FLORIDA WEST COAST BROMELIAD SOCIETY

1954-2021

Celebrating over 67 Years in Bromeliads

October 2021 Newsletter

NEXT MEETING

Date & Time:	Tuesday, October 5, 2021; 7:30 pm
Location:	Good Samaritan Church 6085 Park Boulevard Pinellas Park, Florida 33781

The church's conditions for use of the meeting hall will remain the same until further notice and are as follows. We must limit the number of people to 50% capacity, wear masks regardless of vaccination status, and sanitize the tables and chairs at the end of the meeting. We will also continue the policy of no shared refreshments but will have available bottles of water and soda. Otherwise, our meetings will be conducted as a typical meeting, with Show and Tell, Raffle Table, and Friendship Table.

OCTOBER PROGRAM

The speaker in October will be **Bruce Holst**, Vice President for Botany at the Marie Selby Botanical Gardens in Sarasota, Florida, and a frequent speaker at our meetings. This time his topic will be *Uncovering the Mysteries of Herbaria*. Bruce defines 'herbaria' (singular: 'herbarium') as collections of dried, pressed, preserved plant specimens that are used for scientific botanical studies. Herbaria are invaluable storehouses of information about not only the plants themselves, but also related subjects such as ecology, phenology, distribution, ethnobotany, and botanical history of the plants. There are about 3,400 herbaria worldwide that contain collectively a total of about 400 million specimens. Selby's herbarium is among the top five herbaria in the U.S. in their holdings of bromeliad specimens. Bruce will talk about how plants are collected, prepared, and added to the Selby herbarium, what a specimen can tell us, and the importance of preserving collections into the future.

Bruce has studied tropical and subtropical plants for over 40 years and is interested in plant diversity and distribution in the Americas. He has served as senior editor of Selby's research journal, *Selbyana*, as well as *The Journal of the Bromeliad Society*. He is currently working on inventory and conservation projects related to the flora of Belize, Ecuador, Venezuela, and Florida. He is co-editor of the nine-volume publication titled *Flora of the Venezuelan Guyana*. This is the first full scientific account of the plants in a botanically rich and geologically ancient part of northeastern South America that encompasses parts of Venezuela and Guyana. This area is dominated by massive table mountains (tepuis) that tower over surrounding rain forest and savannas and provide a wealth of habitats for nearly 10,000 species of vascular plants.

LAST MEETING HIGHLIGHTS

SEPTEMBER PROGRAM


Dennis Cathcart

Dennis Cathcart, owner of Tropiflora Nursery in Sarasota, talked to us about *Bromeliads in the Cloud Forest*. These types of forests are high altitude, moist forests immersed in persistent clouds, fog, and mist. They are classified as 'tropical montane cloud forests' and form unique ecosystems on the slopes of mountains within narrow bands of altitude, typically between 3,000 and 8,000 feet above sea level. At these higher elevations, cooler temperatures cause an increase in relative humidity, which can in turn lead to condensation of water droplets and the formation of clouds that linger at tree canopy height.

Cloud forests occur in tropical and subtropical zones in Central and South America, Africa, Madagascar, the Philippines, Papua New Guinea, and Malaysia. In his presentation to us, Dennis showed pictures of bromeliad species in cloud forests that he took while on trips to Ecuador, Costa Rica, and Panama.

Cloud forests provide habitats for species of plants and animals not found anywhere else. Their high level of persistent moisture promotes a high biomass and biodiversity, especially in epiphytes. Dennis presented pictures of cloud forest trees with branches and trunks heavy with colonies of epiphytes that included bryophytes, mosses, orchids, bromeliads, ferns, and aroids. These plants obtain their moisture directly from water droplets in the clouds.

Cloud forests differ significantly from, and should not be confused with, rain forests. Below is a summary of their different characteristics.

Cloud Forest Characteristics	Rain Forest Characteristics
Higher elevation	Lower elevation
Cooler temperatures	Warmer temperatures
Reduced amount of available light	More filtered light
Dramatic changes in elevation	Little change in elevation
Lower, dense, compact canopies	Layered canopies
Shorter, gnarly trees	More massive trees
Higher biodiversity	Lower biodiversity
More epiphytes	Fewer epiphytes

There are two general types of montane cloud forests.

