S.F.V.B.S.

SAN FERNANDO VALLEY BROMELIAD SOCIETY

APRIL 2020

P.O. Box 16561, Encino, CA 91416-6561

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Twitter is: sfvbromsociety ***Instagram is: sfvbromeliadsociety***

Elected OFFICERS & Volunteers

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next meeting: **Saturday April 4, 2020**

IS CANCELLED

Announcements

Future meetings. As you see above the April meeting has been cancelled. At this time, no decision has been made regarding the May meeting. As things develop, the Club leadership will decide whether to have a May meeting, and notify everyone via email. Obviously, we will follow directives or advisories from national, state and local authorities in making these decisions.

Our April speaker was going to be Cristy Brenner talking about Peru. She will be speaking in September instead.

World Bromeliad Conference 2020 Rescheduled. Due to the Coronavirus (now known as COVID-19) outbreak in the USA, including Florida and the fact that the Florida Governor has declared a state of emergency, **the World Bromeliad Conference from June 9-13, 2020 in Sarasota, Florida has been rescheduled to June 8-12, 2021.** The host hotel will still be the Hyatt Regency Hotel in Sarasota. You will have to change your reservation dates with the hotel. For more info, see

Please pay your 2020 Membership Dues

NEED TO RENEW ?.....

Pay at the picnic or future meetings to: Membership Chair –Steffanie Delgado or Treasurer - Mary Chan or Mail to: SFVBS membership, P.O. Box 16561 - Encino, CA 91416-6561 ***Yearly Membership*** **Dues - $15 for monthly e-mail** newsletters or **$20 for snail mail**

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, the May and future meetings may be cancelled.**

Saturday May 2	Norman Caughran III
Saturday June 6	John Martinez
Saturday and Sunday June 13-4	Club Bromeliad Show & Sale w/ LA Cactus Festival
Saturday July 4	Meeting????
Saturday August 1	Bryan Chan
Saturday September 5	Cristy Brenner
Saturday October 3	Ray van Veen
Saturday November 7	Woody Minnich

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

Photo submittal from our President

Tillandsia hybrid (concolor x capitata)

Billbergia “Swally’s Stoloniferous” x “Picta Red”

Instagram Tutorial

How to open an Instagram account

By Felipe J. Delgado

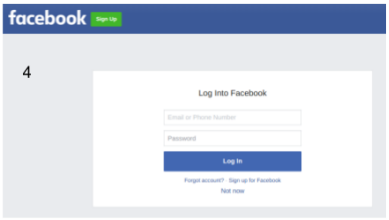
Open web browser - www.instagram.com

1) Click Sign Up to open new account or,
2) Sign in with Facebook if you already have a Facebook account

Sign in w/Facebook

3) If you choose to log in with Facebook, click on that option and then follow all prompts.

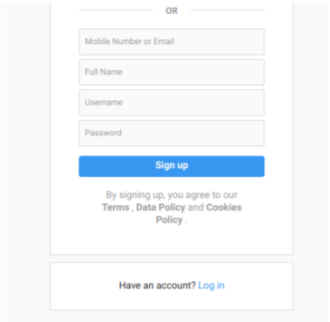
4) You will be asked to log in to your Facebook account and the Facebook and Instagram accounts will then be "linked".



Sign up for new Instagram account

5) Enter information requested and then click on Sign Up.

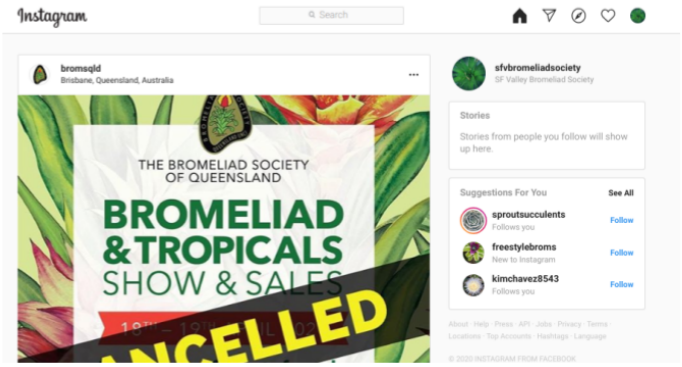
You will then be taken to your new Instagram Account.

