

Passiflora

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sub sole sub umbra virens



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THIS MONTH'S ISSUE Digital
taxonomy - *Passiflora fieldiana*.
Passiflora 'Buzios'. Maypop jelly.
Passiflora xrosea. Passion fruit soup
and more....

EDITOR, LAYOUT & PUBLISHER

✿ Myles Irvine

ASSOCIATE EDITORS

✿ Chuck Chan

✿ Luís Lopes

✿ Shawn Mattison

✿ Kyle Rahrig

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We invite submissions from all *Passiflora* enthusiasts, from cartoons, garden tales, recipes and growing tips to articles about new species and hybrids and reports of wild collecting trips. Please contact the editor at myles@passionflow.co.uk as above. Articles in any language are welcome but will be translated and published in English only for reasons of space.

We reserve the right to edit or refuse articles and ask contributors to note that we may be able to offer scientific peer review depending on the topic. Please note that contributors are not paid. Letters to the editor for publication are also welcome.

Note that new species should first be submitted to the appropriate scientific botanical journals so that the validity of the name is established, after which time we may carry an article about them. If you wish to formally register a hybrid, which is optional, you should apply to the Passiflora Cultivar Registrar, Robert Rice, who, if your application is accepted, will publish your hybrid in the Passiflora Society International Journal & Newsletter.

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Publisher's name: Myles S. Irvine

Publisher's address:

18 Hampton Court Parade
East Molesey
Surrey
KT8 9HB
United Kingdom



Passiflora parritae © Gary Uhouse

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In pursuit of jelly!

By Michael Cook

I've always been keen on wandering in the woods, walking along and checking out meadow-flowers and bugs, gathering and eating some of the tasty fruits we have in Texas. Think of this as a sort of written ramble - wandering along through my adventures in making jelly. I have jellied all kinds of native wild plants, from elderberries and blackberries to the mustang grapes that cover fences and bushes in parts of Texas.

Because of my location in Dallas, I'm in the enviable position of being able to wild-harvest *Passiflora incarnata*, also known as maypop. It's a wild plant around where I live, mostly in meadows and freeway verges. They're delicious, with a tangy, aromatic tropical flavor, like a blend of pineapple, apple, and lemon. The perfume of these fruits is so amazing - when you have a dozen pounds of it in bags in the kitchen, you can literally smell them when you walk in the front door. Like mangoes or pineapples, you can smell a fully ripe fruit at arm's length. The first time I got enough of them to do more than just eat them fresh until I was sick, I harvested thirteen pounds of fruit.

I started researching how to make jelly from them, because I wanted to be able to preserve them in a way that's shelf-stable and useful. I found a lot of recipes that seemed to be written by people who have never seen passionfruit ("slice the fruit thinly"?), and a lot of the recipes were aimed at *P. edulis*, which is much more acid and has more chewable seeds which can be left in.

I tried adapting some of the techniques to the fruit I had, cooking the pulp on the stove top to loosen up the juice, and trying a variety of ways to juice them. Unfortunately, the availability of the wild crop depends on things like when the rain comes in relation to the hot afternoon temperatures, and when the Parks Department mows the park meadows. All of these are totally unsympathetic about the wild passionflower harvest. So I get enough fruit to make a serious effort every couple of years. I haven't ever had enough at one time to make batch after batch until I got it perfectly right.

Cooked juice just made me sad. Longer time at higher temperature drives off a lot of the aromatic principles, and the resulting juice is still tart and fairly tasty, but lacks the ambrosial deliciousness of the fresh fruit. Using any kind of juicing tool like a Foley Food Mill tended to break the seeds into tiny, dangerous shards. The seeds of this species are tough and the insides have a slightly bitter off flavor, and between having little sharp hard chips of seed shell in the juice, and the weird taste, it wasn't worth the effort. I tried pressing the cooked arils through a stainless sieve with a silicone spatula. It avoided the seed shards, but the boiled flavor was still flat. Again, it wouldn't be horrible if I didn't know that it was SO much tastier fresh.

So I started trying to find ways to extract the juice without boiling. Pressing the fresh arils through the sieve with my

fingertips or a silicone spatula got a good flavor, but it was excruciatingly slow, and it was hard to get much of the juice out. I finally figured out that a silicone blade on a kitchen stand mixer, allowed to run slowly for several minutes, would physically break down the arils by mashing without degrading the aromatic elements. Then I could strain the juice through the sieve, leaving the seeds and pulp. The process isn't terribly efficient, but a second run through



the mixer with a hefty dose of granulated sugar yielded a syrup that mixed up delicious drinks, and seemed to salvage most of the remaining juicy pulp.

Finally, I had a strong, aromatic full-strength juice. Now, to make it into jelly. I started out with Sure-Jell, following a recipe for basic jellies. It steadfastly refused to set, making something between watered-down jam and clumpy syrup. I switched to Pomona pectin, which activates differently, and got somewhat better set. I tried adding water and increasing the pectin amounts; adding the water diluted the flavor more than I wanted. So far, the pure juice cooked up with the Pomona pectin provides the best combination of intense flavor and good jelly consistency. It's still not what I wish it was, in terms of consistency, but I'm not willing to sacrifice the flavor to make it jell.



