



Nature's jottings

Newsletter of the Natural History Society of Jamaica March 2010

The Natural History Society of Jamaica would like to dedicate this edition of Nature's Jottings to Cynthia Powell, an honorary NHSJ member, who left Jamaica in February to reside in Canada with her family. She was able to be with us at the annual Get-together in January when many tributes were paid to her, particularly by NHSJ members who had served with her on the Education Committee, which she chaired for 15 years during which time the Committee contributed regular natural history articles to The Daily Gleaner's Children's Own newspaper on which it based a quiz at the end of each school year. Committee members also coached schools in environmental education preparing them for JET's annual environmental competition.

Cynthia, you are a loss to natural history education in Jamaica but we wish you health and happiness with your family in Canada and hope you will be back to see us sometime soon.

Your Jottings

The Natural History Society of Jamaica Clarendon Distillers & Trans-Global Aquaculture.

Date: Saturday the 26th of September
Rendez-vous: 9 a.m. in the Scientific Research Council car park.

It was Field Trip day and the Natural History Society of Jamaica was on the prowl again, this time to south Clarendon to tour the Clarendon Distillers' new facility at Monymusk and the Trans-Global Aquaculture operation by the mouth of the Rio Minho.

Trevor Yee and two of his students: Charah Watson and Nemoi Chisolm were already on the road riding in Vashti Chatoor's green CR-V. At the SRC, Eric Garraway and Joy Royes, Willem Mulder and Andrew Pearson chatted in the shade until Jill Byles, Lee Boxall, Helen Jacobs and her associate Graham Corbin arrived.

At 9:20 all would be late-comers were abandoned to their fates and two vehicles headed west through the corporate area, along the newly named Bolt Highway, and stopped for refreshments at the first suitable place near the beginning of the south road leading from the Mineral Heights roundabout.

Halse Hall Great House with its manicured approach road was passed, the Jamalco plant on the left with the tailings lakes behind the high berms on the right could be better appreciated at the slow pace that the potholes suggested; we bumped and ground on past the U.W.I. Open Campus and Vere Tech. at Hayes, and turned right onto the cane track just before St Dorothy's church at Lionel Town. (A Google map of the visit had been sent to interested persons)

Clarendon Distillers, Ltd. Monymusk

We next slowly made our way past the formerly splendid, but now delapidating, Sugar Company managers' houses, some of which were inhabited, including Dr. Virender Sheorain's pied a terre, which was in relatively good nick, and where we parked and went in. On the collapsing steps up to the house we met Omar Chedda, who had reached independently; our host offered cold liquid refreshments, explained his idea of how the tour would go and we set off collecting the final member of our party Clyve Bowen, who had just fetched up.

Our first stop was the laboratory, where the young analyst Andre McCalla, a graduate of the U.W.I. Chemistry Department, arranged four samples for olfactory evaluation: water-diluted products in small wine glasses with watchglass covers. All were colourless; two were from pot stills – one from a special high ester fermenter, one normally fermented, and two from the column stills – one having been through the “beer” or “wash” column followed by the “aldehyde” and finally the “rectifying” column, and one that only been down the first two columns. Gas chromatography (G.C.) profiles were handed around and the whole rum making process was outlined there and then. Sensory evaluation by olfaction is necessary in beverage spirits manufacture because the human nose is more sensitive than any scientific detectors available.

There are two types of still – pot and column – and two types of fermentation – normal and high ester. The small quantities of the products of the high ester fermentation are used by the rum blender to flavour a larger volume of the base rum produced by the normal fermentation. The old column stills of the old plant were to be disposed of, but the existing pot stills and their associated fermenters were being kept to be used in tandem with the new facilities. The high ester fermentation takes about 35 to 40 days to complete, the normal fermentation as many hours – in fact the newly installed fermenters would be able to turn around in about 28 hours as opposed to the 36 - 40 hours of the older fermenters, automation and finer control being responsible for the saving of time, which results in a more efficient use of the capital needed to finance the operation.

