



THE FIELD NATURALIST

BULLETIN OF THE TRINIDAD AND TOBAGO FIELD NATURALISTS' CLUB

SECOND AND THIRD QUARTER OF 1996

CLUB EVENTS

Proposed Field Trips

Sunday 27 October 1996	Erin Savannah	Trail Guide #29
Sunday 24 November 1996	Caroni Swamp	
(No December Field Trip)	Xmas Party	14 December 1996

Tobago

Field trips will be determined at the quarterly meeting preceding the field trip.

Lectures For This Quarter

10 October 1996	Panel Discussion ENVIRONMENTAL IMPACT ASSESSMENTS
14 November 1996	Seuram Jhilmit (Forestry Division of the Ministry of Agriculture, Land and Marine Resources) MANAGEMENT OF THE MORA FORESTS IN TRINIDAD AND TOBAGO
14 December 1996	Dr. Farouk Muradali (Ministry of Agriculture, Land and Marine Resources) BATS

FROM THE EDITOR

As you may have noticed the second and third bulletin have been combined. This became necessary because of the quantity of material received. The result should make interesting reading for most of our members.

After meeting visiting Indian entomologist Dr Ram Dass Gautam, some of our members (including the writer) undertook a project to breed ladybirds, *Cryptolaemus montrouzieri* for use as predators against the dreaded mealybug, *Maconellicoccus hirsutus* which had invaded many of our gardens. We learned much and proved there is nothing to beat the 'do it yourself' method. Alas! The project came to an end as we ran out of food for our larvae. Special thanks to Mrs. Bunt O'Connor, Potter, for her guidance and her parent ladybirds. Thanks also to Muriel Pierre for the use of her home and garden and of course to Dr. Gautam who triggered our initial enthusiasm.

Details of this year's Xmas party/luncheon have not yet been finalised - more on this later.

Rosemary Hernandez

LECTURES

14 March 1996

Lalmanie Mohammed (Home Maker), A HOME-MAKER'S CONTRIBUTION TO ENVIRONMENTAL PRESERVATION

Environmental commonsense begins at home. Following are some ideas which not only preserve the environment but are also cost-effective:

The use of cloth diapers and hand-me-down clothes;

Home-made toys;

Fruit and vegetable peelings can go to the home-bred 'fowls' or to the garden compost;

A garden of organically-grown vegetables can be maintained;

Ensure that garbage or garden trash is not burnt;

Trees and shrubs can be planted around the yard to maintain a cool temperature;

Weeds should be pulled out rather than sprayed;

Old tyres may be recycled, empty bottles and bags can also be saved for re-use;

Old newspapers may be given away for use by vendors, etc;

Measures can be taken to cut consumption of electricity and gas, including the use of fluorescent, instead of incandescent, bulbs;

Energy can be saved in the laundry by line-drying clothes and by using a warm wash and a cold rinse;

Microwave ovens consume much less electricity than conventional ovens and the use of a pressure-cooker cuts cooking time;

Safe drinking water is necessary in order to safeguard health and should be boiled before drinking;

Water must not be stored in cans which previously contained hazardous substances.

The foregoing is intended to make you healthier, happier, richer and friendlier environment friendlier.

II July 1996

Eli B Henry (Meteorological Office) CLIMATE CHANGE



Topics covered were: The Climate system in general, the driving forces of the climate system, the Greenhouse effect, Global Climate Change, international institutions and the work they have been doing, what is expected at the subregional level (i.e. the Caribbean region) and, finally, what is expected at the local level.

Because we live in and breathe the atmosphere around us, it is natural to focus on the atmospheric changes where phenomena and events are loosely divided into the realms of "weather" and climate. The large fluctuations in the atmosphere from hour to hour and day to day constitute the weather -- the province of the meteorologists. Climate is usually defined to be average weather, described in terms of the mean and other statistical quantities that measure variability over a period of time and over a certain geographical region.

Components external to the climate system include the Sun, the physical components of the Earth, such as the geographic features of the land and the ocean. The source of energy which drives the climate is the radiation from the sun. To balance the incoming energy, the Earth itself must radiate, on the average, the same amount of energy back to space.

Water vapour, Carbon dioxide (CO₂) and some other trace gases are radiatively active gases and are known as greenhouse gases because they act as a partial blanket for thermal radiation from the surface of the earth.

Water vapour evaporated from the ocean's surface provides latent heat energy to the atmosphere to drive tropical revolving systems (tropical storms/hurricanes). The ocean's circulation is an effective means of redistributing heat and fresh water around the globe.

Land plays a much smaller role. However, the land surface and its ecosystem play an important role in the carbon cycle and the hydrological cycle.

Weather systems are steered from West to East in the middle to high latitudes; in the tropics, they are steered from East to West.

Paleoclimatology depends on information extracted from ice cores, coral cores, tree rings, pollen from marine environment. This helps to recreate past climate. Special care is required in interpreting results.

The following human activities can lead to changes in atmospheric composition:

- (1) Burning of fossil fuels (oil, gas, coal)
- (2) Deforestation
- (3) Distribution of aerosols
- (4) Changes in land-use.

The amount of CO₂ in the atmosphere has increased to more than 25% in the past century.

Human activities can also affect the amount of aerosol in the atmosphere. The main direct effect of aerosols is the scattering of some solar radiation back to space which tends to cool the Earth's surface. Aerosols occur in the atmosphere naturally (1) Sahara Dust (2) volcanic eruptions, or human-induced as in power generation in the form of sulphur dioxide (acid-rain problem) and biomass burning.

Observations of surface temperatures show that there has been a global mean warming of 0.3 to 0.6 °C over the past 100 years.

In summary, there is a lack of information on the Caribbean region in terms of frequency of tropical storms, or future changes in climate including rainfall and temperature.

FIELD TRIP REPORTS

SURVEY OF VEGETATION ON LAGON BOUFFE

By Frankie Farrell

28 April 1996

My examination of the plants on the tassik of Lagon Bouffe was very cursory and because of differences from other mud volcano areas needs a more detailed survey. The plants I identified were *Clusia*, *Muntingia*, *Rhabdadenia*, *Pluchea* and *Gravisia*. The respective species were not determined. The last three are almost always seen in mud volcano areas, but *Muntingia* was a surprising find. It is found living under more normal conditions such as just outside the Arena Forest in fairly sandy conditions. The *Clusia* was on the margin of the tassik just as we emerged from the surrounding forest. I saw roots growing from some way up the trunk down to the ground. As it was not in flower I could not decide on the species. None of the halophytic seashore plants so often found in mud volcano areas were found. I hope to find the reason.

