THE FIELD NATURALIST

BULLETIN OF THE TRINIDAD AND TOBAGO FIELD NATURALISTS CLUB

15th December, 1975

Dear Member,

The next meeting of the Club will be the Annual General Meeting to be held in the St. Mary's College Audio-Visual Room on Thursday 8th January at 5:30 p.m. You are urged to attend since many decisions about the Club's 1976 activities and a few New Year resolutions will be made.

A G E N D A

(1) Reading & Confirmation of Minutes of the last Annual General Meeting
(2) Business Arising out of Minutes
(3) Honorary Secretary's Report for 1975
(4) Honorary Treasurer's Report for 1975
(5) Election of Officers for 1976
(6) Any Other Business

Please bring with you any ideas and suggestions concerning next year's field trips. Every year the Club's officers are criticised for arranging field excursions to the ime places and yet when members are asked to assist in the planning of these trips there is negligible response.

ANNUAL SUBSCRIPTIONS - All subscriptions should be paid on or before 31st March. Members are reminded to pay their subs as promptly as possible since failure to do so will result in removal from our mailing list. We would also like to be kept up-to-date with any changes of address that have taken place since the last address list was handed out in June 1975.

A NOTE ON MORA FORESTS *by Victor C. Quesnel*

Mora Forests in Trinidad occur principally in the southeast corner of the island and in the northeast between Sangre Grande and Balandra. Their distinguishing characteristic is the mora tree which dominates all others in height and in numbers. Mora is huge; it grows to 104 feet (43 m) and has enormous plank-like buttresses. In these forests it is gregarious, accounting for over 85% of the trees forming the canopy. The species that make up the remaining 15% of the canopy are the same species that occur in the nearby crappo-guatecare forests but here their numbers are far fewer. In Guyana, mora is not gregarious; it occurs as scattered trees. The question thus arises: Why is mora gregarious in Trinidad?

Beard (J.Ecol. 33: 173, 1945-46) tried to answer this question and came to the conclusion that the moist forests of Trinidad are not typical rain forests and allow in more light. In these conditions mora readily becomes established after which its great reproductive power makes it gregarious and its greater height suppresses the mixed forest. Beard suggests that mora arrived in the southeast corner of Trinidad from Guyana, perhaps fifty thousand years ago, just as Trinidad was being cut off from Venezuela. The species moved inland along the rivers and invaded the southeastern forests first, later spreading to the Matura area. Mora forest, according to Beard, is still spreading.

My theory is that mora is gregarious in Trinidad largely because of its huge seed which is considerably larger than that of any other forest tree. The enormous store of food in the seed would enable the seedling to outgrow anything else in the shade of the forest. It is also possible that once the seedling becomes independent of the food store in the cotyledons, it grows more rapidly than its competitors.

Our question then becomes: Why is mora not gregarious in Guyana? Perhaps in Guyanese forests there are more animals which feed on mora seeds than there are in Trinidad. Or perhaps there are stronger competitors. Beard says that most Guayanese trees are endemic and that of the 40 common species only two occur in Trinidad. With the few facts to go on, speculation can be endless.

But there are other, perhaps related, problems. Janzen (Biotropica 6:69, 1974) tried to make sense out of the conjunction between poor soils, phenol-rich plants, black-water rivers and depauperate animal communities in the mora forests of Trinidad. He states or implies that the forests are poor in species of both plants and animals and that the seeds are unpalatable to animals because of their high content of alkaloids or phenols.

Now, we know from Beard that the mora forests in Trinidad are no poorer in species than any other forests. Furthermore, a recent trip to Fig Walk, deep in mora forest, produced plenty of evidence of game animals and other wildlife in abundance. The streams running through the area were crystal clear without any sign of discoloured water and there were indications that mora seeds were being partly eaten by vertebrates and invertebrates. Tests on one mora seed brought back to my laboratory showed it to be low in phenol (much lower than cacao seeds) and the taste of the oven-dry seed was not unpleasant. This latter fact argues against the presence of high concentrations of alkaloids.

Thus, there are many conflicting ideas and observations on mora forests in Trinidad. They present numerous opportunities for profitable study by determined biologists.

