

WORLD Tales

Bermuda Remains a 'Hot Spot' for Young Sea Turtles and Biologists

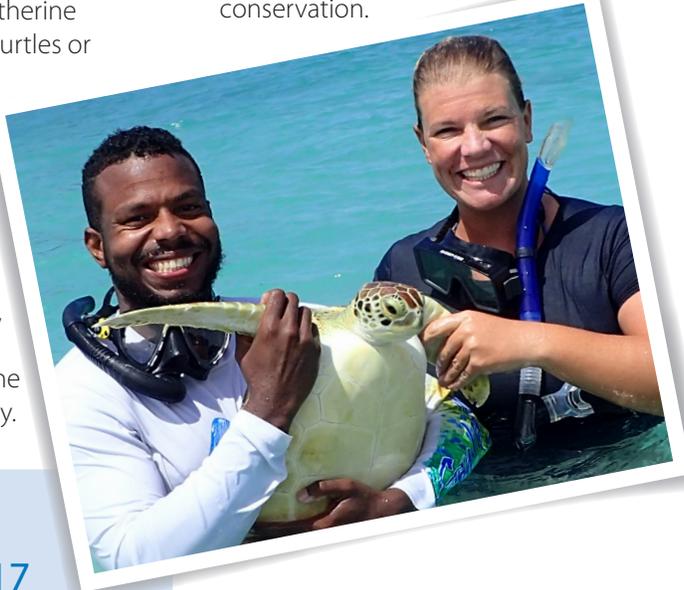
The Bermuda Turtle Project (BTP) had a busy session in August gathering data at 14 research sites, setting our new 1,400' net 16 times, and catching 194 green turtles.

While once productive sites like the Crescent, Fort St. Catherine and Grotto Bay had no turtles or seagrass present, Baileys Bay and Somerset Long Bay continue to yield high numbers of juveniles. Among the capture were 68 turtles that had been previously tagged, most in the same site as their original capture; one had a 12-year BTP history.

In pursuit of our mission to protect sea turtles through research and education, field sampling took place in conjunction with our *21st International In-Water Course* which brings international students to Bermuda to learn about sea turtle biology and conservation.



students gained valuable experience in sea turtle biology. They practiced a range of field methods, reviewed and discussed 19 scientific papers, attended evening lectures, performed necropsies on 17 animals received by the BAMZ stranding network, and deployed a satellite transmitter. They each swam about 17 miles during sampling, they learned much and developed life-long friends and professional contacts to support their future conservation work.



For more than half a century the research of the BTP has focused on the understanding of green turtle biology so that successful protection can be promoted for these animals in Bermuda and throughout their range. Our work is made possible through an extraordinary collaboration between the *Sea Turtle Conservancy (STC)* and the *Bermuda Zoological Society (BZS)*, many cherished donors, treasured student hosts and a passionate and assiduous team.

Jennifer Gray
Bermuda Director, Bermuda Turtle Project

BTP is building capacity and enhancing relationships with overseas jurisdictions, in particular, those with responsibilities to help manage the source populations for Bermuda's turtles.

Participants this year included environmental officers and biologists from *Jamaica, Mexico, Guatemala, Anguilla, Costa Rica and Turks and Caicos*, joined by two candidates from Bermuda. With instruction from Scientific Directors Anne and Peter Meylan, and Gaëlle Roth and Jennifer Gray,



Fall 2017

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"To inspire appreciation and care of island environments"

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BTP Photos: Turtle being released: Jorge Sanchez Gentleman and lady holding Turtle: Jennifer Gray

Photo incorporated in "WILD": MarkWhittaker

Bermuda Zoological Society

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We Welcome Colin Brown — New BZS President

Over the past few years, Colin has proven through his hard work and dedication in helping develop Trunk Island into a *living classroom*, that he not only brings contagious enthusiasm to the picture, but also great strategic thinking and management skills.



**New BZS President,
Colin Brown**

His willingness to learn and understand all he can about the BZS and BAMZ partnership is wonderful, and we look forward to his leading the charity ahead in a positive and sustainable direction.



