



S.F.V.B.S.

SAN FERNANDO VALLEY BROMELIAD SOCIETY

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MARCH 2016 NEWSLETTER

OFFICERS

Pres: **Mike Wisnev** V.P.: **John Martinez** Secretary: **Leni Koska** Treasurer: **Mary Chan**
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Sunshine Chair: **Georgia Roiz**, Refreshments: **Kathleen Misko**, Web: **Mike Wisnev**, FaceBook: **Roger Cohen**
Editors: **Mike Wisnev & Mary K.**, Snail Mail: **Nancy P-Hapke**

next meeting: Sat. Mar. 5, 2016 @ 10:00 am

Sepulveda Garden Center 16633 Magnolia Blvd. Encino, California 91316

AGENDA

9:30 – SET UP & SOCIALIZE

10:00 - Door Prize – arrive before 10:00

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



10:15 - Introduce *Speaker: Marquita Elias*

Program Topic: “Touring the Canary Islands”

Marquita is a member of CSSA and a member of LACSS for five years and has been scheduling programs for four of those years. As a California native, born in Anaheim, she received her degree in Civil Engineering from Loyola Marymount University and also attended Scripps Institute of Oceanography. She worked as a Registered Civil Engineer for over 20 years with a portion of that time spent underwater as a hardhat diver. She spends her time helping with their family construction business, hiking, mountain biking and tending her collection of aeoniums and adeniums.

11:15 - Refreshment Break: Will the following members please provide refreshments this month: *Nels Christianson, Roger Cohen, Gregg DeChirico, Mohamed, Larry Farley, Bob Friedman, Gloria Friedman, Phyllis Frieze, Mardy Graves 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? Contact Kathleen at 818-402-6031 or leenest@aol.com

Feed The Kitty - if you don't contribute to the refreshment table, please make a small donation to (feed the kitty jar) on the table; this helps fund the coffee breaks. **11:30 - For Show and Tell please bring a plant.**

11:45 – Mini Auction: members contribute

12:00 – Raffle: We need each member to donate

12:15 - Pick Up around your area

12:30 – Meeting is over—Drive Safely <>

TIME TO RENEW

Please pay \$10.00 dues at the meeting or use our SFVBS P.O. Box mailing address

President's Message

Please save Saturday April 16 for our Club picnic, hosted by Mary and Bryan Chan at their home. Tentative starting time is roughly noon, for a lunch picnic, and some of the most amazing Bromeliads you can hope to see. More details to follow later.

Mike Wisnev

Mary K is taking a look back at last month..... Nels Christianson was our speaker and he gave an excellent presentation of his trip to Northeastern Mexico; not surprised, his programs are always great! As usual we had lots of great refreshments contributed by *Ana Wisnev, Kathleen Misko, Nancy Hapke, Mohamed El-Twansy, Michael Matsumoto, Bob Friedman, and Bob Wright*. I donated the birthday cake but I really want to know who brought those incredible chocolate cookies? If you didn't make it to the last meeting, Roger Cohen placed several photos from that meeting on our facebook page resulting in several new requests to join as our FB followers. Thank you *John Martinez* for your donation to the mini-auction and also for the raffle plants. A special thanks to *Ray VanVeen* for donating about 3 dz. raffle plants. And others who deserve thanks for raffle plants are *Kaz Benadom, Nancy, Steve Ball and Michael Matsumoto*. Thanks for the Show-n-tell plants brought in by *Joyce Schumann, Ray, Nancy, Steve, Bob Wright, Bryan Chan, Leni Kosko and Mohamed*. We had a nice number in attendance, attending our meetings is important. All went well except that we had too many members parked inside near the back door; we received a complaint from management.

Announcements:

SGC management received a complaint about our parking – Paola, the senior gardener in charge of the Sepulveda Garden Center, received a complaint from one of garden plot holders. We have too many cars parking behind the building. In the future we need more members to use the main parking lot. Besides having that one gardener complaint, last month we even had members parked in the city truck's space. We should drive in the rear for **unloading and reloading** of plants and supplies; then move to the main parking lot. Due to our facility use agreement, we cannot afford to have complaints against our group. If management checks on us and is not satisfied, we could be required to not park inside at all. We need your every ones cooperation.

- **Congratulations to Andy Siekkinen** – he is our Bromeliad Society International (BSI) Western Region Director. For the past few years Andy has been seriously studying bromeliads with a strong focus on Hechtias. For a long time he has wanted to begin working on his PHD. On Monday Feb 22 he interviewed for and was given a grant to do some long awaited field work. He is the recipient of the 2016 Annetta Carter Memorial Fund grant, for his proposed research: "Searching for Hechtia gayorum, the Baja Endemic Bromeliad." This fall he will begin studies at Rancho Santa Ana Botanic Garden/Claremont Graduate University.
- **Snail Mail or E mail** – If you don't have email you are missing out on some very good bromeliad articles written by Mike, our president. The newsletter by snail mail is only a few pages and we can't print the full color articles. If you don't have email, ask your neighbor, friend or family member if once a month you can use their address to receive the newsletter or go online to check our webpage. sfvbromeliad.homestead.com



Andy

- **Happy March Birthday** to *Kaz Benadom* on the 7th.
- **Mailing Membership Renewals to our club P.O. Box** is very good. However the envelopes must be mailed using the **name of the club**. We cannot use an individual's name. Some letters were returned to sender. When renting a P.O. Box you must list names to receive mail there. Those names are posted on the back side for the postal employee's referral; and they have instructions not to place mail in that box other than for those names listed. But of course it depends on who is working that day!! Just mail to **SFVBS membership** and you will be fine.
- **Please see Special Cactus Club announcement on the last page** <>

NOW IS THE TIME

TO continue your fertilizer program with the second number in the formula being higher than the other two. Phosphorus will induce your plants to set flowers. Fertilize once a month at ½ strength.

TO check your plants for scale and aphids. Dip or spray thoroughly in a solution of 1 tablespoon malathion in a gallon of water. Repeat in 10 days if the infestation is heavy.

TO remove spent and dried plants from your pots. Remove pups ½ the size of the mother. Repot for sale or trade.

TO watch watering program according to rain or warm weather.

TO clean tanks of rotting material and when you water, water a lot to wash the salts out of the cups and the soil.

TO check coloration of your plants; if colors are pale, move them into more light. Do not put Neoregelias in full sun. Move plants to sunny areas gradually to prevent sunburn.

NOW IS THE TIME was written and first published by *Stan Oleson in April 1988; and published again in the South Bay Bromeliad Associates Newsletter prepared by Bob Wright in April 2007*

March is also a good time to just move plants around in your yard. If you want to give a particular plant more sun then now is the time; giving it time to gradually acclimate before the long hot summer days.