NESTING TURTLES (Grand Riviere Beach)

By Muriel Pierre

29 June 1996

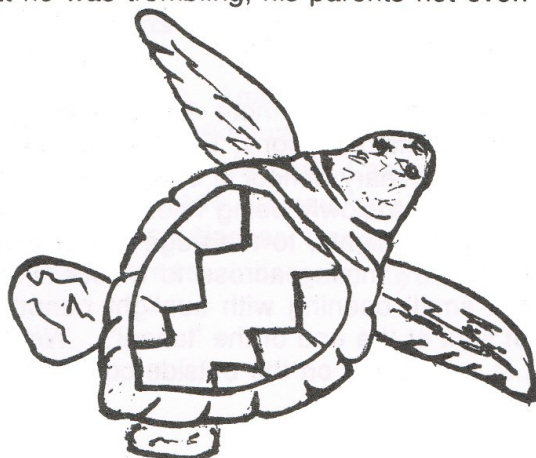
After Dan Jaggernaut gave his talk at the July 1996 membership meeting I realized that some of us who went to the Grand Riviere beach before midnight had seen what he did not. On arriving around eight o'clock we found hundreds of people on the beach which to my knowledge would have been where the hatchlings would be coming out. There was no one there at the time to control the crowd who were using torchlights as they walked about.

There is a hotel and a pub by the beach. Sitting under the almond tree between these two buildings at about 10:00 to 10:30 p.m. some of the hatchlings were seen right among the roots of the tree. They may have been attracted by the light of the pub. An alarm was raised that there were hatchlings and the wall of people just turned back on us. Some children were among the crowd and they started picking the hatchlings up. Someone brought a box and started to collect them. All we could do was to ask them to go and put them into the sea and then hope that this was done.

It was about eleven o'clock when some of the officials of the district arrived and asked the crowd to back off the beach and to stop using the torchlights. This caused some of them to leave and so for another hour there was quiet and darkness. Carol Alexander came to me saying some turtles were seen coming up, and one was coming straight in line with the bench on which I was sitting. I could not move as he said that they were not to be disturbed while they were digging. Only when the turtle started to lay were we allowed to go near so we could see. By the time I got there, the turtle was surrounded by people. I remained there for quite a while. Another turtle had come up some time after and was still digging its nest. At that site people stood back further and you could still see the fins moving. Returning to the first spot, that turtle had finished laying and was covering the nest. I left at this time as the rain started to drizzle and after six hours I decided that it was not necessary for me to see its return to the sea as I had to walk back to the Community Centre. I have to thank Juanita Henry who walked back with me at two o'clock that Sunday morning.

At midnight, sitting on that bamboo bench under the almond tree with the pub close by, I wondered to myself if at my age I was right in my mind to be doing this! But it was the only thing, while going out with the Field Naturalists, that I had not seen and I have to say that I was meant to experience it as it would seem that the turtles came right in my line of vision.

In my opinion there is need for more discipline of the crowds who go there. People should also be careful about taking children. A little fellow sitting on the bench looked at me saying that he was trembling, his parents not even being aware of his feelings.



MONOS ISLAND AND CATHEDRAL CAVE

By Dan L Jaggernauth

30 July 1996

Driving along the Western Main Road we took a left turn after Anchorage continuing down to the car park. Mr. Pouchette and his friend were already awaiting us by the jetty with two boats, at 07:17. Checking 76 persons in the long line, they each paid \$35.00 to our treasurer Selwyn Gomes, before entering the boat. This fee included a return trip to Monos Island and a visit to the 'Cathedral Cave'. However, everyone could not be accommodated on the two boats, leaving 24 persons for the last trip.

Arriving at Monos Island at 08:45 Mr. Griffith allowed us to use the jetty. As one boat left to bring across the field naturalists left behind, Frankie Farrell and Victor Quesnel gave details of the island. Walking along the beach I saw the feared manchineel tree, *Hippomane mancinella* and the mangrove known as *Conocarpus erectus*. By this time the boat returned with naturalists and Mr. Pouchette reminded us to be back at the jetty by 13:00 hours.

Passing through an abandoned coconut plantation we began walking up a dry stream. Some areas of the pathway were blocked by eroded leaves and soil material. Doing our observation we saw a millipede on the trunk of a tree. It was 4 inches in length and identified by Donald Anthony of the St. Lucia Naturalists Society. Continuing uphill, a large frog, *Bufo marinus*, was sighted between some rocks. The trail then became difficult to discern due to previous bush fires. Extensive forested areas were burnt, leading to soil erosion. Reaching one section of the mountain at 11:35 a few palm trees were seen. Looking down from here you could see a steep drop to the rough waters. Some members estimated it to be about 400 feet below.

As we declared it lunch time, Mr. Edmund Charles and myself headed further up to the right, through some sharp razor grass, *Scleria bracteata*. Soon the others walked up, using a long rope we tied to a tree to help them through a damp burnt out area, but with better views. This vantage point afforded a keen sight of some rock erosion taking place in the mountain. The vegetation further up was dense and tangled so we decided to head back to the jetty for one o'clock.

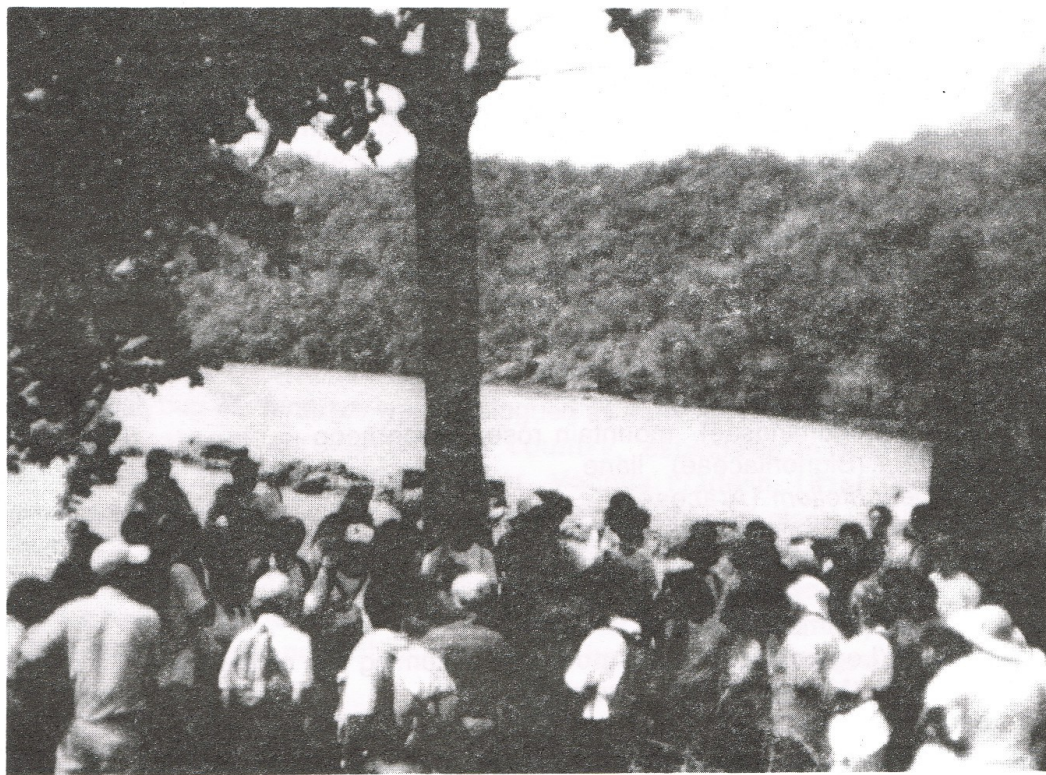
Returning at 13:10 some members were already entering the boat. Then Compton Gonsalves urged a lady to sit more to the back to balance the boat, due to her heavy weight. The two boats left heading for the Cathedral Cave on Gasparee Island. Arriving at the jetty we stepped off the boats and some sat on the benches and concrete area. Then up came a thin tall man telling me that we were "clustering up" the place. Some of the older members knew him well and said that his attitude had not changed over the years.

