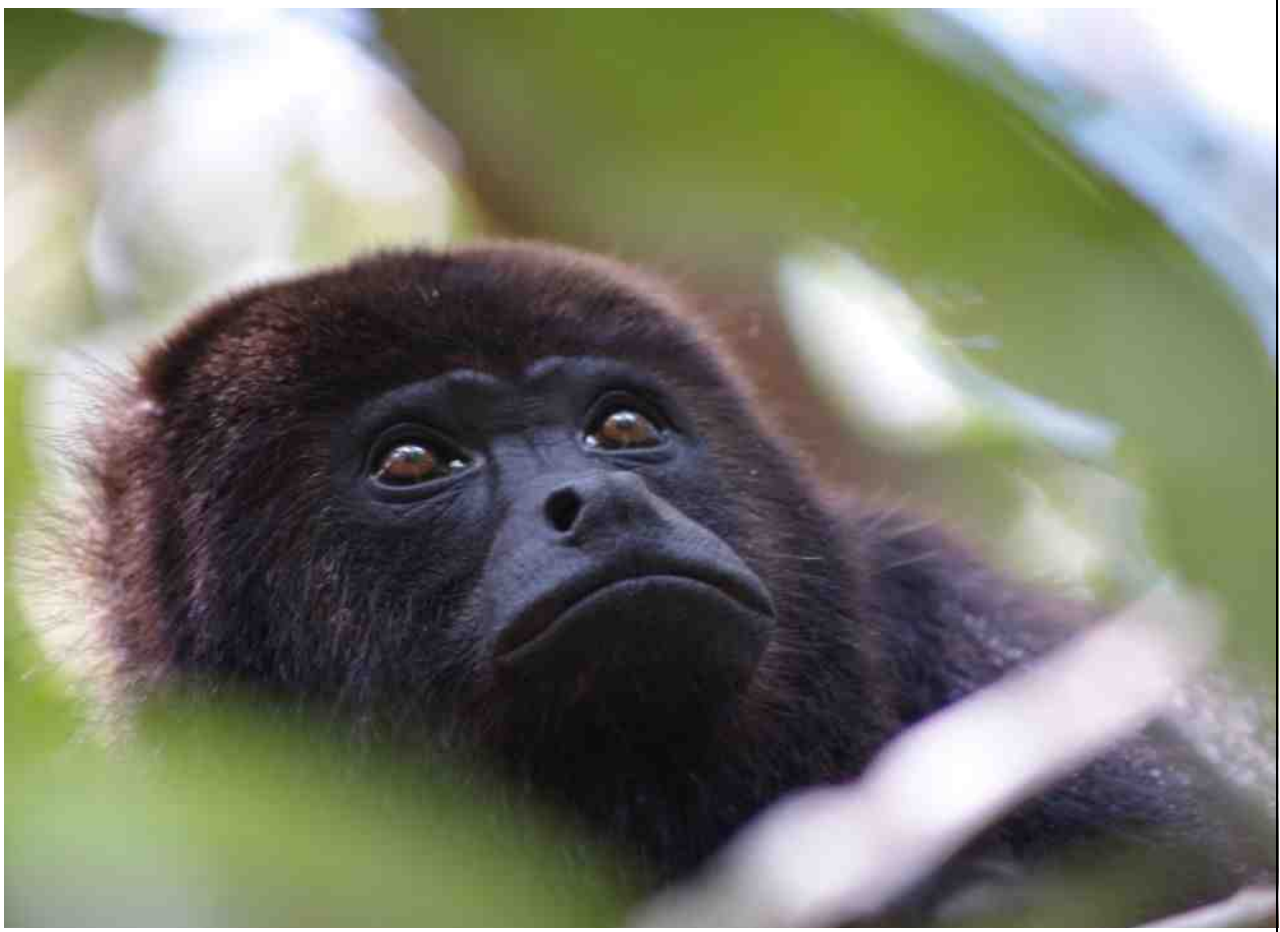
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The million-acre Maya Mountain Marine Corridor provides protection from Ridge to Reef

# MISSION

TIDE's mission is to foster community participation in resource management and sustainable use of ecosystems within the Maya Mountain Marine Corridor of southern Belize for the benefit of present and future generations.



# VISION

TIDE is an effective leader in ecosystems management and biodiversity conservation that fosters community development and empowers communities to sustainably manage and use the natural resources in Toledo District, Belize.



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# *Letter from the Executive Director*

## *Mrs. Celia Mahung*

Dear Friends and Supporters,

2007 was a landmark year for TIDE. It was our first year under my leadership. At the very end of 2006 we bade farewell to our beloved founder and Executive Director for the first decade of TIDE, Mr. Wil Maheia. Wil stepped down after ten years of award-winning leadership and service to the community. Filling his very big shoes, I took over as TIDE's new Executive Director on January 1, 2007.



A lot was accomplished during my first year with TIDE, which also happened to be TIDE's tenth year as a conservation organization. The following are some of the main things we were able to achieve in 2007.

**New Strategic Vision** - TIDE completed a new five-year Strategic Plan to guide our conservation and sustainable development work in Belize. This included a revised mission and vision statement that better articulate our desire to empower local residents to create change and take on more responsibility for their environment.

**Financial Sustainability** - A new organization-wide Business Plan lays the framework for cost-saving measures and new business ventures to create jobs and diversify TIDE's income stream.

**TIDE's 10th Anniversary** - TIDE at TEN was celebrated in style with a week of fun and educational activities, such as: planting of the national tree, mahogany, at schools; a conservation-themed debate between two high school teams; a science fair on global warming, the first annual Ms. Conservation Competition, and more. Visit [tidebelize.org/TIDEs10thAnniversary.htm](http://tidebelize.org/TIDEs10thAnniversary.htm) for a glimpse of the celebration.

