



S.F.V.B.S.

SAN FERNANDO VALLEY BROMELIAD SOCIETY

AUGUST 2020

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Elected OFFICERS & Volunteers

Pres: **Bryan Chan** V.P. **Joyce Schumann** Sec: **Leni Koska** Treas: **Mary Chan** Membership: vacant Advisors/Directors: **Steve Ball, Richard Kaz –fp, & Carole Scott-fp**, Sunshine Chair: **Georgia Roiz**, Refreshments: **Steffanie Delgado**, Web **Mike Wisnev**, Editor: **Mike Wisnev & Felipe Delgado**, Snail Mail: **Nancy P-Hapke**, Instagram, Twitter & Facebook: **Felipe Delgado**

next meeting: **Saturday August 1, 2020 IS CANCELLED**

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, some future meetings, as well as the June show and sale, may be cancelled.**

Saturday September 5	Cristy Brenner??
Saturday October 3	Ray van Veen??
Saturday November 7	Woody Minnich??

Thanks to Richard Kaz for last month's photograph of Bill Baker and others.

Message from our VP of Programs:

Good News (Tentative)

Hi Everyone,

I hope this finds you in good health and staying safe. This pandemic is going on for a lot longer than most of us had anticipated!!

One of the major concerns for all social clubs at this time is how to stay in touch with our members when we can't have a meeting. Each of us will agree that the face to face greeting of each other at the monthly meeting is the best part of any get together. But in the meantime, we must do what we can to stay together and continue to share our common interests.

One option is to host a ZOOM meeting. (Where did Zoom come from? I had not heard of this until the virus came along.) This could be presented as a brief business meeting followed with a Power Point program narrated by the presenter (just like the regular meeting, only on Zoom). Or we could do some of the fun things such as a Show-&-Tell segment with each of us presenting our special plant(s) with commentary by you

or the host or through the “Chat” feature of Zoom. We could even figure out a way to do a raffle or silent auction. Let us think on that one for a while, tho. Another option is for us to send in photos of our best (or problem) plant and our senior members could comment on it. All of the above is being considered and we would appreciate your feedback on what you would like to see presented. Even better, send us your idea of something we can do to stay in touch and share our plants.

So, stay safe and positive and healthy and maybe see you soon – on Zoom.

Sincerely,
Joyce Schumann, VP-Programs



In Memoriam -

As noted in an earlier email, we are saddened to report that our friend and fellow Club member James Johnson passed away on June 22, 2020. He was a member of both our Club for over 10 years. He had a delightful sense of humor and liked sharing good clean jokes. His ready smile and positive attitude made him a pleasure to be around. James enjoyed our programs and auctions, and was enthusiastic about learning details about the plants he collected. He will be sorely missed by those who had the privilege to call him a friend.

