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Search for the Mysterious Lost Plant

Dave Skinner with Carla Black

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The species *Costus vinosus* is fairly well known in cultivation, but until November 2015 there was some doubt as to whether it still existed in the wild. I searched the type locality along the Rio Guanche in Colon Province of Panama in 2012, but found it mostly deforested, converted to pasture land. No plants of this species were found there. I also checked the collection records in Global Biodiversity Information Facility (GBIF) and only two other localities were listed for the species, with records in the 1980's and the most recent one in 2004 in a seemingly unlikely place with little remaining forest. Based on the known information,



Distinctive large cups on the basal sheaths of *Costus vinosus*

were very common, this species would be well represented in the records, as seems unlikely that botanists who explore the forests of central Panama would pass by this unusual plant without making an herbarium specimen.

Rarely is it found in flower in cultivation, but the mystery only deepens when it does flower, because the only two examples I have seen produced two completely different-looking flowers. I saw it at Marie Selby Gardens



Yellow flowered form of *Costus vinosus*

in Sarasota, Florida in 2000, and the flowers there were solid yellow in color - not at all like the description by Paul Maas, who first named and described the species in

1976. He described it with a corolla "creamy to pink" and a labellum "wine red with two orange-yellow streaks in the middle." Then in 2012, the famous plantsman John Mood in Hawaii brought his plant to flower, and it had flowers consistent with the Maas description.



John Mood's plant

So in November 2015, three HSI members, Carla Black, Marianne Akers and I set out to look for this species in the most recently documented site. Though Carla's house is an 8-hour drive from our destination, for over 30 years Marianne has lived within 15 minutes of our goal. She was enthusiastic about hosting us and about joining us in the search. So Marianne took time out from her volunteer botanical education duties at Summit Garden, Panama's only public botanical garden and zoo.

Some time before the trip Paul Maas had given me the general directions to his 2004 observation of the species, which was high on a ridge that looked mostly deforested in Google Earth images. This seemed to be an unlikely place, as his original description of the habitat along the Rio Guancho was "in rocky vegetation in forest shade, near river." But we went to the vicinity, found a small forest patch along a creek that was little more than a ditch, and ventured in. After walking down along the creek bed, navigating around discarded tires and other trash for about 10 minutes, this is what we saw:



The first sighting!

The *Costus vinosus* we found here were actually growing in the wet mud and water at the edge of the creek. There were several plants here, but none in flower. One plant had an older inflorescence that had (thankfully) produced seeds. After spending some time at this site I walked further down the creek bed looking for more, until I came to an area where the forest had been completely cleared and there was evidence of some recent machete work. I found one more plant of *Costus vinosus* in that area. Clearly



Pant at ridge site

the workers had no respect for this rare and endangered species.

So we had verified that the species still existed in the wild, but only in a remnant forest patch in a very disturbed and vulnerable area. To cover all possibilities for finding *Costus vinosus*, Carla had arranged for us to go with a local guide on a two-night trip deep in the more natural forests of the Chagres National Park. Here we were hosted by a subsistence farmer who had small pastures along the Rio Boqueron - the original Camino Real route used by the Spanish conquistadors to cross the Panamanian Isthmus.



Machete chopped *Costus vinosus*

The Purpose of HSI

The purpose of HSI is to increase the enjoyment and understanding of *Heliconia* (Heliconiaceae) and related plants (in the families Cannaceae, Costaceae, Lowiaceae, Marantaceae, Musaceae, Strelitziaceae, and Zingiberaceae) of the order Zingiberales through education, research and communication. Interest in Zingiberales and information on the cultivation and botany of these plants is rapidly increasing. HSI will centralize this information and distribute it to members.

The **HELICONIA SOCIETY INTERNATIONAL**, a nonprofit corporation, was formed in 1985 because of rapidly developing interest around the world in these plants and their close relatives. We are composed of dues-paying members. Our officers and all participants are volunteers. Everyone is welcome to join and participate. HSI conducts a Biennial Meeting and International Conference.

Membership dues are (in \$US): Individual \$40, Family \$45, PDF \$25, Student \$10, Contributing \$50, Corporate \$100, Sus-

taining \$500, Lifetime Member \$1000. Membership fees constitute annual dues from 1 July through 30 June. All members receive the BULLETIN (usually published quarterly) and special announcements. Join or renew your membership at www.heliconia.org.