Please pay your 2016 Membership Dues

NEED TO RENEW ?..... Pay at the meeting to: **Joyce** - Membership Chair

or Mail check to: SFVBS membership - P.O. Box 16561 - Encino, CA 91416-6561

Yearly Membership Dues \$10.00 for a single or couple

Please Put These Dates on Your Calendar

If there is rain please check **web page, email or phone messages** before leaving home for the meeting.

Saturday April 2, 2016	Speaker - Andy Siekkinen – “Brazil Part II: Chapada Diamantina”
Saturday April 16, 2016	Backyard Picnic , hosted by: Bryan & Mary Chan
Sat. & Sun. April 30-May 1, 2016	LaBallona Bromeliad Show & Sale
Saturday May 7, 2016	SFVBS Regular meeting - STBA
Saturday June 4, 2016	SFVBS Regular meeting - STBA
Sat & Sun June 11-12, 2016	SFVBS Show & Sale w/ the Cactus Club
Saturday July 2, 2016	SFVBS Regular meeting - STBA
Saturday August 6, 2016	Speaker - Andy Siekkinen
Sat. & Sun. Aug 6-7, 2016	So. Bay Bromeliad Show & Sale
Saturday Sept 3, 2016	SFVBS Regular meeting - STBA
Saturday Oct 1, 2016	SFVBS Regular meeting - STBA
Saturday Nov 5, 2016	SFVBS Regular meeting - STBA
Saturday Dec 3, 2016	SFVBS Regular meeting - STBA
Saturday Jan 7, 2017	SFVBS Regular meeting - STBA

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 John Martinez johnwm6425@gmail.com or Mary K. at 818-705-4728 or e-mail rango676@aol.com

Taxonomic Tidbits – *The Rise (and Fall?) of Orthophytum - just how many are there?- Part 2*

By Mike Wisnev, SFVBS President (mwisnev@sbcglobal.net)

San Fernando Valley Bromeliad Society Newsletter – March 2016

Part 1 covered the basics of *Orthophytum*, including the huge increase in species the last few decades, and the sessile inflorescence complex. Part 2 continues with the scapose inflorescence complex.

As a reminder, the sessile complex is characterized by having a very short inflorescence; the flowers are basically in the rosette of the leaves. Part 1 showed a lot of them including three very pretty ones, *Orthophytum amoenum*, *navioides* and *ulei*. Frankly, most of the others are just as pretty if not more so, at least in flower. While *Orthophytum burle-marxii* is in cultivation, though not widely seen around here, most of the others are even less commonly seen in this area.

Each of *Orthophytum albopictum*, *hatschbachii*, *heleniceae*, *humile*, *ophuriodes* or *rafaelii* would be great additions to any collection. It would be hard to choose one over another. If forced, I'd go with *Orthophytum humile* – its inflorescence might just be a tad more stunning than the others, and I like its lepidote leaves more than those with bright glabrous green ones. You might disagree. Many are discussed in a recent JBS article called “Introducing *Orthophytum rafaелиi*” by its editor, Alan Herndon. 64(2) JBS 109 (2014).

Does anyone have that species?

Some Technical information. Before turning to the scapose complex, just what features distinguish *Orthophytum* from other genera. As almost always, this entails a look at the key to the genera of bromeliads. Like roughly half of the many genera in the Bromelioideae subfamily, *Orthophytum* have symmetric sepals. A few of these have filaments that form a tube, but not *Orthophytum*. The key then distinguishes genera by whether the terminal axes of the inflorescence is visible or instead is covered by leaves or bracts. *Orthophytum* fall within the latter group.

Now it gets a bit more complicated since *Orthophytum* appear three times within the group of genera with symmetric sepals, filaments not forming a tube and terminal inflorescences covered with leaves or bracts. As to those with a simple inflorescence, *Orthophytum* are distinguished by having leaf-like floral bracts. (The genera with bract like floral bracts include *Ochagavia*, *Acanthostachys* and others



Orthophytum humile photo by Rafael Louzada
type locality at Grao Mogol

even more uncommon!). As to those with a compound inflorescence, *Orthophytum* is the only one that is obviously compound – the rest (which include Nidularioid complex and *Cryptanthus*) have a “pseudosimple” one. Presumably that means it is a compound inflorescence that looks more like a simple one.

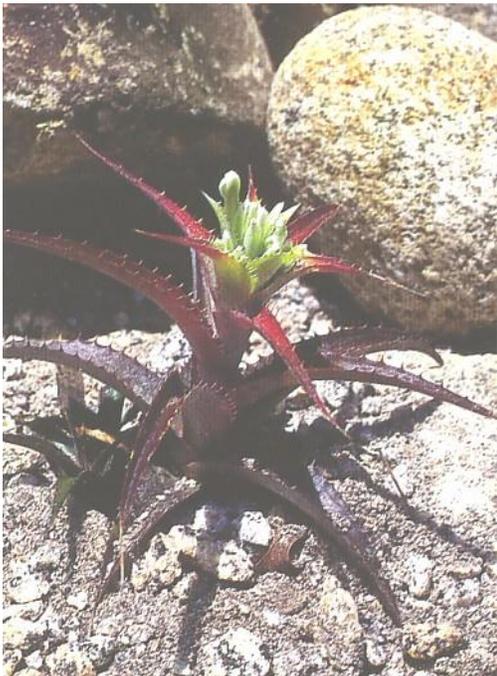
The Scapose Inflorescence Complex. In 2004, Elton Leme divided the genus into two complexes – those with a sessile inflorescence, discussed before, and those with a scapose one. At least ¾ of them fall into the latter category. As noted, these have tall inflorescences and sometimes the rosette is more or less gone by the time the plant stops flowering.

Leme described three subcomplexes with scapose inflorescences. These were

- a. "Subcomplex disjunctum" - leaves forming a distinct rosette before and at anthesis, petals forming a tubular corolla toward base, except for the suberect apex, apex obtuse to acuminate, not cucullate. (26 taxa).
- b. "Subcomplex mello-barretoii" - leaves forming a distinct rosette before and at anthesis, petals forming a clavate corolla, apex obtuse-cucullate. (2 taxa).
- c. "Subcomplex leprosum" - leaves not forming any rosette neither before anthesis nor during it, and not distinguishable from the scape bracts, or leaves absent even before anthesis. (4 taxa).” See J. Brom. Soc. 54(1): 36-7. 2004

"Subcomplex mello-barretoii." Let's start with the smaller ones.

