



Annual Report 2012

Ya'axché Conservation Trust



Punta Gorda | February 2013

Cover page

Cinnamon Hummingbird (*Amazilia rutila*)

Photo: Gunnar Hammar.

Back page

Flowering cacao (*Theobroma cacao*)

Photo: Erik Hammar.

Maps

All maps prepared by Jaume Rusalleda.



Annual Report 2012

Ya'axché Conservation Trust

Punta Gorda, Belize - February 2013

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The toad *Bufo valliceps*, photographed near Calera camp in Bladen Nature Reserve.

Photo: Erik Hammar



CAYO DISTRICT

MAYA MOUNTAINS

BLADEN NATURE RESERVE

TRIO

BLADEN

MEDINA BANK

GOLDEN STREAM

TAMBRAN

INDIAN CREEK

GSCP

THE MAYA GOLDEN LANDSCAPE

TOLEDO DISTRICT

BIG FALLS

Southern Highway

PUNTA GORDA

CARIBBEAN SEA





Ya'axché's rangers make many discoveries; this arrowhead, discovered on the savannah, has been dated at more than 4000 years old and was made by the pre-Mayan Archaic people.

Photo: Lee Mcloughlin

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Blue-spotted Mexican treefrog
(*Smilisca cyanosticta*). Bladen Nature
Reserve.

Photo: Erik Hammar

List of acronyms

BDF	Belize Defense Force
BFREE	Belize Foundation for Research and Environmental Education
BNR	Bladen Nature Reserve
BRIM	Biodiversity Research, Inventory and Monitoring
COL	Community Outreach & Livelihoods
COMPACT	Community Management of Protected Areas Conservation Programme
CRFR	Columbia River Forest Reserve
CITES	Convention on International Trade in Endangered Species
DRFR	Deep River Forest Reserve
EEP	Energy and Environment Partnership
EIA	Environmental Investigation Agency
FCD	Friends for Conservation Development
GIS	Geographical Information Systems
GSCP	Golden Stream Corridor Preserve
LULC	Land-use Land-cover Change
MFFSD	Minister of Forestry, Fisheries and Sustainable Development
MGL	Maya Golden Landscape
NGO	Non-governmental Organization
NMBCA	Neotropical Migratory Bird Conservation Act
PACT	Protected Areas Conservation Trust
PAM	Protected Areas Management
TIDE	Toledo Institute for Development and Environment
UNDP	United Nations Development Program

From the Executive Director

2012 marked another year of growth, expansion and prosperity for Ya'axché Conservation Trust. It was a year full of changes but that allowed institutional strengthening, team building and forward thinking. It was one that required active fundraising and interaction with staff and board which resulted in the strengthening of the organization. As we share the highlights of our program of work for 2012 we must reflect and acknowledge the dedication and commitment of the staff that through their hard work and enthusiasm made it all possible.

There were major shifts and changes within Ya'axché Conservation Trust in 2012, as the former Executive Director Mrs. Lisel Alamilla got appointed as Minister of Fisheries, Forestry and Sustainable Development and myself took office as the new Executive Director. The work continues to happen as we strive for a more positive and vibrant year.

Ya'axché has continued to raise awareness of the benefits of protected areas in communities and communication continues to be strong between Ya'axché's Protected Areas Management program and the Community Outreach and Livelihoods Program. This has been further strengthened by the employment of a Sustainable Land-use Officer who ensures those programs are complementary and mutually beneficial. This year also saw the integration and inclusion of new farmers in our agroforestry work as well as the donation of solar panels to primary schools of Indian Creek and Golden Stream village. This was complimented with a summer camp held at the Golden Stream field station, where 60 children participated from the communities we worked with.

Ya'axché continued its long-term monitoring program, now in its 6th year, focusing primarily on birds and mammals, and more recently incorporating snails and vascular plants in permanent sample plots. It is indeed a stepping-stone for the ranger team, for they are highly qualified in these monitoring techniques and are considered some of the best trained rangers in the country of Belize. Now, having a strong team on board, Ya'axché can make sound and informed management decisions pertaining to our protected areas.

Ya'axché's past and present successes are as a result of a strong and dedicated team of staff and volunteers. These individuals have given their all to the organization and must be commended for their efforts. The support from our funders, the good collaboration from our partners, and the strong encouragement from our fans have been essential and we hope that this coming year will even be better as we strive to create harmony between nature and human development for the benefit of both.

Yours in Conservation,

Christina Garcia,
Executive Director



Strategic Plan

The work carried out by Ya'axché is guided by a strategic plan that sets out the goals of the organization and the means to achieve them. The strategic plan for the period

2012 to 2014 was finalized in November 2011 and includes updated mission and vision statements as well as updated organizational values.

Vision statement of the organization

Harmony between nature and human development for the benefit of both

Mission statement of the organization

Ya'axché is a Belizean organization which aims to maintain healthy forests, rivers and reefs for the benefit of all through protected area management, advocacy, and working hand in hand with communities to develop capacity for the wise use of land and natural resources in and around the Maya Golden Landscape in Toledo

Organizational values

Ya'axché...

- has passion, dedication and commitment to its vision
- has respect for ethnic and cultural diversity
- is inclusive
- is adaptable and responsive
- strives for 'openness' and transparency
- values participation and collaboration
- values integrated approaches
- values being a proactive advocate
- values professionalism and teamwork

In the strategic plan for 2012-2014, Ya'axché identified five strategic objectives that will guide the work of the organization for the coming years.

The institutional structure has also been revised and clarified in order to more effectively deliver the strategic objectives. The complete strategic plan is available upon request.

Five strategic objectives

- Increase sustainability of extraction in the Maya Golden Landscape, including protected areas and community lands.
- Increase application of best agricultural practices in Toledo.
- Improve development and implementation of sustainable land-use planning and management in Toledo.
- Reduce the rate of forest clearance for agricultural and community expansion in the MGL.
- Improve Ya'axché's financial sustainability.

Important revisions to the institutional structure

- Ya'axché operates under the principle of sustainable land-use management, where conservation and sustainable development are planned at the landscape level for the benefit of all. Ya'axché has two program areas that both contribute to sustainable land-use management: Protected Area Management program (PAM) and Community Outreach and Livelihoods (COL) program.
- 'Advocacy' is not a program area in itself but an activity that cuts across and contributes to the two programmatic areas.
- 'Governance and Institutional Strengthening' is not a programmatic area in itself but a core function of the organization.



External communication

New website

In June 2012, Ya'axché launched a brand new website with a modernized design and a more intuitive layout. The website acts as the definitive source of information about Ya'axché and the work done by the organization. In the coming year, the functionality of the website will be expanded further. The address is the same as before: yaaxche.org.