Thank You Richard

As outgoing BZS President, we are truly appreciative of Richard Winchell's devotion in guiding the BZS over the past 5 years. His unstinting commitment and passion in seeing the BZS succeed, grow, thrive and move forward has been inspiring.

**Gillian Freelove-Jones,
Membership Officer**

Photos: BZS file photos

COLLABORATION

"Discover Bermuda" — Shipwreck Ecology

June 2017 marked the fourth consecutive year that Flagler College has partnered with BAMZ to offer a study abroad fully-immersive Bermuda experience. Each year the course has a different theme, chosen by Flagler Professor(s) and course instructors. This year, Shipwreck Ecology, taught by Dr. Terri J. Seron, focused on comparing fish and corals found around 5 different shipwrecks, along with the historical perspective of how these ships became wrecks. All 7 participating students were required to be Open Water 1 SCUBA certified prior to the course.

Shipwreck Ecology began with 5 weeks of online coursework preparing students for their 1-week fieldwork portion in Bermuda. Weekly assignments ranged from background readings on the formation and propagation of coral reefs to quizzes on identification of Bermudian coral and fish species. Each student was also responsible for choosing and reporting on two different shipwrecks. This advance preparation allowed students to start collecting species data on their very first day of diving in Bermuda.

Arriving from St. Augustine, Florida, the Professor and students were introduced to BAMZ and given a tour of Trunk Island by Drs. Ian Walker and Robbie Smith. Soon everyone was in the water for their first snorkel in Bermuda. The snorkeling was a great way to prepare for the next day of diving.

The next morning was the start of the daily routine for the rest of the week; 2 dives each day, the first on a shipwreck and the second on a reef. The 5 shipwrecks studied included the "Pelinaion", "Cristobal Colon", "Rita Zovetta", "Mary Celestia" and the "Hermes".

Overall, the students did a fantastic job designing a research project and collecting data using the knowledge of fish and coral that they had learned from the course. Differences in fish and coral diversity were noted between wrecks of different ages, however, this may be due to the ship's construction materials or location over age. Differences were also seen between the wrecks and the adjacent natural reefs, as might be predicted, but quantifiable studies

especially for specific species are of great importance. Other studies included the quantity of soft corals (sea fans) as compared to hard corals, size comparison of brain corals on artificial (wrecks) versus natural reefs, and abundance of star corals versus brain corals. The fact that students were collecting scientific data on some of their very first scuba dives is quite impressive. A subsequent offering of this course will allow for the refining of methods and an opportunity to build upon the data that was collected.

The final day in Bermuda was spent watching America's Cup racing. Despite the Americans losing both races to the Kiwis that day, the American students and Professor on this course will never forget the fantastic time they had studying Shipwreck Ecology in Bermuda!

Huge thanks to Dr. Ian Walker and Dr. Robbie Smith for their hospitality, along with Jim and Teri Babcock for their support and encouragement!

**Dr. Terri J. Seron,
Flagler College**

EDUCATION

Another Record Year for the Schools' Programme!

This past school year a total of 8,392 educational experiences (classes, land-based field trips, snorkelling or free-diving field trips) were given by the BZS education staff, far exceeding last year's record of 7,189.

Preschool through college-aged students took part in our Schools' Programme (2,253 for Preschool, 4,493 for Primary School, 1,498 for Middle School, 313 for Senior School, 78 for College, 250 for Homeschool) and over 70% of the students were from public schools.



Although the weather proved challenging at times, forcing us to cancel trips, 127 students were still able to participate in land-based field trips

on Trunk Island while another 359 students participated in snorkeling trips around the island.

Hats Off to Captain Trevor

When I was looking for a captain for our marvelous beach catamaran, I was hoping to find someone who would be far more than just a pilot for the boat. In Trevor Rawson, I found just that person and more.

Not only is Trevor an exceptional captain who is meticulous about maintaining "Callista", he is an enthusiastic naturalist and an engaging educator who is able and keen to impart information to people of all ages.

