S.F.V.B.S.

SAN FERNANDO VALLEY BROMELIAD SOCIETY

FEBRUARY 2018

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Elected OFFICERS & Volunteers

Pres: **Bryan Chan & Carole Scott** V.P.: **John Martinez** Sec: **Leni Koska** Treas: **Mary Chan** Membership: **Joyce Schumann**
Advisors/Directors: **Steve Ball, Richard Kaz –fp, Mary K., Mike Wisnev -fp** Sunshine Chair: **Georgia Roiz,**
Refreshments: **vacant** Web: **Mike Wisnev,** Editors: **Mike Wisnev & Mary K.,** Snail Mail: **Nancy P-Hapke**

next meeting: **Saturday February 3, 2018 @ 10:00 am**

Sepulveda Garden Center 16633 Magnolia Blvd. Encino, California 91316

AGENDA

9:30 – ***SET UP & SOCIALIZE***

10:00 - *Door Prize – one member who arrives before 10:00 gets a Bromeliad*

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

10:15 –*Speaker* – ***Bryan Chan***

Bryan Chan has been a member of three Los Angeles area Bromeliad clubs since the late 1980's and also is a long time member of two Cactus and Succulent societies as well. He has been growing plants most of his adult life and maintains a fairly large plant collection. As a hobbyist plant collector/grower he has created hybrids in a few different plant groups. His primary focus is Bromeliads, although he has been growing many other types of plants. including cactus and succulents, orchids and bulbs. The talk will center on growing Bromeliads, the 2006 World Bromeliad Conference and his and Mary's visit to the Chihuly Garden and Glass Museum. It's a presentation you're sure to enjoy, and won't want to miss. <>

11:15 - Refreshment Break and Show and Tell: Will the following members please provide refreshments this month: ***Tom Lucero, John Martinez, Michael & Terral Matsumoto, Kathleen Misko, Bill & Susan Novickas, Stacey Phelps 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.

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 - Show and Tell *is our educational part of the meeting* – Members are encouraged to please bring one or more plants. You may not have a pristine plant but you certainly have one that needs a name or is sick and you have a question.

11:45 – Mini Auction: members can donate plants for auction, or can get 75% of proceeds, with the remainder to the Club

12:00 – Raffle: Please bring plants to donate and/or buy tickets. Almost everyone comes home with new treasures!

12:15 - Pick Up around your area

12:30 –/ **Meeting is over**—Drive safely <>

Announcements

Happy February Birthday to: **-** ***Kim Chavez 1st, Mary K. 5th, Nels Christianson 16th, Stacey Phelps 21st and Teresa Campbell 24th.***

Member Dues Increase **– 2018** is our first dues increase in about 30 years but it is necessary. Those who receive newsletters thru the **US mail will pay $15.00 per household**. Annual Email news is $10.00. If you do not renew by this meeting, the February newsletter will be your last.

Member Name Badges **-** If you have misplaced your badge, now would be a good time to order a replacement. See Joyce to order.

Participation Rewards System **–** This is a reminder that you will be rewarded for participation. Bring a Show-N- Tell plant, raffle plants, and/or 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 unidentified plants that can be brought in. Each member, please bring one plant

Please pay your 2018 Membership Dues

NEED TO RENEW ?.....

Pay at the meeting to: Membership Chair – Joyce Schumann or Treasurer - Mary Chan
or Mail to: SFVBS membership, P.O. Box 16561 - Encino, CA 91416-6561

Yearly Membership **Dues -** $10 for monthly e-mail newsletters or **$15** for snail mail

Please Put These Dates on Your Calendar

Here is our 2018 Calendar. As our schedule is always subject to change due to ……, please review our website and email notices before making your plans for these dates.

Saturday February 3, 2018	***Bryan Chan***
Saturday March 3, 2018	***STBA***
Saturday April 7, 2018	***Cristy Brenner - Brazil***
Saturday May 5, 2018	***STBA***
Saturday & Sunday June 8 & 9	***SFVBS Bromeliad Show & Sale***
Saturday July 7, 2018	***STBA***
Saturday August 4, 2018	***STBA***
Saturday September 1, 2018	***STBA***
Saturday October 6, 2018	***STBA***
Saturday November 3, 2018	***STBA***
Saturday December 1, 2018	***Holiday Party***

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** <>

Taxonomic Tidbits –

The Rise (and Fall?) of Orthophytum –Part 4

By Mike Wisnev (mwisnev@gmail.com)

San Fernando Valley Bromeliad Society Newsletter –February 2018

The first three parts of this series appeared in the February and March, 2016 and June 2017 Newsletters. Part 1 covered the basics of *Orthophytum*, including the huge increase in species the last few decades. In 1979, there were about 17 species; a few years ago about 70 species had been described. Many were described by Judge Elton M. C. Leme.

