



How to Identify *Costus* Species

By Dave Skinner, Guest Contributor

Costus is a genus in the plant family Costaceae, and these plants are fairly easily recognized by the spiral arrangement of the leaves along the stem, but identifying the individual species in the genus can be quite a challenge. The most thorough study of this genus was done in the 1970's by Dr. Paul Maas of the University of Utrecht, and was published by the New York Botanical Garden in two volumes of the Flora Neotropica. Dr. Maas included in his monographs detailed descriptions of each of the New World species, subspecies and the named varieties that he accepted as valid. More recently, Dr. Chelsea Specht of the University of California at Berkeley conducted DNA studies in this plant family and divided the genus *Costus* into four genera – two of which are found in the neo-tropics.

Dr. Maas' identification key for this genus begins by dividing them into two main groups – species whose bracts bear foliaceous appendages (leaf-like attachments at the ends of the bracts) and those species without the appendages. Then these two groups are further divided between species that flower terminally at the end of leafy stems and those species that flower near the base of the plant, at the end of a separate, nearly leafless shoot (technically this is also a terminal inflorescence).

In my field studies, I have found that there are many *Costus* species that will flower both ways – at the base or at the top of a leafy stem – and sometimes both ways on the same plant! Therefore, I do not consider this a reliable

way to identify a species. Dr. Maas seems to recognize this fact, as there are three species (*C. arabicus*, *C. amazonicus*, and *C. laevis*) that he lists in both sections of his key.

Another key character to define a species is the shape of the flower itself – either closed and tubular or more open with a spreading labellum. Generally speaking, the hairiness of *Costus* species is quite variable within a given species, so the presence or type of hairs does not seem to be a good basis for identification except in a few cases. From there, the identification key gets into finer points such as the length and shape of the ligules, colors of the bracts, whether the margins of the bracts are fibrous, etc.

All this looks very good on paper, as botanists try to tell the plants what they should look like, but Nature does not always follow man's rules and regulations. The plants that are common in cultivation may conform to their descriptions fairly well, but get them out of the captivity of our gardens and you might say they "go wild". The greatest lesson I learned when I started studying *costus* plants in their native habitats is that the garden clones I was accustomed to seeing and recognizing by a species name are just that – clones of just one mother plant – so of course they will all look alike. When you get into the forests and see the natural diversity within a given species, it becomes much more difficult to recognize and identify them. Only after many trips to the tropics and after seeing

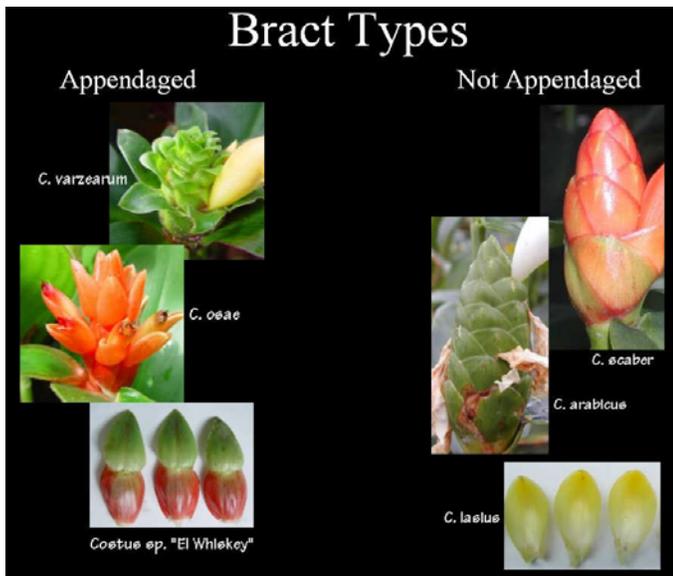
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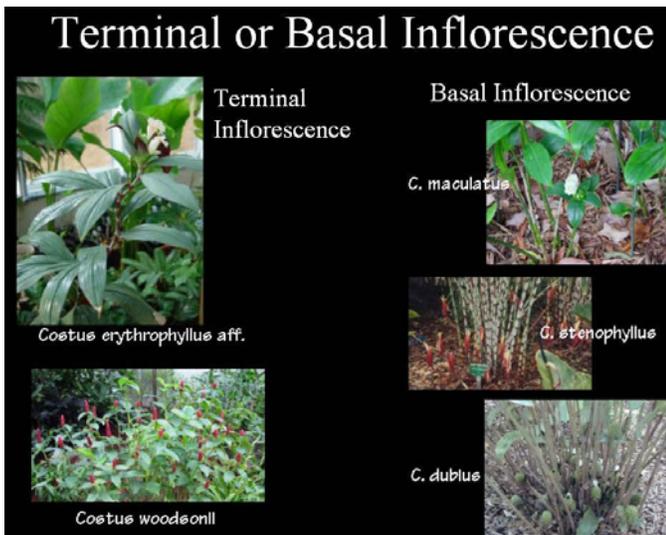
- HSPR "Meet the Experts" *Costus* Conference, 10:00 am, Sunday, March 8, 2009, with Dave Skinner at the new Biology Building Auditorium, U.P.R. Mayaguez Campus.

