Anthurium seleri (Araceae)

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In February 1993, co-author Hodel was investigating *Chamaedorea* deep in the hinterlands east of Las Margaritas in Chiapas, México with his companions Juan Jose Castillo-Mont of Juan Carlos University in Guatemala and the late Inge Hoffmann of California. Several hours east of Las Margaritas on a dusty gravel road over several, broadly rounded but large ridges in discouragingly disturbed, nearly leveled, and in what was once likely rich, seasonally moist, oak-pine forest, they spotted a *Chamaedorea* with its damaged, wretched leaves poking above the debris of cut and fallen vegetation among limestone rocks.

While investigating this palm, they saw nearby, fully exposed on rocky outcrops, a compact-

1. *Anthurium seleri* has performed exceedingly well in Los Angeles with little attention. Here and throughout, photographs of living plants (*Hodel 4018*) at Chamaedorea House, Lakewood, California.

growing, striking and handsome *Anthurium* with a short erect stem and spreading, glossy, dark green, thick, long, and narrow leaf blades with two small, but prominent and erect lobes at the base. Smitten with this aroid, Hodel gathered a few of the orange-red berries, extracted the seeds, and grew them on in the *Chamaedorea* research collection in Los Angeles, where he perched a plant among locally sourced, white, sedimentary Palos Verdes stones to mimic the appearance of its natural habitat in Chiapas.

This *Anthurium* has performed exceedingly well in Los Angeles with little attention (**Fig. 1**). It receives full morning sun until about mid-day and 70% shade thereafter, has tolerated slightly subfreezing temperatures on a few winter nights and record-setting summer heat on two occasions, and thrives on weekly summer irrigation and once or twice monthly winter irrigation if it does not rain, the latter of which is becoming a distressingly common occurrence here.

Because Hodel did not know the identity of this plant, he sent photographs and a description to the world's leading *Anthurium* authority, Tom Croat at the Missouri Botanical Garden in St. Louis, who promptly identified it as *A. seleri*. Here, we provide a well illustrated account of *A. seleri*, including its history, taxonomy and nomenclature, description, distribution and habitat, specimens examined, and cultivation.

Materials and Methods

We consulted the pertinent literature and 78 collections comprising 154 specimens from 27 herbaria: B, BM, CAS, CHIP, CICY, CM, DAV, DS, DUKE, E, ENCB, F, GH, LASCA, LL, MEXU, MICH, MO, NCU, NY, PH, RSA, U, UAMIZ, UC, US, XAL, WIS (all acronyms from Thiers 2016). Unless otherwise noted, all specimens cited were examined from medium- to high-resolution images. Those not seen are denoted with "[n.v.]."

Also, we relied heavily on new information from Tom Croat and Jay Vannini (pers. comm.), who provided new information and told us that they are preparing an article (Vannini et al. 2022) about new species and or new interpretations of existing species of *Anthurium* from México and Central America that would greatly affect the current concept or interpretation of *A. seleri*. Although not treating *A. seleri* directly and comprehensively, they are "peeling off" entities from the historically broad and inclusive concept of *A. seleri* and making them new species, which results in a new, much more narrowly circumscribed *A. seleri*. They also provided information about the natural range on this new, more narrowly defined *A. seleri*, which helped immensely in refining our new concept, preparing a new description, and selecting herbarium specimens to document this new concept and establish its range. We are much indebted to them for their kindness and generosity in sharing this information with us.

