



THE FIELD NATURALIST

Quarterly Bulletin of the Trinidad and Tobago Field Naturalists' Club

January-March 2003

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Mayo Quarry / Piparo Mud Volcano

October 27, 2002

John Lum Young

I was looking forward to this outing because it was not the usual walk in the bush but a drive through a part of the country that I had not visited in many a year. It was agreed that the more scenic approach to Mayo would be from the north rather than the quicker access routes via Bonne Adventure or Forres Park. I entered Mayo Road ignoring the "road closed" sign knowing that in the countryside such a notice usually meant, "no heavy vehicles allowed". In Philippine, the first village, there were two landslips and the driving surface narrowed to about 7 feet.



In the next settlement, Gordon Village, a popular fruit tree was Cashima (*Annona*

Piparo Mud Volcano

Photo: Dan J.

sp.) a plant I had not seen in a long time and had begun to think it was largely replaced by the much sweeter Sugar Apple (*Annona reticulata*). Surprisingly there were clumps of Naked Indian (*Bursera simaruba*) on the side of the road. This medium sized tree with the flaky, paper thin, copper coloured coating on its bark is usually associated with coastal forests or dry coastal areas. Clumps of Traveller's Palm (*Ravanella madagascarensis*) were also noted.

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Continuing along Mayo Road I recalled the last time I drove along this ridge in the Montserrat Hills, some six years ago. That Dry Season was severe and a bush fire razed the valley scorching the land for mile upon mile extending westward to the la basse at Forres Park. The landscape then was burnt, barren and painful to look at not the pleasant, radiant greens now enjoyed. Incidentally this ridge is regarded by some as part of the boundary separating north from south Trinidad.

First stop was the picturesque Tortuga R.C. Church consecrated in 1879, the oldest standing wooden R.C. Church in the country. It was a few minutes to 8:00 a.m. and the sexton was ringing the church bell. [Interestingly this bell bears the inscription "Don de M. Eugene Noel Joseph et Mme. Marie Teresa Joseph a l'eglise de Tortuga.

1899.”] As mass was about to be celebrated one could not view the statue of the Black Madonna or Lady of Montserrat, the patron saint of the Church, set in a grotto within. Neither could one view the extremely rare paintings (the only paintings on tin in the country) depicting the 14 Stations of the Cross.

A French priest (who was also an architect), Fr. Marie Jules Dupoux, built the Church on the crest of the Montserrat Hills, selecting the site because the hilltop reminded him of Montserrat in Barcelona, Spain. Restoration started on the Tortuga R.C. Church about 2 years ago and was completed in early September 2002 with the exception of the stained glass panes from the 20 windows, which will be sent to Toulouse, France for restoration. (Maison L.V. Gesta Fils of Toulouse made the original stained glass and the restoration will be done by the Bataillou brothers, Daniel and Michel, experts in restoring the work of Maison Gesta Fils.) After leaving Tortuga but before the descent into Mayo one passed the site of El Dorado Village. The then village was largely represented by barrack housing and was situated on the El Dorado Estate. The village disappeared in the mid '60s presumably with the decline of estate agriculture.

Next stop was the 800 acre Mayo Quarry owned by Trinidad Cement Limited (TCL). Limestone is the main ingredient in the production of cement and this quarry sits on the largest yellow limestone deposit in Trinidad. Mr. R. Ramkisson, Mining Engineer, outlined the production process from the open pit mining operation to the bag of cement in the hardware and took us on a tour of the plant.

The quarry has been sectioned according to its limestone or calcium carbonate content: <30% very low

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Trinidad and Tobago Field Naturalists' Club**

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MISSION STATEMENT

**To foster education and knowledge on natural
history and to encourage and promote activities that would
lead to the appreciation, preservation and conservation of
our natural heritage.**

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stone, 30 – 76% low stone, 76 – 86% high stone and >86% premium stone. All of the quarried material is utilised with the various stone being mixed to get limestone with 76.5% calcium carbonate content. Excavation during the week takes place at various sections in order to achieve the desired 76.5% blend. Bulldozers rip the earth and excavate the limestone. Previously dynamite was used to break up the ground but this practice ceased in 1988 after the complete destruction of the powder magazine at Camp Omega, Chaguaramas that stored the explosives for the local market. Encroaching bush fires had ignited the dynamite. The blast from 24 tons of explosive registered 2.5 on the Richter scale at the Seismic Research Unit (SRU) at U.W.I. St Augustine. Four firemen and two police officers died in that blast that pitched a fire engine 200 feet. Twenty were also wounded. Cement production (and by extension construction in the country) could not simply be halted because of the non-availability of explosives so TCL started excavating with heavy machinery and this method has been employed ever since.

Excavation has only been done at the western end. The eastern side (separated from the western portion by Corosal Road) is yet to be exploited. In 1954 when mining commenced the crushing plant was constructed at the bottom of the limestone hill. Today the hill has disappeared having been quarried away over the years and in fact the crushing plant is now at the top of a rise overlooking the quarry. The western end averages about 328 feet above sea level. Excavation is done in benches of 26 feet and the current mining plan projects going down to 282 feet, though in theory they can go to 207 feet, which

is the high water level of the dams that collect rain run off.