Next stop was the new distillery itself, we passed the old column stills, the molasses storage tanks and, around the corner, the old fermenters, before we reached the new site. The new facility had a molasses pre-treatment set-up, to dilute and acidify the molasses (which prevents a lot of bacterial contamination but does not affect the yeast) and four 200,000 gallon cylindro-conical fermenters set on massive concrete stands currently being run in semi-continuous mode. The fermenters were cooled to 30°C, optimal for the yeast, by external jackets linked to a cooling tower, whereas the cooling at the columns

was of the spray type. Every aspect of the new distillery was controlled electronically, and these control systems were in the process of being handed over from the Indian supply company to a local operator (Damian) as we visited.



New column stills to the left, old ones to the right

The new distillery has a daily capacity of 40,000 litres absolute alcohol compared to 20,000 litres for the old column stills, and staffing has been reduced from about 94 to about 50. There were notable increases in efficiency of the new plant in comparison to the old: molasses utilisation increased from 83% to ~90%, and recovery of alcohol increased from 95% to 98%. Overall, the cost of production of alcohol had been reduced by 30%, with the installation of the new state-of-the-art technology.

Of the primary raw material used, molasses, by Jamaican legislation the distillery is obliged to accept all molasses produced by the neighboring sugar factory if there is one, regardless of the quality. In this case 30% of the molasses requirement is met from the adjacent Monymusk factory, though the quality was described as being “poor”, with the remained being imported but supplied by the Spirits Pool of Jamaica, which controls both the molasses input and the alcohol output of Jamaican distilleries. The excise revenue accruing to the Government is supervised by the Customs and Excise Department.

The new facility, costing \$2.9 Million (U.S.) was financed to the extent of 60% by the European Union with the remaining 40% coming from the owners which include Diageo (the largest beverage spirits company in the world, who also own Red Stripe), and the Government of Jamaica.

We returned to Dr. Sheorain's house for our lunches, he and the Indian engineers commissioning the plant attacked their veggie burgers, while we consumed our various provisions, washed down with some of the host's cooled drinks. Further sampling of various Diageo's rums ensued, as our host brought forth a blend he had made with ingredients from other distilleries over which he had responsibilities. There were no takers for his sample of commercially available, adulterated sugar cane wine, which was deemed to be of dubious quality by the entire party, despite his assurances of its benefits.

Trans-Global Aquaculture, Ltd. Alley.

Leaving Monymusk by the front gate, which took us passed more dilapidated sugar estate housing, but this time of the workers and much more modest in original design, we turned right to Alley and right again to cross the Rio Minho by the recently repaired bridge, after which a few miles of cane roads brought us to the local office of Trans-Global. We were met by Munir Mulla, the President of the local operation of this U.S.-based company with operations in several countries including Belize, which Mr. Mulla had put into operation some years previously. He sorted us into vehicles that could survive the next journey, and we went to the hatchery situated close to the mouth of the Rio Minho.

The property is 1,500 acres of which 400 are seawater fishponds: 107 ponds, averaging about 4 acres each accommodating a depth varying from 4 to 6 feet in each pond. When the ponds were operating at high densities, there were floating mechanical aerators, but at the low densities now obtaining, these were not necessary.

Sea water from an inlet, which harboured two visible crocodiles, is pumped up to a raised reservoir from which it is gravity-fed to the ponds as necessary. Each pond can be drained into the Rio Minho. Sea water bred tilapia and Pacific white shrimp were stocked together in the same ponds, the fish being top dwellers and the shrimps, bottom dwellers. Harvesting of the fish was accomplished by netting, which can take 90%, the rest and the shrimps were collected in a drain box. Once the pond is drained after a production cycle – usually about 6 months – the muddy base needed to be harrowed and limed before being refilled.



Aerated pond with main office in the background

The processing factory was set up in such a way that different levels of cleanliness required in its operation, e.g. scaling, gutting and packing, were separated, and the workers wear appropriately colour-coded apparel. Processing time is about 1 hour from the delivery of the stock to its placement in the freezers, after 6 hours in which they go into freezer storage awaiting distribution.