- The first one occurs when clouds and fog are generated by trees through evapotranspiration. Trees lose (i.e., transpire) water into the atmosphere through their leaves, and cooler temperatures at higher elevations promote formation of water-saturated clouds that are captured in the tree canopies. The water coats the leaves and stems, trickles down the tree trunks and onto the forest floor. Most of the water reaches streams and rivers, and in this way, cloud forests play an important role in the regional

hydrologic cycle. For example, on the east side of the Andes mountains the water trickles into thousands of streams leading into the Amazon basin and then to the Atlantic Ocean.

- The second type occurs when clouds form in mountain valleys and saddles such as those on the east side of the Andes mountains. The long cloud banks drift west into the Andes mountains where the air masses rise, cool, and release water as rain on the east side of the mountains.

While some plant and animal species grow both in cloud forests and in other habitats, those that grow exclusively in cloud forests typically do not grow well—or at all—in cultivation where it is difficult to replicate the persistent high humidity and cool temperatures found in cloud forests. Examples of two bromeliads that grow only in cloud forests are *Guzmania globosa* and *Guzmania longipetala*. Bromeliads found in cloud forests and in other habitats that can be found in cultivation in the US include *Aechmea zebrina*, *Guzmania sanguinea*, *Guzmania squarrosa*, *Tillandsia complanata*, and *Aechmea manzanaresiana*.

Dennis observed firsthand in the field some of the human threats to cloud forests of which less than 20% remain with about 2% more being lost each year. Locals clear the land for agriculture and logging, often using a slash-and-burn method that destroys both plants and animals in the cloud forests indiscriminately. They haphazardly build roads through and around the mountain slopes to reach their objectives, removing the overburden soil by dumping it down the slopes in such quantities that it can cover and smother 20- to 30-foot-tall trees. This leads to the death of the trees, which in turn results in less moisture accumulation to form the cloud cover that provides the moisture on which the animals and plants rely. Large portions of the removed soil eventually travel further down the slope and clog the rivers and streams.

Barb Gardner Gift

At the September meeting, Interim President Kathy Risley presented Barb Gardner an *Aechmea zebrina* as a token of the club's appreciation for her services as our president from January 2019 through July 2021 when she retired. Barb will remain on the Board of Directors in the position of Immediate Past-President and will also continue to serve as our club librarian.

SHOW AND TELL

Monika Hale	*x Wallfussia '*Antonio' (*Wallisia cyanea* x *Barfusia platyrachis*); formerly *Tillandsia* 'Antonio' (*Til. cyanea* x *Til. platyrachis*); (picture below)
Franne Matwijczyk	*Aechmea* 'Romero' (*Aec. fendleri* X *Aec.* 'Perumazon'); (picture below) *Aechmea fulgens* var. *discolor* (picture below). Its common name is 'coralberry' and it is the seed parent of the popular hybrid *Aec.* 'Burning Bush'
Susan Sousa	*Neoregelia* hybrid

Barb Gardner

Barb told us about an important part of her garden she calls the TLC ('tender loving care') zone where she places bromeliads that are unhealthy, damaged, or distressed. There she gives them the extra attention and care they need and time to rest and recuperate before they are put back into the general garden population. She showed us some of the plants she has placed there that included one with twisted stolons, a pup turned albino that was not getting enough sunlight, and an apparently 'dead' *Aechmea* that while 'resting' went on to produce a pup. Next to the TLC zone is her gardening bench where she keeps her gardening tools organized and ready for use. She added a tip about how she deals with ants in her pots: she places the ant-laden plant and pot together into a soap and water mix, which usually encourages the ants to vacate the plant. Try it out if you want to bring a plant into the house when it is blooming and find it is hosting ants.

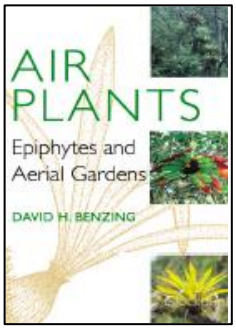
SHOW AND TELL PLANTS

x *Wallfussia* 'Antonio'

Aechmea 'Romero'

Aechmea fulgens var. *discolor*

David Benzing Presentation, 2013



In February 2013, **Dr. David Benzing** gave a presentation to our group titled *How Does Family Bromeliaceae Demonstrate the Reality of Darwinian Evolution?* The focus of the talk was to refute four common misconceptions about the process of evolution using examples of bromeliads to illustrate the process. He covers this topic in greater detail in his book *Air Plants: Epiphytes and Aerial Gardens* published in 2012 (pictured on the right).