Despite regular removal of the surface material, grasses, sedges and flowering plants spring up very quickly. I imagine that most of the seeds arrive on the wind. V. Quesnel, botanist, identified a number of the flowering plants which included the composites *Emilia coccinea*, *Emilia sonchifolia*, *Bidens pilosa* (Spanish Needle or Railway Daisy), *Tridax procumbens* and the legumes *Mimosa pudica* (Ti-marie), *Crotalaria retusa* (Shack Shack) and *C. verrucosa* (Chac Chac). The *C. retusa* with its brilliant yellow bloom devised an interesting pollinating strategy. As an insect lands on the flower the weight causes the petals to open and the anther projects upwards brushing pollen on the insect. Other flowering plants noted by Quesnel were *Euphorbia hysopifolia*, *Ricinus communis* (Castor Oil), *Spigelia anthelmia*, *Sida acuta*, *Jussiaea* (Ludwigia) *erecta*, *Jussiaea* (Ludwigia) *octonervia*, *Muntingia calabura*, *Stachytarpheta jamaicensis* (Vervain). The quarry also attracted hundreds of Black Vultures or Corbeaux (*Coragyps atratus*) that seem to like sunning, preening and socialising in the open space after scavenging at the nearby 'la basse'.

I first went looking for the Piparo Mud Volcano about nine years ago having read about the 1969 eruption. In that explosion the ground movement ranged from 2 to 4½ inches and houses up to 66 yards away were damaged, though it was not felt beyond 100 yards. An active vent had developed in the road, spurting gas every few seconds. Within a week the road had been resurfaced sealing the cone completely - which was sufficient to block the activity. What I found then was a dry hole on the western side of the road about 3 feet deep. It was inactive and so insignificant that some nearby residents (living obliquely opposite) were unsure of its exact location. In 1997 the first eruption occurred on February 7 resulting in two huge craters forming in the middle of Piparo Road, with wide cracks radiating away from the holes for more than 100 feet. The road was so badly damaged that the Ministry of Works began considering an alternate route to the village. Parts of people's yards sank about 2 feet. Officials from the Seismic Research Unit and the National Emergency Management Association visited the area and advised the residents that the activity was not unusual for mud volcanoes and that it would subside in a few days. Within two weeks the lives of many changed forever.

On February 21 about 5:00 a.m. there was a loud explosion which gave residents enough time to flee their homes taking only the clothes on their backs. Less than half an hour later mud pitched as high as 200 feet into the air continuously for roughly 20 minutes. This mudflow was of similar size to the 1930 eruption at Tabaquite Mud Volcano where an estimated 500,000 cubic yards of mud and debris came out of the ground in 20 minutes. The mountain of mud eventually spread over 8 acres before solidifying. At the end of it all, 11 houses, 15 cars, 4 pick up vans, 15 cattle and 13 goats were covered. Another 4 houses were pushed down by the moving mass of mud. In total 108 were homeless. The 15 families have since been relocated to Buen Intento.

Notwithstanding the displacement of 1997, the villagers have been very fortunate to avert disaster over the decades. According to Higgins and Saunders the tassick covers 445 acres, 2,406 yards by 1,094 yards and that puts the village plumb on the mud volcano. The Naparima Thrust Fault runs through this village. Sighting along a fence on the top of Thompson Hill one could clearly see the three feet shift of the land along the fault line. In one resident's yard an annexed platform at the back of the house was ripped off and destroyed by the same land movement but the house remained intact. That man was fortunate that his house did not straddle the fault.

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Southern Watershed Reserve November 25, 2002

John Lum Young

Claire Bowen-O'Connor, who studied the flora and fauna of the Southern Watershed Reserve, led the trip to Quinam in the deep South. She explained that the Reserve had its genesis at the turn of the 20th century when R. Lodge of the Indian Forest Department proposed the establishment of a 7.77 square kilometres (sq. km) forest reserve in 1900 to be called the Quinam Reserve (MALMR, 1987). In 1906 however, C.S. Rogers another forestry officer believed that the Quinam Reserve proposal could not meet the requirements of the area and so, in 1909, a larger area of 28.16 sq. km was surveyed, demarcated and legally proclaimed as the Southern Watershed Reserve (Figure 2.1, MALMR 1987). The initial objectives of the Reserve were to protect and enhance the water supply, to preserve favourable climatic influences, to maintain wildlife habitat and to produce timber and other forest products to meet the demands of the community (MALMR 1987).

As the trip leader spoke under the cool and soothing ambience of the canopy I reflected on the calming influence of the countryside. After the aggressive rush down the highway and the hustle along the By Pass, the change in mood was most noticeable as one exited the interchange leaving San Fernando proper. Contributing to the lazy Sunday morning feeling, no doubt, was the absence of traffic. It seemed like very few ventured out early, probably guessing that there would be street flooding in low lying areas following the torrential downpour the night before. All was quiet as we drove through Duncan Village, Canaan and Palmiste. At Palmiste Park, with its spreading Samaan trees (*Samanea saman*) and stately Royal Palms (*Roystonea oleracea*), a useful concrete exercise track was built around the perimeter for use by the community.