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After meeting Juan Carlos Amado at the end of the road at precisely the appointed hour, we packed our gear on his horse and walked an hour and a half to his small homestead. He and his scattered neighbors actually live inside Chagres National Park. Because they were there before the park was established and because the government didn't buy out landowners as they set park boundaries, Juan Carlos and people like him are allowed to continue living inside national parks and to maintain their past level of farming activity.

Juan Carlos sometimes helps with organized backpacking tours that travel the Camino Real, but this was the first time he hosted his own guests, and it was certainly the first time tourists had stayed under his roof. Subsistence farming is hard work, but Juan Carlos has made himself comfortable with a 5-room house. For over a decade he's had a solar system that powers a few lights, and more importantly, the radio - bringing him music and news from the outside world. Two sets of bunk beds are usually used for storage, but the lower level of each was cleared off and made up with real mattresses and clean sheets. It was more than I expected! Juan Carlos keeps pigs, chickens and cattle, fencing himself in his house rather than fencing them into pens. He's single, so is ac-



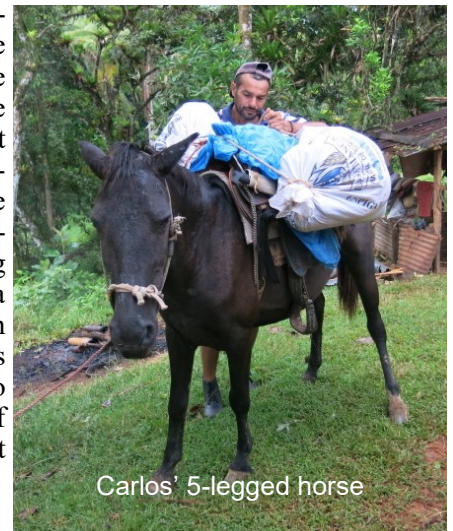
Magnesium mining infrastructure

On this route through primary forest, we were happy to find about a half dozen more plants of *Costus vinosus*



The Rio Boqueron *Costus vinosus*

scattered over a 2 km stretch along the trail. None of these plants were in flower nor did they have any old inflorescences. We did not find any small seedlings, either. It appeared that the only way these plants were perpetuating the species was by asexual propagation of the fallen stems or natural increase of the rhizomes. Thus we had verified that the species is still extant in the wild, but nevertheless vulnerable and in danger of extinction. I am hoping to return to Panama earlier in the season to see if these plants are in flower and to solve the mystery of the two different flower colors.



Carlos' 5-legged horse



Juan Carlos' house

customed to work in the kitchen, and he did some fine cooking for us on an open fire. A water pipe to the house is in the plans, but because it wasn't quite ready we took turns going down to the creek to bathe - which was much nicer than standing under the same water in a shower stall!

We were up early in the morning and headed out after the domestic animals (and we) were well-fed. The route followed the course of the Rio Boqueron and the Camino Real. In the '70's and '80's there had been magnesium mining in the area, and so we enjoyed trails on wide roadbeds and avoided wet feet as streams passed through culverts. But soon we left the disturbed zone behind and we walked mostly in the shallow river, with brief respites of dry ground along the shore.