History

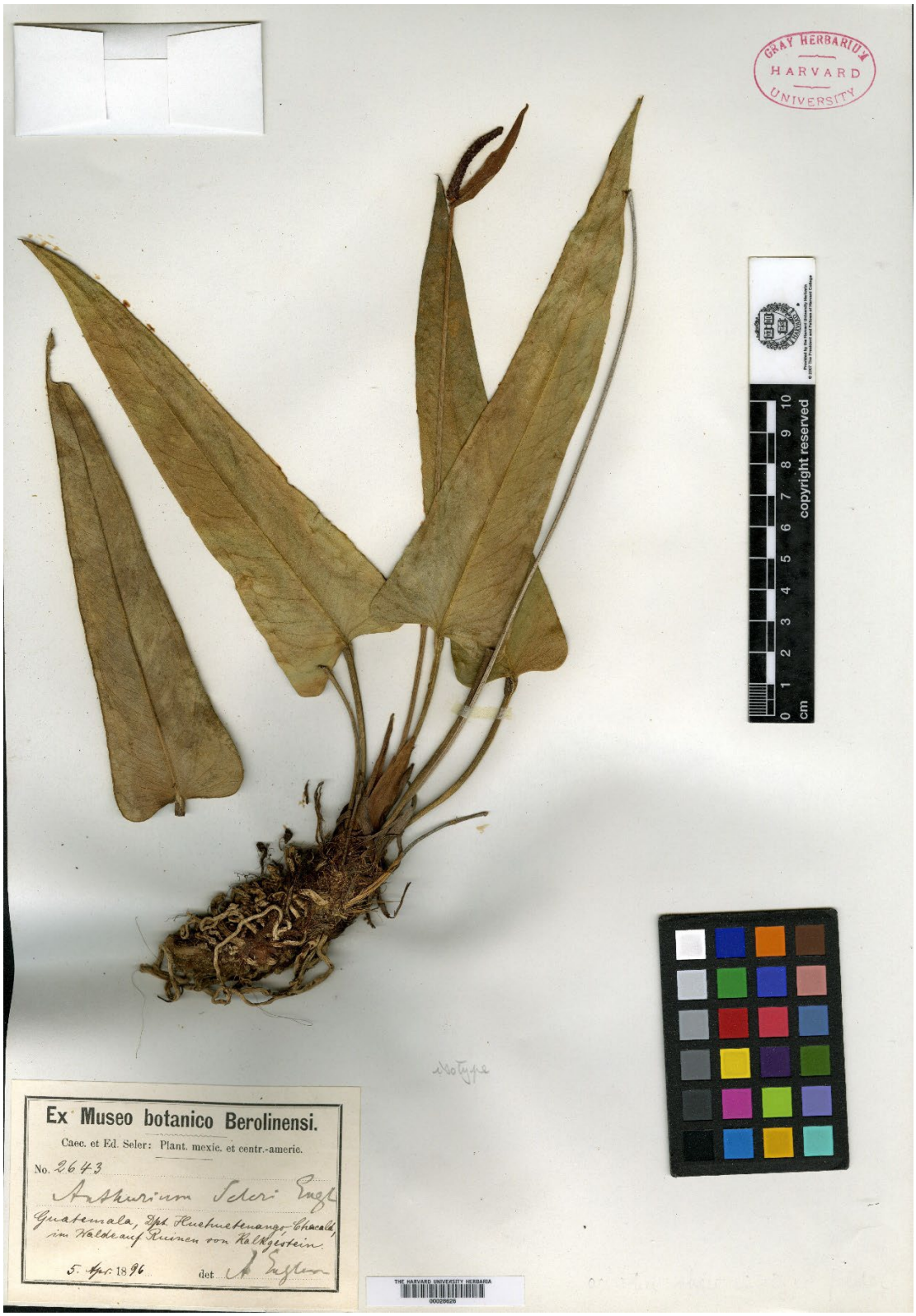
Heinrich Gustav Adolf Engler (25 March 1844 – 10 October 1930), born in Sagan, Prussia, now Zagań, Poland, first named *Anthurium seleri* in his revision of the genus *Anthurium* (Engler 1898). Engler was a German botanist noted for his prodigious publications in plant taxonomy and phytogeography. With Karl A. E. von Prantl, he co-edited the well known *Die natürlichen Pflanzenfamilien* (*The Natural Plant Families*) and his system of plant classification, the Engler system, is still followed in many floras and manuals. However, because the Englerian system is based on assumed taxonomies, many have dropped it for the simple ease of an alphabetical classification while others have dropped it for a modern, molecular-based classification.

Engler based his new species on a collection that the German wife and husband team of Caecilie Seler (1 June 1855 – 4 January 1935) and Eduard Seler (5 December 1849 – 23 November 1922) and had made in 1896 (*Seler 2643*) on calcareous ruins ("*in Walde auf Ruinen von Kalkgestein*") near Chacalá [Chaculá], Huehuetenango in western Guatemala. Although not specified in the article, Engler (1898) was likely honoring Eduard based on the spelling of the epithet, *seleri*, an untenable and unenviable position today. If honoring Caecilie, the correct spelling would be *selerae* or, if honoring both, the correct spelling would be *selerorum*. Born in Crossen, Eduard was an anthropologist, ethnohistorian, linguist, and epigrapher while Caecilie, born in Berlin, was an ethnologist. Together they conducted archeological work and made critical contributions to our knowledge of the pre-Columbian peoples and cultures in the Americas.

Despite not being botanists, the Selers made excellent botanical collections, and Hiepko (2003) discussed the many attributes of their work. Noted for their diverse and well prepared specimens, they amassed about 6,000 collections during six expeditions to Guatemala and Chiapas and the Yucatan in México. They sent their first set of collections to B, for study by that institution's botanists. Although much of the Selers' collections were destroyed in WW II, some duplicates exist at other institutions, for example NY. Five new genera, about 200 species, and many new records for México and Guatemala are based on their collections. The names of 80 species bear epithets honoring the Selers. Because they included Mayan uses and names as well as locality and habitat information on their label data, their collections are invaluable for ethnological, ethnobotanical, and ethnomedicinal studies.

Croat (1984) is the most recent and comprehensive taxonomic account of *Anthurium seleri*, and we have consulted it here. However, based on the new information from Croat and Vannini (pers. comm.; Vannini et al 2022), we now consider *A. seleri* much more narrowly defined or interpreted, constricting its distribution, reducing the quantity of specimens cited in Croat (1984) and currently listed in TROPICOS, and rendering many specimens in herbaria in need of new identifying annotations.

2. The lectotype of *Anthurium seleri* at Herbarium B. ©2022 Botanischer Garten und Botanisches Museum, Berlin.



3. One of the two isolectotypes of *Anthurium seleri* at GH. ©2022 by Harvard University.

4. Second of the two isolectotypes of *Anthurium seleri* at GH. ©2022 by Harvard University.

5. *Anthurium seleri* is a clustered, terrestrial or epilithic aroid potentially forming clumps to one m tall and wide.

6. Stems of *Anthurium seleri* are short, compact, branching and typically covered with roots and persistent cataphylls.

Taxonomy

Anthurium seleri Engl., Bot. Jahrb. Syst. 25(3): 459. 1898. SELER'S ANTHURIUM.