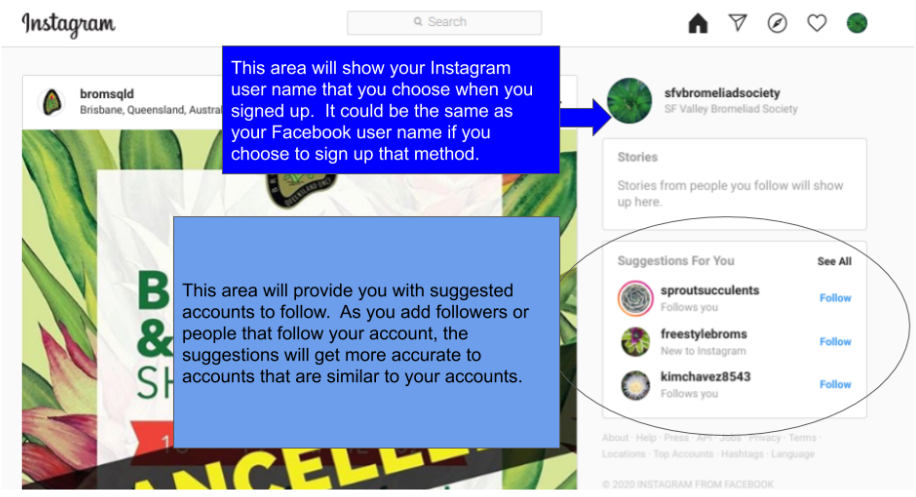


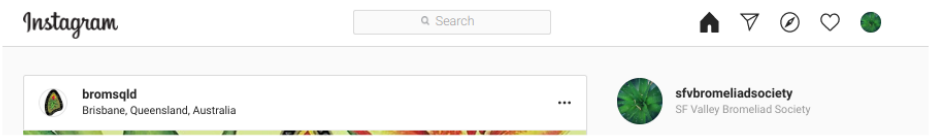
Opening Page - Instagram

Shown here is the SFV Bromeliad Society Instagram page.

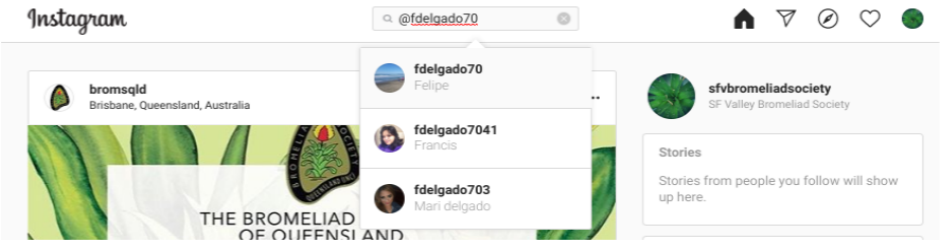
Your new page will look somewhat different as you have no posts yet.



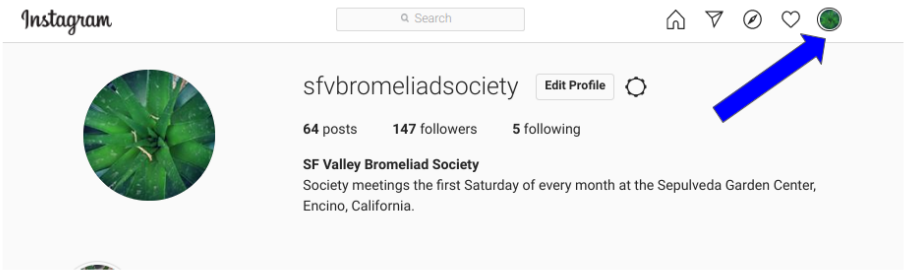




The Search box on the home page is where you can look for specific accounts that you may have been made aware of. For instance, our Society's Instagram account.
On Instagram, the best way to search for accounts is by adding the @ symbol in front of the account name. If you have only an idea of what the account name is, then do not add the @ and only enter the portion that you may know.
To find our Society's Instagram, enter @sfvbromeliadsociety into the Search and click the enter key. The next slide shows an example of Search where I looked for a Society Members personal Instagram page. My own (shameful plug, I know...sorry).