More images of plants seen on this Panama excursion



Boqueron *Heliconia* sp. in the *H. latispatha* group



Boqueron *Heliconia latispatha*



Magnificent wine-colored, wine glass-shaped ligules on this *Costus vinosus*



Boqueron *Heliconia lutea*



Boqueron *Heliconia curtispatha*

More images of country living in a Panama jungle



Country kitchen



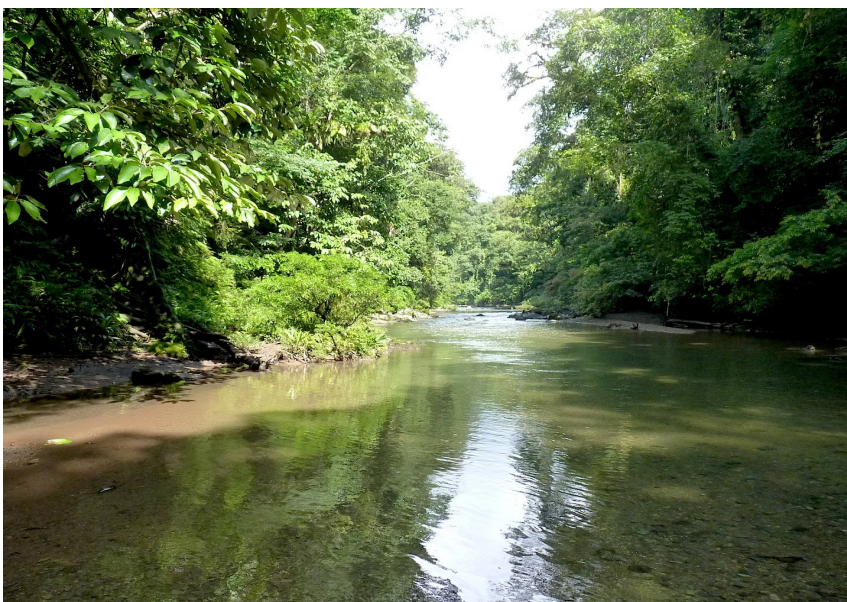
Country living room



Momma hog and bacon bits



Juan Carlos drinking from heliconia leaf cup



Camino Real Rio Boqueron was the pathway for this adventure



Juan Carlos

Gingers: A Specialty Crop Market Waiting to Happen

Jeff S. Kuehny

Reprinted from *Greenhouse Product News*, June 2000, 10 (6):22-26.

The plants we know as “gingers” are monocots and most are classified in the Zingiberaceae family, which has more than 1,000 species. The lore surrounding the culinary, aromatic and medicinal uses of ginger is extensive and spans hundreds, if not thousands, of years. Gingers also have commercial importance as cutflower, landscape and potted plants, but considering the sheer number of species and the cultural significance of gingers, this is obviously a group of plants that is underexploited in the floriculture market.



Siphonochilus decora



Hedychium gardnerianum

With this article, I hope to introduce you to at least a couple of ornamental gingers you may not know but which have potential in your particular market. I also offer more specific cultural guidelines in an article appearing elsewhere in this issue of GPN.

A DIVERSE GROUP

The genera of the more common flowering gingers in the Zingiberaceae family include *Alpinia*, *Curcuma*, *Etlingera*, *Globba*, *Hedychium*, *Kaempferia*, *Siphonochilus*, and *Zingiber*. The genera of the gingers in the Costaceae family have been considered part of the Zingiberaceae family; however the two families remain separate. The most common genera of flowering gingers in the Costaceae family are *Costus* and *Mono-costus*.

Many ginger species originated in tropical regions of Asia, mainly in Southeast Asia. A smaller number of the Zingiberaceae family are found in Africa, north Australia, and Madagascar. The genus *Renealmia* is the only ginger in the Zingiberaceae family native to the Americas. The genus *Costus* is native to tropical America.

Most gingers are herbaceous perennial with aromatic, short, thickened or long, thin) rhizomes. Some of these ginger rhizomes, such as those in the genera *Curcuma* and *Globba*, have tuberous storage vessels attached by modified underground stems termed “roots” or “milk sacs.”

Leaves are basal or along the stem, sometimes having a petiole, arranged alternately or oppositely in rows and trap

like. Inflorescence(s) are terminal usually simple borne on a leafy shoot. Flowers, which are produced on bracts, often have a condensed headlike or conelike appearance; the flowers of most gingers last one day.

Most everyone is familiar with *Zingiber officinale*, the common culinary ginger. This species is hardy up to Zone 8 and is grown primarily in India, Hawaii, and Jamaica. *Z. officinale* grows well in medium to full sun and should be harvested when the rhizome is two years old.

GINGERS IN CLUTFLOWER PRODUCTION

Production of gingers for cutflowers take place primarily in Central America, northern South America, and in the West Indies (Jamaica and Puerto Rico). Rhizomes and cut flowers also are produced in Southeast Asia, Indonesia, India, East Africa, and Hawaii.



Curcuma rhabdota and *C. petiolate* (syn. *C. cordata*)

Often referred to as “red ginger” *Alpinia purpurata* is the most common ginger used for cut flower production. ‘Jungle King,’ A red ginger, and ‘Eileen McDonald,’ a pink ginger are the important named cultivars; they reach a height of six to eight feet.

Shell ginger (*A. zerumbet*) received its popular name because its pink bracts resemble shells. Hardy into USDA Zone 7, it reaches a height of about nine feet. *A. zerumbet* ‘Variegata’ is the variegated form with pale yellow stripes in the leaves. This cultivar is used for its foliage.

The *Costus* species most often used for cutflowers include *C. lasius*, *C. pictus*, *C. puerulentus*, *C. speciosus*, *C. spicatus*, and *C. stenophyllus*.