Walking up the concrete pathway some field naturalists said it was their first visit to the island and continued uphill to the Gasparee Caves, while others set up ropes and apparatus for climbing down the Cathedral Cave. This church-like cave was first shown to us by Dr. Stuart Miller on a previous trip to the island.

At 14:45 the exploration began down the cave. The more experienced persons climbed down first, which included Paul Renne, Donald Anthony, Edmund Charles and Leonard Chan Chow. As students from a Junior Secondary School in Chaguanas climbed down, the safety belts and ropes attached to them were slowly being released. Using a 'rope rail' they cautiously walked down, guided by torchlights, to the edge of the rock. They wore life jackets and plunged into the water. Swimming across to a rock, they stood on it. Looking above from this point was a small opening with sunlight penetrating beneath, which was described as a glimmer of light at the end of the 'tunnel'. We limited the time of field naturalists so others waiting in a long line on the outside could get an opportunity

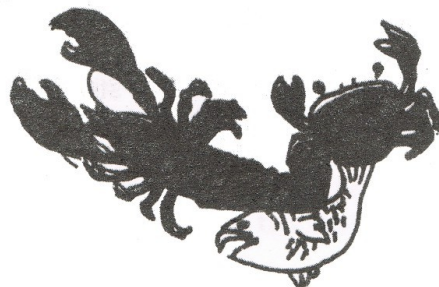
to visit the cave. Soon Victor Quesnel climbed down using the safety belt and applause was given for a courageous man. Following Victor was Luisa Zuniaga, using her feet and hands on the rope as a true mountain climber. Reaching the ground and holding on to the rope rail she was given a standing ovation from eager looking fans at the entrance.

The operations continued for two and one half hours with persons on their return saying they saw an "amazing light at the end of the tunnel." Some wanted to take photographs but it was difficult to get the cameras across the water. Inside the cave were water channels heading in various directions, but 'caution' was the watchword inside the Cathedral Cave. Flying from the cave were fish-eating bats *Noctilio leporinus*. Walking from the cave we brought out large pieces of styrotex which were floating inside. Then we untied our ropes and safety apparatus and walked down to the jetty. The boats had arrived and on our return journey some students said: "if there are other aspects of a light at the end of a tunnel, the experience of the Cathedral Cave is certainly one of them."



T&T Field Naturalists at Monos Island

Dan J.



PLANTS SEEN ON MONOS ISLAND

By Victor C Quesnel

30 July 1996

Laguncularia racemosa mangrove, sea shore
Conocarpus erectus mangrove, sea shore
Hippomane mancinella manchineel, sea shore, in fruit but not ripe
Morinda citrifolia (Rubiaceae) near Villafana house, large white fruit
Stachytarpheta jamaicensis (Verbeaceae) rat tail
**Lonchocarpus punctatus* (Leguminosae) savonette, common
Citharexylum sp. (probably *spinosum*) (Verbenaceae)
Piper aduncum (Piperaceae) common
**Cecropia peltata* (Moraceae)
Casearia sp. (Samydaceae)
Piper marginatum (Piperaceae) sweet bush
Piper tuberculatum (Piperaceae) candle bush
**Ceiba pentandra* (Bombacaceae) silk cotton
**Apeiba schomburghii* (Tiliaceae) Tobago sandbox. Fruit like a sea urchin
#*Zanthoxylum martinicensis* (Rutaceae - citrus family) l'epinet, spiny trunk
**Protium guianense* (Burseraceae) Incense
Heliconia wagneriana (Strelitziaceae) balisier
**Coccoloba* sp. (prob. *fallax*) (Polygonaceae) cuchape
#*Spondias mombin* (Anacardiaceae) hog plum
Erythrina micropteryx (Leguminosae) mountain immortelle
Monstera sp. (prob. *adansonii*) (Araceae) epiphyte
#*Cedrela odorata* (Meliaceae) cedar
**Warszewiczia coccinea* (Rubiaceae) chaconia
@*Bactris major* (Palmae) roseau
**Brownea latifolia* (Leguminosae) mountain rose, cooperhoop
Lundia corymbifera (Bignoniaceae) liane
Xanthosoma hillebrandifolium (Araceae)
#*Cupania americana* (Sapindaceae) maraquil
Heliconia hirsuta (Strelitziaceae)
Philodendron sp. (prob. *acutatum*) (Araceae) epiphyte
Terminalia obovata (Combretaceae)
**Swartzia pinnata* (Leguminosae) bois pois. Fruits coming out of the trunk
**Byrsonima spicata* (Malpighiaceae) serrette
**Rudgea freemani* (Rubiaceae)
@*Desmoncus* (Palmae)

- * These plants are all recorded by Beard for Deciduous Seasonal Forest, *Bursera-Lonchocarpus* Association which is the type of forest in the Bocas Islands.
- # These plants have been recorded by Beard as present in the *Protium-Tabebuia* facies of the Deciduous Seasonal Association of the hills of the Northwest Peninsula.
- @ These palms have not been recorded by Beard as present in the Bocas Islands. The only one he records as present is cocorite, *Maximiliana elegans*.

I collected a few other plants that are still unidentified and may remain so.

Saving the Erin Savannas

By Paul L. Comeau

The Erin Savannas are the only example of this unique vegetation type that occur south of the Central Range. They are confined to the Erin Reserve in southwest Trinidad where they form part of a vegetation mosaic which also includes remnants of natural forest and pine tree plantations. Several savannas, which are isolated from each other, are scattered over the reserve. The western savannas, which are the least isolated being accessible via Spring Trace, Buenos Ayres, are the most disturbed due to fire, and being planted with *Pinus caribaea* which are grown from seed at the nearby Cap-de-Ville Pine Nursery. It is the latter activity and not fire that can seriously threaten the continued existence of the savannas.

Pinus caribaea is a very fire resistant, fast-growing non-native tree, and once planted will quickly reach maturity. It out competes the ground cover vegetation and scattered small trees that make up the savanna's natural vegetation. Once the pine reaches tree size, which takes as little as five years, it can tolerate the frequent dry season fires that occur in this and other areas. These fires are intense enough to destroy young pine seedlings and saplings that grow beneath the more mature trees. This results in an aging pine stand with aggressive ground cover vegetation such as the sedge *Scleria bracteata* (razor grass). The pine trees shade out the sun-loving savanna plants and smother the ground surface with slow decaying pine needles that prevent germination of seeds or retard vegetative reproduction via rhizomes and root stock which is often the mode of propagation for plants growing under adverse conditions. Thus the savanna plants are gradually replaced.