It is very likely that you will have multiple results even from an exact search as there are a lot of accounts active on Instagram. Verify that you choose the correct account and once you click it, you will be taken to that Instagram account.
Once you are on the Instagram account for our Society, click on the Follow button and now the Instagram account will show in your Feed. Your Feed is what you see when you log into your Instagram account. As you add more Instagram accounts, your feed will start to show photos (posts) from the accounts you follow.



The above shows our Society's Profile page. This page can be reached from your Instagram Home page by clicking on the icon above. This icon can be personalized with a photo that you chose.
As you can see, the Profile page shows how many Posts our Society has. How many other accounts follow our Instagram page and also how many accounts our Society page follows.
You can click on any one of these "metrics" to see who the followers are and who you are following.

Taxonomic Tidbits: *Hasawata, a new genus broken out from Aechmea – subgenus Chevaliera*

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

Last month noted that the number of *Aechmea* species has declined in the last five years, primarily due to transfers to other genera. The most recent change involves *Aechmea* subg. *Chevaliera* and March's Newsletter discussed that subgenus in some detail. This month discusses two different transfers from that subgenus.

Last month also noted that based on new DNA studies, over 20 *Aechmea* were transferred to *Ronnbergia* and *Wittmackia* in 2017. Aguirre-Santoro J. 2017. Taxonomy of the *Ronnbergia* Alliance (Bromeliaceae: Bromelioideae): new combinations, synopsis, and new circumscriptions of *Ronnbergia* and the resurrected genus *Wittmackia.* Plant Syst. Evol. DOI 10.1007/s00606-017-1394-y ("2017 Paper"). Some of these were members of subg. *Chevaliera*. Aguirre-Santoro noted these were unusual for *Ronnbergia* due to their strobiliform inflorescences.

One of these was *Aechmea germinyana*. It was first illustrated as *Chevaliera germinyana* in 1881. See the illustration on the next page. By 1889, Baker treated it as an *Aechmea*, where it remained until moved to *Ronnbergia* by Aguirre-Santoro in 2017, along with another member of the subgenus, *R. veitchii*. Aguirre-Santoro said three members of the subgenus were transferred, but I am not sure what the third one was.

Aguirre-Santoro noted these were unusual for *Ronnbergia* due to their "because of their strobiliform inflorescences covered with broad and rigid floral bracts, and strongly compressed flowers," while similar to *Ronnbergia* "because of their combination of sessile flowers, suberect to apically spreading corollas and rudimentary chalazal ovule appendages, a combination of characters not observed in other species of *Aechmea* subg. *Chevaliera …* " Id.

Ronnbergia germinyana illustrated as *Chevaliera germinyana*, Rev. Hort. (Paris). 53: 230. Figure 55, pl. 1881.

Both it and *Ronnbergia* (previously *Aechmea) veitchii* are unusual *Ronnbergia* species due to their stobiliform inflorescences.
The latter is illustrated in the August 2017 Newsletter.

While members of the subgenus *Chevaliera* may not be commonly cultivated (at least here), they have been studied quite a bit by Brazilian botanists the last two decades, and this had led to varying numbers of species in the genus. As noted last month, Sousa et al. (2009) studied their different inflorescence structures and stated there were 21 taxa; the list was slightly different than the 21 species listed by Smith and Downs in the late 1970's. [Sousa earned her doctorate thesis on the subgenus.] Another botanist said there were 24 species in 2003. Silva, B. R. 2003. Contributions to the Understanding of Andean and Amazonian *Aechmea* Subgenus *Chevaliera* (Bromeliaceae). Selbyana, Vol. 24, No. 1 (2003), pp. 46-63.

In addition to those listed in Smith & Down, Silva noted that *A. frassyi, gustavoi, microcephala and tayoensis* had been described as members, while Eric Gouda recognized that *A. lateralis* was a *Disteganthus* species. *A. frassyi was* later synonymized with *A. multiflora*.