I wish this ended up with “And the jelly was perfect, and the people all rejoiced, and they lived happily ever after”... but it doesn’t. At this point, I’ve got a neat jelly with an intense, rich flavor but an often too-soft set. I would be particularly interested to hear from anybody who’s fought this same fight, to figure out if there’s an issue with the types of acid in the pulp, or some kind of other issue.

If you’ve never made jelly, I would recommend checking out any of the large number of tutorials and videos on the internet; this is a fairly brief recipe, intended more as a guideline.

- 2 cups of very pulpy juice (almost as thick as dairy cream, no seeds, strained through a fine mesh sieve)
- 3/4 cup sugar
- One teaspoon of calcium water (mixed with a powder from the Pomona packet)
- One teaspoon of Pomona pectin

Sterilize jelly jars by boiling for 10 minutes in a large kettle full of water. Heat lids in a smaller pan to soften the sealing gum.

Bring the juice and calcium water to a boil, add the pectin and sugar, return to a boil and boil hard for one minute while stirring constantly.

Pomona’s pectin uses calcium to set, which comes from powder mixed with water; if you are using a different version of pectin, you don’t need the calcium water. If you are using it, there will be instructions for making it up in the packet with the pectin.

Turn off heat, fill and seal sterilized jelly jars. Be careful - the jelly will be HOT. Handle the jars with tongs.

Personally, I like to process the filled and capped jars in an open kettle of boiling water for an additional 10 minutes or so; this isn’t entirely necessary with jelly, because the heat of the jelly itself kills any dangerous organisms, but I find that I get a better seal on the jars this way.



Digital taxonomy

Time to move forward?

By Andrew Adair

Finding the correct scientific name for a plant is usually accomplished by examining descriptions of species and deciding which best matches. The descriptions are based on pressed and dried specimens or occasionally on specimens grown under artificial conditions. As more species in a genera are found it becomes apparent that some descriptions are lacking the detail necessary to separate the species. Often with *Passiflora*, when the dried material is re-examined the stipules are missing, or with flowers, the internal structure or petals etc. are obscured.

Viewing fresh plants can reveal that extra information that is sometimes needed to separate species or to extend the knowledge of a species. Plants grown under artificial conditions are usually grown under relatively constant conditions. Plants growing in nature, where conditions are not constant, are more likely to display any variance of a defining characteristic. Being able to capture the characteristics of a specimen at the time of collection can only be positive for plant taxonomy and field guides.

Since the turn of the century digital cameras have improved to the stage where a point & shoot camera is small, lightweight, and able to produce quality close up images. It is time for taxonomy to enter the 21st century.

I use the Cyber-shot DSC-TX30. It is compact and water/dust and shock proof. It has one of the longer digital zoom lenses in the rugged camera group, with a range of 26-130mm (5X). Around the lens are a pair of LED illuminators, which can be used to brighten up your subject in the camera's Magnifying Glass Plus (15X) mode. This mode allows you to be 1cm away from your subject.

Following the general sequence for describing *Passiflora*, let's see if, as an adjunct, digital taxonomy flies or dies. To launch the concept, what species could be better than the long awaited... *Passiflora fieldiana* Tillett ined found in Rancho Grande Venezuela.



Passiflora fieldiana Tillett ined



Passiflora fieldiana Tillett ined



Flower, leaf & stem



Stem - mature & juvenile



Stipule (2x1cm)



Leaf (16-19cm x 15cm)



Petiole (8 cm)



Petiole gland



Bract and developing fruit



Close up of bract



Sepal (35x26mm) Petal (40x16mm)



Sepal awn



First and second row coronal filaments



Hypanthium x-section



Hypanthium wall protuberances, operculum, limen, trochlea



Stigma, styles, ovary, anthers



Fruit (7x7cm)



Seeds (6x3.8mm)



Flower, leaf & stem



Stem - mature & juvenile



Stipule (2x1cm)



Leaf (16-19cm x 15cm)



Petiole (8 cm)



Petiole gland



Petiole gland



Bract and developing fruit



Close up of bract



Sepal awn

Sepal (35x26mm)
Petal (40x16mm)



First and second row coronal filaments



Hypanthium x-section



Hypanthium wall protuberances, operculum, limen, trochlea



Stigma, styles, ovary, anthers



Seeds (6x3.8mm)

Fruit (7x7cm)