Torch ginger (*Etlingera elatior*) also is referred to as “Philippine waxflower.” It is grown in red and pink forms for its inflorescence. The large green leaves of torch ginger have maroon undersides. There are other *Etlingera* species that are gaining popularity as cutflowers in colors that vary from white to red and black.

Globba winitii has reflexed bracts that are pink to mauve or purple with a slender, curved, yellow corolla. It is native

to Southeast Asia and has a postharvest longevity of up to one month. Although *G. winitii* has a very long postharvest life, forms are only recently becoming popular in the cutflower market.

Zingiber spectabile is not as popular the cutflower market; however it is one of a few hardy *Zingiber* species (USDA zone 10). This Malaysia native features yellow bracts turning scarlet.



Curcuma alismatifolia, single stem and in pots

LANDSCAPE GINGERS

Alpinia zerumbet, also known as “shell ginger” or “pink porcelain lily,” is a common landscape plant grown in the South to USDA Zone 7b. This ginger has a white to pink inflorescence with fragrant flowers subtended by a bractole. Three variegated forms are available: ‘Waimalo’ has yellow variegation and reaches a height of four feet; ‘Yu Hwa’ has dark-green leaves and light-green variegation; ‘Variegata’ is a pinstriped form.

The “spiral gingers” in the genus *Costus* can be grown in the landscape to USDA Zone 8. The *Costus* are native to Central and South America, Africa, and Southeast Asia. Some of the same species used for cutflower production are also used as landscape plants: *C. lasius*, *C. pictus*, *C. puerulentus*, *C. speciosus*, *C. spicatus* and *C. stenophyllus*.

Curcuma species are only recently beginning to gain popularity as landscape plants in the U.S. Ranging in height from one to eight feet, most species are hardy USDA Zone 8 and are dormant in the cooler months. *Curcuma* species are native to drought-prone areas of tropical Asia and Australia. These are commonly called “hidden ginger” or “surprise ginger” because the inflorescence of many species does not rise above the foliage. *Curcuma* can be divided into two groups: spring bloomers and summer bloomers. Spring bloomers bloom before or while foliage first appears, have inflorescences on separate stalks, and bloom in early May. Summer bloomers have a central inflorescence that rises from the center of the plant and is surrounded by leaves. These *Curcuma* bloom from mid-

summer to early fall. Inflorescences can range from white to pink, red, yellow and purple. The summer bloomers most commonly used as landscape plants are *C. cordata*, *C. roscoeana* and *C. elata*.

Of the approximately 57 species of *Etlingera*, only one is currently used as a cutflower and a landscape plant. *E. elatior* is evergreen in the tropics and known for its deep pink or bright red bracts, which is best described as a torch (thus the common name “torch ginger”).

Globba species are hardy to USDA Zone 8 with a natural dormancy. There are approximately 70 species, all of which grow best in part to full shade. Most *Globba* species reach a maximum height of two feet and are grown for their attractive foliage or showy inflorescence. The most common is *G. winitii* ‘Dancing Ladies,’ named for its flower (with a yellow calyx) that evokes dancers in the eyes of imaginative observers. In contrast to the yellow inflorescences of ‘Dancing Ladies,’ the cultivar Mauve Dancing Ladies has a mauve inflorescence.



Alpinia purpurata is the most important cutflower ginger

The *Hedychium* gingers are commonly referred to as “ginger lilies,” “garland lilies,” or “butterfly gingers.” Flowers are quite large and often fragrant (many attract butterflies and moths). Many of the approximately 40 species are hardy into USDA Zone 7; they are native to tropical Asia, areas of the Himalaya range, and Madagascar. The most common are *H. coccineum* (red ginger lily, scarlet ginger lily), *H. coronarium* (butterfly lily, garland flower, white ginger), and *H. flavescens* (yellow ginger).

Kaempferia species are commonly called ‘peacock gingers’ because the purple and/or silver patterns of their leaves resemble those of calatheas (members of Marantaceae family). Best in shade, *Kaempferia* species reach a maximum height of two feet. These tropical Asian natives have a natural dormancy and are hardy into USDA Zone 8.

The flowers of *Kaempferia* species are small, ranging from purple to white with a longevity of approximately one day. Commonly used in the landscape are *K. atrovirens*, *K. gilbertii*, *K. parviflora* and *K. pulchra*.