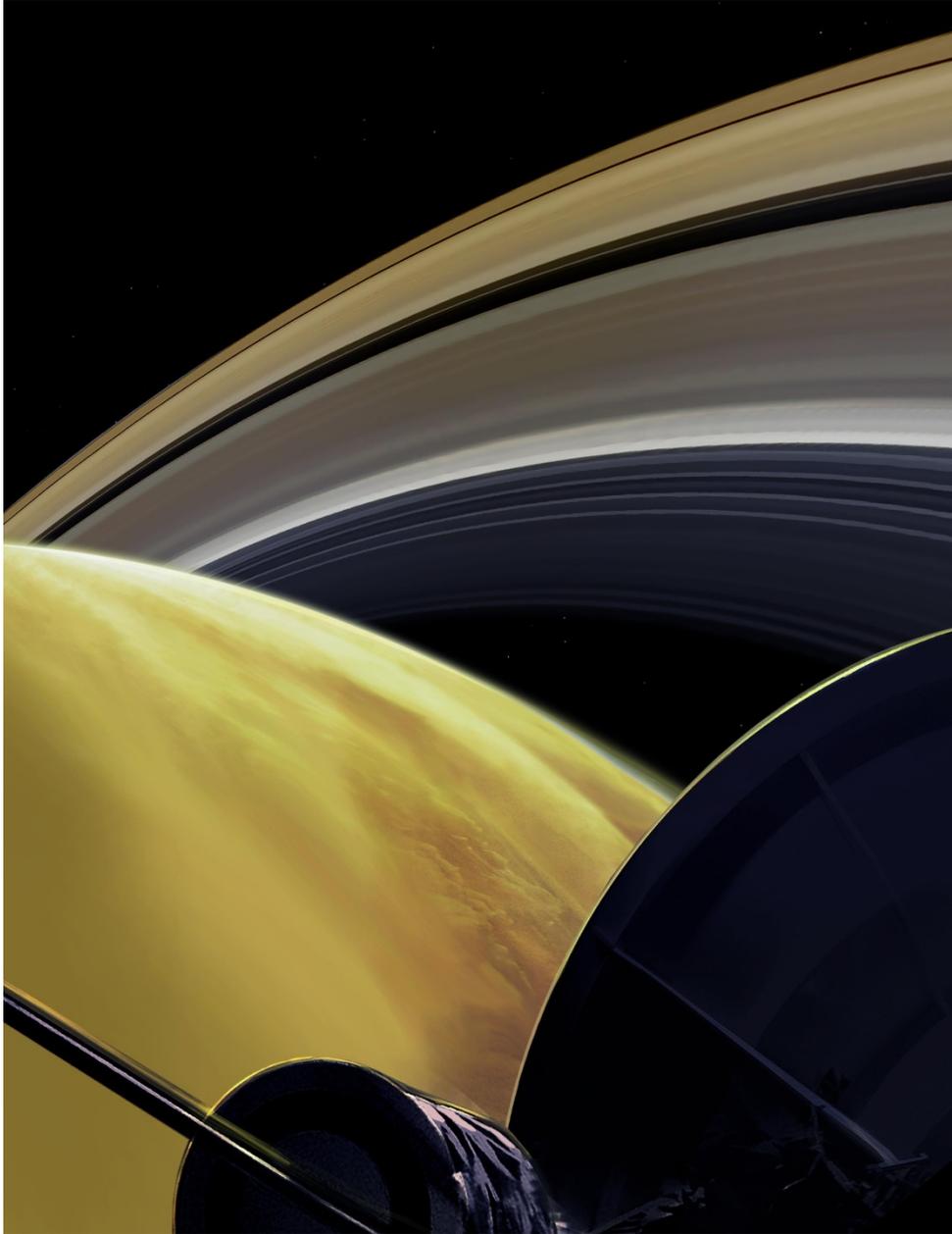
Our hearts and prayers go out to his two sisters, Margarita and Mercedes, and his family. Here is James sitting in his garden, taken by Margarita



We will miss you James. RIP.

Member-contributions of photos or articles

Continuing with space, after Mars and Jupiter there is Saturn –



Grand Finale: One of Cassini's Last Dives

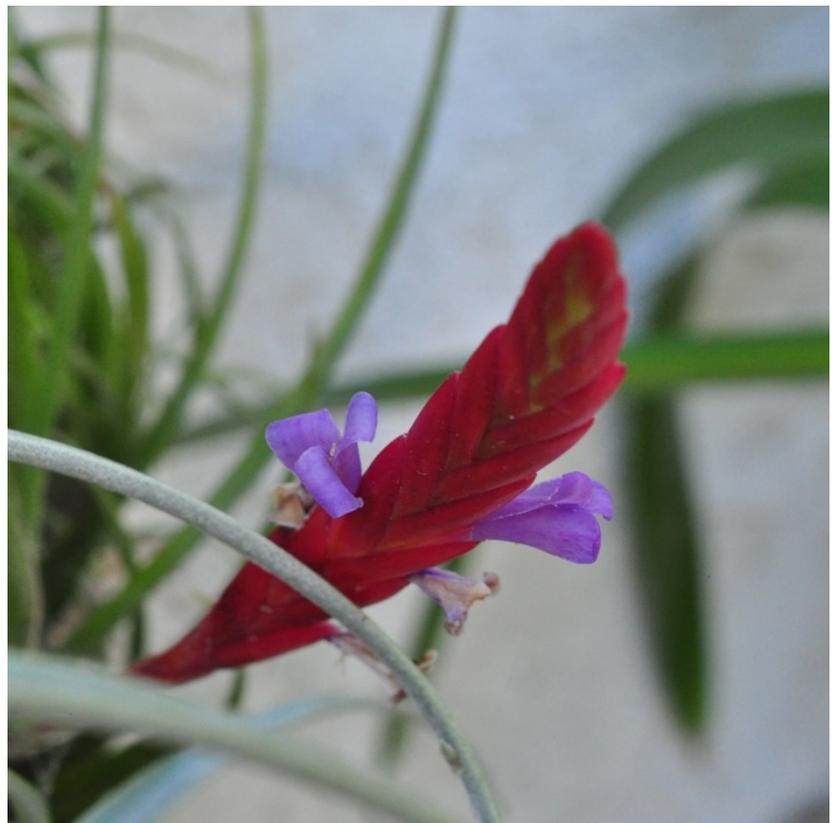
This illustration imagines the view from NASA's Cassini spacecraft during one of its final dives between Saturn and its innermost rings.

