THE FIELD NATURALIST

Quarterly Bulletin of the Trinidad and Tobago Field Naturalists' Club

April – June 2019 **Issue No: 2/2019**

MARINE REPORT MAY 2019

LOW TIDE EXPLORATION

by Stephanie Warren-Gittens

The coastline at Quinam. *All photos by Stephanie Warren-Gittens*

In a search of an expanse of macroalgae flats exposed by a low tide (one of the lowest for the year), a group of nine ventured to Quinam Beach on Trinidad's south coast for an early Sunday morning exploration. Our starting point was the recently re-opened beach facility, where work was primarily done to combat erosion—hinting at sights we could expect later on. The scent of decaying mounds of sargassum seaweed, possibly brought up overnight, greeted us in the morning sun. From there, we journeyed eastward on an easy but brisk coastal walk, keeping the tidal times in mind. At this time, the tide was still falling and moisture still clung to the sand, allowing for beautiful reflections of the sky.

(Continued on page 3)

Inside This Issue

Editors' note :
Many thanks to all who contributed and assisted with articles and photographs.

Disclaimer :
The views expressed in this bulletin are those of the respective authors and do not necessarily reflect the opinion and views of the Trinidad and Tobago Field Naturalists' Club

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April – June 2019

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WELCOME NEW MEMBERS!

The club warmly welcomes the following new members:

Nicole Gomes	Anamika Broomes	Robert Dumas
Vanessa Aberdeen	Yinka Jagbir	Kai Greene
Debra Bann	Finbar Garcia	Jamie Foale
Christine Bann	Winston Boodram	Trister Hosang
Virraj Bann	Tushara Maharaj	

Markings left in the sand by a mollusc

(cont'd from page 1)

We stopped occasionally to observe any creature we came across. Scores of small isopods scurried away from us as we moved in closer to inspect rocks and washed up logs on the beach. Not unexpected for rocky areas, molluscs and limpets were seen…however not quite in the quantities I would have expected. We also found a couple crabs in the tidal pools that were scattered over the ever-expanding coastline with the fall of the tide. One of the crabs gave Marianna a little bite as she held it up for the group to see. Thank goodness he wasn't a bigger fellow. At other times we came across the tracks of miniscule organisms, leaving us to wonder what they could be. On two occasions, these marks indicated the presence of molluscs—one that was barely buried in a shallow layer of sand, while the other was at a depth beyond my digging fingers. Another set of markings was seemingly left behind by a hermit crab, long gone about his daily activities.

As we passed the first headland, I looked back at our starting point and could see ripples in the exposed sand. We also briefly investigated a river and stand of mangrove backing the beach, where howler monkeys were heard in the distance. This took me back to a recent TTFNC lecture on howler monkeys, that mentioned their presence on our south coast. Opposite this area and closer to the water's edge, was a patch of rocks whose occurrence, Jalaludin Khan suggested, was probably due to deposits from the river. Many other areas along the coastline also consisted of jagged rocks rising out of the sand, giving an unearthly appearance, possibly due to a combination of deposition and erosion?

Exposed rocky substrate

The real beauty during our coastal journey, however, was the cliffs majestically backing the beach. It would have been an added benefit if a geologist was also there to better explain what we were seeing. As such, I could only try to think back

Left & right: Cross-sections of the cliffs seen at Quinam

some years ago to what were seaward and landward rocks from geography class in secondary school. In many of these areas, parts of the cliff face appeared crumbling suggesting erosion, likely due to their geologic composition. In fact, the vertical cross-section provided by the cliffs' face told a story of their creation.

As we continued to marvel at these sights on our eastward journey, the weather took a turn for the worse and we were soon soaked in a heavy downpour. The rains eventually blew over to be replaced by blazing sun. Another interesting observation seen was that the sargassum quantities were not uniform along the coast. Some "bays" had none, while there was one in particular where it was quite thick. It was at this densely covered location, where we started to see the presence of different types of algae (red algae) mixed in above the sargassum mat.

There were also many variations of the rock rubble seen at the back of the beach. Some of the coastal rocks appeared quite smooth and sand-like, others appeared to be almost perfectly rounded. There was one particular area where the cliff face was slanted, and circular rocks were stuck at varying heights, as if someone had pelted them there. Other rocks were covered by holes caused by burrowing, or did these existing holes provide a perfect place for the barnacles to reside? Yet others had squishy-looking objects partially hidden in crevices. But what could these be? The identity of these was soon revealed at the turning point in the journey, where we reached one particular headland with an adjacent stack. We decided at this point that we wouldn't proceed further, as we wanted to ensure that we returned to the beach facility before the tide rose, and thus avoid our getting trapped.

We couldn't have chosen a more beautiful spot

(Left): Beach at Quinam densely covered by sargassum; (Right): three types of alga found among the sargassum

Clockwise from left: a club member is seen at the base of the cliff at our resting point; exposed algae covered rocks; an anemone sheltered in a rock pool; a frothing crab among sargassum

to stop—at the base of a beautiful rocky cliff, at least 9 metres high with large boulders scattered at its base. We rested there for a bit, prodding and prying where we could, to see if any more organisms could be seen. In this area, green algae covered the rocks along the waterline, while seabirds soared around the stack. Unfortunately, not being much of a "birder", the only bird that I could identify in this area was a pelican. In one of the rocks, a pool of water remained, and in it two anemones were observed with tentacles fully extended in the protection of the water. These were the squishy organisms seen earlier.

