

Coastline newsletter



Volume: 5 Issue 1
January - July 2017



CZMAI Hosts the Third Annual Coastal Awareness Week 2017

By: Samir Rosado, Coastal Planner

Coastal Awareness Week (CAW) 2017 was celebrated from March 20th to 25th 2017 under the theme “Business and the Environment: A foundation for Sustainable Growth”. The purpose of the week of events was to i) Highlight the need for synergy among Belize’s economic, environmental and social development; and ii) Increase public awareness on sustainable business and development practices in various sectors. In an effort to share this information to the public in a manner that was both thought-provoking and easy to understand, the CZMAI hosted six major activities spread across six days. The events were a huge success and garnered support from both the public and private sectors. Most notably we would like to acknowledge the tremendous support from our main sponsors; The Inter-American Development Bank, Protected Areas Conservation Trust and World Wildlife Foundation. The following are the major highlights from the week’s events.



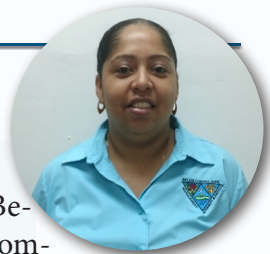
Opening Ceremony

Coastal Awareness Week 2017 kicked off with the Official Opening Ceremony on March 20th 2017. The ceremony was held at the CZMAI Training Room and was hosted by the CZMAI Marketing Officer, Mr. Chad Bowman.

... cont'd. on Pg. 3

The Inter-American Development Bank (IDB) Celebrates 25 Years of Working in Belize

By: Arlene Young, Director



This year, the Inter-American Development Bank (IDB) is celebrating the 25th anniversary of Belize’s membership in the IDB. To this end, the IDB is hosting a year-long celebration of activities to commemorate this significant achievement.

Earlier this year in March 2017, IDB kicked off its celebration by collaborating with CZMAI to sponsor and implement Coastal Awareness Week under the theme “Business and the Environment: A key foundation for sustainable growth.”

On July 26, 2017, the Climate Change and Sustainable Development Sector of the IDB and the IDB Country Office in Belize, in collaboration with the Government of Belize through the Ministry of Economic Development, Petroleum, Investment, Trade and Commerce (MEDPITC), hosted a high-level panel discussion entitled “Partners in Sustainable Development” at the Best Western Belize Biltmore Plaza in Belize City. The panel discussion was moderated by Dr. Elma Kay, Administrative and Science Director of the University of Belize’s Environmental Research Institute, included Dr. Lennox Gladden, ...



... cont'd. on Pg. 9

IN THIS ISSUE:

- Coastal Awareness Week 2017.....1
- IDB 25th year of work in Belize.....1
- Message from CEO.....2
- Development sites inventory.....8
- Coastal Planning Updates.....10
- World Oceans Day 2017.....10
- Sportfishing Program Update...11
- Belize River Watershed Study.....12
- Guest Article.....11



Message from the CEO

Dear Partners, Colleagues, Friends:

I am pleased to share the first issue of CZMAI's semi-annual Coastline Newsletter with you for 2017. Through this medium, we have the opportunity and distinct privilege to communicate our accomplishments and share the outlook for the foreseeable future as we continue to deliver on our mission and purpose. We are working continuously and diligently to strengthen the Authority and Institute so that we can improve upon our capacity to effectively fulfill our mandate for improved coastal area management in this country.

The start of 2017 has been very promising so far, and has brought positive collaborations, new partnerships and exciting opportunities, many of which would not have been possible without the support of our Ministry, Board of Directors, staff and key partners, such as yourselves. Some highlights for the first half of 2017 year include:

- Completion of Institutional Assessment and identification of strategic actions towards strengthening the institutional structure and legislative framework for improved coastal zone management in Belize;
- Development of a "Short Term Road Map" in support of coordinating the implementation of the Belize Integrated Coastal Zone Management Plan (2016); and
- Improved implementation of broad-based education and stakeholder engagement activities including, but not limited to, Coastal Awareness Week 2017 celebrated in partnership with the IDB under the theme, "Business and the Environment: A Foundation for Sustainable Growth"

CZMAI remains deeply grateful for your continued support, interest and commitment. I encourage you to stay in touch with us throughout the year via our semi-annual Coastline Newsletter, and by connecting with us on our website and social media.

With very best wishes,

Chantalle Samuels
Chief Executive Officer

...continued from Pg. 1: **CZMAI Hosts the Third Annual Coastal Awareness Week**

Special invited guests included Dr. Lennox Gladden, Policy Coordinator, Ministry of Agriculture, Fisheries, Forestry, the Environment, Sustainable Development and Immigration; Mrs. Yvonne Hyde, CEO, Ministry of Economic Development, Petroleum, Investment, Trade & Commerce; and Dr. Cassandra T. Rogers, Country Representative, Inter-American Development Bank (IDB). The invited guests made several remarks on behalf of their ministries and organizations which highlighted the importance of sustainably managing and using coastal resources for the growth and development of Belize. Additionally, they highlighted the successes that have been achieved over the past year including the official adoption of the Belize Integrated Coastal Zone Management Plan by the government of Belize. Finally, the occasion was used to commemorate the important work of the IDB, who are celebrating 25 years of partnership with Belize. Their contribution and support to the development of Belize is immeasurable and thus it formed one of the key foundation of the ceremony and the rest of the week. Following the remarks CAW 2017 was officially declared open.