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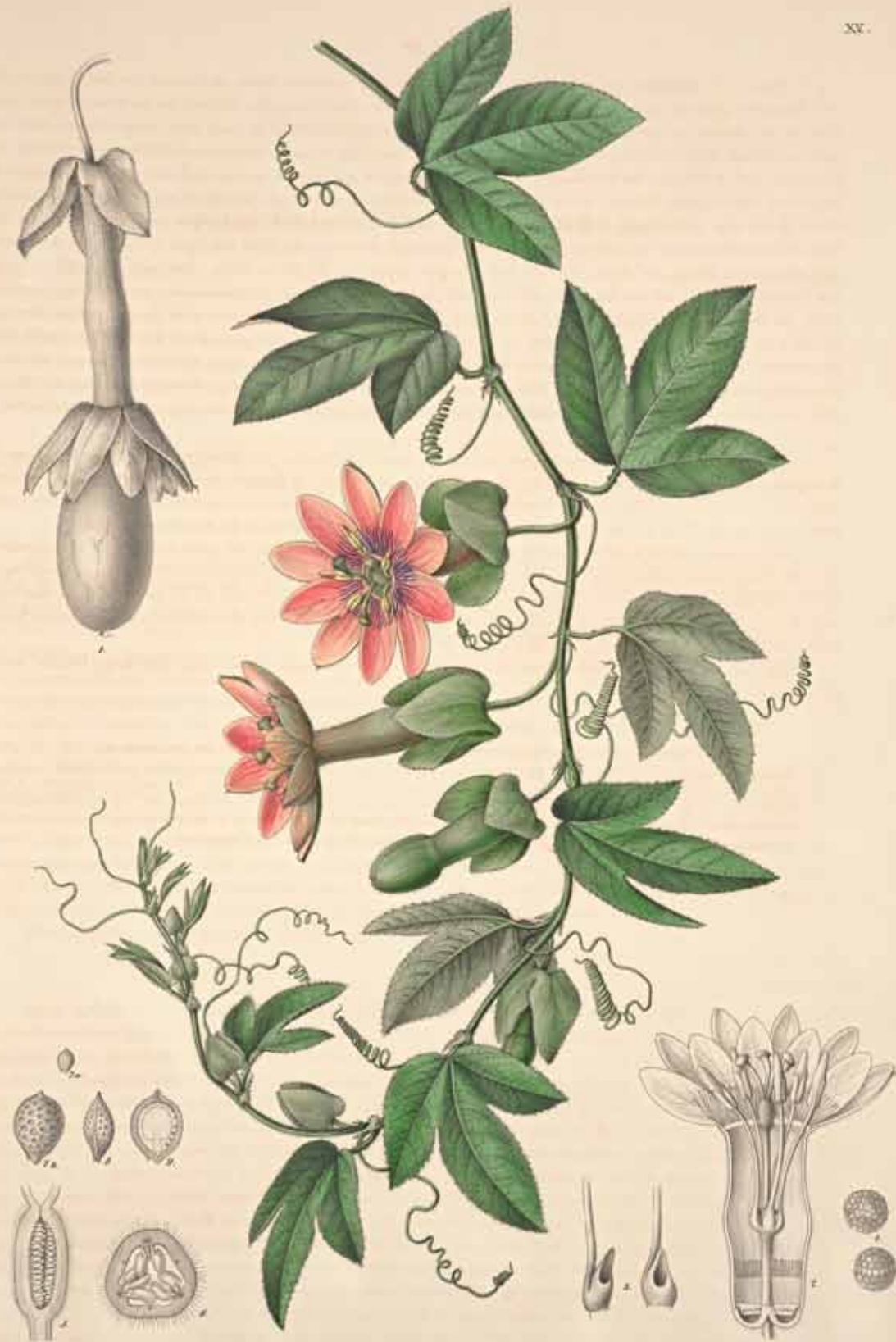
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Recreating *Passiflora* × *rosea*

By Chuck Chan and Paul Borchardt



Poggendorffia rosea H.

Passiflora × *rosea* illustration as *Poggendorffia rosea* by Hermann Karsten in *Florae Columbiae*, vol. 1: t. 15 (1869)



Passiflora × *rosea* in Sibaté, Cundinamarca, Colombia at elevations around 2600 meters © Hernan D. Bernal

Introduction:

In a quest for a sweet passion fruit that can be eaten out of hand and is devoid of astringent seeds yet grows in a maritime climate, an attempt was made to recreate *Passiflora* × *rosea*. In some South American Countries, both parent plants—*Passiflora pinnatistipula* and *Passiflora tripartita* var. *mollissima*—are used for juice and sometimes consumed out of hand. *Passiflora tripartita* var. *mollissima* produces an oblong ovate fruit that is tart and flavorful with large orange arils and astringent seeds. *Passiflora pinnatistipula* is a round sub-globulose fruit that is mildly sweet with slimy small translucent or clear arils.

Passiflora × *rosea* is thought to be a naturally occurring hybrid between *Passiflora pinnatistipula* and *Passiflora tripartita* var. *mollissima* and is found in Ecuador, Colombia, Peru, Bolivia and Northern Chile growing in cultivation or wild near areas where the parents are being cultivated.ⁱⁱⁱ

This plant was first described by Hermann Karsten under the name *Poggendorffia rosea* in June of 1856 in the journal *Linnea*. The specimen described was collected in a garden in Bogotá, Cundinamarca, Colombia. Karsten included an illustration of the species in *Florae Columbiae* in 1859.