Evolution is necessary for life because it allows plants and animals to adapt to and survive changes that occur over time in their environment (habitat). How these adaptations are made is more a matter of error and trial, not trial and error. Cellular mutations or genetic accidents (errors) that occur can produce new traits or characteristics in an organism. Organisms that develop a new trait that allows them to deal with subsequent changes (trials) in growing conditions within their habitat are better suited to adapt and survive the changes. Such adaptations allow organisms to survive in a niche while others without those traits cannot.

Bromeliads are almost unmatched among plants for adapting to a range of habitats from tropical cloud forests to drought conditions and learning to survive on alternative and often scarce supplies of key nutrients. It is this ability that makes them useful for demonstrating plant adaptations as follows.

Vrieseas among clubmosses

1. It is <u>not</u> true that newer, more complex species displace older 'primitive' species. For example, the picture on the right shows two Vrieseas growing beside a primitive plant form called clubmoss. The genus *Vriesea* is no more than a few million years old and the clubmoss in the picture is essentially the same plant as its ancestors that lived more than 300 million years ago.
2. It is <u>not</u> true that characteristics or adaptations never evolve more than once. The leafy tanks of bromeliads have evolved repeatedly over time.
3. It is <u>not</u> true that evolution always progresses from simple to more complex forms or structures and from less to more efficient functions. For example, genus Tillandsia evolved minimum form and function by developing harder, fewer leaves, minimizing shoots, and being essentially rootless, traits which give them an advantage in stressful habitats. They are the most successful in the family *Bromeliaceae* in adapting to a wide range of habitats.
4. It is <u>not</u> true that major changes in form and function require millions of years. Evolution does not always proceed in small steps and in some plants, such as bromeliads, different aspects of its body evolve at different rates.

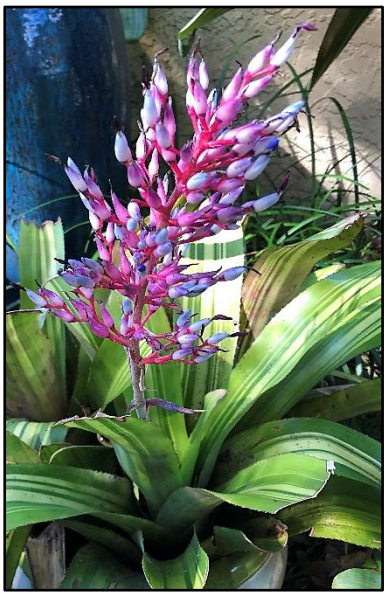
Dr. Benzing is an American research botanist and has written a number of books on the biology of epiphytes and tropical plants, primarily bromeliads and orchids. He taught biology and environmental science at Oberlin College in Ohio for over 40 years until he retired in 2006. He has worked with Marie Selby Botanical Gardens for over 30 years, spending winters in Sarasota, dividing his time between Florida and Ohio. In 2006 he joined the staff at Marie Selby Botanical Gardens and was appointed to the Jessie B. Cox Chair of Tropical Botany. He is a founding member of the editorial board for *Selbyana*, the scientific journal of Selby gardens, and has served as the journal's associate editor. He and the late Harry Luther co-authored the book *Native Bromeliads of Florida*, published in 2009. He has also served on the Scientific Review Panel for the Journal of the Bromeliad Society International (BSI) and is an honorary BSI trustee.

IN THE GARDEN

Neoregelia 'Green Apples'

Neoregelia 'Flirting'

Aechmea 'Big Ben'



Aechmea 'Pilfered'
(*Aechmea fendleri* x *Aechmea* 'Blue Tango')

BROMELIAD AND OTHER PLANT EVENTS, 2021-2022

October 9-10, 2021, USF Botanical Gardens Fall Plant Sale
USF Botanical Gardens, Tampa, FL (https://www.usf.edu/arts-sciences/botanical-gardens/)

October 29-30, 2021, Tropiflora Scary-Good Halloween Plant Sale
Tropiflora Nursery, 3530 Tallavast Road, Sarasota (https://tropiflora.com/pages/events)

April 23-24, 2022, Seminole Bromeliad and Tropical Plant Society Annual Spring Plant Sale
Sanford Garden Club, 200 Fairmont Dr., Sanford, FL 32773, 9-4 each day (https://www.sanfordgardenclub.com/sbtps)

June 7-11, 2022, 24th World Bromeliad Conference, *The Big Show*, Sarasota, FL
Celebrate BSI's 70th anniversary, Hyatt Regency Hotel, Sarasota (https://www.bsi.org/new/conference-corner/)

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