

What a Year for Sea Turtles in Bermuda!

By Jennifer Gray
Coordinator, Bermuda Turtle Project

The 2015 Bermuda Turtle Project (BTP) field session was a resounding success with some exciting unexpected surprises.

We captured 290 green sea turtles in 14 sets of the net; our highest count ever in one session resulting in a catch per unit effort of 22.2 almost double the previous CPU record. 88 of 290 were recaptures (turtles caught and tagged in previous years) with one breaking another record with a capture history going back 15 years. As has been typical in the past, nearly all recaptures occurred on the same grass bed on which the animals were first tagged. One of our recaptures was from the BAMZ Wildlife Rehabilitation Centre. It was rescued from the Tynes Bay incinerator in August of 2012 and released later at Bailey's Bay. Three years on we captured the small turtle, where BAMZ released it, looking healthy and having grown 3 cm...a testimony to the good work of the BAMZ team who care for our injured wildlife. Another new record was set with 58 green turtles in a single set of the net at Somerset Long Bay...a very long day we will never forget.

Two large turtles had satellite transmitters attached to their shells in our effort to learn more about the movements and habitat use of sea turtles. Sea Venture, one of the tagged turtles, is exploring the America's Cup race course in the Great Sound and not showing typical feeding habitat site fidelity. After embarking on a long distance migration, the other turtle, Renaissance, stopped transmitting on September 25th just where Hurricane Joaquin was forming. Riffle was

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“Miracles” The Return of Turtle Hatchlings

By Debbie Boyer
BAMZ Secretary

On the morning of Sunday, 16th August, Bermudian Frank Burchall, woke up early and began to get ready for work. Setting out at approximately 6 am, on Barry Road, his car lights shone upon what appeared to be a baby terrapin trying to make its way across the street. Upon rescuing the animal, from being crushed by another vehicle or captured and eaten by a predator, he noticed it was different — that it had flippers like a sea turtle!

He immediately went home and tried to contact the Bermuda Aquarium, Museum and Zoo (BAMZ), but was unable to reach the facility at that time. Meanwhile, his granddaughter Mimi had already named the little creature after herself! A short while later he delivered the animal to BAMZ in a pot, giving it to Summer staff member, Cassandra Roberts who placed it in a tank of water and then called Aquarist, Ryan Tacklin informing him of what she'd done.

Upon seeing it for the first time, Ryan was struck by its small size. He measured the turtle's carapace (shell), he then investigated what the measurement would be of a hatchling Green turtle's carapace. It was 5.2cm — exactly what this little one's was! How amazing was that! He then asked fellow BAMZ staff members, Robin Marirea and Steven Davis, to look at the specimen and they too felt his suspicions were correct. The three staff members then viewed the animal's plastron (underside of turtle) and there before their eyes, were the signs of egg scarring and the remains of the egg tooth — additional indications that this little animal had recently hatched!



Mr. Burchall's hatchling heading for open water, upon release • BAMZ Museum Image Collection

If the animal had travelled from the Caribbean, it would be larger, as it would have grown whilst on its journey to our island, and the egg scarring and egg tooth remains would no longer be visible. Could it be that Bermuda had just experienced its first return visit of a nesting Green turtle, and if so, Ryan was really holding the results in his hand — what a miracle!

Ryan contacted BAMZ Principal Curator, Dr. Ian Walker to discuss the matter and calls were made alerting others to the occurrence.

Having been notified about the hatchling, BAMZ staff member Lisa Greene and husband Danny made their way to Building's Bay, as did Robin and Steven to determine if there were additional hatchlings and to try and locate the nest-site.

Upon arrival, Lisa indicated the tracks to Robin and Steven, whereupon they both undertook a search of the sand banks along the sides of the beach, as well as vegetation growing in the vicinity. Imagine their excitement, when, in their hunt, they located a funnel-like area containing approximately 12 other hatchlings, some hidden in the vegetation and some under a wooden pallet! They then carefully and gently placed the hatchlings in a bucket of water, protecting them

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Membership Corner

We'd like to extend our thanks to YOU! Your support allows us to distinguish ourselves in the realm of environmental education by capitalizing on the opportunity to build unique and immersive experiences.

As a result of your Membership support the BZS provided 6,665 hands-on conservation education experiences for Bermuda's young people in the last school year. Together we are **Educating Tomorrow's Environmentalists.**

October is renewal time and as you renew your BZS Membership we would like to invite you to consider being a part of history by making an additional special gift to the Bermuda Turtle Project. For the first time in over 100 years, green sea turtle eggs have hatched on a Bermuda beach. This is a historic event and through your special gift you will forever be connected.

