



# Annual Report 2018

Ya'axché Conservation Trust



Punta Gorda | August 2019

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A mature Baird's tapir at Bladen Nature Reserve (*Tapirus bairdii*)  
Photo: James Abbott

## **Back page**

Russet-naped wood-rail (*Aramides albiventris*)  
Photo: Maximiliano Caal



Clavarioid fungi colloquially known as coral fungi.

Photo: Dan Doucette.

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## List of acronyms

BAS	Belize Audubon Society
BDF	Belize Defence Force
BNR	Bladen Nature Reserve
CFII	Chiquibul Forest Investment Initiative
CITES	Convention on International Trade in Endangered Species
COL	Community Outreach and Livelihoods
FCD	Friends for Conservation and Development
FD	Forest Department,
GSCP	Golden Stream Corridor Preserve,
GIS	Geographic Information Systems
GPS	Global Positioning System
GTC	Global Trees Campaign
IFS	Integrated Farming System
km	kilometer
MFFSD	Ministry of Forestry, Fisheries and Sustainable Development
MGL	Maya Golden Landscape
MMNFR	Maya Mountain North Forest Reserve
PAM	Protected Areas Management
SMART	Spatial Monitoring and Reporting Tool
SPU	Police Special Patrol Unit
TFCGA	Trio Farmers Cacao Growers Association
TIDE	Toledo Institute for Development and Environment
Ya'axché	Ya'axché Conservation Trust

## From the Executive Director

### Looking at 2018, Moving Forward

Ya'axché continues to advance its efforts on building **harmony between nature and human development for the benefit of both**. This is achievable through the combined efforts of our two main programs – Protected Areas Management and Community Outreach & Livelihoods; these programs continue to positively impact the lives of communities by fostering awareness and sustainable use of Belize's natural resources.

Over the last twenty years, we have worked tirelessly in ensuring that we create environmental stewards, build the capacity of communities, but most importantly enhance the livelihoods of hundreds of farmers, youths and women. Together in Maya Golden Landscape (MGL) in 2018, we have established 21 model agroforestry and Inga alley cropping farms, harvested over 2,091 pounds of honey, acquired organic certification for farms in the agroforestry concession in Maya Mountain North Forest Reserve, delivered over 20 capacity building training sessions for community members, and improved infrastructure and road access for the transportation of crops. These are only a few things to mention from the many achievements garnered in 2018.

Conscious of the work that we have done, I make reference to the numerous capacity building opportunities provided to our protected area rangers, which was possible through partnerships with numerous organizations, including government agencies. This has prepared our rangers to be better in compliance management, as well as establishing and strengthening partnerships. Shifting the gears in protected areas management also led us to the adoption of new technologies for improved data collection.

As we move forward, we remain focused and committed to providing more training opportunities especially in entrepreneurship to women, farmers and established groups. As Ya'axché's Executive Director, I assure you that we will continue to accomplish our work by collaborating with stakeholders, governmental departments, donors, and partners in order to ensure that we maintain a **healthy environment with empowered communities by fostering sustainable livelihoods, protected areas management, biodiversity conservation and environmental education within the Maya Golden Landscape**. Our commitment to our communities and engagement also ensures that we continue to bring stakeholders to discuss and shape our path forward for a more sustainable future.

Sincerely,



**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 2018 to 2020 was finalized in December 2017 and includes updated mission 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 a healthy environment with empowered communities by fostering sustainable livelihoods, protected area management, biodiversity conservation and environmental education within the Maya Golden Landscape.

### Organizational values

Ya'axché works with...

- Integrity
- Respect
- Professionalism

# Maya Mountain North Forest Reserve

## Bridging community with conservation

Since 2012 a group of landless farmers living near Maya Mountain Forest Reserve (MMNFR) wanted to implement climate-smart agriculture within the 36,000 acre forest reserve. Farming is allowed in a forest reserve, but it requires permission and needs to be carried out carefully; this has led to a successful, collaborative, pioneering initiative.

Ya'axché created a management plan and a conservation agreement to guide all activities to be carried out by the farmers, and lobbied the Government of Belize to establish Belize's first agroforestry concession within the MMNFR. In 2014, the legally recognized Trio Farmers Cacao Growers (TFCG) received permission to implement sustainable farming practices in a 936 acre agroforestry concession. Ya'axché provided the needed equipment, and technical field support to the 31 members of TFCG to adopt new agroforestry farming practices, and capacity building workshops to strengthen the group's leadership and governance.

In 2018, a remarkable year, members of the TFCG and Ya'axché began seeing the fruits of a successfully implemented agroforestry concession through the sales of cacao and still abundant wildlife in the reserve.

- 84,000 cacao trees planted (240 acres)
- A one acre Inga alley cropping model plot established
- Plot assessments completed
- Organic certification for 15 farmers
- A concrete bridge constructed by farmers
- A case study report on work done in the agroforestry concession completed
- Monthly meetings held between the Belize Forest Department, TFCG and Ya'axché
- 2,781 pounds of wet cacao beans harvested by the end of 2018
- Endemic species recorded, such as jaguars, harpy eagles, Baird's tapirs, howler monkeys, white-lipped peccary and red brocket deer
- Capacity building workshops covering over 25 topics provided to members of TFCG.