Belize Coastal Awareness Trivia Challenge

On Tuesday March 21st, CZMAI held the third annual Coastal Awareness Primary School Trivia Competition at the Bliss Institute for the Performing Arts. The purpose of the event was to raise awareness through knowledge building and provide a forum for primary school students to learn about the Belizean Coastal Zone in a way that is both informative and fun. This competition was broadcasted live on Love FM and featured participants from 7 primary schools throughout Belize City who competed for the grand prize of \$500. Participating primary schools and student representatives included:

- | | |
|-----------------------------------|------------------|
| All Saints Anglican School | Roselyn Pech |
| Holy Redeemer R.C. School | Jaden August |
| Hummingbird Elementary School | Khalil Espat |
| St. John Vianney R.C. School | Ashleigh Fermin |
| St. Joseph R.C. School | Ashanty Mayen |
| St. Luke Methodist Primary School | Samantha Alamina |
| St. Mary's Anglican School | Hazey Perez |

... cont'd. on Pg. 4

CZMAI BOARD OF DIRECTORS

Dr. Percival Cho (Chair) <i>Chief Executive Officer</i> Ministry of Agriculture, Fisheries, Forestry, the Environment & Sustainable Development	Yvonne Hyde <i>Chief Executive Officer</i> Ministry of Economic Development, Petroleum, Investment, Trade and Commerce	Froyla Tzalam <i>Chairperson</i> Association of Protected Areas Management Organizations
Sharon Ramclam-Young <i>Chief Executive Officer</i> Ministry of Natural Resources	Professor Clement Sankat <i>President</i> University of Belize	Chantalle Samuels*(ex-officio) <i>Chief Executive Officer</i> CZMAI
Yashin Dujon (Vice-Chair) <i>Chief Executive Officer</i> Ministry of Tourism & Civil Aviation	Andrew Roe <i>Executive Councillor</i> Belize Chamber of Commerce and Industry	Arlene Young*(ex-officio) <i>Director</i> CZMAI

... continued from Pg. 3: **CZMAI Hosts the Third Annual Coastal Awareness Week**

After the Final round was completed, points were tallied and the victorious student was Miss Samantha Alamina, who represented St. Luke's Methodist Primary School. Miss Alamina completed the entire competition without getting a single incorrect answer and therefore earned the grand prize of \$500. The second prize of \$300 went to Mr. Jaden August, from Holy Redeemer R.C. School and Miss Ashanty Mayen of St. Joseph R.C. School took home the third prize of \$200. CZMAI would like to thank all the participants, teachers, parents, sponsors, and judges for helping to make the event a success. We believe that through this competition we were able to share information on major topics that relate to the sustainable use and management of Belize's coastal zone.



Seminar: Sustainable Business Practices & Risk Reduction

On Wednesday March 22nd, CZMAI held a panel discussion at the Radisson Hotel, Belize City. The seminar focused on the topic "Sustainable Business Practices & Risk Reduction". Guest panellists included Ms. Yorshabell Cattouse, Belize Chamber of Commerce and Industry, Mr. Jaime Williams, Development Finance Corporation, Mr. Jackson Edwards, Long Caye, and special guest panellist Mr. Jake Kheel, Puntacana Group, Dominican Republic. The discussion was moderated by Ms. Amylin Mendez, Policy Analyst, Economic Development Council, Public-Private Sector Dialogue, Office of the Prime Minister. In addition to our special guest panellist there was also a presentation by Mr. Gines Suarez and Ms. Michela Seelig from the Inter-American Development Bank. Each panellist gave a short presentation on their experiences from within the private sectors utilizing the principles of sustainability and risk reduction. Following presentations, the floor was opened and there was a facilitated dialogue between panellists and the audience, which included members of the NGO community, close collaborators, and interested members of the public.



Tertiary Level Competition/Coastal Informational Fair

On Thursday March 23rd, CZMAI partnered with the IDB to host the first Tertiary Level Competition and Business Fair. The competition, which was held at the Corozal Community College's Rudolph Wade Auditorium in Corozal Town, focused on inspiring entrepreneurship through sustainability among tertiary level students. CZMAI invited one group from each tertiary level institution across Belize to submit a product/service idea. Each group was responsible for developing their business plan, mock product or service, marketing strategy, and product presentation. Groups were judged on the areas mentioned using criteria developed by a small focus group. The competition was coupled with an informational fair during which participants gave their product presentations. Simultaneously, CZMAI invited various organizations to host informational booths in an attempt to disseminate information to the general public on their work. These organizations included:

...cont'd on Next Pg.

- Protected Areas Conservation Trust
- Inter-American Development Bank
- Development Finance Corporation
- Small Business Development Center – BELTRAIDE
- Atlantic Insurance
- World Wildlife Fund
- CZMAI
- Sarteneja Alliance for Conservation and Development
- FOCUS
- Turneffe Atoll Sustainability Association
- Belize Fisheries Department
- Wildtracks
- Oceana



CZMAI received submissions from four junior colleges. These groups were competing for a first prize of \$3000, second prize of \$1500 and third prize of \$1000. The participating schools and their product idea and members were as follows:



Coco Artallery – Corozal Community College

Members: Artemio Blanco, Emir Cabb, Giovan Guerra, and Luziary Trejo

Product Summary:

This group’s project was focused around utilizing coconut trash to create beautiful works of art. This included figurines, lamps, bowls etc.



Seagass Eco Fuels – San Perdo Junior College

Members: Kelcie Alamilla, Heidi Caliz, Pablo Mendoza, Damaris Morales, and Dora Trejo

Product Summary:

This group’s project entailed utilizing seagrass (sargassum sp.) for the production of methane gas to be used for household consumption. Using bacterial bio-digestion, the seagrass is broken down and methane gas is produced as a bi-product. The gas is then safe to use for residential purposes.



Marina Flora – Centro Escolar Mexico Junior College

Members: Yuri Tzul, Esmeralda Cal, Rivaldo Gomez, Nicole Lopez, and Christian Ardon

Product Summary:

This group processed seaweed into gel form and used it to create various products including vinaigrette dressing, shakes and food thickening agent.