In 1862 Bentham & Hooker reduced the genus *Poggendorffia* to a synonym of *Tacsonia* and described *Passiflora* × *rosea* as an abnormal or monstrous form of *P. pinnatistipula*.ⁱⁱ

Cultivated hybrids of *Passiflora pinnatistipula* and *Passiflora tripartita* var. *mollissima* were first created at the Royal

Botanical Gardens of Edinburgh by John Scott from 1861 to 1862 and the results were reported in *The Journal of Linnean Society of Botany* in 1864.ⁱ Using a self-sterile plant of *Passiflora pinnatistipula*, Scott performed six crosses of *P. pinnatistipula* × *P. tripartita* var. *mollissima* with three flowers setting fruits and only one of the three fruits developing completely. The hybrid produced 190 seeds with 52 embryo-containing seeds. Scott also performed six crosses of *P. tripartita* var. *mollissima* × *P. pinnatistipula* with three flowers setting fruits, two of which produced 116 seeds that were not viable.ⁱ

In 1873, Triana & Planchon did not accept the genus *Tacsonia* and moved the specimen back to the genus *Poggendorffia* and changed its status as a section of *Passiflora* subg. *Tacsonia*. Triana, who witnessed Karsten's discovery, described the plant as having five stamens with free filaments that were concave at the base and deformed anthers. Triana also described collecting fruit from a flower where the ovaries and anthers were normally shaped.ⁱⁱⁱ

Sodrio transferred the plant back to the genus *Tacsonia* in 1903 and accepted the plant as a species but suggested it was a hybrid between *P. pinnatistipula* and *P. mollissima*, since both specimens were cultivated close together.

The plant was later transferred to the genus *Passiflora* by Killip in 1938 after concluding that Sodrio may be correct based on observations of a plant of *P. xrosea* found on the roadside near Tarma, Peru with the suspected parents being within proximity of the plant.ⁱⁱ In 2009 Jørgensen and Vásquez moved the specimen to the section *xInkea*.ⁱⁱⁱ



Passiflora × *rosea* in Sibaté, Cundinamarca, Colombia at elevations around 2600 meters © Hernan D. Bernal

Procedure:

In the current investigation, hybrids of *P. pinnatistipula* and *P. tripartita* var. *mollissima* and the reverse cross of *P. tripartita* var. *mollissima* and *P. pinnatistipula* were made in 2013.

Crosses using *P. pinnatistipula* as the fruit parent were pollinated in the summer and easily took with two fruits. The reverse cross using *P. tripartita* var. *mollissima* as the pod parent were more difficult to make as only one fruit developed from fifteen attempts. Seeds were planted in the fall of 2013 and most of them germinated in the spring of 2014. The plants started to bloom in spring of 2015.

Results:

In both hybrids crosses, we observed the following traits that are likely dominant in the cross:

- Plants are vigorous and grew to blooming size faster than *P. pinnatistipula*
- Bracts are free to the base, sometimes with a reddish brown tinge if exposed to sunlight
- Filaments are 1 cm or greater, longer than those of *P. tripartita* var. *mollissima*
- Calyx tube is pubescent and shorter than *P. tripartita* var. *mollissima*
- Stipules are pinnatisect

In the cross of *P. tripartita* var. *mollissima* × *P. pinnatistipula* all the plants came out with similar flowers that were small green, with recurved, inwards and brownish purple sepals, and petals that were stunted and small. We made several attempts to self and backcross the plants to the parents with no success.

The cross of *P. pinnatistipula* × *P. tripartita* var. *mollissima* appear nearly identical to *P. xrosea* plants that were observed and collected in Colombia and Ecuador. All the plants that have bloomed so far have deformed anthers. A majority of the plants (about 80%) have flowers that are either unable to open or have partly or fully deformed pollen sacs.

Attempts to self-pollinate and back cross the plants were also unsuccessful. One attempt was made to use pollen from a plant with developed pollen sacs with no success due to cold weather.