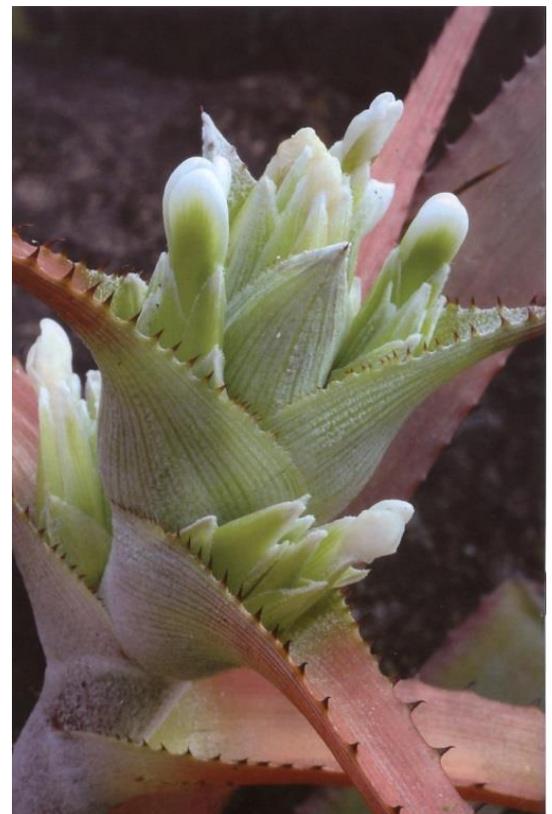
Below is *Orthophytum mello-barretoii* which is obviously in the group named after it. This group has hooded and club shaped



flowers. You won't find many pictures of this species around. While there were only 2 members of this group in 2004, four more had been described by 2008 when Leme wrote more about this subcomplex. See Leme, E.M.C. (2008) Studies on *Orthophytum* – Part IX. The “subcomplex *mello-barretoii*” and another new species. 58(6) JBS 257 (2008).

Orthophytum mello barretoii

Photo by Leme,
appearing in JBS 50(2) 56 (2000)



Orthophytum diamantinense

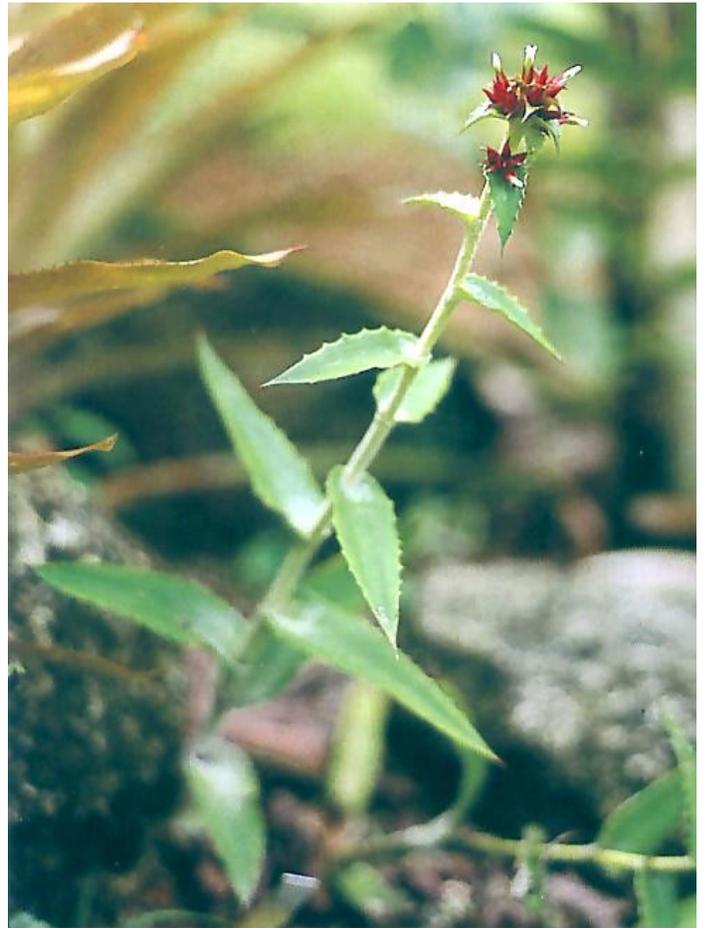
Photo by Leme, appearing in JBS
58(6) back cover (2008).

To see the flowers better, here is the inflorescence of the paratype of the new species described by Leme in that article.

Subcomplex leprosum." The description above says leaves not forming a rosette before anthesis. What Leme is referring to is that the plant leaves form a rosette, but the rosettes disappears as the inflorescence elongates well before the flowers form. In contrast, the other subcomplexes have a rosette still while flowering. *Orthophytum glabrum*, shown in Part 1, is in this group.

Another member of this group is *Orthophytum falconii* photo to the right, Photo by Leme, showing its habit in cultivation. .

"Subcomplex disjunctum." By far, the *disjunctum* subcomplex is the largest complex. *Orthophytum megelhasei*, *guerkenii* and *saxicola*, all shown in Part 1, fall into this diverse group.



Orthophytum falconii
photo in J Brom Soc 53(1): 22. 2003



As you can see, there is still a rosette while the plant has flowers, which are generally smallish and white. The rosettes can vary in color quite a bit. Some of them have a spike like inflorescence and others have a lax spike of spikes.

Obviously this subcomplex is named after *Orthophytum disjunctum*. This species seems somewhat variable – its leaves can vary in size, color and how densely they are covered by trichomes. Different varieties were described by Prof. Werner Rauh based on their different flower colors. The type plant has green bracts and white flowers, but one variety has dark black violet sepals and bracts. Another variety also has violet sepals, but is rather unique due to green petals for which it is named.

Orthophytum disjunctum viridiflorum

[The Rise and Fall? of the *Orthophytum*](#). Let's go back to the title. Part 1 noted the dramatic increase in the number of species- 17 by 1979 and another 17 by 2004. Leme and his co-authors then added 33 more and various others contributed five more. Thus, we have 69 species today, explaining the Rise of the *Orthophytum*.

Wait a second, the more observant might say. The numbers above don't add up – 34 species as of 2004 and 38 later gives us 72 described species, not 69! What is this about? As always a few species are synonymized with others or referred to other pre-existing genera. But I didn't even include those in the 72 described species. One of those, for Bob Wright, was *Orthophytum lanuginosum* (Ruiz & Pavon), which now is *Pitcairnia lanuginosa*!