**New Team Members** - We welcomed Ms. Renata Ferrari as our new Senior Marine Biologist, and fisherman Mr. Thomas "Scully" Garbutt as a new member of our Board of Directors. We also hired a solid team of new rangers from our stakeholder communities. While some of them brought skills to the table, many were given their first opportunity to work a real job, taking them off the streets and away from inherent dangers. These young Toledo residents

have been proving themselves with dedication, passion and focus on the job, learning new skills such as boating, public relations, law enforcement, report writing and research. They are now proud of protecting our resources, and in turn we are very proud of them.

**Strengthened Science** - In an effort to bolster our science programs, TIDE initiated a new Conservation Action Plan for the Maya Mountain Marine Corridor, our area of operations in southern Belize. We also formalized plans to conduct a three-year assessment of the PHMR fishery to determine how well our management is doing for fish populations, and to engage fishermen in the process so they learn about the benefits of sustainable fishing. We will focus mainly on lobster, conch, lane snapper, permit and snook. We will use this knowledge to revise our management plan for the Reserve, and reduce pressures on these important species.



Lobster is arguably the most important commercial species for local fishers - but how are they doing?

We are embarking on ambitious new projects to increase the benefits of the Port Honduras Marine Reserve for local fishermen. We are improving our sustainable livelihood trainings to be more effective and reach more people. We are greatly increasing our education and outreach efforts to reach more resource users with targeted, practical and coherent messages that make it clear how best management practices mean more resources in the future.

And finally, we are making a more concerted effort to ensure that local fishermen, farmers and hunters have the knowledge and tools they need to manage their own resources in a sustainable manner. We want each village or town to be responsible for being stewards of their own environment, with TIDE serving in a supporting role. Though we have many dedicated residents, it will take time and energy to implement. We hope we can continue to count on your support to keep the TIDE rising.

Yours in Conservation,

A handwritten signature in black ink, appearing to read 'Celia Mahung'.