Membership program

Shortly after the launch of the new website, Ya'axché introduced a membership program. Currently, only a basic level of membership is available, free of charge. Members receive a monthly, web-based newsletter update of the recent work done by Ya'axché in protected areas and in the communities which the organization works with. In the future, expanded membership options will become available. Membership packages for paying members may include discounts for eco-tourism operators in Belize, Ya'axché materials such as paper copies of reports, and invitations to our project sites.

Social media

Ya'axché has been present on social media for many years. A new strategy for social media is currently being developed with the aim of improving knowledge about Ya'axché among the general public, both national and international. In practice, the amount of weekly posts to social media,

primarily Facebook, will be increased and the quality improved. Ya'axché will also maintain a presence on Twitter and the video-sharing site Vimeo. A new video showcasing the organization is planned for production in 2013.

Graphical profile

In July 2012, a new graphical profile was adopted by the organization. Earlier, there was little or no consistency in layout and design in official Ya'axché productions, such as reports, posters and banners. A consistent graphical profile will improve the recognition of Ya'axché among local communities and international partners. The internal workflow will also be improved by the utilization of templates rather than developing a new graphical profile for each new production. The first official document produced using the new profile was the Second Quarterly report 2012 for the Protected Areas Management Program.

Articles

During 2013, Ya'axché will produce articles to be published in local media and on the website of partner organization Fauna & Flora International. This is a part in an effort to raise the public awareness of Ya'axché and the work done by the organization. Published articles will be advertised on the website, social media and communicated to Ya'axché members via the monthly newsletter.

Community Outreach & Livelihoods Program

The Community Outreach and Livelihoods Program has seen an active and productive year in engaging our local communities. Despite challenges that ranged from limited human resources to transportation issues, the following is a summary of activities carried out as per the Strategic Plan within and around the Maya Golden Landscape in 2012.

Renewable energy

Renewable energy for Education and Livelihoods in the Maya Golden Landscape, a project funded by Energy and Environment Partnership (EEP) in Central America has established solar systems at Indian Creek RC and Golden Stream Government primary schools. Now these schools have electricity for lights that allow primary school and even high school students to study at night, instead of in front of kerosene lamps or candles. Furthermore, both schools in the communities can utilize laptop computers and projectors to make learning more effective and fun. Members of the communities take advantage of the cheap but renewable energy to charge cell phones and other small electrical appliances plus conducting meetings after dark.

A computer lab and solar system at Medina Bank Government School, with kind support from Community Management of Protected Areas Conservation Programme (COMPACT) through a COMPACT/UNDP funded project, the Tz'imin Che Watershed Group and Ya'axché has installed, thanks to the expertise of Maya Mountain Research Farm, a solar powered computer lab in the Medina Bank school library.

Two solar panels, a power box, 2 batteries and 2 brand new laptops will be the start, hopefully of a larger system that can power more laptops and lights for the school.

Leadership workshop

Sixteen leaders from five communities attended a two-day Community Leadership and Good Governance Workshop held by Ya'axché in Big Falls. Community leaders found the workshop useful and fun, as it was very interactive and participatory. Presenting real life issues and problems gave the leaders the opportunity to share their experiences and learn from each other. The leaders included Village Council Chairmen, Alcaldes, Village Water Boards, Parents/Teachers Associations and farmer and women's group representatives.

Some of the topics discussed during the sessions were roles and functions of community leaders, qualities of a good leader, branches of government, what is good governance, community participation amongst others. During the evaluation of the workshop the participants requested that Ya'axché ought to conduct another workshop with emphasis on the Village Council Act and Alcaldes Jurisdiction.

Increased nursery capacity

In 2012 a full-time horticulturist was hired so that sapling production could be increased to a capacity of 50 000 seedlings in the Ya'axché nursery at the Golden Stream field station. During this period, approximately 40,000 seedlings were distributed including 20,000 cacao seedlings produced in partnership with Maya Mountain Cacao. The Nursery also serves as a training area for field staff from other organizations. This is accomplished by Ya'axché organizing training sessions in nursery management, methods of propagation, the setting up of nurseries, combination of organic material used in filling bags etc. Saplings cultivated in the nursery are distributed within and around the communities of the Maya Golden Landscape. This was done through projects and by sales of saplings. All saplings produced in the nursery are sold at a marginal price of BZ\$ 2.00 per sapling.

Agroforestry farm data collection

Agroforestry farm data collection: a study of agroforestry plots has been conducted. The researched is based around demonstrating the social, environmental and economical impact derived from agroforestry plots. It is headed under a thesis entitled *Cacao-based agroforestry as a tool to achieve sustainable rural development and effective protected areas in the District of Toledo, Belize*. This research has provided valuable information that can motivate and encourage farmers to become more productive and can also be used in developing concept notes to expand agroforestry systems in Toledo.

Community forums

Community forums are held regularly where different issues are discussed. At one forum farmers were invited to listen to presentations from Maya Mountain Cacao and Toledo Cacao Growers Association. The forums are part of a project focusing on changing attitudes and behaviours. Their goal is to conduct research on what environmental problems people are currently experiencing and what unsustainable behaviours they engage in. The top environmental problems that farmers brought up were related to pests, and they did make an observation that pest abundance could be related to degradation of the habitat around the farm.

On 31st October 2012, another open forum was held in the Indian Creek community centre. An invitation was sent out to communities in the MGL to inform them about Ya'axché's work and to facilitate a discussion about what are the needs of the communities and how Ya'axché can help meet these needs. Over 30 village leaders from six communities attended. Many important issues were raised and valuable information was collected on how Ya'axché can better focus its efforts.

School visits

Regular awareness-raising activities are conducted at primary schools within and around the MGL. Eight community schools were visited during 2012 and each have had an opportunity to be engaged in either field trips or also received a presentation about ecosystems, protected areas, pollution, watershed protection, climate change, plants and animals, agroforestry and marine life from the Education and Outreach Coordinator at Ya'axché.



The capacity of the Ya'axché nursery at the Golden Stream field station was increased in 2012.

Photo: Erik Hammar

Birding clubs

Ya'axché is concerned about the natural environment of the communities around the Golden Stream Corridor Preserve, and the people that live there. To measure the condition that these natural surroundings are in, Ya'axché looks at the bird species that like to breed or spend time in these surroundings. The more bird species are present in the community, the healthier the natural environment of the community can be considered. We all know that the healthier the environment, the more prosperous the future looks for the community's children and coming generations.

Ya'axché took the initiative of starting birding clubs in several communities to monitor the state of the natural surroundings of the villages. These community birding clubs consist of three or more people that go out in the field at least once a month to identify the bird species present in their community environment. The club can also organize other activities to increase awareness about birds in the community, or join together with neighbouring birding clubs to do a bird count in a larger area. Every bird club reports its activities back to Ya'axché once a month.