Orthophytum boudetianum, photo by Leme. This fairly new species is similar to *Orthophytum sucrei* which is in cultivation. Like a few others, both are smaller species that usually grow on rocky outcrops. They also have an inflorescence that is a spike – all the flowers are at the top of the peduncle. Compare it to the picture above that shows a lax spike of spikes. .

Lapanthus. Three earlier species considered *Orthophytum* are now part of a new genus called *Lapanthus*. It was named by Louzada and Versieux in 2010 to honor Dr. Maria das Gracas Lapa Wanderley and also to refer to the rocky habitat of this genus (lapa meaning rocky shelters in Portuguese). One of the three had also been considered a *Cryptanthus*.

Part I discussed the sessile complex, and its three subcomplexes. The *Orthophytum supthutii* subcomplex was distinguished by its yellow orange petals and the fact the leaves don't change color when the plant flowers. In fact, Leme told its discoverers that "it is really different from everything I have ever seen." You were warned there was more to the story, and here it is.



Orthophytum boudetianum
See J. Brom. Soc. 57(4); 149. 2007

Just as *Orthophytum supthutii* was the only orange flowered *Orthophytum*, it turns out that *Cryptanthus duartei* was the only member of that genus with an orange petals. Leme, A New Identity for a Mysterious Species. J Brom. Soc. 45(1):3-5. 1995. It hadn't been found again since it was collected in 1949. When Leme examined the herbarium specimen, he saw the petals had appendages. While *Orthophytum* have petal appendages, *Cryptanthus* are not supposed to have them! He also realized that this plant was from the same locality as *Orthophytum supthutii*, and after looking into them, concluded the two were really the same species!

The older name generally controls in this case; thus, normally the new name would be *Orthophytum duartei*. But since there already was a different species named *Orthophytum duartei*, the new remained as *Orthophytum supthutii*. In 2004, this was the sole member of the *supthutii* subcomplex.

Here is another new *Lapanthus* species. *L. validorum*. It is easy to see why these species had been considered *Orthophytum*.



Lapanthus validorum Photo by O B C Ribeiro

Fast forward to 2007. Louzada and Versieux described a new species, *Orthophytum itambense*, which they felt was closely related to *Orthophytum supthutii*, even though it had white petals. Novon 17(1): 130-134. 2007. They continued their work on *Orthophytum*, and found that these two species had certain unique features. Their petal margins have cilia, or hair like structures and the stamens are free. In contrast, *Orthophytum* and *Cryptanthus* both have entire margins and adnate filaments. These two species also have lanceolate petal appendages, while *Cryptanthus* don't have appendages, and *Orthophytum* have "cupuliform or sacciform" shaped ones. In addition, an earlier DNA study that included *Orthophytum supthutii* suggested it was a different genus. As a result, they created the new *Lapanthus* genus, and moved both species into it. It also appears they have scented flowers. Does anyone own a *Lapanthus*?

Last tidbit. The rule that the earlier name controls still applies! So while *C duartei* had become *Orthophytum supthutii* since there was already an *Orthophytum duartei* Ilare, the name now is *Lapanthus duartei*. *Orthophytum itambense* is now *L itambensis*. So now you know about *Lapanthus*, and why 3 species described as *Orthophytum* no longer are. Of course, even taking a lot of literary license, it really doesn't seem fair to characterize a decline from 72 to 69 species as the Fall? of the *Orthophytum*.

While not unattractive, some species, like *Orthophytum macroflorum*, are not exactly stunning. This species has the largest flower known to the genus. Photos appear in J. Brom. Soc. 55(4): 171-5.2005



Figure 26. *Orthophytum macroflorum* Leme & M. Machado, in cultivation. The type specimen was prepared from this clone.

Photograph by Elton Leme.

Figure 25. Detail of the flower of *Orthophytum macroflorum* Leme & M. Machado, in cultivation. The type specimen was prepared from this clone.

Photograph by Elton Leme.



Are all the species valid? A second question is whether any of these newly, or older, species will end up being considered the same. This is purely speculative. But it is not an uncommon phenomenon, especially when lots of new ones have been named. As researchers have more time to evaluate these new ones, and find new habitats, there may be some consolidation. Two that do intrigue me are *Orthophytum piranianum* and *Orthophytum graomolgoense*. But since all of this is speculative, why the title name?

DNA Studies. As noted in Part I, Rafael Batista Louzada's doctorate work involved the first comprehensive DNA study of this genus. This study included 40 *Orthophytum* species, 12 *Cryptanthus* species and 2 *Lampanthus*. As before, Louzada followed up with an article. See Louzada, R.B., Schulte, K., Wanderley, M.L., Silvestro, D., Zizka, G., Barfuss, M.H.J., Palma-Silva, C., Molecular phylogeny of the Brazilian endemic genus *Orthophytum* (Bromelioideae, Bromeliaceae) and its implications on morphological character evolution, *Molecular Phylogenetics and Evolution* (2014).

The bottom line is that while the results indicated *Orthophytum* isn't a good genus, the authors felt more work is needed before taking any specific action. As to the actual result, all of the *Orthophytum* species didn't fall within a single group unless *Cryptanthus* is also included.

Basically, there are three different groups of *Orthophytum*, with different groups of *Cryptanthus* species between two of them. While some of these had high statistical support, others (or at least the relationship between others) were poorly supported. This is why the authors felt more work is needed. However, the study certainly isn't encouraging for keeping *Orthophytum* as a single genus.

There are a number of *Orthophytum* cultivars. Here is one called 'Copper Penny.' It thrived in a pot, and I decided to plant it when it got bigger. For whatever reason, it didn't last too long!



How did the complexes and subcomplexes adopted by Leme hold up? Actually, they got rid of those terms and use groups and subgroups instead. Why? – the manuscript simply says “we understand these morphological groups of species are not species complexes according to its idea.” As best as I can tell, they consider complexes as potential subgenera or taxa, and since their studies don't support them, they use the more informal term group.

Ignoring this change in terminology, here are the highlights of the results.