In 2004, Leme informally grouped into the *Orthophytum* species into complexes and subcomplexes. Studies on ***Orthophytum,*** an Endemic Genus of Brazil - Part I by Elton M. C. Leme in J.B.S. 54(1): 36-7. 2004. Leme proposed that *Orthophytum* be divided into two complexes based on the inflorescence. Most have long inflorescences – this was the scapose inflorescence complex. A smaller number of them, however, have their flowers growing low in the rosette, much like *Orthophytum vagans,* with a very short or no peduncle. This was the sessile inflorescence complex. Leme's sessile complex included three subcomplexes. One small group, called the *supthutii* subcomplex, was later made into the *Lapanthus* genus discussed in Part 2.

Part 2 continued describing the new species and then the potential decline of the genus. Rafael Batista Louzada's doctorate work involved the first comprehensive DNA study of this genus. 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 study found that all of the *Orthophytum* species didn't fall within a single group unless *Cryptanthus* is included. While the results indicated *Orthophytum* isn't a good genus, the authors felt more work was needed before taking any specific action. Assuming the data was accurate, some groups would have to be taken out of *Orthophytum*; it was also possible that *Orthophytum* would be merged into *Cryptanthus*.

Orthophytum rincontense

Photo by Leme, 55(4) JBS 162 (2005)

Most species now fall within subg. *Orthophytum,* including this one. They usually have a long and compound (that is, more than one branch) inflorescence, along with white flowers. The stem tends to elongate as the inflorescence is produced, and the mother plant will often die afterwards.

Earlier last year, based on the earlier molecular evidence, Louzada and Wanderley broke off most of the sessile complex into its own new genus.

Figure 6. Close-up of flowering *Sincoraea humilis*. Photo by Rafael Louzada.

Discussed in Part 3, the *amoenum* subcomplex of the sessile complex is now a new, or more accurately, resurrected, genus – *Sincoraea*. Louzada, R. B, and Wanderley, M. L., Re-establishment of *Sincoraea* (Bromeliaceae), 66(1) JBS 6 (2017). *[Sincoraea amoenum* had been first described by Ule as a new genus called *Sincoraea* in 1908, but Smith later merged it into *Orthophytum*.] They are stemless, with leaves that turn red while flowering and have white or pale colored petals. *Sincoraea* (previously considered *Orthophytum*) have sessile inflorescences. Photo from article noted in the prior paragraph.

This new *Sincoraea* genus did not include the *vagans* subcomplex of the sessile complex. This group differs somewhat since it has a short stem, and green petals (with white margins) that form a bit of club shape. In addition to *Orthophytum vagans*, it included *Orthophytum pseudovagans and zanonii*. The molecular evidence showed *Sincoraea* were distinct from *Orthophytum* since a group of *Cryptanthus* species showed up between *Sincoraea* and the rest of *Orthophytum.* In contrast, the vagans subcomplex could be considered part of *Orthophytum,* or could be broken off.

Another member of subg. *Orthophytum*. Again it has white petals which form a fairly long tubular base and then spread at the tips. Unlike most members of this subgenus, this species has a simple inflorescence – there are no branches. Unlike *Sincoraea,* the leaves of subg. *Orthophytum* don't change color while the plant flowers.

Orthophytum harleyi
photo by E Leme J.Brom. Soc. 56(3):108.2006

I expected Louzada and Wanderley would follow with another article discussing the other groups since most of the other subcomplexes described by Leme did not find support with DNA testing. However, Leme and others beat them to the punch. See Leme, E., Heller, S., Zizka, G., and Halbritter, H. New circumscription of *Cryptanthus* and new Cryptanthoid genera and subgenera (Bromeliaceae: Bromelioideae) based on neglected morphological traits and molecular phylogeny. Phytotaxa 318 (1): 001–088 (2017) (the "Article").