The uniqueness of the savanna vegetation is the ability to adapt to rather stressful environmental conditions, edaphic, i.e. soil, as well as climatic. Growing in a nutrient poor environment with little organic matter covering the iron-rich parent material, these plants grow under intense insolation, where evaporation rates are high, where the surface of the ground is encrusted with an iron pan making root penetration difficult, and where soil moisture and nitrogen are limiting factors. Despite these severe conditions, the savanna communities have survived and have even adapted to frequent burning of the above-ground vegetation.

The plant species at Erin show some affinity with the natural vegetation of the Aripo Savannas. Approximately 43% of the species at Erin occur at the Longstretch savannas, including *Mauritia flexuosa* (Moriche palm). Erin is one of only three locations for this palm in Trinidad, the other two being at the Aripo Savannas and Nariva Swamp. In addition to Moriche, Erin contains the beautiful large ground orchid, *Pogonia grandiflora*. Several plant species are found only at Erin and do not occur elsewhere in Trinidad. These include the composite *Eupatorium amygdalinum*, the grass *Axonopus anceps*, the legumes *Eriosema crinitum* and *E. simplicifolium*, and the figworts *Buchnera lobellioides* and *B. rosea* (Comeau 1990).

It is easy to grow pine trees, and once established they will persist until harvested but the pine/fire combination will reduce the biodiversity of the plantation. It also is easy to preserve the Erin Savannas, just leave them alone, don't plant pine trees on them and don't burn them in the dry season. Unique habitats, like the Erin Savannas, are worth saving for the valuable lessons they teach about survival under adverse conditions that sometimes occur naturally in a tropical setting.

Ref. Comeau, P.L. 1990. Savannas in Trinidad, Living World, J. T&T FNC., p. 5-8.

CLOSING VIGNETTES FROM ROMÂNIA[^] By J C Williams

Snowdrop
Galanthus species

THE COMING OF SPRING[^]

"*Ghiocel, mititel, scoate capul din afară..... Primavară sa-o-vada*"¹

There we were, after a long and cold winter, just waiting for the Spring. Came the first week of April, then the second. Still the snow lay on the ground, thawing, only to be replaced, admittedly getting less and less. With the third week...hurrah (!), at last the final thaw.

Seemingly all of a sudden, warm, warm sunshine, the first spring blossoms, birds on the trees, chirping and chittering away, and people - such happy faces wherever one looked...especially, having shed winter's wool for the canvas and cotton of early spring and summer.

And near to our home at Strada Coşbuc, at the piaţa mica, the early cherries were almost as rosy as the smiles of the gregarious market sellers, who'd greet you with a friendly..."Cum te serveşti?" (How can I serve you?)

Juanita and I now took decided pleasure in footing it, or biking (if in a rush), to the piaţa to savour the fresh flower, vegetable and fruit stalls, the aromas of which are hard to forget.

The flower stalls were filled with garden varieties, which people were anxious to plant, it being already so much later in the year than normal. Flowers being sold were: Begonia, *Begonia tuberhybrida*, Petunia, *Petunia hybrida*, Delphinium, (Fam. Ranunculaceae - a few types), Zinnia, *Zinnia elegans*, Zonal Pelargonium, *Pelargonium* popularly, but erroneously known as 'Geranium', Love-In-A-Mist, *Nigella damascena*, Forget-Me-Not, *Myosotis*, Daffodil, *Narcissus* sp., and Day Lily, *Hemerocallis* species.

Can you imagine my delight when I had spotted Europe's well-known first Spring flower, the SNOWDROP² in our little garden in early April? The Romanians call it 'GHIOCEL', and Juanita had come home one day reciting this piece of 'poesie' in a tribute to that delicate white flower, which is indeed as lovely as its English name suggests.

In Romania, when the first Snowdrops rear their heads every Spring, they are quickly made into little posies and sold at street corners by (mostly) gypsy ladies or their children, for about 1000 Romanian lei (Deutsche Mark .50, or TT \$2.).

As Spring wore on into Summer, our garden also yielded sunshine yellow Daffodils, the deep purple Sweet Violet, *Viola odorata*, and not forgetting the earlier Lily-Of-The-Valley, *Convallaria majalis*.

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1. "The small, small snowdrop is pushing his head outside.... We are seeing the Spring"
 2. SNOWDROP (*Galanthus* species (Fam. Amaryllidaceae))

Reference:

The Observer's Book of Garden Flowers - Arthur King (Frederick Warne & Co.Ltd., UK, Reprint 1965)



10
Zonal Pelargonium
Pelargonium

'AN EARLY SUMMER AFTERNOON'S WALK TO FEREDEU'

When the long-awaited Spring rather quickly gave way to a true hot Romanian summer, many of our neighbours confessed to an extreme fatigue, which they attributed to the sudden change in temperatures.

For us though it was a real pleasure to once again bask in the warmth of our cosy courtyard, handsomely shaded by Pear, Prune, Kaiser and Walnut trees.

For me, the warm weather ushered in a new release of energy not felt since January. (The first five months of this, my second pregnancy had been unaccustomedly wearying, despite a regular swimming schedule at an indoor 50 metre pool and a brisk walk home afterwards.)

And so it was that on the last Sunday in May, despite already feeling "heavy", we decided to make the trek to a monastery called Feredeu, near to a wine-growing region called Şiria, some 3/4 of an hour's drive from our home in Arad to the beginning of the trail.

We left about 1 pm, a wise choice it turned out, as the walk was much more pleasant out of the noonday heat.

Strikingly, the trail was lined with an abundance of what the Romanians call 'Soc' and 'Maces' (similar to Hibiscus) trees. Both of great use, the former for either juice or tea, the latter well-known as 'Hibiscus' tea, and also widely used for a delicious jam. The Soc, whose umbel type flowers are white, were a fine complement to the Maces' white and soft pink flowers.

The sighting of the Soc was somewhat coincidental, but turned out to be fortunate for us. The previous weekend, a friend had given us a sample of her Soc juice in a Fanta lemon 2L bottle. Kaspar was so enamoured of it, that he'd exhorted me, "you must buy more of this Lemon Fanta, it's excellent!" As we left Feredeu that afternoon, I made sure to collect two bags full of the flowers. We had fresh, home-made Soc for the next two weeks - which was a treat, not to mention the money saved from buying not-so-good-tasting commercial juice.

The Feredeu Monastery is not an ancient one, and appears to us to be run by a sect of the Romanian Orthodox Christian church.

From where we parked, we climbed to a height of about 600 metres, passing en route, a small apiary, a new monastery under construction at ground level, a sparkling stream that ran parallel to the foot trail and marvellous vistas of mountains - never far from sight, thanks to the magnificent Carpathian Mountain Range which more or less runs North-South throughout Romania, in horseshoe shape.

There is also an auto trail from one point, but on the foot trail, we passed nothing more than one fellow and his herd of a dozen-odd cows on our return

Having not been on a "plimbare" (walk) for so many months, it was refreshment to our eyes to see the masses of wild flowers in colours one does not see in the tropics. To witness too, summer's early breath and breezes and all the small creatures living on, or visiting the flowers.