The newly constructed concrete bridge will help to facilitate the transportation of crops.

Photo: Maximiliano Caal

# Protected Areas Management

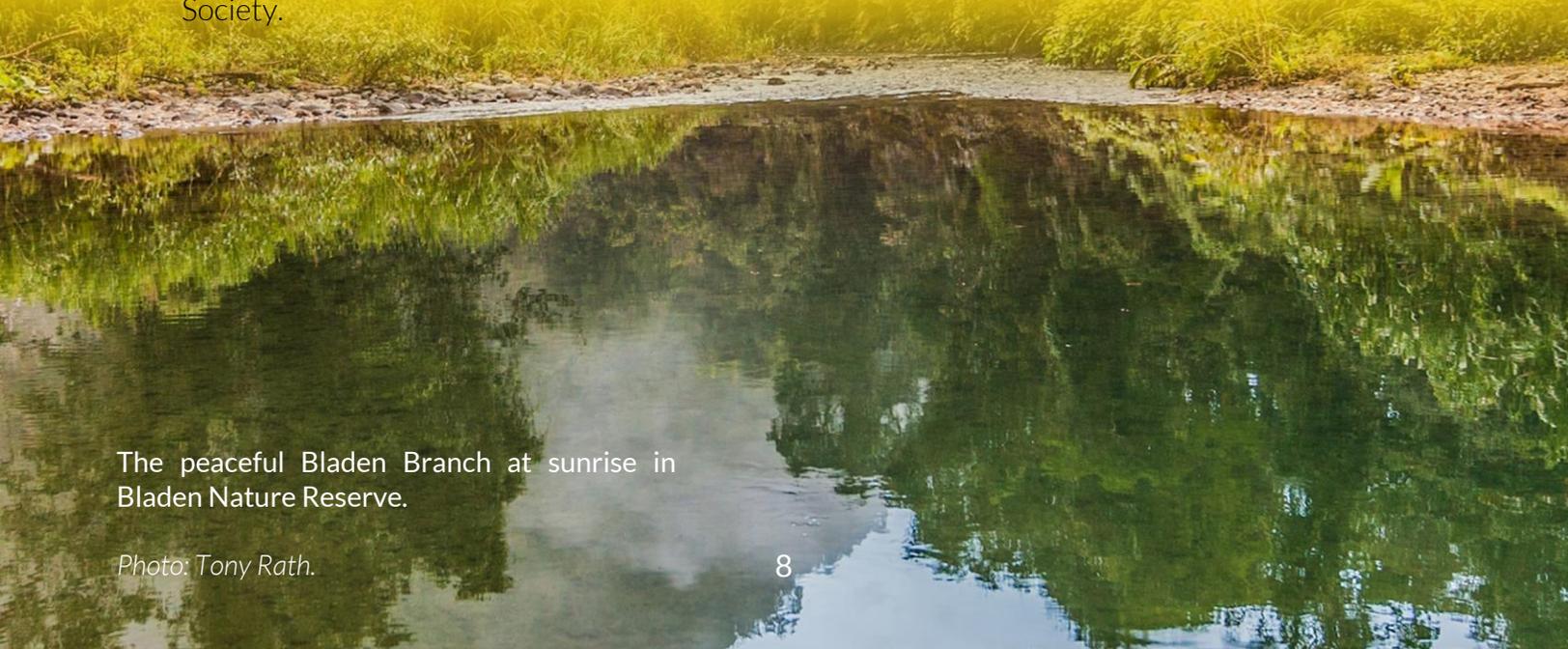
## Building capacity to protect wild places

The Protected Areas Management Program continues to grow, as has the organization over the past 20 years. From a small team in 1998 managing the 15,441 acre Golden Stream Corridor Preserve, the program has been able to attract and grow its team of highly motivated and passionate rangers – in 2008 when taking on comanagement of the 100,000 acre Bladen Nature Reserve, and in 2015 as Ya'axché received rights to comanage the 36,000 acre Maya Mountain North Forest Reserve. In 2018, the program had a 14-man ranger team, in addition to a protected areas manager, 3 GIS experts, research assistant, botanical research project manager, science director, and the protected areas program director.

Ya'axché believes in continuously building the capacity of its staff as opportunities and challenges arise. Ya'axché's ranger team is one of the best trained in Belize, which has been possible through training provided in house and through partnerships with the Belize Defence Force, Belize Police Department, Belize Fisheries Department, Toledo Institute for Development and Environment, and the Belize Audubon Society.

In 2018, the team received training in jungle combat, firearm safety and handling, GPS, GIS, first aid, basic computer, self defense, Spatial Monitoring and Reporting Tool (SMART), green laws, prosecution and arrest, fire management, report writing and case filing, special constable, public speaking, timber identification, and mammal and bird monitoring. As a result of these training sessions, and in particular prosecution and case filing, Ya'axché rangers successfully prosecuted a case in the Maya traditional court of the Alcalde in Golden Stream.

