



# S.F.V.B.S.

## SAN FERNANDO VALLEY BROMELIAD SOCIETY

P.O. BOX 16561, ENCINO, CA 91416-6561

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## SEPTEMBER 2014 NEWSLETTER

### OFFICERS

Pres & News: **Mike Wisnev** V.P.: **Mary K. Carroll** Secretary: **Kathleen Misko** Treasurer: **Mary Chan**  
Membership: **Nancy P.-Hapke** Health & Wellness: **Georgia Roiz** Web Page: **Kim Thorpe**  
Directors: **Steve Ball, Bryan Chan, Richard Kaz -fp, Dave Bassani-fp**

next meeting: **Saturday Sept. 5, 2014 @ 10:00 am**  
**Sepulveda Garden Center 16633 Magnolia Blvd. Encino, California 91316**

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### AGENDA

**9:30 – SET UP & SOCIALIZE**

**10:00 - Door Prize – for members who arrive before 10:00**

**10:05** -Welcome Visitors and New Members.  
Make announcements and Introduce Speaker

**10:15 - Speaker: Larry Farley**  
**Topic: “Blooming Time” Bromeliad Blooms by the Month”**

*The last time Larry came to speak to our group, he told us about how he first remembers viewing African travels on the family's Black and White TV during the early 50's. He was intrigued to see all the wild animals and the landscapes of the faraway places. From then on he has had an interest in plants. Growing up he dreamed of visiting Africa but it wasn't until a few summers ago when he traveled there with Guillermo Rivera who specializes in Nature Tours.*

*Larry was born, raised and retired in California. He has been collecting plants since he was a youngster and obtained his first Bromeliad in 1957; it was *Billbergia nutans* purchased at the Culver City Bromeliad Show. It wasn't in a pot but an old tin can and cost him 25 cents (his allowance for that week). Larry is a member of all three Los Angeles area Bromeliad groups.*

*A few years ago Larry began to notice that at the monthly club Show-N-Tells, generally the same*

*types of Bromeliads seemed to bloom the same time each year. Soon he began asking club members each month what else was blooming at their homes. He wanted to have Bromeliads blooming each month in his yard and now he does.*

*Larry said he has a small collection of Bromeliads but he has a continuous year -long blooming season. Some people with larger collections have permitted him to photograph their beautiful Bloomers, some of which will be included in this program. He will share photos of the monthly blooming Bromeliads in Southern California for all 12 months. Only a small number of the Bromeliads can be squeezed into this presentation. Don't miss this meeting!<>*

### **11:00 - Refreshment Break:**

Will the following members please provide refreshments this month: **Kaz Benadom, Jeanette Bond, Cristy Brenner, Mike Boess, Mike Brewer, Mary Chan, and anyone else who has a snack they would like to share.** If you can't contribute this month don't stay away just bring a snack next time you come.

**Questions about refreshments?** Call Kathleen (818 402-6031). Leave a message - will call back.

**Feed The Kitty** - If you don't contribute to the refreshment table, please make a small donation to the ([feed the kitty jar](#)) on the table; this helps fund the coffee breaks. **11:15 - Show and Tell**

**11:30 – Mini Auction:** members contribute

**11:45 – Raffle:** We need each member to donate

**12:00 - Pick Up around your area**

**12:15 –/ Meeting is over—Drive safely <>**

## ANNOUNCEMENTS

### **New Show Date for 2015**

**Nels Christianson** – keep him in your thoughts and prayers, he had a heart attack  
**Bromeliad Bus Trip** Sat. Oct. 25. Let Mary K. know if you are interested - \$16.00

**Happy Birthday** - *Jeanette Bond* on Sept 3, *Shawn Newmann* Sept 12, *Artie Chavez* Sept 13

## **Please Put These Dates on Your Calendar**

Saturday, Oct 4, 2014	SFVBS Regular meeting - <b>John Martinez</b>
Saturday, Nov 1, 2014	Speaker – <b>Pam Koide</b> –
Saturday, Dec 6, 2014	Holiday Meeting & Brunch 10:00 – 2:00
<b>Sat &amp; Sunday - May 30-31, 2015</b>	SFVBS Bromeliad Show & Sale w/ LACSS

**Ramblings about Better Growing** The editor is looking for information from other members for this column. I'm sure some of you have some growing tips to share about what to do or what not to do; it can be 1 or 2 sentences or 3 or 4 paragraphs. Member contributions are vital to keep the newsletter interesting and our SFVBS thriving. <>

### **For the Beginner - Finding your own way.**

There are all sorts of variables that can come into play when growing plants. People do all sorts of different things. Sometimes the advice, in the aggregate, can seem overwhelming, and often it is contradictory. Ultimately, you need to learn what works best for you, given your conditions, expectations and commitment. While you can, and probably should, find out how other folks grow, ultimately, you really do need to learn what works for you. You can, and should, get all sorts of ideas from experienced growers, but you need to apply them to your situation.