Bowen-O'Connor stated that in 1934 the west-central portion of the Reserve (1,873.74 hectares) was proclaimed as the Southern Watershed Game Reserve (MALMR, 1987) with the main objective of providing protection for wild animals and birds. Hunting and shooting therefore were prohibited in the area (MALMR 1987). A second reserve (Nature Conservation Reserve) occupying 254.96 hectares was later created within the sanctuary to allow for the preservation and protection of the original plant community against encroachment and eventual extinction.

Despite the creation of a protective zone the area remains under threat. One threat was the introduction of Teak (*Tectona grandis*) by the authorities. Teak was planted extensively along the Penal-Quinam Road from 1940 to 1942 and in 1960. Also in 1952 the Morne Diablo Teak Plantation was started. Extensive sections along the eastern end on the Morne Diablo side were planted in 1954, 1956, 1958 and 1960 (Dardaine 1972). Teak being a deciduous tree sheds all its leaves at some time in the Dry Season. With all this tinder on the ground, fire was a regular hazard which adversely and severely affected the wildlife population. The planting of Teak therefore was discontinued in 1965 (Dardaine 1972), however fire continues to be a perennial problem that must be managed closely as the Teak matures. Other threats are from slash and burn farmers and hunters who continue to impact negatively on the Sanctuary which has seen steady degradation since the 1960s.

Bowen-O'Connor followed the Ecological Trail and Forest Values Trail made by Forestry. It must be noted that the sign posts indicating the trails were removed by vandals.

As a result of the dryness of the soil, some of the trees had fewer leaves and had developed thorns to reduce their surface area in order to conserve moisture. Apart from this reason, trees may develop thorns [such as L'epinet (*Zanthoxylum martinicense*)] or poisonous parts [like the Sandbox (*Hura crepitans*)] for protection.

A popular palm in this forest was Carat (*Sabal sp.*). Other palms included the Roystonea, Gru Gru or Banga (*Acrocomia sp.*) and Gri Gri (*Bactris sp.*). In abundance was Camwell (*Desmoncus sp.*), the only palm vine in the country.

Calabash (*Crescentia cujete*) was seen. It is a rare tree in Trinidad almost confined to the Southern Watershed Reserve in its natural state. The dried gourd is used to make the maracas or chac chac. Other trees observed were Naked Indian (*Bursera simaruba*), Wild Orange (*Swartzia simplex*), Juniper (*Genipa americana*) and Laylay or Manjak (*Cordia collococca*). Bowen-O'Connor described the forest as an Acurel (*Trichilia smithii*)/Moussara (*Brosimum alicastrum*)/Jiggerwood (*Bravaisia integrerrima*) forest because these were the dominant species. Tancayo (*Albizia caribaea*), an emergent tree, rearing above the canopy was pointed out. Its fawn coloured bark and fine leaflets made it very distinctive.

Bowen-O'Connor noted that archaeological finds consisting of several middens and pieces of pottery in the area (Koylass and Phillip, 1996) suggested that an Amerindian tribe was the first to settle here. Though little of the indigenous people's history survived Spanish colonisation, their influence remains in the names of rivers and places such as Guayabal River (further west) and Quinam.

Heading south to the coast a detour was made to the top of a cliff that offered a panoramic view of Quinam Beach and the Venezuelan coastline in the distance. There were Silver-thatched Palms (*Coccothrinax barbadensis*) and Gru Gru on this cliff. The Silver-thatched Palm, also called Broom Palm and Latanier, is an endangered palm as a result of human development of their natural habitats. There seems to be a fixation by officialdom with non-native ornamentals when planting trees alongside roads and in open spaces. We can plant native species such as the threatened *C. barbadensis* and in so doing preserve and display the local flora. Even in our Botanical Gardens there is a remarkable absence of indigenous plants.

From the beach it was back to the cars and straight to Debe for some Indian delicacies.

Reference:

Bowen-O'Connor C. Management Plan for the Southern Watershed Wildlife Sanctuary. Unpublished paper 2002.

REMINDER

Your 2003 Membership Fees are Now Due !

Rousillac Swamp / Caroni Bird Sanctuary

August 25, 2002

John Lum Young

We visited Rousillac Swamp and Caroni Bird Sanctuary for the August outing. The Rousillac Swamp was our first stop. Driving through some back roads in Aripiero a flock of Scarlet Ibis (*Eudocimus ruber*) was roosting amongst the Immortelle (*Erythrina poeppigiana*) surrounding a nearby pond. There were about two scores of birds and they looked so bright and majestic that some one exclaimed "No need to visit the Bird Sanctuary." (Note: Small numbers have been recorded at Rousillac, Oropuche and Los Blanquizaes but they are rare in Nariva Swamp – French, 1992.) It was good to see the Scarlet Ibis outside of Caroni Swamp. Looking from the higher ground into the swamp we saw acres upon acres of dead mangrove. No one knew what killed the trees but on entering the swamp we were pleased to note that young trees had started to replace the dried ones.