For the duration of the NMBCA project, Ya'axché offered training on how to find, identify and monitor birds. It is the goal of the birding clubs to go out in the field and

increase bird identification skills while having fun with other birdwatchers from the village. Below is summary of activities conducted as of February 2011 to August 2012.

The Indian Creek Bird Club conducted 26 activities between the months of February 2011 and August 2012. Medina Bank Bird Club conducted 27 activities between May 2011 and August 2012. The Golden Stream Bird Club conducted 17 activities between August 2011 and August 2012.

The Big Falls-Hicattee Farmers-Birds Alliance conducted 14 activities between September 2011 and August 2012. Indian Creek Farmers-Birds Alliance was able to do 26 activities between September 2011 and August 2012. Additionally, 15 educational trips and activities were organized, including workshops and trips to remarkable birding sites such as Cockscomb Basin Wildlife Sanctuary and Crooked Tree Wildlife Sanctuary, among others. The birding clubs and Farmers-Birds Alliance participated in the Belize Audubon Society Annual Urban Bird walk in Punta Gorda town.

Despite the conclusion of the NMBCA project in August of this year, these active birding clubs were able to continue monitoring birds at least once a month on their own motivation.



Birding club members from Medina Bank and Indian Creek during a field training at the Golden Stream field station.

Photo: Julio Chub

Ya'axché Summer Camp

Sixty children between the ages of 8 to 14 years from the communities of Medina Bank, Golden Stream, Indian Creek, Silver Creek, San Miguel and Big Falls attended a two week summer camp, 30th July to 17th August, at the Ya'axché field station in GSCP.

The theme under which the camp was held was *Caring for Nature is our Culture*. Children were able to learn several ways in which the culture of the people respects nature. These included looking at the human necessities; food, medicine, shelter, water and clothing. Campers enjoyed playing games, working in groups, role playing, building a mayan house, presentations and discussions on numerous topics such as protected areas, conservation, culture, healthy lifestyles, agroforestry, migratory birds and birding, ecosystems, watershed, animals, and many more.

There were also presentations from various NGO's. The theme of the camp was reiterated with field trips to Blue Creek Cave, Rio Blanco National Park, Belize Zoo and Blue Hole National Park. Learning about food, a member of the Marigold women's group demonstrated how to prepare organic vegetables from the farm and talked about food that is obtained from the forest.

Mr. Felipe Bah, traditional healer from Tambran and Mr. Choc, licensed traditional healer from Indian Creek were also able to demonstrate to the children thirty types of herbs from the forest that are used for healing ailments such as the common cold, to snake bites. Mr. Bah explained the collecting of resources for home uses. These include house materials, home utensils, and even for creating a rubber ball. He explained how these resources are extracted sustainably, so that these resources are available in the future.

The Executive Director of Ya'axché educated the children in marine life, the importance of coral reefs and benefits to people. Children were amazed and at the end of presentation, campers participated in a quiz where the winning groups were awarded school supplies.

The COL Program Manager of Ya'axché educated children about the importance of leaders in a community. He explained who are leaders, their role and responsibility and how to become a good one. The camp participants got to know Ya'axché even better and the parents who attended the closing ceremony expressed their appreciation of the summer camp.



Children participating in an icebreaker exercise at Ya'axché Summer Camp 2012.

Photo: Erik Hammar

Educational trips

Field trips are an important part of the COL Program. In the last quarter of 2011, Ya'axché was able to take 46 primary school children, five teachers and seven parents from the communities of Medina Bank, Golden Stream and San Miguel to the Port Honduras Marine Reserve. These participants enjoyed snorkelling and great discussions about the marine environment. On the 2nd of March and 3rd of May 2012 three upper division classes from Indian Creek, Medina Bank, and Golden Stream Primary Schools have visited the Bladen Nature Reserve (BNR). On this trip students were able to visit the ranger station and receive a presentation from the protected areas manager and the rangers.

The children were educated about the importance of BNR and why it is necessary to protect the area. The presentation was followed by a hike into BNR. On the hike, students saw and identified many species of birds and plants and were able to learn their uses and functions in the ecosystem. The teachers were amazed by the biodiversity of BNR and stated at the end of the trip that Ya'axché should continue to

conduct school visits into BNR since this enforces the message of conservation taught in the classrooms. The teachers themselves agreed that they learned a lot about BNR during the field trip.

Race Against Fire

Ya'axché arranged Race Against Fire on Saturday the 7th April 2012. The event was a big success, both in terms of being a highlight of the Easter weekend in the communities and in terms of awareness-raising. Ya'axché had a huge turnout and conducted a number of competitions for children and adults, and with good participation from all, including spectators.

University of Belize interns helped us to disseminate fire prevention information; meanwhile, the most popular outreach activity of the day, the raffle, had almost 40 people engaged in conversations about sustainable agriculture and fire prevention. Ya'axché would like to thank the sponsors of Race Against Fire 2012: Tropic Air, Toledo Farm Supply, Kings Energy, Extreme Adventures, Coopers Internet Café, Maya Mountain Cacao, Southern Grocery Store, and Big Falls Village Council.

Land-use change

During 2012, Ya'axché has continued to monitor Land-use/Land-cover changes in the MGL. Through the execution of the Planet Action Project (2010-2012), which has involved the use of historical and recent satellite imagery, we have been able to determine how the landscape has changed in this corner of the world from 1980 to 2012. By assessing the expansion of agricultural lands, we have been able to determine deforestation rates and patterns that allow us to keep close track of how and where is the forest in the MGL.

Agricultural practices are the main factor contributing to Land Use/Land Cover change in the MGL. These generally start with a patch of forest being cleared through *slash and burn* (trees are knocked down and burnt) and the resulting land being cultivated with different crops. The main staples are corn and beans, and additional crops are rice, cassava, coco yam, plantains, banana, pumpkin, pepper, calaloo and okra. A plot will be used until the farmer detects a decrease in productivity at which point it will then be left to regrow natural vegetation for several years, bringing nutrients back to the soil for a subsequent cultivation. This regrowth period is called *fallow period*, traditionally, lasting between 10 and 12 years, so that the soil has enough time to regain fertility. A farmer will normally have several plots so that he can establish a crop rotation between them, having one active plot and several plots in fallow.