Whether it's guiding preschoolers around Trunk Island looking at plants, bees and spiders (themes for their Aqua Camp this year), taking children snorkeling, or supervising students and adults in whatever restoration project they are doing on the island, Trevor does an incredible job. He has quickly become a highly valued member of our education team.

Jamie Bacon,
Education Officer



Friends discover the wonders of nature while swimming off Trunk Island.

Aqua Camps and Trunk Island – A Fabulous Combination!

This year we managed to integrate at least one trip to Trunk Island for each of our camps when the weather permitted. Not only did our 'Tots' (preschool) get to go wading at the extremely safe beach, but they observed the island's plants, bees and spiders which were three of the daily themes for the camp. Our 'Kids' (P1&P2) and 'Fun' (P3&P4) camps got to wade/swim and marvel at sea urchins, shrimps, sea puddings and life in the sea grass bed. Our 'Zoo' (P5&P6) campers snorkeled around the island as did our 'Explorers' (M1&M2) who also completed fish surveys. And finally, our 'Conservationists' (M3&S1) surveyed fish and invertebrates, installed longtail igloos and did restoration work while they lived on the island for the week. The island has truly become a living classroom for our summer camps.

Photo: Chris Burville

Jamie Bacon,
Education Officer

My First Summer at BAMZ

As the new Captain of "Callista", the wonderful staff at BZS and BAMZ have welcomed me in with open arms! Their experience and professionalism has made my transition into this charity a comfortable one and it has been a privilege to work alongside veteran Captain Nigel with his never ending flow of marine knowledge.

Ensuring a safe learning environment aboard "Callista" for students of schools and camps is high priority. I also transport the kids and many corporate groups to Trunk Island for educational and community conservation tasks. My skills as an educator and conservationist grow rapidly with every step I take on Trunk Island. Learning from the legends of conservation and various other brilliant individuals has been an inspiring experience. I look forward to discovering what is next on the horizon!



Trevor

Trevor Rawson,
Captain "Callista"

INTERNSHIP PROGRAMMES

Sharing Information Gleaned from Students' Research

The **James W. Babcock Internship Programme** annually awards U.S. students opportunities to work alongside BAMZ staff to gain a greater knowledge, understanding and experience from working in Bermuda. Flagler College students Kate Mitchell and Savannah DeBauche were this year's recipients of the award and spent six weeks this summer working alongside Museum Curator, Dr. Robbie Smith and Dr. Terri Seron, Associate Professor, Chair of Natural Sciences at Flagler College, St. Augustine, Florida.

The group spent their days collecting and analysing marine life survey data from Harrington Sound that will allow Robbie, to confidently report on the state of the Sound in 2017.

The surveys focused on animals associated with the sandy bottom, revealing a great diversity of sponges at different depths and healthy populations of the *ivory bush coral* and the *turkey wing mussel* at the deeper sites. *Sea urchins*, *sea puddings* and the *bridled goby* were common at all depths.



l to r: Dr. Terri Seron, Dr. Robbie Smith, Savannah DeBauche & Kate Mitchell

This award was established by the Atlantic Conservation Partnership (ACP) to honour Jim's commitment to the ACP and BAMZ, and his dedication to conservation education both in the U.S. and Bermuda.

Photo: Lynda Johnson

Pye Scholarship: Jackie Buchanan was the Pye Scholar this summer - an annual internship opportunity for Canadian students *established in 2001 by Ron and Lorraine Lucas in memory of John L. and Karen C Pye*. Jackie worked with Dr. Robbie Smith to study the Sargassum community. After a near absence of Sargassum around Bermuda for most of 2016, Jackie was able to examine

samples collected in 2017. Two "new" variants of Sargassum became abundant in the Caribbean in 2015 and 2016 which have not been seen since the 1930s! Her results showed they finally reached Bermuda in late 2016. The main question was: *did the occurrence of the "new" Sargassum types affect the abundance and diversity of animals living on or within the Sargassum?* Her results showed that

diversity of animals was fairly similar to samples collected in 2014 and 2015 by Dr. Smith but the levels of abundance for many of the amphipods, shrimps, crabs and snails were quite a bit lower. Dr. Smith will continue to study the changes in the Sargassum community in 2017, with on-going support from the Atlantic Conservation Partnership.