1. The results suggest that neither *Orthophytum* nor *Cryptanthus* is a good genus as currently constituted.
2. Putting it all together, the *amoenum* group in the sessile complex breaks off first. All the other species fall into two clades. One clade has *Lapanthus* and some *Cryptanthus*. The second clade has all the *Orthophytum* and some *Cryptanthus*; *Cryptanthus* break off first, then the *vagans* clade in the sessile complex, then the *mello-barretoii* clade in the scapose complex, and finally the other scapose species.
3. The two *Lampanthus* species were grouped together and were a sister group to a bunch of *Cryptanthus*. Thus, *Lampanthus* seems like a good genus.
4. As to the two complexes created by Leme, the scapose complex was valid. Except for *Orthophytum foliosum*, all of the species with scapose inflorescences are in one group. As to the three scapose subcomplexes, the *mello-barretoii* subcomplex seems like a valid group. But the other two subcomplexes in the scapose complex aren't. Basically, the results showed four other scapose clades but not all of them correlated well to obvious morphological features. These four clades were a sister clade to the *mello-barretoii* subcomplex.
5. The sessile complex was a problem. There are two unrelated groups with sessile inflorescences. They correspond to the *amoenum* and *vagans* groups (except that *Orthophytum foliosum* shows up in the *vagans* group). Since these two groups aren't very closely related, it seems unlikely that the sessile complex will survive.
6. They also compared their DNA results with the various morphological features. If the results are correct, they suggest things like petal appendage and form of the corolla are not overly important at the generic level.

Final musings. As noted, no changes were proposed by this study. More work is needed. But, let's assume that future studies support the results, or at least most of them. What would happen to the *Orthophytum* genus?

While it is expected, or at least hoped, that these DNA studies will ultimately describe valid taxonomic groups, and perhaps sub-groups within them, they won't necessarily tell us which groups or subgroups should be considered a genus. Even with DNA testing, there will be room for lumping and splitting in some cases.

Perhaps the most likely approach would be to create a new genus for the *amoenum* complex; all the rest of the species could remain *Orthophytum*. Or one could break these other *Orthophytum* into more than one genera, but this seems unlikely unless warranted by their morphology. Thus, the Fall of the *Orthophytum*, though not its demise, **may** be on the horizon – we don't know yet, which is why the title says “Fall?”

Cryptanthus also needs to be broken up. One approach is to make some *Cryptanthus* a new genus. Alternatively, these other *Cryptanthus* could be merged into *Orthophytum*.

Depending on the groups, and the features of each, there is a third approach - merge *Orthophytum* and *Cryptanthus* together into a single genus. Would we now have the Super-Rise of the *Orthophytum*? As noted above, if two taxa are combined, the earlier name controls. What would the new name of the combined genus be? It turns out *Cryptanthus* predates *Orthophytum* by 15 years! So, if the two genera were combined, all the *Orthophytum* would be renamed *Cryptanthus*. Now that would truly complete the Fall of the *Orthophytum*.

Taxonomic Tidbits – *Yellow/green petalled Billbergia* – *Part 2 (B. amoena var. carnea and B elegans)*

By Mike Wisnev, SFVBS President (mwisnev@sbcglobal.net)

San Fernando Valley Bromeliad Society Newsletter – March 2016

Part 1 discussed the many varieties of *Billbergia amoena*, including some unlabeled ones of mine. This Part continues with *Bill. amoena* var *carnea*, and its possible relative *Bill. elegans*.

Though the normal form of *Bill. amoena* has green leaves, Part 1 didn't show one. Here is an illustration of so-called *Tillandsia amoena* Loddiges, Bot. Cab.1:pl. 76. Oct 1818. You can readily see the blue tipped petals and sepals and the erect scape. The floral bracts are tiny – you can't see them in this picture.

Bill. amoena var *carnea* is the most unusual variety of *B. amoena* for many respects. However, its description doesn't portray these features. It was described by E Pereira (who also described var *cylindracea* in 1972) as having “scape bracts, scape, rachis and bottom part of sepals carnea (rosy-red).” Bradea 2 at 32 (1975). From what I have seen, lots of varieties have red scape bracts, scape and rachis, so the real distinguishing feature is the bottom part of the sepals being red, rather than the typical green to pale green. As an aside, recall also that var. *minor* is supposed to have red tipped sepals, yet the picture of it seem to show red bottomed sepals.



Here is a picture of *var carnea*. In addition to the red sepals, note the fact the scape is decurved, which means hanging down, as opposed to the erect ones of other varieties. Even more unusual are the blue-violet petals – while most varieties have a blue tip, this one seems all blue. As noted briefly, var. *cylindracea* also seems to have dark petals, though again this is not noted in the description by Pereira. Photo by Butcher.

These three features (a decurved inflorescence, red sepals and blue petals) certainly are quite different than the features of other varieties of *B amoena*. Moreover, other species have violet petals, and decurved inflorescences. So why isn't var. *elegans* a different species? Not surprisingly, others have been curious about this as well. In fact, Uncle Derek has written an article about it, and its similarity to another species called *B elegans*. Bromeleter 37(3): 2-4. 1999.

Billgeria elegans is described by Smith as having a decurved inflorescence, green distinctly lepidote sepals with a blue apex, pale yellow green petals with a blue apex and the upper floral bracts half as long as the ovary. Below is a picture that seems to match well. I am pretty sure this is the plant Derek acquired from Bill Morris who got it from Elton Leme (originally labeled *amoena var carnea*).

Note the scape bracts and sepals are more salmon orange, with white lepidote spots, and the fairly large similarly colored floral bracts.

Derek's article sheds more light on the problem. He notes that a plant named *amoena var penduliflora* (with "Rich Salmon scape and primary bracts" noted on the herbarium specimen) has been synonymized with *B elegans*. Derek suggested that "If your *Billbergia amoena var. carnea* has rich salmon bracts then it is *B. elegans*. If your *B. amoena var. carnea* has rosy red bracts, it is probably its correct name." Finally,



in a letter from Harry Luther, Luther stated.

Billbergia elegans. Photo by Butcher.

"*Billbergia elegans* is similar and perhaps conspecific with *Billbergia amoena*. *Billbergia amoena* seems to be a plant of coastal or near coastal rainforests; *Billbergia elegans* appears to be an inland plant from Campos rupestris type dry habitats." For those interested, I have attached Derek's entire article as an appendix.

Looking at more pictures confuses things a bit more. Most of the pictures of *Billbergia elegans* on FCBS and Derek's Treasures s show orange bracts, but one has red ones. Some inflorescences are fairly erect, not decurved. Some show violet tipped petals, but some show all violet ones. It is hard to tell how large the floral bracts are, or if the sepals are lepidote. From my perspective, the first set of photos of *Billbergia amoena var carnea* on FCBS looks almost identical the first set of *Billbergia elegans* and both were taken by the same photographer. And some of the pictures of *Billbergia elegans* (green petals with the top part violet) seem closer to the typical *Billbergia amoena* than *var carnea* (almost all violet petals).

Here is a plant considered by many to be **Billbergia elegans** from the Caraca Monastery in Minas Gerais Brazil. Photographer unknown. Yet its inflorescence is upright, and it seems to have tiny floral bracts and violet tipped petals and sepals.