See Figures 1-20 below

Plants	<i>P. tripartita</i> var. <i>mollissima</i>	<i>P. pinnatistipula</i>	<i>P. xrosea</i>	<i>P. tripartita</i> var. <i>mollissima</i> × <i>P. pinnatistipula</i>	<i>P. pinnatistipula</i> × <i>P. tripartita</i> var. <i>mollissima</i>
Stems	pubescent	pubescent	pubescent	pubescent	pubescent
Leaves	3-lobed, marginally serrated, 4.5-17 × 6.5-25 cm	3-lobed, marginally serrated, veination impressed, above(4)6-8(11) × (3.5)7-9(14) cm	3-lobed, marginally serrated, 4.1-10.3 × 4.5-14.8 cm	3-lobed, marginally serrated, 5-10 × 10-14 cm	3-lobed, marginally serrated, 4-10 × 4-14 cm
Stipules	0.9-3.3 × 0.4-1cm, reniformed	0.7-0.9(-1.1) cm, pinnatisect	0.5-1.0 × 0.3 cm, pinnatisect	1.0 × 0.4 cm, pinnatisect	1.0 × 0.3 cm, pinnatisect
Petioles	1-5.5 cm with 6-14 glands	(0.8-) 1.5-2 (-3.5) cm with (2)5-10 glands	1.0-2.5 cm with 6-8 glands	1.0-4.0 cm with 4-6 glands	2.5 - 3 cm with 4-8 glands
Peduncle	5-11 cm long	(3.2-) 5-7(-9.5) cm long	2.5 - 8.5 cm long	2.0-3.7 cm long	2.5-3.5 cm long
Bracts	2.5-6× 0.5-2 cm Connate for ⅓ - ⅔ of length	1.2-3 × 0.8-1.5 cm, reddish brown, Free to the base	2-2.5 × 1.5-2 cm free or united 1 cm from base	2.0-3.0 x 2.0cm, reddish brown, serrated edge Free to base	3.0 x 2.0 cm, reddish brown, serrated edge Free to base
Calyx tube	7-12 x 0.7-1.2 cm, glabrous	4.4-6 x 0.9-2 cm, pubescent	4.4-6.7 x 1.3-1.6 cm, pubescent	1.5-6.0 x 1.0 cm, pubescent	5.1-6 x 1.3-1.5 cm, pubescent
Sepals	2.5-5.5 x 0.7-1 cm, Aristate with a 2 cm awe	3.3-6 x 1.2-2 cm, Aristate with a 0.2-0.5 cm awe	2.5-3 × 0.7-1.1 cm, aristate	2.0 x 1.0 cm, Aristate with a 0.5 cm awe	3.5 x 1.5 cm, Aristate with a 0.2 cm awe
Petals	2.5-5.5 x 0.7-1 cm	5-5.8 x 1.5-2 cm	2.5-3.2 × 1.3-1.5 cm	1.0 x 0.5 cm	3.5 x 2 cm
Corona	1 series, with a purple ring	1-2 series, with a purple ring	2 series	1-2 series, with a purple ring	1-2 series, with a purple ring
Filaments	1 mm, white	1.2-2 cm, blue to violet 1 mm, white	0.8-1.3, white pink, purple, and blue 2-3 mm, white	1.0 cm, white	1-1.5 cm white to violet
Ovary	1 cm long, ellipsoid	1 cm long, spherical	1 cm long, ovoid	1 cm long, ovoid	1 cm long, ovoid

Table 1. Descriptions of *P. tripartita* var. *mollissima*^{iv}, *P. pinnatistipula*^{iv}, *P. xrosea*, and our hybrid crosses

Conclusions/Discussion:

Our hybrid attempts of *P. pinnatistipula* × *P. tripartita* var. *mollissima* produced plants similar to those discussed by Sodrio. Of note, similar features of the deformed anther and pollen are also observed in Piet Moerman’s hybrid *Passiflora* “Wigen K. Verhoeff”, which used *P. insignis* as the fruit parent and several other *Tacsonia* hybrids using *Passifloras* in the section *Insignes*.

The morphology of our hybrids suggests that Sodrio’s conclusion that *P. xrosea* is a hybrid between *P. pinnatistipula* and *P. mollissima* is correct. Further, our results suggest that *P. pinnatistipula* was the mother parent.

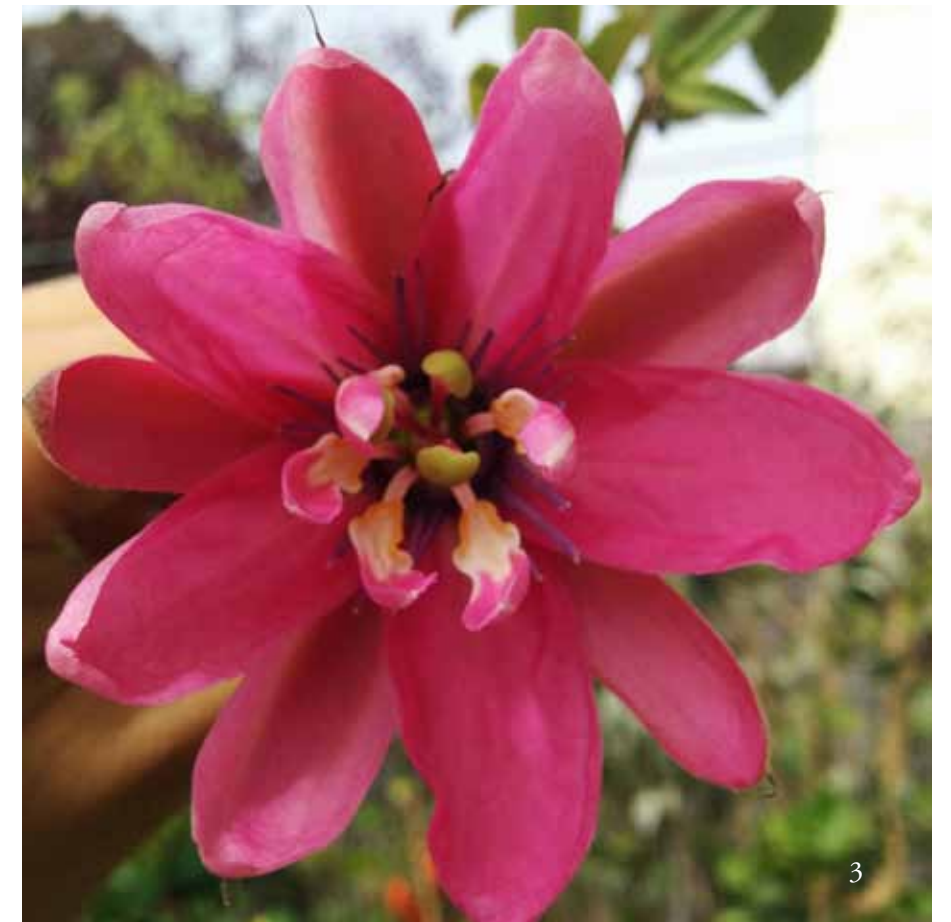
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ⁱ Scott, John. “Notes on Sterility and Hybridization of Certian Species of Passiflora, Disemma, and Tacsonia.” *Journal of the Linnean Society: Botany* 16 June 1864.