Courtesy of NASA via <https://ift.tt/3fcESSc>

Always fun to see a bloom the first time



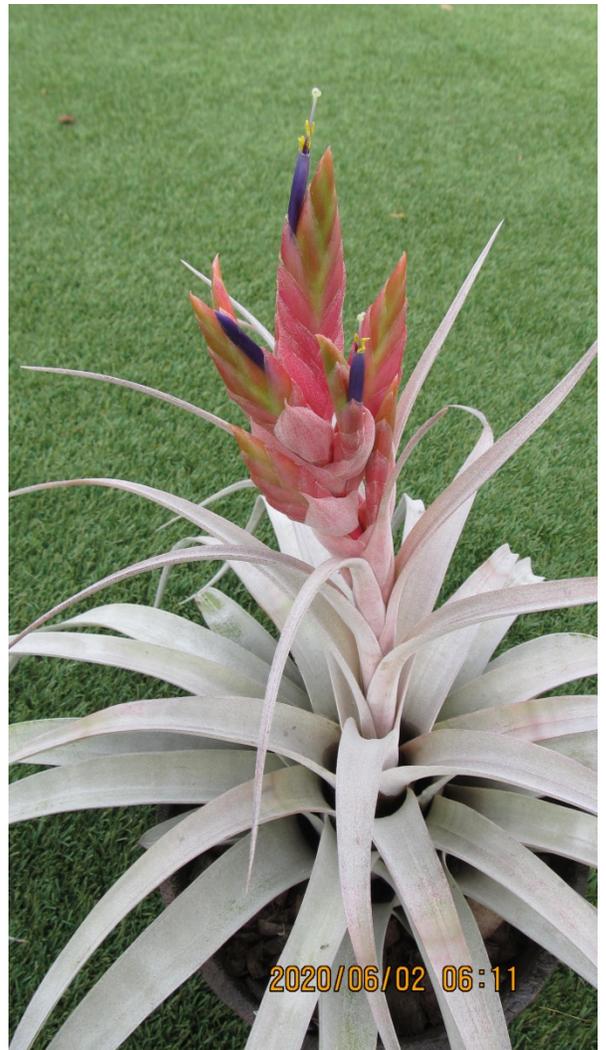
Tillandsia dura



The photos on the following pages were contributed by Bryan Chan.



Tillandsia concolour hybrid



Tillandsia "Silverado"



Tillandsia domingos martins



Tillandsia caulescens



Tillandsia cacticola, large form



T. cacticola inflorescence



Tillandsia chiapensis

Taxonomic Tidbits: *Ananas*, part 3

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

The pineapple genus *Ananas* was discussed last month. It noted that there are three competing views of the nomenclature of the genus. One of them, Smith & Downs, two genera and nine species. The eight *Ananas* species were covered last month. The month continues with the discussion.

Stoloniferous species. As noted last month, only one of the pineapple species reproduces by long stolons; in addition, it does not have a leafy crown. The name of this plant is quite controversial. Smith & Downs treats the correct name as *Pseudananus sagenarius*, with *Ananas sagenaria*, *Pseudananas macrodontes* and *Ananas macrodontes* as synonyms. In a nutshell, Arruda published *Bromelia sagenarius* in 1810, but apparently did not mention stolons or a leafy crown. Schultes & Schultes f. transferred it to *Ananas* in 1830. Morren described *A. macrodontes* in 1878 as a plant that reproduced by long basal stolons and having a fruit without a leafy crown. It was named for its spiny leaves. It grows in Paraguay, Argentina and Brazil.

Hassler created a subgenus of *Ananas* (called *Pseudananas*) in 1919, and Harms raised this to the genus level 1930 with a single species *Pseudananas macrodontes*. I have not seen either work, and they are not written in English. However, in 1939, Smith also recognized this genus and stated that it differed by virtue of its stolons, its minute and inconspicuous coma, and its petal appendages (which have thick lateral folds, rather than delicate funnel shaped scales). Smith, Lyman B. 1939. Notes on the Taxonomy of *Ananas* and *Pseudananas* Botanical Museum Leaflets, Harvard University, vol. 7, no. 5, pp. 73–81. In this same paper, Smith stated he had previously felt *Ananas* was a monotypic genus (like Mez in the 1890's) until reviewing the field work of Baker and Collins.

In 1939, the Brazilian botanist Camargo transferred *Ananas sagenaria* to *Pseudananas*, and treated it as synonymous with *P. macrodontes*. Since *Bromelia sagenaria* was published before *A. macrodontes*, it had priority as a species name. Smith & Downs followed Camargo, treating the correct name as *P. sagenarius*, with *A. macrodontes* as a synonym. This controversial name is discussed further below.