After a bit longer and a quick group selfie, we decided it was time to head back. The return journey was at a similarly leisurely pace, although much hotter, and it was amazing how the foreshore had changed since our journey started. If we thought that the beach was expansive before, boy were we wrong, especially closest to the beach facility. The sea had retreated even further, giving way to hot, dry sand, which hastened our last leg of the journey as we couldn't wait to get out of the heat of the midday sun. All in all, though a bit different from our usual marine trips, this proved to be an also rewarding experience.

Various scenes from the coastal walk. *All photos by Stephanie Warren-Gittens*

General Club Trip – June 2019

OVERNIGHTING IN GRANDE RIVIÈRE

by Renoir Auguste

The Pawi Guest House at Grande Rivière. *Photo by Renoir Auguste*

The Club made its way to Grande Rivière, one of the most beautiful parts of the country, for its general Club trip for June. Twenty-one persons attended this trip with some members staying overnight from Saturday, while others came up with Dan Jaggernauth on Sunday morning only. We stayed at the Pawi Guest House in Grande Rivière, thanks to Kay Hinkson who organized the accommodation for us. Luckily for those who were knackered and wanted to sleep, we were some distance away from the village where the fisherman's fete was taking place!

For those that spent the night, the highlight was perhaps undoubtedly seeing the critically endangered and endemic piping guan or pawi. We managed to see individuals at dusk on Saturday and again on Sunday morning. Other birds seen and/or heard were oropendolas, toucans and trogons. While most members were looking for birds at dusk and dawn, I ventured to go look for frogs and reptiles. I managed to hear calling dwarf marsupial tree frogs (*Flectonotus fitzgeraldi*) on Saturday evening, in hopes of updating their distribution across the country. This frog is threatened with extinction and can be found only in Trinidad and Tobago and Venezuela. At around 5:15 am on Sunday morning, a female nesting leatherback turtle was observed going back to the ocean.

We made our way to the Grande Rivière bridge around 10:30 am on Sunday, to meet up with Dan and those coming up on the morning. From there, Dan gave a safety talk before leading us along a gravel/dirt trail. The trail soon became cooler with dense forest. Some plants we saw included anthurium species 5 metres off the ground on the trees, bromeliads (*Aechmea nudicaulis*, *A. aquilegs, A. lingulata*), and *Heliconia bihai*.

We then made our way to the secluded beach and saw bones of leatherback turtles and dried up corals. Reg Potter then gave a brief talk about the details of the igneous rock on the beach and postulated that they would have come from very far.

After enjoying the sea breeze for a bit, we then trekked back the way we came. Some departed to return home, while a few others went to Matelot for curiosity's sake. Overall, it was a nice trip and Grande Rivière remains one of the best places in Trinidad to visit!

(Top right): Pawi spotted in the trees. *Photo by Mark Hulme*
(Below): Secluded beach at Grande Riviére . *Photo by Renoir Auguste*

'A Naturalist In…' series

NOTES FROM THREE OTHER CAVES

By Christopher Starr & Graham White

Canadian mathematician Francis A. Starr does not like the winter. When the weather turns savage in the sub-arctic zone he looks to take a break in the tropics, often by visiting his father, Chris, in Trinidad. And last December he was eager to get into some caves. Not airy, clean, tourism-friendly caves like that on Gasparee. No, he wanted close, smelly caves with plenty of cavernicolous creatures.

Francis's visit served as a nucleus for various other enthusiasts. None of us is an expert spelunker, but neither were we dealing with difficult caves. We went to three of them at approximately one-week intervals in December. For a review of Trinidad and Tobago's known caves, see Shaw (2009). Darlington & Shaw (2009) have prepared an extensive bibliography of the subject.

Colado Cave

The Lopinot Valley is home to six known caves, three of them described by Shaw as relatively accessible. Francis & Chris selected Colado Cave. We drove as close as we could and then walked up a broad trail, following the directions of local people. We had been told to look for a smaller trail ascending on the left, and just as we came to such a trail we smelled the cave. About 50 m uphill and we were at the broad cave mouth.

Colado Cave (10°42'N 61°20'W) is quite simple from a spelunking point of view. There is a large, very easy entrance into its large upper chamber, which in turn leads to a smaller lower chamber. Aside from a few stalactites, we noticed curious circular pits in the ceiling of the upper chamber. They were about 25 cm in diameter, with depths varying up to about four or five centimetres (deeper in some other caves). Bats roost in these pits, as they do in other caves, but do they cause them? Gomes & Reid (2015) are silent on this question, and when we asked Geoffrey Gomes about it he frankly told us that nobody knows for sure. The best hypothesis he has encountered is that carbonic acid from bat-exhaled CO_2 causes corrosion in the limestone.

There were plenty of bats, especially in the lower chamber, but not the dense swarms that we would meet in the next cave. There are also two species of cockroaches, always a pleasure to encounter.