ⁱⁱ Killip, Ellsworth Paine. *The American Species of Passifloraceae*, Chicago., 1938

ⁱⁱⁱ Jørgensen, Peter Møller & Vásquez, Roberto. “A revision of Passiflora sections Insignes and xInkea (Passifloraceae)”, *Anales del Jardín Botánico de Madrid* 66(1): 35-53, 2009

^{iv} Ulmer, Torsten, and John Mochrie MacDougal. *Passiflora: Passionflowers of the World*. Portland: Timber, 2004



1-3: *P. pinnatistipula* × *P. tripartita* var. *mollissima* crosses with deformed pollen sacs



4-6: *P. pinnatistipula* × *P. tripartita* var. *mollissima* plants with functional pollen sacs



7-8: *P. tripartita* var. *mollissima* × *P. pinnatistipula*



9: Stipules and leaf of *P. tripartita* var. *mollissima* × *P. pinnatistipula*



10: Stipules and leaf of *P. pinnatistipula* × *P. tripartita* var. *mollissima*



11: Flower of *P. tripartita* var. *mollissima* × *P. pinnatistipula*



12: View of plant material cuttings from top to bottom *P. pinnatistipula*, *P. tripartita* var. *mollissima*, *P. tripartita* var. *mollissima* × *P. pinnatistipula*, and *P. pinnatistipula* × *P. tripartita* var. *mollissima*



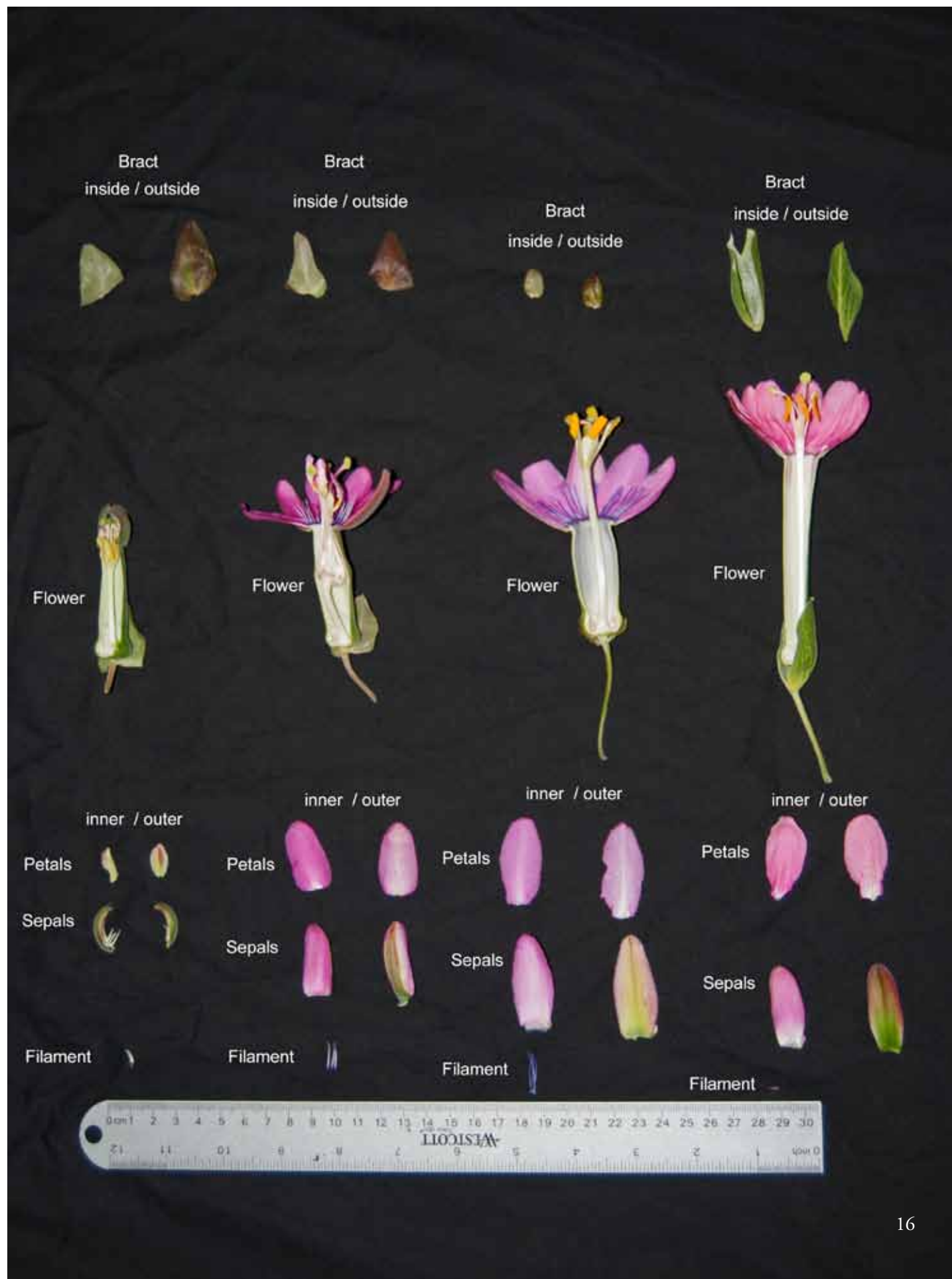
14: View of the side of flowers from left to right *P. tripartita* var. *mollissima*, *P. pinnatistipula*, *P. pinnatistipula* × *P. tripartita* var. *mollissima*, and *P. tripartita* var. *mollissima* × *P. pinnatistipula*