As a BZS Member we are pleased that you are able to enjoy so much. Whether it's family fun enjoying our spectacular animal exhibits and our interactive activities year-round, or your kids loving our dynamic and fun Aqua Camps, there is always so much to enjoy as a BZS Member with new things being added all the time.

If you have already renewed, thank you for your Membership support, it is truly appreciated.

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I AM WATER - Fall 2015

The Catlin Kids on the Reef programme, during the spring months, continues to create excitement among middle school students, with students from Dellwood Middle School, Sandys Secondary and Whitney Institute having participated this past spring. This enthusiasm continues through the I AM WATER programme, which was held in the months of September and October.

Dr. Alex Amat was determined to include as many M1 students as possible, and was able to accommodate all of Whitney Institutes M1s this fall, mostly thanks to the passion of one of their teachers – Akinyi Apopa.

Ms. Apopa accompanied her students during the Kids on the Reef programme this summer and, along with other adults, was able to become a trained coach by doing a free diving course, which gave her the level 1 qualification to 14 meters. With the support of Ms. Apopa and Whitney Institute, Dr. Amat was able to conduct 5



Dr. Alex Amat and Josiah Darrell from Whitney Institute • Photo by Owen Chisnall

sessions – each consisting of 17 students.

Dr. Amat hopes to encourage all Middle Schools' future participation in the Kids on the Reef program for this school year.

Thank you XL Catlin.

REEF Watch 2015 Report

By Dr. Thaddeus Murdoch
Chief Scientist, B.R.E.A.M

Bermuda's coral reefs encircle our island like an undersea castle, protecting our island from storms. Bermuda's reefs produce the limestone sand that forms the island, take 97% of the energy from oncoming waves, provide touring and recreational activities, produce many kinds of food and attract overseas scientists and students. As Caribbean islands struggle to limit the deterioration and collapse of their reefs and fisheries, it is critical that we in Bermuda both monitor the ecological condition of our coral reefs and fish stocks, and actively manage the effects of many local and global impacts that can harm reef and fish health.

With major support by Hiscox Bermuda Ltd, 26 teams of trained citizen scientists signed up to survey 52 coral reefs located across the entire Bermuda lagoon in the summer of 2015. While inclement weather conditions postponed the efforts of this citizen science flotilla on Reef Watch Day 2015, all teams learned about the ecology of Bermuda's marine environment, and raised support for the BZS Reef Watch Project. Over the next two months, twelve teams



successfully surveyed their chosen reefs. Information was collected on reef environmental conditions, the status of fish population and on the condition of sessile and mobile reef organisms such as hard and soft corals, marine plants, and sea cucumbers. By surveying these reefs for the third time, we can start to build an understanding of and how the condition of the Bermuda reef lagoon changes through time. Through this report and online sources of reef monitoring data such as www.BermudaBREAM.org, BZS Reef Watch provides a public source of information on the condition of our vital coral reef habitats and the fishes they support.

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Trunk Island - Corporate Giving

We would like to recognise and thank all of the companies who have donated their time and efforts on Trunk Island. A special thanks to Ariel Re, Argo Re, Amlin, Aon Bermuda, Barcardi International, Merke Sharpe & Dohme, Orbis, XL Catlin and Zurich. These corporate giving days are important to the progress of the Conservation Management Plan, developed by Dr. David Wingate, and our ultimate goal of creating a "Living Classroom" for our education programme. Whilst on the island, volunteers diligently work to clear areas of invasive species, and preparing for replanting of native and endemic species.

If your company is a corporate member of BZS or ACP and would like to donate a corporate day of giving, please email volunteers.bzs@gov.bm or call (441) 293-2727 ext. 2130.

Ariel Re, XL Catlin and Amlin on their Corporate days of Giving • Photos by M. Smith



MARK YOUR CALENDARS SANTA COMES TO BZS

**Book your visit with
Santa at BZS**

A BZS membership family tradition

**Friday, December 11
Saturday, December 12
6:00pm - 8:00pm**

Enjoy a visit with Santa,
light refreshments, crafts and fun
activities

Tickets are limited and you will be
assigned a slot to see Santa on a
first come first serve basis.



*For more information, email
volunteer.bzs@gov.bm
or call (441) 293-2727 ext. 2130*

Critter Corner: Welcome Wallabies

On Thursday, 8th October the Bermuda Zoological Society and BAMZ were happy to welcome two new additions to our animal family, a male and female wallaby. After a period of quarantine and adjustment they will join our existing wallabies in our Australasia exhibit.

