Anthurium viridifructum (Araceae): A New Species in sect. *Belolonchium* from Cultivation

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Abstract

***Anthurium viridifructum* (Araceae), in section *Belolonchium*, is named, described, copiously illustrated, compared to similar species, and its distribution, ecology, and cultivation are discussed. Although originally from Loja, Ecuador in high-elevation, montane cloud forest, it is named and described from cultivation in a garden in San Francisco, California, U. S. A., where it has been a superb performer for nearly 30 years.**

1. The type plant of *Anthurium viridifructum*, *Hodel 4079*, which Darold Petty of San Francisco brought to co-author Hodel's garden near Los Angeles for two days so it could be photographed and described and an herbarium specimen prepared. Hodel staged the plant for photographs in his *Chamaedorea* research collection. Petty then returned to San Francisco with his plant. All photos of *A. viridifructum* are of or from the type plant, *Hodel 4079*, and are © 2025 D. R. Hodel, unless otherwise noted.

Introduction

Darold Petty, an ardent tropical plant fancier living in San Francisco, California, U. S. A. observed an *Anthurium* after the 1996 International Palm Society Post-Biennial Trip to Ecuador. Petty was always searching for palms and companion plants from tropical but cool, high-elevation, moist cloud forests that have environmental parameters similar to those of San Francisco where he maintains his garden.

After the official Post-Biennial Trip, Petty and a companion hired a taxi to take them south of Loja, Ecuador, attempting to access and explore cool, high-elevation cloud forest. They took the old original road south from Loja toward Zamora and, at the highest point in the road, they observed an *Anthurium* growing alongside the road. They obtained a small seedling of this plant, which grew well over the years in a pot in Darold's San Francisco garden. Nearly 30 years later in 2025, Petty carefully placed the potted *Anthurium* in the back of his covered pick-up truck and drove it about 650 km to co-author Hodel's house in Lakewood, California near Los Angeles, allowing Hodel to write up a description and make a suitable collection that serves as the type of this new species. Within two days, Petty retrieved the plant and drove it back up to his home in San Francisco.

