Nature's jottings

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Report on NHSJ's Field Trip to Jamaica

Hydroponics Ltd., and two Plant Nurseries in Mandeville, Sat. Mar. 8th, 2008, by Sonia Chin.

Members of the NHSJ left the SRC parking lot shortly after 8am on Saturday, March 8th, 2008, headed for the cool hills of Mandeville and its environs. Besides the bus, which was filled to capacity, several of our members drove, and others joined us en route. Altogether, a group of just over 40 members made the trip, including two members of the staff of U. Tech., and five UWI M. Sc. students in Plant Production and Propagation, and Dr. Joseph Lindsay, one of the lecturers for the course.

We then arrived at Richard Khouri's Jamaica Hydroponics Ltd., a venture for which he received a National award recently. This farm is the only one of its size and level of operation with hydroponics in Jamaica. An almost entirely closed system, it has its own nursery, producing the plants it needs for growing, though the seeds themselves are imported, a control house with equipment that senses when to add additional nutrients to the circulating irrigation system, water storage ponds and a back up generator. The major crop being cultivated presently now is Romaine lettuce. In fact, Richard mentioned that he was supplying only a fraction of the demand for the product, and could expand several fold, before needing to expand the range of plants cultivated.

There were two large growing houses, each comprising about six bays, and with their own small attached concrete structures, which contained the controls for pumping nutrients to the growing house. Nutrients that are not taken up by the plants are then recycled back and the automatic system determines if additional nutrients are needed before further recirculation.

The main control room, which we were able to see on our way out later, mixes all the nutrients needed, making a concentrate every three weeks. The nutrient mix is stored in an 800-gallon tank in-ground. When more nutrients are needed, a signal goes out to the main control room, which adds more pre-prepared concentrated nutrients.

There is a storage tank with 80,000 gallons of ready-to-use nutrients. When the signal for more nutrients is received in the main control room, the fresh water tank is prompted to pump water down, and fresh nutrients are added to the water, and then sent to the growing houses.

A 50-kilowatt back up generator was sufficient to run the whole farm, whenever JPS was down and even had excess capacity.

The growing house that we first looked at was built after Hurricane Dean hit Jamaica in 2006. Before that, the farm depended on humans doing the mixing. There were 6 houses, something like 23 years old, that had been built mainly of wood and shade cloth, whereas the new houses were built of steel, concrete, and plastic. The plastic sheetings, that cover the entire structures are removed during hurricanes. When it's time to harvest the lettuce, the lettuce is stored in the cold room immediately after harvesting.

Romaine Lettuce, from seed in the ground to hand, usually takes 8 weeks. The hydroponics method used here, however, takes only 7 weeks, as the nutrients are continuously available, and the system was compared to that now being used for the computerised system of rearing of chickens, that our members had seen at Mr. Bullock's farms in Guanaboa Vale.

Questioned on the term organic, Mr. Khouri laughed as he asserted, "Better than organic," he said. Organic, he continued, was a myth, as, for example, cow manure can carry E. coli. The nutrient mix that Jamaica Hydroponics produces and uses, is the same commonly used in soil, but

whereas every soil reacts differently, with hydroponics, all nutrients are always available, and a wholesome product is produced.

Production is done in a 4-week cycle, with plants at different stages. When they harvest the lettuce in each house, they re-plant again on the same day, so their cycle remains constant and predictable. Six thousand plants are harvested every week, on a Monday.

This weekly planting and harvesting schedule is kept constant and predictable. On Mondays and Tuesdays, the workers are at full steam, while the tempo from Wednesdays to Sundays is at a steadier, more relaxed pace, as the workers monitor and ensure the conditions necessary for the lettuce to thrive.

Jamaica Hydroponics has 8 workers except for harvest day, when there are 20 workers. These are divided into three teams: the first of which shakes off the growing medium of, for example, perlite, the second team sterilizes and puts the lettuce on ice immediately, while the third team plants the next crop of lettuce.

Harvesting is done with gloves secured with rubber bands, so that the lettuce is never touched by human hands. Post-harvest treatment is important too. As soon as it is harvested, the lettuce is put in the cold room, and from there goes directly to a cold truck, which is kept at 38 degrees F—a shade less than the cold room, and the lettuce sealed in boxes. The lettuce weights about 1-1/2–2 lbs (600 grams), when harvested.