Tamana Cave

Tamana Cave (10°28'N 61°11'W) was a more ambitious goal. This time Francis & Chris were joined by members of the Neotroopers. Just getting there is quite an undertaking over variable roads, and we resolved not to do it again in an ordinary car. As we approached the cave, we sent ahead the two members of the group who had not been there. As expected, they smelled the cave just before they came to the main chimney, an impressive experience. We let them wonder for a minutes how we could possibly get down into that abyss and then led the way further up the trail (passing the smaller chimney nearby) to the entrance. A rather rough slope leads down into the broad ante-chamber. Off of this is easily accessible Boulder Chamber, always with a great density of bats.

Getting properly into the cave is by no means so easy. Hidden behind a huge rock in the ante-chamber is the crawl-hole by which one enters the cave. The only way is to slide down this narrow, winding passage feet-first, blind to what is ahead. It is not a long passage or dangerous, but it's tight and necessarily slow, so claustrophobes and those who panic when temporarily stuck should strike Tamana Cave off their list. It is best if someone who has been there before goes first, in order to guide and encourage first-timers.

Once inside, we were home free. This is perhaps biotically the most interesting cave in Trinidad and Tobago (Darlington 1970, 1995), home to eleven bat species and a great number of other beasts. No one has estimated the number of individual bats, but it is confidently set at more than a million. Because we preferred to drive back in

daylight, we did not stick around for the great, river-like outpouring of bats through the main chimney around dusk, a very impressive sight. Sometimes the cockroaches are so dense that one has the impression that the cave floor is in motion.

From the area near the main chimney there is a slope down to sudden drop-off. Interested as we were in the lower depths, we went no further. From inside the cave we found a ladder up the side of the main chimney. It seemed solid and well placed, but we were not confident of leaving by that way, going over the edge at the top, so we elected to go back up the crawl-hole like inch-worms.

Carriker's Cave

Graham White, Francis and Natasha Joseph made the long and difficult walk to this cave, the highlight of which was encountering a large (estimated at more than a metre long) fer-de-lance at the top end of the first stream. Only Graham had been there before, and that more than 20 years earlier. The directions in the Club's trail guide got us to the location (10°43'N 61°14'W), but the actual cave entrance was surprisingly elusive, even with the accurate GPS coordinates. It was also quite difficult to enter the cave, due to a fallen tree over the entrance, and we had to burrow through the vegetation and leaf mould.

The cave was quite different from Graham's long-ago recollection of the path running close to a narrow sinkhole about two metres in diameter. At that time this hole was in the roof of a large cavern over eight metres high. Within this cavern was an underground waterfall flowing over a ledge of flowstone. To one side of this was a large domed stalagmite with a small pool at the centre. We christened this the fountain of youth. This dome was surrounded by a gently sloping riverbed with rippled flowstone looking like miniature rice terraces from Indonesia. It was possible to follow the watercourse for quite a long way underground, descending at three or four places where ropes were in place. Eventually the channel narrowed to a very narrow tunnel that we could only just squeeze along, ending in a hole in the floor about 30cm in diameter. This led to a final large chamber about 10m high.

The second entrance to the cave was a walk-in entrance accessed via a gully near the path. The cave was inhabited by about 60 oilbirds. At the bottom was a small ledge leading into a narrow crawl-hole that gave access into the same large chamber that we had accessed via the hole on the roof.

During our December visit it appeared that the path had shifted, and we could not find the hole into the big chamber. When we eventually got into the cave it appeared much larger than Graham remembered. At the bottom there was no ledge leading into the next chamber but there was a waterfall of flowstone. These and other differences that we observed can be explained if the roof between the sinkhole and walk-in entrance had collapsed, covering the fountain of youth and filling in the watercourse at the bottom of the cave. We visited Carriker's Cave shortly after a major storm in the Northern Range, with damage recorded in the Arima Valley, Brasso Seco and Matelot. There was also a 6.2-magnitude earthquake earlier in the month, and we observed what appeared to be a recent fall of part of the roof. Any major roof collapse would have to have been much earlier.

For a report on a trip to very nearby Soho Cave, see Jaggernauth (1993).

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CULTURE, CONSUMPTION AND CONSERVATION: POACHING OF SEA TURTLES IN TOBAGO

by Renoir Auguste

In 2018 I was selected to be a fellow for the Conservation Leadership in the Caribbean fellowship. A conservation project was part of the eighteen month programme and I chose the group that was looking into sea turtle conservation in the Caribbean. Our project looked into factors impacting sea turtle conservation in Grenada and Tobago. My project's objectives were to gain a better understanding of the demand for and persistence in consuming sea turtles and their eggs in Tobago, in hopes of improving future conservation management plans.

I spoke with some of the main stakeholders involved in turtle conservation on the island (n=8), including government officials, and non-governmental officials, which included those from turtle patrol groups, and community conservation personnel. Poaching is regarded as the main threat to sea turtles on the island, particularly in the north, whereas habitat loss/alteration is regarded as a major threat to sea turtles in the south of the island. This may be unsurprising as the south of the island is more developed and development is continuing to meet the needs of tourism.

