



S.F.V.B.S.

SAN FERNANDO VALLEY BROMELIAD SOCIETY

OCTOBER 2020

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Elected OFFICERS & Volunteers

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Saturday October 3, 2020 ZOOM Meeting

President's message: Our first ZOOM meeting last month worked out great. In fact, it has some advantages as folks can share all sorts of pictures of their plants at their homes. So we will host another host another meeting on Zoom. This is scheduled on our regular meeting date October 3 at **12 Noon**. A program has not been scheduled but, we are planning to have programs in future meetings.

You can join us for a chat with video – with Show-N-Tell, plant Q&A, and a general bromeliad topics discussion. Hosted by Bryan and Mary Chan. Log on with your computer that has video/camera and microphone/speaker capability, or on your smart phone. There is NO NEED to download the Zoom program. You can join on the Zoom app or just click on the provided link or type it into your browser. You'll need the Meeting ID number either way that you join.

This is the link to the meeting. <https://tinyurl.com/SFVBS> Click on or copy and paste into your browser to start. Then join the Zoom meeting.

Please Put These Dates on Your Calendar

Here is our 2020 Calendar. Rarely does our schedule change..... however, please review our website and email notices before making your plans for these dates. Your attendance is important to us. **As noted earlier, future meetings may be cancelled.**

Saturday November 7	Woody Minnich
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STBA = Speaker To Be Announced

Speakers 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 **Joyce Schumann** at 818-416-5585 or ropojo@pacbell.net

November Speaker - via Zoom

Some things never change. In the midst of all the changes that the pandemic caused (I won't waste your time by listing all the changes that you already know about) some things remain the same. For many years, Woody Minnich has been the November speaker for the San Fernando Valley Bromeliad Society. And this year is no different. Thanks to the marvels of Zoom, Woody will be presenting a slide program for us from the safety of his home. More details to follow.

You may recall, John Martinez was scheduled to speak at our November meeting but has been rescheduled to January, 2021. What a great way to start the New Year! More details on this program will be posted in the December newsletter.

See you soon, via Zoom – kind of rhymes doesn't it.

Joyce – VP, Programs

Regular meetings. You may be wondering when regular meetings will resume. That is a good question, and we have no answer. At that time our regular meeting place at Sepulveda Garden Center is not even open due to COVID restrictions. So we couldn't have a meeting there even if we wanted to. Once the Center opens, we can discuss whether a regular meeting is safe and desirable.

Bromeliad Zoom Recordings available.

The La Ballona Valley Bromeliad Society (which meets in Culver City) has had some ZOOM presentations. Here is a link to the recording of "Pedro Nahoum on Bromeliads of Brazil, Part 1", <https://tinyurl.com/PedroNahoum1> from the August meeting. Peter has been involved in plants his entire life, and now works with a company growing producing landscape plants for Brazil. There are some great photos, especially *Alcantarea* and *Ananas*. Enjoy!

Member-contributions of photos or articles

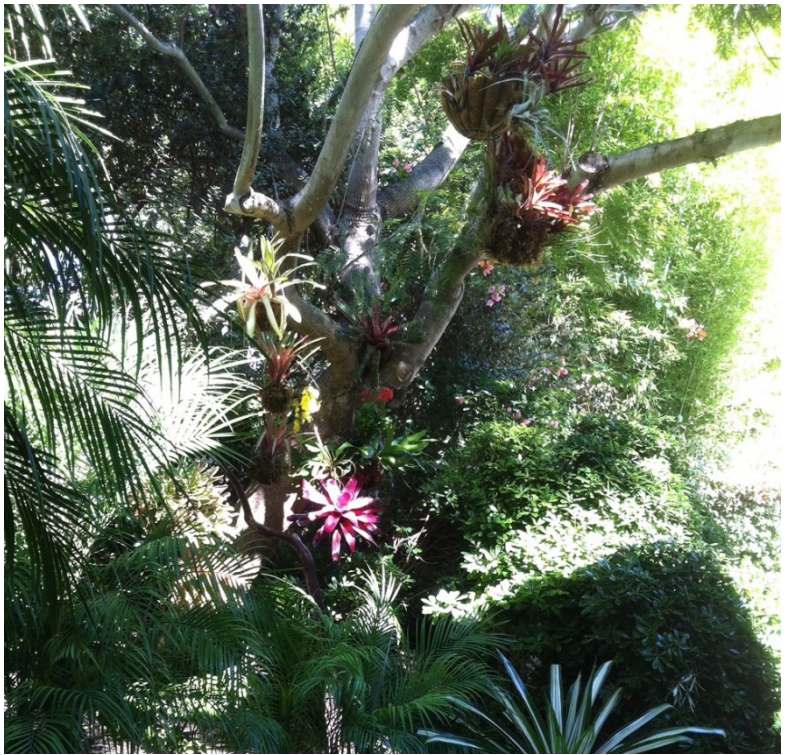
Many thanks to our Club member, David Bassani, for sharing his pictures of how to use bromeliads as landscape plants.