After harvesting, the perlite is re-used, after it has been sterilized with hydrogen peroxide, which decomposes to water and oxygen, both harmless to humans, but which will kill any pathogens.

Water supply, however, remains a problem. Water has to be trucked in, and the bill for this past January alone was $800,000. Each day, 16,000 gallons of water as pure as drinking water are needed. The Ph level is monitored very carefully, so there is no clogging of pipes.

The 40-acre farm's location, 2,500 feet above sea level, with its large land space, and very breezy location were specially chosen, as lettuce needs a cool area, which must be dry, and with low humidity to prevent the growing of molds.

The Wigton Wind Farm with its wind generators was located just beyond, on the next hill. The temperature at night is in the low 60's, and this is critical, for whereas in the daytime, photosynthesis takes place, at night, the plants need to conserve their energy to grow. If conditions are hot, then the plant would be using its energy to cool itself.

Heat would also lead to other problems—namely, spores and fungus. Another cool place like Christiana would also be good for growing lettuce. On the other hand, one grower in Middlesex, while he had suffered no damage from Hurricane Dean, nevertheless suffered from the country's subsequent loss of electric power, as his farm did not have sufficient generators, and although he suffered minimally actual damage from the hurricane, his produce was wiped out by the heat and mildew, that later thrived in the hot, moist conditions.

The inputs for the hydroponics system are very expensive. For one thing, the metal structure for the houses is imported, although the houses themselves are assembled here.

Not surprisingly, cold room expenses are high, and a turbine is being considered, for which EU funds are being sought.

The company delivers the Romaine lettuce to its customers, ensuring that the lettuce is always kept in peak condition, at the proper temperature. Its customers are local entities—hotels, restaurants, supermarkets, etc. Demand is constant—and high—and by Thursday all the Romaine lettuce has been delivered. The company will probably go on to grow iceberg lettuce later, for despite its inferior nutritional value, iceberg lettuce has an even greater demand.

There is an estimated US$6 million worth of bauxite underground, and the farm was 2-1/2 years out of operation during Mr. Khouri's legal battle to remain in operation, despite the bauxite interests' efforts to secure the land for mining.

With the systems he has in place, Mr. Khouri himself visits once or twice a week, but with new inputs being installed, he will need to visit more often during the coming weeks.

During this phase of his expansion, he has put in some fancy lettuce in the new extra-large house for seedlings. At three weeks, the seedlings will be transplanted. The mesh keeps insects, etc., out. Discarded leaves from harvesting, etc., are disposed of, by recycling in the ground.

We left the farm around 12:30 pm, and headed for Irene and Gerald Hollar's home, where we had been invited to have lunch in their gardens. We brought our lunches, but the hospitable Hollars served drinks, cakes, and ice cream cones as well, which were thoroughly enjoyed, along with their extensive and lovely gardens.

After lunch, Irene Hollar led our bus to Diana Lyn's, Bonnie View Garden. There Mrs. Lyn, carrying her catalogue, complete with colour photos, took us on a tour. There were, besides the usual fruit and ornamental trees, more exotic plants like strawberry guava, mulberry, Surinam cherry, Ponderosa lemon, Meyer lemon, limequat (very sour, she assured us, but good for juice), calamandin, raspberry, lychees, longans, purple guavas, etc. The ornamentals included Norantia, Medenella, Ramgoat dashalong, and gloxinia. Some members immediately made plans to return on a purchasing spree, as there was no space on the bus for plants—well, not too much.

Following this, Mrs. Hollar again led our bus to visit Dotlyn Levy's gardens. She took us on a tour and showed us her many orchids, including her prizewinner from the 2007 orchid show. Dotlyn also had a number of fruit trees, among her many flowers and several members bought dwarf Pomegranates.

Of particular interest to the Graduate students were the various propagation methods used, and Dr. Lindsay pointed these out as we went along.

Soon afterwards, we made our way back to Kingston, after an interesting and informative trip and arrived back at approx. 5:30 pm

Annual Social Excursion to Castleton Gardens
February 03, 2008

There was a gathering of 42 members and friends of the NHSJ at our annual social event. This included a luncheon and an informal tour of Castleton Gardens located on both sides of the main Road in St. Mary and near to the St. Andrew border.

The hillside area of the gardens includes the arboretum and palmatum and on the opposite side, near the river there are economical trees and ornamental plants. There is also an area of ornamental garden plants tucked in near the entrance of the hillside area.