The investment in capacity building continues to pay-off in tackling existing and emerging threats facing the 151,000 acres of forests across the Maya Golden Landscape. Our SMART reports generated from over 1,497 patrols conducted, indicated that Bladen is the most vulnerable of the 3 protected areas – this is due to the limited presence across a vast, inaccessible area. Maya Mountain North faced more threats than Golden Stream Corridor Preserve. Cumulatively, illegal entry is the most frequent infraction, followed by hunting and logging.



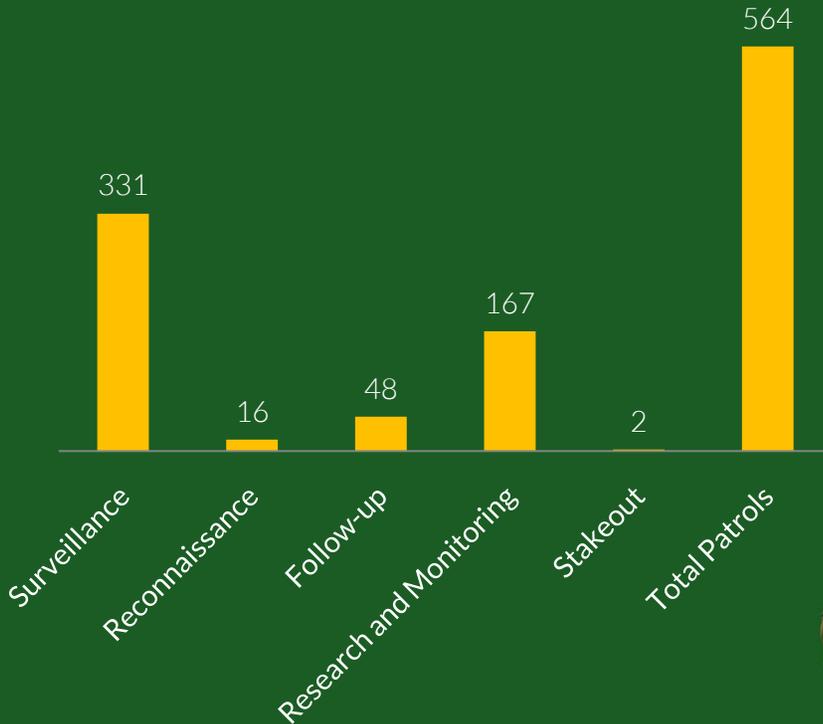
The peaceful Bladen Branch at sunrise in Bladen Nature Reserve.

*Photo: Tony Rath.*

## Threats to protected areas



## Patrol effort



Ranger Rosendo monitoring wildlife while on patrol in Golden Stream Corridor Preserve.

Photo: Maximiliano Caal.

## Science

### Rosewood monitoring

Ya'axché rangers have been monitoring 100 *Dalbergia stevensonii* trees at four sites in Golden Stream Corridor Preserve since October 2013. The major goals of this work are to identify seasonal patterns of flowering and fruiting and make correlations between tree size and reproductive success. This information is crucial for creating a sustainable harvest plan for the species.

Monitoring results show that most trees shed their leaves between April and July. Flowering begins at the peak of the leafless period, and its ending coincides with the time the trees begin regaining leaves. Flowering events for the species are narrow and occur for approximately one month each year between May and July. Fruits are observed after peak flowering, though the period of fruiting is less well-defined. Fruits are first formed in July, with few trees still holding on to mature fruit into March of the following year.

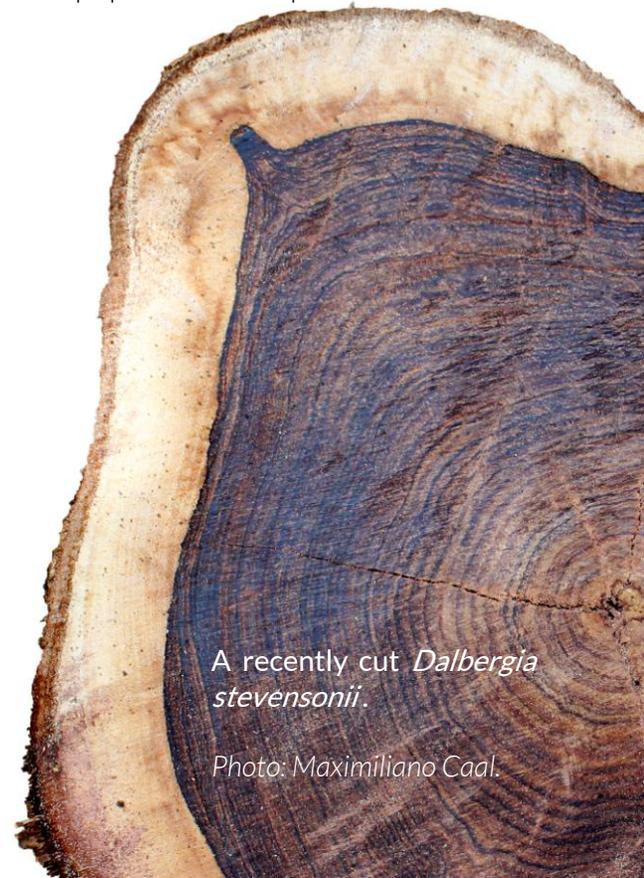
On average, 30% of the trees in GSCP are observed to flower each year, but at most only 15% of the trees are observed to have fruit at any time of the year.