I'd suggest that no matter how hard you try, you can't easily grow exactly someone else. There are too many variables. Most critically, you probably can't replicate their environment - their place is hotter, or cooler, or windier etc. Good growers tend to grow more in greenhouses, or with cover of some type, while most beginners don't! SO even if you lived next door, yours may get full sun, while theirs are under shade cloth. Once you introduce that variable, how you water, or your soil mix probably should be different.

Keep that in mind when you get advice. If their conditions differ than yours, you better be careful. And if they do something else differently than you, you better be careful. Following one aspect of their growing regime without knowing most everything else they do can cause problems.

Also, this isn't like baking. (Okay, I never bake, but Ana tells me about it, and sometimes I listen.) Someone tells you they water lightly, or heavily what does that mean? And sometimes, they generalize. I'll ask about a specific species, and they say- don't water it in winter. I don't, it dies, and I later ask them more - well, they meant water occasionally in winter, not none at all! They also might be growing different plants than you. Different genera, or more established plants. This can be a reason to grow differently.

The good news, as I mentioned before, is that there are lots of ways to grow good looking plants. SO the fact you can't completely copy someone else doesn't really matter. <>

# Help us to improve our Membership

**Tell people about your hobby !**

**Let apartment dwellers know these plants can be grown  
inside or on a balcony !**

**Give them a plant !**

**Invite them to a meeting !**

**Reach out to visitors and new members, make them feel welcomed !**

**Let us hear your ideas to improve membership.**

## *Speakers*

We have some interesting speakers lined up for the next few months of this year but it is never too early to start planning for 2015. Let us know if you have any ideas for Speakers about Bromeliads or any similar topics? We are always looking for an interesting speaker. If you hear of someone, please notify Mary K. at 818-705-4728 or e-mail [rango676@aol.com](mailto:rango676@aol.com) <>

**Participation Rewards System** – This is a reminder that you will be rewarded for participation. Bring a Show-N- Tell plant, raffle plants, and Refreshments and you will be rewarded with a Raffle ticket for each category. We realize not everyone has pristine show plants but each of us certainly have sick or unidentified plants that can be brought in. **Each member, please bring one plant.** <>

### ***• What can you do to help our club?***

First foremost we need **members to plan to attend all meetings.** What we ask is for people **to try not to plan anything else on our meeting day.** Look at our calendar below before you schedule your next event.

1. You can **donate an occasional plant for the mini-auction or the raffle.** You can also **participate by buying raffle tickets or by bidding** on a plant in the auction.
2. Food and Drink – everyone is encouraged to bring in something for our great lunches, and feed the kitty if you don't. .
3. Newsletter – you might contribute a short (or better yet, long) article – a paragraph would be great. <>

## **Membership Dues      *NEED TO RENEW ?.....***

Pay at the meeting to:

Membership Chair - **Nancy Pyne-Hapke** or Treasurer - **Mary Chan**

or Mail to:

SFVBS membership

Attn: **Nancy Pyne-Hapke** -      **P.O. Box 16561 - Encino, CA 91416-6561**

**Yearly Membership Dues \$10.00** for a single or couple

## *Broms in Bloom - Member Photos.*

Well no one sent a plant photo in, so....

Andy Siekkenen, our last speaker, brought in a number of unusual Bromeliads, many of them for sale. The first picture below shows some he brought for Show and Tell, including *Orthophytum benzingii* and *zoonii*, *Hechtia glomerata* and *Cryptanthus warasii*. I think Ray VanVeen bought an offset of the *O benzingii*, so in about 15 years, we all may have one!



*The second picture is Ochagavía littoralis. I brought it in last year, about to bloom but the flowers hadn't shown up yet. About a week later it did.*

## *Ochagavía littoralis*



Andy gave a great talk last month about small terrestrial Bromeliads. He briefly mentioned some changes in the Bromeliad subfamilies, so my article below is timely, if not a surprise to many of you who paid attention!