TRUNK ISLAND



Trunk Island — A Living Classroom

The Campaign for Trunk Island Education has reached its \$5 million target for its "**Living Classroom**" capital campaign. Launched in November 2014, the five-year campaign means the BZS has made a giant leap to secure our education and conservation programmes' future and how to inspire Bermudians to appreciate and care for our island environment.

The Living Classroom on Trunk Island marks the beginning of a new stage of education for Bermuda's schoolchildren. From laying the groundwork for unique learning in nature experiences to understanding conservation management, Trunk Island learning is an opportunity to unplug from technology and everyday routine and for students to completely immerse themselves in the natural environment.

The confidence local teachers are showing in our out-of-the-classroom lessons is positively impacting programme attendance.

By the end of the school year, the BZS Education Team made the following FREE Trunk Island experiences a reality for students:

- * **42 Land Based Field Trips on Trunk Island**
- * **31 Trunk Island Snorkels**
- * **1,175 school students experienced Trunk Island**

And for teachers:

- * **4 Teacher Development Workshops were held on Trunk Island and 86 Teachers participated**

A \$5 million capital campaign is a tremendous accomplishment, but achieving that goal speaks volumes about our community. We are very grateful to all of our supporters, not only to the campaign, but also our entire membership. Your support keeps the BZS growing year after year. Thanks also to the *Trunk Island Weekend Warriors* and our *Corporate Day of Giving troops* for the volunteer hours spent culling invasive species and planting native and endemic trees on Trunk Island. Together, we are giving the inheritors of our earth an opportunity to experience and discover nature first-hand, and they are more likely to engage and retain what they learn.



Trunk Fish Illustration: "A Guide to the Reef, Shore & Game Fish of Bermuda" by Louis S. Mowbray

Lynda Johnson,
BZS Development Officer

VOLUNTEERING

Summer Volunteering at BAMZ

This summer we were very lucky to have a wonderful group of young adults who manned the craft table and Mini Touch Pool.



Youngsters enjoying themselves at the Craft Table

The craft table was a busy place with almost 200 free crafts made each week! Members and Visitors were encouraged to glue glitter and fold together creatures such as jellyfish, colourful puffer fish, snakes and birds. The most popular of crafts were the hats and headbands. What fun to see our young guests “bopping” around at sharks and bugs.

It has been so popular that our Junior Volunteers will continue the craft table throughout the year on the third Saturday of the month. So don't forget to bring the children to BAMZ to create a craft each month.

Everyone was missing the touch pool – this summer volunteers helped guests to get up close and personal with sea urchins, conch and sea cucumbers with the help of volunteers. Everyone was a little wet at the end of the day but this allowed more people to learn about these salt water creatures.

