

## WHAT INSECTS ARE FOUND ON TREE TRUNKS?

Jo-Anne Nina Sewlal

The recently concluded “Nature of the Islands” conference in memory of the late Prof. Peter Bacon featured four talks and a poster on insects that are usually found on tree trunks. Talks included two on the ant *Anochetus emarginatus* by Alicia Roach, Michelle Cazabon, Lena Dempewolf and Dr. Christopher Starr, one on webspinners by Dr. Janice Edgerly and I delivered a presentation on the spider *Mesabolivar aurantiacus*, and exhibited a poster on its relationship with the orb-weaving spider *Azilia vachoni*. It was at this conference that long-time Club stalwart and outstanding all-round naturalist, Dr. Victor Quesnel, made the observation that he did not see anything but lizards when he looked at tree trunks, and posed the question why was I able to see spiders and other insects there.

Now the simple reason that most of us, when we look at a tree see nothing but bare bark, moss or lichens, is that the animals that live there are very well camouflaged to fit that background. Another reason is that, with time, some naturalists develop a tendency to focus on one or a few groups of animals, so when they take a walk through the woods they are more focused on their group/s and do not have a search image for the other animals that are there. This happened to me once when sampling for spiders: I came across a gecko on a tree trunk, and at first incorrectly thought how novel but out of place it was.

A broad variety of insects are found in this microhabitat, however, some of which regard this microhabitat as home while others use it as a feeding or resting site. I will use the Arena Forest Reserve as an example, as it is the field locality that I know best. However, I expect these remarks to be applicable to almost any lowland, broadleaf forest in the neotropics.

This note focuses on the different orders of insects found on the exposed trunk below the crown of the tree to the portion (including roots, if visible) found above the level of the leaf litter. The term “buttress notches” is used to describe the space between two buttress roots.

**Arachnida:** I observed spiders belonging to seven families in this microhabitat, including: *Mesabolivar aurantiacus* (Pholcidae), *Nephila clavipes* and *Azilia vachoni* both of which belong to Tetragnathidae; two unidentified species of orb weavers (Araneidae); and unidentified species belonging to Linyphiidae and Agenlenidae. The empty retreat of a tarantula (Theraphosidae) was also observed on a tree trunk. All these web-building spiders, except the tarantula, occupy buttress notches. Jumping spiders (Salticidae), most likely in search of prey, were observed on the tree trunk **Blattodea:** Tree trunks also provide a resting site for cockroaches.

**Coleoptera:** I have observed Passalid beetle larvae feeding among debris in a buttress notch. Other beetles such as Long-horned beetles (Cerambycidae) have been recorded as feeding on dead or dying trees.

**Diptera:** Midges and mosquitoes use buttress notches as resting sites where they hang from the underside

of spider webs belonging to members of the family Pholcidae which I have observed in this locality are *M. aurantiacus*.

Embiidina: Also commonly called webspinners, build and cover their complex network of retreats on the trunks of trees with silk which they produce.

Hemiptera: *Arachnocoris trinitatus* was observed to often share webs belonging to *M. aurantiacus* in buttress notches, most likely feeding off scraps of food left by the spider.

Hymenoptera: A variety of hymenoptera live on trees, including ant species, such as, *Azteca* sp. and *Anochetus emarginatus* which both occupy the tree trunk, the latter of which is found at heights varying from 2 to 4m. *A. emarginatus* occupies cavities in the trunk, the junctions between the trunk and a branch, or in root masses of epiphytes.

Isoptera: I have observed four termite species:

*Nasutitermes ephratae*, *N. costalis*, *Microcerotermes arboreus* and *Termes hispaniolae*. Both *Nasutitermes* species and *M. arboreus* build regularly globular nests either mid trunk and higher along the trunk extending into the crown of the tree, while, *T. hispaniolae* nests, which resemble dry mud, extend up to

2m from the base along the trunk.

Lepidoptera: Tree trunks make the ideal resting site for moths as the bark blends in with the drab colouration of their body.

Opiliones: Harvestmen, as they are commonly known, have been observed on tree trunks as well as buttress notches. They also form aggregations on tree trunks where they collectively shake their bodies.

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<p><b>The Quarterly Bulletin of the                  Trinidad and Tobago Field Naturalists' Club</b></p> <p><i>July— December 2004</i></p> <p>Editor.....Rupert Mends                  Assistant Editor..... Calista Pierre                  Contributors.....Jo-Anne Sewlal, John Lum Young, Christopher Starr, Matthew Cock, Selwyn Gomes                  Photographs.....Jo-Anne Sewlal, John Lum Young, Nicholla Johnson                  Design &amp; Layout..... Calista Pierre</p> <p><b>The Trinidad and Tobago Field Naturalists' Club is a non-profit, non-governmental organisation.</b></p> <p><b>Management Committee, 2004-2005</b></p> <p>President....Carrall Alexander (633-3373); Vice-President.... Jalaludin Khan; Secretary....Shane Ballah (633-5352); Treasurer.....Selwyn Gomes (624-8017); Asst. Secretary....Carla Smith (645-9097); Committee Members...Dan Jaggernauth (659-2795); Reginald Potter (622-6289 ); Richard Lee Kim.</p> <p><b>Website: <a href="http://www.wow.net/ttfn">http://www.wow.net/ttfn</a></b>  <b>Contact: The Secretary, TTNC c/o P.O. Box 642, Port of Spain.</b></p> <p>Disclaimer: The views expressed in this bulletin do not necessarily reflect the opinion and views of the Trinidad and Tobago Field Naturalists' Club.</p> <p style="text-align: center;"><b>MISSION STATEMENT</b>  <b>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 .</b></p>
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## Botany Group: Yarra River Field Trip

Saturday March 20, 2004

Nicholla Johnson

The group met at the pillars to the Maracas turnoff and had a safe drive up to the turnoff by the WASA Station and parked a short distance from the start of the trail along the Yarra river. As we began walking near the parking area we observed the roadside weed Gentianaceae *Coutoubea spicata* with its spikes of white flowers, a Cashew tree *Anacardium occidentale*, the native Cocorite palm *Attalea maripa*, and overhead, the bright purple flowers of the Easter Vine *Securidaca diversifolia* (also seen last year on the Scotland Bay botany trip). Other plants seen along the roadside included a *Senna multijuga* sapling, another Gentianaceae *Irlbachia alata* with a light green bell shaped flowers, and the sedge *Rhynchospora sp.*

We crossed the first stream which was lined with the blooming Maraval Lily *Spathyphilum canifolium* with the lovely white scented flowers, and the flowering tree *Hirtella triandra* with crenulate leaves. Kester, with a very keen eye, drew the attention of the group to a well-camouflaged Mapepire Balsain/Fer de Lance (*Bothrops sp.*) hiding in the river bank. As we entered the abandoned cocoa plantation area, we saw a mature Crappo tree *Carapa guianensis* with the distinct rectangular flaking bark and red wood. Carlisle Mc Millan drew our attention to a few orchids in the area which included *Maxillaria camaridii* and *Scaphyglottis cuneata*. On the understory were the lush *Selaginella* plants, the sedge *Rhynchospora cephalotes*, and the red fruiting *Xiphidium caeruleum*. Dan showed us the hollow fruits of the Toporite *Hernandia sonora* which, he demonstrated, can be blown like a whistle. Also seen was a Guttiferae *Calophyllum lucidum* and, to the group's delight, a flowering Clove tree *Syzygium aromaticum*. Overhead Carlisle pointed out there was a long spray from a flowering Brown Bee orchid (*Oncidium luridum* = *Lophiaris lurida*) growing on a Bayleaf Tree *Pimenta racemosa*. As we continued to walk along the cocoa estate we saw large patches of flowering Black Stick *Pacchystachys spicata*, and several orchid species identified by Carlisle including *Epidendrum strobilifera*, the Vanilla orchid *Vanilla indora* and, overhead, the epiphytic *Anthurium hookerii*.