David said “My interest is bromeliads’ beauty and how they perform in the landscape. The photos are from 2019 and 2020. The clients are pleased with the ease of care and the visual. The watering misters are hidden but effective. It wasn’t possible to do much subsurface because of the water and electrical lines, concrete footings. The narrow space wasn’t a challenge but an opportunity. The homeowners wanted a planting that didn’t detract from the existing trunks. The answer was to suspend the planting.”



The photos are offered as a concrete example of bromeliads in the landscape. "After installing them for at least fifteen years at clients homes, I can say with confidence that they are underused and well worth having and recommending to the general public".





David Bassani's relaxation area.

Taxonomic Tidbits: *Ananas*, part 5

By Mike Wisnev SFVBS Editor (mwisnev@gmail.com) San Fernando Valley Bromeliad Society Newsletter –October 2020

Recent Tidbits articles discussed the pineapple genus (*Ananas* and possibly *Pseudananas*) at length. Depending upon the applicable botanists, there are one or two genera, 2, 3 or 7 species and 0, 1 or 5 varieties. This article concludes the discussion.

How many genera and species are there? The next piece (and last, based on current knowledge) of the puzzle are phylogenetic studies that sample and analyze various DNA components of all these taxa. Given the fruit of all the species, it seems likely they are a monophyletic group. A comprehensive DNA study is needed, and still may not answer the question definitively. Even with such a study, botanists may well take different positions as to whether taxa on various sister clades should be treated the same.

There have been many earlier DNA studies of the bromeliad family addressed in earlier Newsletters. Most have few *Ananas* species and group them together. They are part of the “early diverging” group of the Bromelioideae subfamily, as opposed to the “core” group consisting primarily of tank top species holding large amounts of water.

However, five studies provided some interesting results for *Ananas*, both with regard to the individual taxa and the position of the genus with regard to other genera. Unfortunately, the results of the studies were not entirely consistent.

Three of these studies included a few *Ananas* species when studying other matters. A 2010 study found that *Ananas comosus*, *nanus* and *ananassoides* fell on one clade that is sister to a clade of *A. bracteata* and *Aechmea*

tayoensis. Sass, C. and C. D. Specht. 2010. Phylogenetic estimation of the core Bromelioids with an emphasis on the genus *Aechmea* (Bromeliaceae). *Molecular Phylogenetics and Evolution* 55: 559–571. If this is correct, then (1) *Ananas* needs to be broken up or (2) *Aechmea tayoensis* is an *Ananas*. More likely, a later study with more sampling will show that *A. tayoensis* does not belong with *A. bracteatus*.



Aechmea tayoensis at Denver Botanical Garden.

By Daderot - Self-photographed, Public Domain,
<https://commons.wikimedia.org/w/index.php?curid=16002218> .

This species is closely related to the pineapple, and it is unlikely it will remain as an *Aechmea*. It may well end up in a new genus.