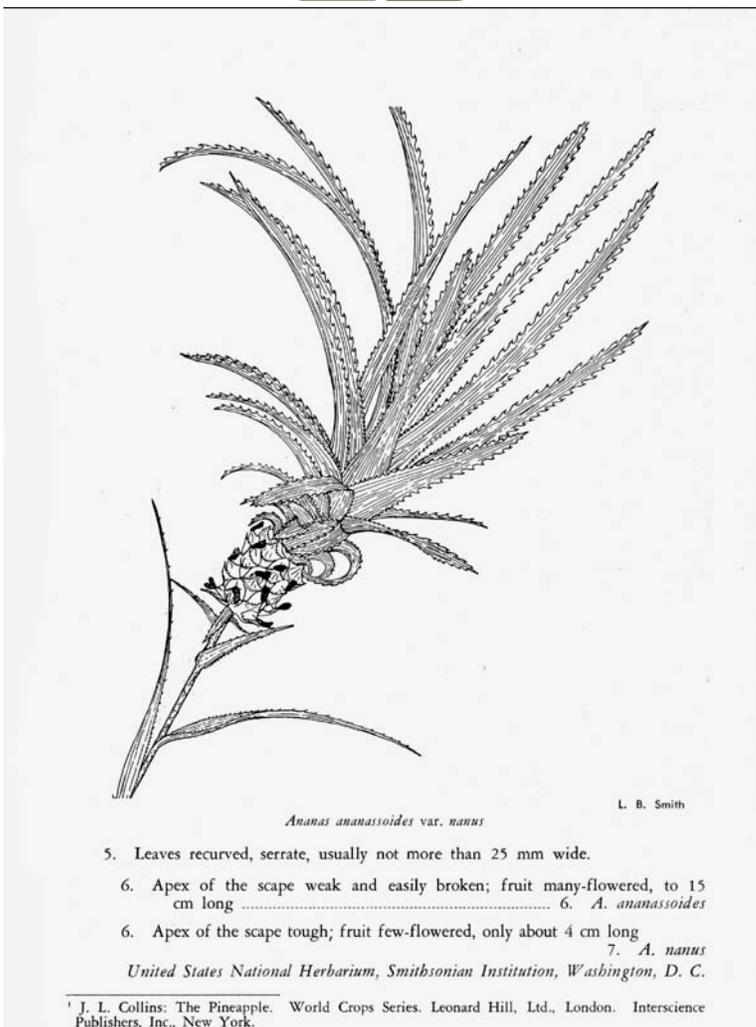
Pseudoananas sagenarius (according to Smith & Downs) at the HBG.

Photo by Wisnev.

While labeled *Aechmea magdalenae*, the purple flowers suggest this is actually *Pseudananas sagenarius*, assuming the various plants have long stolons. Note the extremely long and spiny leaves and short inflorescence.

The current Brazilian Flora list recognizes 7 of the 9 names listed in Smith & Downs as valid species, including *Pseudananas sagenarius*. As noted above, *A. monstrosus* and *A. nanus* are now synonyms of other species. < <http://floradobrasil.jbrj.gov.br/>>.

Ananas nanus, illustration by Smith. 12(3) B.S.J. 55 (1962). Smith originally published this taxa as a variety of *A. ananassoides*, but in this 1962 article raised it to species level. It has a very small fruit, a tough peduncle apex and few flowers. The Encyclopaedia still treats it as a variety of *A. ananassoides*; the Brazilian Flora list and WCSP treat it as a *synonym*. However, others still treat it as a species.



Coppens d'Eeckenbrugge, Leal and Govaerts; World Checklist of Selected Plant Families (“WCSP”). For those interested in more information about the history of the genus, see Leal, F., G. C. d'Eeckenbrugge and B.K Holst, Taxonomy of the Genera *Ananas* and *Pseudananas* – An Historical Review. 1998. 19(2) Selbyana 227-235. That paper concluded that the Smith & Downs key for *Ananas* was “untenable.” Among other things, it was based mainly on the size of various features that could well be influenced by environmental features. These authors published many other papers on the pineapple.

Two of these authors followed up with another article in 2003 that proposed a significant revision of *Ananas* nomenclature. Coppens d'Eeckenbrugge, G. and Leal, F. 2003. Morphology, anatomy and taxonomy, In: The pineapple: botany, production and uses. Pineap. Bot. Prod. Uses (ed. D. Bartholomew et al.) pp. 13-33. (“2003 Paper”).