Speaking about the particular species of sea turtles, the hawksbill is perhaps the most exploited of the sea turtles in Tobago. Reason being that it is a preferential choice by the locals to consume the meat of hard shell species compared to the leatherback. The hawksbill is also a more frequent nesting species in the north of Tobago than the leatherback, whereas the other hard shell species such as the green (nesting females) is less common. The hawksbill is currently regarded as Critically Endangered.

The following were noted by the interviewees as contributing factors and challenges to sea turtles in Tobago:

- Cultural and historical status of eating turtle meat is engrained in local community;
- It is a source of food for some communities and some locals refer to turtles as 'sea goat' and like the taste;
- Limited financial opportunities/alternatives;
- Lack of enforcement and support on patrols from government officials;
- There is currently (during time of project) no prohibited beaches on known nesting areas;
- Remoteness of nesting beaches and lack of access to patrol;
- Poachers are getting more crafty;
- Lack of knowledge and awareness on the importance of sea turtles.

The following were noted by the interviewees as management measures needed:

- More education awareness programmes and projects to local communities;
- Improved support from local government officials;
- Greater financial support, from local and international bodies;
- More patrols on nesting beaches;
- Designation of prohibited areas in sensitive, high density nesting turtle beaches.

More work is needed. It will require a collaborative effort but most important, from people in the local communities. They stand to benefit from having sea turtles around as do all. If the turtles are gone, not only will the marine ecosystem and all the other species (including fish sold at markets) be negatively affected, but also the local economy.

NATURE IN THE NEWS

A quarterly summary of local environmental news

by Kris Sookdeo

APRIL

Hunting

The Agriculture Minister Clarence Rambharat announced that Cabinet had approved further restrictions on bird hunting. The Minister indicated that "when the hunting season for birds reopens, only hunting of two types of pigeon, four types of dove, the orange-winged parrot and corbeau will be permitted in the period November 1 to the end of February." Once the changes are gazetted, it will would mean that several ducks, herons and other previously targeted bird species (except those listed above) will be fully protected by law.

Construction

The Opposition Leader has proposed the construction of a road connecting Mayaro and Moruga to Cedros to boost tourism once their party wins the 2020 general elections. Mrs. Persad-Bissessar said Edward Trace could be upgraded to a major road to connect Guayaguayare and Moruga. The plan also appears to involve a coastal road running through the foothills of the Trinity Hills but this could not be confirmed from news reports.

MAY

Illegal Wildlife

A 27-year old fisherman of Icacos Village was arrested after officers of the La Brea Police Station stopped a vehicle along the Southern Main Road in Rousillac and found six yellow-footed tortoises. The fisherman appeared before Point Fortin Second Court Magistrate Taramatie Ramdass and was fined $3,000. The fisherman told the court he got the animals from a friend and was going to sell them. He admitted that on a prior occasion he sold a tortoise for $300. The magistrate ordered that the tortoises be handed over to the Emperor Valley Zoo.

A 23-year old Diego Martin man arrested by a team of game wardens and police after he tried to sell ten yellow-headed parrots and six white-eyed conures via his Facebook page.

An Arouca man was held with 6 yellow-crowned parrots and 2 blue and gold macaws was arrested as he attempted to sell the birds at Trincity Mall.

Seafood Health Risk

A study coming out of the University of Trinidad and Tobago (UTT) and The University of the West Indies (UWI), has claimed that seafood harvested from heavily-industrialised areas of Trinidad's west coast presents "a high cancer risk to the human population". The study warns that the wet season cancer risk was generally higher than the risk for the dry season. Near-shore sediment posed a greater cancer risk than offshore sediment due to the higher concentration of PAHs from terrestrial sources.

JUNE

Illegal Quarry

Nature Seekers has again raised concerns about illegal quarrying near the Matura beach. In some places it is said to be just one hundred metres from Leatherback turtle nesting grounds. Allegedly, the quarrying began on private land but then spread to State lands and although they have notified the Environmental Management Authority, the Ministry of Agriculture, Lands and Fisheries and other public authorities, the illegal quarrying continues.

Toco Port

Concerns continue to be raised about the construction of the proposed billion dollar Toco Port which has the potential to negatively impact the area's natural environment including the Grande L'Anse coral reef.

Green Fund

According to the latest Auditor General's report in September 2018, there is over $6 billion in the Green Fund. Over $373 million has, to date, been allocated to 23 projects meaning that over 93% of the Green Fund has not been utilised. Furthermore, 77% of the $373 million went to state agencies.

Your Ideas and Observations

A Quarterly Update

Case of the parasite

While on a Club Herpetology trip in Moruga, TTFNC President, Renoir Auguste, spotted the most unusual sight of what appeared to be a caterpillar predated upon by parasitic wasp eggs. The caterpillar and wasp were later respectively identified as Acharia sp. (Limacodidae) and cocoons of Microgasterinae (Braconidae) by Matthew Cook . Needless to say, this would not end well for the caterpillar.

A caterpillar covered by the cocoons of a parasitic wasp *Photo by Renoir Auguste*

Please send us your ideas and observations to admin@ttfnc.org for inclusion in the next Bulletin!

October 2018 - June 2019 STRATEGIC PLAN UPDATE

by Stephanie Warren-Gittens and Laura Baboolal

Short term Goals

Publications

The 2019 Living World Journal edition will soon be available at a cost of $110 TTD with an expected delivery under two weeks. Payment can be made to Selwyn Gomes.

