

Scientific Note

A NOMENCLATURAL HISTORY OF SOUTHEASTERN FILIFEROUS *Yucca*, WITH SELECTION OF A NEOTYPE FOR *Y. flaccida*.—In the eastern United States, in contrast to the American West, the genus *Yucca* (Agavaceae) is represented by few native species. The Spanish-dagger or Spanish-bayonet (*Yucca aloifolia* L.), with its erect, usually unbranched stems and unique stiffly spreading, rough-margined leaves, occurs widely along the maritime coasts and at scattered locations inland. The much less common Mound-lily *Yucca* (*Yucca gloriosa* L.), with forked stems and smooth brown-margined leaves, is restricted to coastal dunes from Virginia into northeastern Florida (Ward 2004a). A distinct third form, usually interpreted to consist of two species, is characterized by leaves borne only at the base of the plant with their margins bearing loose, semi-detached, stiffly curved fibers. Although members of this third group in eastern Virginia have been called “Silkgrass” (Fernald 1944) and botanical texts have occasionally assigned them the name “Beargrass” (Chapman 1860, Trelease 1902) or the improbable label of “Adam’s-needle,” these distinctive basal-leaved, filiferous plants are almost invariably known simply as “*Yucca*.”

Four scientific names have been applied to members of this group, each with the assumption that a distinct species was involved. The earliest, *Yucca filamentosa* L., was formed by Carl Linnaeus in his *Species Plantarum* (1753), the starting-point for all modern plant nomenclature. Linnaeus did not have a specimen in his own herbarium, and it is unknown whether he saw any of the few specimens of this group then in European gardens and herbaria. Linnaeus’ description was brief and cryptic, but he cited a book by his friend Jan Frederik Gronovius (1743), which described many species from specimens sent to Gronovius by John Clayton, a public official and enthusiastic amateur botanist of Gloucester, Virginia. By this citation, Clayton’s specimens (now in BM) become the types for the names published by Linnaeus, and a herbarium sheet bearing two short branches of a *Yucca* inflorescence is the type specimen of *Y. filamentosa* (Fernald 1944, plate 808).

In the late 18th and early 19th centuries an English horticulturist and botanist, Adrian Hardy Haworth, assembled a garden near London of plants brought to Europe by explorers in South Africa and America (Staffeu 1966). His interest soon centered on “succulents,” plants with fleshy stems and/or leaves, and grew to encompass forms of *Yucca* that he knew either as living plants or as specimens received from distant lands. Among the 17 species of *Yucca* described by Haworth (1819) were six within what he termed the Filiferae, an early recognition of the taxonomic significance of their unique marginal leaf fibers. Of these six, one is clearly misclassified: the name *Y. “recurva”* is a synonym of the smooth-margined *Y. gloriosa*. The second and third, *Y. glaucescens* and *Y. angustifolia*, are from “Americ. Septent.” (eastern Canada) and “prope flumen Missouri in Americ.” (near the Missouri River), both extraterritorial. Only three of Haworth’s names are from the southeastern United States: *Y. filamentosa*, *Y. concava* Haw., and *Y. flaccida* Haw. He left no type specimens; his *Y. filamentosa* was based on a later edition of Linnaeus’ work, and *Y. concava* and *Y. flaccida* he knew only as garden plants (both noted as introduced before 1816).

A fourth name for the filiferous Yuccas was given by Merritt Lyndon Fernald (1944), following his active study of the flora of eastern Virginia. Fernald recognized that *Yucca concava* was surely a synonym of *Y. filamentosa* and that both names applied to the plants he knew in Virginia. He also accepted *Y. flaccida*, though made no pretense that he understood it or its variations. But he separated these names from a fourth entity, one with pruinose-pilose branches of the panicle; this he named *Y. smalliana*, and typified it with a collection made in northeast Florida [Sandy soil near Jacksonville, Duval Co. A. H. Curtiss 2950 (holotype, GH; isotype, FLAS)].

Early authors, lacking knowledge of types, treated the filiferous southeastern yuccas variously, as they thought best. The pioneer Florida botanist, A. W. Chapman (1897), made no distinction, including all within *Yucca filamentosa*. William Trelease (1902), after bringing into cultivation the numerous western taxa as well as those of the Southeast, and with field

knowledge of nearly all, published what has remained the basic monograph of *Yucca*; he distinguished both *Y. filamentosa* and *Y. flaccida*, with numerous varieties in each. J. K. Small (1933) recognized 3 species: *Y. concava*, from coastal Georgia northward; *Y. filamentosa*, of the southern coastal plain; and *Y. flaccida*, inland, along the Appalachians. Fernald (1944), the first author to understand the type of *Y. filamentosa*, returned that name to plants of eastern Virginia; then, needing a name for the plant Small had called *Y. filamentosa*, he described a new species, *Y. smalliana*, to represent the southern plant (Ward 2004b), and retained *Y. flaccida* for the inland variant. Duncan and Kartesz (1981), reflecting the first author's long interest in the genus, recognized two species: *Y. filamentosa* and *Y. flaccida*, the second containing *Y. smalliana* in synonymy. Retention of two species has been continued by Hess and Robbins (2002). A recent guide (Wunderlin 1998, Wunderlin and Hansen 2003) has returned to the conservatism of Chapman, again recognizing only a single species, *Y. filamentosa*. Fernald's *Y. smalliana* has been reduced to *Y. filamentosa* var. *smalliana* (Fern.) Ahles (1964), and to *Y. flaccida* var. *smalliana* (Fern.) D. B. Ward (Ward 2004b).