They proposed only two species, *A. comosus* (with five varieties) and *A. macrodontes*, and did not accept the *Pseudananas* genus. Another article in 2009 addressed the domestication of pineapples and further discussed these various taxa. G.C. d'Eeckenbrugge and M-F. Duval. 2009. The Domestication of Pineapple. Pineapple News Issue No. 16, 2009. ("2009 Paper.")

As noted above, these two species differed in that the former reproduced by stem shoots, peduncle slips and the crown, while the latter reproduced by stolons and had no crown. Their key placed much less emphasis on fruit size. The 2003 Paper noted that a few earlier authors (like Mez in his earlier treatise) had treated the genus as monotypic due to the small variation of the species. As to the overall status of the *Pseudananas* and *Ananas* species, they stated

"The study by Duval *et al.* (1998) justifies the distinction between the generally diploid crowned pineapples propagating by shoots and the tetraploid crownless *yvira* propagating by stolons, although both taxa show much more similarity with each other than with other bromeliads, suggesting that they belong to the same genus." Id.

Except for the tetraploid *A. macrodontes*, the other species have no reproductive barrier, and no floral differences, and limited DNA differences.



Ananas macrodontes “in the wild in southern Brazil. “

Photo by M. F. Duval. 2009 Paper at 22.

These various changes were accepted by the pineapple specialists, but not by members of the general botany or bromeliad community for almost a decade. In “Fragments of the Atlantic Forest,” Siqueira-Filho and Leme stated

“These authors did no specific field work nor did they give any information on the specimens used in the study. They also did not clarify aspects of the group's pollination biology and especially they did nothing to reduce information gaps related to floral traits that have been historically ignored for the taxa dealt with in the study (e.g., sepals, petals and associated structures, anthers, stigma, pollen, etc.) ... The arguments used to justify this decision, such as absence of reproductive barriers, possible hybridization, biochemical and molecular

similarities, and number of chromosomes, are not absolute truths when it comes to biological features in the Bromeliaceae....”

It appears that the Bromeliad Taxon List first accepted these changes around 2013, and the WCSP only accepted the transfer of *Pseudananas* to *Ananas*.

Another article was published in 2015 paper – its purpose was “correcting formal errors, and restating the reasons for synonymies as given in the 2003 treatment of the pineapples.” G.C. d'Eeckenbrugge, R. Govaerts. 2015. Synonymies in *Ananas* (Bromeliaceae). 2015. 239(3) Phytotaxa 273-9 (“2015 Paper”). Since it was co-authored by Rafaël Govaerts, who works at Kew and manages the WCSP, it should come as no surprise that these names are now accepted by the WCSP.

A summary of the taxa recognized in the 2015 paper is below.

Ananas comosus. The 2003 Paper stated:

“Instead of producing stolons, *A. comosus* multiplies by stem shoots (terrestrial and aerial), slips (from the peduncle) and crown. The syncarpic fruit is formed of 50-200 berries. The spines are generally antrorse but some genotypes also exhibit a few retrorse spines. As commonly found in *Bromeliaceae*, *A. comosus* is diploid, with 50 minute and almost spherical chromosomes...”

Five varieties were recognized. They generally correspond with different *Ananas* species of recognized in the Brazilian Flora List.

“The three cultivated *Ananas* botanical varieties are *A. comosus* var. *comosus*, the pantropical pineapple cultivated for its spectacular and exquisite large fruit, *A. comosus* var. *erectifolius*, a small-fruited pineapple cultivated for its fibre, and *A. comosus* var. *bracteatus*, a robust pineapple with multiples uses, involving its medium-sized fruit for juice and its armed leaves for fences. The two latter varieties are now increasingly cultivated as ornamentals.”
2009 Paper at 17.



Ananas comosus var. *parguazensis* in the Rio Negro Basin. Photograph by M.F. Duval, 2009 Paper at 22.

This taxa is treated as *A. parguazensis* by other authorities. Camargo and Smith published this species in 1968 with a Latin description. A New Species of *Ananas* from Venequela. 1968, 16 Phytology 464. The article noted Camargo found the species in a year-long research project, and Smith agreed it was a species based on “its “retorse foliar and bracteal spines” and “infundibuliform petal-scales.” It has somewhat wider leaves than *A. ananassoides*.

A tidbit- in “Bromeliads in the Brazilian Wilderness,” Leme and Marigo note that native peoples

made a wine from pineapples known as nanay. As many of you known, bromelain comes from pineapple (and many take it as vitamin). Apparently, it is thought “represents a chemical defense against insect larvae...” Id at 161

As to the other species recognized by Smith & Downs, the 2003 Paper treated both *A. ananassoides* and *nanus* as *A. comosus* var. *ananassoides*. However, the 2015 Paper noted the correct name for *A. comosus* var. *ananassoides* is *A. comosus* var.

microstachys. The nomenclature rules provide that the earliest validly published name has priority, but only at the rank in which it is published. Because Mez published *A. sativus* var. *microstachys* in 1892, *microstachys* has priority over *ananassoides* at the variety level. In contrast, *ananassoides* has priority at the species level since Baker published *Acanthostachys ananassoides* in 1889 while *Ananas microstachys* was published in 1891.