Mrs. Celia Mahung  
Executive Director

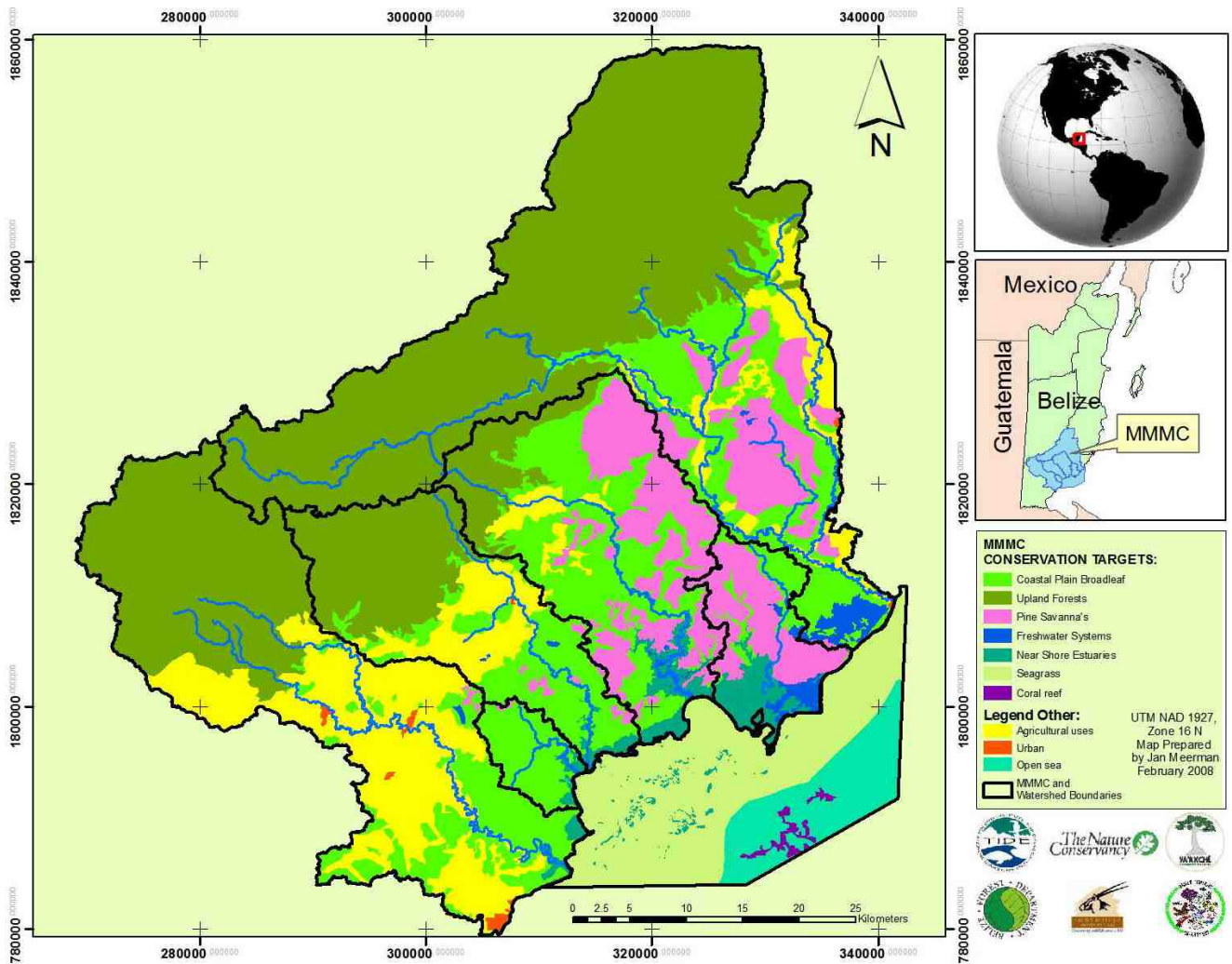


Local fisher and TIDE Ranger, Carlos Ramirez, learns to monitor seagrass

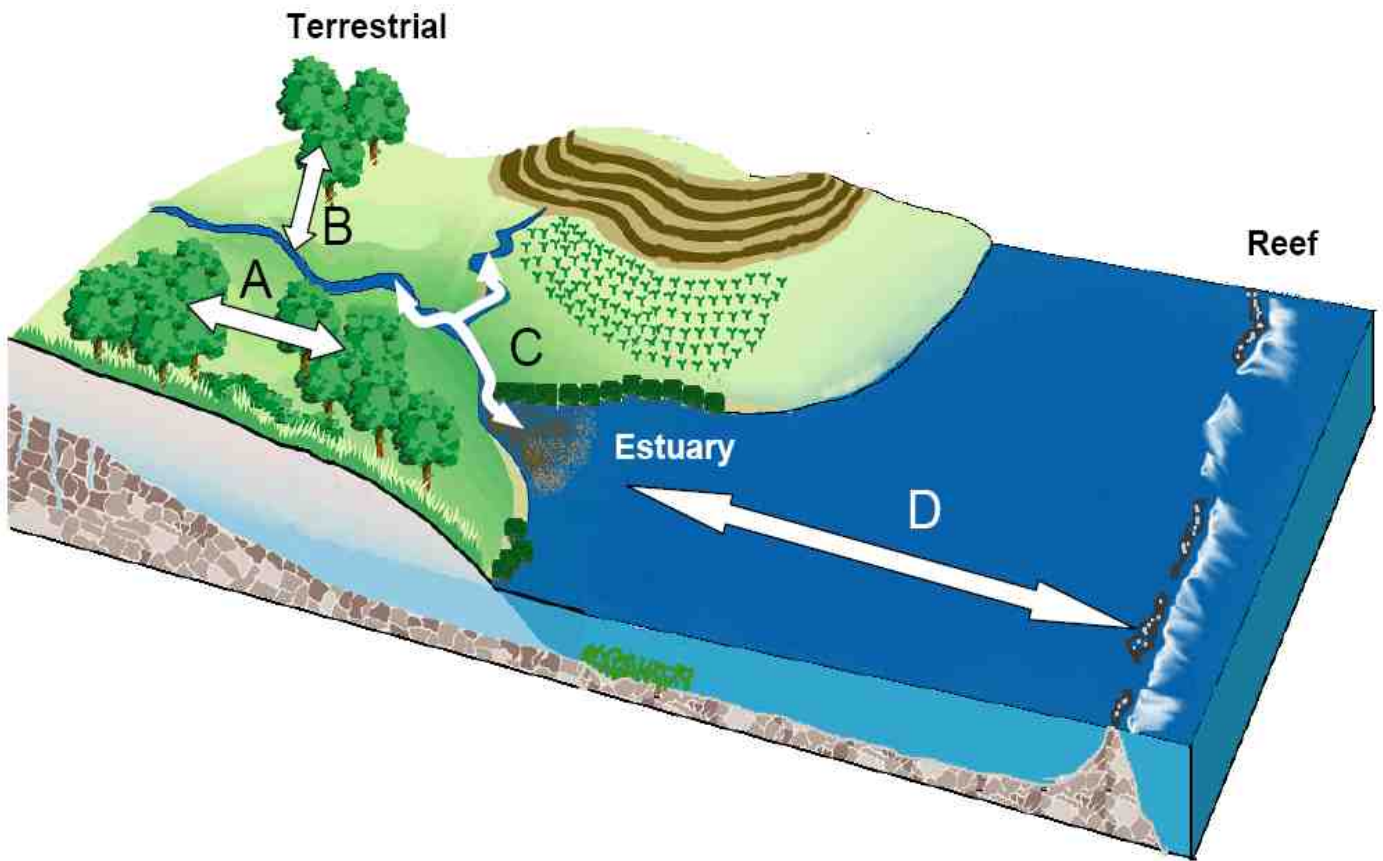
# WHERE WE WORK

The Maya Mountain Marine Corridor (MMMC) is the centerpiece of TIDE's "ridge-to-reef" conservation strategy in the southernmost Toledo District of Belize. The Corridor is a magnificent natural area covering almost one million acres of land and one thousand square miles of sea stretching from the Maya Mountains to the Belize Barrier Reef. The MMC forms a significant part of the Meso-American Biological Corridor, which covers only 0.5 percent of the world's land surface yet houses 7 percent biological diversity. This corridor is unique to Belize and the region, and contains some of the best-protected land and water resources in the world. The MMC contains six rivers that empty into the Port Honduras Marine Reserve, delivering freshwater and nutrients from the Maya Mountains to the Reef.

These watersheds form the Corridor's physical boundaries, as shown on the map below. In addition to the Corridor's biological importance, the area is home to Belize's largest indigenous Maya and Garinagu/Garifuna populations, whose welfare depends heavily on agriculture and fishing, respectively. With scarce employment, limited foreign investment, expansion of shrimp farms, a budding interest in oil exploration, and growing pressure on our natural resources, the Maya Mountain Marine Corridor and its people face challenging threats, and TIDE and our partners work to address the most important threats in a collaborative effort.



# *A Model of Ridge to Reef Conservation*



## *The four types of ecosystem connections present in the MMMC:*

(A) Terrestrial-to-Terrestrial connectance between two forest patches characterized by the movement of organisms between habitat patches; (B) Terrestrial-to-river connectance between a land-based ecosystem and the river characterized by the movement of water, sediment, organic material, and nutrients from the land to the river and back again during floods; (C) River-to-Estuary connectance between the freshwater system and the nearshore environment characterized by the delivery of freshwater, sediments, nutrients, and organisms from the river to the estuary and organisms from the estuary to the river; and (D) Estuary-to-reef connectance characterized by the exchange of fishes and invertebrates during parts of their life cycles.