Proyecto Icaco – St. John's College Junior College

Members: Vickie Menjivar, Chelsea Frutos, Juliet Ermeav, Areli Salgado, and Angel Espat

Product Summary:

This group focused on growing coco plum trees in vulnerable areas to prevent/reduce erosion. The fruits from the coco plum trees would then be used to create an array of cosmetic product including exfoliants, sunscreens and moisturizers.

Judging for the competition was done by a small panel made up of individuals from organizations outside of the CZMAI. This panel included Mr. Ishmael Quiroz, IDB; Mr. Jaime Williams, DFC, and Mr. Jorge Gentle, SBDC. Each group was judged on their i) Written Business Proposal and ii) Product presentation. At the end of the competition points allotted for both portions of each submission was tallied and the winner was determined. At the end of the competition the Proyecto Icaco group won first prize. Second was Seagass Eco Fuels followed by Marina Flora in third. Finally, at the end of the competition it was announced that the IDB would award one student with a summer internship opportunity with the IDB. The lucky recipient would be chosen from a shortlist of students announced at the end of the competition and would be selected based upon interviews to be conducted after the competition.

Coastal Awareness Week Awards Night

On Friday March 24th, the CZMAI hosted the Coastal Awareness Week Awards Night at the Radisson Hotel in Belize City. Our hostess for the evening was Mrs. Anita Hamilton and musical entertainment was provided by the Panatics Steel Pan band. The purpose of the event was to celebrate and officially close the week of activities and to recognize close partners/collaborators that have been integral to CZMAI's work over the years. This year's awardees are as follows:

In gratitude for their generous donations in support of Coastal Awareness Week 2017 the following organizations were honored:

- Inter-American Development Bank
- Protected Areas Conservation Trust
- World Wildlife Fund



...cont'd on Next Pg.

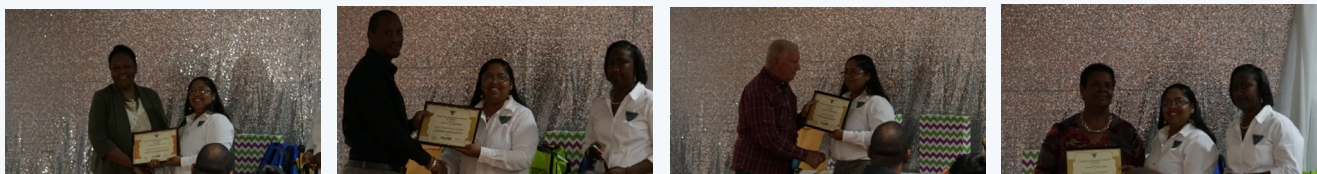
In gratitude for their unrelenting support for the CZMAI and the advancement of the organization's objectives the following individuals were honoured:

- Mr. Abil Castaneda
- Ms. Nadia Bood



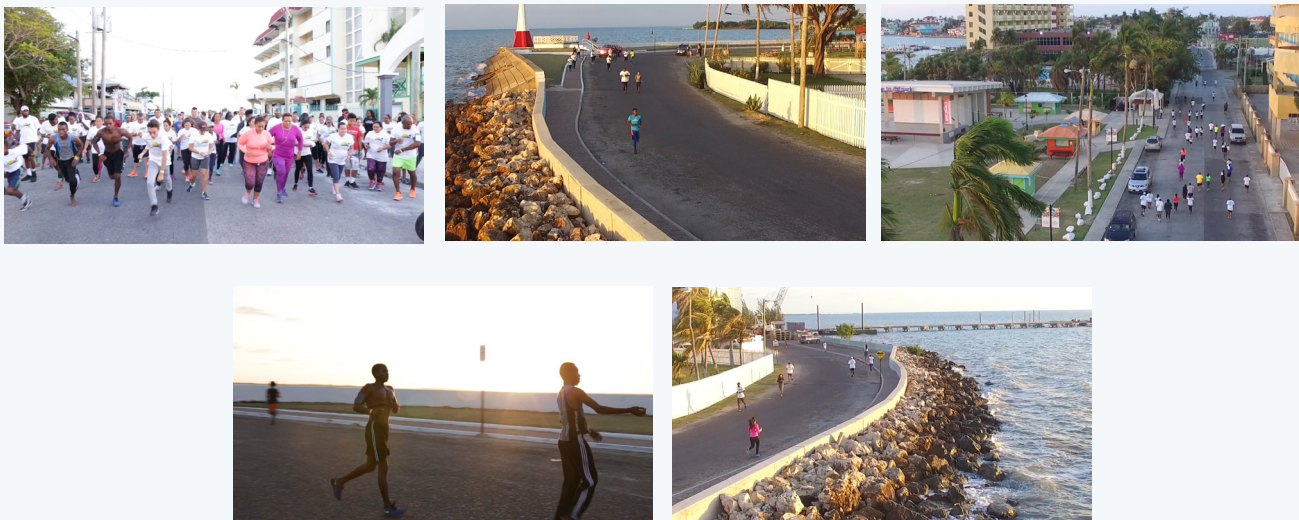
In gratitude for their support of individual programme areas the following individuals/entities were honoured:

- Belize Port Authority for their support of the Goff's Caye Management Programme
- Land Information Centre for their support of the GIS Data Centre
- Mr. Mike Heusner for his support for the Sportfishing Programme
- Mr. Doug Thompson for his support for the Water Quality Monitoring Programme



Run for the Coast

To cap off the week CZMAI hosted the third annual Run for the Coast. The run took place in the wee hours of Saturday March 25th from 5:30 am to 7:00 pm. This event was done in an effort to raise awareness about the value of the Belizean coastal and marine resources. Through this 3 mile leisure run/walk from the BTL Park to the Baron Bliss Lighthouse and back we are trying to encourage Belizeans to appreciate services that the coastal zone provides. In this case that service is the aesthetics it provides that contributes to personal well-being. There were approximately 100 participants and prizes were issued to the first adult male, adult female and child and senior citizen. At the conclusion of the run refreshments were provided to all participants.