Orthophytum eddie-estevesii, a member of *Orthophytum* subg. *Clavanthus*. Photo by Leme, on the cover of 50(2) JBS. This subgenus has club-like flowers. This particular species is extremely unusual for its greenish yellow flowers, unlike most *Orthophytum* species which have white flowers.

Orthophytum eddie-estevesii

Orthophytum gurkenii, to right, is very unusual for an *Orthophytum* - with its stripes it looks more like a *Cryptanthus.* It is one of the prettiest and most commonly seen species. The label says this is from the type locality.

Orthophytum striatifolium
See J. Brom. Soc. 57(4): 153. 2007

Not surprisingly given the title, most of the Article addressed *Cryptanthus*. But it necessarily addressed *Orthophytum* as well, since it covered this entire group of related genera. As noted in an earlier part of this series, one possibility was to make everything *Cryptanthus*. The authors said

> Considering the data at hand, and the monophyly of the "Cryptanthoid complex", two possible taxonomic consequences, provided we accept the recognition of monophyletic groups as a principle, are presented: (a) recognize the "Cryptanthoid complex" as a single genus *Cryptanthus* (the oldest genus name in the complex) and refer established, well recognizable and morphological distinct genera to the synonymy, eventually recognizing them as subgenera, or (b) assign generic and subgeneric rank to the several smaller, monophyletic groups, which are well circumscribed biogeographically, morphologically and genetically. Considering the data at hand and the assumed better practicality of (b), this option was adopted here. Id at 24.

In addition to a DNA test of the group, the Article contains a massive amount of information about the morphology of these groups, and the geographic locations. The Article uses a "total evidence" approach (remember Leme is a judge), to revise these genera. "A total evidence approach, i.e., the combination of multiple traits (i.e., morphological, palynological, biogeographic, ecological, and molecular) and the critical assessment of the diagnostic characters (e.g., inflorescence structure, flower pedicels, petal concrescence, petal appendages) as proposed by Leme (1997, 1998, 2000a) for generic delimitation in bromelioids, was applied here to revise the "Cryptanthoid complex"." Id. at 21.

photo by Leme. Another species in subg. *Orthophytum*. This species also has a simple rather than compound inflorescence. Most are in the so-called *sucrei* clade, but *Orthophytum harleyi* shown earlier with a simple inflorescence is in a different clade.

The article has a wealth of information about biogeography, habit, propagation, the inflorescence, flowers, sepals, petals, petal appendages, stamens, stigma, seed, and fruit, discussed more next month. One of the authors is the leading expert on pollen, and there is a lengthy discussion about pollen types. Much of this is very technical. The most useful plant features are the "corolla, petal appendages, stigma, pollen, fruits, and seeds." Id at 12.

Orthophytum buranhense **See J Brom Soc 60(2): 57. 2010**

Photo by Leme, another member of subg. *Orthophytum*. It has similarities to *Orthophytum lymanianum, lanuginosum and magalhaesii.*

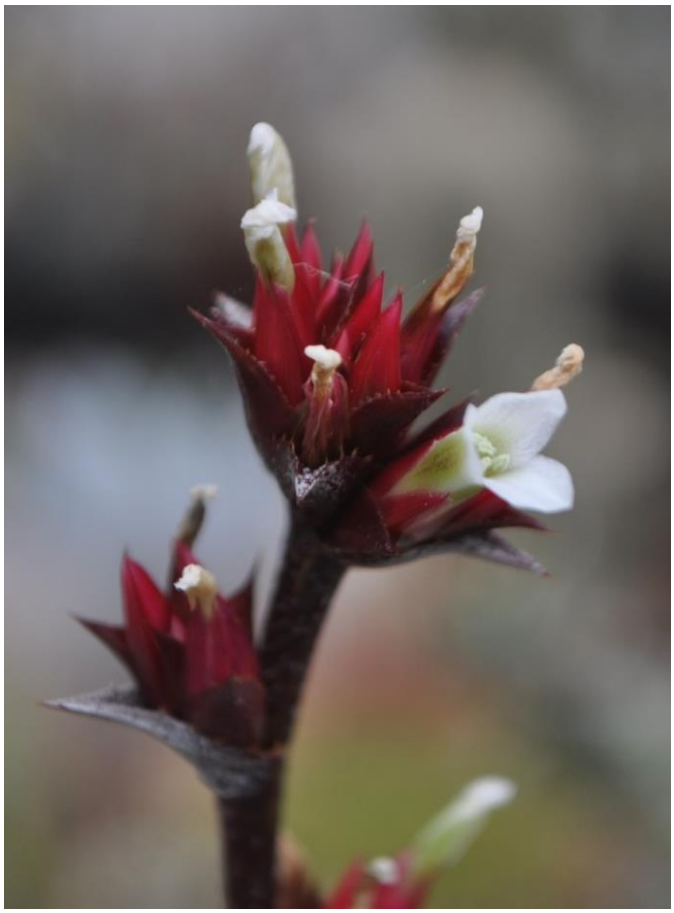
As a very quick overview, the article breaks *Cryptanthus* into four genera – in addition to *Cryptanthus*, there is now *Haplocryptanthus*, *Rokautskyia* and *Forzzaea*. These are discussed next month. As to *Orthophytum*, they found morphological and geographical factors to support various groups. However, the molecular DNA analysis did not strongly support these groups (unlike the *Cryptanthus* groups). For that reason they created five *Orthophytum* subgenera rather than moving some *Orthophytum* to new genera.