Figure 6. Habitats and morphology of *A. comosus* var. *ananassoides*, in French Guiana and Amapá state, Brazilian : A, B, inselberg and rock savannah; E, intermediate phenotype with medium fruit on long peduncle in cultivation in wild lowland forest; C, D, extreme range of fruits sizes commonly found (see pen at white arrows for scale) (photographs of G. Coppens).

A. comosus var. *microstachys* is treated as *A. ananassoides* by other authorities. This species has long but thin leaves.

Photographs by Coppens, p. 21 of 2009 Paper.

The 2003 Paper treated *A. bracteatus* and *A. fritzmulleri* as two different forms of *A. comosus* var. *bracteatus*, although they did not give either form a name. Variety *bracteatus* is “always found cultivated as a living hedge, for fibre and fruit, juice, or abandoned in ancient settlements.” Id. This variety is known for its dense, wide and spiny leaves, as well as its large floral bracts, which are bright red in one of the forms and green in the other.



Figure 3. *A. comosus* var. *bracteatus*, a remnant from an old fence in a southern Brazil farm (machete handle provides scale; photograph of M.F. Duval), and a variegated mutant used as a garden ornamental in Martinique, FWI (photograph of G. Coppens).

A. comosus var. *bracteatus* is treated as *A. bracteatus* or *A. 'Bracteatus'* by other authorities. Smith treated the variegated form as *A. comosus* var. *tricolor*, but that variety was not recognized by the 2003 Paper or the Brazilian Flora List.

Ananas comosus var. *erectifolius* was published for the smooth leaved *A. erectifolius*. As compared with var. *comosus*, “[p]lants of *A. comosus* var. *erectifolius* are much less massive, with abundant and early shoots, frequent crownlets at the base of the main crown, numerous erect, fibrous leaves and a small, very fibrous, inedible fruit borne on a long and slender peduncle.” 2009 Paper at 17. It is not found in the wild, and it was cultivated by indigenous people for its fibers since its leaves are generally spineless and fibrous. *A. lucidus* Miller, a species accepted by Smith & Downs, as well as certain other names published by Miller in 1768 “should not be considered valid names” since they were cultivars and “Miller did not intend to describe distinct species.” 2015 Paper at 215.