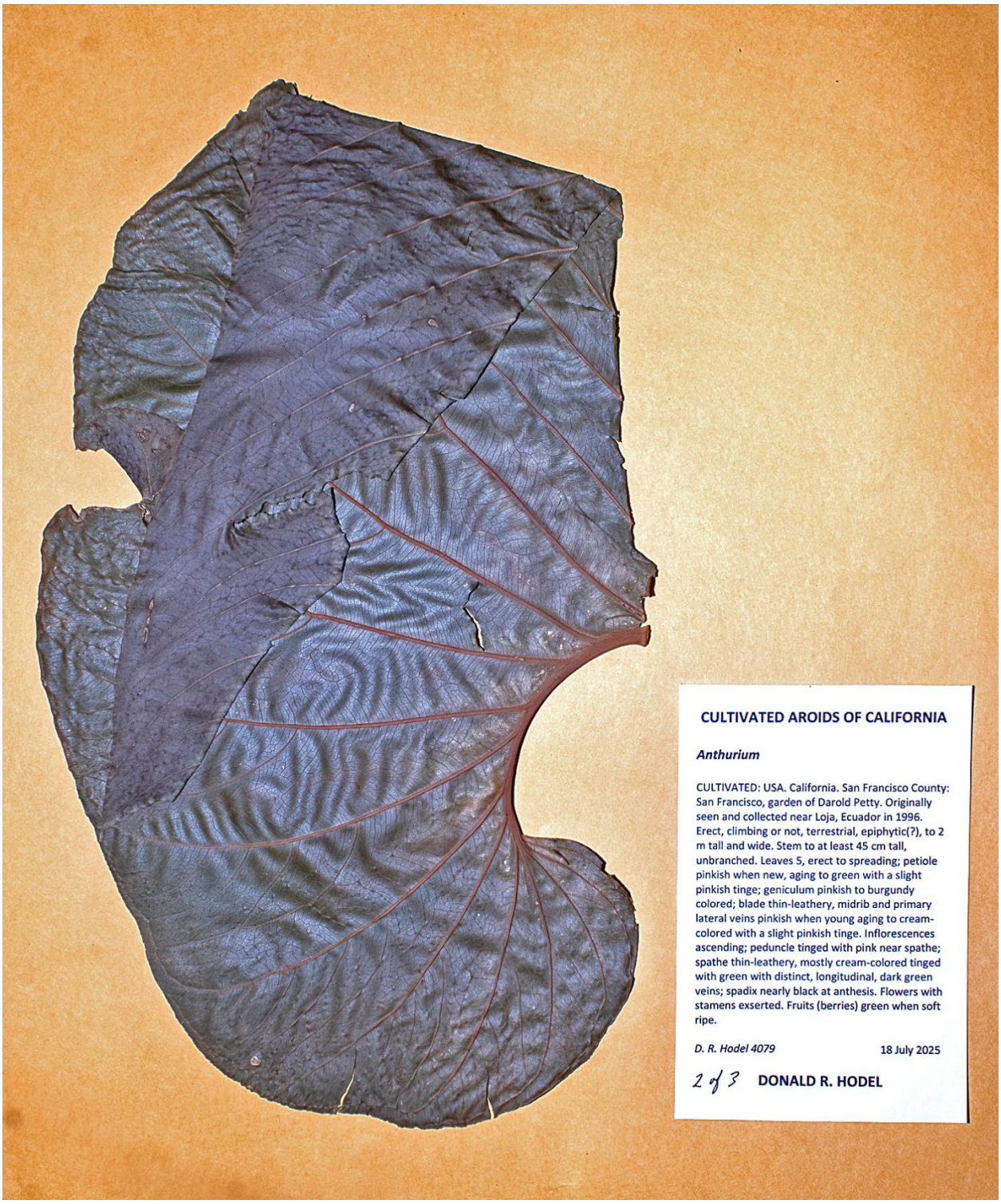
Here, we name, describe, and thoroughly illustrate this new species and discuss its distribution, ecology, relationships within *Anthurium*, and its cultivation. The description is from fresh and dried material.

Taxonomy

Anthurium viridifructum Croat & Hodel sp. nov. TYPE: CULTIVATED. U. S. A. California. City and County of San Francisco: garden of Darold Petty, 18 July 2025, *D. R. Hodel 4079* (Holotype MO [comprised of two sheets, each collected from the same plant on the same date and bearing original labels in common constituting a single gathering], MO-7126674, MO-7126675; isotype QCNE). Originally observed and a small plant obtained in 1996 from a road cut on the old road south of Loja to Zamora, Ecuador in montane cloud forest in a peat/moss substrate at 3.990383,¯ 79.144550, 2797 m elevation (**Figs. 2**–**4**). **Figs. 1–27.**

Diagnosis: The species is a member of *Anthurium* sect. *Belolonchium* and is characterized by its short thick internodes; persistent cataphylls with closely spaced, fine light brown-drying fibers with medium brown fragments of epidermis; a subterete, prominently sulcate petiole; ovate-sagittate, brownish-drying, gradually acuminate leaf blades with a hippocrepiform sinus and the posterior lobes directed inward; 12 pair of basal veins, a posterior rib naked most of its length, a collective vein close to or along the margin; an erect inflorescence with a cream-colored, erect,

2. Sheet one of three sheets of the holotype of *Anthurium viridifructum*, *Hodel 4079*, prior to being consolidated into two sheets at MO. This sheet has about one-half of the leaf blade and the petiole.



3. Sheet two of three sheets of the holotype of *Anthurium viridifructum*, *Hodel 4079*, prior to being consolidated into two sheets at MO. This sheet has the other one-half of the leaf blade.

4. Sheet three of three sheets of the holotype of *Anthurium viridifructum*, *Hodel 4079*, prior to being consolidated into two sheets at MO. This sheet has cataphylls and an inflorescence.

narrowly ovate spathe; and stubby, cylindroid-tapered, blackish purple spadix with protruding styles and green berries.

