

Establishment of A Medical and Native Plant Garden for the Welchman Hall Gully

by

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Introduction:

Barbados has many naturally occurring gullies throughout the island. Gullies are oases; their steep walls shelter life within from the island's harsh winds and sun, and their streams and pools provide plenty of fresh water for life to feed on. The conditions inside gullies are ideal for plant growth.

In Barbados, it is believed that with the onset of colonization and the intense cultivation of sugar, many indigenous plants disappeared (Cohall, 2014). Not surprisingly, it was in the gullies where most of the native plant communities were able to survive the “sugar invasion”. Gullies remain some of the best areas for harboring native and endemic plant species. 'Native' plants are plants endemic to the Lesser Antilles, which represents “13% of the total flora” of Barbados (Carrington, 2007). Endemic plants are those known only to one area.

The Welchman Hall Gully is a key component in protecting endemic and native species in Barbados. Educating the public is the key to conserving Barbados' native and endemic plant species.

Propagation:

The propagation techniques that were used include air layering, herbaceous stem cuttings seed propagation, and seedling transplants. Air layering involves girdling a section of the stem, applying rooting hormone to this exposed area, surrounding it

with a moisture-holding medium, and wrapping polyethylene film and then tin foil around it all. Once the roots are visible through the transparent film, the plant is cut below the roots (Hartmann et al., 2011). Herbaceous stem cuttings are taken from a side branch from the stock plant that includes two or more nodes. The basal cut is done just below the node. The leaves are pruned, and sometimes rooting hormone can be applied before the cutting is placed into a moist medium. For seed propagation, dormancy must be addressed, which could include soaking, drying or heating the seeds. The seeds are sowed 2-4 times their diameter deep. Lastly, for seedling transplants, the ground around the plant must be wet to gently uproot it using a digging tool.

Objective:

The goal of this project was to incorporate new information and plants into the Welchman Hall Gully. Our research involved finding native and medicinal plants, since there was room for expansion on this aspect in the gully, and the need for conservation of both native and medicinal species. Barbados has a long history of people using medicinal plants. However, the use of medicinal plants on the island has plummeted, and we must conserve the existing medicinal plants before all are lost, including the traditional uses that go along with them. The work done on this project

will also contribute to the educational aspects of the Gully and produce a native and medicinal plant garden with informative labels that will be continued as an integral aspect of the Gully.

Materials and Methods:

In order to collect the native and medicinal plants, we drove around the island to various places including the following: Turner’s Hall, Pam’s house, a gully near Apes Hill, Bathsheba, and North Point (Figure 1). Each time we went out to collect plants to propagate, we collected several specimens of each species to increase their chances of survival. All these collected plants were brought back to our base, Bellairs Research Institute for propagation.



Figure 1. Collecting plants with Pam Leach

The propagation techniques that we performed included air layering, herbaceous stem cuttings, seed propagation, and seedling transplants. At Turner’s Hall, we used air layering to propagate Wild Jasmine (*Cestrum latifolium*) and Wild Coffee (*Faramaea occidentalis*). To propagate we stripped the bark from a section then applied rooting hormone then surrounded with soil and wrapped with saran, aluminum and string (Figure 2). Our cuttings were made by clipping the plant stem into sections with at least 4 nodes each. We dipped the cuttings

in rooting hormone and placed them in a rich commercial potting mix and watered daily. This propagation method was used for Bellyache Bush (*Jatropha gossypifolia*) and Black Sage (*Cordia curassavica*). Seed propagation was used for Cerasee (*Momordica charantia*) and Crab Eye (*Abrus precatorius*). The seeds were planted 2-3 times their diameter into the potting mix. Before planting the Crab Eye seeds, they were soaked in water. All other plant species were propagated by seedling transplants.



Figure 2. Wild Coffee air layering in Turner’s Hall

The plants were cared for at the Bellairs Research Institute, until they were transplanted into Welchman Hall Gully. Informative labels for each species were made. Other ways we contributed to the Gully included creating and conducting a visitor feedback survey and creating a map of the Welchman Hall Gully that can be used for advertisement and for visitor guidance and awareness (Figure 3).



Figure 3. Map of the Welchman Hall Gully

Results & Discussion:

We collected around 20 native and medicinal plant species found around Barbados, which were propagated in our nursery at Bellairs situated under a tree (Figure 4). Of those we collected, 11/20 species survived to transplant to the gully: Bellyache Bush (*Jatropha gossypifolia*), Cerasee (*Momordica charantia*), Crab Eye (*Abrus precatorius*), Mimosa (*Mimosa pudica*), Monkey Hand (*Lepianthes peltata*), Poison Tree (*Sapium hippomane*), Silk Cotton (*Ceiba pentandra*), Vervain (*Stachytarpheta jamaicensis*), Wild Sage (*Lantana camara*), Yellow Crocus (*Zephyranthes citrina*), and West Indian Tea (*Capraria biflora*). The propagation method of seedling transplants was the most effective method. Although, the dryness of Barbados during June and July made it hard for survival of uprooted seedlings, such as Shame Bush (*Neptunia plena*) and Ball Bush (*Leonotis nepetifolia*), which did not survive.



Figure 4. The Nursery at Bellairs Research Institute that we conducted

Conclusion & Recommendations:

To improve survival of collected plants in the future, we would recommend carrying out a similar project in the Fall when it is lush in Barbados and there is more rainfall, as moist soil conditions are needed to minimize damage when digging

up a seedling. Future attempts might be more successful if seedlings are established in the garden *before* experimental propagation techniques are attempted to increase the number of plants of each species.

The establishment of a native and medicinal plant garden at the Welchman Hall Gully will involve long-term help from other students and interns. We are pleased to be passing this project along to a student from the University of the West Indies. This student will tend to the plants in the Gully to make sure they thrive.

Acknowledgements:

We would like to thank Danielle Donnelly, Jeff Chandler, Debra Branker, Pam Leach, Dr. Angela Fields, and Cassandra Springer. We were able to participate in this research project thanks to Danielle Donnelly, who organized it with the Welchman Hall Gully. Without these helpful and supportive people, we would not have been able to complete our research project.

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