Type: GUATEMALA. Huehuetenango Department, Nentón Municipality, "*pr. Chacalá* [Chaculá]*, in ruinis calcareis in silva sitis*," fl., fr. 5 April 1896, *C. & E. Seler 2643* (lectotype, designated by Croat 1984: 382, specified here, B 10 0242946 (**Fig. 2**); isolectotypes CM157203 [n.v.], F 012073 [photo B], GH00028626 (**Fig. 3**), GH00028627 (**Fig. 4**), MO 1009542 [photo B]).

Because Engler (1898) did not specify an herbarium where the type specimen (*Seler 2643*) was located and he referred to an entire gathering that consists of more than one specimen, those specimens are syntypes (Turland et al 2018: Art. 9.6 and Art. 40. Note 1). When Croat (1984) listed the specimen at B as a holotype, he inadvertently designated it as a lectotype. Here, we specify the specimen barcode number at B.

Description

Habit clustered, terrestrial, epilithic aroid, potentially forming clumps up to 1 m tall and wide (**Fig. 5**).

Stems to 30 cm long, 5–8 cm diam. with leaf bases and roots, branched, erect or leaning, leaf bases, roots, and cataphylls obscuring nodes and internodes, internodes noticeably short (**Fig. 6**).

Roots numerous, 3–5 mm diam., descending, spongy, grayish white (**Fig. 6**).

Cataphylls 6–15 cm long, lanceolate, acuminate, subcoriaceous, midvein raised and knife-like abaxially, spine-tipped, other longitudinal veins faint, sometimes faintly reddish tinged distally, initially green (**Fig. 7**), drying brown to reddish brown and splitting at base, persistent **(Fig. 8**).

Leaves 5–9 per stem, clustered toward apex, erect to mostly spreading, 40–125(–150) cm long, simple; **base** 8–15 cm long, long-open, tubular only near the base, light green (**Fig. 9**); **petiole** 20–45 cm long, 7 × 9 mm diam., green, generally D-shaped in transverse section (**Fig. 10**), flat to shallowly furrowed adaxially (**Fig. 11**), rounded abaxially, laterally smooth when fresh, shallowly longitudinally grooved when dry; **geniculum** 1–2 cm long, 1.5–2 cm thick, conspicuous, yellowish cream colored (**Fig. 12**); **blade** 20–65(–100) × 3–10(–15) cm, width at base if posterior lobes present to 20 cm, length:width mean ratio ca. 5.6, generally narrowly oblong to oblong-lanceolate or narrowly long-triangular (**Fig. 13**), margins tapering to straight distally but even when straight margins tapering over distal 15–20 cm, coriaceous, glossy dark green adaxially, paler abaxially, apex short-acuminate, base truncate to cordate, frequently with well developed **posterior lobes** on either side (**Fig. 13**), these typically much smaller than the anterior lobe, 1–8

7. (Left) Cataphylls of *Anthurium seleri* are initially green. **8.** (Right) Cataphylls of *Anthurium seleri* age to brownish, have a knife-like midvein, and persist on the stem.

9. Leaf bases of *Anthurium seleri* are long-open and tubular only near the base.

10. Petioles of *Anthurium seleri* are mostly D-shaped in transverse section.

11. Petioles of *Anthurium seleri* are typically shallowly furrowed adaxially.

12. The yellowish to cream-colored geniculum of *Anthurium seleri* is rather conspicuous.

13. The narrowly oblong to oblong-lanceolate or narrowly long-triangular, coriaceous, glossy dark green leaf blades of *Anthurium seleri* are exceptionally handsome. Note the conspicuous posterior lobes at the blade base.

14. Posterior leaf blade lobes of *Anthurium seleri* are typically at a 90° angle to blade (living material).

15. The Midrib of *Anthurium seleri* is rounded, sightly raised, and yellow-green adaxially.

16. Midrib of *Anthurium seleri* is rounded and prominently raised abaxially.

17. The leaf blade of *Anthurium seleri* has 1–3 pairs of basal veins with the first pair on the margins of the posterior lobes and they are thickened and barely raised adaxially but prominently raised abaxially.

× 1–5 cm, blade length:posterior lobe length mean ratio ca. 6.5, directed outwards (pressed dried material) or upwards (living material), typically at 90° angle to blade (living material) (**Fig. 14**) and petiole or rachis (dried material), sinus typically shallowly to deeply parabolic, midrib or rachis rounded, sightly raised, and yellow-green adaxially (**Fig. 15**), rounded and prominently raised abaxially (**Fig. 16**), **basal veins** 1–3 pairs, first pair on margins, thickened and prominently raised abaxially (**Fig. 17**), the 2nd–3rd pairs similar to the primary lateral veins, 9–11 primary lateral veins per side (Figs. 15–16), these departing midrib at 45–50° angle, straight but loop-connecting to collective vein near margin, these 2–6 mm from margin, slightly sunken and yellow-green to green to obscured adaxially, flat to prominently raised and green abaxially, 1–2 secondary veins between each pair of primaries.