Seventy five of the 100 trees in GSCP were observed to have flowers or fruit at least once during the monitoring time period. The proportion of trees observed with fruit generally increased with increasing tree diameter. 65% of trees meeting the commercial cutting diameter of 25cm DBH or larger produced fruit, compared to only 31% of trees below harvest size. This means that trees

harvested for timber are also the majority of trees producing fruit for the species. The results emphasize the importance of maintaining large trees to act as reproductive individuals for natural regeneration.

In 2017, the year with most consistent monitoring, the proportion of trees observed with flowers increased as tree size increased and peaked at roughly 75% for trees at least 20cm in diameter. Trees in the smallest size class were not observed to have any fruit. The proportion of trees with fruits increased with increasing size class. Ripe fruits were observed in trees at least 20cm in diameter, though even in the largest diameter class (40-49.9cm), only 25% of trees were observed to have ripe fruit.

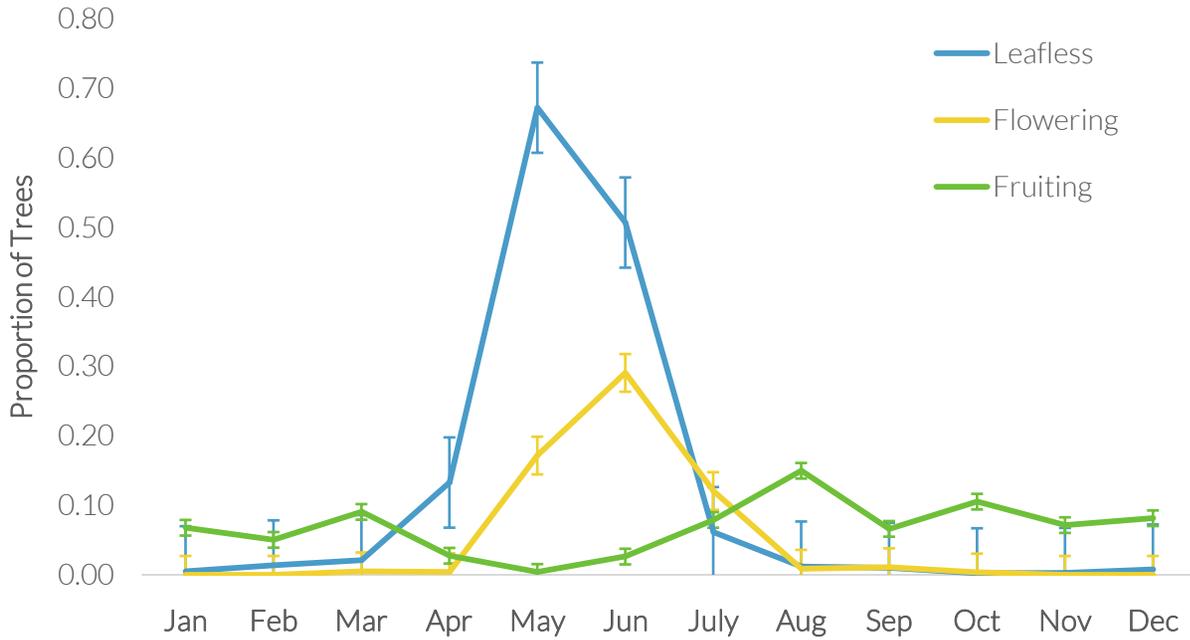
Ya'axché rangers continue to patrol and monitor rosewood in GSCP and MMNFR to ensure that populations are protected.