Currently only 12 ponds were in operation, this low level of operation was caused by the enormous amount of theft of the products that had been occurring. This was in stark contrast to our previous visit about three years ago, when approx. 200 ponds were in operation and the packing house operated almost continuously. Huge rows of empty packing boxes were now evident. Employment had been reduced from 200 down to 30 as a result of the scaling back of operations.

The multi-million US\$ hatchery was not able to operate and laid idle because the quality of water was too low: there is a noticeable smell of dunder coming from that section of the Rio Minho, the origin of which could be from one or both of the distilleries in the area: the Clarendon Distillery we had just visited or the New Yarmouth distillery at Kemps Hill. This meant that hatchlings had to be imported which obviously raised the price.

As we left Mr. Mulla expressed reserved optimism about a fresh attempt to get the operation up to speed in the near future, and distributed his card saying that he made deliveries to Kingston from time to time. He explained that unlike the past, when almost all sales were for the export market, the company had ceased exporting and was now exclusively selling to the local market of hotels, and wholesalers.

Contact details: Munir Mulla, President, Trans-Global Aquaculture Ltd., P.O. Box 45
Lionel Town, Clarendon. Tel. 987 5434; fax 987 4410; mobile 817 0995; email
munirmulla@hotmail.com



On the return, the old windmill, now the Alley branch library, was photographed as was the dunder stream leading from the distillery we had visited. The more picturesque return route through Salt River was rejected in deference to the reputedly poor state of the road, and we made our way back to Kingston and “civilisation” retracing our outward path.

Contributed by Andrew Pearson

NHSJ Field Trip on Sat 21st November 2009, to Harris Savanna (S. Clarendon)

To see the area explored, check Ordnance Survey map #16.

Turn L off the main road from Kingston to May Pen, at Savannah Cross (shortly after all the honey stalls, and poles harvested from the forest for scaffolding and fences).

This area is called Free People, as it was one of the early sites, not far from Freetown, both given to the freed slaves after emancipation.

Field Trip leaders: Eric Garraway, Trevor Yee, George Proctor

Other participants:

Patrick Lewis – UWI Herbarium

Jill and Paul Byles

Kai Meng Lui

Ruth Loewe

Deirdre Hughes

Klaus Wolf

Carl Chin

First we met at UWI Life Sciences for a brief description, by Drs. Eric Garraway and Trevor Yee, of what to expect. We learned that the area, which is a flat encapsulated valley of dry limestone with seasonal ponds and alluvial clay, contains several species of endemic and indigenous plants, some found nowhere else in Jamaica. Among these are 20 critically endangered plant species including several grasses and sedges. Some are natives of Cuba, Cayman, and the USA, but found only at Harris Savanna, in Jamaica. There is a pond dwelling pteridophyte (plant related to the ferns) called *Isoetes jamaicensis* (Isoetaceae). (The meaning of isoetes is 'same at all seasons'). It is a fern-like plant but looks like a bunch of scallion. It has no flowers, only spores borne in capsules or sporangia at the base of the leaves.

There are several species of orchid, including two endemic to Jamaica - *Broughtonia sanguine* and *Oncidium tetrapetalum*; a guava, native to the W. Indies but mistakenly thought to have been from Guinea in Africa, *Psidium guineense* (Myrtaceae); a night-blooming water-lily, *Nymphaea jamesoniana* (Nymphaeaceae), a day blooming one, *Nymphaea ampla*, and a different type of water hyacinth, which does not have the big bulbs, at the base of its leaves, *Heteranthera limosa* (Ponderiaceae).

We were honored to have George Proctor with us - he was responsible for finding the endemic W. Indian cherry *Malpighia proctorii* (Malpighiaceae), so far only reported in this single location in Jamaica. He told us how he came to Jamaica to study ferns and fern allies found in Dominican Republic, Cuba and Mexico. He was taken to an area south of Freetown, but at first did not find *Isoetes*. Twenty five years later he was exploring Harris Savanna again, and found the plant at last and the cherry *Malpighia proctorii*, later named for him – only about 3 miles away from the first location!