Update on the Inventory of Development Sites for monitoring the Belize ICZM Plan

By Maritza Canto, GIS Manager

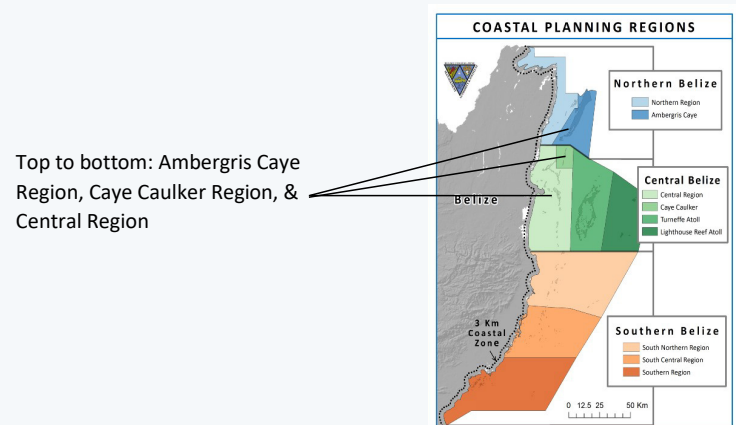
The CZMAI Data Centre is currently creating an inventory to map development site in the cayes and coastal areas; specifically, within the Ambergris Caye, Caye Caulker and Central planning regions (Figure 1). These activities include identifying land parcels within these areas and determining the current status of land use (residential, commercial, industrial etc). Collecting this information is useful for several reasons. First, knowing the land use aids in determining the footprint of the building itself. Footprints can give an indication of the cumulative effects of land use on the area and surrounding environment. Therefore, it can aid in the future planning and development of these areas. Secondly, the information can aid in the identification of vulnerable areas once compared against other datasets such as flood prone areas and topographical data. As a result, organizations such as the National Emergency Management Organization (NEMO) of the National Climate Change Office can identify areas of critical importance during storm events and areas in need of mitigation/adaptation interventions respectively with more precision. Finally, the information will serve as a baseline for monitoring the implementation of the Belize Integrated Coastal Zone Management Plan (BIZCMP). The BICZMP contains a spatially explicit zoning scheme that was created using the ecosystem based approach and local stakeholder knowledge. Several zoning schemes were created for various coastal resource use activities with coastal development being one. The current mapping effort will be used as a baseline to be compared against future mapping efforts in order to determine whether or not development followed the zoning scheme or if it deviated. Through other complementary activities (i.e. environmental monitoring and consultations through the coastal planning programme) CZMAI will be able to determine the effects of the deviations on the environment and communities.

The inventory includes various building and structural information and other land use data which will assist in monitoring adherence to ICZM zonation and management guidelines.

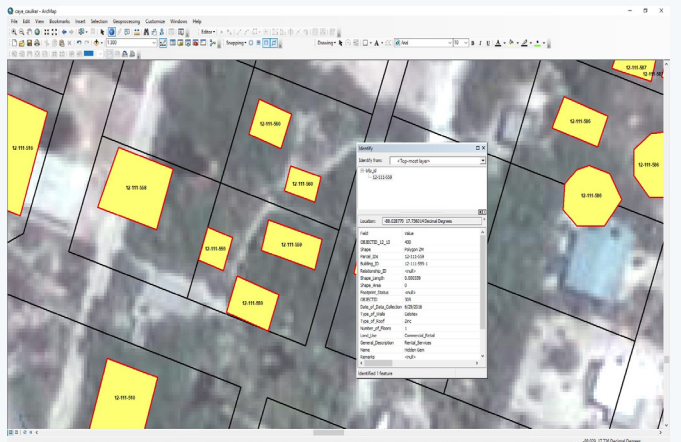
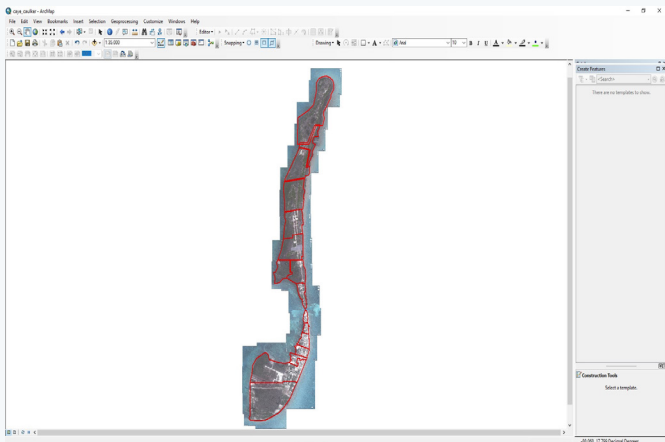
To develop the inventory, CZMAI's Data Centre applied four steps:

1. Acquired Google earth Imagery, Aerial imagery and Drone-captured still imagery for each planning region;
2. Retrieved the parcel data by region from the Land Information Centre, Ministry of Natural Resources & Immigration;
3. Created an overlay of the parcel data on the imagery and digitized buildings and piers within the planning regions using Arc Map tool in the ArcGIS desktop. After digitization, each region was divided into zones based on zoning schemes provided by the Integrated Coastal Zone Management Plan. A map was produced to illustrate each building footprint and pier by zones;
4. Ground-truthing was conducted to validate data captured from aerial survey/drones;
5. Data gathered was manipulated and processed to produce meaningful spatial data.

Ground truthing activity on Caye Caulker was completed in June 2017. The Land Information Centre from the Ministry of Natural Resources & Finance provided technical assistance to the Data Centre during this activity. It took approximately three weeks with a team of four members to complete the ground truthing activity for this region. During the ground truthing activity, an Open Data Kit (ODK) Collect, which is a mobile application used to aid in data collection and data processing. Data processing will result in the creation of a building footprint layer and land use layer for this region. The data processing for this region is expected to take approximately two months.