Increase of population (in the Toledo district, from 11,495 inhabitants in 2000 to 18,968 in 2010, a 65% increase in 10 years) and the associated rise in agricultural demand have led to a decrease in soil fertility, which has caused an expansion of the agricultural matrix in the villages community lands (and outside of them) in search of more fertile soils. Highly variable and shortened fallow periods, and shifting agricultural techniques have created a complex landscape, particularly close to populated areas, dominated by a young secondary forest, which remains unused for a few years before it is cut down again after the fallow period. The search for new fertile lands and the subsequent human footprint expansion has been one of the main trends identified in this study (see map), from 4400ha (10,872 acres) affected by human footprint in 1980 to 11,045ha (27,292 acres) in 2012 (Figure 1).

Agriculture is not the only factor involved in Land-use/Land-cover change. Natural hazards like hurricanes can also be determinant. Some parts of the MGL experienced severe damage during hurricane Iris in 2001, due to vegetation knock over and aftermath fires, caused by the use of fire in agricultural practices (*slash and burn*) that escaped and burned large areas due to fuel accumulation. Both agricultural expansion and post-hurricane related fires have had their effect in deforestation rates (Figure 2), which are variable, but worryingly high in the last period studied (2010-2012) where hurricane effects had a minimal influence.

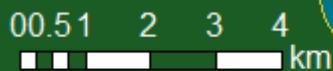


Southern Biological Corridor

GSCP

MGL

Human footprint in the MGL



Despite these challenges, The MGL plays a key role in the maintenance of the structural and functional connectivity of the Belize Southern Biological Corridor, and it is paramount to protect the remaining forests of this narrow passage that connects the Maya Mountain Massif with the forested coastal plains.

The effective management of GSCP is already contributing to the maintenance of the corridor, but its narrowness and confinement between the villages of Golden Stream and Medina Bank make it a very fragile corridor. For this reason, Ya'axché, through its Integrated Landscape Management strategy is trying to stabilize Land-use change rates in these villages, by

promoting permacultural practices like cacao based agroforestry and discouraging inefficient and environmentally hazardous practices like *slash and burn*. The Golden Stream community has been a Ya'axché partner community since the birth of this organization, and has participated in many Ya'axché led initiatives

In Medina Bank, the *Tz'imin Che* Watershed Group, assisted by Ya'axché, has just begun a process towards the promotion of sustainable land use practices and wise management of the Deep River Watershed, through direct activities like the reforestation of 1500 trees on the river bank, and long term actions linked to awareness-raising and education.

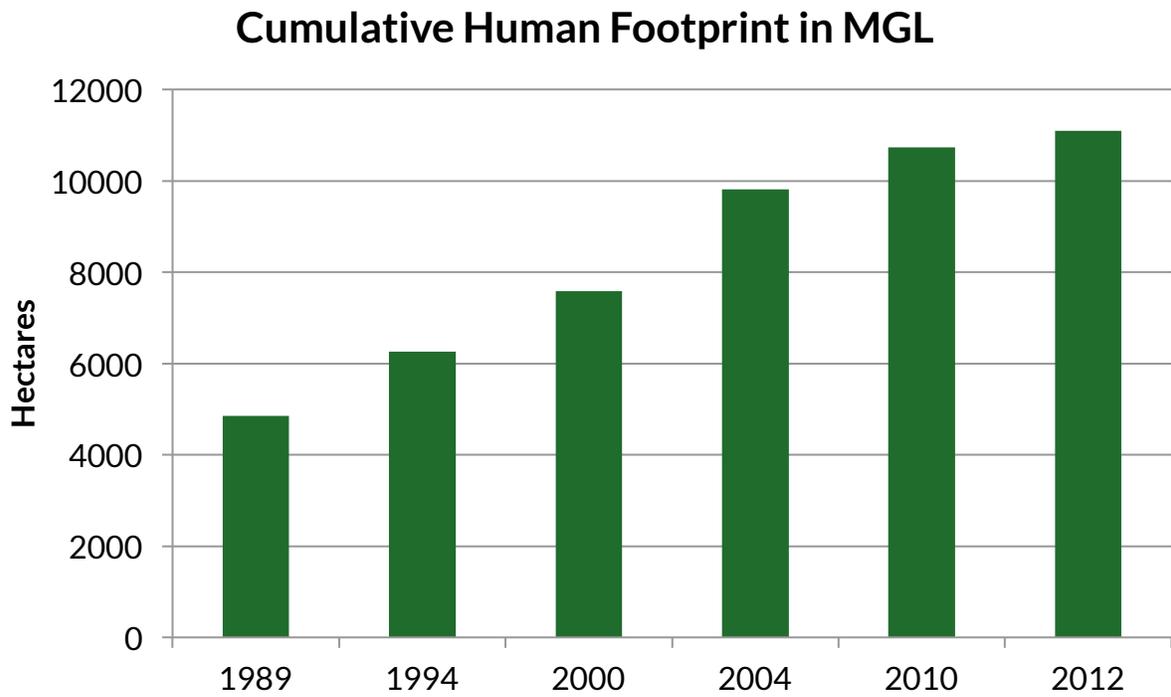


Figure 1. Cumulative human footprint (hectares) in the Maya Golden Landscape, 1989 to 2012.