He has made 30 trips to the area – he pointed out that you have to explore at different times:- different seasons, amounts of rainfall, length of day etc. to appreciate the types and variations in the plants there. Many plants are annuals, and only stimulated by the right amount of rain.

We were reminded that this has been a dry year, so a lot of the aquatic species may not have been present. If there are no rains, there will be no sporangia and no spores. At least two of the seasonal ponds were observed to have dried out, but we did locate a permanent pond in the Savanna.

In the past, Logwood, *Haematoxylum campecheanum* (Caesalpiniaceae) and two species of Sisal, regular Sisal *Agave sisalana* and the Maypole, *A. sobolifera* (Agavaceae) were grown commercially, but these are now wild. An old abandoned rope making Sisal factory is still there. Presently, locals use the forest for chopping wood for yam sticks, fence posts and scaffold etc; charcoal burning; producing honey from the abundant Logwood trees; and collecting orchids. Butterflies and insects proliferate after the rains (and consequent flowers); and there is also the leaf-cutting ant, which has been found only here and on Long Mountain on the S. Coast.

Andreas Haiduk has had discussions with the Water Resources Authority and the area is on record as being not suitable for habitation because of the likely contamination of the underground aquifers. (It was commented that this was also the NWC's position but which did not help Long Mountain!)

However it is not a protected area, and future plans are to extend the Highway right across the area, and the Savanna was the proposed site of the "New Town", along the Highway. One of the reasons for our visit was not only to observe the many interesting plants and animals but also to try to preserve the endemic and rare species found there. We then headed out to the area. First we walked to a pond which Dr. Eric Hyslop (head of the Dept. of Life Sciences) said was the most diverse pond observed to date. Samples of plants and pond creatures were taken, then we had a couple of walks in the forest, walking across to the area known as Inverness. The plants seen were classic to limestone forest, including:-

Metopium brownii (Burnwood, mango family)	Guinea grass, Panicum maximum
Cuphea decandra (small purple flower)	Red birch, Bursera simaruba
Lantana camara (wild sage)	Ebony, Brya ebenus
Croton nitens (camphor smell)	Screw Fruit, Helicteres jamaicensis
Piscidia piscipula (Ja dogwood – used to kill fish)	The palm, Thrinax parviflora
Stigmaphyllon emarginatum	Caesalpineia bonduc, yellow nicker
Sarsparilla (chainey root family)	Braziletto, Peltophorum linnaei
Amyris elemifera (aromatic – citrus odour)	Bauhinia divericata
Different types of deadly nightshade	
Wild Rosemary (Croton), Croton linearis	
Zanthoxylum spinosum (with the spiky bark) and others from the citrus family such as the mountain pride and Amyris elemifera	
Vanilla orchid, Vanilla claviculata, and an orchid which came to the region in a Saharan dust storm, Oeceoclades maculatum	
Phyllanthus angustifolius (the "leaves" are stems, or cladodes, with wee fruits on them.	
Velvet foot, Cissampelos pareira (Menispermaceae Curare poison family)	
Sea grape family, Coccoloba krugii and C. longifolia	

Several bromeliads e.g. Bromelia penguin, which is from the pineapple family and has delicious sweet yellow fruits, and other bromeliads, e.g. Tiillandsia bulbosa

And, of course, George Proctor took us to the one and only Malpighia proctorii, which had small green fruits at this time, and which he appropriately, based on the time of the year, likened to a Holly, with its shiny bright dark green leaves, and when flowering and fruiting with pink flowers and bright red fruits..

We also saw several butterflies including a female Heraclides (syn. Papilio) thersites and the bright orange Julia butterfly, Dryas julia delila and a green stick insect, a Phasmatodea.