...cont'd on Next Pg.



... continued from Pg. 3: **The Inter-American Development Bank (IDB) Celebrates 25 Years of Working in Belize**

Policy Coordinator for the Ministry of Forestry, Fisheries, the Environment, and Sustainable Development, Mr. Yashin Dujon, Chief Executive Officer, Ministry of Tourism and Civil Aviation; Mrs. Carolyn Trench-Sandiford, President and Executive Director, Belize Association of Planners/Caribbean Planners Association; Ms. Kay Menzies, Co-Chair, Economic Development Council-Department of Public-Private Dialogue; and Mrs. Natalie Goff, General Manager, Development Finance Corporation..



The IDB/GOB high-level panel was attended by over 70 participants and involved a dynamic discussion on Belize’s development challenges and outlook for sustainable growth, in the context of prior and existing IDB support to the public and private sectors. The discussions also highlighted and how the Bank may continue to support national sustainable development goals, highlighting the areas of natural capital, sustainable infrastructure, sustainable cities and climate change.

At the forum, Ms. Annette Killmer, a key advisor in the Bank’s Climate Change and Sustainable Development sector stated **“In Belize, where natural capital is at the core of economic and social development, mainstreaming biodiversity and integrating it in key economic sectors with measures to strengthen resilience to climate change is paramount for sustainable development.”** Ms. Kilmer further stated that the IDB strongly supports the Government’s Growth and Sustainable Development Strategy, its Integrated Coastal Zone Management Plan, and its Sustainable Tourism program.

CZMAI looks forward to working more closely with IDB to support implementation of the ICZM Plan in 2017 and beyond and commend them on the 25th Anniversary of working Belize!





Updates from the Coastal Planning Unit

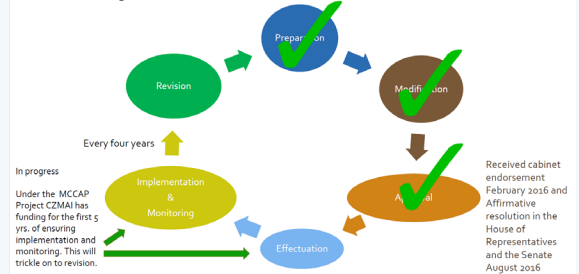
By: Kleon Coleman, Research Technician

The Coastal Planning Unit has the task to carry out the activities related the ICZM plan. The plan is in its effectuation stage since it was approved by the Government of Belize in August 2016. This phase runs simultaneously with the implementation phase. Currently, the unit is engaged in two major activities: i) reactivation of the Coastal Advisory Committees (CAC) for the nine coastal planning regions; ii) To implement a “short term road map” of activities from the plan which can be accomplished within a short period.

With regard to the reactivation of the CACs, to date the Coastal Planning Unit has held five (5) out of the nine (9) regional CAC meetings; namely the South-Northern, Southern, Lighthouse Reef Atoll, Northern and Caye Caulker Regions. The purpose of these meetings was to discuss with the CACs what the role of the committee will be going forward. In the past, the activities of the committees were focused on the creation of the Coastal Zone Management Guideline (CZMG) for each planning region. However, since the plan has been adopted by the Government of Belize the committee’s roles will be to help the CZMAI to monitor and implement the ICZM plan and CZMGs. During these meetings, the committees were presented with a brief history of CZMAI and the ICZM plan, how it was developed and the benefits of the Plan. They, were also presented with the terms of reference for the committee which included roles, function and the membership.

The Unit is also working to implement a ‘Short Term Road Map’ of activities to implement the plan. The objective of road map is to identify activities from within the (ICZM) Implementation Plan that can be accomplished in short term. The activities presented in the “Road map” were prioritized according to four (4) major criteria; Finance, Activity Timeline, Collaboration, and Institution Capacity. The four (4) major criteria were then broken down into sub categories. These included associated Cost, availability of Funds, accessibility of Funds, time Investment, priority, relative Time to Completion, potential for Collaboration, amount of Partner Agencies Required, on-going activities related to activity, equipment availability, In-Country Technical Capacity and Necessity for External Technical Support for Consultancy Services. After the allocation of the prioritization scores, the lowest overall scores were considered higher priority. The road map aids in identifying priority activities that the CZMAI can work towards implementing the ICZM Plan with greater efficiency.

Development Process for the ICZM Plan



World Ocean’s Day 2017

By: Chad Bowman, Marketing Officer



World Oceans Day has been promoted globally by The Ocean Project since 2002. In 2008, The United Nations officially recognized June 8th as World Oceans Day and has since been celebrated annually. So why dedicate a day to celebrate our oceans? The oceans contribute to our everyday lives in many ways by helping to generate some of the oxygen we breathe, regulate our climate, provide us with food and medicine, and help us keep a sound mind by the beauty it displays. The five oceans of the world connects us globally and Belize, being bounded to the East by the Caribbean Sea with its diverse marine coastal zone, plays an integral role in ensuring the preservation and protection of healthy oceans for present and future generations. As the leading authority tasked with the responsibility of managing Belize’s coastal zone, the Coastal Zone Management Authority and Institute (CZMAI) has been actively organizing and participating in activities to raise awareness, protect and celebrate Belize’s coastal and marine resources as our contribution to maintaining healthy oceans. CZMAI decided to shape its 2017 World Oceans Day activities around this year’s theme, “Our Oceans, Our Future” and participated in activities which promoted early childhood sensitization of the need for healthy oceans to preschool children.

Our Ocean, Our Future



...cont'd on Next Pg.