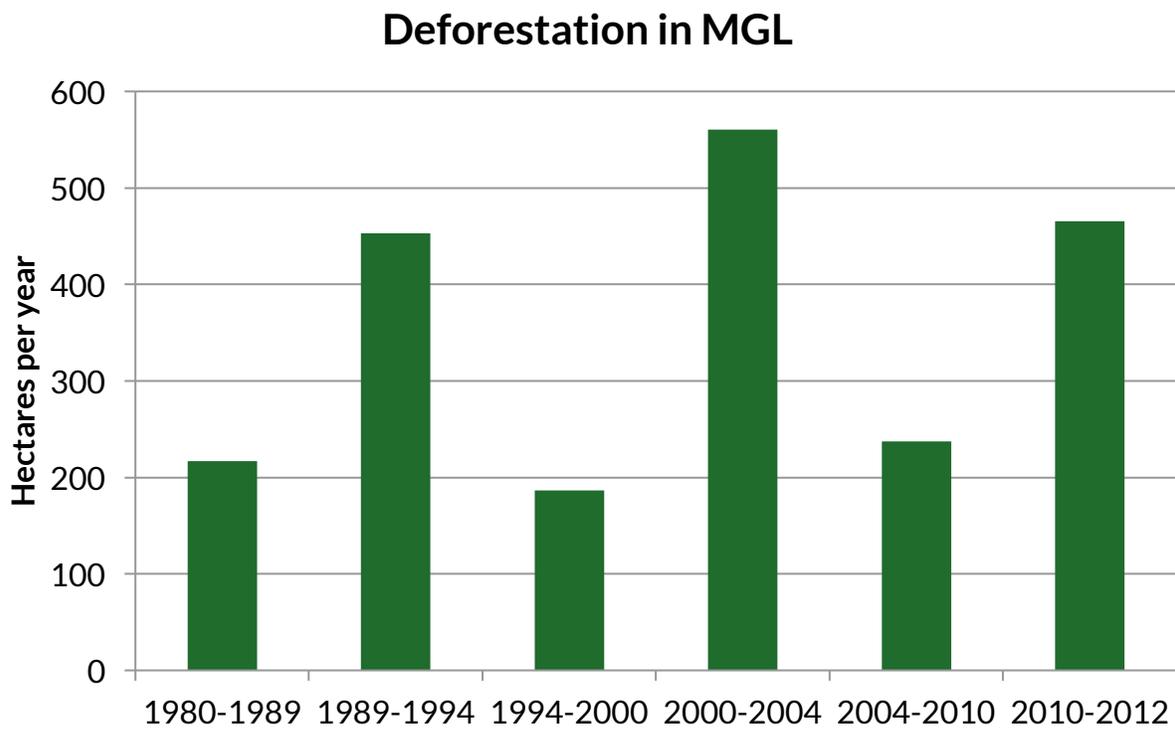


Figure 2. Deforestation rates in the Maya Golden Landscape, 1980 to 2012.

Protected Areas Management program

Ya'axché's vision is to find harmony between nature and human development. The Protected Areas Management (PAM) program seeks this through balancing research, monitoring and law enforcement and through close partnership with the Community Outreach and Livelihoods program. The primary aim of the PAM program is to ensure that sensible, socio-culturally sensitive and science based decisions are made concerning the Golden Stream Corridor Preserve and Bladen Nature Reserve. Achieving this does not happen overnight and Ya'axché has been adapting and changing to meet this challenge since the management of Golden Stream Corridor Preserve was taken on in 1998, and then on a much larger scale since management of Bladen Nature Reserve was taken on in 2008.

2012 saw both a continuation of the biodiversity monitoring transects, in operation for 6 years now, and also a move toward more long term indicators of ecosystem health. The ranger team have all received training in a suite of biotic and abiotic monitoring techniques over these past 6 years have, under the guidance of the Research Officer, refined and professionalized Ya'axché's data collection, recording and database management to a remarkable level of self sufficiency. In addition to this, patrol techniques have been improved and illegal activity monitoring has similarly professionalized through changes to data recording and database management.

The added strength of expertise in GIS and Remote Sensing has enabled management to develop specific threat mapping and to better visualize georeferenced data from a

variety of incidents ranging from hunting camps and archaeological looting sites through to sightings of rare and endangered flora and fauna. This threat mapping has, in combination with the Land-use/Land-cover change mapping, enabled a more comprehensive and broad view of what are the drivers of the threats to the integrity of biodiversity in the Maya Golden Landscape.

Ya'axché's ranger team is one of the best trained in Belize in the areas of biodiversity monitoring, research data collection and data processing. Our patrol techniques and threat monitoring are also exemplary. However, the threat levels are changing in Bladen Nature Reserve and dealing with this threat will require a new approach which must be prepared for. The need to carry firearms has become so apparent that Ya'axché has been forced to seek the necessary training in anticipation of a potential confrontation. An alarming rate of deforestation, degradation and loss of threatened species is occurring in our neighbouring protected area, the Chiquibul National Park to the north and the Columbia River Forest Reserve to the west, it is likely that unless action is taken we can expect to see the same impacts as far into Belize's territory as Bladen Nature Reserve.

More than ever there is a need to develop effective partnerships with other law enforcement agencies both government and non-government. Ya'axché will continue to advocate at the highest level for the increased protection of the Maya Mountain Massif and for the strengthening of these partnerships, and in particular the sharing of experiences and lessons learned.



Ya'axché ranger Anignazio Makin crosses a small stream on a patrol in the eastern part of Bladen Nature Reserve, February 2012.

Photo: Erik Hammar

Enforcement

Ya'axché has over 14 years of protected area enforcement experience and has strived towards a firm but fair approach, which is sensitive to the socio-economic needs and traditional practices of the communities buffering the Golden Stream Corridor Preserve and the Bladen Nature Reserve. Growing threats from Guatemala to the integrity of these protected areas in the Maya Mountains will require a collaborative approach between Ya'axché, the Government of Belize and from the communities that rely on the services provided by these forests.

Trends observed in 2011, which saw illegal activity drop significantly in Eastern and Central BNR and GSCP continued in the first half of 2012. This trend was unfortunately not apparent in the Western region of BNR. Continued difficulties in getting the necessary support from the Belize Defence Force, due to escalating violent crime in Belize City, resulted in just three patrols to the region. Despite the low patrol frequency valuable information was collected. High levels of Xatero (illegal palm leaf harvesters from Guatemala) activity in Central River valley, the border region with Columbia River Forest Reserve, were discovered, including direct contact with

armed Xateros. A subsequent patrol to assess the extent of Xatero incursions east of this point found that trails and harvesting activity has now extended more than 15km inside the reserve, and 25km inside Belize's sovereign territory.

The discovery of Xateros such a distance inside BNR has raised the threat level for previously low risk patrols and has led the board of directors to agree with the request of the PAM program for permission to carry firearms on regular patrols. In order to explore this in the safest possible manner the rangers received training in the safe handling and operation of shotguns and handguns. In early 2013 licences will be obtained, safe storage constructed, and finally firearms purchased. An exchange program will be set up in early 2013 in order for the rangers to get experience in the Chiquibul forest complex, with partners Friends for Conservation Development (FCD), who are facing even greater levels of illegal activity than BNR. A joint training with FCD ensured the remaining Ya'axché ranger without Special Constable licence was able to undergo the training and receive the important qualification.

GUATEMALA
BELIZE



CAYO DISTRICT

MAYA MOUNTAINS

BLADEN NATURE RESERVE

2009-2010
2011
2012
2013?

GOLDEN STREAM CORRIDOR PRESERVE

TOLEDO DISTRICT

PUNTA GORDA

CARIBBEAN SEA

Intrusions by Xateros in Bladen Nature Reserve have increased over recent years. In 2012, Xatero activity was discovered 15 km inside the reserve.



In eastern and central BNR Ya'axché continued to record low levels of illegal activity. Over the past 14 years Ya'axché has been raising awareness of the need for protected areas, their location, and the laws pertaining to them, in conjunction with Ya'axché's COL program. This, combined with a firm but fair approach to enforcement, is likely to have contributed significantly to this drop in illegal activity. In order to gather the social evidence to support this assumption, such as numbers and type of species hunted, Ya'axché is seeking to develop its social monitoring program component in 2013.

To further advance the patrol and enforcement program component the ranger team has received training in patrol data collection and incident report writing throughout 2012. This complements the

newly designed patrol log database, which contains data collected since 2009, and is currently being analysed to check for patterns or trends which might assist the team in conducting better targeted patrols.