Siphonochilus species, which reach height of only about 18 inches, are slow growers. Native to South and East Africa, they have a natural dormancy and are hardy to SDA Zone 7. *S. decora* has wide rippled leaves with yellow flowers borne on a long spike. One flower per spike blooms every day during the bloom period; longevity per flower is about 12 hours. *S. kirkii* is similar to *S. decora* but has larger rose-lavender flowers.



Curcuma roscoeana, known also as “hidden ginger” is suitable in size for landscaping and container uses.

GINGERS AS A SPECIALTY POT CROP

With their exotic beauty and sky-high level of consumer recognition, it should come as no surprise that numerous breeders and growers have dabbled in developing and producing gingers as flowering pot plants of the years. However, little research has been conducted on any of the named genera. As a rough rule of thumb, the gingers most adaptable to flowering pot plant production are a number of those species currently used as landscape plants.

The Louisiana State University Floriculture research program and Dr. Richard Criley at the University of Hawaii evaluated the following genera: *Curcuma*, *Glozza*,

Kaempferia and *Siphonochilus*. The inflorescences of some of these gingers have a long postproduction life (up to four weeks), and are relatively easy to grow.

When grown as pot plants, gingers will flower three to eight months after planting, depending on species, propagation method and environmental conditions (humidity, light, temperature).

The companion crop culture report [see HSI 22(3)] offers production guidelines applicable to most species of importance in the landscape and cutflower markets. A significant number of these species reach a mature height of two feet or less and would not be a challenge to grow and force for sale in flower. If you produce specialty flowering pot crops, I invite you to give ginger a try!



Kaempferia pulchra features patterned leaves that resemble those of *Calatheas*



These diverse and easily-grown plants are steadily gaining popularity

Botanical Explorations in the Windward Islands of Saint Lucia and Dominica

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In my passionate search for elusive forms in *Heliconiaceae* (heliconia family), during the months of July and August 2016, I traveled, along with my wife Annette, to the Windward Islands of Saint Lucia and Dominica. These islands are located south of Puerto Rico, between the calm Caribbean Sea and the rough Atlantic Ocean. Since I live in the Caribbean, some of my favorite heliconias have always been the large, colorful *H. caribaea*. Our visit coincided with the best time of year to observe them in all their splendor.



Hector and Annette

Saint Lucia, with its spectacular twin volcanic peaks rising out of the sea (The Pitons, a UNESCO World Heritage Site), is an impressive island. The main heliconia found in the mountainous ancient forests is the red form of *H. caribaea*. I would like to point out that there are many different variations within this particular species, noticed by an avid collector. Some inflorescences have slimmer bracts versus fatter, chubbier

ones; or curled bract tips versus straight tips. Another major differentiation is the intensity of the reddish coloration, varying from a bright red to a rather dark, wine colored, burgundy red. As with many heliconias, their color depends on the state of maturation of the inflorescence.



Petit Piton

Since heliconias prefer wet humid locations, I found that the main spots to find them in abundance are the following particular areas. Our local guide, convivial and knowledgeable Maurie Jules, drove us around to the locations that I had previously studied on topographical maps, as well as places suggested by friends, together with other sites Maurie had previously identified.

Around the Quillesse Forest Reserve (on the south central part of the island) and Barre de L'Isle Ridge (the central mountain region, west of Dennery) various forms of *H. bihai* and the red *H. caribaea* are found. To access these places you need a 4WD all terrain vehicle, since most of these roads are unmarked and unpaved. Throughout Des Cartiers (located in the center of the island, at the National Rain Forest Reserve) *H. bihai* is abundant, but *H. caribaea* is much more rare.



Heliconia caribaea 'Saint Lucia'

tips. This variety also goes by the commercial name of *H. caribaea* cv. 'Prince of Darkness'.

I was not able to see *H. caribaea* growing in the wild around Castries since it is too dry. But in the northern part of the island (which is also very dry and not a hospitable natural habitat for heliconias), I was able to locate an abundance of them growing in the rainforest: La Sorciere hill, in Babonneau. This region is just north of Forêtiers Tropical Forest, where *H. bihai* is in abundance, including the green 'Emerald Forest' and red varieties.