The Man-o'-War or Magnificent Frigate Bird (*Fregata magnificens*), a large seabird and a common sight in the coastal areas of Trinidad and Tobago, was patrolling above. Interestingly, though this bird fishes by flying low over the water and snatching fish near the surface with its beak, it prefers to rob other birds of their catch. It attacks and picks at other seabirds in flight such as gulls and terns shaking them until they disgorge their fish. The Frigate Bird then catches the falling fish before the fish hits the water. This behaviour gives the Man-o'-War a third name, Pirate Bird. Other birds seen along the edge of the mangrove included the White-headed Marsh-Tyrant (*Arundinicola leucocephala*) Common Black Hawk (*Buteogallus anthracinus*) and Turkey Vulture (*Cathartes aura*).

The Rousillac Swamp provides a fine example of Red Mangrove (*Rhizophora sp.*) growing in the sea, protecting the coast from tidal onslaught and facilitating soil build up on the landward side. The Red Mangrove sets the conditions for its own demise as it cannot survive on the firm soil created. It gives way to its replacement, the Black Mangrove (*Avicennia germinans*), as it moves away from firmer footing to be at the waterfront.

Mangroves face certain specific challenges to growth associated with tropical inter-tidal zones. Besides high salinity levels, the trees must withstand fluctuating water levels, soft, anaerobic soil, the shade of other mangroves and strong tropical winds (Tomlinson, 1986). Soft soil affects the ability of plants to prop themselves upright against forces such as wind and gravity. Ground water salinity levels may also vary, and in some cases are significantly higher than seawater salinity levels (Morrow and Nickerson, 1973). Salt management is especially important for the plant because sodium can be toxic to them. Also, ion concentrations affect osmotic potential making it difficult to draw water up to the leaves. Mangroves therefore have had to adapt to overcome habitat challenges.

As hinted earlier the Red Mangrove (height 25m and girth 2.5m), the most common mangrove in the swamps of the country, grows farthest out to sea where the mud is almost always under water. One of the plant's adaptations to these conditions is the development of stilt roots (which can be as high as 4.5m above the ground) at the base of the trunk for added support in the fluid environment. [Note: There are two



Dead Mangrove

Photo: Jo-Anne Sewlal

types of Red Mangrove; both are very similar only differentiated by their flowers. The *R. mangle*, by far the more prevalent of the two, has flowers that are usually in pairs or sometimes three together, in the axils of the leaves. The *R. harrisonii* has multi-flowered inflorescences.] In addition, these stilt roots have special apertures that are alternatively covered and uncovered by the changing tides which enable oxygen to pass through them to the submerged parts of the roots. The *R. mangle* is a non-secreting salt excluder because it lacks glandular secretory structures and excludes salt from entering the roots. (The salt in xylem sap of the Red is 100 times less concentrated than in seawater – Tomlinson, 1986; Scholander, 1968; Scholander et. al., 1962 – and it is generally agreed that this is accomplished by a process of ultrafiltration in the cell membranes of roots.) Another fascinating adaptation is the mode of germination. The Red Mangrove bears a conically shaped fruit about 2-3 cm long, with a single seed that germinates while the fruit is still attached to the tree. From the seed, a shoot (hypocotyl), about 30 cm long, extends toward the ground. This seedling is weighted in the bottom portion (nearest the ground) so on dropping from the tree there is a good chance of the hypocotyl sticking upright in the mud. If it does not stick, the seedling can survive some 12 months floating about before taking root and growing from a horizontal position on a mud flat (it needs about 5 days to root). Interestingly, the pollen is very light and plentiful. No insects have been observed on the flowers so it is believed that the Red is pollinated by the breeze. The Red also sends out root from its branches in order to get oxygen. If these branches get too heavy the supporting roots will enter the mud becoming a main root.

The *A. germinans* grows on the landward side of the swamp and is similar to the Red in height and girth. The Black Mangrove prefers areas where the soil is covered with water at high tide and exposed at low tide. The plant obtains oxygen through numerous vertical roots (pneumatophores) about 6cm long and above the water when the tide recedes. Unlike the Red, the Black desalinates the seawater by secreting excess salt through specialised glands on the surface of leaves, in addition to carrying out root ultrafiltration. Black Mangrove roots can filter 90% of the salt from seawater (Tomlinson, 1986; Scholander, 1968), although some investigators report considerably smaller percentages, some as low as 30% (Field, 1984). The Black has also devised a system where, in order to get oxygen, short roots protrude from the trunk up to height of 3.5m. The seeds of the Black (ovoid, about 2 cm long and covered with minute hairs) also germinate on the tree and when they drop off may float about for two months before they die.

Learning about the mangrove brought recollections of Gary Aboud's (Fishermen and Friends of the Sea - FFOS) futile protest to save the mangrove on the Mucurapo foreshore and prevent the building of PriceSmart and the commercial complex. Thirty years ago that area was covered by the sea before being land-filled to build the Audrey Jeffers Highway. Mangroves have re-established themselves on the new shore line. Today young Reds are growing once more on the sea front and they should protect this new commercial space from the Gulf. Mangrove, being a natural defensive measure against tidal onslaught, can offer protection from the inevitable rising sea levels expected from global warming.