# WHAT WE DO

TIDE's mission is to foster community participation in resource management and sustainable use of ecosystems within the Maya Mountain Marine Corridor (MMMC) of southern Belize for the benefit of present and future generations. We manage protected areas in the Corridor, help develop sustainable livelihoods for local residents living in or around these protected areas, educate our local youth and adult population about the importance of conservation, and work with local industries to develop best management practices that reduce environmental degradation.

This MMMC is truly unique to the region; it is a very large working landscape that enjoys remarkable protection for wildlife, and provides livelihoods for thousands of local residents. The MMMC contains all or part of seven major protected areas, including the Payne's Creek National Park and the Port Honduras Marine Reserve, which employ hundreds of local people through fishing and tourism, and are home to dozens of endangered species. The condition of the entire corridor impacts the fishery, the economy, and human health, making it vital that we take a landscape-level approach to conservation in the MMMC and work closely with our partners such as the Ya'axche Conservation Trust, The Nature Conservancy, Belize Fisheries Department & Forest Department, Bladen Management Consortium, Belize Tourism Industry Association, Belize Tour Guide Association, Trinational Alliance for the Gulf of Honduras (TRIGOH), and many others.



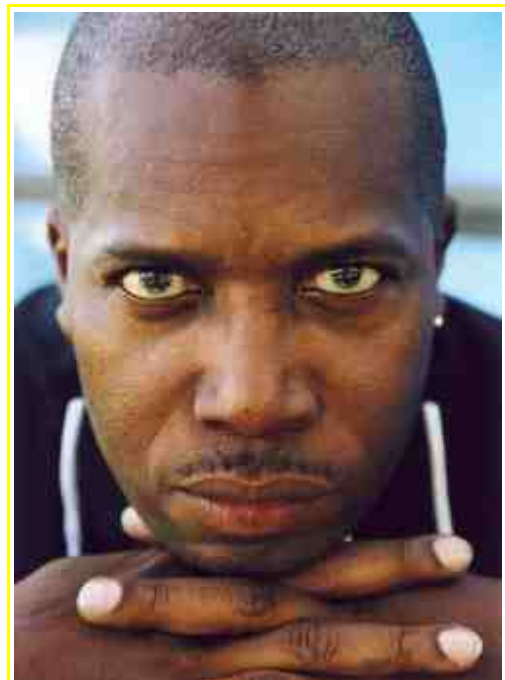
# ***WHO WE ARE - 2007 Staff***

<b><u>Name</u></b>	<b><u>Position</u></b>	<b><u>Paid/ Voluntary</u></b>	<b><u>Full/Part-Time</u></b>
Alexander Augustine	Ranger	Paid	Part-Time
Andrew Williams	Ranger	Volunteer	Part-Time
Angelica Chavarria	Administrative Assistant	Paid	Full-Time
Carlos Bardalez	Ranger	Paid	Full-Time
Celia Mahung	Executive Director	Paid	Full-Time
Clyde Palacio	Ranger	Paid	Part-Time
Delonie Forman	MMMC Scholarship Coordinator	Paid	Part-Time
Dennis Castillo	Ranger	Paid	Part-Time
Dennis Garbutt	Manager Port Honduras Marine Reserve	Paid	Full-Time
Ernesto Caliz	Driver Mechanic	Paid	Full-Time
Estella Williams	Office Janitor	Paid	Part-Time
Eugenio Ah	Forest Management Specialist	Paid	Full-Time
George Emmanuel	Communications Coordinator	Paid	Full-Time
George Fuentes	Ranger	Paid	Part-Time
George Sambula	Ranger	Paid	Full-Time
Germaine Williams	Volunteer	Volunteer	Part-Time
Janel Borland	Ranger	Paid	Full-Time
Jimmy Boucher	Ranger	Paid	Part-Time
Jonathan Labozzetta	Development Director	Paid	Full-Time
Jonathan Ranguy	Ranger	Paid	Part-Time
Joseph Villafranco	Freshwater Initiative Coordinator	Paid	Full-Time
Juan Chub	Marine Biologist	Paid	Full-Time
Leonard Williams	Head Ranger	Paid	Full-Time
Lumen Cayetano	Development Officer	Paid	Full-Time
Mario Lemus	Grounds Maintenance/Security Officer	Paid	Full-Time
Mario Muschamp	Manager Paynes Creek National Park	Paid	Full-Time
Marlon Williams	Head Ranger	Paid	Full-Time
Mikhail Daniels	Ranger	Paid	Part-Time
Norman Budna	Education & Outreach Coordinator	Paid	Full-Time
Pablo Ack	TIDE Tours Assistant	Paid	Part-Time
Patsy Rodriguez	Receptionist	Paid	Full-Time
Sergio Bricenio	Information Technology Officer	Paid	Full-Time
Skipworth Coleman	Ranger	Paid	Part-Time
Stephene Supaul	Office Manager	Paid	Full-Time
Suzette Jacobs	Ranger	Paid	Full-Time
Wil Galvez	Director of Operations	Paid	Full-Time
Wilfred Muschamp	Ranger	Paid	Full-Time

# *Profile of the Toledo District*

Despite Belize's small size (22,960 km<sup>2</sup>), the country's global biodiversity significance is disproportionately high, due to the extent and relative intactness of its estimated 85 terrestrial and 2 marine ecosystems. The southernmost District of Toledo contains the greatest concentration of the country's biological resources, which traditionally benefited from the District's remoteness. However, vast improvements to infrastructure have opened Toledo to the rest of the country and to the outside world, and new threats to this once pristine area are increasingly being realized.