Those members and friends who met in Kingston departed from the Scientific Research Council shortly after 9:30 a.m., some taking the bus and others travelling by private vehicles. After arriving at Castleton we were greeted with a slight shower of rain and this seemed disappointing for those of us with cameras. The rain held up after a while and then we started trekking gingerly up the mossy garden path with Andreas as our guide. The skies cleared and then there wasn't any significant rain for the rest of the day.

We had lunch after midday in the gazebo and were duly served by Annette and her staff to a variety of delicious meat dishes and salads. These were complimented with assorted drinks and wine donated by of Andreas. The members provided a variety of desserts. After lunch Andreas led us all over the arboretum and palmate pointing out several introduced species of trees and palms. Some of the palms are endemic. Then he led us across the road and spoke on the uses of several trees there. The Brazil Nut tree with its huge dried fruits came in for much study and photography. The Emortelle and Spathodia were in bloom on this side of the Gardens.
A list of some of the species of trees, palms and shrubs follows.

Plants observed in the Arboretum

Brownea coccinea	scarlet flame bean	family *Myrtaceaceae*
Callistemon viminalis	weeping bottle brush tree	
Pimenta racemosa	Bay Rum	
Ceiba pendandra	Cotton Tree *Bombacaceae*	
Barringtonia asiatica	introduced to Bath Gardens in 1719, called the fish poison	

	tree in Polynesia.
Amherstia nobilis	*Caesalpiniaceae* called Pride of Burma
Hibiscus elatus	Blue Mahoe

Trees observed in the Arboretum

Dombeya x cayeuxii	pink flowered tree (in bloom at this time)
Mammea americana	Mammee Apple
Tetrasperma elegans	
Dillenia sufffruticosa	family *Dilleniaceae*, flowers two cm across, yellow fruits open and are star-shaped revealing reddish coloured seeds.

Trees observed near the river side

*Erythrina p*oupigiana	Emortelle
Litchii chinensis	Lychee
Kigelia pinnata	sausage tree from Tropical Africa, Brazil Nut
Courouptia guianensis	Cannon Ball Tree
Dracena sp.	
Pandanus sp.	

Plants in the Palmatum on the Hillside

Carlulorica palmeta	family Cyclantheaceae (often mistaken for a palm) Jippi Jappa, native of Central and Northern S.America. Introduced to the W.I. and elsewhere.
Phoenix sp.	different species from Senegal, India
Phoenix sylvestris	India
Phoenix rupicola	India

Pinanga kuhlii	small clustering palms to 2 m tall with pinnate fronds very attractive.
Ptychosperma	Hurricane Palm
Latina sp. Male	
Pinanga malayana	
Dictyosperma rubrum	Hurricane Palm
Sabal	Bull Thatch (endemic)
Sabal minor	dwarf native of Florida
Cycas revoluta	
Cycas circinnalis	

The jade wine *Strogulodon macrobotrys* was in bloom and is found near the hillside entrance to the Gardens.

Castleton Garden was established in 1862. It was stocked by Nathaniel Wilson and became known as the best stocked garden. Most of the plants came from Kew. Originally 32 species of plants increased to 180 in 1897 by William Fawcett. There was a large fernery. In early 1963 the garden on the riverside was severely flooded in the wake of hurricane 'Flora'.

Prepared by Cicely Tobisch

NHSJ Field Trip to Salt Island Lagoon
St. Catherine
Saturday, May 3rd, 2008

Leader: Byron Wilson, Iguana Project Co-ordinator, UWI

Following Byron's announcement to release captivity-bred Iguanas in their historical habitat, the Hellshire Hills, it was decided to organize a joint FT to Salt Island Lagoon and surrounding dry forest hills. Experience gathered during a previous FT by NHSJ to this site in July, 2002 was very helpful for gaining access. The Jamaica Gun Club exercises control over an area that includes the largest dry forest area in the Caribbean, a very vulnerable biotope and sanctuary for wild life.
Pad-locked gates controlled by the gun club ensure that unwanted intruders like charcoal burners, hog hunters, illegal bird shooters, ganja growers and orchid

collectors are kept out.
While government is incapable to provide effective protection, the gun club renders a sterling service in the conservation of what had been declared a National Park. Some orthodox environmentalists still harbour a problem with bird shooting. They have to realize, that it is in the gun clubs interest to protect habitat and the feeding ground of the birds, the forest.