One of the keys to effective enforcement in BNR is partnerships. Ya'axché had the opportunity to present the issues facing the reserve and give recommendations for dealing with these issues to the Minister of National Security in November. Through coordinated and increased frequency of patrols into the Columbia River Forest Reserve and BNR, in partnership with the Belize Defence Force, Police Department and Forest Department, illegal activity is expected to decrease. Lessons learned, and partnerships built, with FCD in the Chiquibul forest complex will increase the effectiveness of these patrols.

Table 1. Number of patrols carried out by Ya'axché rangers in Bladen Nature Reserve (BNR), Deep River Forest Reserve (DRFR), Golden Stream Corridor Preserve (GSCP) and Columbia River Forest Reserve (CRFR) in 2012.

Month	Patrols		Man days worked BNR and DRFR	Man Days Worked GSCP and CRFR
	BNR and DRFR	GSCP and CRFR		
January	23	27	46	78
February	19	28	41	57
March	13	25	24	63
April	20	22	55	56
May	27	27	61	59
June	30	23	65	50
July	22	18	45	40
August	20	17	42	45
September	23	18	62	35
October	20	16	47	33
November	17	16	34	50
December	19	12	42	31

The Rosewood issue

Addressing the issue of rosewood exploitation in the Toledo District has continued to be a priority for Ya'axché throughout 2012. In our 2011 Annual Report we suggested that a high number of large *Dalbergia stevensonii* trees had already been removed from the forest. The conservation community had grave concerns that this would result in the species becoming locally rare – a worrying prospect given that southern Belize is thought to be the last stronghold for *D. stevensonii* (the species has only been recorded in the Toledo District of Belize, and neighboring areas of Mexico and southeastern Guatemala). Furthermore, a market flooded with raw lumber led to a drop in value at the local level and many citizens of Toledo were concerned at the low price paid to local workers per board foot, in comparison to the thousands of dollars made by those at the other end of the supply chain.

In February of this year, Ya'axché was awarded a grant from the Mohammed bin Zayed Species Conservation Fund to step up protection of rosewood populations in the Golden Stream Corridor Preserve (GSCP). At a point in the dry season when harvesting was intense, Ya'axché had received numerous reports of illegal logging on private lands, in forest reserves, and on land adjacent to the Bladen Nature Reserve. This funding allowed us to conduct a number of extra patrols deep into GSCP to monitor for signs of illegal activity. It also enabled us to commence long-term monitoring of the species, in order to provide much-needed information on population dynamics.

The appointment of Ya'axché's former Executive Director to the newly created position of Minister of Forestry, Fisheries and Sustainable Development (MFFSD) in March 2012 was swiftly followed by the issue of a moratorium on harvesting of rosewood trees, and on the export of raw lumber. Although certainly not popular with all those involved in the rosewood supply chain, for Ya'axché, this informed decision represented the culmination of almost a years' worth of advocacy work. In June, a team from the Environmental Investigation Agency, USA spent several days in the Toledo District working with Ya'axché staff to gather information on the rosewood issue. Other species from the *Dalbergia* genus are being harvested at an alarming rate in Madagascar and Thailand where (as is the case in Belize) unsustainable (and often illegal) logging is driven by demand for raw lumber from China. EIA recently published a report¹ stating that China is now the worlds biggest importer, consumer and exporter of timber and wood products.

In October 2012 the government of Belize submitted a proposal for the species to be included on CITES Appendix II.

¹ *Appetite for Destruction: China's trade in illegal timber.*
Environmental Investigation Agency, November 2012.



The demand for rosewood, primarily from China, has resulted in unsustainable extraction rates of the species in Belize.

Photo: Maximiliano Caal

The proposal will be presented by a delegation from the Government of Belize at the sixteenth CITES Conference of the Parties in Bangkok, Thailand in March 2013. As and when the moratorium is lifted, a listing under Appendix II would help regulate exports of raw lumber and some semi-finished products.

A CITES listing is just one component of a much larger body of work needed to ensure greater protection for this valuable timber species across its limited global range. In Belize, Ya'axché will continue to advocate for a district-wide assessment of remaining standing stocks, since determining population sizes will be key to developing a sustainable use plan. We will also continue to raise awareness of the importance of sustainable use of forest resources amongst communities in Toledo (funded by Rainforest Action Network), and we are working with the law enforcement team from the Forest Department to ensure that community members are cognizant of current legislation, and of the penalties for breaking those laws. Within weeks of the official opening of logging season in October, Ya'axché received reports of rosewood harvesting at three separate locations in the district. As the forests dry out, there may well be increase in illegal logging. We will continue to work alongside the Forest Department and the police in an effort to protect remaining stocks and to ensure that the laws of Belize are upheld. Our priorities for 2013 will be to continue protecting rosewood trees in GSCP and Bladen, to complete a Red List assessment for the species (a collaboration with the Global Trees Campaign in the UK), and to

ensure that the Government of Belize is well-armed to defend its CITES proposal at the Conference of the Parties in March.

A recent report produced by an independent forestry consultant has suggested that if the rosewood moratorium were to be lifted without first implementing tighter controls on the harvesting of trees, and on the export of raw lumber, commercial stocks of *D. stevensonii* in Belize could be exhausted in 20 years or less. At Ya'axché we believe it is necessary to look not only at the eventual loss of financial benefits that such actions are likely to bring about, but also to consider the long-term ecosystem damage that could be caused if such a high rate of extraction were to recommence. Furthermore, which tree species will be the next target once *D. stevensonii* is no longer available? Reports that black poisonwood (*Metopium brownei*) and granadillo (*Platymiscium yucatanum*) are being stockpiled in the north of the country demonstrate that a shift may already be in progress, and that action could soon be required to ensure there is no long-term damage to populations of these species.

Rosewood trees have been a valuable resource for the people of Belize for many years. With science-based management decisions, regular monitoring of logging activities, clearer legislation and better law enforcement, it is possible that the species could provide a steady income far beyond the next two decades, and that the forests of Toledo will continue to provide essential ecosystem services for future generations.

Monitoring

Since 2006, Ya'axché has been developing a biodiversity monitoring system to keep track of changes in the natural environment that could indicate unsustainable human impacts. The system has always consisted of approximately ten monitoring transects, on which bird and large mammal species have been recorded using point counts and track counts respectively.

When Ya'axché accepted co-management of the Bladen Nature Reserve (BNR) in 2008, a Biodiversity Research, Inventory and Monitoring strategy (BRIM) was drafted by Ya'axché, Fauna & Flora International and the Toledo Institute for Development and Environment (TIDE) in 2009. This strategy detailed the questions that the involved NGOs face when managing their protected areas, and distilled a number of indicators for the monitoring to find answers to these questions. Among these indicators were birds and large mammals, but also freshwater quality, vegetation and land use change.