In this country we look upon mangroves as we do weeds on the lawn - a nuisance. Driving past mangroves daily in the vicinity of the La Basse (Beetham Highway) we perceive the plant as unimportant. Mangroves, though are an economic and environmental resource in many tropical countries (Macintosh and Zisman, 1999) providing, among other things, food and habitat for animals above and below the water level, soil stabilisation, timber and firewood, charcoal and tannin (Law and Arny, 2001; Macintosh and Zisman, 1999). Its resin is also used in folk remedies for a multitude of illnesses (Hartwell 1967-1971; Duke and Wain 1981; Garcia-Barriga, 1975), to restore lost vitality (Morton, 1981) and as an insect repellent.

After proceeding along the southern edge of the mangrove we eventually headed north across the trackless swamp to the sea. The tide was low and the water was only a few cm deep exposing the numerous pneumatophores to the air. The ground was relatively firm so the mud rose only just above the ankles. Unbelievably, rubbish was everywhere; scattered as far as the eye could see were soft drink bottles and other plastic containers brought in by the tide. Eventually we got to a break in the mangrove along the shore. After traversing the mud of the swamp a loud cheer went up on reaching the beach. From here we could see Naparima Hill, the islands in the Bocas and Venezuela. We returned to the cars and headed north via the Solomon Hochoy and Uriah Butler Highways to the Caroni Bird Sanctuary for the tour, guided by young Mr. Lester Nanan who provided information about the Reserve. We boarded a flat bottom boat and entered the Reserve via Canal Nine

(one of 9 man made canals in the Swamp leading due west to the Gulf of Paria).

Mr. Nanan explained that in 1970 there were 20,000 Scarlet Ibis nesting in the Reserve and this decreased to 5,000 by 1980 as the breeding birds migrated to Venezuela during the nesting season (March to August). Even though from 1953 the birds could not be hunted during the breeding season and since 1965 it was totally protected by law all year round, the nesting population decreased steadily. Gradually, by vigilant patrolling and keeping all unauthorised personnel away from the nesting area including poachers, oyster gatherers, fishermen, tourists and tour operators more and more breeding pairs remained at Caroni and the breeders are now estimated at 18,000. In spite of this, it is still difficult to convince people who like curried ibis that the bird is worth much more alive than cooked. Sadly, it must also be noted that persons arrested for poaching sometimes escape punishment on a technicality. Captured birds are skinned in the swamp and there is no expert witness to identify the carcasses.

The Sanctuary comprises 6,000 hectares of marshy land which contain 186 species of birds and 40 species of fish including Grouper (*Acanthistius sp.*) and Tarpon or Grantoucaille (*Tarpon atlanticus*). It was good that Lester provided a lot more information than the writer had gathered 20 years ago; back then one simply took a boat ride and moored in sight of the nesting area to watch the birds come in to roost.

Along the waters edge was the Four-eyed Fish or Mud Skipper (*Anableps sp.*). On the roots of the mangrove was the Fiddler Crab or Tree Climbing Crab (*Eratus sp.*) which the Ibis depends on for the carotenoids that give it its scarlet colour. Seven species of Fiddler Crabs live on the mangrove roots, some above the water and some below. The Ibis catches the crabs that live below the water at low tide by probing the mud with its long bill.

Further along we saw the first of six Cascabel snakes (*Trigonocephalus tararaca*) curled up and sleeping in the fork of an overhead branch (the snakes sleep during the day and feed at night). We then passed Forestry's Visitors' Centre, a modern facility constructed on the southern bank of Canal Nine, a few kilometres into the Reserve. The Centre is accessed by car along the southern bank of the canal and some argue that having vehicle emissions so deep into the swamp should not be encouraged.

We turned south at the first major junction away from Canal Nine towards the main nesting area. The nesting area was a mangrove forest across open water about 2km away. Nearby were a viewing tower (about 25m high behind some mangrove facing the nesting area) and a viewing platform at the edge of the mangrove island. Lester drove away after pointing out the nesting area in the distance in order to minimise the disturbance to the Ibis colonies. We headed northwest through wide open water where large mullets jumped out, as if involved in some celebratory chase, then through a dark, narrow channel with mangroves closing in on all sides, called the Tunnel of Love. Then it was through another passage and on to the Blue River.

We idled in side passages looking up at the flocks of Scarlet Ibis returning to their roost. There were many flocks flying in a 'V' formation generally numbering up to three dozen birds. But we saw two large flocks: one made up of more than 70 birds and another of over 120. A Poor-me-one or Silky Anteater (*Cyclopes didactylus*) was spotted curled up high on a tree limb. Other birds seen were the Carib Grackle (*Quiscalus lugubris*), Yellow Oriole (*Icterus nigrogularis*), Bicoloured Conebill (*Conirostrum bicolour*), Little Blue Heron (*Egretta caerulea*), Cattle Egret (*Bubulcus ibis*), Green-backed Heron (*Butorides striatus*), Cornbird (*Psarocolius decumanus*), Spotted Sandpiper (*Actitis macularia*), Yellow-crowned Night-Heron (*Nyctanassa violacea*), Scissors-tail or Fork-tailed Flycatcher (*Tyrannus savana*), Large-billed Tern (*Phaetusa simplex*) and the Mangrove Cuckoo (*Coccyzus minor*), a rare bird in these swamps. As suggested by Lester, we looked for the Common Pootoo (*Nyctibius griseus*), a night bird that usually perches upright on a tree stump during the day moving only if directly threatened. The bird is grey, black and chestnut, blending with the shadows of the forest. We did not see this well-camouflaged bird in the deepening twilight of the swamp. As we returned to the boarding jetty a most interesting day out ended with a glorious sunset at our backs.