Club Outreach

Dan Jaggernauth led outreach activities in the following schools:

- Rio Claro West Secondary School
- Parvati Hindu College
- Valencia Secondary School

Re-development of Junior Naturalist Tours geared towards environmental clubs and secondary schools is to come in to effect 1st quarter of 2020. Two paid guides will conduct these tours.

The 7th Bioblitz was held in Toco in November 2018. Bioblitz continues to be successful, in terms of outreach and volunteers.

Medium and Long Term Goals

Land acquisition

A committee has been formed to help the Club acquire a home. This committee is headed by Roma Wong Sang.

An application was submitted to the Chaguaramas Development Authority (CDA) by Club Managaement, for one of the abandoned houses in the Macqueripe area. We are awaiting feedback on Club's Charitable Status before approaching CDA for feedback on a decision regarding the Club's proposal.

A copy of the full strategic plan can be requested by email to admin@ttfnc.org. Constructive comments and suggestions from members of ways to work towards these goals are always welcome.

July 11, 2019

MEMBERS' EVENING PRESENTATION SYNOPSES

by Mike Rutherford; Renoir Auguste and Christopher K. Starr, Lena Dempewolf & JoAnne N. Sewlal

Top 10 Favourite UWI Zoology Museum specimens

By Mike Rutherford

Mike Rutherford presented a short talk on his top ten favourite specimens from the UWI Zoology Museum. He is leaving his job as museum curator in a few months so took the opportunity to share the stories about some of the animal specimens he has collected during the last decade. Highlights included the fin of a sperm whale, a skinned squirrel, a young oilbird and a bushmaster snake skin. Many of the objects were written about in the Living World Journal.

Improving biodiversity data accessibility in the Caribbean

By Renoir Auguste

A limitation towards improved biodiversity conservation is accessibility to data or lack thereof. Data are needed to help guide management and national policies effectively. A European Union grant funded a project (BID-CA2016-0006 REG) in the Caribbean to help fill this gap in relation to biodiversity data. The countries involved include Suriname, Barbados, and Trinidad and Tobago. Each country's zoological institution spearheaded the regional project. TTFNC's Mike Rutherford and Renoir Auguste were the representatives for Trinidad and Tobago which ran for two years—2017 and 2018. After being trained by representatives from the Global Biodiversity Information Facility (GBIF), we formatted and updated some of the University of the West Indies Zoology Museum's (UWIZM) zoological records, that are mostly from T&T, but also global, onto the GBIF website. UWIZM is currently the sole publisher from Trinidad and Tobago on GBIF. A very brief introduction to the project and the website's page where information on species can be found were given. Some of the country's zoological data are now openly accessible to anyone with access to the internet. These data can now hopefully be used to help guide conservation management issues, for example, assessing gaps in biodiversity conservation requiring attention. Examples of these in high profile peer reviewed journals (Nature, Biological Conservation) were shown to have used UWIZM's data on GBIF. This project's information (about T&T's biodiversity data on GBIF) was shared with those responsible for drafting the country's 2019 National Biodiversity Strategy and Action Plan. For more information on GBIF, you can contact Mike or Renoir, or check out the website www.gbif.org.

Escape Responses of Orb-web Spiders

by Christopher K. Starr, Lena Dempewolf & JoAnne N. Sewlal

Orb-web spiders tend to sit exposed at the hub of webs, apparently vulnerable to any predator that can reach them. They are not armoured nor chemically defended and have little ability to employ their venom in retaliation. We studied the responses of eight species to a standardized physical threat, recording their responses to repeated disturbance. Each species showed a more or less consistent repertory of escape responses, in each case ending with dropping from the web on a dragline. Some species were found to supplement their immediate responses (secondary defenses) with elaborations of the web that were present at all times (primary defenses).

Opinion Piece

FOCI AND EMPHASES IN OUR NATURAL HISTORY RESEARCH

by Christopher K. Starr

The Naturalists' Club has a number of worthy purposes, one of which is to advance knowledge by conducting and publishing original findings. This latter is accomplished in large part through the Living World journal. Natural history is a broad field, and a broad diversity of topics is represented in our activities and in the journal.

This got me wondering about the proportional representation of subject matter in the Living World, so I tabulated the topics treated in about 250 articles and nature notes since the journal became an annual in 2001. Putting the topics into a workable number of areas, the breakdown looks like this:

Geology/geography	2
Plants, algae and fungi	14
Marine invertebrates	5
Land and freshwater invertebrates	124
Fishes	7
Amphibians	19
Reptiles	35
Birds	29
Mammals	18

This makes no claim to be a rigorous analysis, and some of the figures can be distorted through the activity of especially prolific authors, such as Matthew Cock (Lepidoptera) and JoAnne Sewlal (spiders). Publications on birds have certainly gone down since Richard ffrench is no longer with us. Nonetheless, I think it gives a fair picture of relative research weighting among our amateur and some professional naturalists. As such, there are some surprises and some not-so-surprises in these figures.