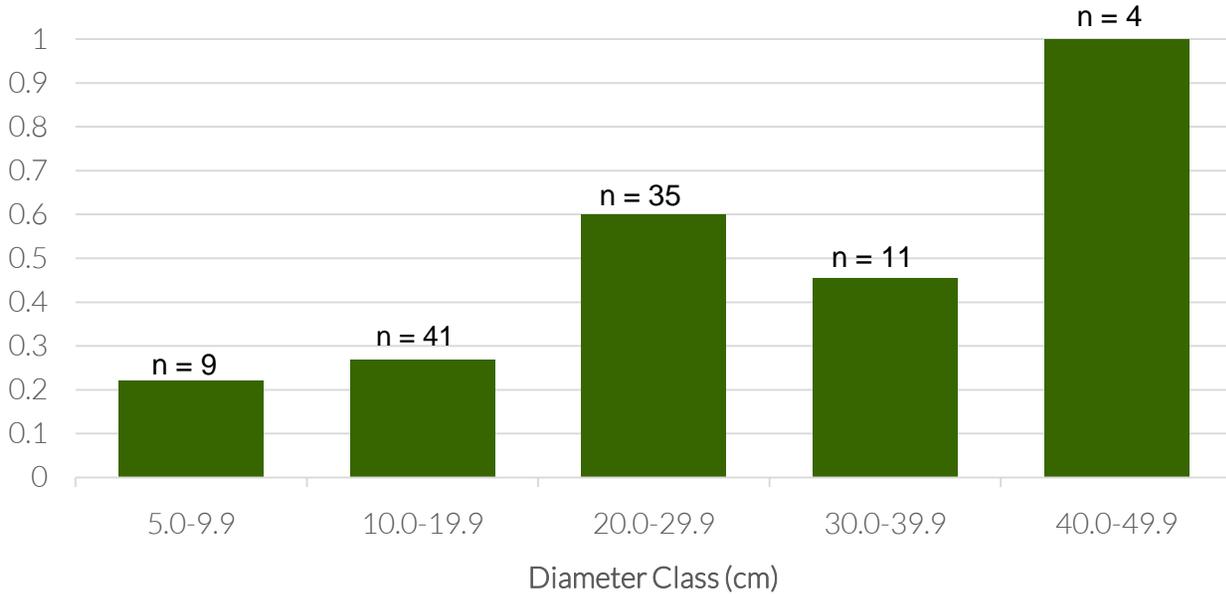
A recently cut *Dalbergia stevensonii*.

Photo: Maximiliano Caal.

Seasonal changes in GSCP *Dalbergia stevensonii* 2013-2018



Proportion of Trees with Fruit per Size Class  
2013-2018



## Agroforestry farm monitoring

Since 2005, Ya'axché has been working with farmers to adopt the wildlife-friendly farming practice of growing cacao beneath shade trees. In 2016, Ya'axché rangers began studying biodiversity on 5 of these agroforestry farms using non-invasive, motion activated field cameras – one of the research methods – to pictorially monitor mammal presence on the farms.

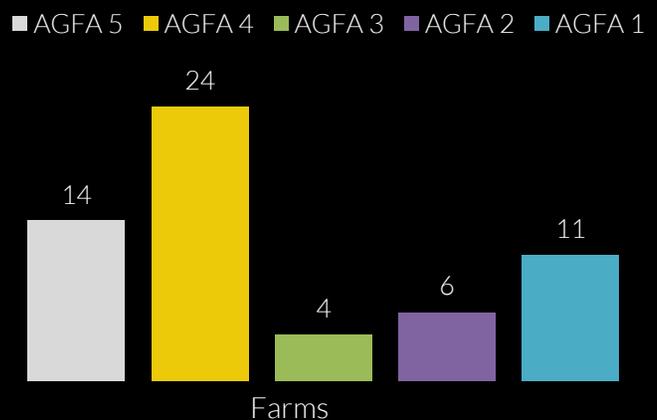
In 2018, two field cameras were deployed on each of the 5 agroforestry farms selected in the villages of Golden Stream, Indian Creek, Hicattee and San Miguel. The farms were monitored over 8 months, during both wet and dry seasons.

Over 30,000 photos were processed for 2018. The frequent mammals appearing on footage were agoutis and common opossums. Game species such as the white-tailed deer, paca, collared peccary, armadillo, and iguana were present on the agroforestry farms. Jaguar, puma, ocelot, jaguarundi and margay, all five of Belize's wild cats were captured by the field cameras.

Two farms from San Miguel recorded higher species richness – AGFA 4 having the highest followed by AGFA 5; however, there was a higher game species richness seen in AGFA 5. These agroforestry farms have faced fewer deforestation pressures since 2016 and have a higher percentage of canopy cover.

Due to increased deforestation resulting from expanded plantations around the agroforestry farms AGFA 3 and AGFA 2, the lowest number of total species and game species were recorded at these sites. Species more susceptible to higher disturbances, such as agoutis and opossums, were dominant on these agroforestry farms. Farm AGFA 1 remained in the median.

## Agroforestry Farm Species Richness



Jaguar (*Panthera onca*).

Photo: Panthera/Ya'axché.



## Community Outreach & Livelihoods

### Incorporating science

Complementing the work of the Community Outreach and Livelihoods (COL) Program creates a balance to protecting wild places in the Maya Golden Landscape (MGL). This critical program realizes the need to support the livelihoods of communities that are dependent on the resources and services provided by healthy forest landscapes.

As the COL program engaged and stimulated communities of the MGL over the past 20 years, science has become an important component in strengthening our work. In 2016, a short pilot study using camera traps began confirming that agroforestry farms provide a suitable habitat for mammals.