On short notice, Byron advised that the timing for the release of young iguanas had to be postponed because of a change in plan, using instead a helicopter, if access remains a logistic problem. Although a bit disappointing we accepted the circumstances. After all, the site offers still a lot incentives for the keen naturalist. The convoy of NHSJ members and visitors (in all 31 persons) arrived at the club house at about 10:00 a.m. .Wayne Du Quesnay, executive member and care taker of the gun club arranged for a rendezvous with two guides we had picked up at the Spanish Town round-about. Because of the bad condition of the Windsor road a detour was made via Hills Run.

Byron briefed the audience on the historical and biological facts on the Iguana and its conservation strategy. Andreas Haiduck explained the geological and hydraulical system. Surface water running off from St. Catherine's upper plains, created an alluvian basin from sediments flushed down. The Salt Island Creek which we crossed, acts as a natural drainage canal, running through mangrove wetlands towards Galleon Harbour.

The group proceeded to walk along the perimeter road from the club house towards the south -eastern fringe of the lagoon, Hellshire Mountain foot at the left, the overgrown basin of the lagoon to the right. Both sides lined by "macka bush". There was obviously frequent traffic on this "dirt road", cow-dung and hoof prints indicated that cattle moves in and out for grazing.

Thick clusters of what turned out to be *Bromelia pinguin,* were growing along the hill side of the road in various stages of maturity. A few plants were still flowering. The small, rose coloured flowers with inner leaves bright pink, and leaf tips in transition from green to red led to the identification according to D.Adam's.
*B. pin*guin is distributed in Central and northern South America and the West Indies.

A real surprise was the empty nest of the vervian humming bird (*Mellisuga minima*) of the size of a thimble, very artfully spun and tied to a twig, reaching right into the road at eye level. The material was probably gathered from spider webs. Also commonly called little doctor bird or bee humming bird, it is a very common resident (see description in "Birds of Jamaica" by Audrey Downer and Robert Sutton) and said to be the second smallest bird in the world. Its smallest relative is found in Cuba.

The road eventually merged into an open marshland with patches of low but densely growing reed. Lumps of mud built up on our shoes and, since we come closer to open water we decided to return. It was a cul-de-sac. In 1995 one was able to drive right towards the south eastern tip of the lake.

Back at the club house, it was lunch time and a rebellious young lady with an iPod ear phone sticking in her left ear, and dressed in fatigue outfit, was very happy to get home, after the majority decided to call it a day at about 02:00 p.m. A small group of “hard core” members stayed on to follow the UWI pickup Under command of Byron W. into “the bush”, along the road direction Deanery. Our guide proved to be very knowlegable, informing us, to our surprise, that the road had been extended recently, now leading further west towards the Deanery. There was an almost immediate transition from secondary forest and bush to an almost pristine dry forest as it existsted at Portland Ridge years ago.
The road turned into a track for genuine four-wheel drive vehicles, with protruding rocks and sharp, steep corners.

We made about two loops, circumnavigating steep hills, coming down to a depression, a bauxite pit with a well levelled surface and only sparse growth of unidentified weeds. After a while it became a bit hairy. Vashti braved with her SUV all difficulties to this point but had to quit when negotiating a very rocky spot: the vehicles limited ground clearance made it impossible to go any further. Hermann’s old “Landy” proved once again to be worth its salt. Vashti and her passengers proceeded walking, and very soon we met Byron’s crew in yet another levelled depression. A fresh breeze indicated that we weren’t far away from the sea.

A single plant of *Oncidium pulcellum* had been spotted, otherwise flowering *Broughtonia sanguinea* were frequently seen on tree trunks and branches. One can only hope that orchid collectors will never get access to this area.

A copy of a rudimentary map, edited by J.D. Woodley for a scientific survey of Hellshire Hills in 1970 was used to determine our position in relation to Portland Bight and Salt Island Lagoon with the help of a compass and altimeter.

The geographical/geological team of the UWI used a GPS for continuous tracking of the road on our way back.
One could see that Byron was very happy to have reached there, and he knew why.
Earlier on, our guide showed a trail leading from the road up to a hill from where one could get a view of the sea. On reaching that spot on our return journey, Margaret Hodges, now 90, was the first to reach the vantage point ahead of us “youngsters“. It was like a fata morgana what we saw: looking straight ahead west, Big Goat Island emerged from sea level above the Deanery, to the north mangrove lined estuary of Salt Island Creek and a bit of Galleon Harbour, in the

distance Rocky Point terminal, Brasiletto Mountain and well beyond Round Hill. The entire panorama of Portland Bight. One could have stayed on, stunned by the impressive view, until sun set. It was an entirely new experience seeing Portland Bight from this point.