The group soon began to walk along the Yarra River which had growing along its banks several of the small tree Copper Hoop *Brownea coccinea* [subsp. *Capitella*] which was in flower and fruit. Also seen were numerous woody vines/lianes, in particular, the Monkey Ladder *Bauhinia sp.* hanging on the trees along the river bank. Another tree seen included the Wild Chataigne *Pachira insignis* which was in fruit, tall patches of the Elephant's Ear/Malanga/Wild Dasheen *Colocassia esculenta* all along the river bank, as well as plants of *Cyclanthus bipartitus* which has palm-like leaves. Carlisle pointed out some *Corianthus sp.* orchids growing overhead in the rootball association with ants and the Piperaceae *Pepperomia sp.* We saw a large clump of the ribbon-like epiphytic cactus *Epiphyllum hookeri* and the tree *Ficus maxima* along the riverside. Bird life included the Common Black Hawk (*Buteogallus anthracinus*), the Little Hermit (*Phaethornis longuemareus*) and White-bearded Manakins (*Manacus manacus*).

There were several large Tapania trees *Hyeronima laxiflora*, the small Guttiferae tree *Marilla grandiflora* which had leaves similar to the *Conocarpus Warszewiczia coccinea* which was also growing nearby. On the open river bank exposed to sunlight there were tufts of a small purple flowering Acanthaceae *Teliostachya alopecuroidea* [syn. *Teliostachya alopecuroidea*]. The lovely white, flowering Cocoa Onion/Amarila lily *Hymenocallis tubiflora* was seen along the river bank, as well as *Ryania speciosa* with its white, star-shaped flower and bark which has insecticidal properties. Several clumps of the small under-

story palm Anare *Geonoma interrupta* were seen in fruit, as well as the palm *Bactris setulosa* with distinct rings of thorns along the stems. A large Silk Cotton tree *Ceiba pentandra* was a big attraction for the group with its huge buttress roots which several members climbed and took photographs. Another orchid, *Rodriguezia lanceolata*, was seen nearby by Carlisle.

Other trees in bloom included *Calliandra guildingii* with its pink powder puff flowers, orchids *Octomeria sp* with white flowers, and *Pleurothallis sp.* and *Tabernaemontana undulata* [understory – small tree] with equal leaves and white flower. In the understory was also seen the saw-tooth leaves of *Ouratea purdieana* which is uncommon. As we entered more of the Seasonal Evergreen vegetation in the area, the understory was dominated by Tirite *Ischnosiphon arouma* and also another short Marantaceae species *Monotagma spicatum* [which in comparison has a ringed pulvinus base]. Also in the understory was the very large sedge *Becquerelia cymosa*, as well as several of the fruits of *Sloanea laurifolia* which littered the forest floor. Several trees of Wild Guava *Eugenia sp.* were observed with the distinct peeling off, orange red bark, a Bois Bande tree *Parinari campestris* with leaves of a distinct brown underside, and the palm *Oenocarpus bataua* with the horsetail-shaped inflorescence. Large numbers of the understory plants Hot Lips *Psychotria poeppigiana*, and *Psychotria muscosa* with beautiful purple fruits were seen, as well as the sedge commonly known as Razor Grass *Scleria secans*. We saw young plants of the unifoliolate, white, flowering Poui *Tabebuia stenocalyx* which differs from the two yellow Poui *Tabebuia chrysantha* and *T. serratifolia* that are well known with digitate leaves. Another plant was *Thoracocarpus bissectus*, a *Cyclanthus* vine and a large adult and several young *Podocarpus coriaceus* (supposed to have *P. trinitensis* as well) which is a native Gymnosperm (Conifer) to Trinidad and Tobago.

We were happy to encounter a fruiting Balata tree *Manilkara bidentata* as the members all enjoyed the fallen fruits collected on the forest floor. Nearby was a *Symphonia globulifera* which was cut and the yellow sap seen, as well as the red flowers observed along the trail and, to our delight, in the vicinity a new grass species [for Trinidad] , *Olyra ecaudata* (Nicaragua to Bolivia and Brazil, French Guiana, Suriname) was collected. The members soon arrived at the end of the trail and enjoyed lunch while observing the river life which included Crayfish and the Mountain Mullet which is spotted with a distinct stripe along the side.

The return trip was quite an adventure as we climbed the sides of the mountain part of the way, and to much laughter over discussion of who was collecting the fruits of the Bois Bande *Parinari campestris* that was littering the trail. What an adventure slipping and sliding while holding on to the prickly fern *Cnemidaria sp.*, and numerous saplings that were so well spaced along the treacherous cliff to provide us with a safe hold! We eventually came down at the beautiful gorge and had a swim in the very refreshing pool, along with stopping off at a one person waterfall ensconced in the riverside. We passed along the popular Yarra Gorge and had a beautiful siting of the gorge's rock-face, lined with flowering *Begonia mariannensis* which was recently described at the Marianne River in Blanchisseuse. Winston Johnson from the National Herbarium also identified in this gorge rock community a new [for Trinidad] grass species *Raddia guianensis* (Venezuela and Tobago to Brazil, French Guiana and expected in Surinam). We also saw *Clusia palmicida* fallen fruits and flowers along the river side and, as true adventurers, we partook of a 'new' fruit Rubiaceae *Coussarea panniculata* which was a white, sweet and fleshy fruit we observed on the hillside and identified by Mr. Johnson. The trip ended at the cars, over a hearty meal of watermelon and delightfully ice-cold drinks provided by Dan. We look forward to our next trip to Erin Savannas in October 2004 and all the new plants we may discover there.

Botany trip to Yarra River Saturday 20<sup>th</sup> March 2004  
Photos by Hema Seeramsingh, Kester Dass and Nicholla Johnson

Plate 1



*Irlbachia alata*



*Coutoubea spicata*



Mapepire Balsain (*Bothrops* sp)



*Colocassia esculenta* (Elephant's Ear)

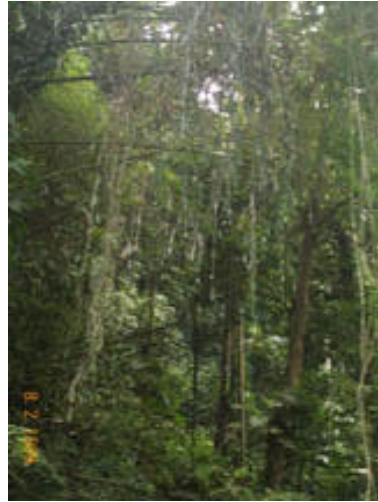


*Brownea coccinea* pods (Cooper Hoop)



*Anthurium hookerii* (epiphyte)

Plate Two



*Oncidium luridum* (Brown Bee) *Epiphyllum hookeri* (cactus) *Marilla grandiflora*



*Ceiba pentandra* (Silk Cotton tree)



*Geonoma interrupta* (Anare)



*Podocarpus coriaceus* (seedling)



Botany Group at lunch stop

Plate 3



*Begonia marianensis*  
Growing on the rock face of Yarra River Gorge area  
(Photo by Kester Dass)

## FIELD TRIP REPORT

## Tapana Falls and Double River Falls : May 30, 2004

John Lum Young

It seemed like the early morning rains affected the turnout. The weather was of concern because any rain in the vicinity of the intended destination would have resulted in Plan B, a back-up walk. At the trail briefing the trip leader detailed May's Mystery Trip. It comprised two parts; first to Tapana Falls, not on the schedule of hiking groups but visited by that rare individual willing to explore and secondly to Double River Falls. Double River Falls was never an official field trip though individual members would have gone there in the past.