ANT SPRAYS *(Article from German Tribune, 12th October 1975. Submitted for editing by Marianne Kummerloew.)*

Ornithologists in West Germany are busy learning new toilet habits -- not their own -- but those of many songbirds found in temperate climates. This news comes from zoologist Anke Querengasser of the Radolfzell bird sanctuary who has just completed a slow-motion film of starlings in the process of spraying their wing and tail feathers with formic acid. The acid is obtained from several species of ants which the birds pick up in their beaks. Once thus alarmed, the ants are capable of spraying the acid from their poison glands for distances as great as eight inches. And the birds love it. The spray of acid seems to impart a tingling sensation which they find most pleasurable.

The procedure, which is repeated every two or three days, has not been studied in any detail until now because everything happens so fast. When a starling tracks down a column of ants on the march it is careful not to step too close in case it were to get stung on the foot. Then it picks the ants up. Whilst spraying itself, the bird closes its eyes to prevent the stinging acid from searing its cornea. Afterwards, the ants are either flung away again or gobbled up.

Young starlings begin using ants as "spray cans" at the age of about 5-6 weeks, although they tend to be very timid about it at first and only continue the process for a few seconds. By 2 months of age they are capable of trapping several ants simultaneously. Then, by the time they are 80 days old, they can spray themselves using as many as 20 ants at a time. When the unfortunate victims are dried out, they are jettisoned and replaced by 20 more, a procedure which may last up to twenty minutes.

Ant spraying is more or less instinctive, say most ornithologists. However, the birds do have to learn for themselves that ants are required for it. Young birds kept in captivity picked up all manner of objects, such as cigarette butts, mothballs, beetles and worms. When they had realised that these objects could not produce the desired formic acid they threw them away and were not fooled again.

But why this strange toilet? Some experts suggest that the acid spray may kill off irritating ticks in the wing and tail feathers. Yet, the rump feathers, where most ticks are found, are never given the formic acid treatment. So the real purpose must be something entirely different. Another theory is that the acid is some sort of preventative treatment to protect the birds against rheumatism, to which their wing joints are particularly susceptible in cold weather. The use of formic acid in the treatment of rheumatism in humans has long been known. Perhaps some species of birds have known of this remedy long before we thought of it.

HOW MOSQUITO REPELLENTS WORK *by Hannah Pavlik*

I am one of those people whom mosquitoes and sand flies love. On the turtle-tagging trip to Tacarib last August, when everyone was standing at the Blanchisseuse fish depot worrying about which boat was the most seaworthy and how rough the sea looked, my pressing problem was that the sand flies were biting. It was the same thing with mosquitoes in the mora forest -- I always seem to be the first victim. The July 1975 issue of Scientific American contains an interesting article on mosquito repellents which I would like to summarize for the benefit of those fellow sufferers who, like me, treasure the wonders of Flypel, Off and citronella.

Female mosquitoes locate their host through impulses transmitted from sensory hairs (called sensilla) located on their antennae. These hairs are sensitive to the relative humidity, warmth and carbon dioxide concentration of the airstreams passing over them.

Undisturbed females remain generally quiescent except for occasional flights to adjacent portions of their environment. These spontaneous flights are believed to be caused by the random firing of nerve cells in the mosquitoes' "brains". If the level of carbon dioxide in the environment is suddenly increased, the frequency of the spontaneous flights also increases and the mosquitoes appear more restless. The excitation is shortlived however, for as the raised level of carbon dioxide is maintained, the number of random flights returns to normal.

Mosquito repellents duplicate this effect of excitation followed by adaptation. Although the exact mechanism is still unknown, a low level of repellent seems to jam the carbon dioxide sensors of mosquitoes and thus prevents them from responding to the carbon dioxide emitted by warm-blooded animals.

Mosquitoes are also extremely sensitive to variations in warmth and humidity. They are therefore readily attracted by the aura of convection currents which surrounds the warm-blooded hosts on which they feed. These currents are created by the warmth of the skin and the transpiration of moisture through it (and not by skin odors, as many people think).