In many respects, *Orthophytum, Cryptanthus* and the three new genera (along with *Sincoraea* and the small *Lapanthus* genus (discussed in Part 2 of the *Orthophytum* series)) are similar.

"They form the so called "Cryptanthoid complex", sharing ecological, geographical and morphological characteristics such as endemic occurrence in southeastern and northeastern Brazil, terrestrial or saxicolous habit, leaf rosettes without water-holding capacity, sessile flowers usually arranged in subsessile fascicles and fruits without noticeable mucilaginous substance." Id at 3. Most members of these groups have white or pale greenish flowers, though there are exceptions.

A hybrid called O*rthophytum* Starlights, a cross of *Orthophytum gurkenii* and *sucrei*.

The various groups have some clear differences, however. While *Orthophytum* have free sepals and petals, *Cryptanthus* (and the three new genera) have connate (also usually white) petals and connate sepals, that is, they are joined together. *Cryptanthus* also don't usually have petal appendages, while *Orthophytum* (other than two species) do. *Orthophytum* generally grow more inland in drier localities.



Orthophytum toscanoi ssp atropurpureum, ISI 2013-28, considered by some to be *Orthophytum argentum.* Photo by Wisnev. Another member of subg. *Orthophytum.* This is an example of a compound inflorescence shows the so-called strobilate flower fascicles that most members of this subgenus possess.

The authors break *Orthophytum* into five subgenera, most of which fall into subg. *Orthophytum*. It has the largest range along much of eastern Brazil (but not the northeast or southeast). Most grow from sea level to 500 m.

Orthophytum subg. *Orthophytum* has mostly compound, short and compact to distinctly elongate inflorescences of the "glomerulate spike" or "spike of spikes" type. The peduncle is short and inconspicuous or well developed, which in some species may be indistinct due to the continuous elongation of the plant stem (see habit section above). Lateral spikes are always densely (few-to-many) flowered and may be short and capitate-spicate or elongate and cylindrical mainly in late anthesis. Simple inflorescences are rare. Id at 33.

Most have strobilate flower fascicles (cone shaped), as shown in the prior picture. They also mostly have echinatiform petal appendages unique to this subgenus, but some species have cupuliform or sacciform appendages. Included within this group are *Orthophytum sucrei, gurkenii, glabrum, magalhaesii, fosterianum, argentum, saxicola, disjunctum, toscanoi and horridum.* Most have white subtubular flowers. The Article states they have a pseudocaulescent habit in which "the leaf rosettes soon disappear and the "stem" becomes indistinguishable from the peduncle due to an early strong elongation of stem and peduncle which makes leaves similarly sparsely arranged as the peduncle bracts." Id at 26.

Orthophytum benzingii , in Subg Orthophytum , showing an extreme example of a pseudocaulescent habit. Photo by Leme. 48(4) BSJ 148.

Subgenus *Clavanthus* is the sister clade of subg. *Orthophytum*, and consists of six species limited to the central-northern Espinhaço Range in Minas Gerais state. They grow just south of the *Sincoraea* species which grow in the Espinhaco Range in Bahia to the north. Subg. *Clavanthus* is the same as Leme's former *mello-barretoi* subcomplex, and consists of that species and O*rthophytum diamantinense, graomogolense, eddie-estevesii, schulzianum and piranianum*.