Inflorescences 4–6 per stem, erect to spreading in flower, spreading to nodding in fruit, shorter than to ca. equaling leaves (**Fig. 18**), 30–70(–105) cm long; **peduncle** 25–55(–86) cm long, 6–8 mm diam., rounded (**Fig. 19**), sometimes faintly purple tinged; **spathe** 6–13 × 2–5 cm, basal margins connate and completely encircling peduncle at attachment (**Fig. 20**), lanceolate, apex acuminate, base truncate, thick-papery to subcoriaceous, pale green in flower and immature fruit, brown in mature fruit, reddish tinged basally (**Fig. 20**), initially erect against spadix (**Fig. 21**), later reflexed to peduncle at 50–70° angle (**Fig. 22**) or completely reflexed and nearly clasping and encircling peduncle in its entirety (**Fig. 23**); stipe to 5 mm long where two sides of spathe are united to nearly lacking in front; **spadix** 8–13 cm long, tapering to 6–8 mm diam. at base and 2–4 mm diam. at apex, green initially aging to brownish purple (**Fig. 23**); **flowers** densely arranged in spirals, 8 left spirals, 5 right spirals, 3 × 3 × 3 mm, cube-like, rhombic to sub-4-sided from dense packing and mutual pressure, sides straight to slightly sigmoid (**Fig. 24**); tepals 3 × 2 mm, shorter than anthers and stigma, broadly ovate-oblong, broadly rounded apically, brownish to brownish green, apical margins tinged or bordered with red (**Figs. 24**–**25**); stamens slowly emerging sequentially from the base, lateral stamens first followed by alternates; filaments connate in pairs of 2, 2.5 × 1.5 mm, just shorter than tepals, not exserted, broadly ovate to awl-shaped, flattened, clear-colored to yellowish, held in a circle at edge of pistil; anthers 0.6 × 0.6 mm, paired in 2s, exceeding tepals but shorter than stigma, leaning toward pistil, bilobed, white (**Fig. 25**); thecae ellipsoid, slightly divaricate; pollen white to pale yellow; pistil 4 × 1.5 mm, burgundy colored (**Fig. 25**); stigma 0.4 mm high, exserted above tepals and exceeding anthers, crater-like, broadly rounded apically. **Infructescence** spreading to pendant; **fruits** 6–15 × 4–10 mm, obovoid, tightly packed and angled from mutual pressure, orange to red-orange (**Figs. 26–28**); **seeds** 4–11 × 2.5–4 mm, oblong-obovoid, slightly flattened, ends narrowed, dark gray (**Fig. 28**).

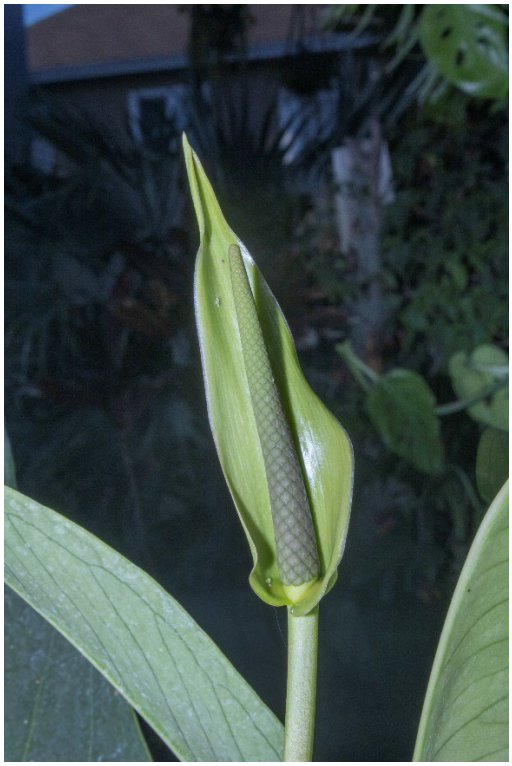
Specimens Examined

GUATEMALA. Huehuetenango Department. Nentón Municipality: *Seler 2643* [B, CM [n.v.], F [photo B], GHx2, MO [photo B]); *Steyermark 51576* (US). MÉXICO. Chiapas State. Amatenango

18. Inflorescences of *Anthurium seleri* are 4–6 per stem, erect to spreading in flower, spreading to nodding in fruit, and shorter than to about equaling the leaves.