The walk along Madamas Road, Brasso Seco, revealed the plantation past of the Valley as a few Cocoa (*Theobroma cacao*), Coffee (*Coffea arabica*) and Nutmeg (*Myristica fragrans*) survived. Near the streams more and more Christophene (*Sechium edule*) were being cultivated. Apart from the popular Mango (*Mangifera sp.*) the relatively scarce Primrose (*Syzygium jambos*) was in fruit. The group paused in the shade of two grand *M. fragrans* trees. Nutmeg, native to the Moluccas or Spice Islands of Indonesia, was introduced to the Caribbean in 1824. An evergreen that reaches a height of 20m, it takes about 8 years to bear but will bear annually for the next 40 to 50 years. The pulp of the yellow mature fruit though hard and sour is edible. The ripe fruit splits open exposing the kernel covered by a bright red net-like material. This is mace a top of the line spice in its own right. Within the kernel lies the nutmeg (spice), the dried seed that is grated to add flavour to gourmet delights.

The approach to the Tapana Falls involved walking up the Tapana River for an estimated 1.6 km through mini gorges. Getting trapped there in flash flood will be bad news, but so far the weather was holding and the sun regularly peeped from behind the clouds. There was no trail and with the daily rains in the Brasso Seco Valley the vegetation crowded the narrow passage. The predominant growth was Wild Tania.

The first of the Tapana Falls was about 3m high with a heavy volume of water and a shallow pool at its base. The dominant vegetation in the immediate vicinity of the falls was the Fern Ally *Selaginella plana* a member of the SELAGINELLACEAE family. In fact this fall was the first in a series of 4 along this section of the Tapana River. The second one was five minutes beyond the first but thereafter the others were less than a minute apart.

Retracing steps to Madamas Road and the Aqui River the next stop was Double River Falls (7 minutes distant) though some persons decided to head home. It must be noted that some popular hiking clubs referred to Double River Falls as Sobo Falls but this was incorrect. Sobo Falls was in fact another waterfall about 3.5km east. It has been off the hiking path for a number of years because those living on the estate on which the falls is situated do not allow hikers to access the trail that passes at the side of their house.

Before reaching the waterfall the tumbling

Double Falls

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## FIELD TRIP REPORT

### Proposed Matura National Park– June 27, 2004

**Jo-Anne Nina Sewlal**

Our group departed from the UWI south entrance at approximately 7:00am heading east past Arima to Valencia and Toco Road, through Matura, one of the longest villages (approximately 9.7km) in Trinidad, and then finally to Salybia.

Our destination was the proposed Matura National Park. In total the site measures approximately 9,000 hectares. This area has long been recognized as a Forest Reserve due to its biodiversity<sup>2</sup>. The Park comprises three sections, the first declared in 1922, the Eastern extension in 1958 and the Western extension in 1959. In 1980 this area was proposed a National Park in a Systems Plan for National Parks and other Protected Areas for Trinidad and Tobago. In the 1990's a management plan for the area was developed. Finally, in 2004, Matura along with Buccoo Reef in Tobago became the first proposed National Parks in Trinidad and Tobago.

Much of the biodiversity contained in the Park consists of rare or threatened flora and fauna which include<sup>1</sup>: Trinidad Piping-guan or Pawi (*Pipile pipile*); Yellow-crowned Parrot (*Amazona ochrocephala*); Parakeet or Green-rumped parrotlet (*Forpus passerinus*); Ocelot (*Leopardus pardalis*); Tayra (*Eira barbara trinitatus*); Red Howler Monkey (*Alouatta seniculus*); Quenk or Collared Peccary (*Tayassu tajacu*); Agouti (*Dasyprocta leporina*); Matte (*Tupinambis teguixin*); Iguana (*Iguana iguana*); Red Brocket Deer (*Mazama americana trinitatus*); Orchids (*Orchidaceae* spp), as well as rare South American relict fishes.

All of the species listed are on one or more conventions or protocols for species threatened by varying degrees of extinction; these are the following: 1) the World Conservation Union (IUCN) Red List, 2) the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) and 3) Specially Protected Areas and Wildlife to the Cartagena Convention (the SPAW Protocol)<sup>2</sup>. The much publicized Pawi is the only species placed on all three lists. It is an endemic species and a relative of the Cocrico<sup>3</sup>. Its scarcity and large size make it a prize catch to hunters. It also shows indifference to gun fire, hence entire flocks can be destroyed while roosting as surviving members only fly for a short distance<sup>3</sup>. The Ocelot is another well publicized species and is the only member of the large cat family found in this country.

This reserve also boasts the largest stand of Mora (*Mora excelsa*) in the country, the presence of which was quite evident further along the Salybia-Matura Trace. Mora grows in almost pure stands (Quesnel and Farrell 2000) the reason being that this species can produce seeds weighing up to 250g (Quesnel and Farrell 2000) that fall very close to the parent. The considerably large food supply contained in these seeds also gives it an advantage over other seedlings (Quesnel and Farrell 2000). It also appears that Mora has the capability of invading and displacing other forest types. This should cause some concern since Mora forests have been hailed by many biologists as the only example of low diversity forests in the Caribbean<sup>2</sup>. Therefore, if the aim of the Park is to preserve biodiversity, would it not be best to regulate the numbers of Mora as a mitigation measure?

This leads one to consider the manpower available to carry out the mitigation measures listed in the report, Environmentally Sensitive Area Matura National Park Notice, 2004. Such measures include preventing illegal hunting and squatting and fire prevention. Currently,

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## Management Notices

### ANNUAL YEAR-END GET TOGETHER

**DATE :** December 12, 2004  
**COST :** TT\$75.00 (payable by December 5, 2004)  
**VENUE :** Lopinot

**Contact the Treasurer to secure your attendance.**

### ANNUAL GENERAL MEETING

The next AGM of the TTFNC will be held in January.  
More details on the last page.

### Publications

- ? The 2004 Issue of the *Living World Journal* has been published. Please collect your copy at the next monthly meeting
- ? *The Palm Book of Trinidad and Tobago including the Lesser Antilles* by Paul L. Comeau, Yasmin S. Comeau and Winston Johnston.
- ? 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.

### Welcome New Members

**Anne Solomon**  
**Darren Ali**  
**Julie Ann Sims**  
**Judy Headly**

**Quillan Young Sing (Student)**  
**Anthony Sladden**  
**Ruth Trier**

## FIELD TRIP REPORT

### Guanapo Gorge : February 29, 2004

John Lum Young

Guanapo Gorge is a place where one can admire the carving power of flowing water that chiselled the metamorphic rock creating the longest and most spectacular canyon in the country. The trip was properly planned for the Dry Season but the weather was being influenced by El Nino, a phenomenon of the Pacific region that upsets neighbouring weather systems, as evidenced by the wetter than usual January and February 2004. The Group will have to be careful because the Gorge though accommodating can be dangerous.