This problem clearly needs more investigation. A number of groups of species, including **Billbergia amoena** var *carnea* vs **Billbergia elegans** “are particularly difficult to differentiate using dried material and frequently are misidentified in herbaria. Additional fieldwork and study are needed to better define species limits of these groups.” See Versieux and Wendt, 2006, Checklist of Bromeliaceae of Minas Gerais, Brazil with Notes on Taxonomy and Endemism, *Selbyana* 27(2) 107 at 114.

Absent new field work, let’s look at where these two taxa occur. While **Billbergia amoena** has a huge distribution, both var *carnea* and **Billbergia elegans** are endemic to Minas Gerais. Specifically, Smith’s Monograph shows var. *carnea* was found in Botumirim, Minas Gerais, while it seems **Billbergia elegans** was found in five locations in Minas Gerais. Struggling with Google Maps, it looks like **Billbergia elegans** is found at least 300 miles south of var. *carnea*.

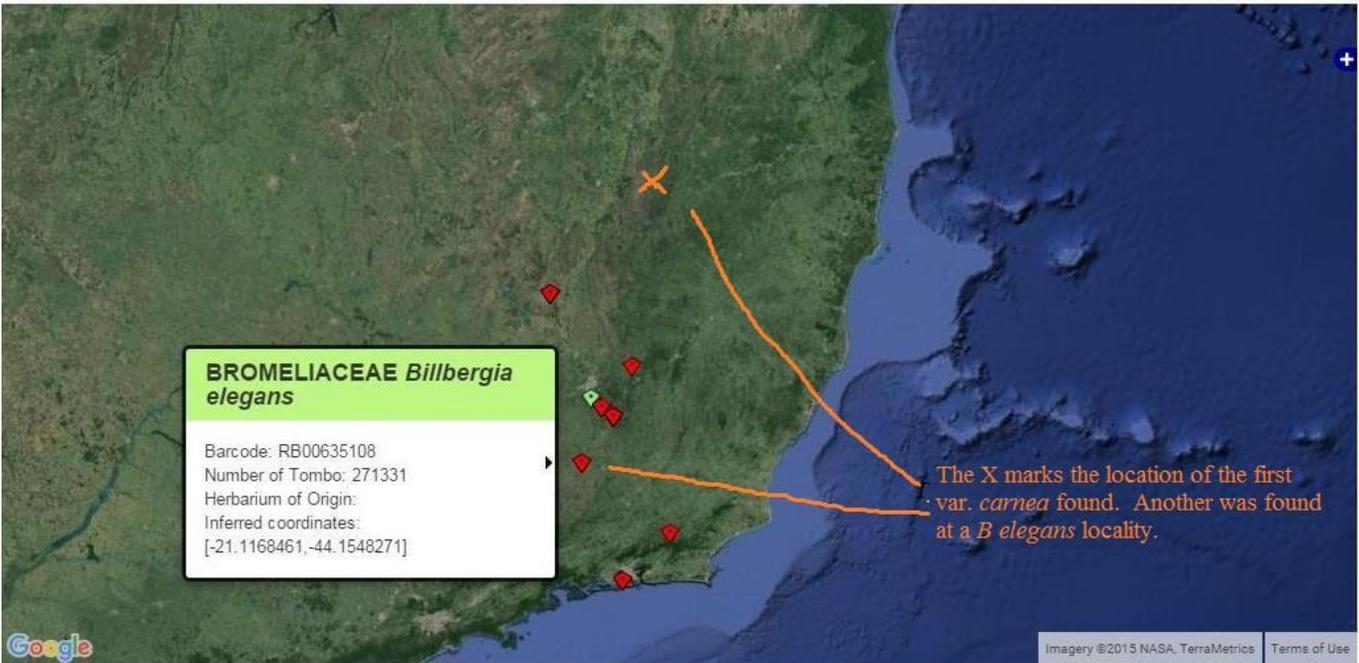
Another internet site shows tons of Brazilian herbarium specimens.

<http://www.herbariovirtualreflora.jbrj.gov.br>. It listed one site for var *carnea* in Tiradentes. Serra de São José. Encosta Norte. Tiradentes, Minas Gerais,” , and 20 sites with geographical coordinates for **Billbergia elegans**, including a number

in Rio de Janeiro. The site allows you to map the coordinates, which is shown below for the two taxa.

In fact, one of the locations for **Billbergia elegans** has the same coordinates as that of the only location of **Billbergia amoena** var *carnea*. But this site is considerably distant from the original finding of **Billbergia amoena** var *carnea*, which is roughly indicated by the orange X.