Children are often excluded from initiatives promoting sustainable practices because limited considerations are given to their role in safeguarding the environment. It is, however, never too early to engage in sensitization activities about the world's oceans and our environment with our children as they can develop a passion for the cause at a young age and influence decisions made by their parents and guardians. Reaching out to this demographic class can be deemed necessary, as the earlier they can understand the importance of safeguarding our resources, the higher the likelihood that they will live to protect our resources such as the oceans.



CZMAI delivered a combination of reading, dramatization, and video activities to six pre-schools across Belize City (). The activities were geared towards igniting a love for the oceans within each child that was present. The kids got an opportunity to learn about the five oceans and the organisms that exist in it from characters dramatized by CZMAI's staff. In addition, short video clips were shown to the children, which included videos from well-known cartoon shows such as "The Bubble Guppies". These videos highlighted anthropogenic impacts and informed the children of how to minimize or eliminate the adverse effects human actions can have on the oceans and those life-forms that depends on the ocean, including humans. Furthermore, the children were asked to colour pictures of different underwater creatures. Following this the pictures were placed on a background provided by the CZMAI which depicted an underwater sea scape. The idea behind the activity was that the children would have their very own ocean with creatures and that it was their job to take care of it and keep it safe.

World Oceans Day is celebrated once a year, but the awareness should be active in each and every one of us every day, through the way we live our lives. It is estimated that 80% of marine pollution is land based, stemming from sources such as: agricultural run-offs, discharge of nutrients and pesticides and untreated sewage



including plastics. Acknowledging that we may never be 100% pollution free and may not have a direct impact on minimizing all the sources of marine pollution; everyday behaviour such as the management of garbage can go along way if everyone joins in. Let's save ourselves by saving the oceans.



Progress in CZMAI's Sport Fishing Program

By: Victor Sho, Sportfishing Programme Coordinator

Hello all;

I'm, Victor Sho, the sport fishing program coordinator at the Coastal Zone Management Authority and Institute (CZMAI). Like the title implies I'm here to fill you in on everything fishy! So let's begin. CZMAI sport fishing program has seen some major improvements since the last newsletter; from meeting with stakeholders, participating in outreach activities to engaging in capacity building, we are here to improve the industry.

In January of 2017 we continued to engage stakeholders from across the country to not only listen to their concerns, but also work along with them to develop potential solutions, both in the short term and long term. How will we implement these solutions? In the short term we will work with stakeholders to address region specific concern. In the long term we intend to gain a stronger legal frame-work to enable us to do more for sport fishing; this will be done through legislative and institutional assessment we are undergoing. In order for us to know what legal mechanisms we need in our regulations and parent act, we requested that the consultants hold sport fishing focus groups with our stakeholders. In this way, all the potential changes will be geared towards the needs of the stakeholders; so we can better serve them. The last focus group was held in July 2017, we're looking forward the results of this consultation.

...cont'd on Next Pg.

Apart from working on the regulations, we have also been pro-active in reaching out to partners. CZMAI is developing a working relationship with the Bonefish and Tarpon Trust (BTT); it's a research base NGO located in Florida, USA. BTT have done extensive research on bonefish, tarpon and permit within Belize, Caye West, the Bahamas and other countries. This relationship will help us gain access to their expertise and will help us to make better science-based decisions. One CZMAI staff member will be attending the Bonefish and Tarpon Trust 8th Annual International Science Symposium in November 2017; not only will this give Belize representation at this level, but it will also prove to be a good chance to network and attract potential researchers to Belizean waters. CZMAI is also working along with the Belize Tourism Board (BTB) to reach out to new tour guides. Every year BTB works along with partners to implement tour guide training courses across the country, CZMAI will work with BTB to deliver short sessions on the laws and regulations of the sport fishing industry as well as best practice techniques for sport fishing.

CZMAI has also recognizes that apart from expanding the capacity of its stakeholders, there is also a need to do the same for its staff. To this end, CZMAI has sought different training opportunities that would help better equip the sport fishing coordinator carry out his duties. One such training opportunity came in the form a Conflict Resolution and Negotiation Workshop hosted by the Environmental Research Institute of the University of Belize. The workshop was geared towards equipping the participants with various techniques to better resolve conflicts and hold negotiations with emphasis on resource base conflicts; much like the kind you'd encounter when working with the different stakeholders and their corresponding interest as it relates to sport fishing.

CZMAI will continue to work towards improving the sport fishing industry with which it has been entrusted. We plan to do so with the help of our partners (both international and domestic), our stakeholders and the general public at large. Until the next newsletter, we will continue to serve the people of Belize.



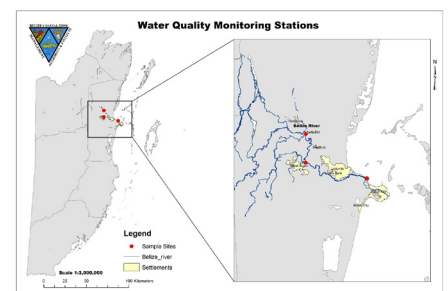
Belize River Watershed Study

By: *Gilbert Andrews, Environmental Lab Technician*

As Belizeans move deeper into the 21st century a number of issues ought to be taken into consideration, but today I will direct my thoughts on how important it is for Belizeans to protect and preserve the Belize River. According to one of our country heroes, Philip Stanley Wilberforce Goldson, "The time to save your country is before you lose it." The Belize River provides freshwater which is vital to the existence of all organisms in the area. However, this valued resource is constantly being threatened by a growing human population which puts additional pressure on this resource through its increasing demand for high quality water for domestic and economic purposes. The quality of which is influenced by human activities and natural processes.

If we, the local citizens, do not preserve and protect our waters we will have the remnants of what was once a quality River. As we look around at how agriculture and big industries in other countries discharge large quantities of waste into rivers and lakes, we must take note of the adverse effects of these activities on these environments and try to avoid them. For example, pollution of this kind can alter the water pH and provide excessive bacterial nutrients, this often compromise the ability of natural processes to inactivate and destroy pathogens, which also affects their physio-chemical characteristics. If we don't protect and preserve our natural resource we will become victims very soon.