How to Identify *Costus* Species (continued)



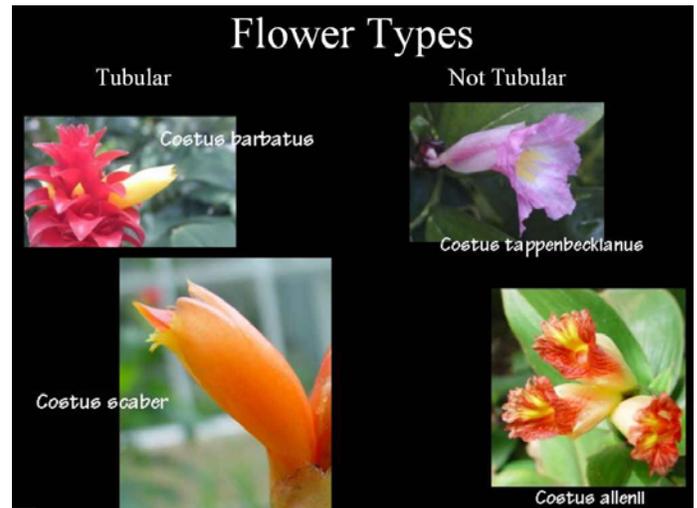
some *Costus* species in their many varied forms, have I begun to really recognize them and learned how to place them in their species categories as defined by man.

Nevertheless, I have tried to create a “*Costus* Identifier Tool” on my website at <http://www.gingersrus.com/test/identifier.php>, based on the written descriptions of the species. Note that this is still being tested, and although it is technically accurate, it certainly is not 100% guaranteed to



accurately identify an unknown species of *costus*.

Here is how it works: When you first go to the page, you will find on the left side a list of characteristics, such as HEIGHT, HABIT, FLOWER COLOR, etc. with selection boxes to input what the unknown plant looks like. On the right side is a list of all the possible species that have been entered in the system. You enter the characters you know, then click on the “SUBMIT MY SELECTIONS” button at the bottom. The identifier tool then queries the database and reduces the list of possible species on the right side of the screen to only the ones that meet the characters you entered. You can then click on a link for one of the species on the list and see photos and a full description of that species, or you can further refine the list by entering additional characters. The primary advantage of using this tool is that you can narrow down the possibilities of a plant identification by just entering the characters you know, rather than having to follow a hierarchy of characters. If you don't



have any flowers, you can still enter the vegetative characters, or possibly the bract characters if you have only a mature inflorescence.

I invite HSPR members to try out this tool on any unknown (or known) *costus* plants in your gardens. I will be speaking at the March 2009 meeting in Mayagüez, so please feel free to bring in specimens or photos and we will try to identify your plants.



About the Author

Dave Skinner is an avid plant collector and Master Gardener in Tallahassee, Florida. He has written several gardening columns for the Tallahassee Democrat and is often on the program as guest speaker on shade gardening and gingers in Tallahassee area gardening clubs and organizations. He has taught classes in the Continuing Education Program at Bainbridge College in Bainbridge, Georgia. His "Jardin Ombragé" is a yearly event on the Master Gardener tour of gardens.

From Our Last Meeting

Dr. José "Falín" Abreu Deliz hosted HSPR's December meeting (our traditional Christmas Party) at his spacious, country house in Cidra. The richness of the colors, as well as the vast diversity of the flowering heliconias in his collection amazed everyone. A deep blue sky, cool day, full of camaraderie, was enjoyed by the 50 members and their families. Dinner consisted of the delicious, traditional lechón asa'o, pavochón, pasteles and arroz con gandules. We all thank Falín for his generosity in hosting this unforgettable, joyful reunion.

Yolanda Reyes (HSPR Treasurer) gave a report of our finances. She informed us that our society currently has a balance of \$2,461.69 in its bank account. From this amount, we will have to deduct future expenses related to the Christmas Party, our "Meet the World Experts Conference" and for the printing and distribution of our quarterly Newsletter.

Dr. Raymond Jerome, member in charge of our precious HSPR Coop Heliconia Conservation Centers (CCs), gave a formal presentation of the importance of these CCs and how our society has benefited, growing in prestige internationally and becoming the nation with the largest amount of heliconia varieties in the world!

According to his 2005 census, we originally had 284 species, hybrids and cultivars in our CCs. Today (3 years later) our nine CCs have 365 different varieties of heliconias growing in their collections; some of them "new" varieties developed in Puerto Rico, others very rare and in danger of extinction.