19. Peduncles of *Anthurium seleri* are rounded in transverse section.

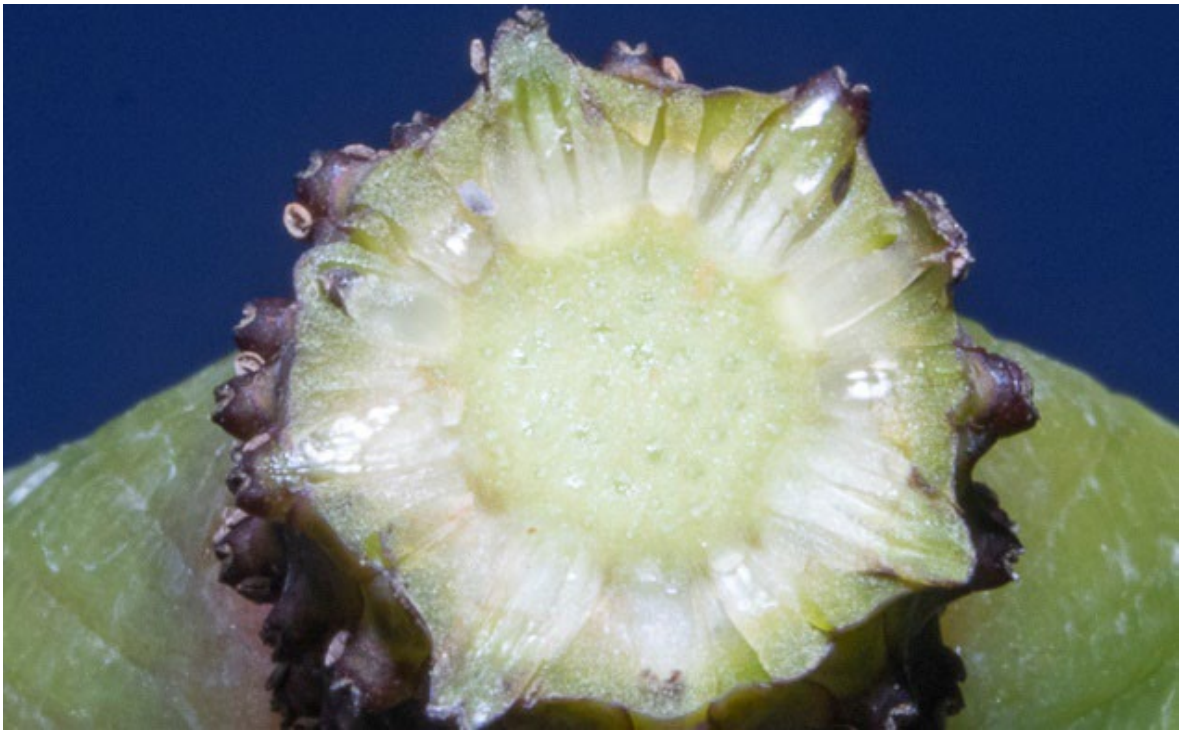
20. Spathes of *Anthurium seleri* have their basal margins connate and completely encircling peduncle at attachment. Note the red tinge at the point of attachment and the short stipe.



21. (Left) Spathes of *Anthurium seleri* are initially erect against the spadix. **22.** (Right) Spathes of *Anthurium seleri* are later reflexed to peduncle at a 50–70° angle.

23. As they age, sometimes spathes of *Anthurium seleri* are completely reflexed and nearly clasping and encircling the peduncle in its entirety.

24. Flowers of *Anthurium seleri*, arranged in spirals, are rhombic to sub-4-sided with straight to slightly sigmoid sides.



25. Tepals of *Anthurium seleri* are broadly ovate-oblong, broadly rounded apically, and transparent; anthers are exserted and leaning toward the pistil; and the pistil is emergent and burgundy colored.

del Valle Municipality: *Croat 46505* (CAS, MEXUx2, MOx3, NYx2, MICH, RSAx2, U). Comitán de Domínguez Municipality: *Lopéz F. & Espejo 1038* (MEXU); *Miranda 5040* (MEXU); *Miranda 5068* (MEXUx2); *Ochoa et al. 4129* (CAS, CICY [n.v.]); *Webster et al. 12897* (DAV [n.v.], MEXU, MO, US, WIS). La Independencia Municipality: *Breedlove 33460* (CAS). Las Margaritas Municipality: *Breedlove 34732* (CAS); *Breedlove et al. 66204* (CAS); *Ramamoorthy et al. 1463* (MEXU). La Trinitaria Municipality: *Flores-Cruz et al. 334* (MEXU); *Hampshire et al. 1180* (MO); *Rzedowski & Matuda 25943* (MEXU); *Tellez V. et al. 8017* (MEXU).Teopisca Municipality: *Breedlove 26201* (CAS), ENCB [n.v.], DUKE [n.v.], LL, MICH, MO [photo ENCB]). Venustiano Carranza Municipality: *Alava 1344* (E, CAS); *Breedlove 6612* (CAS, ENCB [n.v.], MICH, MO [photo ENCB], US); *Breedlove 10564* (CAS, LL, MEXU, MICH); *Breedlove 11187* (CAS, LL); *Laughlin 1947* (CAS); *Raven & Breedlove 20104* (CAS, ENCB [n.v.], LL, MO [photo CHIP], US). CULTIVATED. MÉXICO. Chiapas State. *Matuda 159* (MEXUx2). Comitán de Domínguez: Ejido Francisco Sarabia, *Velasco et al. 116* (CHIP [n.v.], MO [photo CHIP]). México, D. F.: *Hampshire et al. 1463* (MEXU). USA. California. Los Angeles County, Lakewood, garden of D. R. Hodel, originally from beyond and east of Las Margaritas, Chiapas, México, *Hodel 4018* (LASCA).

Distribution and Habitat

In our new, more narrowly circumscribed species concept, based on the criteria of Vannini et al. (2022), a preponderance of specimens of *Anthurium seleri* originates from central eastern Chiapas in southeastern México and portions of Quiché and Huehuetenango departments in adjacent Guatemala. Within this general area, *A. seleri* is restricted to a relatively small, generally oblong region roughly from Uspantán and Cunén, Quiché, Guatemala in the southeast, to the south end of Lago de Yolnabaj, Huehuetenango, Guatemala in the northwest, and finally to about halfway between Comitán and San Cristobal de las Casas, Chiapas, México, an area about 225 km long and 30 to 50 km wide. Specimens from outside this area, which have been included in *A. seleri* in the past, are mostly excluded.