Etymology: The epithet is from the Latin *viridus*, meaning green, and *fructus*, meaning fruit, and alludes to the green, mature, soft-ripe berries of this species.

Habit: solitary, erect climbing or not, likely terrestrial, perennial aroid, to 2 m tall and wide (**Fig. 1**).

Stem: unbranched, erect, to at least 45 cm tall, to 10 cm in diam. including persistent, fibrous cataphylls and adventitious aerial roots (**Fig. 5**), internodes short, 4 cm in diameter; **roots** 10–16 cm long, 3–6 mm in diam., pink to brown when young, aging to green (**Figs. 6–7**); **cataphylls** 19–27 cm long, 7.5–10 cm wide at base, briefly green then brown, midrib and primary lateral veins pinkish when young aging to cream-colored with a slight pinkish tinge, persistent and quickly becoming marcescent and disintegrating into a mass of indistinguishable, closely spaced, fine, light brown-drying fibers (**Figs. 4, 8–10**), abaxially with medium brown fragments of epidermis.

Leaves: 5, erect-spreading, simple but 3-lobed with 2 opposite basal lobes and a large and long apical lobe (**Fig. 1**); **petioles** 66–86 cm long, 1.5 × 1.5 cm at base, gradually tapering to 1.3 × 1 cm at geniculum, subterete, prominently sulcate adaxially, rounded abaxially, pinkish when young, aging to green with a slight pinkish tinge, glabrous, densely and minutely white-spotted (**Fig. 11**); **geniculum** 3–4.5 cm long, 1.3 × 1.3 cm in diam., rounded abaxially, grooved adaxially, pinkish to burgundy colored (**Fig. 12**); **blades** 69–80 × 47–53 cm, ovate-sagittate, 1.5–1.56 times longer than broad, about as long as petioles, gradually acuminate at apex, prominently lobed at base, subcoriaceous, green adaxially (**Fig. 13**), paler abaxially (**Fig. 14**), drying medium-dark brown and weakly glossy adaxially, slightly paler yellow-brown and semi glossy abaxially (**Figs. 2–3**); anterior lobe 48–53 cm long, convex on margin (**Fig. 13**); posterior lobes 22 cm long, 15–15.5 cm wide midway, prominently directed inward, margins entire, undulate; sinus hippocrepiform, 17–18 cm deep, 10 cm wide, open or closed by posterior lobes (**Figs. 15–16**); basal veins 12 pairs, 1st pair free to base; 2nd pair fused 1.5–2 cm; 3rd pair fused 3.5–5.3 cm; 4th pair fused 5–5.2 cm; 5th fused 6.5–7.3 cm; 6th pair fused 8.3–8.5, 7th pair fused 8.7–9.5; 8th & 9th fused 9.7–9.7–11, these raised and green abaxially, scarcely impressed and green adaxially; posterior rib moderately curved, glabrous for 9.3–10 cm or nearly most of its length (0.92 of its length) (**Figs. 15–16**); midrib and primary lateral veins pinkish when young aging to cream-colored with a slight pinkish tinge (**Fig. 16**), midrib narrowly rounded, drying acutely fine-ribbed, darker adaxially, narrowly round-raised, finely ribbed, reddish brown abaxially; collective vein origin uncertain, likely from upper most primary lateral veins, all basal veins and most primary lateral veins margining out to the antimarginal vein with only the uppermost primary lateral veins forming a vein that parallels (essentially contiguous with) the antimarginal vein close to or along the margin; tertiary veins

5. The unbranched, erect, stem of *Anthurium viridifructum* is typically enveloped in persistent, fibrous cataphylls and adventitious aerial roots.

6. Aerial roots of *Anthurium viridifructum* are pink to brown when young.

7. Aerial roots of *Anthurium viridifructum* age to green.

8. Cataphylls of *Anthurium viridifructum* are briefly greenish white when young.

9. Cataphylls of *Anthurium viridifructum* quickly turn brown and persist, becoming marcescent.

10. Cataphylls of *Anthurium viridifructum* disintegrate into a mass of indistinguishable, closely spaced, fine, light brown-drying fibers.