Silva's article contains an excellent history of the genus. Among other things, Silva notes that in 1896, Mez recognized *Chevaliera* as a genus (with 4 species), while treating 4 species recognized as subg. *Chevaliera* by Baker as *Aechmea* subg. *Purpurospadix*. Silva studied live species at the Marie Selby Botanical Gardens collected from the Amazon and Andes. Silva found that seven of the nine subg. *Chevaliera* species from this area "seem to form a natural group, being ecologically adapted to the shade and humid terrestrial habitat of the equatorial rain forest." Id at 48. Two others from this area, *A. rodriguesiana and pallida*, did not appear to belong to the group, in part due growing in full sun.

In contrast, Silva found that the Eastern Brazilian species did not seem closely related to the others, and noted many morphological differences. The eastern species had a rosette that held much water, while the others had a spreading rosette that held little water. In addition, the shape of the leaves, floral bracts, petals sepals, anthers, ovaries and ovules differed for the two groups. These morphological differences were reflected in the different treatment of these species by Mez.

Another 2003 paper addressed the so-called *Aechmea multiflora* complex, a group of then four species of subg. *Chevaliera* in eastern Brazil (*A multiflora, depressa, hostilis and saxicola.*) Canela, F. M. B., L. N. P. Paz, and T.Wendt. 2003. Revision of the *Aechmea multiflora* complex (Bromeliaceae). Botanical Journal of the Linnean Society 143: 189–196.

Various other botanists found and published more members of this subgenus, such as *A. recurvipetala, timida, prasinata, nigribracteata and*

heterosepala; and Leme & Kollman also described an *Aechmea conifera* complex.

Various new species were published in the last two decades, leading one article to note the "current concept" of the subg. *Chevaliera* had 30 species. [1] 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 ("2018 DNA Study"). In the first comprehensive DNA study of the subgenus, the 2018 DNA Study sampled 22 of these 30 species, and 3 different DNA loci from them and 47 other bromeliad species.

The results found that the subgenus was highly polyphletic, with members found in six different places in the tree. However, there were two main groups. The largest group had 11 species, and included the type species, *A sphaerocephala*, shown in last month's Newsletter.

The 2018 DNA Study stated:

"The *A. sphaerocephala* group can be morphologically characterized by the following set of characters: tank-forming plants occurring in Atlantic Forest; leaves exceeding 1 m in length; inflorescence simple, strobiliform, multiflowered, the main axis narrow (< 5 cm wide); floral bracts lignified with entire margins; and flowers blue, red or lilac." Id at 291.

[1] The precise list isn't clear to this author. The study sampled (and listed) 22 of them, and noted 4 others that were not sampled. It did not seem to address four others: A. *rubignosa, microcephala, pallida and tayoensis.* It also noted the two species moved to *Ronnbergia*.

Photo by Elton Leme. Leme described this species in 2009 as a member of subg. *Chevaliera,* but it was not mentioned in the 2018 DNA Study, and now appears to be considered a subg. *Pothuava* species. Many similar looking plants often differ taxonomically.

The group has two clades, one of which is the *A. conifera* group, which includes *A. digitata* (as noted last month it has a compound strobiliform inflorescence.) Note that the feature listed in Smith's key (absent or reduced petal appendages is not addressed – presumably many (perhaps all?) of the species have petal appendages.

Four sampled species did not group with any other members of the subgenus. These included *A. ornata* (pictured last month) which was sister to a clade with *A. nudicaulis, pineliana and bromeliifolia*. Two others, *A. magdalenae* and *fernandae*, were not even in the core bromeliad group, do not have tank like rosettes and do not grow in eastern Brazil. They were both part of Mez's *Aechmea* subg. *Purpurospadix* , but they were not all that closely related under the 2018 DNA study. Another subg. *Chevaliera* member not sampled in the study (*A strobilacea)* appears to be closely related to *A. fernandae.*

Aechmea rodriguesiana (shown in last month's Newsletter) was not grouped with any other subg. *Chevaliera* members, including *A digitata* which also bears a digitate inflorescence. *A. rodriguesiana* had been a member of the *Gravisia* complex before it was transferred to subg. *Chevaliera*, but the study indicated it is part of the *Gravisia* complex.