References:

- Quesnel V.C. and Farrell T.F.** Native Trees of Trinidad and Tobago. Trinidad & Tobago Field Naturalists' Club 2000. 156 p.
- Schongalla M.** Salt Management in Rhizophora mangle and Avicennia germinanas (Final). Unpublished discussion paper 2002

Management Notices

Agenda Notice Vacancy on Management Committee

Nicholas See Wai has resigned from the position of Committee member on the 2003-2004 Management Committee.

In accordance with Rule #14, of the Rules of the TTFNC, this vacancy shall be filled via a secret ballot election to be held at a special meeting of the membership. This special meeting will be held on April 10, 2003 at St Mary's College, Frederick Street, Port of Spain. The elections will be conducted as a separate agenda of the usual general meeting scheduled for the same time and place.

Please be guided accordingly.

Shane T. Ballah
Secretary, TTFNC, March 6, 2003

From the President's Desk

Dear Members

At the AGM held on January 9, 2003 the new Management Committee, whose names are provided on page two of the Bulletin, was elected. On behalf of the members I would like to thank the outgoing Committee and make a special mention of recognition to Nigel Gains and Clare Bowen O'Connor, both outgoing members. Unfortunately, Nicholas See Wai has encountered a conflict with his further educational programme lecture schedule and our meeting dates which resulted in the need for him to resign from the Committee (see notice of Special Meeting above). We wish him good luck in his studies and look forward to his renewed availability at the conclusion of his lecture series.

Reginald Potter, President

Publications

- ◆ *The Palm Book of Trinidad and Tobago including the Lesser Antilles* by Paul L. Comeau, Yasmin S. Comeau and Winston Johnston. The TTFNC is accepting pre-publication orders for this book at the discounted price (25%) of TT\$200.00. The final cost (exclusive of shipping and handling) will be US\$40.00. For additional information visit the website at <http://www.wow.net/ttfnc>.
- ◆ Members are asked to note that copies of the *Native Trees of Trinidad and Tobago* are still available for purchase at TT\$80.00 per copy.
- ◆ Issues of the *Living World Journal* from 1892—1896 are now available on two CD volumes.

On The Trail

Chasing the Four-Eyes

The four-eyed fishes, genus *Anableps*, comprise three species of mostly fresh- and brackish-water fishes. If you look in any general treatise on fishes or textbook of ichthyology, you can count on finding mention of exactly one aspect of *Anableps*: their divided eyes that allow them to see both above and below water as they swim along at the surface. You will find very little about their behavioural ecology, probably not even what they eat.

I found *Anableps anableps* fairly abundant in the shallow surf at North Manzanilla in February. They occurred in a variety of sizes, and it seemed to me that the discrete groups were mostly made up of same-sized individuals. In Southeast Asia I spent many happy hours watching mudskippers. These little fishes of the genus *Periophthalmus* (family Gobiidae) are not closely related to the four-eyed fishes, so that any special resemblance between them must be convergent. Mudskippers are found in much the same habitats as four-eyes, but we will not find them here. They live mostly in the Pacific and Indian Oceans; the only Atlantic species is found on the West Coast of West Africa.

Both groups have long, rather lizard-like bodies and eyes that bulge prominently at the top of the head, like frogs. However, mudskippers are distinctly more terrestrial in their habits. In my experience, they spend most of their time very near the edge of the water, either just slightly in the very shallow water or a short way up on the land.

The thing that first attracted me to mudskippers was the observation that they are extraordinarily hard to catch. They are not especially fast and swim rather clumsily, but they seem to have a very topographic sense, so that they can almost never be herded out of their core areas or into a trap. Mudskippers are very resistant to being chased into deeper water. Instead, under pressure they skip over the surface parallel to the shore to a new position of safety at the water's edge.

So I set to pursuing four-eyes to see what they would do. Like mudskippers, they are relatively slow yet very hard to catch. Still, even my very brief observations turned up two large differences. First, the four-eyes were found in schools, i.e. groups of fish that moved in close parallel. I have never seen anything similar in mudskippers, any more than I have seen a herd of lizards running in formation.

Second, the four-eyes were only too happy to flee out to sea. In fact, my attempts to get between them and the open ocean, with a view to driving them toward land, were strikingly unsuccessful. Whenever I started to get around them, they sped along parallel to the shore and a short way out to sea.

I asked some people up in the village about *Anableps*. They confirmed that the fish are very hard to catch and that they, too, call them "four-eyes." I note that the common name in Spanish is the corresponding "cuatro ojos." Watching *Anableps anableps* is great fun, and I suspect that there is potential for some rather juicy research here.

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FIELD TRIPS, NEW FINDINGS AND THE QUARTERLY BULLETIN

Christopher K. Starr

Our quarterly bulletin, *The Field Naturalist*, has matured wonderfully in recent times. I believe it was Paul Comeau who gave it a decidedly more professional look some years ago, an advance that later editors have kept and improved upon. Having just looked through the 2002 issues, I find them all excellent, a product of which we can be very proud. My fervent thanks and congratulations to Rupert Mends and Calista Pierre.