The wallabies are tammar or dama wallabies (*Macropus eugenii*) and are one of two species of wallabies we have in the BAMZ collection. About the size of a rabbit, the tammar is among the smallest of the wallabies in the genus *Macropus*. Its coat colour is largely grey and it has several notable adaptations, including the ability to retain energy while hopping, the ability to see in colour and the ability to drink seawater. A nocturnal species, it spends night time in grassland habitat and day time in shrubland.

Our new wallabies were caught in Rotorua, New Zealand and as they are wild caught, their exact age is not known, but is approximated that they are between 1-3 years of age. They are believed to be genetically unrelated, so we are hopeful that future permissions will be granted for a breeding programme.

These two wallabies are the second import BAMZ has participated in as part of a collective effort to assist the New Zealand government. The wallabies considered an invasive pest species in New Zealand and continue to have a negative impact on that island's ecosystem. Their heavy browsing stops anything from growing and so their numbers need to be controlled in order for the native forest to regenerate.

Outside of New Zealand, the tammar wallabies are part of a Species



Wallabies in the Australasia Exhibit • Photo by S. Westhead

Survival Plan (SSP) Program. The mission of an AZA SSP Program is to cooperatively manage specific, and typically threatened or endangered, species population within AZA-accredited zoos and aquariums, certified related facilities, and sustainability partners. Wild wallabies in New Zealand are caught and, over approximately a 6 month period, are placed in participating institutions to become part of the managed breeding population.

Mangrove Tank Progress

One of the newest additions to the Aquarium Hall, which has yet to be officially unveiled, is the Mangrove Tank. Our Aquarist, Steven Davis, is meticulously working to complete the tank, and thus far it is looking fabulous!

Within the tank is the Red Mangrove (*Rhizophora mangle*), which get their name from the bright red colour of the wood underneath the bark of the tree. The incredible importance of these trees, for structuring habitat and hosting other plants and animals, led to both the Red Mangrove and Black Mangrove being listed under the Protected Species Act in 2011.¹

In a report from 2009, Jessie

Hallett, former research associated of the Bermuda Zoological Society, stated that "Many mangrove habitats in Bermuda have disappeared entirely in the past two centuries. Since we have already lost so many mangrove areas, any remaining habitat where mangroves are thriving should be protected."

For this reason, BAMZ felt that it was imperative to create a tank specifically for such an important part of Bermuda's eco-system.

As we endeavour to complete the Aquarium Hall, we thank you for your patience and look forward to the final unveiling of the display.

¹ Red Mangrove (*Rhizophora mangle*), Department of Conservation services, <https://conservation-services.squarespace.com/red-mangrove/>. Access on 10/15/2015.



Photos of the current progress of the Mangrove tank in the Aquarium Hall • Photos by M. Smith

REEF Watch 2015 Report

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As in the first Reef Watch day in 2013, our analyses again indicate that overall coral reef health is good, with abundant hard corals and parrotfishes and sparse reef algae (marine plants). However, commercial species of important predatory fishes (e.g. groupers and snappers) remain rare or absent at most reefs. Similarly, lobsters (also commercially harvested) were only seen on a few of the 25 reefs surveyed. It remains a concern that so few of these popular shellfish, subject to both commercial and recreational fisheries management, were observed.

Overall the intent of Reef Watch is to teach Bermudian residents how to recognize the signs of healthy and distressed reefs, to learn how to survey reefs and to share their knowledge with the rest of the island and the world. For the second year in a row, over 100 citizen scientists took part on Reef Watch day, and we hope that even more will take part next year.

The full report will be presented to the Minister of Environment and is on the BZS website.

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made an epic journey of 1,500KM, in just under a month reaching Cat Island in the Bahamas just as Hurricane Joaquin was approaching the same area. We are ecstatic that Riffle is still transmitting a journey through the Bahamas. You can follow these animals at <http://cccturtle.org/seaturtletracking.php>.

The BTP is a joint effort between Sea Turtle Conservancy, ACP, BZS and BAMZ. The mission is to conserve sea turtles through research and education. For the past four and a half decades focused research has been undertaken to provide new insights into the life history of sea turtles at a specific stage of their life cycle; the 'benthic developmental stage' in which juvenile turtles grow from the size of a dinner plate to nearly adult size. More than 4,000 green turtles have been captured, tagged and released, and the results have provided data on size frequencies, sex ratios, growth rates, genetic affinities, habitat preferences, as well as migratory routes from the island. Turtles tagged in Bermuda have been recovered in Nicaragua, Panama, Cuba, Mexico, Dominican Republic, Grenada, St. Lucia, the U.S. and Venezuela. Three turtles tagged in Bermuda have subsequently completed their life cycle and nested in Mexico and Costa Rica.