The importance of type specimens cannot be overemphasized. The "type concept" is a central feature of the International Code of Botanical Nomenclature (Greuter et al. 2000). In principle, every plant name is linked to a single plant specimen (the type), and all other specimens must be deemed conspecific with that specimen if they are to bear the same name. The Code permits some latitude; illustrations may also serve as types, and new names published before 1958 are not required to have a type. But the presence of a type is essential to the consistent application of a particular name to a plant or population of plants with a particular morphology. Without types, each author is free to interpret each description as he thinks most appropriate, even though this inevitably must result in different interpretations and different applications of the same name.

It is so important that each name be anchored by a type that the Code provides for creation of a substitute type—a neotype—if the original type has been lost or was perhaps never chosen. Such a substitute type, once selected, holds the importance and permanence of the (hypothetical) original type, subject to displacement only if the original type were to be discovered.

Determination of the number of species represented by the eastern filiferous *Yuccas*, and the morphological criteria that delimit their populations, cannot succeed until there is agreement as to the meaning of the specific names that have been applied. Of the four names, types are known for *Yucca filamentosa* and *Y. smalliana*; these names are thus securely fixed. But since Haworth is believed not to have retained herbarium materials upon which his new names were based, the exact form of the plants used by him is open to interpretation.

There is perhaps no need to establish a type for Haworth's *Yucca concava*, for its leaves, described as "concavis," well correspond to the wider leaves (to 5 cm), clearly spoon-like when young (plane when older), frequently found in shade-grown plants of *Y. filamentosa*. Except for Small (1933), who used that name elsewhere, authors have not questioned that Haworth's *Y. concava* is adequately disposed of by synonymy under *Y. filamentosa*.

But Haworth's *Yucca flaccida* remains untypified, and is thus subject to different interpretations. Though *Y. flaccida* is for many the name of choice for the widespread southern coastal plain *Yucca* (Duncan and Kartesz 1981, Clewell 1985, Godfrey 1988, Ward 2004b, etc.), the assignment of this name to a more inland variant cannot be wholly dismissed. Further, several varietal names of *Y. flaccida* recognized by Trelease (1902), with others in *Y. filamentosa*, remain unstable until the specific names themselves are settled.

Further, even within *Yucca flaccida* as presently recognized, there is unexplained variation. Plants in a small area of southern Alachua County, Florida, bear leaves to 90 cm in length, yet only 2 cm in width. Colonies in western Putnam County, Florida, vary both in leaf width and season of flowering. Plants in areas of Liberty and Gadsden counties, central panhandle Florida, have twisted, corrugated leaves, unlike those seen elsewhere (Godfrey 1988). A form with pubescent inflorescence axes occurs in more inland areas, as described by Trelease (1902) and Small (1933) and acknowledged by var. *smalliana* (Fern.) D. B. Ward (2004b).



Figure 1. Plant of *Yucca flaccida*, near Ginnie Springs, Gilchrist County, Florida, the source of the selected neotype specimen. Scale = 1 meter. June 2003.

Figure 2. Basal leaves *Yucca flaccida*, Ginnie Springs, Gilchrist County, Florida. May 2003.

At the present date there is no way to determine the source of the garden plants seen by Haworth and employed by him in describing *Yucca flaccida*. In his day access to the wild lands beyond the Appalachians was restricted and hazardous. Yet traffic was routine to and from the ports of the southeastern seaboard (Charleston, Savannah), while coastal Florida, especially the eastern towns of Fernandina and St. Augustine, was frequently visited. It is probable that travelers to those ports could have returned to England with viable plants. Thus selection of a neotype from peninsular Florida, as is done here, is fully as appropriate as one from elsewhere.

Yucca flaccida Haworth, Suppl. Pl. Succ. 34. 1819. TYPE: holotype, unknown; neotype, selected here. Leaves all basal, 2.5–2.8 cm broad, 40–50 cm long, gradually tapered, stiff (not flexed in middle), marginal fibers 4–6 cm long, irregularly curved (not curled); inflorescences 2.5–3.9 m tall (panicle 0.8–1.2 m tall, atop naked scape); inflorescence axis, branches, and pedicels glabrous; buds dusky rose, to 5 cm long; sepals creamy white (with touch of rose on abaxial surface), 5 cm long, 2.0–2.5 cm broad; petals creamy white throughout, 5 cm long, somewhat broader than sepals; stamens 2 cm long (filaments glandular-pubescent, curved outward near apex, 2 cm long; anthers <1 mm long (other plants to 3 mm); pistil slightly shorter than stamens (style narrower than ovary, ca. 8 mm long, with 3 divergent stigmas); capsules (of previous year) erect, dry at maturity, 3.0–3.5 cm long; seeds black, flat with thickened margin, 6–7 mm long. Figures 1, 2, 3, 4. Locally frequent. Yellow-white sand, roadside fencerow at edge of pasture, 2 mi (3 km) w of Ginnie Springs, sec. 32, T7S, R16E, n.e. corner of Gilchrist Co., FLORIDA. D. B. Ward 10736, 19 May 2003: FLAS; iso-neotypes: FSU, FTG, GA, MO, NCU, NY, TEX, USF. = *Yucca filamentosa* Linnaeus var. *flaccida* (Haworth) Engelm., Trans. Acad. St. Louis 3: 52, 214. 1873.



Figure 3. Flowers of *Yucca flaccida*, Ginnie Springs, Gilchrist County, Florida. May 2003.

Figure 4. Fruits of *Yucca flaccida*, Ginnie Springs, Gilchrist County, Florida. June 2004.

With this selection, and with recognition of the types for the other related taxa, the stage is now set for field study that will yield stable names for the filiferous *Yuccas* of eastern America.

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