Orthophytum mello-barretoi.
Photo by Leme 58(6) BSJ 260 (2008).
One of six members of
Orthophytum subg. *Clavanthus*.

Its species all have club-like flowers like some members of subg *Capixabanthus*. However, among other differences with that subgenus, its members have no stems and a well- developed peduncle, and fewer leaves. Since the petals are club shaped, its stamen usually are not visible. Most have a scutelliform petal appendage type unique to this subgenus, but some species have a sacciform appendage.

Figure 6. The holotype specimen (*Leme 7189 & Paula*) of *Orthophytum piranianum* at type locality.

Orthophytum piranianum, a member of subg. *Clavanthus*. Photo by Leme from JBS 58(3) 2008, Studies on *Orthophytum* – Part VIII by Leme and Paula. Like other members of this group, it has no stem, and its leaves don't change color during flowering. It has relatively few leaves compared to subg *Capixabanthus*. The Article refers to the inflorescence as a glomerulate spike with "subflabellate-pulvinate flower fascicles." This latter term more or less means the top of the inflorescence is relatively flat and like a cushion, compared to the cone-like (strobilate) ones of subg *Orthophytum*.

Orthophytum piranianum

The two smallest new subgenera have a combined 3 species in them. Subg. *Krenakanthus* and Subg. *Orthocryptanthus* are sister clades, yet have some different features that kept them as separate subgenera. All three species are located in more or less the same area of the Rio Doce valley in Minas Gerais. This is roughly 200 km east of the most southern members of subg. *Clavanthus*, and perhaps 50 km. west of subg. *Capixabanthus*. They are the only three *Orthophytum* species with open flowers and a very small tube, and also the only three that have fragrant flowers.

Figure2. Holotype specimens (*Leme 7175 & Paula*) of *Orthophytum graomogolense*.

Photo by Leme from JBS 58(3) 2008, Studies on Orthophytum – Part VIII by Leme and Paula . In subg. *Clavanthus*, it has no stem and a long inflorescence.

The sole member of subg. *Krenakanthus* is *Orthophytum. roseolilacinum* which was described in 2015 by Leme. It is most unusual for its rose-lilac–purple petals. It also has papery leaves, and unlike other *Orthophytum*, sepals that are joined together (connate, rather than free) and relatively long round and fragrant flowers. The flowers look a lot more like *Tillandsia bergeri* than a typical *Orthophytum*. It has a unique stigma type – conduplicate-spiral – that no other *Orthophytum* or *Cryptanthus* have. Its stamen are also very short and can't be seen even when the flower is fully developed. By virtue of its connate sepals and round petals, this species has some similarities to the 14 *Rokautskyia* species. *Orthophytum roseolilacinum* grows in lower altitude shaded forested areas.

Lovely specimen of *Orthophytum glabrum*, shown by Steve Ball at a club meeting. In subg. *Orthophytum*. Photo by Wisnev.

Orthophytum glabrum

Orthophytum santaritense (with a pale yellow flower) and *vasconcelosianus* (with a purplish flower) are the two members of subg. *Orthocryptanthus*. The former is first described in the Article. Unlike all other *Orthophytum*, these two species have no petal appendages, and are thus like *Cryptanthus* in that regard. They have a long caulescent habit. Both grow in rock outcrops or crevices. The two have two different stigma types: simple-erect (which *Sincoraea* also have) and simple-patent. Interestingly, the three *Forzzaea* species share these two stigma types; these types don't exist for other *Orthophytum* or *Cryptanthus.*

These two tiny subgenera are sisters to the second largest subgenus - subg *Capixabanthus*. Below are two species in the new *Capixabanthus* subgenus.

Figure 6. Comparatively shorter stem of *Orthophytum pseudovagans* Leme & L. Kollmann Photo by E. Leme.

Figure 7. The distinctly caulescent habit of *Orthophytum vagans* M. B. Foster. Photo by E. Leme.

Photos from JBS 57(4) 2007, Studies on Orthophytum – Part VI by Leme and Kollmann. These two have stems, but very short inflorescences. The Article refers to them as "sessile, compact, shortly corymbose." Note that *vagans* has a simple inflorescence while *pseudovagans* is compound. Like *Sincoraea*, the leaves usually change color during flowering.