However, recent issues also serve to highlight a major opportunity that I believe is slipping through our fingers. As you must have noticed, the bulletin is much more fact-intensive than it used to be. Field trip reports, in particular, contain a great deal of information, and reporters are now careful to identify plants and animals correctly and get the right names.

This is a big step forward, but there is room to take it much further. Too often on organized or informal field trips we make observations that seem well worth pursuing but are not. As a result, we lose opportunities to contribute new knowledge. Looking through old bulletins of comparable organizations from Nigeria and Malaysia, for example, I find that the members had a good sense of learning and contributing new information, things that no one had ever known before, or at least that no one had reported in the literature. This sense, unfortunately, is only weakly developed in the Club.

Here are two examples of apparently promising observations from the most recent bulletin.

John Lum Young, reporting on a Club field trip to the Tamana Caves, remarked on a yellow-bellied puffing snake (*Pseustes sulphureus*) in a cave, and suggested that this individual has become a specialist predator on bats. This is not the first time that this interesting and plausible conjecture has been made. Boos (2001:138-39) noted that this species is sometimes found in these caves and made the same suggestion. The yellow-bellied puffing snake is normally arboreal, feeding on such things as nestling birds. It presumably has to move about a great deal in search of prey, in which case it would be quite remarkable if some individuals have neatly solved the problem of finding prey (although not of catching them). If this has really happened, we have some snakes whose predatory strategy has shifted rather dramatically, from searching to sit-and-wait (ambush) predation.

Nicholla Johnson reported on a Botany Group trip to the Aripo Savannas. The thing that most struck me in her report was observations of an epiphytic bromeliad (*Aechmea mertensii*) with a pepper (Piperaceae) and an orchid (both identified) growing out of its massed roots, along with a colony of pugnacious ants. Now, similar symbiotic associations have been studied, including some involving this particular bromeliad, but the subject seems to me far from exhausted. If there is a significant *A. mertensii* population in the savannas, it would make a good undergraduate or graduate research project. However, there is no reason why members of the Club could not fruitfully constitute themselves as a research group. There are worse ways to spend several Sunday afternoons than studying a plant-insect association in the Aripo Savannas.

As a professional scientist, I am well aware of the difficulty in recognizing novel observations outside of one's area of speciality, as well as the labour involved in amassing new facts in a coherent and durable fashion. Still, any naturalist with serious interest in a particular area of natural history and an alertness to opportunities can make a real contribution to our knowledge. I absolutely reject any notion that this righteous activity is off-limits to amateur naturalists.

Reference :

Boos, H.E.A. 2001. *The Snakes of Trinidad & Tobago*. College Station: Texas A&M Univ. Press 270 pp.



In Memoriam - Peter Robin Bacon

“The Architect of the Turtle Conservation Laws”

By Ian Lambie

I first met Peter Bacon in 1964 when he became a member of the then Trinidad Field Naturalists' Club. Peter had arrived in Trinidad in August 1963 accompanied by his Trinidad-born wife, Tyra, whom he had married in England in July 1962. He soon made his presence felt in the Club and he was elected to the post of Honorary Assistant Secretary in 1965. He served in the post of Vice-President from 1966 to 1968 and was elected President of the Club in 1969, a position he held for three consecutive years. From 1972 to 1980, he was a member of the Club's Editorial Committee and continued to serve the Club until his departure for the University of Calabar in Nigeria.

In 1964, the Club had received a report that during the annual nesting season large numbers of Leatherback turtles were being slaughtered on the beach at Matura. In addition, once slaughtered, the carcass was pushed out to sea by a different group of persons, not the poachers, and at first light the many sharks which were attracted to the carcass were shot.

On the Club's first visit to Matura, on a night in mid-1964, having not previously reconnoitered the area in daylight, we were unable to locate the turn-off to the beach from Orosco Road and most of our party, including a large number of UWI students who had been invited by Peter, left in frustration. However some of us stragglers met a villager who directed us to the northern end of the beach now popularly called Rincon where we saw our first Leatherback turtle on the beach.

Trips were made to the Matura Beach later in 1963 and during 1964 by Club members including Peter Bacon. In 1965, the Trinidad Field Naturalists' Club commenced a turtle-watching project with Peter Bacon as coordinator. At that time, the exact nesting period for sea turtles in Trinidad and Tobago was unknown to the Club and there were many “folk-tales and myths” to contend with. Beach patrols were made not only at Matura but also at Las Cuevas where Mr. Eric La Forest often accompanied by Luisa Zuniaga and other friends visited regularly.

During the next five years, turtle catch information was obtained from the Fisheries Division for turtles landed at the Toco and Mayaro Fishing Depots and offered for sale at various market places, and by 1969 a reasonably accurate nesting pattern was also discerned from the information collected by Club during its five years of beach patrolling. Also in 1969, Peter became the first PhD graduate in Zoology from the St Augustine Campus of the UWI. During the turtle nesting season of 1970, the Club began a Turtle Tagging Project using equipment supplied by the University of Florida, and by 1980, 330 Leatherback turtles had been tagged. The information on each turtle was recorded on information sheets designed by Peter. Beaches visited included Matura, Fishing Pond, Las Cuevas, Big Bay at Toco, Grand Riviere, Tacarib and Grafton and Turtle Beach in Tobago.