*Joanne Chisnall,
Volunteer Coordinator*



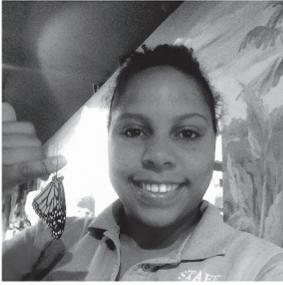
“INSPIRATIONS” from JUNIOR VOLUNTEERS

- 👉 *BAMZ became my happy place; a home with people I didn't feel like I had to be someone else with or hide anything I didn't like about myself. It ended up meaning so much more to me than volunteering and cleaning up poop!*
- 👉 *I know that this will help me in the future. I have made new friends with people who have the same interests as me, and thank you to everyone who helps organise this programme.*
- 👉 *This job is one of the smelliest, loudest, most frustrating experiences at times — it's also one of the best experiences I've ever had!*
- 👉 *The memories and friendships I have made will never fade. I will miss this so much — I wish I could be a JV forever.*
- 👉 *Being a JV has been a dream come true. Working with the staff, making new friendships and interacting with the animals — I wouldn't trade it for the world.*
- 👉 *Joining the JV Programme was one of the best decisions I've ever made. I was never bored and always interested. It will be hard to walk away from this amazing programme.*
- 👉 *I was worried that I would make mistakes or not grasp necessary concepts. But, as I continued in the programme, I learned that being a JV was not as daunting as it seemed. I had help from the staff and my fellow JVs to keep me on track and build my confidence. For me, being a JV taught me that I can accomplish more and be successful. I loved being a JV because of the skills I acquired, people I met and opportunities I was given.*
- 👉 *The only thing I looked forward to each week was going to the Aquarium because I felt, and still feel, like I belong somewhere.*
- 👉 *I appreciated Ms. Camilla and Dr. Alex for teaching me leadership skills and how to 'keep my cool'!*
- 👉 *The JV Programme encouraged me to: generate greater communication skills, as well as being able to be hands-on with both people and animals.*
- 👉 *My JV year was full of great experiences and opportunities and I have met so many new people and made many new friends.*
- 👉 *As a JV, I realise that it has not only taught me how to handle myself in a work environment, but along the way I have made many new bonds with people I would have never met.*
- 👉 *Not only did I get to experience the joys of interacting with the animals, but I also had the privilege of becoming a friend of many people who have helped me along the way. They have all made my year a memorable one.*
- 👉 *I hope to stay in contact with everyone as well as maintain the concepts I have learned while being here — to move forward.*

“To inspire appreciation and care of island environments”

AQUARIUM

It's Farewell, to Two of Our Beloved Team Members, Chelsea Crockwell and Ryan Tacklin



Chelsea

Chelsea resigned on July 26, trading in her 'fishy friends', for the furry, four legged, ones! She's pursuing her dream of owning and running her own full-time business, as a mobile dog groomer. Juggling this 'in demand' business, on a part-time basis, between her responsibilities as an Aquarist, proved too overwhelming.

Chelsea was 14 years old, in 2006, when she started volunteering in the 'Local Tails' building. In 2012, she became a full-time Aquarist, mainly in 'Local Tails.' When the building closed in 2016 for renovations, she then became responsible for Section 1 in the Aquarium.

BAMZ will miss her bubbly, cheery spirit that she brought to the facility over the last 11 years. We know, however, it's not goodbye forever, as many of us have dogs that will need a GREAT groomer!!!

Ryan Tacklin left BAMZ on August 28. He's had his eye on relocating to South America for a number of years and his dreams were answered a few weeks ago, when he received two offers of employment in Brazil.

Ryan has been a full-time Aquarist since 2009. He started his tenure with BAMZ in 2006, working two years, as a summer student in the Plant Department. In the fall of 2007, he transferred to the Aquarium, working as a weekend student.

Since 2015, Ryan has been responsible for the exhibits in Section 3 of the Aquarium and was also lead Aquarist for the Harbour Seals. Ryan will not only be missed immensely by his fellow Aquarists, but by *his* seals as well!



Ryan

**Lisa Ray,
Head Aquarist**

NATURAL HISTORY MUSEUM

The True Value of Our Museum Collections

I think most people appreciate their visits to a Natural History Museum, where fascinating artifacts are on display with information to help you understand the significance or distinction of the plant or animal presented. I also think most people under-appreciate the value of Museums as centres for research. Our Natural History Museum has steadily acquired thousands of specimens over time, either through direct collecting efforts or the return of older material from other Museums or past visiting scientists. But, the real purpose of the Museum is to allow scientists to use the preserved material to answer questions about the identity of an organism, when and where it was found and its relationship to species in other locations.