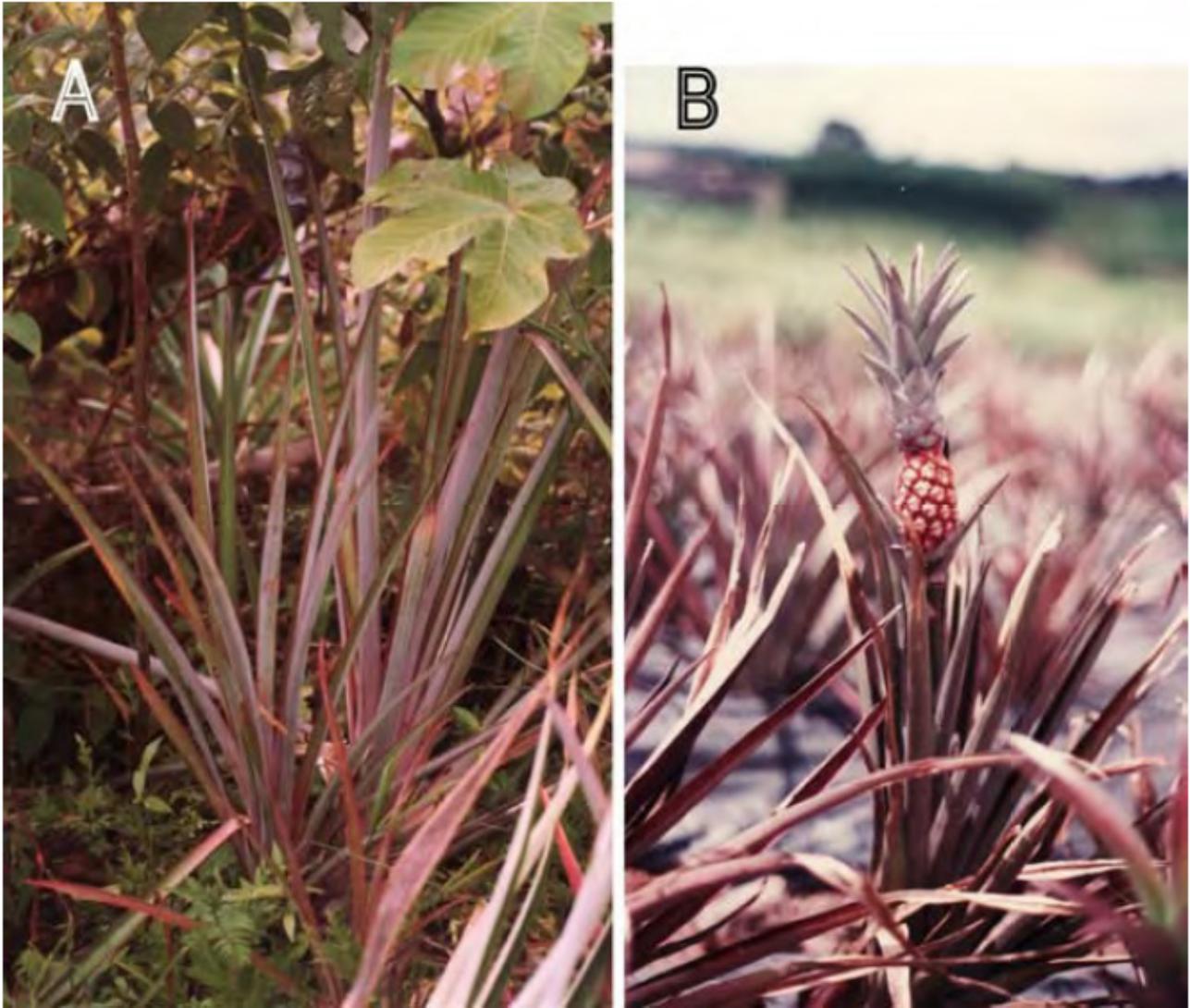


Figure 2A. *A. comosus* var. *erectifolius* under cultivation for fibre in the Amazon (Rio Negro basin; photograph of M.F. Duval), and Figure 2B, as an ornamental, for export, in Côte d'Ivoire (photograph of G. Coppens).

Photographs on prior page by Duval and Coppens, p. 18 of 2009 Paper. This taxa is considered *A. lucidus* or *A. 'Erectifolius'* by other authorities. Smith had incorrectly treated *A. erectifolius* as a synonym of the smooth leaved *A. lucidus* Miller, which was an edible cultivar.

Ananas macrodontes. 28

Belg. Hort 140, pl IV & V. 1878.
Image from the Biodiversity Heritage Library. Digitized by Harvard Botanical Library. This is the illustration from the first description of this species by Morren in 1878. He noted it did not have a leaf crown, and propagated via stolons.

However, in 1939 Camargo treated *A. macrodontes* as a synonym of *Bromelia sagenaria* described by Arruda da Camara in 1810, and Camargo and Smith & Downs treated it as belonging to a different genus, *Pseudananas*. The 2003 Paper asserted this synonymy was “dubious because of very incomplete descriptions, not mentioning clearly the absence of a crown and hence generating a confusion with *A.*



comosus var. *bracteatus*.”

Thus, the 2003 Paper recognized *A. macrodontes* as the correct name, and treated *Pseudananas sagenarius*, *B. sagenaria* and *A. sagenaria* as possible synonym of *A. comosus* var. *bracteatus*. The Brazilian Flora List still treats it as *P. sagenarius*.

The 2003 and 2009 Papers discussed the origin and evolution of the various species and varieties. It appears that the pineapple has been cultivated for at least 2500-3000 years, and the domesticated varieties *comosus*, *erectifolius* and *bracteatus* probably evolved primarily from the wild *A. comosus* var. *ananassoides* in northern South America.

While these proposals represented a major contraction in the number of genera and species listed by Smith & Downs, d'Eeckenbrugge and maintained most of the relevant taxa and treated them at a different level. Both S&D and 2003 Paper separate the stoloniferous taxa from the others; S&D treats it as *Pseudananas*, a different genus from *Ananas*, while the other treats it as a different species (*A. macrodontes*) from the only other species, *A. comosus*. As to the remaining taxa, S&D treats them as different species, while the 2003 Paper generally treats them as varieties of *A. comosus*. This is perhaps the most subjective of taxonomic and nomenclatural challenges: are various differences between taxa significant and stable enough to justify treating them as different genera, species, subspecies or varieties (or not at all)? Even a phylogenetic study may not answer these questions in many cases.