The other two studies suggested that *Pseudananas* might be a valid genus. In the first, *Pseudananas sagenarius* was sister a clade composed of five

Ananas taxa and *Disteganthus basilateralis*. In the latter clade, *A. comosus*, *bracteata*, *nanus* and *ananassoides* fell on one clade that is sister to *D. basilateralis* and *A. fritzmulleri*. Silvestro, D., G. Zizka, and K. Schulte. 2014. Disentangling the effects of key innovations on diversification of Bromelioideae (Bromeliaceae). *Evolution* 68: 163–175. If correct, this study suggests that there might be three pineapple genera (or that *Disteganthus* belongs with the pineapple genus), and that *A. bracteatus* and *fritzmulleri* are not the same species, or even as closely related as assumed. Again more studies are needed.



Disteganthus basi-lateralis.

Photo courtesy of Eric J. Gouda. <http://bromeliad.nl/encyclopedia/>

Numerous studies have shown this species is closely related to *Ananas*, as well as a few *Aechmea* species. Unlike all of these other species, it has a lateral inflorescence.

The other study dealt primarily with *Aechmea* subg. *Chevaliera* and was addressed in newsletters earlier this year. Maciel, J. R., R. B. Louzada, A. M. Benko-Iseppon, G. Zizka, and M. Alves. 2018. Polyphyly and morphological convergence in Atlantic Forest species of *Aechmea* subgenus *Chevaliera* (Bromeliaceae). *Botanical Journal of the Linnean Society* 188: 281–295. It had *A. bracteatus* sister to a clade

of *D. basilateralis* and *P. sagenarius*; in turn, these three species were next to *Aechmea magdalenae*. It suggests *Pseudananas* is more closely related to *D. basilateralis* than *Ananas*, and thus is a separate genus unless *D. basilateralis* is treated as *Ananas*.



Aechmea 'Quadricolor' a variegated form of *Aechmea magdalenae*.
Photo by Michael Pascall. <https://registry.bsi.org/>.

Like *Aechmea tayoensis* shown earlier, this is another *Aechmea* species that is more closely related to *Ananas* than other *Aechmea*, and may end up in a new genus.

In contrast to the above studies, an early 2003 study primarily addressed *Ananas*. It sampled 91 *Ananas* clones and six *Pseudananas*. Duval MF, Buso GSC, Ferreira FR, Noyer JL, Coppens d'Eeckenbrugge G, Hamon P, Ferreira ME. 2003. Relationships in *Ananas* and other related genera using chloroplast DNA restriction site variation. Genome 46:990–1004. The results showed three different clusters of

species. The first was *Pseudananas* with the only sample of *A. fritzmuelleri*. “The former can be found in the wild in the southeastern part of South America from Argentina and Paraguay to the Brazilian states of Bahia and Mato Grosso [citations omitted], whereas the distribution of *A. fritzmuelleri* is restricted to the southern Brazilian states of São Paulo, Minas Gerais, Rio de Janeiro, and Santa Catarina [citations omitted]” Id at 997.

The second cluster included most (but not all) of the samples of *A. parguazensis* from the north - Rio Negro and Venezuela. All the other species (with a wide distribution range) formed the third cluster, including 5 accessions of *A. parguazensis*. The study also suggested that *A. bracteatus* could well be a hybrid since it had various DNA markers in common with different species.

Thinking the article was complete, one last Google search revealed a 2018 comprehensive *Ananas* phylogenetic study. Phylogenetic relationships among *Ananas* and related taxa (Bromelioideae, Bromeliaceae) based on nuclear, plastid and AFLP data. 2018. Matuszak-Renger S., J. Paule, S. Heller, E. M. C. Leme, G. M. · Steinbeisser, M. H. J. Barfuss and G. Zizka. 304(7) Plant Syst. Evol. 841. Plant Systematics and Evolution. I was happy I found one, and a tiny bit annoyed I had more work to do! I will refer to this as the 2018 Study.