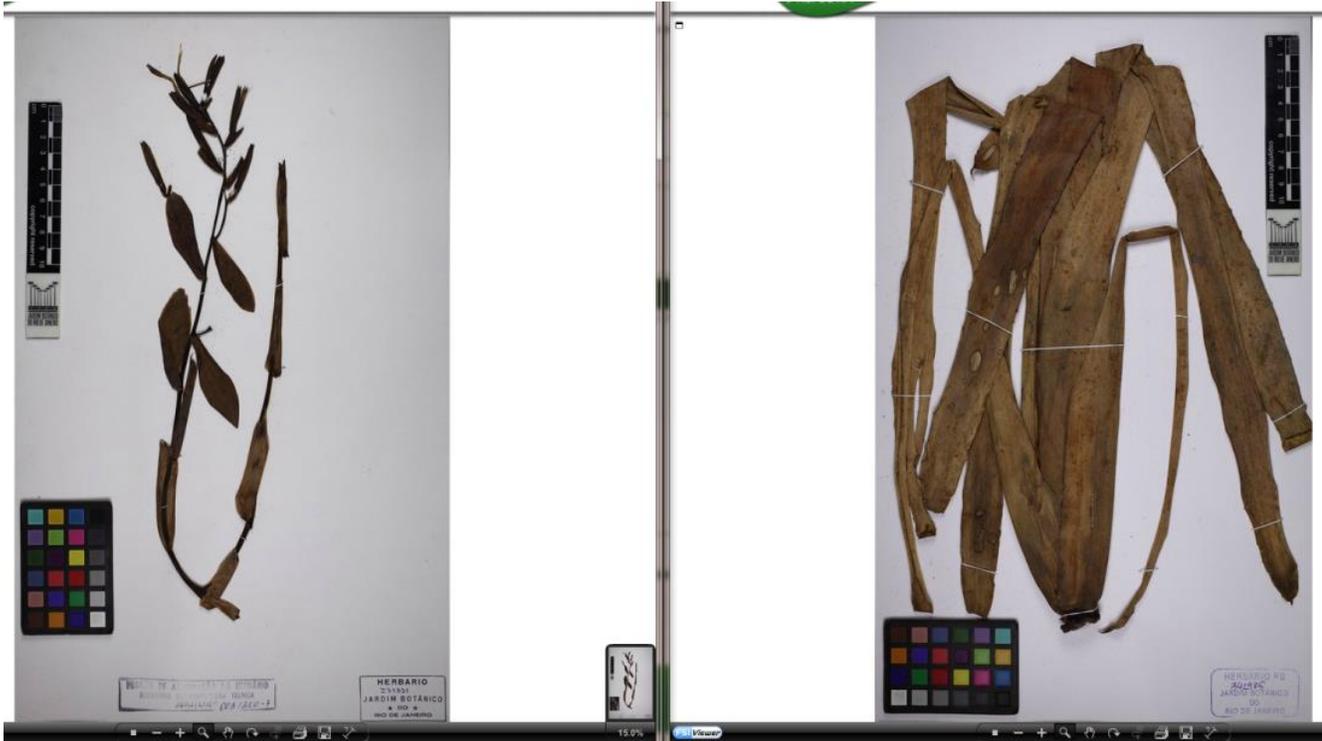


two orange lines show the two localities found for *B amoena* var. *carnea*.



Another consideration is the treatment of the *amoena* var *minor*, shown at the locations above. Recall that it, like var *carnea*, has red sepals.

The two specimens from Tiradentes, Minas Gerais are shown below.



Herbarium specimen of *Billbergia elegans*, on left. Complete data is **BROMELIACEAE *Billbergia elegans*** Determiner: T. Fontoura in --/04/1988 collected by **Alves Ruy J.V, 14** 03/10/1987 at Tiradentes. Serra de São José. Tiradentes, Minas Gerais,

Billbergia amoena var *carnea*, on right, found at same general location.

BROMELIACEAE *Billbergia amoena* var. *carnea* Determiner: Bruno R. Silva in 30/01/2003 collected by **Ruy J. Válka Alves, 4373**, 08/12/1993 at Tiradentes. Serra de São José. Encosta Norte. Tiradentes, Minas Gerais

Besides the fact I can rarely tell much from herbarium specimens, this comparison is particularly worthless since one is of the rosette and the other the inflorescence. Both were collected by the same fellow at the same place five years apart and determined by different presumably expert botanists to be different species. So either these rather similar taxa exist in almost the same location, or experts can't tell them apart.

The answer – who knows? Given all the above, including the various combinations of plants with blue tipped v all blue violet petals, erect v decurved inflorescences and orange v red scape bracts, Luther's comment seems accurate: "Billbergia *elegans* is similar and perhaps conspecific with Billbergia *amoena*," at least *amoena* var. *carnea*.

The most relevant morphological questions for future field work may be (1) whether there are populations with all of the following: decurved inflorescences, orange scape bracts, orange lepidote sepals, and large floral bracts, and (2) are there populations with some, but not all, of these features, (3) how much variation exists in these specific populations, and (4) how far apart are these populations? The other important, if not critical, inquiry is DNA analysis.

As an aside, Part 1 neglected to mention that Billbergia *speciosa* Thunberg (1821) is the type plant for the genus since it was the first described *Billbergia*. Thunberg both described the plant and had an illustration. Strangely, Smith treats the Thunberg illustration as Billbergia *amoena* var *minor*, while he treats the Thunberg description as *B elegans* – more on this much later. Loddiges named a different plant *Tillandsia amoena* in 1818, and Lindley gave moved it into *Billbergia* in 1827. *Amoena* means lovely. The name Billbergia *speciosa* persisted as a species for some time, but not after Smith's Monograph; however, it remains the type species even though no current species bears that name.

APPENDIX:

The entire text of Derek's article in Bromelletter37(3): 2-4. 1999 is set forth below.

"Billbergia elegans" by Derek Butcher

Plants under this name have had a chequered career in Australia, with some dead ends.

It all started in the 1960's where confusion reigned as to what was a *Billbergia sanderiana* and what was *Billbergia elegans*. Eventually all turned out to be *Billbergia sanderiana*. The problem arose when Adda Abendroth collected plants near her home in Teresopolis, near Rio de Janeiro: She sent seeds to Australia and plants to Lyman Smith for identification. It took some years for Lyman Smith to decide that the plants were *Billbergia sanderiana*. Meantime 30 years on we still come across a *Billbergia sanderiana* with *Billbergia elegans* on the label, because some growers assume the label is always right. It can take some time to correct some plant names and finding a true *Billbergia elegans* is just one example.

About eight years ago the Butchers became the proud owners of a *Billbergia amoena* var. *carnea* from Bill Morris whom, in turn, got it from Elton Leme when Elton was just a lad. I assumed the name was correct. A short time later, Len Colgan had imported a batch of plants from Alvim Seidel and one of the *Billbergias* flowered, not according to label.

Len sent details to Elton Leme who said the plant was *Billbergia amoena* var. *carnea*. The plant we got from Bill Morris was a prettier plant, but different and we have grown on both plants treating them as unresolved puzzles. The 1994 edition of Selbyana had Harry Luther's De Rebus, which is a listing of Bromeliads, named or changed since Smith & Downs. It didn't take me long to see that there were many plants, the descriptions of which I did not know. I have been accumulating these plants slowly ever since. Of course, Harry Luther has all of them at Selby Gardens, but to ask for copies of all my missing descriptions would have stretched my friendship with Harry somewhat! So I asked for those plants which really interested me. The two genera were *Neoregelia* and *Billbergia*. The staff at Marie Selby was very helpful. So I got my description of *Billbergia amoena* var. *carnea* by Pereira which is as follows:

"Differs from type by the scape bracts, scape bracts, rachis and bottom part of sepals being carnea (in other words Rosy-red)". Now this was a great help!!

In 1995 John Catlan sent me a photograph of an unknown *Billbergia* which was the same as "MY" *Billbergia amoena* var. *carnea*. So I knew it was spreading around Australia.

In 1996 at the Bromeliad Conference in Orlando, Florida Don Beadle gave a talk on *Billbergias* and one of his slides depicted "MY" *Billbergia* but he called his plant *Billbergia elegans*. Those of you who read my article on my 'World Trip' will know that I had already asked him if his *Billbergia fosteriana* had dangly bits, so this was one question I had to defer to later on. I did write to Don but as yet have had no reply.