13: View of the front of flowers from left to right *P. tripartita* var. *mollissima*, *P. pinnatistipula*, *P. pinnatistipula* × *P. tripartita* var. *mollissima*, and *P. tripartita* var. *mollissima* × *P. pinnatistipula*



15: Flowers and leaves from left to right *P. tripartita* var. *mollissima*, *P. pinnatistipula*, *P. pinnatistipula* × *P. tripartita* var. *mollissima*, and *P. tripartita* var. *mollissima* × *P. pinnatistipula*



16: Dissection of flowers showing bracts, flowers, petals, sepals, and filaments from left to right *P. tripartita* var. *mollissima* × *P. pinnatistipula*, *P. pinnatistipula* × *P. tripartita* var. *mollissima*, *P. pinnatistipula*, and *P. tripartita* var. *mollissima*



17: Dissection of flowers and stamen from left to right *P. tripartita* var. *mollissima* × *P. pinnatistipula*, *P. pinnatistipula* × *P. tripartita* var. *mollissima*, *P. pinnatistipula*, and *P. tripartita* var. *mollissima*



18: Dissection of flowers showing leaves from left to right *P. tripartita* var. *mollissima* × *P. pinnatistipula*, *P. pinnatistipula* × *P. tripartita* var. *mollissima*, *P. pinnatistipula*, and *P. tripartita* var. *mollissima*



19



20

19, 20: Flower of *P. pinnatistipula* × *P. tripartita* var. *mollissima*

គន្លឹះ គន្លឹះ ស៊ុប ជាមួយ ខ្នុរ ប្រេង មារីណេត ក្រណាប្លេ ៩ ក្រណាប្លេ ស៊ុប

By Cameron Rutherford



Recipe:

passion fruit soup

- 700ml of water
- 300g of sugar
- 250g of passion fruit purée
- 1 lemon grass stalk, bruised and roughly chopped
- Thumb-sized piece of ginger roughly chopped
- 2 lime leaves, finely sliced
- 1/2 vanilla pod
- 1/2 lime
- 1/2 lemon

tips

If available, instead of passion fruit puree, buy fresh passion fruit, cut in two, scoop out the flesh, juice and seed and push through a coarse sieve to remove the seed. If possible use fresh Kaffir limes for the juice as this special ingredient will add a lovely perfume to the soup.

method:

Boil together the sugar & water to make a simple syrup. Add the zest and juice of the lemon and lime, the lime leaves, the vanilla & the lemongrass and ginger. Allow to infuse over night. The next morning stir in the passion fruit puree then pass the soup through a sieve. Chill in the fridge as it is important this soup is served very chilled.

marinated pineapple

- 1 Ripe pineapple
- 10 Thai basil leaves
- 25g of stem ginger syrup

method:

Peel the pineapple with a sharp knife taking care to remove all the rough outer skin. Segment the pineapple into four pieces and remove any tough inner core. As neatly as possible dice the pineapple into very small squares then place into a chilled bowl and pour over the stem ginger syrup. Leave to chill for 2 hours. Just before serving thinly slice the basil leaves and add to the marinated pineapple.

coconut sorbet

- 600g Coconut Yoghurt
- 75g Sugar
- 75ml Water
- 1 leaf of gelatin pre soaked in cold water

method:

Boil the Sugar and water together and whisk in the gelatin. Allow to cool slightly then stir in the coconut yogurt. Churn in an ice cream maker following the manufacturer instructions.

finishing off:

Chill 4 nice bowls then place a small mound of the marinated pineapple in the center of each bowl. Next, place a scoop of the coconut sorbet and rest it neatly on top of the pineapple. Lastly, pour the chilled soup into the bottom of the bowl and let it surround the pineapple and sorbet. Garnish with little Thai Basil leaves and serve immediately.