I am not sure what to make of this new *Capixabanthus* subgenus. Three species are caulescent with almost sessile inflorescences and hooded flower petals (the two shown in the prior picture and *O*rthophytum *zanoni*). Thus, they share the club-like flowers of subg *Clavanthus*, although the Article refers to them as subtubular, subclavate, as opposed to the tubular, clavate ones of Subg. *Clavanthus*. While they have stems and short inflorescences, the six species of subg *Clavanthus* have no stems and a long inflorescence. They also have smaller flowers than subg. *Clavanthus*.

Two photos of ***O*rthophytum *rubignosum***
by Leme in 55(4) JBS (2005).
Member of subg *Capixabanthus*.

Unlike the ones shown in the prior picture, this species has a long inflorescence, and does not have club-like flowers.

In contrast, four others (*duartei, compactum, foliosum and rubignosum* [Louzada considers the last three as a single species]) were not part of the vagans subcomplex, but were grouped with them in the Article. While the *vagans, pseudovagans* and *zanoni* have stems but almost no peduncle, these four are just the opposite - they are stemless with pedunculated inflorescences. They also don't have club-like flowers, but instead generally have flowers that form a tube and then spread at the ends, much like members of subg. *Orthophytum.*
The seven species of subg. *Capixabanthus* do share a common geographical range in the central-northwestern region of Espírito Santo state (as well as Minas Gerais and Bahia), along with some other members of subg. *Orthophytum*. This group grows much closer to the coast than most other *Orthophytum*. Their range also overlaps with some *Cryptanthus* species.

The seven also have relatively small pollen compared to other *Orthophytum*, and exhibit two types of petal appendages (other groups also have these two types of petal appendage.) Compared to subg. *Clavanthus*, they have more leaves (roughly 20-40 leaves v 6-12), and smaller flowers (22-30 mm vs 30 -50). Subg. *Orthophytum* species have flowers that are 10–30 (–50–65) mm long.

Orthophytum guaratingense See J Brom Soc 60(1): 5. 2010

Photo by Leme. Member of subg. *Orthophytum*. Though not particularly visible, this species is a bit unusual for this subgenus since it does not have a subtubular flower. Most *Cryptanthus* don't have tubular flowers either.

As I studied the Article more closely, I was surprised to see the molecular data (Fig 7 of the Article) did not completely support this group. In particular, *Orthophytum duartei* did not fall on the same branch as the other six species. It also has a different flower shape (open, fan bladed) than the other species, which either have a club-like flower or subtubular one with spreading petals. A different analysis of molecular and morphology data (Fig 5 of the article) shows that four of these members (*vagans, pseudovagans, foliosum and zanoni*) are more closely related to the two tiny subgenera above than the other three members. I would not be surprised to see more on this set of problems in the future, including the possibility that this subgenus is broken into smaller groups, or *Orthophytum duartei* is taken out.

All *Orthophytum* other than the two tiny subgenera with three species have the same stigma type, called simple–dilated.

Orthophytum pseudostoloniferum **See J Brom Soc 60(1): 12. 2010**

Photo by Leme. A rather cute member of subg. *Orthophytum*.

As noted before, *Sincoraea* was previously broken off from *Orthophytum*. In addition to having sessile inflorescences that distinguish it from *Orthophytum*, the molecular data shows that the new *Rokautskyia* genus (14 previous *Cryptanthus* species) are more closely related to *Orthophytum* than *Sincoraea* is. All these species share a simple-erect stigma (as do a few *Orthophytum* and *Forzzaea*) and a sacciform petal appendage (as do various other *Orthophytum*). All but one of these species are located fairly close together in Bahia in the Campos Rupestris regions of medium altitude. *Sincoraea humilis* is found to the south in Minas Gerais in the range of subg. *Clavanthus*. Most have subtubular flowers like subg. *Orthophytum*, though there are a couple exceptions.

From a hobbyist viewpoint, perhaps the most disconcerting thing is that few plant characteristics are true for all members of the various groups. Botany can be messy – groups don't always have the nice clean demarcations we would like them to have. While most plants in a group may have a particular feature, it often seems there is an exception. Also, different groups may have overlapping characteristics. For example, while most members of the subgenus *Orthophytum* have an "echinatiform" petal appendage (and no other groups have this), some members of subg *Orthophytum* have different forms. Groups with fewer members are more likely to have universal features. Of course, there are exceptions – *Cryptanthus* have a "very characteristic and unique" form of pollen.

I wouldn't be surprised if there one more installment of this article. However, it does appear safe to say that *Orthophytum* will remain a valid genus.