As the padlock of the last/first gate snapped in, we returned back to our daily world.

(Please see attached an extraction of Byron's talk and various papers on the Jamaican iguana, *Cyclura collei including the late Peter Vogel's contribution in the "The Naturalist ")*

NHSJ FT to Salt Island Lagoon
Saturday, May 3rd, 2008

A brief introduction of the history of the Jamaican iguana
Cyclura collie and its population recovery programme

History

A subfamily of the iguaniae, the Jamaican iguana was once abundant. Its population had been greatly reduced over centuries by hunting and introduction predators such as the Indian Mongoose (*Herpestes auropunctatus*), cats, dogs, and pigs and loss of habitat.
Contrary to popular belief, the iguanas are harmless creatures, which will only become fierce and defensive if they are attacked. They are almost exclusively herbivorous, consuming a diversity of vegetation types such as leaves, fruits and flowers and occasionally some animal matter in the form of snails.
There is evidence that Tainos hunted the iguana, but the decline in population began with the colonialization of Jamaica by the Spaniards and accelerated with the arrival of the British in 1655. The Spanish gave Liguanea Planes its name, suggesting that the population was wide spread between St. Catherine and St. Andrew. Later, Sloane reported in 1688 that "gwanas are fat and good meat and are a common dish".

By mid 19th century the iguana had become already very scarce. A small population survived on Great Goat Island but with the installation of an aerodrome for sea planes on little Goat Island during WW2 (to spot German submarines) by US-forces and, subsequent squatting of people with goat herds afterwards, the iguana was assumed extinct by 1948. There was no evidence of any survivors on the mainland until in the late sixties, when hog hunters reportedly caught species according to notes taken by the then head of the Dept. Zoology, J.D.Woodley.
Then, suddenly a small population had been re-discovered in the Hellshire Hills

in 1990. Numerous efforts had been made to increase their numbers ever since.

Commencement of the recovery programme

The programme was aimed at breeding the endemic iguana and repatriating them to their natural habitat. Measures were taken to include the establishment of a so called satellite population at six Zoos in the USA, which comprise the Fort Worth Zoo in Texas, the San Diego in California, Indiana Zoo in Indiana, Sedgewick Zoo in Kansas and the Gladys Porter Zoo in Florida.
Both local and overseas conversation groups have been since involved in field research, aimed at preserving the species, especially in their natural habitat.
On September 28, 2004 four Jamaican iguanas were hatched in the Hope Zoo from eggs taken from the wild.

The Jamaican iguana recovery strategy includes the control oft the mongoose by trapping , the guarding of nest sites, collecting hatchlings for headstarts, monitoring released iguanas by radio-tracking, and negotiations to keep charcoal burners out of the core iguana area.

NHSJ organized a field trip for January 27th, 2001 to visit the outstation erected by Byron Wilson and his team in the centre of Hellshire Hills. Access was gained by sea, from Hellshire beach to Manatee Bay. From there a trail leads up to the station over rough karstic terrain. All monitoring devises installed along the trail had been explained by Byron Wilson. No iguana had been sighted that day, but members of the society got a good idea of the physical and logistic effort made in maintaining control of the environment to mitigate losses in the iguana population.

It needs to be mentioned that the health of the iguanas has to be continuously monitored while growing up in captivity at the Zoo. A medical screening protocol was developed for that purpose. Cloacae cultures and fecal exams have to be conducted to screen for abnormal internal parasites and bacterial pathogens, including examination of the blood chemistry as well.

The first pair of iguanas fitted with radio transmitters was released at their hatch sites in 1996. Experiences from 1995 had shown that radio tagged hatchlings released near the nest site from where they were taken as fertilized eggs, tended to remain in the same vicinity and it was hoped that older iguanas would display a similar site fidelity.
Another criteria is the acclimation of head started iguanas to adapt slowly to the native vegetation.

Concurrent expenses to facilitate pre-release health screening and annual costs of field project constitute a considerable burden of the programme.

A fraction of the money dumped by UDC in abandoned projects around Hellshire

Hills would have made a significant impact on the Jamaican Iguana recovery programme.

Prepared by Hermann Tobisc

Jottings Prepared by Jill Byles 14/5/08