In pursuit of including informative indicator species in the monitoring program, Ya'axché has struck a balance between aiming for the species groups suggested in the BRIM and opportunistically making use of available expertise within and around the organization. Between 2009 and 2011, an extensive freshwater quality monitoring effort was set up by Ya'axché's freshwater ecologist in the frames of a doctoral degree

at Lancaster University, UK. A third of the entire ranger team was intensively trained in the meticulous execution of field techniques to provide reliable data. In 2011, Ya'axché's Sustainable land-use manager did a first land-use land-cover change (LULC) study for the entire MGL, spanning a 30-year period. The study discovered an increasing human impact on the forested landscape outside of protected areas and an increase in illegal incursions inside protected areas. Also in 2011, a first number of test runs were conducted with acoustic Anabat units to monitor bat diversity and activity.

2012 was an extra intensive year for the monitoring team. Aside from the ongoing bird, large mammal, LULC, and bat monitoring efforts, four additional components were added to the monitoring program, taking advantage of fruitful relations with researchers at partnering NGOs BFREE and Panthera. Two one-hectare vegetation-monitoring plots were established to international professional standards in BNR. Over 4000 trees were tagged and their diameter at breast height (DBH) recorded. Due to the large number of trees, identification is still ongoing. Once identification is completed, the plots will be revisited in five years time to measure growth and forest dynamics. Both Ya'axché rangers and villagers from Ya'axché's buffer communities were trained in plot establishment, tree measurements and tree identification during these efforts.



Ya'axché rangers Pastor Ayala and Anignazio Makin getting ready for fresh water sampling in Bladen River, November 2012.

Photo: Erik Hammar

Another informative indicator species group taken on in 2012 was land snails, due to their sensitivity to chemical pollutants. Again, two Ya'axché rangers were trained in field methods for plot establishment, sample collection and species identification by researchers from BFREE and the Lincoln Memorial University – Cumberland Mountain Research Centre. Six 20 by 50m plots were established in BNR, in which over 80 leaf litter samples were collected.

Identification of snail species is still ongoing, but at least one snail species occurring in BNR has never been scientifically described. Thirdly, in an attempt to improve our large mammal monitoring data, Ya'axché obtained 10 camera traps from IdeaWild and PACT funds, and deployed these opportunistically in the protected areas. Several breathtaking pictures of rare and elusive species were taken, including jaguar, ocelot, tapir and white-lipped peccary. Currently, efforts are underway to conduct an MGL-wide survey with the help of Panthera to assess landscape connectivity for jaguars.

Lastly, two high-tech weather-monitoring systems are being installed in BNR. A total of five sensors are attached to a data logger, which stores measurements from all sensors every five minutes. Measurements include rainfall, wind speed, temperature, relative humidity and Photosynthetically Active Radiation. These weather stations, in combination with a similar setup at BFREE, aim to detect rainfall gradients in BNR, and provide environmental background data against which the biodiversity data can be interpreted.

The BRIM prescribes the annual analysis of the data, to facilitate comparison among years and provide information to guide the management of our protected areas. A first annual Biodiversity Synthesis Report was produced in 2010, and the 2011 report will be available in the first quarter of 2013. These reports include detailed description of field techniques, data management and analysis techniques, and provide an overview of all results for the different indicators. The reports are available from yaaxche.org.



This weather station, named Esmeralda, was established in the southern part of Bladen Nature Reserve in November 2012 and is one of three that will be used to collect data on the local climate.

Photo: Erik Hammar

Research

Although Ya'axché is not primarily a research-focused organization, we are continuously looking for opportunities to base our management decisions on a more solid scientific basis. Therefore, we work together with national and international research institutes whenever possible.

In March, a team of researchers, Ya'axché staff and community members went up to an area called 'the Maya Divide', the highest ridge in the Maya Mountains, to explore the biodiversity of this extremely remote and unknown area, which might have seen very few visitors since the demise of the ancient Maya. The expedition team found an area of quasi-cloud forest with many giant oak trees and a plethora of epiphytes. The area was named 'Oak Ridge'. The team consisted of researchers from BFREE and Copperhead Consulting (US), and made inventories of plant diversity, bat

diversity and land invertebrate diversity. Final results are still underway, but at least eight land snail species were discovered that are presumed to be new to science, and some very rare fern species were observed.

Research was undertaken on daddy long-legs (Arachnida: Opiliones), which are also known as harvestmen, in late July in the very east of Bladen Nature Reserve. Lead researcher Maynard Schaus and assistant Vic Townsend were able to find 11 species in BNR of which only two were found elsewhere, meaning nine unique and possibly endemic to the area. It is interesting to note that all other sampling sites in Belize combined yielded only 10 species and BNR had 11. Professor Schaus is interested in sampling more extensively in BNR, including more remote locations, potentially in 2014.

Staff

As of January 2013, Ya'axché has 25 paid and unpaid members of staff, including 10 rangers. Volunteers, indicated by an asterisk, fill key positions in the organization.

Christina Garcia
Executive Director

Bartholemew Teul
Community Outreach & Livelihoods
Programme Manager

Lee Mcloughlin*
Protected Areas Manager

Ivanny Oliva
Finance Manager

Maximiliano Caal
Program Support Officer

Jaume Rusalleda*
Sustainable Land-use Officer

Kenny Cal
Agriculture Extension Coordinator

Julio Chub
Education & Outreach Coordinator

Maarten Hofman*
Research Coordinator

Gail Stott*
Botanist

Erik Hammar*
Marketing & Communications Coordinator

Tom Pienkowski*
Head Development Officer

Roberta Kamille Pennell
Development Officer

Stacy Armbruster*
Conservation Project Manager

Marchilio Ack
Head Ranger

Victor Bonilla
Ranger, specialized in birds

Octavio Cal
Ranger, specialized in freshwater
monitoring

Anignazio Makin
Ranger, specialized in freshwater
monitoring

Pastor Ayala
Ranger, specialized in freshwater
monitoring

Rosendo Coy
Ranger and licensed tour guide

Vigilio 'Dilo' Cal
Ranger, specialized in navigation

Marcus Tut
Ranger, specialized in snail monitoring

Marcus Cholom
Ranger, specialized in snail monitoring

Zaccheus Cal
Ranger, specialized in vegetation
monitoring

Miguel Coc
Horticulturalist

Funders and Partners

Fauna & Flora International (FFI) is the principal institutional partner of Ya'axché and has supported the organization from the beginning.