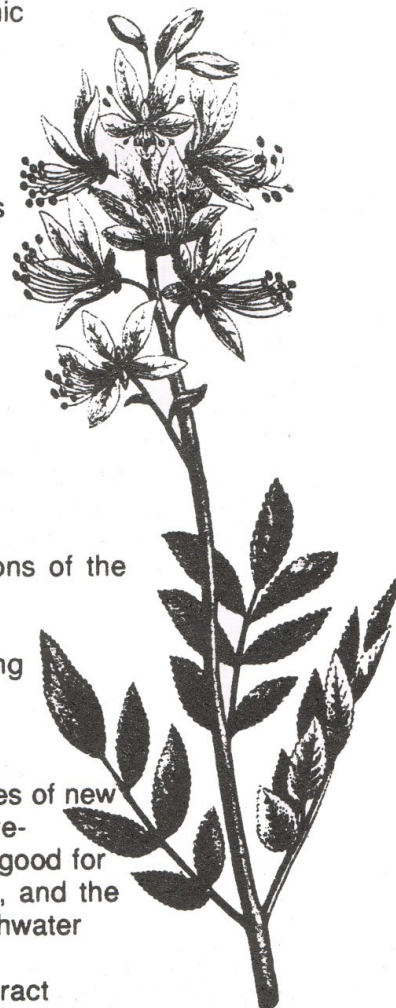
Nearing Feredeu, Juanita dozed off, so K. went ahead of me. When I reached the top, panting somewhat, she was fast asleep on a bench in front of the chapel. Perhaps it was the number of cherries she ate during our small picnic lunch, or the fresh mountain air, but K. had to take her downward on his arms. I trailed slower behind, picking a few samples.



K. mentioned to me that several of the flowers we saw growing wild in Romania, have become rare in Germany, and are protected. That's important to note when considering that most of the flowers/plants sighted have proven medicinal uses. Romanians are still 'unspoilt' enough that they think first of going to the Herb & Plant stall in their local markets, before automatically running to a pharmacy. A noteworthy quality, considering how little the lei (local currency) is of value internationally.

Here are some of the flowers we spotted, and a brief idea of their medicinal uses. (Unfortunately, my reference book with the English names was inadvertently left in Romania, so I give you here the German and Latin names, and perhaps some Field Naturalist can supply me with the English names!)

- | | | |
|--|---|---|
| * Brombeere (Ger)/ <i>Rubus fruticosus</i>
Blackberry (Eng) | : | A tea from the leaves is used against colds, skin excema and chronic diarrhoea |
| * Boretsch (Ger)/ <i>Borrago officinalis</i> | : | Rheumatic pains, measles, inflammation of the kidneys |
| * Bärlapp, echter (Ger)/ <i>Lycopodium clavatum</i> | : | Kidney stones, bladder stones |
| * Sauerkirche (Ger)/ <i>Prunus cerasus</i>
(a tree) | : | Gout, constipation |
| * Fünffingerkraut (Ger)/ <i>Potentilla reptans</i> | : | Diarrhoea, lack of appetite |
| * Hornblume (Ger)/ <i>Centaurea cyanus</i> | : | Inflamed cornea of the eye |
| * Feld-Mohn (Ger)/ <i>Papaver rhoeas</i>
Common Red Poppy (Eng) | : | Coughing, bronchitis, infections of the mouth |
| * Weisser Diptam (Ger)/ <i>Dictamnus albus</i> ... this is a protected plant in Germany and is very rare | : | Hysteria, menstrual cramping |
| * Fichte (Ger)/ <i>Picea excelsa</i> Link | : | A syrup made from the needles of new sprouts is said to have nerve-strengthening effects, and is good for pale complexions, Bronchitis, and the needles are also put into bathwater |
| * Erika (Heiderkraut) (Ger)/ <i>Calluna vulgaris</i> Salisbury | : | Inflammation in the urinal tract |



Weisser Diptam
Dictamnus albus

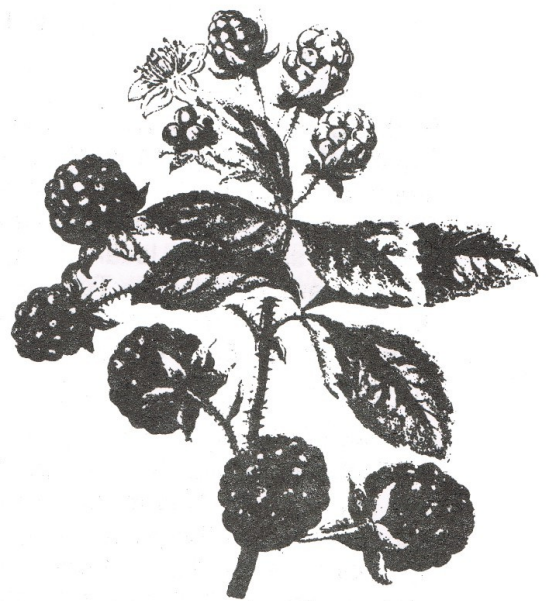
(Special thanks to KSc for help in identifying the flowers)

References:

Taschenbuch Der Heilpflanzen - Dinand (T.J. Schreiber, Germany, 1926)
The Observer's Book of Wild Flowers - W.J.Stokoe (Frederick Warne & Co.Ltd.,UK, Revised Edition, 1965)



Sauerkirsche,
Prunus cerasus



Brombeere,
Rubus fruticosus



Fichte,
Picea excelsa Link



Fünffingerkraut,
Potentilla reptans

THE YELLOW TAIL TREE

By Matt Kelly

In the center of the rural village of Parlatuvier on the tiny island of Tobago in the Caribbean is a most interesting spot where a spectacular sight occurs each and every evening, year 'round, at sunset. Hundreds, and even thousands of the Crested Oropendola (*Psarocolius decumanus*), locally known as the "Yellow Tail" bird come to one small spot in the local park to roost. The Crested Oropendola is the only bird in the family Icteridae native to Tobago which weaves the long hanging stocking-like nests. At this time, there is no other place like this known to exist in all of Tobago where so many of these birds congregate. This park needs to be further studied, preserved and protected.

The area lies right at the junction of the Parlatuvier East River and the Parlatuvier West Rivers. Watch for a small stand of bamboo (*Bambusa vulgaris*) exactly where the two rivers meet. This is the "tree", and as you may know, bamboo is really not a tree, but a member of the grass family. The area around the "tree" has been cleaned and fixed up under the supervision of the head of the Village Council, Carlton Campbell. The area is very easily accessible and not far from the main road. To watch the sight, plan to be there about 40 minutes before sunset to get the full show. Wear long sleeves and long pants with socks, for there can be mosquitoes. This bamboo is the "tree" where most of the action takes place. The stand of bamboo is about 35 feet in height, at the top, and has a rough diameter of about 100 feet. Position yourself so you can see the sunset, and make yourself comfortable. I will describe the sight viewing the "tree" with my back to the sea, at a distance of about 150 feet.