The cultural diversity of the region includes Kekchi and Mopan Maya, Garifuna/Garinagu, Creole, East Indian, Anglo and other people making up a population of ~22,000. Virtually all of these people rely upon access to goods and services provided by nature (e.g., water, forest, soil, and sea). Along with the Districts' recent ecological decline is the associated problem of poverty. The economic conditions of Toledo's people have steadily declined since 1995, with fully 79% of the District's population falling below the poverty line (US \$1,421 annually) according to the UNDP's last poverty assessment report in 2002. Ironically, Toledo was also identified as the most expensive District in the country to live, due to the high transportation costs facing suppliers of basic goods and services, which are subsequently passed on to consumers. Underemployment predominates, with most families in rural Toledo lacking access to potable drinking water, sanitation, waste disposal systems, or electricity.



Andy Palacio, who brought international awareness to the Garifuna culture in Toledo with his award-winning music, tragically passed away in 2007.

Insecure access to clean drinking water in particular constitutes a critical social problem as natural water sources dry up due to deforestation, or become contaminated. The infant mortality rate for Toledo has doubled in the past five years (to 25.1 per 1000 live births in 2003), while child mortality rate has tripled (to 29.5 in 2003). Both rates are close to twice the national averages, and continue to rise while indices elsewhere in the country decline.

In order to sustain the protection of this area, TIDE works with local communities to ensure sound management of protected areas and the development of sustainable income generating activities. Through our sustainable development and conservation programs we know that the resources of Toledo can be conserved for generations to come.

# SCORECARD 2007

## How we did towards our proposed goals in 2007



Rapid Ecological Assessments of the MMMC in the 1990's revealed that the area that is now the Port Honduras Marine Reserve (PHMR) serves extremely important ecological functions of regional significance. Compared with the water quality beyond the Eastern border of PHMR - the Snake Cayes - the PHMR was found to have appropriate water quality for coral growth offshore and to be high in juvenile fish including most of the commercial species. PHMR was declared in 2000 and co-management was granted to TIDE and the Fisheries Department. After a baseline assessment was carried out in 2001, a management plan was developed in 2002. Since that time TIDE has worked closely with partner organizations and community members to prevent illegal activity in the Reserve, and promote sustainable alternative livelihoods for displaced fishermen. The historic use of PHMR has been fishing, including fishing by foreign nationals from neighbouring Honduras and Guatemala. Many of the Belizean fishers in the area complain of illegal fishing activities by foreign nationals, and attribute the reduction in certain fish stocks to such activities.

Based on recommendations of a PHMR Management Effectiveness study that was completed in 2006, TIDE has been bolstering its scientific research program and diversifying alternative livelihoods options to improve PHMR management. TIDE is utilizing effective research to inform management decision-making, reviewing our Alternative Livelihoods and Education programs to determine their effectiveness in lessening impacts on the fishery, improving the quality of life of former fishermen, and getting more people participating in conservation.

## Port Honduras Marine Reserve - Progress on Anticipated Impacts

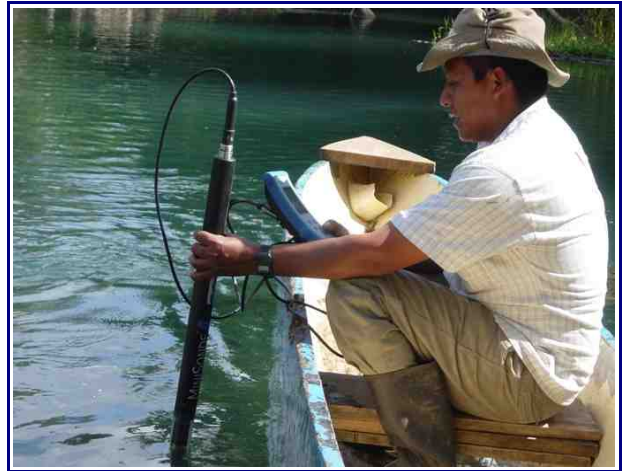
- ✓ For 2007, we improved and expanded our surveillance work by increasing joint patrols with the Park's co-managers, the Fisheries Department, as well as the Belize Defense Force, the Belize Coast Guard and the Police Department. In total, 750 patrols were carried out, and as a result 8 persons were arrested and taken to court, and 34 gill nets and 5 long lines were confiscated from within the waters of the Reserve. More than 60 joint patrols were carried out in the Marine Reserve, and ~20% of them resulted in arrests for illegal activity or confiscations of illegal gear. We focused energy on stepping up our education efforts with individuals using the Reserve. When necessary, arrests are made and prosecution is carried out by the Fisheries Department; all activity is recorded in ranger logbooks and Fisheries arrest reports.
- ✓ TIDE provided a variety of training, including protected area management, special constabulary (certified by the Belize Police Department), open water diving (PADI), dive master (PADI), DAN oxygen use, boat handling, Spanish Language, law enforcement, team building and leadership training.
- ✓ More than 300 local students and parents enjoyed guided tours of the Reserve and learned first-hand about its local and global importance to biodiversity and the economy. Prior to the tours, classroom presentations were made to schools in the area, focusing on the importance of the marine reserve. Students showed enthusiasm and retention of the lessons taught and were inspired by the subsequent field trips.



At least twelve local residents served as Community Rangers with TIDE to help with surveillance and/or research in PHMR, thereby building their capacity and skill to manage their own resources. A majority of Community Ranger phone or radio calls to TIDE to report illegal activity resulted in an arrest or confiscation of illegal equipment. In 2008, we will add new folks to the program, providing them with a radio and other necessary equipment. Many of these same people also work with us to carry out research to help us determine the health of the Reserve and the effectiveness of our management.