Our CCs are affiliated with the HSI Conservation Centers and they are widely distributed throughout the Island; from the warm, low lands to the cool, high mountains. These are: Kelly Brooks' Marin Alto Tropicals (Patillas), Paul Yoshioka (San Germán), Bob Castro (Adjuntas), Edgardo Varela (Caguas), Bryan Brunner's Montoso Gardens (Maricao), "Sherry" Ballester's Vivero Anones (Las Marias), Ray Jerome (Canovanas), Héctor Méndez Caratini (Aibonito) and

Sergio Tejedor's Santa Rosa Farm (Jayuya).

On October 2008, Ray was able to get a handful of uncommon specimens of "Old World Heliconias" and successfully introduced them to PR. They were potted at the President's house and a couple of months later, planted at his farm. When these heliconias firmly establish themselves, they will be distributed to other CCs on the Island.

On September 2008, Dave Skinner sent to the President twelve different varieties of rare costus specimens which he had collected in the wild. They were transplanted to plastic pots with Pro-Mix. Some of them were distributed among the CCs present at the December meeting. The rest of the owners of the CCs who could not make it to the past meeting will receive their corresponding specimens at the March meeting. Please try to attend. Two different varieties of Costaceae will be donated to each center. The owners will have to keep growth records and promise that the specimens will not be sold or traded without the approval of Mr. Skinner.

I followed up with a report of the grant proposal I had submitted on behalf of HSPR soliciting funds to the Ford Foundation. I requested the amount of \$5,000.00 to be used for funding the "Meet the World Experts Conference" guest lecturer's travel arrangements, the acquisition of new species for the CCs, fertilizer, I.D. tagging materials, etc. The competition was fierce and unfortunately, the funding was denied.

The announced Conference "Propagation of heliconias from rhizomes" to be given by Yolanda Reyes could not be held for reasons beyond her control. We look forward to hearing her presentation at a later date.

To the untrained eye, the majority of the public doesn't know how to differentiate one heliconia inflorescence from another and are often misled to believe that since they look similar, they are the same ones they already have in their back yard collection. During the customary Show & Tell session, I brought five different varieties of inflorescences of red, yellow and green pendants. This way our members were able to better appreciate the differences between size and orientation of the bracts, distance between the rachis, etc. The samples I brought were two different varieties of *H. rostrata*, *H. standleyi*, *H. flabellata* and *H. platystachys*.

Other members contributed with rhizomes and potted plants to the Raffle. Besides the many heliconia specimens available, Edgardo Varela brought some rare collector's items to the game. The first plants picked out by the winners were some of his exotic bamboos, bromeliads and orchids. Again, another success, every one who bought a ticket won a plant!

Héctor Méndez Caratini
President, HSPR

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HSPR

*Promoting Zingiberales in
Puerto Rico since 1996.*

The Heliconia Society of Puerto Rico, Inc. was founded in 1996. The objectives of the society are to stimulate and promote the enjoyment and understanding of Heliconia and related plants of the order Zingiberales through education, research and communication, and to interact with the Heliconia Society International and other institutions which share similar interests, purposes or objectives.

New Heliconia Website



President's Corner

Last summer, Ray, Falín and I met Dave Skinner during the 2008 HSI Conference held in Iquitos, Perú. His beautifully illustrated presentation on little known Costaceae (costus family) impressed us all. Later on, we travelled together through-out the Amazon and invited him to visit Puerto Rico.

Following Dave's lecture (at the new Biology Auditorium, U.P.R. Mayagüez), a reception will be held so our guest can mingle with HSPR members. Admission is free and open to the general public. I highly encourage you all to attend and meet Dave in person. Meanwhile, you're welcome to browse Dave's extraordinary web site at www.gingersrus.com.

Afterward, Dave and his wife Karen will tour the Island on their own and will visit several HSPR Coop Heliconia Conservation Centers, such as: Bryan Brunner's farm in Maricao,

Sergio Tejedor's farm in Jayuya, and my farm in Aibonito. I am very grateful to our west coast members who helped us with the logistics of this important educational meeting.

Thanks to the dedication of Dr. Brunner, who has done a superb job as HSPR Newsletter Editor and HSPR Webmaster for the past six years, our society has rapidly evolved from a small local one to a treasured resource center for heliconia enthusiasts around the globe. Due to the magic of technology, our internet website www.heliconiasocietypr.org has become one of the top sites for persons wanting to know more about heliconias and/or consult the valuable information found in past HSPR Newsletters.

Among our HSPR members, several have web sites dedicated exclusively to promoting heliconias, gingers, ornamental bananas and other Zingiberales, and I would like you all to visit: "Sherry" Ballester's www.viveroanones.com, Bryan Brunner's www.montosogardens.com and Sergio Tejedor's brand new www.thetropicalflowerstore.com. Go check them out! These are great places where you can purchase seeds and/or rhizomes on line.

As always, we're asking our members to bring plants and rhizomes for the Raffle; as well as refreshments and food for the informal potluck lunch. Due to the special lecture, our customary Show and Tell session will not be held this time.

Hoping to see you all at the University of Puerto Rico for the Mayagüez March meeting!

Saludos a tod@s,

Héctor Méndez Caratini
President, HSPR