Recently, the Bermuda Zoological Society provided a grant to BIOS scientists Dr. Leo Blanco-Bercial and Mr. Tim Noyes to try to extract DNA from

all the fishes in our collection. The goal is to build a "library" of the distinctive genetic codes for all of Bermuda's fishes. Remember that our fish specimens have been pickled in formaldehyde or alcohol for several decades but new DNA analytical techniques can extract a unique DNA fingerprint for each species. Two BIOS summer interns, **Maria Granquist** (Lehigh University) and **Jonas Schroder** (Colorado College) methodically removed tissue from 240 fish species and prepared them for genetic analyses. Leo and Tim will use this library of fish DNA to match against DNA found in water samples around Bermuda's reefs. This may prove to be a

very effective tool to tell us how much fish diversity there is from place to place, especially on our deeper reefs, where it is hard to spend much time doing visual surveys.

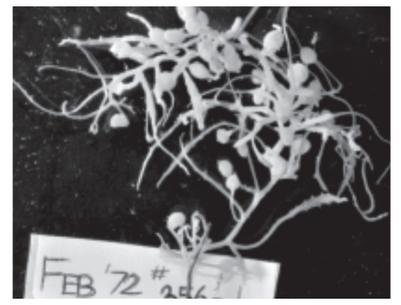


Jonas Schroder extracting the DNA from a Museum fish tissue sample

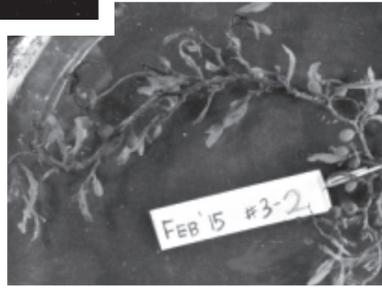
As another example of the value of our collections, BZS also supported Jennifer Choyce, a Master's degree student from University College London. She worked on my Sargassum

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project in 2016, but we were unable to find any Sargassum during her 2 month long visit. However, Jennifer was able to study archived Sargassum samples, taken in a prolonged study at BIOS in the mid 70s, to determine if there were any differences in any of the animals living on the Sargassum at that time, as compared to Sargassum I have been collecting since 2013. We were curious to see if any of the calcifying species (barnacles, bryozans and calcified algae) have been reduced due to our slowly acidifying ocean. Several significant changes were noted, with fewer bryozoans colonies and a near-absence of calcified algae today.



A comparison of Sargassum plants from 1972 to 2015. Note the white lace-like bryozoans on the 1972 plant which are greatly reduced in 2015.



Lisa Greene, Collections Officer, holds jar containing one of many marine specimens collected over the years.

There are thousands of specimens in the BAMZ Museum Collections including historic specimens such as an "Eastern Kingbird", collected by Saville Reid on April 27, 1875, as well as recent samples acquired in the last week or so. All undergo identification and accessioning into the Museum Collections for future referencing and scientific research.

These studies show that Museum collections are a valuable key to the past and provide a window to assess changes in our environment.

Dr. Robbie Smith
Curator, Natural History Museum

ZOO

Our Zookeeper staff is small, but our team works hard to manage and care for all 200+ animals in the Zoo



Jermiko Dillas was 14 when he began volunteering at BAMZ as a member of the Junior Volunteer Programme in 1998.

Through his years here, he has worked with and seen just about all there is at BAMZ, thus making his knowledge invaluable to all.



Chris Davis started in 2009 as a zookeeper, but also became the one to call with the many, MANY fix-it jobs that need tending to in the Zoo; from mending exhibit walls, to creating crates for shipping precious animal cargo overseas, Chris is always eager to learn about, build and try out new ideas.



John Glynn has been a zookeeper since 2006 and prior to joining our team, he worked at the National Trust.

His combination of knowledge and experiences brings a unique perspective to the appearance and theme of the exhibits for which he is responsible.



Cameron Rowling-Bridgewater has been a member of every husbandry team at BAMZ, as well as assisting with collection of aquarium specimens and helping the Bermuda Turtle Project's sampling sessions.

Cameron started in the Zoo as relief staff and was made full-time senior keeper in 2015.



I, Tricha Cross-Pitcher started as a junior volunteer at age 15, working through all ranks, until given the opportunity to fill in as a relief zookeeper, where I realized the Zoo was where I wanted to be.

I later applied for the Head Zookeeper position, where I happily am today!

Tricha Cross-Pitcher
Head Zookeeper