This year, not only were more species of mammals documented, but we saw a direct correlation of high forest cover with a higher diversity of species on agroforestry farms, including game species, and migrant birds. Ya'axché will continue to incorporate science in the COL program to gain a deeper understanding of our work so that agroforestry farmers clearly understand their impact.

### Engaging communities

The MGL has a relatively high forest cover, however due to growing populations and increasing demand for agriculture land, large mammals are affected by fragmented forests. Overhunting of game species and inadequately secured livestock farms have contributed to a rising conflict between farmers and jaguars in Belize. This year, we increased our education and outreach to children, youth, and adults through school visits, meetings, training workshops, and appearances on local radio and national television shows. In selected farms, mitigation measures such as field cameras, solar lights, sound alarms, and improved fencing were implemented. We recorded a reduction in reports of jaguars preying on livestock and retaliatory killing of jaguars.

Dialogue continued with leaders of communities of the MGL. Notably, regular discussions began with the leaders of San Pablo and Bladen villages, who are highly interested in Ya'axché's agroforestry work.

We engaged school children in our annual, interactive BioBlitz event through presentations, wildlife monitoring and spending a fun-filled day with Ya'axché's entire staff. This year, 120 students learned how to use a compass and map for navigation, set up field cameras for mammal monitoring, identify trees, birds and macroinvertebrates at the one-day event.



Farm produce from the Maya Golden Landscape.

Photo: Maximiliano Caal.

## Climate-smart agriculture exchanges

Ya'axché values the exchange of knowledge between stakeholders of the Maya Golden Landscape (MGL), individuals and groups that have similar interests. Ya'axché's COL team provided regular training and technical field visits to the farmers of the MGL and facilitated peer-to-peer exchange visits to learn from each other. This year, farmers working in the Vaca Forest Reserve in the Cayo District, farmers from Graham Creek village from the Toledo District and the beekeepers of the Cayo Quality Honey visited the agroforestry concession and other farms across the MGL. The COL team organized an exchange visit to Uaxactún, Guatemala with farmers and emerging entrepreneurs of the MGL to see how a long term concession is coordinated between multiple players involved in ecotourism, the harvesting of timber, xaté palm, and ramón nut.

An agroecology specialist from Cuba, Professor José Rubén Sánchez Curiel visited farmers of the MGL and southern Belize through a South to South Exchange – a partnership formalized after MGL farmers visited Cuba in 2017. Agroecology looks at increasing the productivity of farms by working closely along with nature for mutual benefits; it allows for a deeper understanding of how nature works. Hands-on training in community seed banking, seed production and storage, soil management, pest control, biofertilizers, composting and biogas were provided by Professor Rubén. Discussions of an agroecology farming manual to be worked on in 2019, by Ya'axché in collaboration with Professor Ruben, is underway.



Black eye beans bottled for storage by MGL farmer Augustin Chub.

Photo: Maximiliano Caal.

## Beekeeping

The beekeeping program is gaining momentum in the Maya Golden Landscape (MGL). The 21 beekeepers that Ya'axché works with – including farmers, most of which are females, raising bees in the Maya Mountain North Forest Reserve – harvested 2,091 pounds of honey in 2018. This is a result from improved apiary management and field training sessions provided by the COL team in beekeeping hygiene, pest management, expansion of hives, and management of shade for apiaries. Training workshops in branding, marketing and labelling was also provided to the beekeepers – it is important to note that the honey was sold locally. Ya'axché will be providing support in branding and marketing in 2019. Ya'axché also facilitated discussions on forming a beekeeping cooperative. The beekeeping program is moving in the right direction and allowing farmers to diversify their income streams.

## Inga alley cropping

In 2018, the COL team was able to work with farmers in establishing 21 Inga alley cropping plots across the Maya Golden Landscape. *Inga edulis*, a species of leguminous trees locally known *bri-bri*, is a critical part of this climate-smart farming system. The fast growing *Inga edulis* trees are grown in rows to suppress weeds, reduce erosion, create mulch and fix nitrogen in the soil. The Inga trees are allowed to close canopy and after two years, they are pruned to make way for annual crops such as maize, beans and vegetables. This climate-smart farming practice enables farmers to invest in the fertility of a piece of land rather than having to clear forests in search of fertile soils.



**Bees consuming honey during the wet season as less trees and plants are flowering during that period.**

*Photo: Ya'axché.*

Additionally the thicker branches of the Inga trees are used as firewood. This year, the COL team provided 2 training sessions using the farmer field school methodology, a pioneering initiative of effectively engaging farmers developed by Ya'axché, in pruning of the Inga trees and plot maintenance. In the coming year 2019, farmers will begin planting crops in their plots while others get ready to do their first pruning.

## Staff

The list below represents staff members (past and present) that have contributed to Ya'axché's achievements throughout 2018. As of January 2019, Ya'axché employs 33 full time staff. Volunteers, indicated by an asterisk (\*), fill key positions in the organization.