Anthurium seleri mostly occurs from 1,000 to 2,200 m elevation. Collections from lower elevations tend to be from seasonally dry, tropical deciduous forest while those from higher elevations tend to be from mixed, seasonally moist, oak-pine forest, which can be rather arid at times. Díaz Jiménez (2021) found *A. seleri* at the type locality in Huehuetenango, Guatemala at 1,400 m elevation in the understory of humid cypress forest (*Juniperus comitana*). Although defined as terrestrial, *A. seleri* is nearly always near or on, or otherwise associated with, calcareous rocks. Rainfall averages between 1,000 and 2,000 mm annually (Geo-Mexico 2022) with lower elevations tending to have more seasonal and less precipitation while high elevations tend to have less seasonal and more precipitation.

26. Orange to red-orange, mature ripe fruits on the spadix of *Anthurium seleri* are tightly packed and angled from mutual pressure.

27. Mature, ripe fruits of *Anthurium seleri* are orange to red-orange.

28. Fruits of *Anthurium seleri* are obovoid and angled from the mutual pressure of dense packing and seeds are dark gray, large, oblong-obovoid, slightly flattened and with narrowed ends.

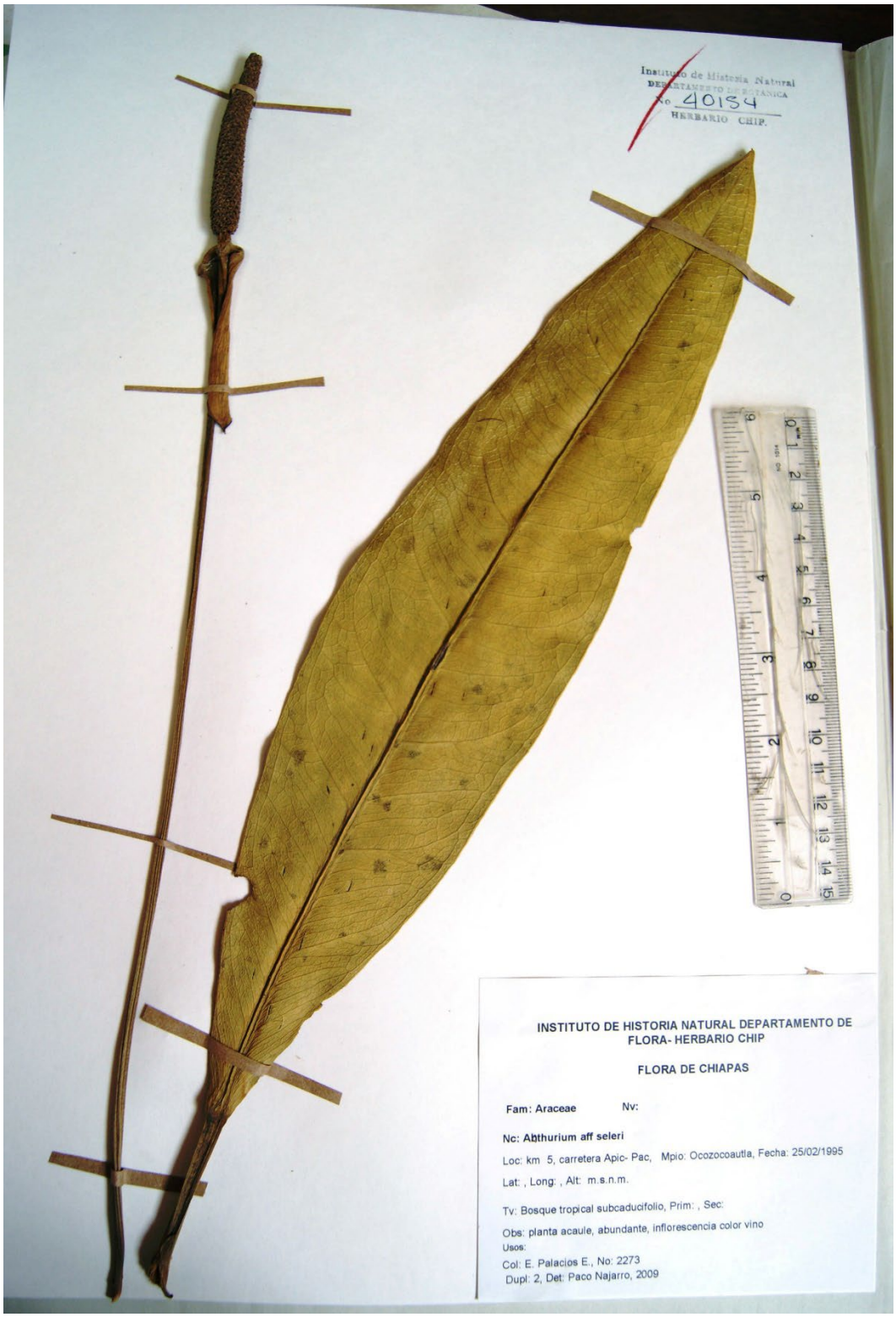
Discussion

The description is primarily from Hodel's observations over nearly 30 years in Los Angeles, California of the cultivated, seed-grown, living plant from east of Las Margaritas, Chiapas, México and supplemented from Croat (1984), the latter of which included material of a more broadly defined species concept of *Anthurium seleri*. After reviewing 78 collections comprising 154 specimens from 27 herbaria, we selected 27 collections comprising 71 specimens that we feel align with the new, more narrow species concept of *A. seleri*; we exclude the remainder, which likely belong to other species, some of which are unnamed (**Figs. 29–30**). We used these 27 collections in helping to develop our new description and establishing the range of *A. seleri*.