While you are there, watch for many of the other abundant local avifauna, including: Yellow-crowned Night Heron (*Nyctanassa violacea*), Black-crowned Night Heron (*Nycticorax nycticorax*), Tricolored Heron (*Egretta tricolor*), Little Blue Heron (*Florida caerulea*), Snowy Egret (*Egretta thula*), and Cattle Egret (*Bubulcus ibis*). You may also see the arial acrobatics over the river by the Short-tailed Swift (*Chaetura brachyura*).

At about 40 minutes till sunset you will see Giant Cowbirds (*Scaphidura oryzivora*), the first arrivals, begin to gather. The cowbirds first land in trees along the periphery hill to the left of the main "tree". At first, almost no one lands in the main tree. Noise level from the birds is low, or even quiet at this time. The cowbirds will continue to arrive to the periphery for about 30 minutes.

At about 20 minutes till sunset, many cowbirds will start shifting to the "tree". They first occupy the topmost sentinel positions, and seem to be anxiously watching and waiting for the Oropendolas. The Cowbirds become more and more vocal. It is during this time that the local frogs start to add to the background noises. Also during this period, I have seen many other species of birds dart into the tree, including: Tropical Mockingbirds (*Mimus gilvus*) [up to 8], Shiny Cowbirds (*Molothrus bonariensis*) [up to 30], White-tipped Dove (*Leptotila verreauxi*), Blue-gray Tanager (*Thraupis episcopus*) [up to 8], Cattle Egret (*Bubulcus ibis*) [up to 5], Smooth-billed Ani (*Crotophaga ani*), Black-crowned Night Heron, Yellow-crowned Night Heron, and once even a hummingbird!

About 8 minutes before sunset, the Cowbirds hoarse squeaky noises increase even more, as the first Oropendolas fly in to the periphery trees. They begin to appear from every direction, singly, but mostly in groups, up to fifty, sometimes more. They will all fly to the periphery first, even if they must first fly over the roosting tree to get there.

They all seem to gather as old friends to watch the sunset, exchange gossip, and re-inspect their nightly meeting place. I do not know the sex ratio of these Oropendolas. The Cowbirds are very visibly excited by the arrival of the Oropendolas, which will continue to arrive up till about 15-18 minutes after sunset. The timings are always the same, even on a day when cloud cover obscures the sunset.

During this last described phase, there is much displaying on the periphery by the Oropendolas. You can hear the unmistakable high pitched gurgle of their display call as they hang upside down and spread their feathers for all to see. Just before the sun goes down, the majority of the Cowbirds, along with some of the Oropendolas, will move from the periphery to the communal roosting tree.

As soon as the sun sinks into the sea, the Oropendolas start to make their move. They come from the periphery trees singly, or in groups of up to sixty at a time and flock into the roosting tree. The Oropendolas will continue to land in to the periphery, then move to the roost, for up to about 18 minutes after sundown. The Cowbirds leave their sentinel positions in the tops of the bamboo, and move into closer quarters with the Oropendolas. This is the time when the noise level from everyone comes to a crescendo. The tree is literally alive with several hundreds, sometimes thousands of excited birds. Also at this time, with dusk moving in, many, many, smaller birds dart into the roost, impossible to identify from lack of light, their speed, and distance.

Even the frog's calls rev up with all of their might. They seem to be carrying on an old argument as if at a restaurant. The server must have asked if they wanted wheat or white for their sandwich bread, and the mass of frogs has been split in dissention ever since, with the high pitched screams of, "Wheat!" "White!" "Wheat!" "White!" Sometimes I'm tempted to shout back, "I'm not your waiter!"

I have seen gatherings of Oropendolas of up to 1900 (6/24/94), up to 1500 (5/1/95), up to 750 (5/17/96), and up to 450 (4/26/96). There usually appears to be about 300 - 450 Giant Cowbirds. I have not been there year 'round to ascertain this, but it appears that the numbers are declining on the average. There are no long stocking shaped Oropendola nests anywhere in the vicinity of this "tree". Also, I have not ascertained the sex ratio of these Oropendolas.

All species of Oropendolas and their cousins the Caciques are gregarious, make long hanging nests, live in colonies, and have a symbiotic relationship with the Giant Cowbird. Smith [Janzen 1983] describes the chief mortality of the Chestnut-headed Oropendola (*Psarocolius wagleri*), which is not native to Tobago but found in Costa Rica, is the attacks of the botfly larve (*Philornis* spp.). The larve of these botfly will consume the chicks of the Oropendola, without interruption even from the parents of the chick. Giant Cowbirds engage in parasitic nesting by laying their eggs in the Oropendolas long hanging nests. When there is one or two Giant Cowbird chicks present in the Oropendola's nest, botfly larve seem to be consumed, and hence eliminated by them. The Giant Cowbird's parasitic nesting habit has been observed to be tolerated by Oropendolas in many cases. But in other instances, Oropendola colonies are sometimes made in the vicinity of wasp colonies. In these instances, the wasps appear to chase away the botflies. In colonies where Oropendolas have nested in common with the wasps, the Oropendolas have been observed to chase the Giant Cowbirds away from their long hanging woven basket nests.

Local residents say this bird gathering has been taking place for as long as anyone can remember. Carlton Campbell [1995] says he's been watching this sight for over 35 years, and the birds have come every night year 'round. There used to be many more, he says, but the numbers get less and less every year. Duran Chance [1994] has lived in Parlatuvier around 55 years, and remembers it taking place in the same spot all that

time. Carlton Campbell [1996] relates some five or more years ago when his 70 plus father mentioned that the birds came to the same tree when his father was a young boy, and even back at that time, people said the birds came as long as anyone could remember.

David Rooks, and other Tobago Field Naturalists knew of no other place on Tobago where a phenomenon such as this occurred. Rooks [1996] recalled some years ago seeing very large numbers of Yellow-rumped Caciques (*Cacicus cela*) nesting, but not roosting, in Sangre Grande, Trinidad. Richard French [1984] noted huge numbers of Carib Grackle (*Quiscalus lugubris*) sharing a single roost in the Caroni marshes which also shared the roost with Yellow-hooded Blackbirds (*Agelaius icterocephalus*) and Shiny Cowbirds (*Molothrus bonariensis*).

French [1996] was familiar with communal roosting of Crested Oropendola in Trinidad, but not Tobago. He has observed communal roosting sites of Crested Oropendola in the Arima Valley, most always in bamboo, most always in lower valley. He figures the Oropendola favor bamboo, because it allows them to get larger numbers closer together than other roosting sites would. The sites he has observed attracted large numbers of Oropendolas every evening, which in the mornings, could be seen to fan out over about an eight mile radius.

Many questions need to be answered regarding this awesome nightly sight in Parlatuvier. Why do the birds come to the same place? Why every evening all year? Do the number of birds change with different seasons throughout the year? Are there more males or females? Are there any parent birds at the roost while young are still in their nests? Why are there no Oropendola nests around this area if it is so popular? Are the bird numbers really declining? Is this a courtship area? How far of an area are they coming from? Why are other species of birds mixing with them?