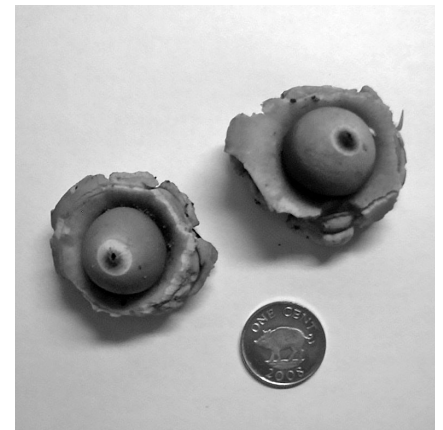
Jennifer Gray holding a juvenile green turtle • Photo submitted by Jennifer Gray

Fabulous Funky Fungi

By Dr. S. R. Smith
Curator, Natural History Museum

Our long hot and wet summer has produced a few surprises for us, with the emergence of many unusual fungi, erupting from our soil, tree stumps and dead branches. Our interest in Bermuda's fungi was stimulated by a visit last spring by Dr. Lawrence Millman, a prolific writer on mushrooms and fungi and Associate of the Harvard Herbarium. Last March we explored Cooper's Island and Walsingham forest and recorded 16 different species of fungi. Some were small and dull-coloured and others large and brilliant white. The diversity of their forms departed significantly from what we typically think of as a mushroom!

Bermuda's fungi have not been comprehensively described since J.M. Waterston in 1947. Bermuda has seen a great increase of plant importation and general cargo since that time. The loss of our endemic cedar forest and the explosion of invasive plants in Bermuda since the 1960s may have set the stage for new opportunities for fungi here. Fungi play a critical role in woodlands by degrading plant material, which contributes to the recycling of nutrients and formation of rich soils. However, some fungi are pathogenic, attacking plants and wooden structures. So it is useful to have an up to date picture of the fungi present in Bermuda today.



Earthstar (*Geastrum* sp.) • This type of fungi is associated with soil • BAMZ Museum Image Collection



Bracket fungi (*Ganoderma* sp.) • An example of fungi generally found on stumps or dead branches • BAMZ Museum Image Collection



Wood ear (*Auricularia* sp.) • An example of fungi generally found on stumps or dead branches • BAMZ Museum Image Collection



Woolly stalk (*Agaricus* sp.) • This type of fungi is associated with soil • BAMZ Museum Image Collection

Welcome to the New Junior Volunteers!

We would like to take this time to recognise both the incoming and outgoing Junior Volunteers.

To celebrate and say goodbye to our outgoing students, the outgoing JVs were able to enjoy an end of year weekend retreat on Trunk Island. While they enjoyed kayaking and swimming in Harrington Sound, they also prepared for their end of year ceremony, which was a pot luck lunch on the island with their families. They were able to present a short PowerPoint presentation to their families, sharing stories of their work throughout the year.

OUTGOING JVS - 2014/15

Cassandra McPhee - Warwick Academy
 Laura Barrett - Homeschool
 Maia Steele - Homeschool
 Samantha Dill* - Warwick Academy
 Ella Burt* - Bermuda High School
 Dejanee Hill-Edwards - Berkeley Institute
 Yndia Raynor* - Berkeley Institute

Emma O'Donnell - Bermuda High School
 Alyssa Fox* - Cedarbridge Academy
 CaVon Raynor - Saltus Grammar School
 Cani Swan* - Somersfield Academy
 William Porter - Cedarbridge Academy
 Dylan Furtado* - T. N. Tatem Middle School
 Aidan Copcutt* - Warwick Academy
 Aeron Peets - Cedarbridge Academy
 Cameron Lee-Ming* - Warwick Academy

We are proud to report that the students with * next to their names completed their Open Water PADI in June of this year and are now certified scuba divers. Additionally, we are delighted to welcome Maia Steele as a Junior Staff member in the Zoo and CaVon Raynor as a Junior Staff member in the Aquarium.