The 2018 Paper ended their introductory material summarizing the current state of taxonomy by stating

In this study, we present a molecular phylogenetic analysis comprising all seven *Ananas* species, *P. sagenarius* as well as additional *Aechmea* Ruiz & Pav. and *Disteganthus* taxa based on the comprehensive data set covering three nuclear, five plastid DNA sequence markers and AFLP (amplified fragment length polymorphism) data. Id.



Ananas

'Lava
Burst'.

'Lava

Photo by David Fell. <https://registry.bsi.org/>

There are about 46 registered *Ananas* cultivars. This is one of the more attractive ones.

The 2018 Study used the species listed in Smith & Downs, except for *A. monstrosus*. They treated *A. nanus* as a species, rather than a variety or synonym of *A. ananassoides*. (A study about *Portea and Gravisia* also recognized *A. nanus*.) Thus, while most of my article here focused on the differences between the Brazilian Flora list, WCSP and the Encyclopaedia, they did not use any of them! They did cite the Bromeliad Taxon List for the number of genera and species in the Bromelioideae subfamily.

Due to the earlier studies, it is no surprise they included *D. basilateralis* and *Aechmea tayoensis* in their study. They also included various members of *Aechmea* subg. *Chevaliera*, including *Aechmea fernandae*, shown on the following page. They included all of the *Ananas* species, and in some cases more than clone of a species.

The results were somewhat consistent with the above studies but there were some differences, some of which are consistent with current taxonomic treatments. All of the *Ananas* species were in a monophyletic clade that is sister to *P. sagenarius*. Like the other studies, *Aechmea tayoensis* and *D. basilateralis* were closely related to *Ananas*, although their relationships differed. Specifically, *A. tayoensis* was sister to the *Ananas/Pseudananas* clade. That entire clade was sister to a clade consisting of *Aechmea fernandae* and *D. basilateris*. These plants have certain common features, like a simple and well developed inflorescence, but each has some differentiating characteristics. Interestingly, the two *Aechmea* species are tank top bromeliads, yet they fall on the clade of early diverging group of genera, rather than the core group that has the other tank top genera.

The authors stated that these results plus the fact the *Pseudananas* species is tetraploid, not diploid like *Ananas* species, “could be regarded as an indication for maintaining the genus level of *Ananas* and *Pseudananas*.” Id. Note, however, that this treatment is not required since others could well assert the differences are insufficient to treat them as different genera.



Bromelia fernandae, now *Aechmea fernandae*.

E. Morren, Ill. Hortic. 18: 114. pl. 65. 1871.

Like the similar looking *Aechmea magdalenae*, this species appears to be much more closely related to *Ananas* and *Bromelia* than *Aechmea*.

As to the individual *Ananas* species, the 2018 Study showed:

1. The study had more than clone of each of *A. comosus*, *fritzmuellerei* and *ananassoïdes*. The clones of each species fell on the same clade.
2. One of the 3 clones of *A. nanus* fell on a different clade than the other two clones which fell on a clade with *A. lucidus*. *A. ananassoïdes* fell on a sister clade to these other two clades.
3. There were two clones of *A. bracteatus*. As expected one fell on a clade with three clones of *A. fritzmuelleri*, consistent with earlier literature treating them as either closely related or the same taxa. However, the other clone fell on a clade with *A. parguazensis*, which was sister to *A. comosus*. Various DNA markers of *A. bracteatus* point to a relationship with 4 other *Ananas* species (though not *A. parguazensis*) and the two clones did not have the same marker coverage. The authors concluded that “introgressive hybridisation plays an important role for the speciation of *Ananas*.”

The authors concluded that “the resolution was not satisfactory for drawing robust conclusions. Hence, to finally resolve the “*Ananas* problem,” extensive wild sampling and population genetic approaches using markers with high resolution need to be employed in particular to assess past or present gene flow between the closely related taxa.” Id.

Finally, the authors noted a possible link between leaf like scape bracts and a conspicuous coma. *Ananas* species have both. In contrast, species with bright colored scape bracts do not apical comas.

That is it, no more about *Ananas*!