Cameron Rutheford is a private Chef.



Is *Passiflora* 'Buzios' a natural hybrid?

By Leslie A. King

(International Passiflora Cultivar Registrar, 2004 – 2011)



Fig.1 *P. racemosa* © Frank Stausholm

The first occurrence of a wild plant resembling *P. racemosa* (Figures 1 & 2), but with unlobed leaves was reported by Killip [1]. He cited the herbarium specimens collected in the Atlantic rainforest of Eastern Brazil by Mary Agnes Chase in 1929, noting “In most of the specimens here cited the leaves are all three-lobed, though in a few instances some are entire; in Chase 10115 all the leaves are entire”. Those original sheets from Chase are now located in the Smithsonian National Museum of Natural History [2].

Specimens were introduced into cultivation by Mauro Peixoto [3] over ten years ago. They were named *P. racemosa* ‘Buzios’ after the coastal location in Brazil, which is only about ten miles from the original collection site in 1929. It has never been formally described in the botanical literature, but most growers continue to regard it as a form of *P. racemosa*. However, *P.* ‘Buzios’ (Figure 3) exhibits a number of differences from normal forms of *P. racemosa* including paler and smaller flowers, a white corona with long filaments and unlobed leaves. A selection of *P.* ‘Buzios’, originally named as *P. racemosa* ‘Carioca’ [4] forms both racemes and single flowers, yet it is almost unknown for *P. racemosa* to form single flowers.

The fact that the cross *P. racemosa* (♀) × *P.* ‘Buzios’ (♂) is known but the reverse has not been described is evidence that *P.* ‘Buzios’ is not a form of *P. racemosa*. A number of hybrids based on *P.* ‘Buzios’ have been described, but there are few examples where those hybrids can be compared with analogous hybrids based on *P. racemosa*. Furthermore, many hybrids of *P.* ‘Buzios’ have been made by crossing it with other hybrids that already contain *P. racemosa* in their genome. Unsurprisingly, many of these are broadly similar to the analogous hybrid based on *P. racemosa*, and shed little light on the nature of *P.* ‘Buzios’. For example, *P.* ‘Flora Sabureau’ (*P.* ‘Kew Gardens’ (♀) × *P.* ‘Buzios’ (♂)) [5] is similar to *P.* ‘Annette’ (*P.* ‘Kew Gardens’ (♀) × *P. racemosa* (♂)).

However, the hybrid *P.* ‘Pluto’ [*P. ×violacea* (♀) × *P.* ‘Buzios’ (♂)] shown in Figure 4 bears little resemblance in terms of size, colouration and general structure to *P.* ‘Twin Star’ [i.e. *P. ×violacea* (♀) × *P. racemosa* (♂)] [4]. The unnamed hybrid *P.* ‘Buzios’ (♀) × *P. tarapotina* (♂) produced apparently healthy plants, but over the course of two growing seasons, every bud, among hundreds, aborted before opening. This can be contrasted with the successful hybrid *P.* ‘Esplendor’ [*P. racemosa* × *P. tarapotina*] [6]. Finally, I have pollinated *P.* ‘Buzios’ with five different clones of *P. caerulea*; each cross produced many seeds, but none ever germinated.

Direct evidence is lacking, but it is suggested that *P.* ‘Buzios’ is a complex natural hybrid involving *P. racemosa* and *P. galbana* and/or *P. mucronata*. This conclusion is partly based on the morphology of *P.* ‘Buzios’ and partly because it has some similarity to *P.* ‘Kew Gardens’. The

origin of *P.* ‘Kew Gardens’ is unknown, but its inclusion among herbarium specimens at the Royal Botanic Gardens, Kew indicates a wild origin [7]. It is known that *P.* ‘Kew Gardens’ is similar to the hybrid *P.* ‘Night Shift’ [*P. galbana* × *P. racemosa* (♂)], registered by Henk Wouters in 2009 [4]. Furthermore, *P.* ‘Night Shift’ has unlobed leaves like those of *P.* ‘Buzios’. In other words, *P.* ‘Buzios’ could be descended from an original hybrid of *P. racemosa* and *P. galbana*/*P. mucronata* having subsequently been naturally backcrossed one or more times to *P. racemosa*. Although *P. galbana* is not found in those areas where *P.* ‘Buzios’ now occurs, that could be entirely irrelevant since *P.* ‘Buzios’ could have evolved millions of years ago when the distribution of flora in Eastern Brazil was almost certainly quite different to what is found today.

If *P.* ‘Buzios’ is a natural hybrid, then the epithet ‘Buzios’ is unacceptable. At present, it refers to a large number of clones, whereas a cultivar epithet must relate to a genetically unique taxon. Until such time as it can be formally described, it is suggested that the plant(s) could be known as *P. ×buzios*.

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Fig. 2 *P. racemosa* © Frank Stausholm



Fig. 3 *P.* 'Buzios' © L.A. King



Fig 4. *P.* 'Pluto' [*P.* $\times$ *violacea* (♀) $\times$ *P.* 'Buzios' (♂)] © L.A.King