Generally, *Anthurium seleri* can then be characterized by its sulcate and D-shape petioles and coriaceous, narrowly oblong to oblong-lanceolate or narrowly long-triangular leaf blades with a truncate to cordate base frequently with rounded posterior lobes typically much smaller than the anterior lobe and these directed outwards, not proximally as in closely related taxa. The leaf blade length:width mean ratio is 5.6 (n = 33, blade length measured along the rachis and width

29. This specimen, *Breedlove 70913* (CAS), is an example of material we excluded from *Anthurium seleri* because of its large and proximally pointed posterior lobes. ©2022 by California Academy of Sciences.

30. Another example of a specimen we excluded from *Anthurium seleri* because of its large and proximally pointed posterior lobes is *Farrera 2396* (CHIP [photo MO]). ©2022 by Missouri Botanical Garden.



31. A specimen from within the new, narrower range of *Anthurium seleri* but that we excluded was *Palacios 2273* (CHIP [photo MO]), which differed in its cuneate rather than truncate or cordate leaf blade base. ©2022 by Missouri Botanical Garden.

32. We excluded this specimen, which is unusually similar to *Anthurium seleri* but is from outside the new, narrower range of that species, *Croat 40541* (MO), because it differs in its exceptionally long, slender inflorescences, considerably longer than the leaves. ©2022 by Missouri Botanical Garden.

measured at its widest point excluding the basal lobes) while the leaf blade length:posterior lobe length mean ratio is 6.5 (n = 23; blade length measure along the rachis and posterior lobe length measure from rachis to apex).

Croat and Hormell (2017) placed *Anthurium seleri* in section Andiphilum, which is distinguished by a combination of characters, including the petioles generally D-shaped in transverse section, orange fruits with a pasty mesocarp, and huge seeds.

Vannini (pers. comm.) is confident that *Anthurium seleri* is contained within the range described earlier. Indeed, he feels that if an *Anthurium* in section Andiphilum is found within this range, it is almost certainly *A. seleri*. We came across a couple of problematic entities when we were examining herbarium specimens identified as *A. seleri*. One, which was collected within the new narrower natural range of *A. seleri* (*Palacios 2273*) (**Fig. 31**) and that differed vegetatively in its cuneate blade base rather than truncate and cordate, is likely an undescribed species in section Pachyneurium (Vannini pers. comm.). The other is from outside the new range of *A. seleri* (*Croat 40541*) (**Fig. 32**) but otherwise is similar vegetatively to material within the range. It differs in its exceptionally long, slender inflorescences, considerably longer than the leaves, and might be a new species (Vannini pers. comm.).

Croat (1984) noted that in a few, extreme forms of *Anthurium seleri*, mostly from the northern and western part of its range, the posterior lobes are nearly as long as the anterior lobe. These distinctive forms, often with unusually handsome leaf blades, are the entities that Vannini et al. (2022) will be describing as new species. Among these soon-to-be-named species is one that encroaches upon the range of and is similar to *Anthurium seleri* but that differs in its rounded-acuminate leaf base and distinctly ribbed petioles and peduncles.

Another is the already named *Anthurium berriozabalense*, which is a similar species in the same section as *A. seleri*; it can be distinguished by the posterior lobes as long or much longer than the anterior lobe, the anterior lobe and posterior lobes forming a straight or convex margin, the thin leaf blades, and the collective leaf blade vein typically arising from the uppermost basal veins or the lower basal veins are conspicuously loop-connected with the collective vein (Croat 1984).

Anthurium andresloviense can be distinguished by its epiphytic and smaller habit, thinner leaf blades only about 2.6 times longer than wide with the posterior lobes about half the length of the anterior lobe, and subterete petioles (Vannini et al. 2022).

Croat (1984) noted that most collections of *Anthurium seleri* dry matte and greenish but some dry glossy and brown. He attributed this inconsistency to differences in drying techniques rather than significant morphological and taxonomical differences. However, the findings of Vannini et al. (2022), effectively “peeling off” specimens once included in *A. seleri* and better referred to

other species, suggest that differences in dried leaf blade texture should be revisited and perhaps they will have taxonomic significance.

Cultivation

Its typically long, narrow, coriaceous, glossy dark green leaf blades with conspicuous basal lobes and relatively long inflorescences, unusually showy when heavily laden with ripe, orange to red fruits, branching and relatively compact habit, tolerance of adverse environmental conditions, and ease of cultivation make *Anthurium seleri* an especially handsome and appealing horticultural subject. It has performed superbly in the *Chamaedorea* research collection near Los Angeles, which is in a Mediterranean-type climate with long, warm, rainless summers and short, mild, sometimes moist winters, averaging about 300 mm of rain annually although global warming has led to reduced rainfall, increased temperatures, and stubborn aridification.

In the *Chamaedorea* research collection in 1998, Hodel positioned the plant of *Anthurium seleri* among rocks where it received full sun until about 12 noon, after which it was in 70% shade. It received ample irrigation once a week in the summer and once every three to four weeks in the winter if no rain occurred. Typical summer daytime temperatures range from 26 to 32 C while nighttime temperatures range from 16 to 21 C. Typical winter daytime temperatures range from 15 to 20 C while nighttime temperatures range from 1.5 to 7 C. Over the nearly 30 years the plant has been in the *Chamaedorea* research collection, it has tolerated a high temperature of 45.5 C in July 2018 and again in July 2019 and a low temperature of -1.5 C in January 2007 and several other years with near freezing nighttime temperatures without any damage. This fact is unsurprising considering this species occurs over 2,000 m elevation where frost can occur on winter nights.