## Research & Monitoring Results:

**Water Quality:** Whereas the salinity, pH, dissolved oxygen and turbidity appear to occur within acceptable range in the PHMR, the nitrates and phosphates are not, and thus pose a threat to the Reserve. Increasing levels of nitrate-nitrogen and/or phosphate-phosphorous are indicative of pollution (agricultural, aqua-cultural, sewage, etc.). The nitrate-nitrogen and phosphate-phosphorous concentrations in PHMR are much higher than the maximum nutrient threshold concentrations for healthy reefs determined by Bell and Lapointe (1992). This can be due to the proximity of PHMR to the coastline and the discharge it receives from five major rivers.



**Sea grass:** The sea grass beds of the Port Honduras Marine Reserve appeared to be in good condition and can serve as a key component, along with the coral reef and mangrove ecosystems, in providing important nursery and foraging grounds for many commercially important fish and invertebrate species. Based on the results obtained at the sea grass communities, we noticed no major changes over the past three years.



**Mangroves:** 45 trees were measured and several trees were dead in all three plots. In general, the data collected in 2003, 2005, and 2006 had similar high and low productivity periods. In terms of productivity, mangrove litter contributes greatly to local fisheries by providing the nutrition needed. Tall mangrove forest at East Snake Caye appears to be more expansive than those at other areas of the reserve. The number of trees measured in 2006 is significantly lower than that measured in 2003 and that is due to deaths, by natural causes, of the older mangroves.

**Lobster Surveys:** In general, there is an overall decrease in the total number of lobsters counted across sites from 2005 to 2006, and significant decrease at some sites such as Middle snake, Young Rock and Abalone. The data however, is not yet enough to make any kind of analysis on the total population structure within PHMR, but provides some information on the current status. At the end of the upcoming fishery assessment, we will have a more complete picture of the health of lobster in PHMR.



**Conch Surveys:** Out of the twelve sites surveyed, maximum counts (31) were recorded at Abalone. No conch were observed within the transect line at Moho Caye bank, North of South Snake Caye Bank, Brion bank, and East Snake Caye Bank 2. A total of 87 Queen conchs were recorded at the sites surveyed at PHMR. Punta Ycacos had the second highest number of conch recorded (18). The site at Punta Ycacos together with Abalone makes up 56% of the total number of conch recorded in PHMR for 2006. Based on the data collected Punta Ycacos had the most Juvenile conch. In 2004, a total area of 19,000 m<sup>2</sup> was surveyed within PHMR and only 67 Queen conchs were recorded at the same monitoring sites. Still the numbers do not show signs of high improvement overall; certain areas such as Abalone and Punta Ycacos show great improvement in density, which could be attributed to TIDE's constant presence nearby.



**Coral reef and Fish surveys:** For the year 2006, few corals were identified as 'bleaching'. There was no major disease found to be common at the sites being monitored. Competition with macro algae and palythoa is common at all sites. Least coral cover is observed at Wilson Caye.

**Sea turtle monitoring:** The PHMR is home to three marine sea turtles: loggerhead turtle (*Carretta caretta*), Green turtle (*Chelonia mydas*) and Hawksbill turtle (*Eretmochyles imbricata*). We established a monitoring program at the PHMR in 2006 in an effort to better conserve these endangered species. Six nesting beaches were identified, while nine potential feeding grounds were assessed by means of underwater surveys.



Further details of our scientific research and monitoring are available upon request ([info@tidebelize.org](mailto:info@tidebelize.org)).





The objectives of our management of Payne's Creek National Park are to maintain, manage, protect and restore the 37,680 acres of unique habitat for endangered or threatened species such as jaguar, puma, black howler monkey, yellow-headed parrot, Baird's tapir, great curassow, water opossum, goliath grouper, West Indian manatee, black catbird, and black rail. We do this by conducting research and monitoring, carrying out law enforcement, implementing a fire management plan, and conducting community outreach and education.

For 2007 we aimed to protect and manage the Park through an improved fire management program that allows for pine regeneration and species survival. Park staff and buffer communities received fire management training and equipment, increased their surveillance efforts, carried out mapping and boundary demarcation, and raised awareness of conservation in local communities through a comprehensive Outreach and Education Program.



Payne's Creek is a top destination for fly-fishing!

## Payne's Creek National Park - Progress on Anticipated Impacts

- ✓ A continuous goal for TIDE in the Payne's Creek National Park is the **protection of the remaining yellow-headed parrots** and their nesting sites. Only 22 nesting sites for this endangered bird remain in the Park's unique pine savannah ecosystem. The main threats are rampant forest fires that cause massive destruction on an annual basis, and poaching for the illegal pet trade. TIDE has been concentrating on improving fire management to protect the parrots and other species that depend on the pine savannah. Through training, equipment acquisition, networking and education, TIDE and its partners worked hard to suppress wild fires before they spread throughout the park. In 2007, one significant wild fire that started in adjacent Deep River Forest Reserve destroyed ~10,000 acres of savannah. One parrot nest was lost. A new fire lookout tower was subsequently built to help with early detection, which we hope will help us prevent more fire destruction in 2008.



- ✓ **New infrastructure** has been built in the Park to allow increased access by researchers and tourists, which benefits TIDE through increased scientific data and income generation. A fire lookout tower, a research station/eco-lodge, a pier for access from the river, and a solar energy system were developed. TIDE has also begun expanding our trail system through the Park, which allows visitors to enjoy the more than **300 species of birds, 28 mammals and 41 reptile/amphibians**, including the endangered or threatened **jaguar, puma, black howler monkey, yellow-headed parrot, Baird's tapir, great curassow, water opossum, goliath grouper, West Indian manatee, black catbird, and black rail.**



The Punta Ycacos Lagoon of Payne's Creek is excellent habitat for the West Indian Manatee



TIDE owns and manages ~30,000 acres of land that form a critical link in the MMMC. TIDE carries out an average of four patrols per week on the Rio Grande, Golden Stream, and Middle River. The goal of the surveillance is to:

- Minimize illegal fishing, hunting and logging pressure on these properties,
- Educate local residents about the goals of conservation and the rules and regulations of the area, and
- Monitor flora and fauna to determine the impacts of management.