Finally, there was a second group of seven subg. *Chevaliera* species - the *A. multiflora* complex. In addition to the four species noted by the Canelo article earlier *(A. multiflora*, *A. depressa*, *A. hostilis* and *A. saxicola)* , it includes *A. gustavoi, nigribracteata* and *prasinata*. This group cannot be distinguished by a single feature. Like the *A. sphaerocephala* group, they are tank top plants found in the Atlantic Forest with the same kind of inflorescences. But they are distinguished by having the inflorescence axis "dilated (> 5 cm wide); floral bracts lignified with wholly or partially dentate margins; and flowers green or white, dorsiventrally compressed with rigid sepals." Id at 291.

***Aechmea fernandae*.** Courtesy of André Cardoso https://www.flickr.com/photos. First published as a *Bromelia*, this species was transferred to *Aechmea* and has long been considered a subg. *Chevaliera* member. However, based on the 2018 DNA Study, it is unlikely to remain an *Aechmea*; it was found next to a clade of two *Bromelia* species.

The 2018 DNA Study also compared the size of these bromeliads with hundreds of others and found they were among the largest in the Atlantic Forest.

Finally, the authors of the 2018 DNA Study noted that like various earlier studies, taxa based on similar morphological features, but with disjunct geographical distributions, need to be further evaluated since many DNA studies, including theirs, found the taxa was not monophyletic. Instead, it appears the common features (such as strobiliform inflorescences) arose numerous times. What was perhaps "most striking" is the fact that the sympatric *A. sphaerocephala* and *multiflora* groups showed morphological convergence. (Sympatric groups overlap geographically.)

The 2018 DNA Study also concluded that a

"new circumscription of *A.* subgenus *Chevaliera* is mandatory or even a resurrection of *Chevaliera* as a genus should be considered based on the phylogenetic delimitation of the *A. sphaerocephala* group. The *A. multiflora* group could be described as a new genus as one of the first lineages in core Bromelioideae, placed with morphologically distinct taxa, making its morphological identity clear among Bromelioideae." Id at 292.

After the above quote, it is hardly surprising that three of the five authors (along with two other bromeliad specialists) published a new genus, *Karawata*, for the *A multiflora* complex. Maciel, J. R., G. M. Sousa, M.G.L. Wanderley, G. Zizka, and M. Alves. 2019. A New Genus of Bromeliaceae Endemic to Brazilian Atlantic Forest. Systematic Botany 44(3) pp 519-35 ("2019 Article"). In addition to reviewing numerous herbarium specimens, the authors visited live specimens in the Atlantic forest. The article has five lovely drawings from Sousa's 2004 doctoral thesis and pictures of some of the inflorescences.