The natural habitat of seasonally dry to moist and sometime arid forests and thick, leathery leaf blades suggest that *Anthurium seleri* is probably somewhat drought and arid tolerant. Indeed, it has tolerated many days with relative humidity of 5 to 10% in the *Chamaedorea* research collection and, that it can go weeks, especially in the winter, with no water supports the supposition that it is somewhat drought tolerant.

By 2018, about 25 years from seed, the plant had formed a compact, densely branched clump about 1.5 m tall and wide. During relandscaping in 2018 in the *Chamaedorea* research collection, Hodel removed the clump and divided it into three, equal-sized plants, one of which he retained and replanted in the same location and the other two he potted up in containers and then gave to fellow plant enthusiasts. The retained plant has grown vigorously and after four years has formed a clump about 1 m tall and wide.

33. Densely branched stems of *Anthurium seleri* holding many leaves can result in clashing, bent, broken, or otherwise malformed leaves. Periodically and judiciously thinning out selected leaves can give more space and remedy this problem.

34. Judicious removal of 21 deformed or poorly spaced leaves improved the overall esthetic quality of this plant of *Anthurium seleri*, giving it more space for leaves to develop.

Other than providing an appropriate environment, including light, temperature, and moisture, little care is necessary for *Anthurium seleri* to develop into a fine and handsome plant. Occasional applications of an organic or time-release inorganic fertilizer would be beneficial. Regularly removal of dead or yellowing leaves and inflorescences will keep the plant neat and tidy. Because of its densely branched habit and stems typically holding many leaves, which in combination tend to make dense clumps where leaves can clash and become disfigured or malformed (**Fig. 33**), periodic grooming to remove some leaves to open up the clump slightly and allow retained leaves sufficient space to unfurl unobstructed (**Fig. 34**) provides for optimal esthetic presentation and a plant that is sure to garner attention in the garden.

Anthurium seleri is easily propagated by seeds, which germinate readily in a porous, moist medium at a temperature of 24 to 27 C or by division of the stems, the latter of which results in larger plants more quickly than from seed grown plants.

Update to the Typification and Nomenclature of *Anthurium andresloviense*

Anthurium andresloviense has long been considered a synonym of *A. seleri*. While we wait for the results of Vannini et al. (2022), we provide an update to its nomenclature and typification.

Anthurium andresloviense Matuda, Anales Inst. Biol. Univ. Nac. México 36: 108. 1966.

Type: MEXICO. Oaxaca State, Miahuatlan municipality, "San Andrés Lovine [Lovene]," ca. 1,200 m elev., 9 Nov. 1959, *MacDougall 384* (holotype MEXU 00059608 [**Fig. 35]**; isotype NCU 00011407 [**Fig. 36**]).

Matuda (1966) provided the description of *Anthurium andresloviense* and designated the *MacDougall 384* at MEXU as the holotype (**Fig. 35**). Croat (1984) noted that the type at MEXU, *MacDougall 384*, was a mixed collection, with two specimen numbers 59608 and 59838 corresponding to the type description and the photograph in Matuda's original account while another specimen is referable to an entirely different species. Croat (1984) noted that this situation likely came about because MacDougall had the unenviable habit of assigning the same collection number to plants that he recollected and felt were the same species, even though he collected them on separate occasions, which sometimes resulted in mixed collections. We were able to examine both specimens of *MacDougall 384* at MEXU. Specimen 00059608 is the holotype and, while 00059838 (**Fig. 37**) has been considered an isotype, an inspection of the label shows it is not original material and thus does not have type status and should be excluded as an isotype. Croat (1984) also noted that an isotype of was at F but an on-line search and in-person search by staff were unable to locate the specimen.

35. The holotype of *Anthurium andresloviense*, *MacDougall 384* is at MEXU (00059608).

36. An isotype of *Anthurium andresloviense*, *MacDougall 384*, is at NCU (00011407). ©2022 by University of North Carolina, Chapel Hill.

37. Another specimen of *MacDougall 384* at MEXU (00059838) of *Anthurium andresloviense* has long been considered an isotype but a close examination of the label shows it is not original material and thus does not have type status and should be excluded as an isotype.

The spelling of the epithet of *Anthurium andresloviense* has long been problematic. When Matuda (1966) published *A. andresloviense*, he curiously captioned Figure 2 as *Anthurium* '*andreslovinense*', which differed from the spelling in the protologue by having an additional "n." On the holotype at MEXU, four different spelling versions of *andresloviense* are present, including *andreslovinense* (added during digitalization of type specimens in 2012), *andreslovense* (as annotated by Tom Croat in 1978 and later with the addition of a hand-written "i"), *andresloviense* (holotype annotation by Virginia Galacia Miranda in 1987 and Matuda's original spelling), and *andreslovenense* (Matuda's original specimen label)! Several of the major on-line databases, including IPNI (2022), JSTOR Plants (2022), TROPICOS (2022), WCSP (2022), and WFO (2022) spell the epithet *andreslovinense*. Nonetheless, the correct spelling of the epithet is *andresloviense* because that is Matuda's original spelling in the protologue and it is formed and spelled correctly, and Turland et al. (2018: Art. 60.1) support this reasoning.

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