I hope I have raised some interest for this special place in Tobago. There certainly needs to be much more study. There also needs more protection. I do not know who actually owns the land this place is on, but just since last year, a house has been put up literally under the Yellow Tail "Tree", and it has a very noisy dog, which most definitely makes the birds nervous. With the new pier in Parlatuvier, there is much more traffic generated on a bumpy dirt road near the tree, which the birds obviously don't like. I propose the entire area be made a national park and/or protected area by the government.

Next time you're in Tobago, make an hour in your schedule to view this daily event. If you love the spectacular sights of nature like I do, you won't leave dissatisfied.

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POTENTIAL OF BIOCONTROL AGENTS IN THE SUPPRESSION OF HIBISCUS MEALYBUG, *MACONELLICoccus HIRSUTUS* (GREEN)

By
R. D. Gautam

Research Division, Central Experiment Station, Centeno
Trinidad and Tobago, West Indies

The role of biocontrol agents *viz.* parasitoids, predators, bacteria, fungi, nematodes and viruses in the natural suppression of any kind of insect pest is well established. They act as a biotic force, being density dependent, and keep the pest population under check without its extinction or elimination. Any pest, especially those newly introduced in the absence of biotic forces and in the presence of favourable abiotic forces like temperature and humidity followed by suitable food availability, flares up. The hibiscus or pink mealybug and its recent introduction to the Caribbean islands of Grenada, Trinidad and St Kitts is a classical example in this regard. The mealybug is known to occur in several countries including Australia, south-east Asia India, Egypt and Africa. It causes enormous damage due to its habit of sap-sucking and the releasing into the plant host's system of a toxin which induces curling, crinkling and withering of tender parts, abortion of flower buds and deshaping as well as dropping of developing fruits. In case of serious infestation, tall trees like the saman die as they are often attacked by several other lower plants and by scale insects.

The Status of the Hibiscus Mealybug in India

The hibiscus mealybug *M. hirsutus* was catalogued as early as 1908 by Green from India. It is distributed almost throughout the country, especially in Andhra Pradesh, Karnataka, Maharashtra, West Bengal, Bihar, Madhya Pradesh, Uttar Pradesh, New Delhi, Punjab and Rajasthan. So far, it is known to attack only 30 plant species (Table 1) belonging to 19 families. The pest has limited hosts. Most of them are just feeding records and they have not attained major status except in states where a lot of chemical pesticides are used, especially in Andhra Pradesh on grapes. These chemicals, when applied, frequently kill the natural enemies and the pest develops resistance to the chemicals.

Sometimes 9-11% damage to mulberry plants is recorded in West Bengal (Malda, Murshidabad and Dharampuri Districts); 40-50% damage takes place in Karnataka Selam and Dharampuri Districts. Terminals do not get more than 15-20 adults in general.

The hibiscus mealybug is normally kept in check environmentally by natural enemies as well as by weather conditions in India. Some of these points are discussed below:

1. The presence of three classical seasons (summer, winter, wet) in most of the Indian provinces, except south India and coastal regions which experience the tropical climate.
2. The presence of potential predatory and parasitic fauna throughout the country. The parasitoids are mainly active in the Mysore (Karnataka) due to tropical temperatures not exceeding 27 degrees Celsius most of the time.

Table 1: Plant Species attacked by the Hibiscus Mealybug in India

PLANT SPECIES	FAMILY	STATUS
Sugarapple	Annonaceae	Minor
Pommecythere	Anacardiaceae	Minor
Tecoma	Bignoniaceae	Minor
Tamarind	Caesalpinaceae	Minor
Mikania	Compositeae	Minor
Phyllanthus	Euphorbiaceae	Minor
Clitoria, Erythrina, Gliricidia	Fabaceae	Minor
Sugarcane	Gramineae	Minor
Pomegranate	Lythraceae	Minor
Okra, Cotton, Sorrel, Hibiscus	Malvaceae	Minor
Kenaf, China rose	Malvaceae	Minor
Mimosa	Mimosaceae	Minor
<i>Ficus cumia</i> , <i>F. indica</i> , <i>F. religiosa</i> , mulberry*	Moraceae	Minor
Guava	Myrtaceae	Minor
Jasmin	Oleaceae	Minor
Citrus	Rutaceae	Minor
Corchorus (Jute)	Tiliaceae	Minor
Boehmeria (Ramie)	Urticaceae	Minor
Grape vines*	Vitaceae	Minor
Clerodentron	Verbenaceae	Minor
Peanut	Fabaceae	Minor

*Sometimes pest ravage is high

3. The presence of overwintering in the hibiscus mealybug during extreme winter (December to January).

4. The transport of fruits like sugar-apple and pomegranate infested with hidden hibiscus mealybug from one place to another does not provide suitable conditions for their survival and development due to existing geographical conditions. During the months of summer (April to June) the temperature in the northern provinces, Jammu and Kashmir, Himachal Pradesh and the hills of Uttar Pradesh, remains between one and 20 Celsius while the plains of Uttar Pradesh, Delhi, Madhya Pradesh, Rajasthan, Haryana and Bihar experience a temperature range between 27 and 46 Celsius. These fluctuations kill the hibiscus mealybug or break their continuous breeding.

5. Sometimes grapes suffer 50-100% mealybug infestation. The release of 2,400-3,500 adults of *Cryptolaemus montrouzieri* Mulsant and *Scymnus coccivora* Aikyar per hectare gives relief in about two months. Use of Chlorypriphos @ 2ml/litre water is also recommended at least 15 days before the beetles are released to reduce the heavy infestation.

6. The hibiscus mealybug attacks the mulberry plants in Karnataka, Tamilnadu and West Bengal and often cause 30-35 % infestation during the months of March to June.

The following IPM schedule helps in the suppression of the pest.

(a) Clipping leaves and removing terminal shoots are mandatory. The pest re-appears after two months, indicating its slow multiplication as compared with the Caribbean region where it reappears within a one-month period of pruning.

(b) Dust the mulberry plants with 5% Carbaryl powder around the plant to check the crazy ants. These ants interfere with the natural enemies and also act as mealybug carriers.

(c) The minimum release each of 600 adults of *C. montrouzieri* and *S. coccivora* per acre is recommended.

(d) Sometimes a chemical like DDVP (Nuvan) @ 0.2% is used when the beetles are not released.

(e) Karnataka farmers clip off the infested shoots of mulberry trees to feed to their cattle, hence not emphasising other control measures. They believe in milk and silk going together. This area is known for the silk industry in India.

The Status of the Hibiscus Mealybug in the Caribbean

The official records of the hibiscus mealybug in the Caribbean islands indicate that it is present only in three countries (Table 2).