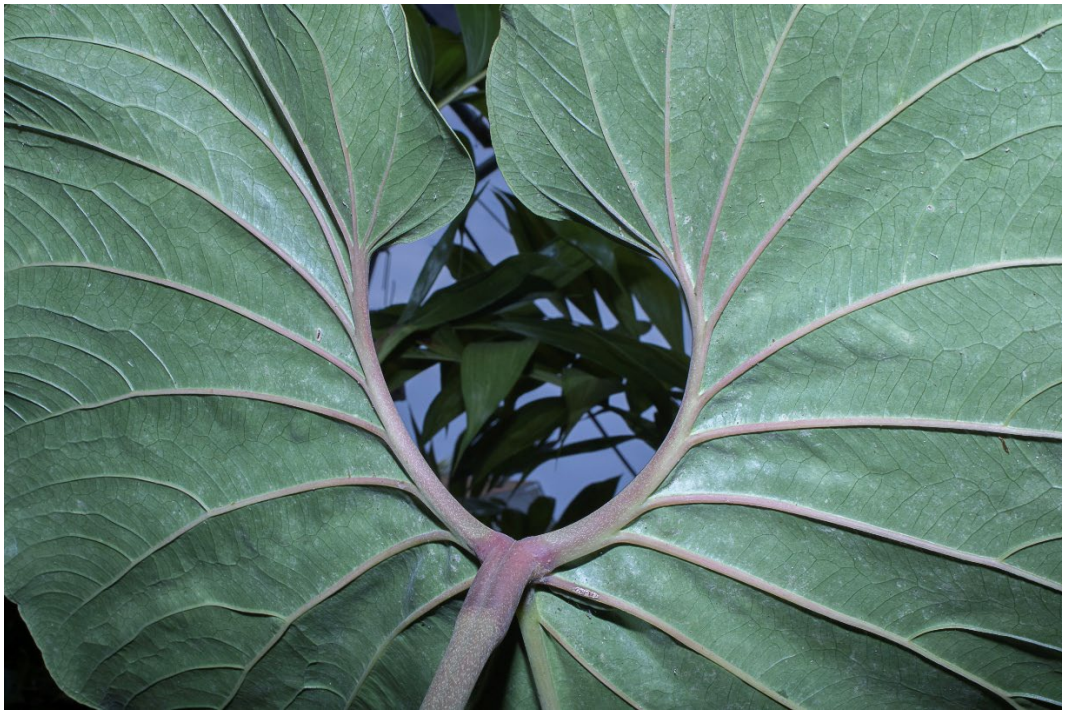
11. Petioles of *Anthurium viridifructum* are prominently sulcate adaxially, glabrous, and densely and minutely white-spotted.

12. The geniculum of *Anthurium viridifructum* is grooved adaxially and pinkish to burgundy colored.

13. Leaf blades of *Anthurium viridifructum* ovate-sagittate, about as long as the petioles, gradually acuminate at apex, prominently lobed at base, subcoriaceous, and green adaxially.

14. Leaf blades of *Anthurium viridifructum* are paler and glossy abaxially.

15. The leaf blade sinus of *Anthurium viridifructum*, formed from the posterior lobes, is hippocrepiform and, in this case, open. Note the color and pattern of the veins.



16. This leaf blade sinus of *Anthurium viridifructum*, formed from the posterior lobes, is hippocrepiform and, in this case, nearly closed. Note the color and pattern of the veins.

moderately close, weakly raised above, prominulous below; both surfaces moderately nondescript without salient features.