Twelve years ago flash flooding trapped the writer there. The water rose about 1.5m in less than 5 minutes. Although there was sunshine in the vicinity of the gorge the upper valley had been experiencing torrential rain. The heavy downpour eventually beat down on the gorge for a number of hours, well after nightfall. Fortunately the rising water caught the writer in a section where he could scale the sides above the torrent and sit it out (from about 11:00 a.m. that day to 8:00 a.m. the next). Concerned that rising water will creep up and sweep him away he kept watching the rushing water and trying to forecast the eventual high water level. It was only when he noticed a strange insect in a dark crevasse near his shoulder that he relaxed. He realised that this denizen of the gorge was not seeking higher ground but simply waiting out the rain.

Glimpses of the surrounding country through breaks in the secondary vegetation revealed hills dotted with flowering immortelles (*Erythrina preppigiana*). The Gorge was entered through its southern entrance 8m upstream stream of the junction of the Tumbason and Guanapo Rivers. There used to be a decent bathing pool (about 1½ metres deep) at the confluence of these two rivers but the area has silted up.

After 233m there was a deep and longish pool and non-swimmers were advised not to venture further. They took heed interpreting the statement to include weak swimmers also. Certainly when one daring young man encountered difficulties the rest realised that it pays to be overly cautious. To that man's credit he did not panic when he sank but waited suspended under the surface for assistance by the watchful swimmer alongside him. Good going!

From this pool to the tributary that joins the Guanapo River from the east the walls towered to varying heights up to an estimated 30m. The width in this section varied from 1m to 4m and the length was 302m. Where the gorge narrowed it was dark enough to accommodate sleeping bats. Where the gorge widened plants with small hairy leaves, West Indian Clearweed (*Pilea inaequalis*) belonging to the URTICACEAE family, clung to the sides. Also taking hold where they could were the Fern Ally *Selaginella plana* or *S. hartii* (SELAGINELLACEAE) and the fern *Hypoderris brownii*

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white jets of water became visible through the trees and the collective "oohs" and "ahs" signalled that those electing to walk further were glad they persevered. Double River Falls, about 20m high, was in full flow emptying into a wide pool. Members could not resist swimming and being massaged by the falling water. Some said it was the best waterfall they have been to in Trinidad, even more beautiful than the popular Rio Seco Falls. Not a bad conclusion to another mystery destination.

From Page 12 there are three forest rangers serving the park, none of whom were willing to show us the area on Sunday, their day off. Clearly, three persons are not enough to patrol an area that stretches from Matura to Shark River (near Matelot) and to carry out the mitigation measures touted. One also has to wonder as to who is protecting the Park and its inhabitants on the rangers' days off.

Another point to note is that if this park is designated an Environmentally Sensitive Area, is it wise to build double lane access roads into it, like the one the park? Like the one a construction crew was feverishly working on to get it ready, they told us for, the President's visit in the next three days? One has to again examine the wisdom of having so few officers patrolling the area when visitor management is one of the mitigation measures listed. Therefore, one must wonder if giving this area a new status will really bring meaningful change in solving environmental degradation.

**Rio Seco**

We parked by the concrete bridge over the Salybia River, and after a briefing by field trip leader John Lum Young we headed into Salybia-Matura Trace. Near the start of the trail we observed a few thin columns of bachacs or leaf-cutting ants. Other insects seen along the way included an Emperor butterfly (*Morpho peleides*). Of the 150 species that belong to the family Morphidae, which is exclusive to tropical Central and South America, this is the only species which has penetrated the Caribbean into this country (Stiling 1986). We also observed the beetle *Canthon* sp. belonging to the family Scarabaeidae, identified by Rajindra Mahabir.

Birds observed were the White-Bearded Manakin (*Manacus manacus*). The males are often seen in contrast to the cryptically coloured females, which tend to nesting duties. The males display to attract females in a patch of earth called a court, which they keep scrupulously clean of debris. A cluster of these courts which can number up to 70 comprise a lek (ffrench 1991). The distinctive calls of the Bellbird (*Procnias averano*) were also heard. Both of these species are found deep in the forests, the former, however, is found more often in the Northern Range (ffrench 1991). Besides the dominant Mora, we also examined a leaf of *Anthurium* sp. whose state of decomposition allowed us to observe its intricate network of veins. Another plant observed was a hairy leaved plant belonging to the family Melastomataceae.

After a 1½ hour walk we reached the Rio Seco Waterfall. "Rio Seco" is Spanish for "Dry River", so called because a 1¾ hour hike upstream reveals that the river emerges from a cluster of limestone boulders. For about 3km upriver, the riverbed is dry since the water flows underground. However after 3km the water is present once more. We had lunch and some members opted for a dip in the basin that has a depth of approximately 15m. Others decided to follow Dan Jaggernaut on a trail that came out on top of the falls, after which we had an uneventful return to our starting point, topped off by a stop for some home-made coconut and cherry ice-cream in Matura.

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## NOTES ON SOCIAL INSECTS OF LITTLE TOBAGO

Christopher K. Starr, Tiffany Vu & Nam Nguyen

### Acknowledgement

Tiffany and Nam's work in Trinidad & Tobago was funded by Santa Clara University.

In her report on the Club's 2003 trip to Tobago in the April-June 2004 issue of these pages, JoAnne Sewlal gave special attention to Little Tobago, with some notes on plants and birds of the island. These prompted us to contribute these observations on social insects made during several days in 1998.

As expected, we found many fewer species than are present on the main island of Tobago. There are two evident reasons for this. The obvious, even trivial one is that Little Tobago is only about 1/300 the size of Tobago. Other things being close to equal, big areas harbour more species than small ones. The more interesting reason is that the probability of a given species going extinct from a small island is greater than from a large island. If a land species goes extinct from the one square kilometer of Little Tobago, it can only re-introduce itself across the sea barrier that separates it from the main island, rather than just walking from an adjoining land area. This sort of island effect is seen in both Trinidad and Tobago, and it is expected to be more pronounced on Little Tobago.

The social wasp fauna of Little Tobago is quite different from what we expected. The main island of Tobago has exactly four species (a subset of the 37 known from Trinidad), the independent-founding (Jack Spaniard) *Polistes versicolor* and the swarm-founding *Brachygastra bilineolata*, *Polybia occidentalis* and *Polybia rejecta*. In Tobago, as in Trinidad, *P. occidentalis* is extremely abundant, but *P. versicolor* (very common in Trinidad) is vanishingly rare. It was thus a surprise to find that the one species on Little Tobago is *P. versicolor*. It is fairly common there, but we found no trace of *P. occidentalis*.

There is no evident reason why *P. occidentalis* should not do well on the smaller island, and the possibility must be entertained that it was present before Hurricane Flora destroyed much of the forest on Little Tobago in 1963. Swarm-founding wasps are probably much more prone to local extinction through events such as hurricanes, and they are less able to disperse over sea barriers.

A similar cause may explain why we found no stingless bees. We did not search hard for them, so the most we can say with any confidence is that they are not a conspicuous part of the fauna. Still, these highly social bees tend to have exceptionally short dispersal distances when founding new colonies, commonly no more than 50 metres, so that an island effect is certainly expected on Little Tobago.

An almost identical comment applies to army ants. It would be no surprise if we failed to note any of the smaller species (with smaller colonies), especially of the genus *Neivamyrmex*, but it certainly seems that we spent enough time on the island to have encountered columns of the larger *Eciton burchelli* if it were anywhere near as common as in Trinidad. The queens of army ants are permanently wingless, so that new colonies can only be founded by walking swarms of ants.

Another ant we found conspicuously absent. The carpenter ant *Camponotus atriceps* is conspicuously present in both Trinidad and Tobago, but we failed to find it on Little Tobago. Many readers will know this as the stout brown-and-yellowish ant that often nests in dry rotting logs and bamboo stems, among other situations,

and rushes out aggressively when the nest is disturbed. It seems quite unlikely that *C. atriceps* is altogether absent from the island, but our observation suggests that it is relatively uncommon.

