KEYS TO THE FLORA OF FLORIDA: 18, *KALANCHOE* (CRASSULACEAE)

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ABSTRACT

Kalanchoe (Crassulaceae) is represented in Florida by 6 species and 1 self-sustaining hybrid, all restricted to the peninsula. The species are all introduced, while the hybrid (*K. houghtonii*) may be formed wherever *K. daigremontiana* and *K. delagoensis* occur together. An additional 5 species have been reported for the state, but are believed either not to persist outside of cultivation or are based on misidentifications. An amplified key is given to the Florida taxa.

KEY WORDS: *Kalanchoe*, Crassulaceae, Florida flora.

The genus *Kalanchoe* (Crassulaceae) has long been familiar in North American horticulture by the popularity of *K. pinnata*, the "air plant" or *Bryophyllum*, as a botanical novelty; the leaves may be pinned to window curtains so that rootlets, then miniature plantlets, develop at notches along the margin. This trait of vivipary is widespread within the genus, at times the primary mode of reproduction. All species are succulent, and typically shift under stress from the conventional C3 metabolism to the crassulacean acid C4 pathway as do many otherwise-dissimilar water-retentive plants.

All Florida species of *Kalanchoe* are native to South Africa or Madagascar, home of perhaps 125 diverse forms. This diversity has led to introduction elsewhere of many species (45 recorded in Europe, perhaps fewer in America) as horticultural novelties. Relatively few as yet have come into Florida, with many of those restricted to greenhouses and tropical gardens and not yet established outside of cultivation. As is invariably true of plants grown for novelty, levels of popularity rise and fall. *Kalanchoe pinnata*, once widely available for

purchase, is now so ubiquitous in greenhouses and naturalized where weather permits that its novelty and marketability is diminished. *Kalanchoe daigremontiana* and *K. delagoensis* have followed a similar trajectory. These species have been replaced by *Kalanchoe blossfeldiana*, now widely marketed as a popular houseplant.

Kalanchoe daigremontiana and *K. delagoensis*, both native to Madagascar but largely allopatric, when together in greenhouses in Europe and America appear to be the parents of a very common hybrid. For decades this plant has been recognized only as *Kalanchoe* "*aff Hybrida*" or some similar designation (Handbook of Succulent Plants 2: 650. 1978; Exotica, ser. IV. 1: 903. 1982; European Garden Flora 4: 181. 1995). It was recognized and well described by Arthur D. Houghton in 1935 (Cactus & Succulent Jour. 7: 44), but was not named. It has now been formally named *Kalanchoe houghtonii* (Cactus & Succulent Jour. 78: 92-05. 2006).

Kalanchoe houghtonii reproduces apparently exclusively by plantlets borne in the notches along leaf margins. Every notch of every leaf seemingly produces a plantlet, but never does a second form after the first has dropped. In suitable open sandy locations these multitudinous plantlets quickly form dense stands, and frequently become nuisances in flower beds and beneath greenhouse benches.

The monocarpic behavior of these three taxa is seldom recognized or understood. Grown from viviparous plantlets (or possibly from seeds in the case of the two putative parents), the plants develop vegetatively for several years. The stems remain unbranched; they often become unstable with increasing weight of successively larger leaves, toppling, then the apex turning to form a continuing upright stem. After perhaps 3 to 7 years the plant forms a robust terminal inflorescence; the entire plant then dies. This trait seems rare or is perhaps absent elsewhere in the genus.

Kalanchoe is here transcribed without the diaeresis over the terminal letter, though that sign is permitted (I.C.B.N., Art. 60.6) for those who feel need for guidance in pronunciation.

It is not surprising that species of *Kalanchoe* are not infrequently misidentified. A repeated pattern has been for a specimen to be misnamed; then later workers, lacking adequate alternative means of naming the plant, pick up the misidentification and disseminate it in their own publications. For many years the only readily available key to species in North American cultivation was by J. T. Baldwin (Amer. J. Bot. 25: 572-579. 1938). Perhaps even today the most useful treatment is that of H. R. Tolken (Flora of Southern Africa 14: 61-73. 1985), though his key necessarily lacks most Madagascarean species and includes many not found in North America. The present key is itself restricted to species known outside of cultivation, thus must be deficient in omitting those that are in the state but yet to be confirmed as escapes.

KALANCHOE Adans. [1]

1. Leaves pinnately compound on lower stem (simple above), fleshy but plane, broadly elliptic with crenate margin; flowers pendent; sepals long-connate, the calyx inflated; petals dusky rose, 2.5-3.5 cm. long. Fleshy perennial herb to 1.5 m. Coastal shell mounds, calcareous tropical hammocks. South and central peninsula (n. to Sarasota, Brevard counties); infrequent. Winter-spring. Somewhat invasive. An old dime-store favorite, the single leaves to be attached to window curtains where a small plantlet will form at each crenation. [*Bryophyllum pinnatum* (Lam.) Kurz]
BRYOPHYLLUM. * ***Kalanchoe pinnata*** (Lam.) Pers.