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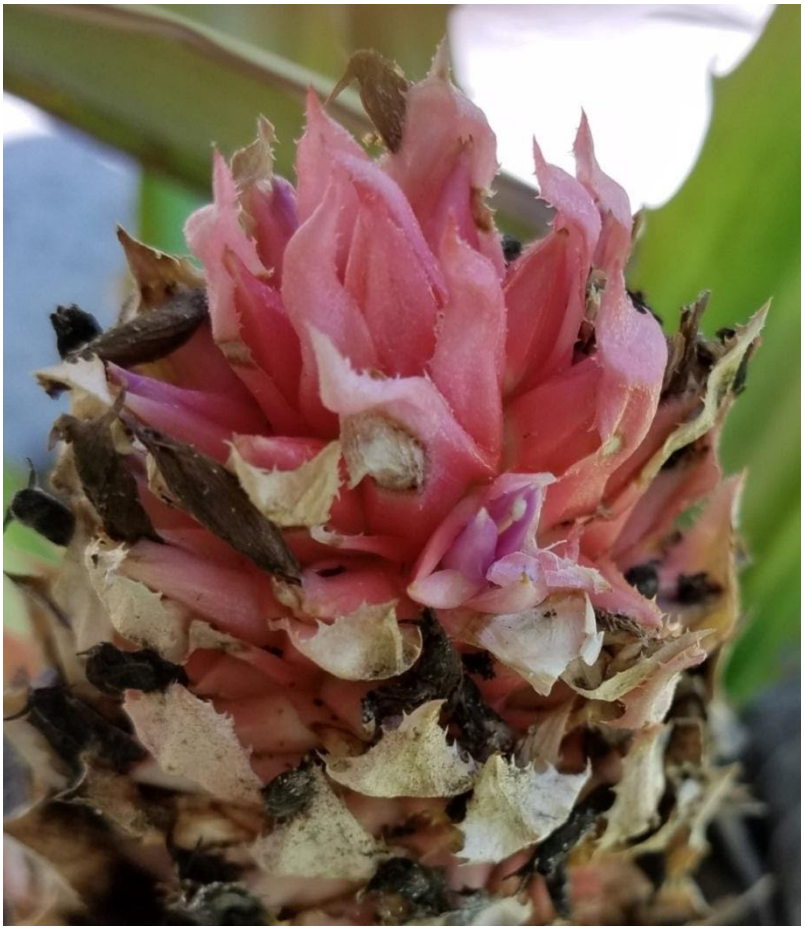
Aechmea magdalenae???? Or *Ananas*. Photo by Wisnev. Last month, I said I had "almost" seen two subg. *Chevaliera* species. This is one of them at the HBG. I was rather shocked to find the label, since I had passed by this clump many time and assumed it was a species of *Ananas*, the pineapple genus. Then one day the sign showed up stating it was *Aechmea magdalenae*. Having never seen such an *Aechmea*, I looked at the literature which showed that species looked much like *Ananas*, and perhaps the primary difference is that *Ananas* has purple flowers, while *Aechmea magdalenae* has yellow ones.

I took the above picture on 9/14/17, and there were no visible flowers though some were almost ready to pop out. The pictures I took did not show them, but I recalled a hint of blue. So I returned four days later, and found blue-ish flowers! This meant it wasn't *A. magdalenae*, but instead an unidentified *Ananas* species. It seems fit well within the description of *Ananas macrodontes*. Some (but not all) consider the correct name of that taxon to be either *Ananas sagenaria* or *Pseudananas sagenarius.* There is considerable controversy over these names.



Ananas macrodontes *(same plant as prior page).* Photo by Wisnev.

In any case, apart from the flower, the HBG plant looks very much like *Aechme. magdalenae*. So I "almost" saw a subg. *Chevaliera* species. Of course, based on the 2018 DNA study, *A. magdalenae* is unlikely to remain a subg. *Chevaliera* species, or even an *Aechmea*. Not surprisingly, it was sister to a clade that contained *Pseudananas sagenarius* and *Ananas bracteatus* (another controversial name!)

Aechmea 'Quadricolor' a variegated form of *Aechmea magdalenae*. Photo by Geoff Lawn. https://registry.bsi.org/.
Compare this picture with the prior page, and you can see why this species is easily confused with *Ananas*.

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The authors of the 2019 Article noted the results of the 2018 DNA study pertaining to the *A. multifolora* complex were consistent with the Smith Downs key, which separate the then known members from other subg. *Chevaliera* members "based on serrulate floral bracts, sepals 17–20mm long, and geographical distribution restricted to eastern Brazil." One of the earlier *Ronnbergia* papers also included 3 members of this complex, and found they fell on one clade.

The 2019 Article described the genus and seven species, all of which had previously been treated as *Aechmea*. They noted the plants were huge, with leaves up to 230 cm, and were "superficially similar" to the *A. sphaerocephala* group species, but those have entire floral margins and blue or vinaceous petals (vs. green or white for *A. multiflora* group species.) They also pointed out that *A. fernandae* and *magdalenae* have dentate floral bracts, but they grow outside the Atlantic Forest and have yellow flowers.

The genus name is the name used by local people to identify some of these plants, and is from Tupi, a language used before the Brazilian colonization.
The key to the species of the genus divided the species depending upon whether they have ovate inflorescences with a compressed axis (*K. gustavoi, depressa, prasinata and hostilis*) or capituliform inflorescence with an elongated axis (*K. multiflora, nigribracteata and saxicola*) inflorescences. While species with compressed inflorescence (the portion of the inflorescence bearing flowers) generally have short peduncles (and vice versa), *K. depressa* has a long peduncle but a compressed axis.