# Taxonomic Tidbits – Bromeliad subfamilies.

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By Mike Wisnev, SFVBS President ([mwisnev@sbcglobal.net](mailto:mwisnev@sbcglobal.net))

San Fernando Valley Bromeliad Society Newsletter – September 2014

My first Taxonomic Tidbit article was quite short. The entire article read as follows:

“Did you know the Bromeliad family has about 2000 species? It consists of three subfamilies, each of which is represented by well-known genera. In fact, you probably own some of each. The Pitcairnioideae family is generally terrestrial, spiny and is distinguished by wing shaped seeds. Dyckias and Hechtias are in this group. Tillandsioideae includes Tillandsia, Guzmania and Vriesea - its seeds have tufts of hair that allow them to be carried in the wind, like dandelions. The third group is Bromelioideae which includes Aechmea, Billbergia and Neoregalia. Seeds of this subfamily are neither hairy or winged, and the fruits are usually berries.”

Many of you probably already knew all of the above information long ago. In fact, this division of the Bromeliad family, technically called *Bromeliaceae*, has been around over 100 years.

And, based on pretty recent DNA testing, this division into three subfamilies is very likely wrong! For that matter, the 2011 article noted later states there are about 3140 Bromeliad species! And, according to one website, there are now over 3400 species.

<http://botu07.bio.uu.nl/bcg/taxonList.php>. So, like everything else, Bromeliad taxonomy can change quite a bit.

**Summary.** The new research shows that *Tillandsioideae* and *Bromelioideae* haven't changed. But *Pitcairnioideae* has been drastically revised.

There are now likely 8 subfamilies as follows:

1. *Brocchinioideae* – the *Brocchinia* genus
2. *Lindmanioideae* – the *Lindmania* genus
3. *Hechtioideae* – the *Hechtia* genus
4. *Navioideae* – *Navia*, *Brewcaria*, *Sequencia* and *Cottendorfia* genera
5. *Pitcairnioideae* – *Pitcairnia*, *Dyckia*, *Deuterohohnia* (*Abromeitiella* has been lumped in here later) , *Fosterella* and *Encholirium*
6. *Puyoideae* – the *Puya* genus
7. *Tillandsioideae* – same as before, *Tillandsia*, *Vriesea*, *Guzmania* etc
8. *Bromelioideae* – same as before – *Aechmeas*, *Neoregalia*, *Nidularium*, *Billbergia* etc.

From a hobbyist standpoint, three of these new subfamilies are quite obscure – – *Brocchinias* make up one, *Lindmanias* another and the third consists of *Navia*, *Brewcaria* and *Cottendorfia*. I don't remember seeing any of them even at the Huntington.

So perhaps the most important thing to remember is that *Hechtias* and *Puyas* have each been broken off from the rest of the *Pitcairnioideae* subfamily into two separate subfamilies. As redefined, *Pitcairnioideae* consisted of *Dyckia*, *Deuterocohnia*, *Echholirium*, *Fosterella* and *Pitcairnia*.

**More Information.** Beginning in the late 1990's, a number of studies suggested that the three traditional subfamilies should be broken up. Perhaps the first major proposal was published in 2007. Professor Thomas Givnish and three others from the University of Wisconsin proposed five new subfamilies. Givnish, Millam, Berry and Sytsma, PHYLOGENY, ADAPTIVE RADIATION, AND HISTORICAL BIOGEOGRAPHY OF BROMELIACEAE INFERRED FROM *ndhF* SEQUENCE DATA, *Aliso* 23, pp3-26 (*Aliso* is a publication of the Rancho Santa Ana Botanic Garden.)

Their DNA study supported *Tillandsioideae* and *Bromelioideae* as good subfamilies. But it showed the *Pitcairnioideae* subfamily should actually be six different subfamilies. It broke off *Hechtias* and *Puyas* into two subfamilies. Surprisingly, the *Puya* subfamily and *Bromelioideae* subfamily were on the same branch. The *Hechtia* branch was nowhere near the *Dyckia* branch – the authors were surprised to find it near *Tillandsioideae* and *Lindmanias*.

The DNA testing results are typically shown as a tree-like diagram that continually branches. The branches are of different lengths. For example, here the results did not show a tree with 8 equal branches. Instead, the tree is more step-like, with the first branches representing the oldest subfamilies. *Brocchinia* broke off first, and then *Lindmania*.

The other six subfamilies were on 3 different branches – one for *Hechtia*, one for all *Tillandsioideae* and the third with the remaining 4 subfamilies. This third branch then split, one for *Navia* types and the other with the remaining 3 subfamilies.

This last branch then split into two branches (call them Branch X and Y), and each of these split again into two more branches. The X branch had one branch for *Puya* and another for all *Bromelioideae* (*Aechmeas*, *Neoregelia*, *Nidularium*, *Billbergia* etc). The Y branch had one branch for the *Pitcairnia* genus and another for *Dyckia*, *Deuterocohnia*, *Abromitiella*, *Fosterella* and *Encholirium*.