On the other hand, the termite fauna of Little Tobago is fairly diverse. Scheffrahn et al. (2003) record 11 species, representing each of the three families found on the larger islands, and we found 10 of these. In particular, we found abundant colonies of the three arboreal higher termites that are common in both Tobago and Trinidad: *Microcerotermes arboreus*, *Nasutitermes costalis* and *Nasutitermes ephratae*. Of 114 colonies that we recorded in walks about the island, 28% were *M. arboreus*, 60% *N. costalis* and 12% *N. ephratae*. These proportions are similar to those from broadleaf forest in Tobago, but quite different from those found in comparable broadleaf forest in Trinidad, in which the respective proportions were 51%, 35% and 13%.

Another difference of note has to do with the position of *N. costalis* nests. The 63 nests that we recorded on Little Tobago were at a mean height of 1.2 metres above the ground, and many were right at ground level. In contrast, our samples from broadleaf forest in Tobago and Trinidad were at mean heights of 3.5 and 4.1 metres, respectively, with very few near ground level. The reasons why *N. costalis* should build its nest at one height, rather than another, remain unexplored, but this widespread species shows a notable tendency to nest at ground level in the Greater Antilles.

Some of the peculiarities of the social-insect fauna of Little Tobago undoubtedly derive from present climatic and vegetational features, but it is likely that some are due to accidents of history, such as chance local extinctions that are not reversed through immigration. In other words, any thorough examination would presumably show the forces of both ecological and historical biogeography at work there.

#### Reference

Scheffrahn, R.H., J. Krecek, B. Maharajh, J.A. Chase, J.R. Mangold & C.K. Starr 2003. Termite fauna (Isoptera) of Trinidad & Tobago, West Indies. Occasional Papers of the Department of Life Sciences, University of the West Indies (12):33-38.

From Page 11 (POLYPODIACEAE).

A further 99 metres was another pool about 6m long, 1.5m wide and some 2.5m deep. A huge quartz boulder was wedged between the narrow walls of the canyon at this point. Twelve years ago this boulder was a bit further upriver where it had created a waterfall about 4m high. *Begonia glandulifera* (BEGONIACEAE) bread & cheese plant with lopsided leaf and white-flowered inflorescence was found here.

Approaching from the north was Sacketteers Hiking Club, over a hundred strong, still a big side despite the splinter groups of Hikeseekers Inc. and Hikers Inc. The writer does not share the view that large numbers trekking through the forest are destructive (nature reclaims the trail fast enough). As in other countries the many hiking groups of T&T keep the trails open. (The real problem was littering - the thoughtless discarding of waste.) Incidentally, in England the walking clubs maintain the trails and legislation is about to be passed that will preserve the trails forever. Even where the trail passes through private property the owner must not obstruct the footpath but leave an appropriate passage in the fence that enables walkers to continue unhindered.

The Group turned back at this point but the Gorge continued for a further 264m to the remains of a sluice gate that blocked the river in times past. The gorge is much wider in that section and a common shrub was *Piper hispidum* (PIPERACEAE) with its distinctive spike-like inflorescence.

It was great to have Glenn Wilkes, former field trip leader, on this walk. Some members "made a cook" by the bridge near the parked vehicles and, armed with their garbage bags, they demonstrated to the public how to leave a place when the "lime" is over. Well done!

Acknowledgement: The author thanks Krishna Dwarika for his assistance in measuring the gorge.

## A newly recognised endemic Trinidad butterfly: the Tucuche Adelpha, *Adelpha seriphia barcanti* Willmott (Nymphalidae)

Matthew J.W. Cock

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In a recent major revision of the large and complicated nymphalid genus *Adelpha*, Willmott (2003) described the Tucuche Adelpha as a new subspecies, *A. seriphia barcanti*. He named it after Trinidadian collector Malcolm Barcant, who first illustrated it (Barcant 1970). Willmott's description was based on this illustration and a specimen that I gave him, which is now the holotype and placed in the Natural History Museum, London. A second specimen in my collection was designated the only paratype, and is illustrated here. There are no other specimens of this subspecies in the major museum collections of the World (Willmott 2003), although there are specimens in at least two collections in Trinidad.

This subspecies is only known from El Tucuche, although other subspecies occur in mainland South and Central America (Willmott 2003). It is therefore valuable and vulnerable as one of a small number of Trinidad endemic butterflies. Robert Dick discovered this species on El Tucuche (Kaye 1940), and his original specimens are now in the Angostura-Barcant collection. Barcant (1970) recognised the Tucuche Adelpha as one of Trinidad's rarest butterflies, stating that it is only found on the summit of El Tucuche. He notes that "in three visits to El Tucuche I have seen this species in numbers of four or five. On my last visit (1947) none were seen and swallows seemed to have taken control of the summit, making a meal of all flying insects." Willmott (2003, p. 77) reproduces comments from a letter that I wrote to him saying "between 1979 and 1982, I visited the summit of El Tucuche five times (once overnight), saw this species on two visits (several specimens on each occasion) and collected it once. At that time ... the summit itself was reasonably clear ... Trees growing just below the summit to south and west overlooked the peak slightly, and the male of *A. seriphia* settled on these, only rarely coming in reach of a long-handled net. ...". Scott Alston-Smith has also collected this species (five males, one female – the only known female) and other collectors may well have done so. As far as I know all specimens were collected during the middle of the day, in the brief period on the summit during this all-day trek. I only saw specimens in sunny weather, and on visits to the summit when it was overcast (including my overnight

visit) none were to be seen. I have looked unsuccessfully for this butterfly on the summit of El Naranjo in sunny weather, but no butterflies could be seen on the tree covered summit, and also on the summit of El Cerro del Aripo, but only during heavily overcast weather.

There is nothing reported regarding the life history of this subspecies in Trinidad, and the life history has not been described for any of the other subspecies (Willmott 2003). The only clue is a record by A. Orellana (in Willmott 2003, p. 295) that *A. seriphia pione* (Godman & Salvin) feeds on *Cavendishia* sp. (Ericaceae) in Venezuela. The only Trinidad species of this genus is



*Adelpha seriphia barcanti* Willmott, paratype male,  
El Tucuche, 11 Aug 1979, M.J.W. Cock, UPS left, UNS right

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## UNEXPLORED VENEZUELA

Christopher K. Starr, Dept. of Life Sciences, UWI

I am becoming convinced that our huge neighbour to the southwest is among the biotically least known territories in the neotropics. On my shelves are two recent volumes titled *Colombia: Biotic Diversity*, and Brazil, for example, puts out plenty of similar books if we can just find them. But there is far too little comparable literature about the plants and animals of Venezuela.

One simple, rough index of overall biotic knowledge of a territory is the completeness of its species inventories. Let me give two examples that have lately come to my attention.

Boos (2001) records 44 species of snakes from Trinidad & Tobago. We can be fairly sure that this list is complete, because Hans and several others have explored these islands to the point where new species have long since stopped showing up. Lancini (1986) records 131 species from Venezuela, and a list derived from Peters et al. (1986) is substantially the same. Is this close to complete? Almost certainly, it is far short of it.