Christina Garcia	Executive Director
Karla Hernandez	Protected Areas Program Director
Ivanny Oliva	Finance Director
Gustavo Requena	Community Outreach & Livelihoods Program Director
Said Gutierrez	Science Director
Kamille Pennell	Operations Director
Carianne Johnson	Development Director
Marchilio Ack	Protected Areas Manager
Maximiliano Caal	Marketing & Communications Manager
Elizabeth Dorgay	Botanical Research Project Manager
Marvin Vasquez	Conservation Project Manager
Stephanie Smith	Conservation Project Manager
Marcelia Assi	Conservation Business Manager
Brenda Kolling	Conservation Business Manager
Gliselle Marin	Development Manager
Raquel Chun	Development Manager
Matthew Jones	Development Manager
Kari Alter	Development Officer
Julio Chub	Community Liaison Manager
Isidoro Sho	Agroforestry Extension Officer
Eugenio Ah	Sustainable Agriculture Coordinator
Oscar Requena	Research Assistant
Miguel Coc	Nursery Technician
Dianne Gomez	Administrative Assistant
Anignazio Makin	Ranger Team Leader, specialized in freshwater monitoring
Hilberto Rash	Ranger Team Leader, specialized in navigation
Henry Cus	Ranger Team Leader, specialized in navigation
Rosendo Coy	Research & Monitoring Ranger and licensed tour guide
Vigilio Cal	Ranger, specialized in navigation
Octavio Cal	Ranger, specialized in freshwater monitoring
Marcos Cholom	Ranger, specialized in snail monitoring
Andres Chen	Ranger
Juan Cal	Ranger
Benjamin Cal	Ranger
Ramon Sanchez	Ranger
Gerasimo Coc	Ranger
Junior Pop	Ranger
Roberto Tzib	Ranger
Benjamin Fletcher*	Protected Areas Program Assistant
Carly Voight*	GIS Officer
Craig Weideman*	GIS/Remote Sensing Specialist
Henry Wakamiya*	GIS Specialist
Meredith Beaton Marx*	Community Outreach & Livelihoods Intern

## Board of Directors

The list below represents members of Ya'axché's Board of Directors that have contributed to Ya'axché's achievements throughout 2018.

<b>Mr. Javier Chan</b>	Chairman (Expertise in Law and Prosecution)
<b>Ms. Aurelia Cal</b>	Vice Chair (Expertise in Financial Management and Business Administration)
<b>Dr. Matt Walpole</b>	BoD Member (Expertise in Conservation Biology and Ecology)
<b>Dr. Nicky Jenner</b>	BoD Member (Expertise in Fundraising and Project Development)
<b>Mrs. Josephina Rash</b>	BoB Member (Community Representative for Medina Bank)
<b>Mr. Antonio Sho</b>	BoD Member (Community Representative for Indian Creek)
<b>Ms. Christina Garcia</b>	BoD Member (Ya'axché Ex-Officio)

## Funders and Partners

Ya'axché is grateful to its long-term institutional partner, Fauna and Flora International for its continuous support over the years and would also like to thank all those who have contributed to our work throughout 2018:

- Australian Government
- Chiquibul Forest Initiative Ministry FFSD
- Disney Conservation Fund
- European Union
- GEF Small Grants Programme
- Gesellschaft für Internationales Zusammenarbeit
- Global Trees Campaign
- Halcyon Land & Sea
- Inter American Foundation
- New England Biolabs Foundation
- Overbrook Foundation
- Protected Areas Conservation Trust
- Rufford Foundation
- Whitley Fund for Nature

## Members

Ya'axché would like to extend a heartfelt thank you to all our members who support our work through their kind monetary contributions!

## Partner organizations

- Belize Association for Privately Protected Areas
- Belize Audubon Society
- Belize Defence Force
- Belize Forest Department
- Belize Foundation for Research and Environmental Education
- Colorado State University
- Ministry of Agriculture, Forestry, Fisheries, Environment, and Sustainable Development
- Maya Mountain Cacao
- Maya Mountain Research Farm
- Panthera
- Protectors of the Last Corridor
- Toledo Institute for Development and Environment
- Trio Farmers Cacao Growers
- University of Belize – Environmental Research Institute
- University of New Mexico

# Financial statement

1st January to 31st December, 2018

<b>Income Less Expense for the Year 2018</b>		<b>7,943</b>
<b>Income</b>		
Admin/Operational Reserve		155,944
Halcyon		188,020
Whitley Award		66,135
Inter American Foundation		20,279
Global Trees Campaign Year 4		27,212
FFI Sub Grant		19,766
CFI MFFSD 2016		158,610
PACT Multigrant		172,034
EU - ICCO		231,319
Rufford 2018		13,276
NEBF 2017		15,166
Overbrook 2018		79,288
Australian Government-DFAT		38,524
NEBF 5K		9,913
GEFSGP2018		111,874
GIZGRANT2018		197,524
GTC Yr 2018-2019		47,028
Disney Fund 2018		34,432
<b>Grant receipts</b>		<b>1,586,343</b>
Consultancy fees		5,850
Sales - nursery		91
EcoTourism Belize		29,972
<b>Other income</b>		<b>35,913</b>
<b>Total Income</b>		<b>1,622,256</b>