1. Leaves wholly simple (rarely some leaves pinnate in *K. crenata*), often very fleshy, plane or in some nearly as thick as broad; sepals free to short-connate.

    2. Plants branched, perennial, usually surviving and flowering for several seasons; leaves crenate, broadly elliptic to obovate, without flange at sinus, usually not plantlet-bearing; flowers erect or pendent.

3. Leaves openly spaced along stem, wholly green; flowers erect; calyx glandular-pubescent; corolla yellow, 1.5-2.5 cm. long; anthers included. Fleshy perennial herb to 0.5 m. Coastal waste areas. South peninsula (Lee, Monroe counties); rare. Winter. [*Kalanchoe integra* (Medic.) Kuntze var. *crenata* (Andr.) Cuf.; *Kalanchoe laciniata*, misapplied]

* ***Kalanchoe crenata*** (Andr.) Haw.

3. Leaves crowded at base of plant, with brown-edged crenations on upper half; flowers pendent; calyx glabrous; corolla dull red to orange, 2.0-2.5 cm. long; anthers protruding. Fleshy perennial herb to 0.4 m. Coastal waste areas. South peninsula (Lee, Martin counties); rare. Winter.

* ***Kalanchoe fedtschenkoi*** Hamet & Perr.

2. Plants unbranched (monocarpic), growing for a few years, flowering only once, then dying; leaves narrowly cylindrical or broadly to narrowly deltoid, untoothed or coarsely and sharply serrate, with prominent plantlet-bearing flange at each sinus; flowers pendent.

4. Leaves whorled, mostly in 3's (or alternate on upper stem), subcylindric (grooved on upper surface), sessile, toothed only at apex, 3-5 cm. long; corolla salmon, 2.5-3.0 cm. long. Monocarpic fleshy short-lived perennial herb to 2 m. Dry shelly waste areas. Coastal areas of peninsula (n. to Levy, Brevard counties); infrequent. Fall-winter. [*Kalanchoe tubiflora* (Harvey) Hamet; *Kalanchoe verticillata* S. Elliot; *Bryophyllum delagoense* (Eckl. & Zeyh.) Schinz.] CHANDELEIR-PLANT.

* ***Kalanchoe delagoensis*** Eckl. & Zeyh.

4. Leaves opposite, broad, very thick, petiolate, toothed along margin.

5. Leaf blades narrowly deltoid to broadly lanceolate; corolla dark red, 2.0-2.5 cm. long. Monocarpic fleshy short-lived perennial herb to 1.5 m. Waste areas, foundation plantings, greenhouse debris. South and central peninsula (n. to Alachua County); infrequent. Winter. A hybrid of *K.*

daigremontiana and *K. delagoensis*, reproducing exuberantly by viviparous leaf-margin plantlets.
* ***Kalanchoe houghtonii*** D. B. Ward

5. Leaf blades broadly deltoid; corolla dusky rose, 1.5-2.0 cm. long. Monocarpic fleshy short-lived perennial herb to 0.8 m. Dry waste areas. South and central peninsula (n. to Brevard County); infrequent. Winter.
DEVIL'S BACKBONE.
* ***Kalanchoe daigremontiana*** Hamet & Perr.

Excluded names:

Kalanchoe blossfeldiana Poelln.
Widely sold by home garden stores, and garden waifs sparingly seen in a South Florida hammock (Lee Co.). But apparently sterile, and not truly escaped.

Kalanchoe gastonis-bonnieri Hamet & Perr.
Reported by Spongberg (1978) to be "well established" on Sanibel Id.; and by Wunderlin (1982, 1998) as "rare" in Lee Co. The sole basis appears to be a 1972 collection (Brumbach 7837 - FLAS), said to be "escaped & well established" on Sanibel Id. However the specimen, though poor, is of *K. pinnata*, a species not recognized by the collector until 1974, when he found it abundant at the same location.

Kalanchoe laciniata (L.) DC.
Reported by Wunderlin (1998) as escaped in Lee and Monroe counties, apparently based on a 1974 Sanibel Id. collection (Brumbach 8209 - FLAS) that, though annotated *K. laciniata*, is typical *K. crenata*.

Kalanchoe laxiflora Baker
Bryophyllum crenatum Baker
Cited as "reported" for Florida by Long & Lakela (1971), but not by whom. Unknown in Florida outside of cultivation.

Kalanchoe marmorata Baker
Kalanchoe grandiflora A. Rich.
Reported as naturalized, "sometimes in extensive colonies" (Long & Lakela, 1971). No such colonies nor individual plants are known outside of cultivation. A distinctive species; a misidentification is difficult to visualize.

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[1] This paper is a continuation of a series begun in 1977. The "amplified key" format employed here is designed to present in compact form the basic morphological framework of a conventional dichotomous key, as well as data on habitat, range, and frequency. Amplified keys are being prepared for all genera of the Florida vascular flora; the present series is restricted to genera where a new combination is required or a special situation merits extended discussion.