The small number of publications on plants (and the like) is a bit puzzling. I know it's not very exciting to watch plants grow and photosynthesize and produce seeds, but the Club has a sizeable, active Botany Group, and it's hard to believe that its field trips don't turn up novel observations that are worth pursuing. I would like to see our plant enthusiasts make more hard-core use of their walks in the woods. The phenology of some trees and herbaceous plants at localities that the group visits repeatedly might make a worthwhile project.

Fishes are hard to watch. They're down there in an alien (for us) environment, and some of them are way down, so that you can't see them at all unless you go diving or have aquaria. I can easily understand why our members and associates tend not to bring to light a lot of new things about fishes. And the same goes for marine invertebrates. These groups don't give up their secrets easily.

The research attention given to mammals is pretty decent, considering that they are mostly hard to see. The majority of our species have little daytime activity, and even the diurnal mammals are not interested in being seen or heard. The next time you are on a field trip, keep a tally of the mammals you see. Then disregard the domesticated ones. What's left? Maybe a squirrel or (in BushBush) a few monkeys.

Then there are the birds. Lively, abundant, conspicuous, mostly diurnal, they are just the opposite of mammals. We have many members who like to go into the field to see birds, but what do they learn from those that they see? To judge by the modest research output, not much beyond making lists. The fault, it seems to me, lies with the preposterous fetish for rare birds. I suppose there is a thrill in seeing something that nobody else in Trinidad has seen in a long time, but shouldn't a real watcher of birds be more interested in learning how the feathered darlings live? Anyone studying the life of Alexander Skutch – who made many fine discoveries about bird life, including the phenomenon of helpers at the nest in the markedly un-rare house wren – will see that that was what he was all about. I doubt that he had any use for life lists.

I am mindful that some serious watchers of birds started out as keepers of lists until this serves as a sort of gateway activity to actually watching what they do. However, I am also quite convinced that

the main mass of bird counters have gotten stuck at this sterile stage and never graduated to real natural history. Opportunities are being squandered.

Let me end on a shout-out or two. As a naturalist, Matt Kelly of Tobago is very much an amateur in the best sense. He contributes novel findings because he is curious about the things he encounters and is prepared to pursue them further if warranted. Another good example is our late beloved Victor Quesnel. He was a professional in plant diseases (or something like that), but as a naturalist he was a consummate, ever curious amateur.

September 30 2018

RETROSPECT ON TAMANA CAVES

by Hans E.A. Boos

With the recent visit by the Field Naturalists' Club of Trinidad and Tobago, to Tamana cave, with e-mails from Dr Christopher Starr and Jalaludin Khan, memories of my visits to this cave were reawakened. I was able to dredge up some old photographs to go along with an article I had written for Wildlife magazine in 1975, as well as some events that could illustrate the warnings Jalaludin sounded about cave exploration.

I had been made aware of the dangers of contacting Histoplasmosis after visiting bat-guano filled caves by Mr. Ludolph Wehekind who worked at the National Museum in the 1960s. He gave me a copy of a paper describing *Histoplasma capsulatum* which was the causative factor when breathed into the lungs from either dust or the moisture laden air in bat caves.

So as a precaution, whenever I went in to a cave I would improvise a mask of a wet handkerchief tied across my nose and mouth. But apparently several of the explorers I came in contact with did not utilize this simple prophylactic device and paid the price of being infected. In one case very seriously.

When Jan Lindblad came to Trinidad to gather material for his book, "Journey to Red Birds," and footage for his many natural history films, in an effort to film for the first time in total darkness, the oil birds (*Steatornis caripensis*) in the Cumaca Cave, he and his assistant, Stephan Rudin, spent several days and nights, in and out of the cave getting the required footage of scenes in the life of these unique birds.

I got to know Stephan quite well especially when he won a Scouting for Talent competition hosted by Holly Betaudieu at TTT house. With his guitar he sang country and western songs and wowed the judges and crowd.

Then he returned to Sweden and I lost contact with him until John Dunstan of Arima who had hosted Lindblad at his home told me that Stephan had joined the army and on one field exercise had gone missing and was found several days later in a coma due to a massive infection of Histoplasmosis. What happened to him eventually, I did not know.

During the Vietnam War, Sydney, Australia was one of the chosen sites for US personnel to visit in their Rest and Recreation programme for the soldiers serving in the US armed services in Viet Nam.

Somewhere between 1968 and 1973, Joseph, "Joe" Dinardo, being a reptile lover, gravitated to Taronga Park Zoo, where I was employed as a reptile keeper, and we naturally became friends. With much interest in common I took him searching for reptiles in the bush country and national parks that intersperse the large sprawling city of Sydney, and on a headland known as Dobb Royd Head we had considerable success in catching species that were new and unique to both him and me. One specimen of the skink, Egernia, he took back to the USA and I believe set a world record for longevity in captivity for the species. When his R&R stint was over he returned to Vietnam and when his time was up, returned to his home in Philadelphia. But we kept in touch by letter.

On my journey to return to Trinidad I went to visit Joe in Philadelphia where he had amassed a great collection of reptile books and papers, as well as a collection of venomous snakes. One night he took me snake hunting in his favourite collecting spot, the Pine Barrens but we had no luck in finding any snakes abroad on such a cool spring night.