Ya'axche would like to thank all those that have supported and contributed to our work in 2012:

- COMPACT
- Conservation Leadership Program
- German Embassy
- Global Environment Facility (GEF)
- GIZ
- Grass Valley Trust
- Greenhill Conservation Consultancy
- Mohamed bin Zayed Species Conservation Fund
- New England Biolabs Foundation
- Nicolas Hulot Foundation
- Panthera Liz Claiborne Art Ortenberg Jaguar Research Grant
- Protected Areas Conservation Trust (PACT)
- Rainforest Action Network
- The Rufford Foundation

- Tapir Specialist Group
- Turtle Conservation Fund
- OAK Foundation
- United Nations Children's Fund/UNICEF
- United States Fish and Wildlife Service
- Whitley Fund for Nature

Partner organizations

- Association of Protected Areas Management Organizations (APAMO)
- Belize Association of Private Protected Areas (BAPPA)
- Belize Foundation for Research and Environmental Education (BFREE)
- Belize Defense Force (BDF)
- Government of Belize
 - Forest Dep.
 - Fisheries Dep.
 - Policy Unit
- Maya Mountain Cacao
- Sarstoon-Temash Institute for Indigenous Management (SATIIM)
- Toledo Cacao Growers Association (TCGA)
- Toledo Development Corporation
- Toledo Institute for Development and Environment (TIDE)

Financial Statement

In 2012, Ya'axché was able to secure a total of BZ\$890,125.05 from various funding agencies and donors (Table 2). The organization was able to operate in an effective manner using the available funding sparingly while still being able to provide the necessary services to help improve community livelihoods and provide support to those in need. The funding was distributed into the program areas as follows:

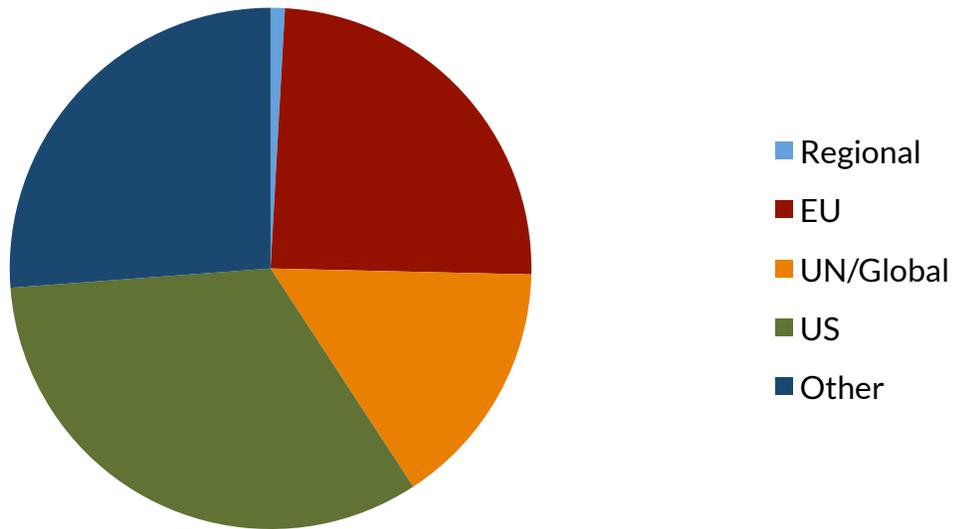
Core operations	\$305, 130.39
Protected Areas Management	\$305, 840.56
Community Outreach and Livelihoods	\$150, 134.62

With the aid of a new and improved Fundraising strategy we plan to develop and operate each program area to its fullest capacity.

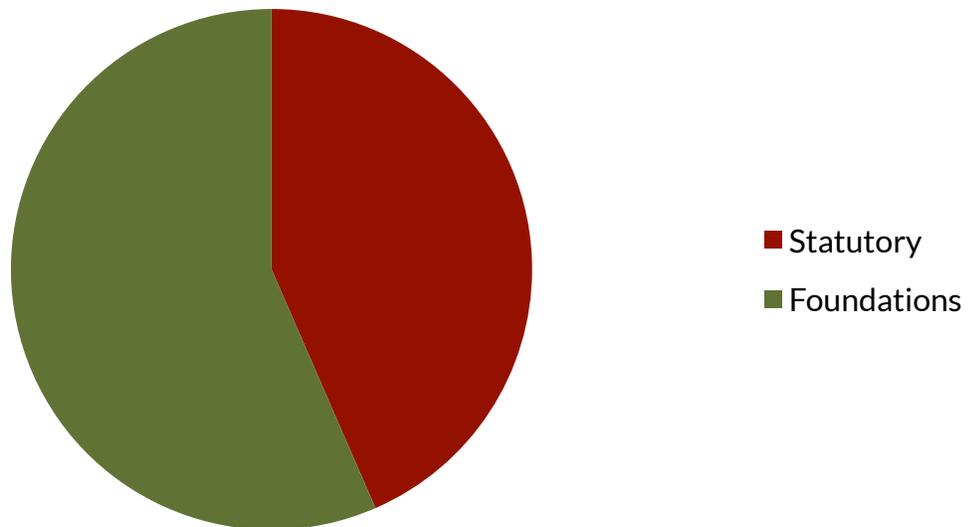
Table 2. Financial statement for the period 01/01/2012 to 12/31/2012.

REVENUE	
Interest Revenue	130.25
Miscellaneous Revenue	1,190.00
Income from grants	890,125.05
TOTAL REVENUE	891,445.30
EXPENSE	
Salaries	
Salaries	320,296.46
Social Security Tax Expense	11,521.74
Total salaries expense	331,818.20
Core activities expenses	
Advertisement & Promotion	5,175.00
Communications	17,952.45
Dues & Subscriptions	410.00
Equipment: Maintenance	245.60
Interest & Bank Charges	3,994.69
Legal Fees & Professional Fees	9,480.78
Office Space	20,210.09
Office Supplies	4,888.19
Staff Appreciation	682.00
Stipends & Allowances	13,787.00
Training & Development: Staff	305.70
Total Transportation	39,343.94
Total core activities expenses	116,475.44
Program expenses	
Equipment: Maintenance	1,887.05
Materials & Supplies	30,590.99
Total Materials & Supplies	29,168.65
Scholarships	504.00
Stipends & Allowances	81,164.10
Sundry	2,450.00
Professional Fees/Consultants	104,360.69
Training & Development: Staff	1,280.00
Transportation	40.00
Total Transportation	27,539.16
Total program expenses	278,984.64
Capital expenses	
Vehicle	2,088.26
Buildings	81.65
Office Equipment	31,617.37
Loss on Disposal of Assets	40.00
Total capital expenses	33,827.28
TOTAL EXPENSE	761,105.56
Net income (Total carried forward to 2013)	129,841.74

Geographical origin of funding 2012



Type of funders 2012





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