Heliconia bihai 'Emerald Forest'

Maranatha Gardens (on the west coast, one mile north of Soufriere) is a very small, lovely, privately owned prayer sanctuary full of heliconias. This well-manicured nature



H. caribaea 'Barbados'

reserve has specimens of: *H. caribaea* 'Barbados Flat', *H. bihai* x *H. caribaea* 'Jacquini', *H. bihai* 'Burgundy', and *H. bihai* 'Emerald Forest'. Further down the road you'll encounter Diamond Botanical Gardens, Mineral Baths and Waterfall (east of Soufriere). It is a public garden that dates back to 1713, when King Louis XIV of France granted the lands to the Deavaux family. In 1983 Joan Devaux began designing and planting the garden known today. The gardens are meticulously well-kept by Mr. Donnie McKinnon, General Manager. Many native plants (bromeliads, palms, ferns, etc.) can be observed here, besides an array of different kinds of *H. caribaea*, *H. bihai* 'Grape', *H. bihai* 'Emerald Forest', *H. bihai* 'Jaded Forest' and other colorful *Alpinia purpurata* gingers. I noticed a large clump of an eye-catching *H. caribaea* 'Yellow' at the gardens. Donnie told me that it was not native, and that it had been recently introduced from the neighboring island of Martinique, north of Saint Lucia.



H. caribaea 'Yellow'

reserve has specimens of: *H. caribaea* 'Barbados Flat', *H. bihai* x *H. caribaea* 'Jacquini', *H. bihai* 'Burgundy', and *H. bihai* 'Emerald Forest'. Further down the road you'll encounter Diamond Botanical Gardens, Mineral Baths and Waterfall (east of Soufriere). It is a public garden that dates back to 1713, when King Louis XIV of France granted the lands to the Deavaux



H. caribaea 'Purpurea'

An inviting waterfall and thermal mineral baths can also be found here.

Afterwards, while visiting Sulphur Springs (on the western part of the island, south of Soufriere and east of Petit Piton), I was able to observe various clumps of the native red *H. caribaea*. They were growing along side of the caldera – a crater filled with pools of bubbling, mineral rich, grey mud and rising hydrogen sulphide steam. Originally this place was a huge

volcano about 3 miles in diameter. It collapsed some 40,000 years ago leaving the western part of the rim empty. This is the world's only drive-in volcano!

Dominica - also known as the Nature Island of the Caribbean - is a primeval paradise full of dense tropical forests, volcanic hills, 365 rivers, numerous waterfalls and the Boiling Lake. It is one of the largest and mountainous Windward Islands. Sixty percent of the island is forested. There are endless places for finding heliconias growing in their natural habitat.



Red *H. caribaea* with lighter rachis

We arrived on Dominica (from Saint Lucia) late in the evening. That night we slept under a scary tropical storm,



Waterfall

with loud thunder, a torrential downpour and strong winds. Early the next morning, Annette woke up ill with the chills, having contracted the mosquito transmitted Zika virus. Miraculously, we were able to undertake our exploratory hiking trips, walking along the steep mountainous nature trails and river beds under the expert guidance of Marcel Fluorent - our young dynamic local guide.

The wild proliferation of *Heliconia caribaea* is truly impressive. They can be found growing all over this island! You do not need to stray far to find them. Regrettably, the government considers heliconias to be a pest, so they try to eradicate them by cutting them down along the main highways. In the place of heliconias, the government substitutes colorful decorative crotons. The deforestation of the tropical forest could pose a potential problem in the near future - some unique species could become extinct.



Caldera

DOMINICA





Heliconia caribaea 'Chartreuse'

Due to the short period of time I had, I was not able to explore the northern-most part of the island, including the Northern Forest Reserve. But, I was able to explore other areas. While driving through the Central Highway (from Melville Hall Airport to Roseau, along the Central Forest Reserve, also from

Pont Casse to Warner) many different forms of *H. caribaea* can be observed - mainly the red, yellow and green varieties (*H. caribaea* 'Chartreuse'), as well as a mixture of colors. Further down the main road (on the southwest coast), you'll encounter the locality of Springfield Estate. Here numerous variations of the green *H. caribaea* can be seen, with all sorts of colorful diversification of the rachis.

While studying one particular clump, I was able to observe a wide diversity of colors. The younger inflorescences were lighter in color, while the older, more mature ones were darker. From my field observations, it is my impression that most *H. caribaea* change colors as the inflorescence matures and ages.

East of Roseau (the capital), near Trafalgar Falls, is Papillote Wilderness Retreat. This is a beautiful privately owned botanical garden. New York born, 86 year old, Anne Jno Baptiste is the proprietor of this jewel.