How then does the mosquito find its victim? First of all, its sensory hairs are alerted by a rise in the level of carbon dioxide in the atmosphere. The mosquito starts flying, and when it encounters a warm and wet convection current, it proceeds n that direction. When it begins to move out of the convection current, there is a sudden drop in the number of impulses reaching its central nervous system from its sensory receptors for moisture and warmth. This change causes the mosquito to turn in its flight, and the turn usually keeps it within the current. It follows the current to its source and then lands.

The effect of a repellent on the behaviour of mosquitoes depends on whether the repellent is diffused throughout the entire area or is confined to the convection currents arising from the host. Applying a repellent to the skin causes the moisture sensors of the mosquito to be completely shut off. The sensors are apparently prevented from responding normally to the raised humidity, and the number of nerve impulses sent to the mosquito "brain" decreases instead of increasing. As a result, the mosquito is disoriented and it turns away prematurely before landing on its target. Treating an enclosed area with repellent will suppress the mosquito's arousal response to an increase in carbon dioxide and will also cause the mosquito to fly through warm and wet convection currents without making the usual turning responses.

In either case, the mosquito's attack, which depends on the above series of automatic responses occurring in a definite sequence, is successfully interrupted.

NEW MEMBERS SINCE SEPTEMBER 1975 *(* denotes a Junior member)*

Neville Acham
Raffique Ali
Michael Bayne
Mary Chate *
Russell Cunha
Lynette Eccles
Brenda Hughes
Daphne Pierre-Smith
Wayne Rodriguez
Alyce Shurland
Elizabeth Streetly
George Wattley
Peter Williams *

SHORT NEWS ITEMS:

The Club's end of year get-together was a resounding success as those who attended will admit. About 60-65 members, all set on having a great time, arrived at the Cooper's house in Carapichaima for barbeque lunch on December 5th. Special mention must be given to our mini parang group led by T.F. Farrell and Patricia Gouveia. The star of the day, however, was definitely Bertha Estrada who provided non-stop entertainment to all and was so busy dancing that she missed her ride back to Port of Spain. Many thanks to Brian and Cleo Cooper for opening up their house to the Club and thanks also to those members who helped so willingly with the food and drinks.

Trinidad Naturalist Magazine. The first issue of the magazine, featuring pollution and environmental destruction, is now available at a cost of $3.00. Members are urged to support the magazine in any way possible i.e. by buying a copy, contributing articles to future issues, offering pertinent criticisms, or suggesting outlets for distribution. Copies are available from Ian Lambie (62-23694), editor Steve Mohammed (662-4693) or from the magazine's business office at 80 Ariapita Avenue, Woodbrook.

Chaguaramas National Park. The Chaguaramas Development Authority has requested twelve more copies of the club's latest comments on the establishment and management of the Park. We take this to be a good sign and will continue pushing for the setting up of the Park in the New Year.

Industry/Environment Seminar. The Management Development Centre and the Pollution Control Council co-sponsored a seminar on "Industry and the Environment" to which representatives of the Club were invited on October 30th. The seminar's purpose (Hannah Pavlik went) was to provide a forum in which the Pollution Control Council, government and industrial sectors could discuss amicably how Trinidad and Tobago is going to deal with maintaining a certain level of environmental standards. Discussion did not always centre on this core issue, however, and insufficient time was allowed for public criticism of the Pollution Control Council's Draft Proposal for Environmental Protection Legislation. (The Draft, I feel, needs much revision --ed.) Members interested in reviewing the document are asked to contact the Honorary Secretary.

Capital Region Plan. The Club has received a copy of the new Capital Region Plan recently drafted by the Town and Country Division of the Ministry of Planning and Development. It is well worth looking over since it outlines Government's plans for the entire Carenage-to-Arima region from now until 1995 and it also touches on the question of a National Park system. Copies are available from the Government Printery.

For Sale. Brian Cooper has a limited number of Trinidad topographical maps, scale 1:150,000, for sale. They are not available in Trinidad. Price: about $4.50. See him at the next meeting for more details about this.

HAPPY NEW YEAR TO ALL!

Hannah Pavlik

for Hon. Secretary