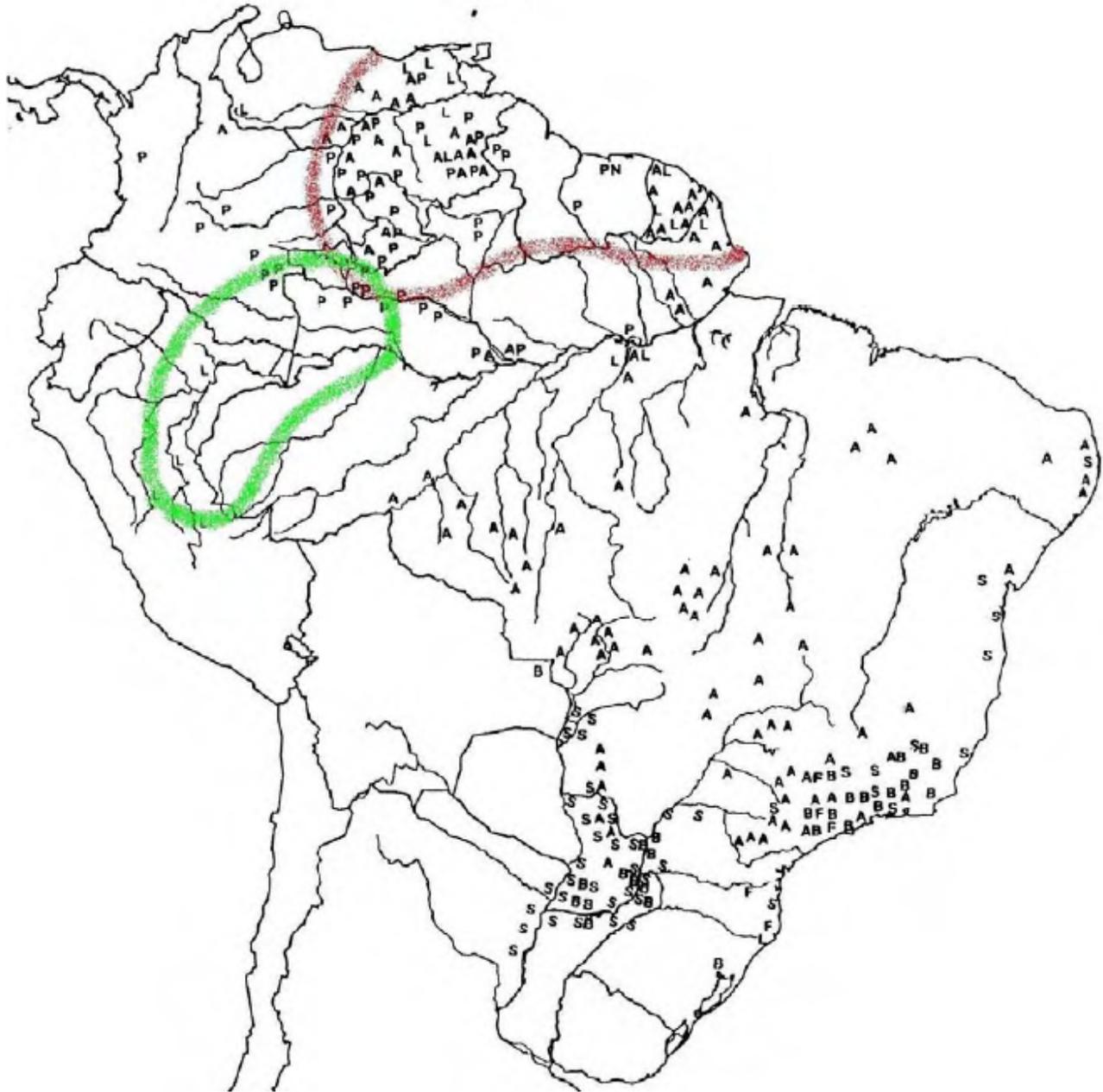


Figure 4. Distribution of *A. macrodontes* (S) and *A. comosus* varieties *ananassoides* (A), *paraguayensis* (P), *erectifolius* (L), and *bracteatus* (B). Red roughly outlines the region of greatest morphological and genetic diversity within *A. comosus* (including var. *comosus* and types intermediate between var. *comosus* and *ananassoides*). Partial spininess is relatively frequent in this area. Green outlines an area with great diversity of large-fruited clones (typical of var. *comosus*), where the "piping" leaf trait is relatively frequent.

Distribution of various *Ananas* taxa. 2009 Paper at 19.

As you can see, var. *ananassoides* has the largest distribution, while var. *paraguayensis* and *erectifolius* are found in the north, and var. *bracteatus* and *A. macrodontes* have overlapping distributions in the south.

Continued next month.