By Deirdre Hughes

FIELD TRIP REPORT VETIVER (KHUS KHUS GRASS)

In October 2009 Andreas Haiduk, Chief Hydrologist at the Water Resources Authority addressed the NHSJ on Vetiver or Khus Khus grass, demonstrating how it can be grown on steep and unstable slopes to bind the soil and prevent soil erosion. He followed this up later in the month by taking NHSJ members to the Hermitage Dam environs, where, some years ago, Vetiver was planted close to a dwelling at the apex of a steep, double sided bank. The Vetiver had formed a thick hedge at the top of the bank and the roots, some of which were just visible penetrated the soil to a depth of about 1.5 metres or more, forming a dense mat, which binds the soil. The grass, which is fairly attractive, grows to about 75 metres. The blades are fine. Once established it is easy to grow as it requires little water and likes a sunny position. The roots have another purpose as they are used in perfume manufacture. Khus Khus can be seen as a hedge binding the soil in a number of places including UWI, above the playing field. Andreas Haiduk expressed regrets that Vetiver is not used to prevent erosion as much as it could be or as much as it was a few years ago since it is an inexpensive method of soil control.. He knew of 2 nurseries growing it, both are in St. Ann and both are growing it for perfume production. He explained that it is easy to establish. It can be split into single joints with each joint being planted in a single, large growing bag. At this stage it requires regular watering. In 3 months the roots would have thickened considerably and the plant is ready for a permanent position. The plants should be put into the soil side by side, about 25cm apart.

We saw the Khus Khus plot at the home of the “Professor”, an extremely knowledgeable and enthusiastic gentleman, who along with his wife welcomed us into their home. This gentleman came to Hermitage Dam with Andreas to meet us. He was well qualified to tell us about the Dam having had many contracts with the NWC to fix the very large pipes throughout St. Andrew, which can only be reached on foot.

Hermitage Dam was constructed almost 90 years ago to serve parts of Kingston and St. Andrew. Despite the growth of the City the Dam’s capacity has shrunk due to silting. We learnt that the Dam is 100ft. deep and pipes lead from it at 20ft. intervals. The pipe at 80ft is blocked by silt. Despite the fact that there has been a fair amount of rain in the watershed area this season the water level in the Dam remains some 15 – 20 ft below the top of the Dam wall, giving cause for concern. Water enters the Dam from streams and rivers starting in the surrounding hills, some of which are as high as 1,500metres. We learnt that besides problem of silting there has been some disturbance of the watershed due to forest clearance for settlements and coffee growing. However, the major causes of the low water level are decaying pipes and excessive water consumption by an ever increasing population in areas fed by the Dam. Some new settlements are constructed illegally but also insufficient consideration is often given to the granting of building permits.

The Dam is a good place to see water birds. We saw an American Kestrel, *Falco sparverius*, Common Gallinule, *Gallinulachloropus*, Little Blue Heron, *Florida caerulea*, Brown Pelican, *Pelicanus occidentalis*.

Amongst the flora was the pink Arthrostema fragile (Malestomaceae), very common on embankments locally, the red Achimenes erecta (Gesneraceae), which flowers on cool, damp embankments in the hills, from October to February and Lady Nugent's rose, Clerodendrum philippinum (Verbena family)

Our thanks to Andreas Haiduk for organizing this enjoyable field trip and to our guide "The Professor" and his wife.

Contributed by Jill Byles

Annual New Year Get-together

Many thanks to the Hodges family who so kindly and successfully hosted our annual get-together on Sunday, January 24th. 2010 at their home in Redhills. The event was very well attended. There were no reports of anyone being lost, probably due to clear directions and sign posting. The food was plentiful and much enjoyed, thanks to Annette Chin, who did the catering.

There was much to look at and much food for thought as Stephen had invited us to see how he has successfully minimized use of JPS and NWC services through solar power and careful collection, storage and recycling of water. Recycled water is used on the garden and for the vegetables grown in pots on the roof.

For those in need of exercise there were 2 short walks to look at the flora surrounding the property and the less active could watch as bird feeders attracted Streamertails and Banana quits in particular.

Condolences

The NHSJ executive and members were saddened by the loss of Gerald Hollar , who, accompanied by his wife Irene, frequently traveled from Mandeville to join field trips. We sympathize with Irene and other members of his family. We were happy that Irene was able to join us on our recent trip to Roaring River.