In addition to illegal activities by locals, a majority of the illegal activity being carried out on TIDE's Private Lands is done by residents of neighboring countries who come to Belize for our abundant resources. TIDE's primary goal is to educate these people on the importance of conservation for long-term sustainability, and make arrests as a last resort. The daily presence of TIDE's Rangers is helping to deter illegal hunting, fishing and logging, and also helping to prevent other illegal activities on the lands and rivers.

In 2007, TIDE carried out more joint patrols together with the Belize Defense Force, Police Department, and local partner organization Ya'axche Conservation Trust (YCT). In addition to the education and outreach performed daily by TIDE's rangers, TIDE organizes monthly community meetings in each stakeholder village to discuss pressing issues and inform residents

about new activities at TIDE. TIDE also manages an Education Center that will be expanded and improved upon to feature maps of the area showing trails and points of interest for visitors, unique plants and animals one might encounter on a hike or kayak paddle, the rules and regulations of the protected areas, and more. We are also posting signs along the various hiking trails indicating points of interest and the closed seasons for threatened species, such as the Hicatee turtle.

The Water Hole property also features a nursery of mahogany trees that are used for reforestation efforts throughout the private lands. The nursery requires frequent maintenance, and will be expanded this year to include more species and medicinal plants.

TIDE continually invests in capacity building for its local staff members and community residents. This year we provided the following trainings to increase the capacity of our field staff and local community stakeholders who are helping us to manage the Protected Areas in the MMMC: Leadership, Conflict-resolution, Project Management, Fundraising, Financial Management, Networking, Hospitality, Tour Guide Certification, and Bird and Plant Identification training for Rangers.

## **Private Lands Initiative - Progress on Anticipated Impacts**

Working in partnership with the Ya'axche Conservation Trust, Fauna & Flora International, United Nations Development Program and Global Environment Facility, TIDE is helping devel-



op a comprehensive management strategy for the Golden Stream Watershed, which forms an integral part of the Maya Mountain Marine Corridor. The goal of this project is to have the Golden Stream Watershed serving as a functional model for integrated landscape management where socioeconomic development of local communities and development of enterprises goes hand in hand with ecological conservation and cultural integrity. Under the project, a management plan will be developed for TIDE's block 127 and 130, which make up ~13,000 acres of our ~30,000 acre Private Lands, and the management plan for Port Honduras Marine Reserve will be revised and updated.

In 2007, 100 joint patrols were carried out in the watershed with rangers from YCT, and 40 joint patrols were conducted with the Belize Defense Force to prevent illegal fishing, logging and hunting in the MMMC. As a result of these patrols, five gill nets were confiscated, and a group of poachers from Guatemala were arrested for capturing more than 100 female green iguanas (*Iguana iguana*). Capturing these iguanas in large numbers can have significant implications on the population, especially when the hunting occurs during the nesting period, as it did in this case. Only 34 of the iguanas were still alive when we discovered them and these were released back into the wild on TIDE's Private Lands.



TIDE hired two new permanent rangers from local communities in 2007. In addition to their surveillance and research work, the rangers reforested a total of 800 ft<sup>2</sup> with Mahogany (Belize's National Tree) in stripped riparian zones along the Rio Grande River. The rangers also benefited from training in "Green" Laws, Law enforcement, Special Constable (which gives them the authority to arrest), boat engine maintenance and boat handling training. To extend the impact of these trainings to more communities, our rangers in turn trained rangers from YCT in boat handling techniques and boat engine maintenance.





**TIDE** completed an impact mapping study on the Monkey River and its three main tributaries. The following is a summary of the results. Our sincere thanks go to The Nature Conservancy and lead consultants, Peter C. Esselman & David G. Buck for their excellent work.

Specific recommendations for TIDE's conservation attention include:

1. Trio Branch is a high priority for mitigation of stresses associated with cattle ranching. TIDE should hold community consultations, educate land owners about national laws protecting riparian forests, and initiate riparian restoration efforts similar to those conducted in the Rio Grande watershed. Addressing this issue with Trio Village cattle ranchers would also help to improve conditions on the Bladen Branch above Trio confluence.
2. Swasey Branch historically has had the most persistent, most intense, and most diverse mix of threats to aquatic ecosystems. Based on personal observation, land use practices in the banana farms have improved, with fewer incursions into the riparian zone, and fewer drains that run directly to the main river channel. However, no buffer and thin buffer points were very high, and thus TIDE's attention to riparian forest protection, rehabilitation, and restoration are very warranted. A Spanish language educa-

tional campaign could be effective, and focused attention on outreach to land owners in the upper Swasey between San Pablo and the Southern Highway Bridge are well-justified.

3. Research into severity of toxics buildup in Swasey Branch and Bladen Branch below the Trio confluence could give TIDE a strong lever with which to influence human communi-



ties living in the banana farming areas— these same communities are at risk from these chemicals. Solid information that implicated the banana industry could also help gain the cooperation of the Banana Growers Association or specific farm owners. This is undoubtedly an issue that has long-term potential (e.g., 30 years) to influence ecosystems and human communities into the future. The new water quality lab being set up at University of Belize could provide the facilities necessary to undertake such studies.

Implementation of these recommendations will form a major part of our Freshwater Action Plan for the MMMC over next five years.

## **Education & Outreach - Progress on Anticipated Impacts**

Fresh Water Cup - This innovative program harnesses the nation's love of football to bring about environmental awareness to the local community. This past year, we added a junior league and had 6 kids' teams for youngsters 12 and under. The joy and exuberance they showed while playing their first organized football was priceless. The Freshwater Cup Junior League will continue in 2008 and be expanded to include more teams and more kids, who in turn will learn about important environmental issues they can take part in. In addition, numerous field trips were held for primary, secondary and university students to showcase our work and to promote an awareness of the rich biodiversity in the parks we manage.