**EXPENSES**

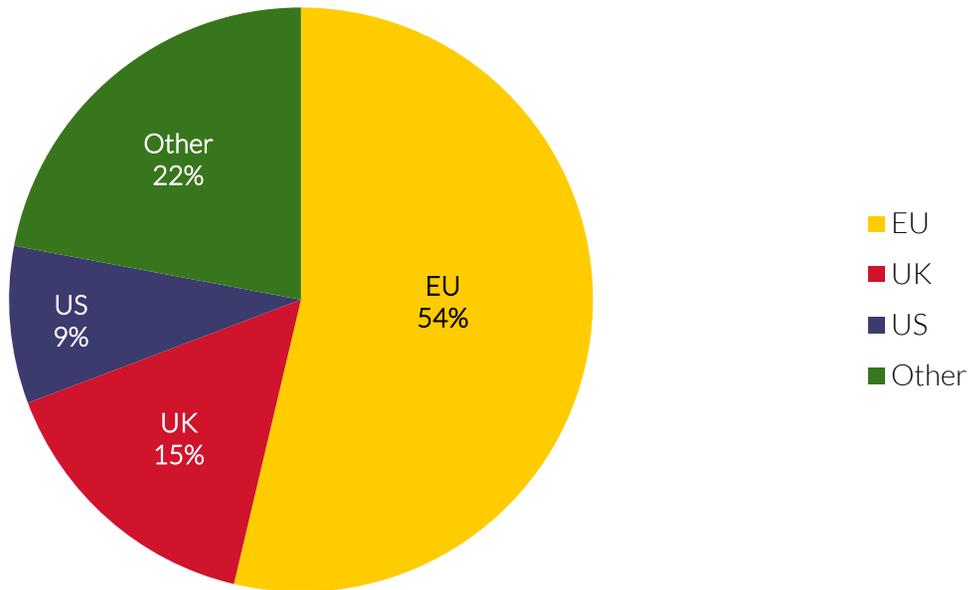
Salaries, wages and allowances	761,680
Training and development	19,482
Legal and professional fees	113,278
Severance provision	2,977
Depreciation	98,469
Materials and supplies	104,599
Workshop	76,888
Eco tourism Belize	42,823
Advertising and promotion	20,380
Communications	8,253
Building, Equipment maintenance and repair	5,188
Travel and transportation	46,623
Office expense and supplies	41,482
Field supplies and equipment	31,423
Vehicle, Fuel, maintenance and repair	85,551
Dues and subscriptions	621
Administration fees	145,064
Nursery & garden	61
Interest and bank charges	3,777
Loss on disposal	4,391
Other expense	1,303

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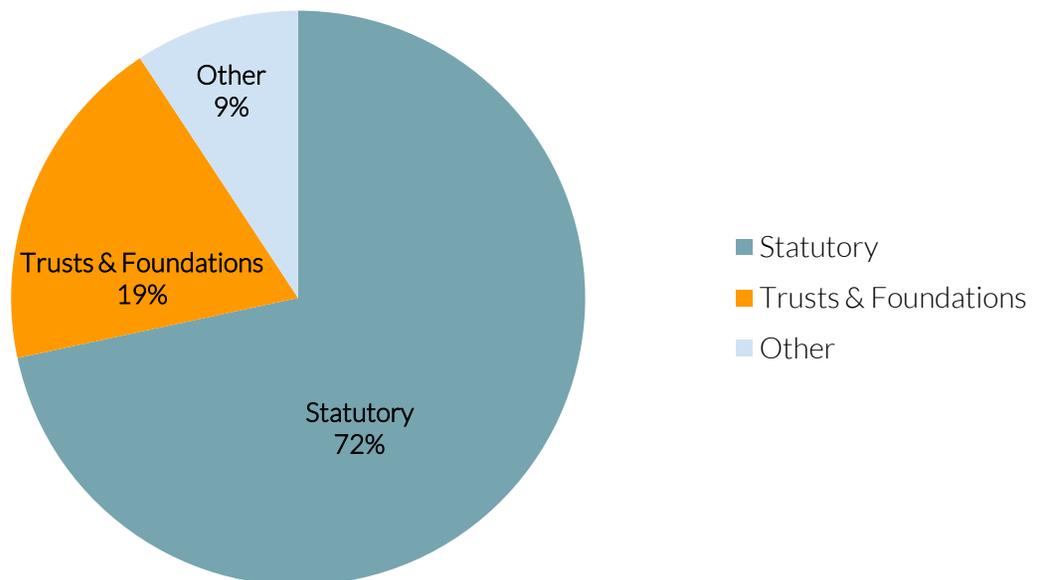
<b>Total Expense</b>	<b>1,614,313</b>
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## Geographical Origin of Funding 2018



## Funding Source 2018





**Ya'axché Conservation Trust**  
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