There is a rule of thumb in biogeography and conservation biology that a ten-fold increase in land area brings with it a doubling of the number of species. No one expects this to be exactly true, but it is a fair approximation. In mathematical terms,  $\log_2 S_X/S_Y \cdot \log_{10} A_X/A_Y$ , where  $S_X$  and  $S_Y$  are the number of species of a given group found in territories X and Y, and  $A_X$  and  $A_Y$  are their surface areas. The assumption here is that X and Y are comparable in climate and topography and are found in the same general region. Applying this rule to our two countries, Venezuela has a land area of a little over 900 thousand km<sup>2</sup>, about 177 times the area of T&T, so that it should have about 4.75 times as many species, or 209 in the case of snakes. On the other hand, we have four species of venomous snakes (two pit vipers and two coral snakes), so the same rule of thumb predicts 19 venomous snakes in Venezuela. In fact, 23 are known (13 pit vipers and 10 corals), which is not far off. Given the amount of attention they receive, it is fair to assume that the figure of 23 venomous snakes is complete. On the other hand, Venezuela would seem like a very good place to look for unrecorded colubrids and other non-venomous species.

Now, let us take a look at social wasps. Applying a somewhat more sophisticated approach, we can once again show that the Venezuelan fauna remains greatly under-studied, even more so than in the case of the snakes. Below you see a graph of the number of known species of social wasps in the 13 continental territories of Latin America from Nicaragua down to Brazil and Bolivia as a function of their respective land areas. (Trinidad & Tobago are continental islands, so it is appropriate to include it.) Note that both the x- and y-axes are to a logarithmic scale. Given the rule that  $\log_2 S_X/S_Y \cdot \log_{10} A_X/A_Y$ , the various points on this graph should approximate a straight line, and you can see that they do. Separate treatments for the independent-founding species (Jack Spaniards) and swarm-founding species (maribons) yield substantially the same pattern. [Editor's Note: The graph will be included in the next issue of the Bulletin...]

Only two territories fall distinctly off the computer-generated regression line. Nicaragua (19 species) and Venezuela (60 species) are both well below the line. Now, it is conceivable that these two countries might form exceptions for good reasons, that they might really have many fewer species than the rule predicts, but that is not the case here.

I have never been to Nicaragua, but I once spent a fortnight in what was then the Santa Rosa National Park (now part of the larger Guanacaste National Park) of Costa Rica, right next to Nicaragua. I was able to collect 25 species in just that one park, more than the 19 recorded

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# FIELD TRIP REPORT

**TOBAGO : April 23-25, 2004**

**Jo-Anne Nina Sewlal**

Twenty-five members attended this year's field trip to Tobago, departing on Friday 23<sup>rd</sup>, by plane or ferry. Members travelling by ferry boarded the M.V. Beauport promptly at noon and departed at 2:00 p.m. for the 6 hour ride. The ferry's facilities included a cinema, 2 restaurants and a bar. Our route took us through the Second Boca between Monos and Huevos, affording a view of the caves that lined the northern coastline of Monos which were cut into the cliffs by wave action. We also saw the M.F. Panorama, the semi-retired ferry, carrying cargo to Trinidad. It still carried passengers during the peak periods and when the Beauport was out of service.

On arriving at the docks in Scarborough we met the members who came by plane. Some opted to stretch their legs and get some food before departing for Old Grange Inn, Mt. Irvine, a 20 minute drive from Scarborough along the Claude Noel Highway and Shirvan Road. This establishment is owned and managed by Jakob Straessle and family.

The highlight of Saturday was a morning hike to Mt. Dillon in Castara, located on the northern side of the island. Castara is also the home of A.N.R. Robinson, the third president of Trinidad and Tobago.

Trees seen included Monkey Apple or Juniper (*Genipa americana*), belonging to the family Rubiaceae, the same family as Coffee and Ixora. Its white flowers turn yellow with age and resemble those of the Ixora in shape and size (Quesnel and Farrell 2000). Its fruits are used to make local wine. We were fortunate to inspect a Cashew tree (*Anacardium occidentale*) with both fruit and flowers. Its pear-shaped fruit is edible, however, the hulls or covering of the kidney-shaped seeds contain cardol oil which can blister the skin (Hargreaves and Hargreaves 1965). We also noted Kiskidee (*Vismia falcata*) (Hypericaceae) called Yellow Wattle in Tobago and Jumbie Bead or Red Sandalwood (*Erythrina pallida*). Originally from Sri Lanka, its wood is strong and durable and sometimes substituted for real sandalwood. The red and black seeds can be eaten and are made into necklaces or weights in Asia (Hargreaves and Hargreaves 1965). Also observed was a Strangler Fig stifling an unidentified palm. Black Sage (*Cordia curassavica*), Yellow Poui (*Tabebuia serratifolia*) and Guava (*Psidium guajava*), were some of the more common trees.

Other plants included a shrub with hairy leaves commonly known as Toilet Paper Bush belonging to the family Melastomaceae, and Manicou fig (*Bromelia plumieri*), the fruit of which has a strong pineapple flavour and used to make drinks and Razor Grass (*Sceleria secans*). This is not a grass, however, since it does not belong to the family Graminae but Cyperaceae (the sedges). The field trip leader, Dan Jaggernaut, stated that the nearby Bamboo (*Bamboo vulgaris*) was a roosting area for hundreds of Crested Oropendola or Yellowtail (*Psarocolius decumanus*). This species forms colonies (French 1991) and Neenam Mohammed added that the Yellowtail fed on the tips of the Bamboo branches, of which about 5-8cm is very soft. We also saw the Palm Vine (*Desmoncus orthacanthos*), whose small round fruit when cracked open, yields water, if young, while the mature one has jelly like a coconut. Other plants included Old Man Beard (*Rhipsalis baccifera*) and Wild Pineapple (*Ananas comosus*).

Birds noted included the Cocrico, or Rufous-vented Chachalaca (*Ortalis ruficauda*). This is the national bird of Tobago. It is frequently found in hill forest and secondary growth adjacent to cultivated

land. Its number increased after a hurricane (Flora) swept the island in 1963, forcing the abandonment of many farms (ffrench 1991). Because of its large population and affinity for cultivated areas, it is locally regarded as a pest. A Woodcreeper as well as green and yellow parrots were seen. Two types of hummingbirds were observed, the White-necked Jacobin (*Florisuya mellivora*) and White-tailed Sabrewing (*Campylopterus ensipennis*) which is only recorded in Tobago and Northeast Venezuela.

Two flowers were along the trail, the first was the twiner referred to as Savannah Flower (*Mandevilla hirsuta*). The second was *Begonia* sp. commonly called "bread and cheese". This is a small shrub with small white flowers which have a yellow centre. Three types of palms were pointed out. The first was Mountain Cabbage (*Prestoea acuminata*) whose bark has green and orange stripes and is found only in Tobago. The other two were Gri Gri (*Bactris setulosa*) and a patch of Roseau (*Bactris major*).

The shrill courting sound of male Cicadas was heard. They have relatively long life cycles lasting a few years, most of which is spent as subterranean larvae living on root sap (Starr 1998). About half way up on both sides of the trail, small bachac nests, easily identified by mounds of excavated debris, were seen. Bachacs cultivate underground fungus gardens. A column of small black ants with yellow abdomens and a body length of approximately 5mm were also noted. They had a square shaped head and abdomen. During the hike a quick cleanup of the garbage left behind by other hikers was done courtesy Matt Kelly, a member of Environment Tobago.