Heliconia 'Black Magic'



Heliconia caribaea 'Springfield Estate'



H. caribaea 'Gold'

The gardens are the most spectacular in the region, with over 100 genera and more than 600 plant species. A while back, Dr. W. John Kress donated several heliconias which he had personally collected in the wild (*H. caribaea* 'Gold' and *H. caribaea* 'Black Magic').

From here you can drive up the road to Fresh Water Lake, where there is an abundance of *H. bihai* (such as: *H. bihai* 'Arawak'), including an interesting one called *H. bihai*

'Liberation'. The bracts of this unique inflorescence are red-orange, with a thin yellow stripe over the lip and yellow on the inside of the keel. On a longer ride, south of Roseau, if you continue driving to an area near Soufriere (south western-most part of the island), you'll encounter Grand Sulfur Springs. Here you can enjoy an invigorating hot mineral bath. Also there is a hiking trail along the river that leads up to the steep mountain Tete Morne. This is the spot where I found the greatest polymorphism in *H. caribaea*.



H. bihai 'Liberation'

In conclusion, the Windward Islands are a great area to explore for autochthonous *Heliconia caribaea* and *Heliconia bihai* growing in the wild. From my past exploratory field trip observations, I have seen that the yellow form of *H. caribaea*, native to Puerto Rico and Hispaniola, is found mainly upwards in the Caribbean basin, while its counterpart, the red *H. caribaea* seems to be more abundant down in the island chain, mostly in Saint Lucia. In between this Antillean arc there occurs a mixture of colors. Dominica, being in the middle, is the island with the greatest color diversity - a mixture of yellow, green and red.

Special thanks to several friends who advised me with the logistics of my exploratory trip: Dr. W. John Kress, Dr. Paul Yoshioka, Dr. Raymond Jerome, Mr. Donnie McKinnon, Mr. Maurie Jules, Mrs. Anne Jno Baptiste, Marcel Fluorent, and of course, my wife Annette who accompanied me throughout this epic nature-filled adventure.



Polymorphism in *Heliconia caribaea*

HSI Member Profile

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When did you join HSI?

I joined in 1990, and have attended almost every conference since then. In 1984 I resigned from the financial office of a car factory. Soon after, I started learning about plants and developing my nursery. Through my involvement in HSI, I introduced many heliconias to Thailand, at a time when not many people knew about them in my country.



Supranee Kongpichayanond

What is your work with Zingiberales?

I work mostly with *Curcuma*, *Kaempferia*, *Cornu-kaempferia*, *Globba* and other ornamental plants. I love many kinds, but especially the ginger family, and so I began to collect them. I have had the chance to go see many plants in their natural habitats throughout Asia. Almost 30 years ago, I started with *Kaempferia*.



Curcuma Snow Ball



Kaempferia rotunda Siam Ruby

What have been your greatest challenges?

In 2011 there was a big flood in Bangkok and the surrounding province. My nursery was flooded 1-1.5 m deep for two months. After the water was gone, only empty pots were left on the ground in my nursery. I lost almost all of my specially collected plants. Now I am collecting again and am building up the variety of zingiberales for propagating. I

am very fortunate to still have my two favorite gingers, and they are in production again: *Curcuma* 'Snow Ball' and *Kaempferia rotunda* 'Siam Pink'

What do you hope for in the future?

I hope to develop new hybrids for use as ornamentals, and I hope to see them in the plant market all over the world.



Curcuma Snow Ball

Leave Number Correlation With Shoot Apex Stage in *Heliconia* spp.

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Introduction

The demand for tropical flowers has been increasing every day, especially with heliconia species. The cut flowers productivity or seasonality are variable according to heliconia species and cultivars, region and climatic condition. The change of vegetative apex to flowering stage could be depending of climatic factors or to the leaves numbers. Nevertheless, this change and the inflorescence development occur without visible external evidence. This study aims to quantify the leaves number in plants and correlated to the shoot apex stage.

Material and Methods

The experiments were performed in clumps at Federal Rural University of Pernambuco Heliconia Germoplasm Collection, Pernambuco-Brazil, implanted in January 2007 in a randomized block design, with three replication. In a first experiment with *H. psittacorum* 'Sassy', 'Red Gold' and 'Red Opal', *H. psittacorum* x *H. spathocircinata* 'Golden Torch' and 'Golden Torch Adrian' and *H. x nickeriensis* clumps were evaluated 36 months after planting (MAP). Twenty plants were collected with two, three and four leaves and were cut longitudinally to characterize the apex develop in vegetative (VEG) or flowering (FLO) stage. Fifty flower stems were collected to quantify the leaves number for the flowering initiation.