This tree like diagram is based solely on the DNA analyses. However, plant characters remain critically important. In the last paragraph, the tree split into the X and Y branches, each of

which had two branches. But the authors made these 4 branches into 3 subfamilies. Let's look at the X branch first. Unlike an earlier paper that suggested that *Puya* be made part of the *Bromelioideae* subfamily, they separated the two based on the "highly distinctive" set of advanced features that distinguish the two groups. Like the X branch, the Y branch also split into two more branches - one branch for *Pitcairnia* and another for *Dyckia*, *Deuterocohnia*, *Echholirium* etc. In contrast to the X branch which was divided into two subfamilies, these two Y sub-branches were both considered the *Pitcairnioideae* subfamily; presumably because of their similar characteristics, they did not even discuss the possibility of making *Pitcairnia* its own subfamily.

The paper also addressed certain anomalies found in the testing. Often a particular species will show up in different branch from other members. This present the authors with a challenge, and a variety of potential solutions. For example, while *Brocchinias* were the first branch of the tree, *Brocchinia serrata* showed up in the middle of the Navioideae subfamily branch far away. In this case, they made a new genus called *Sequencia* for this one species.

In another case, a plant called *Ayensua uaipanensis* showed up in the middle of the *Brocchinia* branch. Here they moved the *Ayensua* genus into the *Brocchinia* genus. These were not arbitrary decisions – in each case, they explained the basis for the move based on plant characters and other studies. Of course, other botanists might disagree and propose different results.

The paper contained a wealth of other information. The abstract of the paper states:

“Bromeliads arose as C3 terrestrial plants on moist infertile sites in the Guayana Shield roughly 70 Mya {Mya is million years ago}, spread centripetally in the New World, and reached tropical West Africa (*Pitcairnia feliciana*) via long-distance dispersal about 10 Mya. Modern lineages began to diverge from each other 19 Mya and invaded drier areas in Central and South America beginning 15 Mya, coincident with a major adaptive radiation involving the repeated evolution of epiphytism, CAM photosynthesis, impounding leaves, several features of leaf/trichome anatomy, and accelerated diversification at the generic level. This “bromeliad revolution” occurred after the uplift of the northern Andes and shift of the Amazon to its present course. Epiphytism may have accelerated speciation by increasing ability to colonize along the length of the Andes, while favoring the occupation of a cloud-forest landscape frequently dissected by drier valleys. Avian pollination (mainly by hummingbirds) evolved at least twice ca. 13 Mya; entomophily was ancestral. *Hechtia*, *Abromeitiella*–*Deuterocohnia*–*Dyckia*–*Encholirium*, and *Puya* exhibit a remarkable pattern of concerted convergence in six anatomical and physiological leaf traits adapted to drought.’



The study found that CAM photosynthesis arose at least four different times, CAM photosynthesis is common for cacti and succulents and differs from normal photosynthesis in that some of the processes occur at night. (I was surprised to see that while most Bromeliad genera use CAM, some don't; those that don't are not very popular among hobbyists (excepting our own Bob Wright who loves *Pitcairnia*.)

Many Bromeliads are epiphytic, which means they grow on trees. This feature also arose four different times. And, while *Dyckia* and *Hechtia* are awfully similar, they evolved quite separately – their common features being a great example of convergent evolution.

The study also agreed with the traditional view that the earliest Bromeliads were terrestrial *Pitcairniadeae* types. The large *Tillandsioideae* and *Bromeliadeae* groups evolved later.

While this paper was pretty persuasive, the authors wanted further studies. They were concerned that some of their results did not have strong support, and they did not study enough species. So, an international consortium of 19 scientists sequenced eight different DNA regions for 90 Bromeliads representing 46 of the 58 currently recognized genera. The results were published in the American Journal of Botany 98(5); pp 872-895. Givnish et. al., PHYLOGENY, ADAPTIVE RADIATION, AND HISTORICAL BIOGEOGRAPHY IN BROMELIACEAE: INSIGHTS FROM AN EIGHT-LOCUS PLASTID PHYLOGENY.

The bottom line is that this new study supported the prior one – there should be 8 subfamilies, as noted above. In fact, in general the new study generally provided stronger support for these breakdowns than the earlier one, though not in all cases.

There were some clarifications from the earlier study. Recall above that at one point the tree broke into three branches, *Hechtia*, the *Tillandsioideae* subfamily and the other subfamilies. Here they found the *Tillandsioideae* broke off first, then the *Hechtia* and then the others. They also found conflicting results for *Puyas* – one analysis showed it was a good group, and another said it wasn't. However, both showed the Chilean and non-Chilean *Puyas* were good groups. While noting more study is needed here, they kept *Puya* as its own subfamily.