The hike lasted until noon, after which we drove off in search of lunch, passing Little Englishman's Bay then Englishman's Bay. Here some members had lunch and spent the rest of the day. The others opted to have lunch at a restaurant in Parlatuvier Bay. On the way, some stopped at Miss Mills Trace where there were a variety of plants including common ones like Hog Plum (*Spondias mombia*), Silk Cotton (*Ceiba pentandra*), and Frangipani (*Plumeria acuminata*). Introduced to the Caribbean by the Spanish, Quick Stick (*Gliricidia sepium*) was a fast-growing tree used by farmers as living fences and fodder. Other trees seen included Tantacayo (*Albizzia niopoides*), Jambolan (*Syzygium cumini*) the fruit of this tree is edible and used to make local wine and Cypre (pronounced "sip") (*Cordia alliodora*) a strong light wood used in furniture manufacture.

After lunch we ventured for a quick dip under a small waterfall around the corner from the restaurant. We then went to Bloody Bay where we saw a local Senna tree (*Senna* sp.). We shared this quiet beach not with bathers, but with free ranging cows that had owners as was evident by the ropes around their necks.

By 4.00 p.m. we departed to for L'Anse Fourmi. On the way we had a spectacular view of the Main Ridge, as well as a cluster of Laylay trees (*Cordia collococca*), commonly called Tobago Cherry, which bear bunches of small round, fleshy and sticky fruit that are a bright red when ripe. We sampled some, thanks to Neezam Mohammed. From L'Anse Fourmi we saw 'The Sisters', a formation of three close-set rocks with a low profile reef located offshore, a popular scuba diving site.

But the day was far from over. On spotting a road near completion linking L'Anse Fourmi to Charlotteville, we decided to give it a test run. This was of course after checking with the security guard on duty. Here we saw: a Rufous-tailed Jacamar (*Galbula ruficauda*), which resembled a very large hummingbird, but is more closely related to the Motmots (ffrench 1991); the Southern Lapwing (*Vanellus chilensis*), a cryptically coloured bird that is rare in Tobago (ffrench 1991); a White-tailed Nightjar (*Caprimulgus cayennensis*). A Blue-crowned Motmot (*Momotus momota*), and a Trogon were also noted. A small brown squirrel and, again, cows were common place along the way. On spotting a laden Pommerac tree (*Eugenia malaccensis*), we stopped for a snack, courtesy of Edmund Charles.

After almost two hours we finally saw the distant lights of Charlotteville. We eventually reached Charlotteville, driving past the Turpin Estate where the group stayed last year. We then took a quick tour of the town that comprised a community centre, police station, library, supermarkets and fish depot. The latter was surprisingly still open at 6.30pm.

Some members patronised the fish depot and the Sharon and Phebs restaurant, while others stretched their legs and took in Charlotteville at night. After ½ hour we headed to the lookout at Flagstaff Hill. A brief but heavy shower delayed our return to the cars, so we held an impromptu concert where the men got to display their hidden talents in singing and reciting. We left Flagstaff around 7.30pm and had an uneventful return to Mt. Irvine all the way on the opposite side of the island.

On Sunday our itinerary officially started at 8.30am, but some members went out earlier to explore Mt. Irvine and Buccoo, where the famous goat races are held at Easter time. We spent the remainder of the day sightseeing the field naturalists' way. Our first stop was at a tree laden with Cat's Claw at a private residence. The yellow flowers of this epiphytic vine resemble that of Poui. Our next stop was Grafton House, an old cocoa house which was converted to a sanctuary for wildlife. There were lizards and trees crowded with roosting Cocricos.

We then headed to Fort King George which was constructed in 1777 by the British but changed hands a number of times. It functioned until 1854. On the way we spotted a Fiji Fan palm (*Pritchardia pacifica*), which is native to Fiji, Tonga and Samoa (Comeau et al. 2003) and an African Tulip (*Spathodea campulata*), which attains a height of 12-15m. It is also known as Flame of the Forest or Fountain Tree. The latter name came about because many of the unopened flower buds contain water which is released when pressure is applied. Discovered in 1787 in Ghana, Africa, this tree is believed to have magical powers. It bears red flowers which grow in a circular formation. Its boat-shaped pods can reach lengths of 60cm (Lennox and Seddon 1980). From Fort King George, we could see that northeast Trinidad was not enjoying the sunshine as we were. Here we also presented fellow member and assistant editor of the Quarterly Bulletin, Calista Pierre, with a birthday gift of a locally made bamboo vase and some refreshments.

Passing Little Rockly Bay we stopped at Petit Trou Beach and then at Store Bay where we had lunch and bought souvenirs. We then journeyed to a mangrove swamp, on the property of Tobago Hilton, through which a boardwalk had been built by Angostura Holdings Limited. Webs of spiders belonging to the family Tetragnathidae were often seen between the roots of the mangrove. Part of the boardwalk opened to a floating plastic jetty, which some members were reluctant to walk on. The last stop was to Canoe Bay, the only man-made beach in Tobago. We returned to the Inn around 5.30 p.m. in time to say our good-byes to members leaving by plane. At 7.30 pm those leaving by boat enjoyed our last night drive in Tobago.

#### Author's Note

The writer would like to thank Paula Smith for use of her notes.

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Cont'd on Page 24

wild clove, *C. urichiana* Britton, which was treated in the Flora of Trinidad and Tobago (Hill & Burt 1940) as *Psammisia urichiana* (Britton) A.C. Smith (Vacciniaceae). Hill & Burt (1940) report this woody vine from El Tucuche and the Heights of Aripo, although Freeman & Williams (1928) describe it as from "Trinidad mountain forests". Given the even more restricted distribution of *A. seriphia barcanti* in Trinidad, it seems quite likely that wild clove will prove to be the food plant here. If so, the butterfly may also occur on the Heights of Aripo, possibly keeping to the canopy unless there are forest clearings. Here is a challenge for local naturalists - to find the food plant of this striking butterfly, so as to record its life history for the first time.

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thus far from the whole sizable country of Nicaragua. Unlike foolish human beings, wasps have no use for national boundaries, and we can be certain that all or almost all of those 25 species are also found in Nicaragua, as well as plenty of others not found in Santa Rosa or anywhere else in Costa Rica. I estimate the true total for Nicaragua at 90-100.

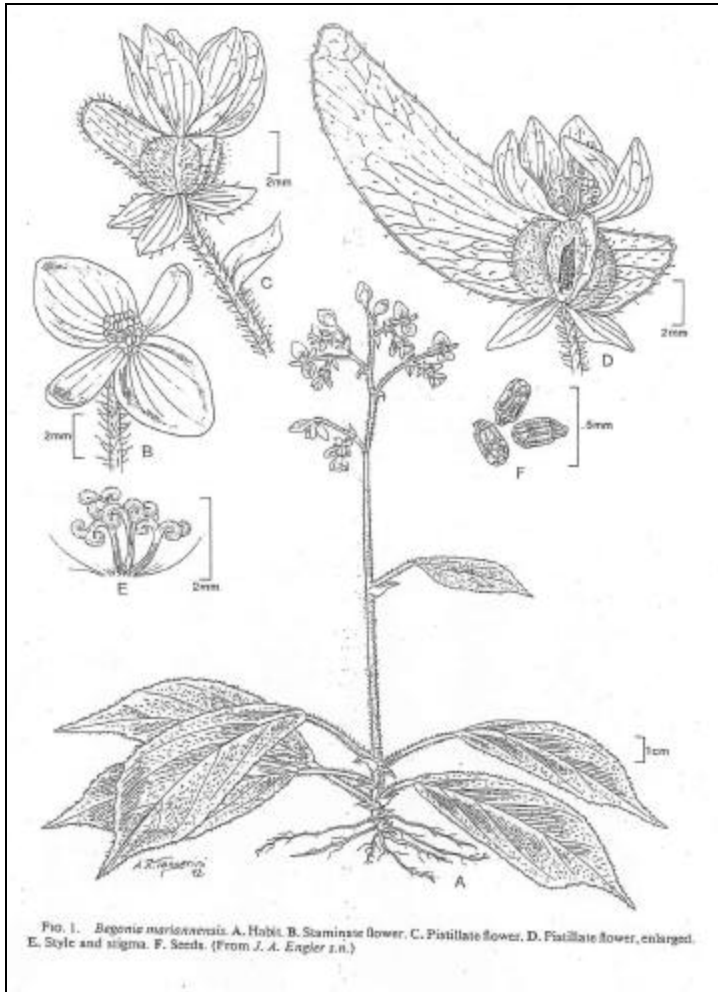
Is there any good reason to believe that Venezuela really does have fewer species of social wasps than the smaller neighbouring country of Guyana? None whatsoever. The discrepancy is plainly due to a difference in taxonomic effort. In particular, the late O.W. Richards spent a great deal of field time in Guyana in the 1950s, collecting and studying huge numbers of social-wasp colonies, while Venezuela has yet to receive comparable attention.