Results and Discussion

The results were: most of the genotypes present four to five leaves when started the FLO stage; four leaves were observed in 70% 'Red Gold' stems, 42% 'Red Opal' stems and 52% 'Golden Torch' stems. The genotypes 'Golden Torch Adrian' and *H. x nickeriensis*, present five leaves in 58% of the stems evaluated. In a second experiment were evaluated clumps of *H. collinsiana*, *H. pendula* and *H. rostrata* 48 MAP. All the plants from the clumps were collected, quantified the leaves number, and the shoots were cut longitudinally to characterize the apex develop stage. The results were: 100% stems collected from *H. pendula* were VEG; the FLO stage were observed in 80% of *H. collinsiana* stem with four leaves and 56% of *H. rostrata* with eight leaves.

Table 1: Percentage of vegetative (VEG) and floral (FLO) stems in heliconia genotypes of Germplasm Collection Heliconias UFRPE. Camaragibe-2011.

GENOTYPES	LEAVES NUMBER															
	2		3		4		5		6		7		8			
	VEG	FLO	VEG	FLO	VEG	FLO	VEG	FLO	VEG	FLO	VEG	FLO	VEG	FLO	VEG	FLO
<i>H. psittacorum</i> L.f. cv. Sassy	100%	0%	60%	40%	30%	70%	-	-	-	-	-	-	-	-	-	-
<i>H. psittacorum</i> L.f. cv. Red Gold	90%	100%	75%	25%	50%	50%	-	-	-	-	-	-	-	-	-	-
<i>H. psittacorum</i> x <i>H. spathocircinata</i> "Golden Torch Adrian"	100%	0%	65%	35%	25%	75%	-	-	-	-	-	-	-	-	-	-
<i>H. psittacorum</i> L.f. cv. Red Opal	95%	5%	55%	45%	40%	60%	-	-	-	-	-	-	-	-	-	-
<i>H. nickeriensis</i> Maas & de Rooij	95%	5%	100%	0%	40%	60%	-	-	-	-	-	-	-	-	-	-
<i>H. psittacorum</i> x <i>H. spathocircinata</i> "Golden Torch"	100%	0%	95%	5%	25%	75%	-	-	-	-	-	-	-	-	-	-
<i>H. collinsiana</i>	94%	6%	100%	0%	82%	18%	-	-	-	-	-	-	-	-	-	-
<i>H. rostrata</i>	-	-	-	-	100%	0%	100%	0%	100%	0%	100%	0%	100%	0%	100%	0%
<i>H. pendula</i>	100%	0%	100%	0%	100%	0%	100%	0%	100%	0%	100%	0%	100%	0%	100%	0%

Table 2: Percentage of flower stems in genotypes of Heliconia associated with the number of leaves.

GENOTYPES	LEAVES NUMBER			
	3	4	5	6
<i>H. psittacorum</i> L.f. cv. Red Gold	4%	70%	26%	-
<i>H. psittacorum</i> x <i>H. spathocircinata</i> "Golden Torch Adrian"	8%	34%	58%	-
<i>H. psittacorum</i> L.f. cv. Red Opal	6%	42%	40%	12%
<i>H. nickeriensis</i> Maas & de Rooij	-	4%	58%	38%
<i>H. psittacorum</i> x <i>H. spathocircinata</i> "Golden Torch"	-	52%	48%	-

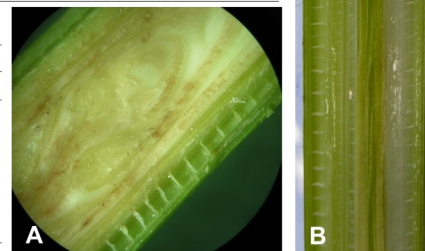


Figure 1: Longitudinal cut in heliconia stem to characterize the apex develop in vegetative (A) or flowering (B) stage.

Acknowledgments

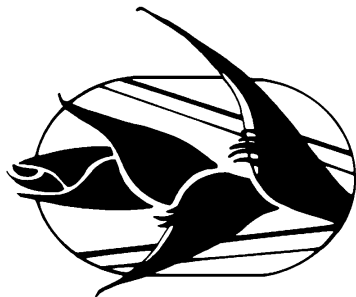


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