Inflorescence: 1(–2), 65 cm long, erect to ascending (**Fig. 17**); **peduncle** 45 cm long, 1 cm in diam. (**Fig. 17**), round, green with minute white spots (**Fig. 18**), tinged with pink at spathe (**Fig. 19**), drying dark brown, matte, 0.7–0.8 cm diam. (**Fig. 4**); **spathe** 20 cm long, narrowly ovate-lanceolate, paralleling, slightly exceeding, and hooded over spadix at anthesis (**Fig. 20**), nearly completely encircling spadix at base (**Fig. 21**), acuminate, thin-leathery, mostly cream-colored tinged with green with distinct, longitudinal, dark green veins (**Fig. 22**), drying dark reddish brown (**Fig. 4**), 17.5 cm long, 6 cm wide, weakly glossy abaxially, matte adaxially; **stipe** short, 2 mm long; **spadix** 18.5 cm long, 2 cm in diam. at base, gradually tapering and then briefly and abruptly tapering to an acute-rounded apex, blackish purple (**Fig. 23**), drying 16 cm long, 1.4 cm diam. near base, 0.8 cm at 1 cm below narrowly rounded tip, cylindroid-tapered, stubby, dark purple, matte (**Fig. 4**); **flowers** 11–12 per spiral, 4 × 2.5 mm, densely pack and angled from mutual pressure (**Figs. 24–25**), when dry 2.6 mm long and wide; lateral tepals 1.2–1.4 mm wide, inner margin rounded, outer margin 2–3-sided; stamens protruding above tepals, anthers erect, 1.4–1.6 mm long, 1 mm wide, drying creamy white; filament and connective drying dark brown.

Fruits: (fruits and seeds not seen fresh, described only from a photograph) a berry, long-obovoid, green (**Fig. 26**); **seeds:** obovoid-ellipsoid, greenish yellow, with extremely sticky-mucilaginous coating that it is nearly impossible to clean remove (**Fig. 27**).

Distribution and Ecology: *Anthurium* viridifructum is known only from the vicinity of Loja, Ecuador in montane cloud forest in a peat/moss substrate at 3.990383, ¯ 79.144550, 2797 elevation.

Discussion

Anthurium viridifructum is unusual for sect. *Belolonchium* owing to the pale fibers of the decomposing cataphylls. Usually, they are more densely arrayed and dry darker reddish brown. However, otherwise the species has most of the other features of *Belolonchium*, especially the indented anterior margin and lack of distinctive epidermal features on the dried blades.

In the *Lucid Anthurium Key* (currently unpublished), *Anthurium viridifructum* tracks to *A. macbridei* K. Kr. from Huanuco Department in Peru near the border of Ancuash), which differs by having a more dark-drying, more gradually acuminate blade with the sinus much less constricted, the lobes not directed inward, having only 6–8 pairs of basal veins, the collective veins more remote from the margin, the posterior rib naked only for 0.7 its length, and having a prominently stipitate spadix. It also tracks to *A. riofrioi* Sodiro (from Ecuador on the Pacific slope near Angamarca), which differs in being a much larger plant with leaf blades 70–115 cm long, 50–90 cm wide, having the posterior lobes directed downward to outward, not inward, having a much

17. The inflorescence of *Anthurium viridifructum* is erect to ascending. Note the peduncle tinged with pink just proximal of spathe.

18. The peduncle of *Anthurium viridifructum* is round and green with minute white, elongated spots.

19. The peduncle of *Anthurium viridifructum* is tinged with pink at spathe.

20. The spathe of *Anthurium viridifructum* is narrowly ovate-lanceolate and slightly exceeding and hooded over the spadix at anthesis.

21. The spathe of *Anthurium viridifructum* nearly completely encircles the spadix at its base.

22. Abaxially the spathe of *Anthurium viridifructum* is thin-leathery, mostly cream-colored tinged with green and with distinct, longitudinal, dark green veins.

23. The spadix of *Anthurium viridifructum* is blackish purple and briefly and abruptly tapers to an acute-rounded apex.

24. Flowers of *Anthurium viridifructum* are spirally arranged in the purplish black spadix.

25. Flowers of *Anthurium viridifructum* are densely packed and angled from mutual pressure.

26. Mature, soft-ripe berries of *Anthurium viridifructum* are green, hence the specific epithet. Type plant in the garden of Darold Petty, San Francisco, California. © 2011 Darold Petty.

longer naked portion of the posterior rib (to ca. 30 cm long), more primary lateral veins (12–20 per side), a more linear-lanceolate and proportionately longer spathe (15–40 cm long), and a proportionately longer and narrower spadix (25–50 cm long).