In 1975 he and his brothers and his girlfriend Debbie came to Trinidad and we made expeditions to places he expressed a desire to see, one of which was the dry cave in Guanapo where Raymond Mendez had collected all the cockroaches used in one of the sequences for the movie "Creepshow."

This cave is a low-domed one, with no river associated, and the floor is covered with a thick bed of dry dusty bat guano over which it seems that millions of large cockroaches and their immature nymphs scuttle and feed, even overwhelming and consuming any baby bat that fell from its mother or perch on the cave roof.

Joe was suffering from some sort of sinus problem and he kept a large hand kerchief/towel with which he wiped away the moisture and blew his nose constantly, this, in retrospect, a fertile medium for what happened. We explored the outer lobby of the cave but could not go inside due to the thick beds of guano, but our very presence must have stirred up a lot of dust as well as that generated by the myriad of cockroaches there.

In any event Joe returned home and it was not until he suffered a minor venomous bite from one of his baby vipers that, while he was hospitalized for treatment; x-rays of his chest showed dark shadows that were baffling the resident doctors until an intern who had done time in the tropics recognized the lesions as caused by inhalation of *Histoplasma capsulatum* from the cave in Guanapo, Trinidad.

What follows is the main text with a few corrections and additions, of one of the first articles I got published in an internatiomal magazine captioned, "Following the Snake Trail."

The bushmaster (*Lachesis muta*,) the largest of all the Crotalidae, is a comparatively rare snake. I had only seen one of these magnificent pit-vipers, and I spread the word out in Trinidad that I was interested in finding a bushmaster to photograph.

For several months I had followed up reports in remote areas of the Northern Range, only to be presented with lovely specimens of Cook's tree boa, (*Corallus ruschenbergerii*) or the other pit-viper found on the island, the fer-de-lance (*Bothrops atrox*) (or 'Mapepire Balsain' as it is known locally). The confusion was due to genuine ignorance, for few (if any) of the local men who caught the snakes had ever really seen a bushmaster. Also, in their language a mapepire is a mapepire – and the bushmaster is known to them as 'Mapepire Z'anana'.

Thus, when I received a message from my brother that a Mapepire Z'anana had been sighted in the Central Range of hills in Trinidad, I was not without skepticism. A team of research workers, studying the ecology and life cycles in this system of caves, had seen a large snake in a hole in the rock formations, and said that it answered my description of the bushmaster.

Bushmaster, Mapepire Z'ananah.
Photo courtesy Hans E..A. Boos

The news had taken several days to reach me, but I finally contacted Johanna Darlington, one of the people who had seen the snake. She was based at the University of the West Indies, and agreed to lead me to where the snake was last seen.

After work one day soon after, I drove up to the University Campus with Ken Kong, the only friend I could persuade to accompany me. We picked up Johanna, and after many bumpy miles over some of the island's worst roads, arrived around dusk and parked in a small farmyard on whose mountainous land the caves were situated.

It was beginning to get dark as we set off up the hill through the cocoa plantation. We stooped low as we walked to avoid the low, fruit-laden branches of the cocoa trees. After about twenty minutes, and a climb of several hundred feet, we suddenly heard a frantic rustling, as if someone were blowing on a thousand toy paper windmills. "Bats," said Johanna.

I had known that we would find bats in the cave, but I had not foreseen that they would be coming out to feed just as we were arriving at the mouth of the cave. We came to one of the chimneys of the cave that opened in the hillside, out of which was pouring a continuous flood of grey. The bats were coming out of this hole in a seemingly solid stream, and we had to walk through the chirruping, fluttering, bustling mass, as the main entrance lay beyond.

It was almost completely dark when we reached the entrance, and there were only a few late-rising bats floating out of the large hole in the hillside. We lit our lantern and, securing the light, steel-wire, ladder that Johanna had brought, climbed the twenty or thirty feet down to the floor of the cave.

Knowing something of the habits of snakes, I was already fearful that our trip would be for nothing. There were innumerable holes in the limestone walls, roof and floor, that disappeared inward for unknown distances. All of them could be housing several snakes – or none at all. We threaded our way into the second chamber of the cave, walking in the water of the underground stream that ran between the black beds of bat guano.

The water of the stream was alive with tadpoles of the small yellow-throated frogs, (*Mannophryme trinitatis*) and the adults scurried before our feet in swarms. I had never before seen such a concentration of these frogs. They fed on the prolific insect life from the guano beds. And filling a niche in the food cycle, we found a pretty little false coral snake (*Erythrolamprus zweifeli*) which feeds on the frogs.

"There's the hole," said Johanna, pointing. At floor level was a hole that looked like many others nearby. I approached it rather carefully, as I did not fancy being confronted at close quarters by a large bushmaster. I had to place my face almost down to the level of the floor and, with my cheek touching the mixture of foul-smelling bat guano and water, I peered up into the hole. This proved rather difficult as, due to the position of the entrance, my head either blocked off the light from my torch, or the torch obscured my view. The hole appeared empty and smelled awful, so I stood up and began to cast the light about the other holes and cracks. Perhaps, as it was dusk outside and the bushmaster is nocturnal, it might have been hunting for a way to get back to the forest.