In 1997 "MY" *Billbergia* flowered again and I was much more critical in my observations of the various parts. I found the following differences with the written descriptions (colours taken from Grafts Exotica chart):

	My Plant	<i>Billbergia elegans</i>	<i>Billbergia amoena</i> var. <i>carnea</i>
Scape	Slightly tomentose	Tomentose	Glabrous
Inflorescence	Erect	Pendant	Erect
Floral bracts	Top ones as long as ovary	Top ones half as long as ovary	Minute
Sepals	Slightly lepidote, cinnamon#13, tip indigo #48	Lepidote, green with blue tip	Flocculose at tip, red, then green with rosy blue tip

Is MY plant an erect-flowered *Billbergia elegans* or a *Billbergia amoena* var. *carnea* with large floral bracts or is it a new species? Clearly the Americans believe it to be the long-lost *Billbergia elegans*.

One characteristic that is not in the description of *Billbergia elegans* is the vestigial flower shown in *Billbergia* of Fig. 695 (Drawing in S&D) and which occurs in MY plant also. I have now found this phenomenon in other *Billbergias* but others might like to look out for it.

If I agree with the Americans, it will solve the problem of whether Len Colgan's *Billbergia amoena* var. *carnea* is better than mine is, because mine will be an '*elegans*'. Any information as to a true *Billbergia elegans* that agrees totally with the formal description would be greatly appreciated.

Addendum:

Since writing this article I have had further information on this problem and Harry Luther has again come to the rescue. Mind you, my query to him was on what I thought was an unrelated problem. Let me do a bit of unravelling!!

Peter Franklin and I have been trying to get hold of old copies of the Bromeliad Society Bulletins by any means at our disposal and photocopying them. In a 1962 edition I found that Mulford Foster had named a *Billbergia amoena* var. *penduliflora*. On investigation I found that Lyman Smith had then treated it as a *Billbergia sanderiana* which I thought strange and asked Harry for his views. He pointed out that in his view *Billbergia amoena* var. *penduliflora* was the same as *B. elegans* and sent me a photocopy of the herbarium specimen of Foster 683 where it was noted "Rich Salmon scape and primary bracts". *Billbergia sanderiana* is very distinct and is related to *Billbergia chlorantha* and *Billbergia kautskyi*, whereas *Billbergia elegans* seems related to *Billbergia amoena*. *Billbergia amoena* seems to be a plant of coastal or near coastal rainforests. *Billbergia elegans* seems to be a species from inland drier habitats.

I think we all know what a *Billbergia sanderiana* looks like with its strong spined leaves. The problem now revolves around *Billbergia amoena* and *Billbergia elegans*. If your *Billbergia amoena* var. *carnea* has rich salmon bracts then it is *B. elegans*. If your *Billbergia amoena* var. *carnea* has rosy red bracts, it is probably its correct name. No doubt there will be more challenges for *Billbergia* growers because we know there are many acknowledged and not acknowledged forms of *Billbergia amoena* already growing in Australia.

***BILLBERGIA ELEGANS* by Derek Butcher**

This species has caused us Australians a slight headache over the years. It all started in the 1960's when Adda Abendroth from Petropolis in Brazil sent us seed of a plant which Lyman Smith could not decide whether it was *B. elegans* or *B. sanderiana*. (See B.S. Bulletin May 1957)

We first got the name as *B. elegans*, but then a few years later it was corrected to *B. sanderiana*.

Needless to say 30 years later we still come across *B. sanderiana* with *B. elegans* on the label! As part of this confusion there is a *Billbergia amoena* v. *penduliflora* described by Mulford Foster in 1962, which Smith placed in synonymy under *B. sanderiana* (See Smith & Downs page 1996)

I would suggest you ignore this reasoning because Fosters plant is clearly linked to the *amoena* / *elegans* complex.

In the 1980's a plant called *B. amoena* v. *carnea* arrived in Australia from Brazil and by the 1990's I had acquired an offset. In the 1990's another plant called *Billbergia* sp. was imported from Brazil and on flowering photographs were sent to Elton Leme, who identified it as *Billbergia amoena* v. *carnea*. I again acquired an offset, so now I was the proud owner of two different *Billbergia amoena* v. *carnea*!

At the 1996 World Conference at Orlando Don Beadle spoke on guess what - *Billbergias*. Amongst his slides I noticed one of my *Billbergia amoena* v. *carnea* BUT he called his plant *B. elegans* and it had orange scape bracts, just like mine!

What was going on? On returning to Australia I started corresponding with Harry Luther as to this apparent anomaly. We had been searching for a *Bill. elegans* that looked something like *Bill. sanderiana*.

Harry pointed out that *B. amoena* and *B. elegans* are very closely allied, and went so far as to suggest that he suspects that *B. elegans* is only an inland, drier area, ecotype, compared to *B. amoena* being a coastal rain forest ecotype. My plant with the orange scape bracts was *B. elegans*.

This was in the back of my mind when I prepared to photograph a *Billbergia amoena* in 1999 that Ruby Ryde of Sydney had collected in Brazil in 1986. It had orange bracts but the inflorescence axis was not orange. I contacted Ruby to find out why she had *B. amoena* on the label and where did she find it?

The name had been given because it looked like a *B. amoena* and had been collected when she stayed at the Caraca Monastery near Santa Barbara, Minas Gerais. I remembered that Tom Lineham had been there too and had written an article in the BSI Journal and I found it on page 206 - 1992 volume. Luckily Tom had given an inventory of plants collected on his trip and this included *Billbergia elegans*.

This meant I just had to refer the problem to Harry and, yes, he confirmed my thoughts of Ruby's plant being *Billbergia elegans*.

Letter from Harry Luther - 17 Jan 1998

Regarding your concerns about *B. elegans*, *sanderiana*, *amoena* var *penduliflora*, and perhaps *amoena* v. *carnea* they have been a problem for years. *B. sanderiana* is very distinct, related to *B. chlorantha* and *B. kautskyi*; it has NO relationship to *B. elegans*. *B. elegans* is similar and perhaps conspecific with *B. amoena*. *B. amoena* v. *penduliflora* is certainly the same as *B. elegans*. *B. amoena* v. *cylindracea* may also be the same but I've seen no material of this taxon.. Getting back to *B. amoena* v. *penduliflora*, there may be plants of otherwise typical *B. amoena* with pendulous inflorescences, one of the Mee paintings that I have seen labelled as *B. sanderiana* or *B. amoena* v. *penduliflora* doesn't look like *B. elegans* and may be a pendulous flowered example of *B. amoena*.

B. amoena seems to be a plant of coastal or near coastal rainforests; *B. elegans* appears to be an inland plant from Campos rupestris type dry habitats.”

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