Hot fun in the summer-time -This year's summer camp was organized and developed by teenage volunteers along with TIDE staff. Based on the theme of "pollution", the camp helped kids to understand the effects of various types of actions on the environment. In one example, children from inland communities visited with children from coastal communities and learned about where



their garbage goes when it is thrown in the river. Many children look forward to our camp each summer as it is one of the few organized and supervised activities that is free of charge! Of course, your donations and our dedicated staff and volunteers help make the camp possible.



## Dissemination of results and lessons learned

We continue to publicize our work on our web site ([www.tidebelize.org](http://www.tidebelize.org)), and on the Rainforest Alliance's Eco-Index ([www.eco-index.org](http://www.eco-index.org)), an online almanac of conservation projects throughout the neotropics. We also produce quarterly newsletters and email newsletters, brochures, posters, and a weekly radio show, "The Rising TIDE". Monthly community meetings and meetings of the protected area advisory boards are some of the most effective ways we have of sharing our work with local stakeholders. Through our quarterly print newsletter and monthly email newsletter, we are able to reach thousands of national and international supporters.



The screenshot shows the TIDE website homepage. At the top left is the TIDE logo, which features a globe and the text "TOLEDO INSTITUTE FOR DEVELOPMENT AND ENVIRONMENT" and "TIDE". The background of the header is a photograph of a tropical beach with white sand and blue water. Below the header is a navigation menu on the left with links: Home, About TIDE, Programs, Partnerships, Support Our Work, News & Events, Contact Us, and Links. A green button labeled "Donate to TIDE" is positioned below the menu. To the right of the menu is a large photo collage of four images showing community events, including a group of people under a blue canopy and a large crowd at an outdoor gathering. Below the collage is a text box that reads "TIDE thanks all Donors for Fish Fest 2008". On the right side of the page is a "News & Events" section with several links: "TIDE Reports", "Job Opportunity April 2008", "Canadian Students from Nova Scotia visit TIDE April 2008", "TIDE Develops Seagrass Monitoring Skills April 2008", "Seleem Interview with the Rising TIDE April 2008", "Education Outreach touches the consciousness of the Youth April 2008", and "Fish Fest 2008". At the bottom of the page is a green banner that says "Welcome to TIDE! The Toledo Institute for Development and Environment".

**Toledo Institute for Development and Environment (TIDE)**

**News & Events**

**TIDE Reports**

[Job Opportunity](#)  
April 2008

[Canadian Students from Nova Scotia visit TIDE](#) April 2008

[TIDE Develops Seagrass Monitoring Skills](#)  
April 2008

[Seleem Interview with the Rising TIDE](#) April 2008

[Education Outreach touches the consciousness of the Youth](#) April 2008

[Fish Fest 2008](#)

**Donate to TIDE**

Become a member of TIDE and receive our newsletter and updates from the Executive Director, Ms. Celia Mahung.

Email: \_\_\_\_\_

**Welcome to TIDE!** The Toledo Institute for Development and Environment

# 2007 Financial Information

Figures are in Belize Dollars - \$1 US = \$2 BZ

## Income vs. Expense for 2007



Grants	1,249,288
Interest	127,970
Donations	12,216
Other Income	45,786
<b>Total Income</b>	<b>\$1,435,259</b>

## TIDE Balance Sheet as of Dec. 31, 2007 (Unaudited)

	2007	2006
Total Assets	5,565,957	5,267,302
Total Liabilities	562,941	555,199
Accumulated Fund	5,003,016	4,712,103

## Income & Expenditures

	2007	2006
Total Income	1,435,259	1,827,803
Total Expenditure	1,382,914	1,745,264
Excess of Income over Expenditure	52,345	82,539

# ***Donors and Partners***

## **TIDE's Donors 2007**

American Friends of Belize  
Birds Without Borders / Aves Sin Fronteras  
Therese Arana Brechin  
CAVU  
Christa Mehard  
Earthwatch Institute  
Foundation for Wildlife Conservation  
Francis Romero  
Generation Earth  
George & Holly Stone  
George Scaffer  
GoJoven  
Government of Belize Debt for Nature Swap  
Hausmann Foundation for Environmental Solutions  
Johnsons Store  
Judy Chaddick  
Karen Yamasaki  
Laddie Rhodes  
Winfred & Libby Hill  
Mark & Margaret Stenftenagal  
Mesoamerican Barrier Reef Systems Project

Mr. and Mrs. Paul Rhodes  
National Fish & Wildlife Foundation  
National Geographic  
National Oceanic & Atmospheric Assoc.  
Oak Foundation  
Ocean Foundation  
Outpost International  
Philanthropic Ventures Foundation  
Programme for Belize  
Protected Areas Conservation Trust  
Rainforest Alliance  
Romero's Charters  
Scotia Bank  
SeagrassNet  
Species Survival Network  
Summit Foundation  
The Nature Conservancy  
Thomas Salam  
Tropical Forest Conservation Act  
United States Fish & Wildlife Service  
University of New Hampshire

## **TIDE Partners, Affiliations**

Association of Protected Area Management Orgs  
Belize Fisheries Department  
Belize Forest Department  
Belize Audubon Society  
Belize Tourism Industry Association  
Belize Association of Private Protected Areas  
Bladen Management Consortium  
Conservation International  
Earthwatch Institute  
Environmental Defense Fund

Monkey River Tour Guide Association  
Monkey River Fishermen Cooperative  
Programme for Belize  
Rainforest Alliance  
Rio Grande Fisherman Cooperative  
The Nature Conservancy  
Trinational Alliance for the Gulf of Honduras  
Toledo Tour Guide Association  
World Wildlife Fund  
Wildlife Conservation Society



**Thank you for your support!**