Ken was pointing to the hole I had just discarded as being empty. "It's there, I can see it. Look to the left, up in the corner." I crouched once more, in my excitement kneeling in the soggy guano and, peering again into the hole as directed, I saw a snake coil with deeply keeled scales, and my pre-conditioned mind said 'Z'anana'.

It was difficult to judge just how deep in the hole the snake was, and closing the jaws of my tongs, I thrust the end into the hole. With about two feet of the shaft in the hole, I released the trigger to open the pincers and, pushing forward about six inches, closed them again. I could feel I had got nothing, and thrust deeper to repeat the operation. By now my fist and the handle of the tongs were almost in the mouth of the hole.

Suddenly, right next to my naked fist, appeared a large, blunt, dark serpentine head. I tried to jerk the tongs out of the hole, but the pincers were open and the tongs jammed. All this happened in a flash and, letting go of the jammed tongs, I cried out in fright and jerked backwards.

When I realized that I had not been bitten, and that we were all out of range, I recovered and said, "Get me a stick, quick." The snake was slowly coming out of the hole, and although I was telling myself that it was a Z'anana, I could see that it was too long and slender; and it was too black, no pattern; and yet, the keeled scales and ridged back, these were the same as a Z'anana . . .

We found a stick and gently manoeuvred the snake until all eight feet or so flowed gracefully into the open. In the light of our lantern and torches it began to move slowly away from us and I was able to retrieve the tongs. Rather shakily I grasped the reptile behind the head and then, carefully transferring it to my hand, released the pincers. I then confirmed what my observations had suggested. I did not know immediately what this snake was, but once I had got a good look at it I knew it was not a bushmaster.

I washed the filth from the snake's head in the stream to show that there were no facial pits of the Crotalidae. I had never before seen such a large colubrid, but I knew that, at that size, the snake could only be one of three: a tigre, *Spilotes pullatus*; a

yellow-bellied puffer, *Pseustes sulphureus*; or the yellow tail cribo, *Drymarchon corais*. Its eyes were milky blue in the light of our torches, the sign of the early days of its resting period prior to the changing of its skin. It must have gone into the cool role to hide until the sloughing was completed.

It had neither the yellow anterior bars of Spilotes, nor the yellow tail of the Trinidad race of Drymarchon, and three post-ocular scales, as compared to two in the other two snakes, confirmed it as *Pseustes sulphureus*, the yellow-bellied puffer. This large handsome snake gets its common name from its aggressive defence display. When it is annoyed, it expands the loose skin of the neck region until it seems that the snake has swallowed quite a large ball. This display is accompanied by jabbing strikes, and sharp hissing. The tail is also vibrated to give off a loud buzzing rattle amongst the leaves.

It was not, after all, my Z'anana, but at least an empty space in my photographic list had been filled. I displayed this snake at the first lecture I was honoured to deliver to the Field Naturalists' Club. In the photographs taken after the lecture John Dunstan, John Correia and Clive Crichlow can be seen, as I handled the unusually docile yellow-bellied puffing snake that was captured in Tamana cave.

In the audience of this lecture can be seen, George La Forest, President of the FNC, William Dixon, architect and builder of the early Emperor Valley Zoo, David Basset from the Virus Lab, Claire Henderson, (nee Stores-Fox), and Colm Imbert's parents.

In conclusion we should all be aware of the dangers, both obvious and hidden when we choose to go into and explore the caves in Trinidad.

Top: The audience at the lecture. Bottom: Hans handles the Yellow-bellied Puffing snake at the lecture. *Photos courtesy Hans E..A. Boos*

Trinidad and Tobago Field Naturalists' Club
P.O. Box 642, Port of Spain, Trinidad and Tobago

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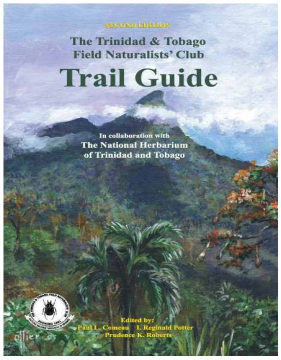

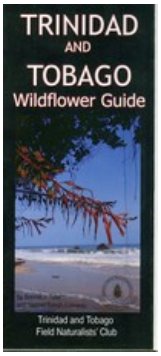

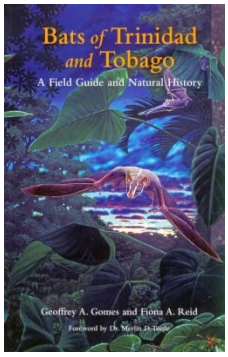

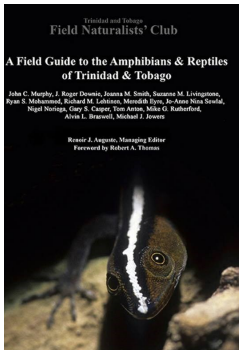

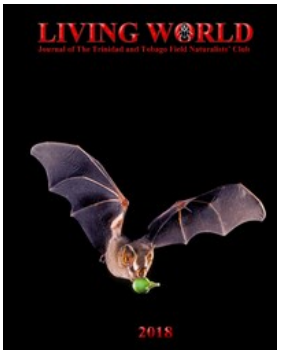

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