As noted in an earlier newsletter, keys don't necessarily follow the DNA cladogram, and the groupings in this key didn't either. The DNA tree showed a clade with *K. gustavoi* by itself, sister to the other six species divided into two clades, one with *K depressa, multiflora* and *nigribracteata* and the other with *K. saxicola, prasinata and hostilis.* I was somewhat

curious how these two clades differed morphologically, but the authors didn't address that point. However, it turns out there are some different features for each clade.

K. multiflora, photo courtesy of Eric J. Gouda.

http://bromeliad.nl/encyclopedia/ Eric and Kees Gouda and Derek Butcher publish the online Encyclopaedia of Bromeliads. This excellent source for bromeliad information also has pictures of *K. depressa and saxicola.* *K. multiflora* is one of three *Karawata* species with an elongated capituliform inflorescence.

On a clade by itself, *Karawata gustavoi* appears unique in the genus due to its long and narrow leaf blades and white petals (all others have green ones). It is also the only species with a capituliform inflorescence with long and narrow bracts. It is found in two disjunct populations in Bahia and Pernambuco, and grows exclusively as an epiphyte unlike the six other species.

It appears that three members of one clade (*K. depressa, multiflora* and *nigribracteata)* are only found in Bahia. *K. multiflora* has the largest distribution of all seven species. It is similar to *K. depressa* by virtue of its red floral bracts, and free petals; as noted above, they have differ different forms of inflorescence. *K. nigribracteata* (named for its unusual blackish floral bracts) also has free petals, and an elongated capituliform inflorescence like *K. multiflora*. Thus, the three members of this clade all grow in Bahia, and all have free petals above the epigynous tube.

***Aechmea fernandae*.**

Photo courtesy of André Cardoso https://www.flickr.com/photos.

Compare this photo with that of *K. multiflora* on the prior page. It is hardly surprising that they were both considered closely related, and previously in the same *Aechmea* subgenus. However, based on phylogenetic studies, they are no longer in the genus, and not even that closely related.

In addition, it appears that all three of these species have relatively long peduncles (at least 30 cm, and up to 120 cm). *K. multiflora* has the longest peduncle (roughly 2 – 4 ft. tall) of all the *Karawata* species. *K. nigribracteata* has the largest flowering portion of the inflorescence (about 8-12 inches). *K. depressa* is unusual in that it has a fairly long peduncle but a compressed axis.

Karawata nigribracteata. Photo courtesy of Jefferson Maciel.

Maciel is the lead author of the 2018 DNA Study, 2019 Paper and a 2014 article publishing the then *Aechmea nigribracteata.* I contacted him and he graciously sent me the above picture for the article.

In contrast, the three members of the other clade all grow south of Bahia. Of these, *K. saxicola* has the widest distribution, growing throughout the states of Rio de Janeiro and Espirato Santo. It is the only member of this clade with an ovate inflorescence and elongated axis, but differs from the other two species with this type of inflorescence by virtue of its connate petals and growing south of Bahia. Like *K. saxicola*, both *K. prasinata and hostilis* have connate petals; both of these species are endemic to Espırito Santo. *K. hostilis* and *prasinata* both have relatively short inflorescences and rachis. But *K hostilis* red floral bracts (like two of the species of the other clade), while *K prasinata* has green ones.

Thus, these two clades differ by their distributions and whether they have connate or free petals. The three species of one clade grow in Bahia, have free petals and long peduncles. The three species of the other clade grow south of Bahia and have connate petals, but can have short or long peduncles. Interestingly, *K. gustavoi* which is also found in Bahia has connate petals and a short peduncle unlike the three other species found there.

All seven species grow epiphytically. *K. gustavoi* is the only that that grows exclusively that way. *K saxicola* also grows on rocks, while the other five species also grow terrestrially (rarely for *K. prasinata*).

There seems to be little doubt that many other *Aechmea* species, including at least 3 or 4 more species of *Aechmea* subg. *Chevaliera,* will be transferred to other new, or current genera.