Table 2. Status of Hibiscus Mealybug in the Caribbean

COUNTRY	AFFECTED ISLAND	NUMBER OF HOST PLANTS ATTACKED	STATUS
Trinidad and Tobago	Trinidad	123	Major
Grenada	Grenada	135	Major
St. Kitts and Nevis	St. Kitts	47	Major

The pest is polyphagous and because of its high dispersal nature, it has the potential to attack a variety of crop plants belonging to more than 67 families. These are:

Acanthaceae, Amaranthaceae, Annonaceae, Anacrdiaceae, Apocynaceae, Araceae, Araliaceae, Asclepidiaceae, Begoninaceae, Bignoniaceae, Boraginaceae, Cactaceae, Caricaceae, Capparideceae, Caesalpinaceae, Casuarinaceae, Commelinaceae, Compositeae, Convolvulaceae, Crassulaceae, Cucurbitaceae, Cyperaceae, Dioscoreaceae, Euphorbiaceae, Fabaceae, Flacoutiaceae, Gesneriaceae, Gramineae, Labiateae, Lauraceae, Lecythidaceae, Leguminaceae, Liliaceae, Lythraceae, Malpighiaceae, Malvaceae,

Meliaceae, Moraceae, Musaceae, Moringaceae, Mimosaceae, Myrtaceae, Nyctaginaceae, Oleaceae, Oxalidaceae, Palmae, Passifloraceae, Piperaceae, Plumbaginaceae, Polygonaceae, Polypodiaceae, Portulacaceae, Proteaceae, Punicaceae, Rhamnaceae, Rosaceae, Rubiaceae, Rutaceae, Sapindaceae, Scrophulariaceae, Solanaceae, Tiliaceae, Umbelliferae, Urticaceae, Verbenaceae, Vitaceae, Zingiberaceae.

(Mani, 1989; and Anonymous, 1996).

Introduction of Ladybirds from India into the Caribbean

The Australian ladybird, *C. montrouzieri*, introduced into India (for the control of the coffee mealybug *Coccus viridis* and other mealybugs) from Australia during the year 1898, is well established in the tropical provinces. The Indian ladybird, *Scymnus coccivora* Aiyar, which is well distributed in southern as well as northern India, including New Delhi, is very active, even at lower pest density and has the potential to chase mealybugs underneath bark and into crevices. These beetles were considered for the recent introduction to tackle the hibiscus mealybug in the Caribbean region. They were chosen from among a few more predatory ladybirds studied and cultured by the author. A total of 600 adults of each species were brought by the author to Trinidad on February 4, 1996. These were multiplied at the Central Experimental Station, Centeno, Ministry of Agriculture, Land and Marine Resources. Subsequently, 1,000 adults each of *C. montrouzieri* and *S. coccivora* were introduced from Trinidad into St Kitts on March 20, 1996. Also, 500 adults of *C. montrouzieri* were introduced into Grenada on May 14, 1996 for effective mealybug control.

The introductions were made by the Caribbean Agricultural Research and Development Institute (CARDI) initially from India to Trinidad and subsequently to other islands through its regional offices, in consultation with the ministries of the respective countries.

Each of these predators can feed on 2,000 to 4,000 eggs of the hibiscus or pink mealybug during their grub (larval) period and complete their life cycle in 20-30 days. They have the potential to survive for 30-100 days during their adult stage, while they continue to feed and breed in nature. So far, no hyperparasitoid has been noticed here on these ladybirds which are establishing well in the Caribbean islands wherever they have been released.

Factors Affecting the Colonisation of Ladybirds

The factors listed below help to limit the colonisation of these ladybirds, hence they must be taken into consideration for the effective conservation, colonisation and suppression of the hibiscus mealybug.

1. The use of chemical insecticide viz malathion for vector control (mosquito) by the Health Department, injudicious use of chemicals in agriculture and the use of synthetic pyrethroids for household pests.
2. The presence of crazy ants which interfere with the natural enemies of the pest.

3. The presence of insectivorous birds, lizards and other pests feeding on adult beetles or their stages of development.
4. The presence of bright light on the release sites including illumination of trees which attracts adult beetles.
5. Poor canopy of the plants which leaves no shade and shelter for the ladybirds.
6. Burning of crop residues (fallen leaves and fruits suspected of harbouring ladybird stages), roadsides and even standing sugar cane crop, where the beetles are likely to migrate in search of food during their dispersal.
7. No proper mulching around the tree trunk when grubs come down for pupation or in search of prey when it is diminished on the tree.
8. High wind velocity which affects the activity of the adults to some extent.

People's Participation - An Appeal

The hibiscus mealybug is a national problem in Trinidad, hence co-operation from all is solicited. Remember, the use of the ladybird beetles is an important asset for the country to have long-term and permanent control of the HMB and other indigenous mealybugs and scale insects. Further, it is the most potent segment of integrated pest management (IPM) recognised the world over. Some of the points are discussed below for fighting the national problem together with the whole-hearted support of the public.

1. Mobilisation and setting-up multiplication centres owned by volunteers/NGOs at former or community level.
2. Conservation of indigenous and exotic ladybirds and other natural enemies in the islands.
3. Establishment of a "ladybird corner" in the zoo, parks and schools for educating the masses.
4. Visit to nearest release site and proper publicity of "The Beetle Bowl" (Gautam et al, 1996).
5. Active participation in the Relay Release system of the ladybirds.
6. Facilitating the feedback to the Government through regular participation in the monitoring of introduced/exotic ladybirds.

Conclusion

The hibiscus mealybug, *M. hirsutus*, is known to cause economical losses in cotton in Egypt and grapes and mulberry in India. Pest ravage is checked by the presence of about 44 parasitoids and predators in nature, as well as climatic variations in the geographical regions. As and when the pest flares up, especially in grape, it is controlled by using bioagents viz *C. montrouzieri* and *S. coccivora* along with other IPM strategies. The recent introduction of *M. hirsutus* in Grenada, Trinidad and St Kitts has threatened several crop plants in more than 67 families. Efforts have been made to augment *C. montrouzieri*, *S. coccivora* and *Anagyrus kamali* in the island for long-term and effective control of the hibiscus mealybug along with other control methods. Chemical pesticides play a limited role in pest suppression as well as conservation of tall trees and forests.

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Muriel Pierre



D. Chase (Daily Express), E. Heesterman, president of T&TFNC and R. Hernandez, secretary, T&TFNC, listen to Indian entomologist Dr Ram Dass Gautam talk about propagation of biological agents to combat the pink mealybug. Occasion was a familiarisation meeting with members of the T&TFNC at Central Experimental Station, Centeno.

Dan J

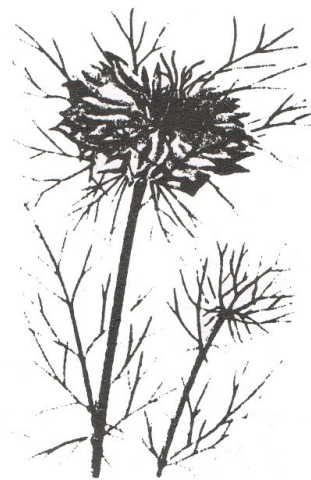


Students at Monos Island.

Muriel Pierre



The hibiscus or pink mealybug (*Maconellicoccus hirsutus*)



Love-In-a-Mist *Nigella damascena*



Daffodil *Narcissus species*

TRINIDAD & TOBAGO FIELD NATURALISTS' CLUB
P.O. Box 642.
Port of Spain, TRINIDAD & TOBAGO