This study also supported a variety of earlier ones. One involves *Aechmeas*, which are now known as the “trashcan” genus. Like an earlier more detailed study of *Aechmeas*, this one found that *Aechmeas* showed up many different branches (in this case 6!).

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The pictures below and following information are copied directly from pp875-5 of the 2011 article.

“Representative species of bromeliad subfamilies; images are at different scales.  
BROCCHINIOIDEAE: (A) *Brocchinia prismatica*, non impounding species sister to all *Brocchinia*, found in wet, sandy savannas in SW Venezuela; (B) *B. reducta*, terrestrial carnivore of damp, sandy savannas in SE Venezuela and SW Guyana; (C) tree-like *B. micrantha*, SE Venezuela and SW Guyana. LINDMANIOIDEAE: (D) *Lindmania guianensis*, SE Venezuela and SW Guyana; (E) *Connellia augustae*, sandstone outcrops, Venezuela and Guyana. TILLANDSIOIDEAE: (F) *Catopsis berteroniana*, carnivorous epiphyte, Florida to Brazil; (G) *Guzmania lingulata*, epiphyte, Central and N South America; (H) *Tillandsia dyeriana*, epiphyte, Ecuador; (I) *Tillandsia setacea* (above branch) and *T. usneoides* (Spanish moss, below branch), widespread atmospheric epiphytes; (J) *Vriesea heliconioides*, epiphyte, Mexico to Bolivia; (K) *Tillandsia ionantha*, fl owers of tiny atmospheric epiphyte, Central America. HECHTIODEAE: (L) *Hechtia mooreana*, CAM terrestrial, Mexico; (M) partial inflorescence, *H. rosea*, CAM terrestrial, Mexico. NAVIOIDEAE: (N) *Navia* aff. *lactea*, saxicole, S Venezuela; (O) *Sequencia serrata*, E Colombia. PITCAIRNIOIDEAE: (P) *Pitcairnia holstii*, low-elevation terrestrial, Venezuela; (Q) bird-pollinated fl owers, *P. undulata*, Mexico; (R) *Deuterocohnia lotteae*, high-elevation Andean cushion plant, S Bolivia; (S) *Encholirium spectabile*, CAM terrestrial, NE Brazil; (T) *Dyckia lindevaldae*, CAM terrestrial, Brazil. PUYOIDEAE: (U) *Puya chilensis*, tall terrestrial, Chile, cultivated at the Huntington Botanical Garden. BROMELIOIDEAE: (V) *Bromelia macedoi*, CAM terrestrial, Brazil; (W) *Fernseea bocainensis*, SE Brazil; (X) *Cryptanthus fosterianus*, nonimpounding CAM terrestrial, SE Brazil; (Y) *Neoregelia eleutheropetala* var. *bicolor*, CAM epiphyte with fl owers emerging from tank, S tropical America; and (Z) *Canistrum alagoanum*, CAM epiphyte with flowers emerging from tank, SE Brazil.

#### Photo credits:

A, Thomas Givnish;  
B, Peggy Faucher; O, Julio Betancour;  
T, Reginaldo Bai ã o;  
all others, Bruce Holst.”



Like the earlier one, this 2011 study discussed the evolution of the Bromeliad family in depth. Bromeliads arose about 100 million years ago in the Guayana Shield, which is more or less the northeastern part of S America. However, the current subfamilies did not even start to show up for another 81 million years and the actual genera were even later. One of the last groups, tank top Bromeliads, showed up about 5.5 million years ago.

Geographically, the study concluded that Bromeliads moved out of the Guayana Shield in counter clockwise in a spiral pattern. Different groups first moved into the northern Andes, Central America and the Caribbean. Later they moved south down the Andes and east into the Brazilian shield. There are a lot more specifics in the paper for those interested.

These studies and many others are based primarily on DNA analysis – parts of each species DNA is coded, and then compared to others. Complex statistical computer programs then attempt to organize the data into optimal trees showing the various genera etc. This branch of science is called phylogenetics or cladistics, and has only existed the last 50 years when technology allowed us to study DNA and develop computers.

There are tons of scientific papers that use cladistics to analyze all sorts of animal and plant genera and families. For example, earlier this year there were new studies on dog evolution that appeared in the LA Times and the web. These studies are all based on cladistics. *Dyckia*, *Deuterocohnia*, *Aechmea* and *Puya* have already been studied to some degree, I would expect other genera to be studied in the future.

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