In 1973, Peter, on behalf of the Field Naturalists' Club, prepared a document containing recommendations for the amendment to the existing Turtle Conservation Laws. These recommendations were submitted to the Ministry of Agriculture, Lands and Fisheries and follow-up meetings were held with the then Minister, the Honorable Lionel Robinson and with other Government officials. At these meetings, the Club was represented by Mr. G.E.L. LaForest, its President, Dr. Peter R. Bacon and Mr. Ian Lambie, the Honorary Secretary.

Articles and photographs depicting the slaughter of turtles on the Matura Beach together with letters to the editors of the daily newspapers, calling for the amendments to the existing laws, in order to better protect the nesting turtles on our beaches, were regularly published and resulted in the issue of the

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Book Review

Up Close and Personal

Erich Hoyt 1996. **The Earth Dwellers**. New York, Simon & Schuster : 319 pp. ISBN 0-684-83045-0 pb US\$13

Erich Hoyt is a science writer who has written mainly about whales. Early in this serious popular treatment, he tells us that "This book will recount the everyday dramas in the lives of ants and other insects, interspersed with the stories of the myrmecologists who love to watch and study these little animals." He makes use of his time in the field in Costa Rica with leading myrmecologists (ant specialists) Edward O. Wilson and the late William L. Brown to ingeniously introduce and frame the various topics.

Many of these are the same as would appear in almost any treatise on ants, such as caste ratios, pheromonal communication, defensive strategies, the evolution of social parasitism, ant-plant mutualisms, and the nature of the colony cycle, but the original approach makes this book unlike any other. Brown was primarily a taxonomist, and Wilson is primarily an ethologist, but each has extended into the other's territory. Hoyt's treatment of these and other myrmecologists in the field is very engaging. I know both Brown and Wilson personally and find his portrait of each wonderfully accurate. Most importantly, he catches their passion for ants. For example:

"This place is loaded with dacetines," says Wilson, stopping at a rotten log. "This is the third one I've seen in five minutes. We must be getting into prime dacetine country."

"And look at this *Strumigenys* colony", says Brown, referring to a long-jawed dacetine species at the other end of the log. "Pardon me while I have a good drool."

This is from two middle-aged full professors -- at the time Brown was 65, Wilson 58 -- yet no young naturalist could exude greater enthusiasm. And here lies the real charm and power of the book. Hoyt makes a special point of distinguishing between those who study ants more or less in passing (as I do) and the hard-core fanatics. This distinction is well known among entomologists and was perhaps best stated by Rémy Chauvin in the terms "Myrmecologists are born of a different amazement."

Brown refers to dacetines as "intriguing little devils", and this is one group of ants in which he and Wilson did pioneering studies already in the 1950s. The focus of this classic work on social traits as adaptations took this approach beyond any previous attempt with invertebrates. The bachac *Atta cephalotes* and the army ant *Eciton burchelli*, both prominent in Trinidad also come in for special attention. *A. cephalotes*, in particular, has been the subject of some of Wilson's most important studies of caste in ants. Let us also note Brown and Wilson's serious conservation concerns, which Hoyt highlights well through their interest in ants.

Any book that opens up to the reader the red blood of another's prime enthusiasm is worthwhile, and this is one of the best.

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Turtle and Turtle Eggs Regulations of 1975 (Act 23 of 1975 issued as Government Notice No. 119 of 8th September 1975), which included all the recommendations submitted by the Club. A memorable victory had been achieved by the Club.

Professor Peter Robin Bacon had made a significant contribution not only to academia but also the Environment and Wildlife Conservation, for which we are very grateful.

Today we would like to believe that the early conservation work by the Trinidad and Tobago Field Naturalists' Club under the guidance of Peter Bacon has resulted in a general awareness of the plight of sea turtles and the need for sound management of this very valuable natural resource. We like to believe also that this early work has resulted in the birth of organizations such as Nature Seekers in Matura and other Turtle Conservation groups in Grande Riviere, Fishing Pond and in other parts of Trinidad and in Tobago.

On **Monday 24th February 2003**, Professor Peter Robin Bacon passed away at the age of 64 years after a long period of illness.

The Trinidad and Tobago Field Naturalists' Club, the University of the West Indies and the Country are all the poorer and we all mourn his passing.

May He Rest in Peace



Editor's Note

Due to space limitations we are forced to limit the length of reports to be submitted for publication in the Quarterly Bulletin. We therefore propose the following guidelines :

Font Type: Times New Roman. Font size: 12 point. Maximum Length : 1,750 words (approx. 3 pages).

We thank our regular contributors and encourage other members to take notes during field trips and submit your reports and observations for publication in the Bulletin. You can email your articles to any of the following: 1) mendsr@bp.com 2) cpierre@energy.gov.tt 3) tfnc@wow.net, or to any member of the Management Committee.

The deadline for submission of articles for the 2nd Quarter 2003 issue of the Bulletin is May 31, 2003.