As was mentioned in our December issue of the Coastline Newsletter, the CZMAI is conducting a pilot study on the Belize River looking at changes in water quality associated with land use activities up stream. To do this, CZMAI is using YSI Exo II sondes to do hourly measurements of the following parameters; pH/ORP, Temperature, Conductivity, Dissolved Oxygen, Chlorophyll and Turbidity. These measurements will be measured for a year in order to account for seasonal changes and nutrient loading events caused by weather events. Loggers were installed on October 21st 2016, therefore, to date we have collected 8 months of data. At the beginning of the study three sondes were installed at various points along the Belize river. However, due to circumstances beyond our control two of the loggers had to be removed from the river for various reasons.



...cont'd on Next Pg.

As a result the only remaining sonde was the one installed at the mouth of the Belize River. We believe that this data is still very valuable and can give an indication as to the quality of the water that is released into the coastal zone. The data sets are very large and therefore only very basic analysis has been done so far. With regard to descriptive statistics, over the time period from November to July 6534 measurements have been recorded. This accounts for one measurement taken every hour, with a few measurements missing which would account for instances when the sonde had to be removed in anticipation of an extreme weather event. Following these events however the sondes were immediately returned to the site in order to capture nutrient loading which usually occurs after storms since headwaters would experience flooding. With regard to variation, the standard deviation for many of the variables would suggest that there is high variability across the measured variable.

This would seem to be confirmed by the minimum and maximum measurements indicated in the table. However, in reality the variation is not as great. Spiked measurements that show up as maximum and

Variable	Descriptive Statistics (WQM NOV-JULY BRM)				
	Valid N	Mean	Minimum	Maximum	Std.Dev.
Chlorophyll ug/L	6534	2.39	-1.17000	25.22	2.22
pH	6533	7.75	5.20000	8.80	0.30
Turbidity FNU	6534	9.53	-2.87000	989.88	26.08
Temperature C	6534	28.18	6.90300	32.88	2.18
Specific Conductance uS/cm	6534	10556.83	3.70000	58738.40	13705.83
Salinity ppt	6534	6.39	0.00000	39.19	8.68
Total Dissolved Solids mg/L	6534	6861.93	2.00000	38180.00	8908.79
Dissolved Oxygen %	6534	83.87	35.40000	11569.40	142.60
Dissolved Oxygen mg/L	6534	6.40	2.70000	1402.97	17.30
Pressure psi a	6536	16.77	14.18300	17.51	0.49

minimum values are actually representative of outliers that have occurred during the time period. These include measurements that may have been recorded during calibration. Additionally, there was an instance when nutrient levels were high at the river mouth which caused the sonde to be overrun by algae and barnacles. Although this even can be identified by the chlorophyll measurements, other probes were effected due to the overwhelming presence of the barnacles. Therefore producing spiked or faulty measurements that may have skewed the statistics. Once the data set is completed, however, these values will be removed in order for us to get a true sense of what the various parameters actually were. Additionally, the data collected for each parameter will be compared against precipitation and flow data for the period, therefore giving an indication of changes in water quality during loading periods. Finally, looking at the mean values for each parameter we see that the water quality in this area is in good condition. The average value for chlorophyll being less than 5 is indicative of little to no P-loading in the area. Phosphorous is often used as an indicator for pollution, since it is limiting nutrient in natural systems. Chlorophyll levels correlate to P levels in the system therefore the average low levels gives a good indication. The temperature and pH are pretty much where you would expect it in an estuarine environment as well as the Salinity and Total Dissolved Solids. Dissolved oxygen is high which is good for species that live in the area as well as the turbidity. These values would suggest that potential changes in water quality as a result of land based activities such as cattle ranching and agriculture is either a) being regulated by natural features along river banks or b) is manifesting itself in the sediments or species that inhabit the river. Further test would be necessary in order to determine the true picture. I reiterate, however, that these inferences are solely based on a very basic snapshot of the data.

Let's clamp down on any form of pollution; be it disposing of agricultural, chemical, or sewage waste in the river. If we keep polluting the Belize River we will soon be faced with a food shortage. In simpler terms, we will have no fish to eat and no water for human consumption. Let us do our part by protecting and preserving our river, so we can boast today and keep boasting tomorrow that we have the best water in this region. Belizeans you decide, do you want to lose it all? Or will we protect and preserve it?

Guest Article: Summer Internship Opportunity with the IDB

By: Giovan Guerra, Corozal Junior College

As a follow-up to an activity that took place during Coastal Awareness Week 2017, as mentioned in the article “CZMAI Hosts the Third Annual Coastal Awareness Week 2017”, the Inter-American Development Bank (IDB), a major sponsor of the week, offered an internship opportunity to one deserving candidate that would be chosen from a shortlist of students who participated in the competition. During the judging of product presentations, the judges identified two students from each group that stood out. These students were then interviewed by the IDB and Mr. Giovan Guerra from Corozal Junior College was selected as the successful candidate. Giovan spent six weeks at the IDB Country Office in Belize City, where he was attached to the Private-Sector desk supporting the Multilateral Investment Fund portfolio as well as the Economics unit. The following is a first-hand testimonial of his internship experience with the IDB:



My name is Giovan Guerra; I live in Orange Walk Town. Currently, I am in pursuit of an Associate Degree in Business Economics. This past summer, I was an intern for the Inter-American Development Bank (IDB) for a total of six weeks. I was introduced to the Multilateral Investment Fund (MIF) portfolio and the work of the Economics Unit.