INCOMING JVS - 2015/16

Sarah Whitaker - Bermuda High School
 Freyja Kermodé - Bermuda High School
 Gabrielle Madeiros - Somersfield Academy
 Micah Simmons - Cedarbridge Academy
 Shermar Gomez - Impact Mentoring Academy

Elyon Adonai - Berkeley Institute
 Stefan Wilson - Warwick Academy
 Tré Maxwell - Berkeley Institute
 Emily Watson - Bermuda High School
 Stephanie Medeiros - MSA Academy
 Tahquaysha Tucker - Berkeley Institute
 Jada Richards - Berkeley Institute
 Rory Wojciechowski - Warwick Academy
 Jonathon Alves - Warwick Academy
 Malachi Musson-Sheehed - Bermuda Institute
 Milvin DeRosa - Berkeley Institute

This year the JVs from both last year and this year will fundraise for the programme's biennial overseas trip scheduled for 2016. At present, the destination choices are Madagascar, the Galapagos Islands or Belize. The students will be fundraising through various activities, such as babysitting nights, car-washes, bake sales and special encounters. We hope that you will support their fundraising efforts.

If you would like to make a donation to the programme, please visit the Bermuda Zoological website at www.bzs.bm.



Last year's Junior Volunteers at their end of year retreat on Trunk Island • Photos taken from JV Programme Facebook Group



Available for private evening dining
 for up to 40 people

For more information email
info@arugalaltd.com
 or call
 (441) 533-2766

CAHOW TOURS

Explore the world of the Cahow (Bermuda Petrel) as it soars over the waters out on the open ocean! Every November, the birds will gather a few miles off-shore, performing courting displays and laying claim to nesting burrows, before coming into their burrows under cover of darkness. The best place to view this amazing experience is off Cooper's Point in the late afternoons.

In a joint venture between the Bermuda Audubon Society and BZS, we will be hosting boat tours to view the Cahows aboard *The Endurance*. There are a maximum of 24 places per trip.

Trips are subject to suitable weather and sufficient passengers. They will depart from the Aquarium dock at 2pm, with an anticipated return of 6:30pm.



Cost is \$50 per person, which will include a donation to the Cahow Recovery Programme.
 To make a reservation, email info@audubon.bm

“Miracles” - The return of Turtle Hatchlings

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against the searing heat and sun.

Meanwhile, Dr. David Wingate, Craig Trott and several members of the neighboring area arrived to survey the proceedings, marveling at its having taken place in their neighborhood!

Lisa, Steven and Robin then worked to secure and preserve the area, so when Drs. Peter and Anne Meylan along with Jennifer Gray of the Bermuda Turtle Project arrived at the site, they determine what had taken place and collected data on the incident. The three Bermuda Turtle Project researchers then released the precious contents of the bucket into the bay, so each 5.2cm baby could begin its long and arduous 200-mile journey to the Sargasso Sea!

Between the early night-watch shift and late shift of the area, Steven and Robin

not only located the nest-site but also 2 additional hatchlings. The following evening, despite ominous thunderstorms threatening their comfort, Steven, Robin and Ryan along with other interested parties made their way to the bay for another late shift observance of the beach.

After approval was given by Dr. Walker, excavation of the nest-site began. After digging down approximately 5 or 6 inches, they discovered two more hatchlings making their way up through the sand to the surface. A quick examination of the two revealed their egg scars had healed and so they were then released on the beach.

Locating the nest’s bottom at a depth of 28 inches or so, the three team members exhumed the remains of approximately 90 intact eggs of which, 86 had hatched,



Robin Marirea opening failed eggs for potential genetic samples • BAMZ Museum Image Collection

4 had failed (did not hatch) and there was enough eggshell material left over to make up 4 additional eggs — thus appearing that an estimate of 94 eggs were laid! The exhumed shells were then delivered to the BAMZ Natural History Museum’s Collections Department.

Robin Marirea gently cut open each of the 4 failed eggs to view and document their contents.

The majority of eggshells will remain in the Collections Department for preservation and future study purposes, while a number will be sent off for DNA analysis.

Sargasso Secrets

Join us as we uncover the secrets of the Sargasso Sea! You will learn why it is protected, discover the many critters among the fresh seaweed and even get a closer look using the microscope!

Sunday, 15th November
9:30 am—11:30 am

5-10 years old
\$15 BZS Members
\$20 Non-Members

For more information email activities.bzs@gov.bm or call 293-2727 ext. 2133

CHRISTMAS AT THE BZS GIFTSHOP

Do your Christmas Shopping at the BZS Gift Shop!

Free Parking
Open 7 days a week
Unique Eco Gifts

BAMZ After Dark

Back by Popular Demand!
DATES TO COME

CELEBRATE YOUR BIRTHDAY WITH BZS!!

Just for kids! A birthday party at BAMZ is a fun way to celebrate a special occasion. Schedule one of our weekend parties for an unforgettable birthday!

For more information, contact Lauren Simons at concessions.bzs@gov.bm or call 293-2727 ext. 2117