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This plant *Begonia mariannensis* was observed along the rock cliffs of the Yarra river. It was blooming (white flowers) at the time of the Botany Group's visit on 20<sup>th</sup> March 2004.

The illustration on the left is taken from the article:

Wasshausen, D.C. and T. McClellan. 1995. *Begonia mariannensis* (Begoniaceae), a new species from Trinidad, West Indies. Brittonia, 47 (5): 21-23.

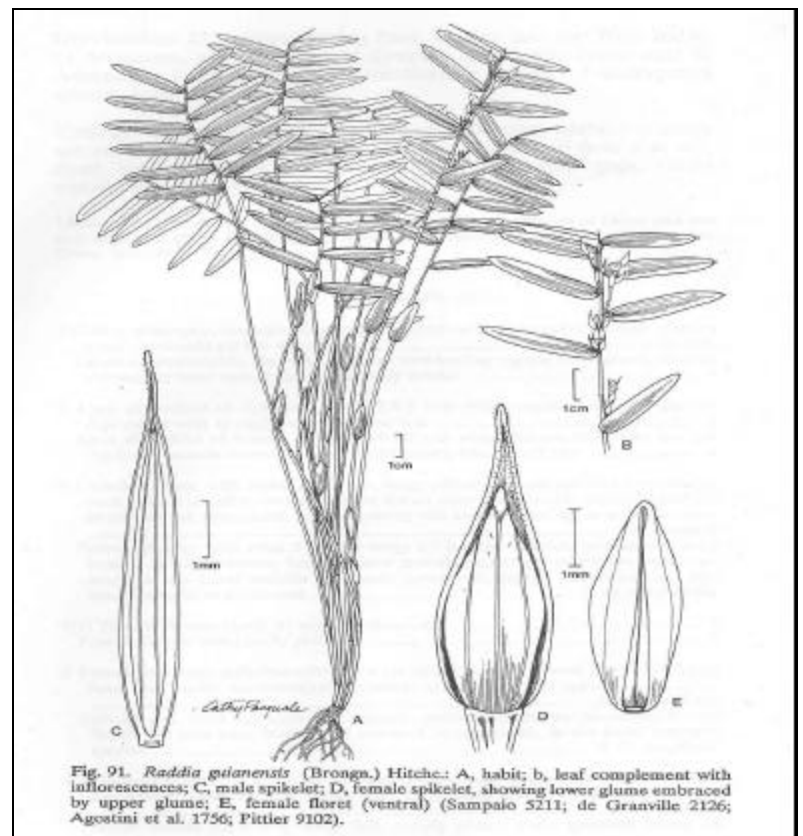
Submitted by Nicholla Johnson, Botany Group.

This plant *Raddia guianensis* was also observed along the rock cliffs of the Yarra river at the time of the Botany Group's visit on 20<sup>th</sup> March 2004.

The illustration to the left is taken from the article:

Judziewicz, E. J. 1990. 80 - *Raddia*. In Flora of the Guianas Series A: Phanerogams 187: Poaceae. Edited by A.R.A. Gorts-Van Rijn, pp. 536 – 539. Koeltz Scientific Books, Koenigstein, Federal Republic of Germany.

Submitted by Nicholla Johnson, Botany Group.



## NATURAL HISTORY BOOKS AVAILABLE ON-LINE

Project Gutenberg (<http://promo.net/pg/>) is a decades-long initiative to make the older literature available in electronic form. Its list now amounts to some thousands of titles, mostly in English, over a broad literary spectrum.

Among the books available are several classics of interest to naturalists. The list below is not complete, but it gives a fair indication of what you can find at the site. Of special note, Project Gutenberg appears to have all of Charles Darwin's books except the one on pollination of british orchids (1877, I believe).

The dates in the list are those of first publication, as far as I am aware, except for the 6th edition of *The Origin of Species*. Brackets around a date indicates posthumous publication. The Gutenberg file title is given at the end of the citation. All downloads are gratis, but please first read the explanation of conditions at the start of any book that you call up.

Henry Walter Bates 1863. *The Naturalist on the River Amazons*. notra10.txt In my opinion, the greatest of all victorian-era works of natural history.

Thomas Belt 1874. *The Naturalist in Nicaragua*. ntncg10.txt

John Burroughs 1871. *Wake-Robin*. wkrbn10.txt

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John Burroughs 1879. *Locusts and Wild Honey*. lwon10.txt

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Charles Darwin 1859. *On the Origin of Species*. 1st ed. otoos11.txt

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Charles Darwin 1872. *On the Origin of Species*. 6th ed. otoos610.txt

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Charles Darwin (1903). *More Letters of Charles Darwin*. Vol. 1-2. 1mlcd10.txt, 2mlcd10.txt

W.H. Hudson 1892. *The Naturalist in La Plata*. 7plat10.txt Possibly the greatest work of natural history about the Southern Cone.

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## NOTICE OF ANNUAL GENERAL MEETING

Dear Members,

You are hereby notified that the ANNUAL GENERAL MEETING of the TRINIDAD AND TOBAGO FIELD NATURALISTS' CLUB will be held on January 13, 2005 at the Audio-Visual Room, St Mary's College, Frederick Street, Port of Spain from 5:30 p.m.

The Agenda is as follows:

1. Treasurer's Report
2. Adoption of Accounts
3. Committee Report by the President
4. Secretary's Report
5. Election of Officers and Members of the Committee for the year 2005
6. Appointment of Auditors
7. Any other business

Any member wishing to have any business discussed at this meeting may advise the Secretary in writing, at the address below, at least seven (7) days before the date of the meeting, giving particulars of the subject to be discussed.

The Secretary

c/o P.O. Box 642

Port of Spain.

Yours sincerely

Shane Ballah

Secretary

Trinidad and Tobago Field Naturalists' Club

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

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<sup>1</sup> Environmentally Sensitive Area Matura National Park Notice, 2004.

<sup>2</sup> The Administrative Record for the Designation of Matura as an Environmentally Sensitive Area under the Environmentally Sensitive Areas Rules, 2001.

<sup>3</sup> <http://www.trinizoo.com/pawi.html>

#### Editor's Note

Guidelines for Articles:

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

You can email your articles to any of the following: 1) [mendsr@bp.com](mailto:mendsr@bp.com) 2) [cpierre@energy.gov.tt](mailto:cpierre@energy.gov.tt) 3) [tfnc@wow.net](mailto:tfnc@wow.net), or to any member of the Management Committee.

**The deadline for submission of articles for the Ist Quarter 2005 issue of the Bulletin is February 15, 2005**