I got the opportunity to gain practical experience at the IDB in Belize City. For the most part, internships are meant for individuals to get practical experience and be self-aware of their potential work place. While my experience at the IDB was no different in this regard, I had no idea the impact it would have on me personally. The experience was a memorable one, from the start to finish. From sending the letter of interest to then being interviewed for the position and to finally being told I was selected, all formed part of new moments in my life.

The staff members were truly welcoming from day one, and the bank got me exposed to meetings, conferences, and an overall working environment sensation. I developed awareness for the projects that the bank has ongoing and engaged in small tasks that had to be performed on a regular cycle by the economic sector. I had several assignments spread out for all working weeks which made way for me to gain knowledge, skills, life lessons and values which have become a part of my student/professional life.

I placed into practice my educational skills in all the work assigned. All those years of using and practicing excel, word processor, and PowerPoint software were all finally put to use towards actual physical tasks that were important to a ‘real job’ setting. Being in a classroom versus real life, work was a bit overwhelming to me; knowing that my outputs performed weren’t going to be graded but that it was going to be used for the bank’s purpose which had to be as accurate as possible- is where the real thrill occurred. I gained confidence in knowing that I am capable of handling assigned duties plus responsibilities.

The internship program passed my original expectations and gave way to an environment I would have never been a part of if it was not for being selected as the candidate. Within that knowledge, I realized key factors that I need to improve so as to enhance my professional life in the near future. Issues that previously seemed simple and unimportant are those that need I need to strengthen and correct.

*Ultimately, after I went through that little adventure I felt part of something with a great value. Being an intern at IDB is a milestone! I know it’s the beginning of where I want to be and the type of organization I’d like to be a part of someday. To anyone who is given the opportunity of being an intern at the IDB or any other place, my only words would be **“It will impact your life”**.*

CZMAI takes this opportunity to congratulate Giovan on his successful internship; and, applauds the IDB’s commitment to the sustainable development of Belize including their support of our efforts to sustainably manage Belize’s coastal and marine resources inclusive of activities like Coastal Awareness Week. Through this internship the IDB provided a platform for the promotion of inclusiveness through mentoring and recruitment. We look forward to working with the IDB to provide similar opportunities in the future.

SPECIAL THANKS



Coastal Zone Management Authority and Institute (CZMAI) wants to extend a heart-felt thank you to all of our 2017's Coastal Awareness sponsors.

COASTAL CHAMPION Sponsors



COASTLINE GUARDIAN Sponsor



MARINE INVESTOR Sponsors



SHORELINE DEFENDER Sponsors



CZMAI SERVICES

CREATE YOUR VERY OWN Goff's Caye EXPERIENCE



For a limited time only, Coastal Zone Management Authority and Institute (CZMAI) wishes to advise the public that there is now a 20% discount available to Belizeans for the private rental of Goff's Caye. Goff's Caye boasts approximately 0.5 acres of tropical terrain. Managed by the CZMAI, this registered archaeological site is a one of a kind island with untouched natural features. Goff's Caye has long been enjoyed by both tourists and locals, and its crystalline blue waters and close proximity from mainland makes it a favourite of many and it can be all yours for an entire day. As we wish to preserve the natural heritage and sustainability of the island, we want to remind the general public that any usage of Goff's Caye should be under the consent of CZMAI.

Coastal Zone Management Authority and Institute
Princess Margaret Drive
P.O. Box 1884
Belize City, Belize

Call us at: 223-0719/223-5739
Email: marketing@coastalzonebelize.org
Website: www.coastalzonebelize.org



www.coastalzonebelize.org

SPORT FISHING IN Belize

Day License \$20Bz
Week License \$50Bz
Year License \$100Bz

Buy SPORT FISHING LICENSE IN BELIZE ONLINE

www.coastalzonebelize.org Get yours today!!

Plan your next event at the "ZONE"

At the Coastal Zone Management Authority located on Princess Margaret Drive our offices have two conference room facilities.

The Deluxe Conference Room: is equipped with a 52" Plasma TV, DVD player with surround sound, a snack bar, and the room is internet ready; this room seats 15 person around a plush Belizean made mahogany conference room table.

The Training Room: can seat up 40 persons training room style or accessible to over 80 person for a conference. This room is equipped with projector, screen, and is internet ready. Clients have access to a PA system, stage and can be provided with flip charts on request.

We can accommodate conferences, seminars, parties, weddings, cocktails. Call us to check out our competitive rates.

Call us at 223-5739 / 223-0719 to book your next event.

Or email us at info@coastalzonebelize.org



MISSION STATEMENT:

Our Mission is to lead the sustainable use and planned development of Belize's coastal resources through increased knowledge and the building of alliances for the benefit of all Belizeans and the global community.

CZMAI TEAM

Chantaille Samuels Chief Executive Officer
Arlene Young Director

FINANCE, ADMINISTRATIVE, & OPERATIONS STAFF

Rosanne Constantino Administrative Officer
Whitney Requena Accounts Clerk I
Kachiri Flores Administrative Clerk
Hazel Oshon Jamitress
Jason Ferguson Ranger/Boat Captain
Kashiff Stevens Assistant Boat Captain
David Sedasey Driver

MARKETING

Chad Bowman Marketing Officer
Monique Goldson Sales & Marketing Assistant

SPORTFISHING

Victor Sho Sportfishing Coordinator

GIS DATA MANAGEMENT

Maritza Canto GIS Data Manager
Andria Rosado GIS Technician

COASTAL PLANNING

Samir Rosado Coastal Planner
Gilbert Andrews Water Quality Analyst
Kleon Coleman Research Technician
Ellis Requena Boat Captain/WQ Assistant



Coastal Zone Management
Authority & Institute



Ministry of Agriculture,
Fisheries, Forestry, the Environment
& Sustainable Development

Princess Margaret Drive, P.O. Box 1884

Belize City, Belize

Phone: 223-0719/5739

Fax: 223-5738

Email: info@coqstazonebelize.org