Darold Petty shared some additional information about his encounter with this species. After the 1996 International Palm Society Post-Biennial Meeting Trip, led by the late John Rees, Petty and his roommate traveled south to the city of Loja. His roommate spoke passable Spanish, so they hired a taxi for a fixed rate for about eight hours, asking him to drive them to higher elevations. They went along the road to Zamora, stopping at the high crest of the roadway. The *Anthurium* was just along the roadside, and growing in sort of a peat/moss substrate, rather than the mineral soil.

Nearly 20 years later, Petty and his wife returned to the exact spot in November, 2014. They found that the old, original road, which Petty had followed in 1996 and that lead from the crest downward to Zamora along the north side of the east/west valley, had been upgraded and rerouted to the south side of the valley. The exact crest was cleared for staging of road construction equipment, was severely damaged, and had become an unauthorized dumping ground for construction waste and other debris. They were unable to find the *Anthurium* again.

Cultivation

Petty brought home to San Francisco, California the small *Anthurium* seedling, now *A. viridifructum*, he had obtained on his 1996 trip and potted it up in the standard mix he used for palms, some weightiness, but fast draining, the latter a critical factor. It grew well and he air-layered the plant once. The plant has been outdoors on Petty's patio always year-round since 1996, and only brought inside during one attempt to collect the pollen.

Averages temperatures in San Francisco are a high of 14 C and a low of 8 C in January, the coolest month, and a high of 21 C and a low of 13 C in September, the warmest month. Growing under the canopy of a *Howea forsteriana* palm, Petty's *A. viridifructum* has on rare occasions experienced temperatures as low as ¯2.2 C and as high as 30 C with no visible damage. Relative humidity is about 80% year-round. These temperature ranges and the high humidity of coastal central California are similar to those of high-elevation, montane cloud forest in South America, where this species originated. Average annuals precipitation in San Francisco is about 635 mm, which mostly occurs from October through April; irrigation during the dry months supplements natural rain.

Petty hand pollinated the spadix of his *Anthurium viridifructum* when it showed tiny droplets of clear liquid, which he assumed correctly to be pistillate anthesis. At first no change was visible

27. Freshly planted seeds of *Anthurium viridifructum* have a clear, sticky coating that was not water soluble and was impossible to wash off. From the type plant. © 2011 Darold Petty.

but the spadix did not break down and die like it typically would. It seemed to take many months for the fruits (berries) to mature. The spadix looked the same but increased a lot in overall size. The green soft-ripe fruits quickly "erupted" from the surface of the spadix over just a few days, and then the whole spadix broke down into a slimy mess. The seeds had a clear, sticky coating that was not water soluble and was impossible to wash off. He sowed the seeds in his greenhouse, in which he maintained temperatures of 10 to 24 C, and got good germination (**Fig. 27**).

Petty is cognizant of the possibility of hybrids in cultivation, especially in a species-rich collection of numerous closely related species in the same genus. Nonetheless, he feels that the possibility of his *Anthurium viridifructum* producing hybrid seeds is slim or non-existent because it has produced inflorescences many times but only produced fruits once when he hand-pollinated it. Also, although he has other *Anthurium* spp. in my garden, they have quite different leaves, and only one has ever produced fruits by itself.

Petty has a keen interest in his *Anthurium viridifructum* and feels that it is really special and would make an ideal addition to the tropical plant motif of gardens in cool coastal California and areas around the world with a similar climate. He has distributed seedlings of this species as "*Anthurium* sp. Loja."

Acknowledgements

We sincerely thank plant aficionado Darold Petty who found this plant, nurtured and cultivated it to perfection at his San Francisco residence, extolled its virtues, and provided information and gave us access to the plant for our study.

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