

# *Yucca linearifolia* (Agavaceae): A new, indehiscent, fleshy-fruited, linear-leaved species endemic to the Chihuahuan Desert, Mexico

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Clary, K. H. (Department of Botany, University of Texas, Austin, TX 78713, U.S.A.). *Yucca linearifolia* (Agavaceae): a new, indehiscent, fleshy-fruited, linear-leaved species endemic to the Chihuahuan Desert, Mexico. *Brittonia* 47: 394–396. 1995.—*Yucca linearifolia* is described, illustrated, and distinguished from other yucca species. Its distinctive combination of fleshy fruit and narrow, linear, denticulate leaves sets it apart from all other yuccas.

Se describe e ilustra *Yucca linearifolia* y se discute su separación de otras especies del género *Yucca*. La combinación de caracteres tales como el fruto carnoso y la hoja linear y denticulada la distingue del resto de las especies del género.

**Key words:** *Yucca*, Agavaceae, Mexico, Chihuahuan Desert, sect. *Sarcocarpa*.

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In June 1993, Burford Westlund and John Mendenhall brought me a leaf sample from a yucca encountered while searching for cycad habitats in the side canyons of the newly cut road along the banks of the Río Pilón between Rayones and Galeana, Nuevo León, Mexico. This plant had very narrow, denticulate leaves which we had not seen before. In July 1993 I visited the area and collected this yucca in fruit. In April 1994 I collected it in flower at a nearby locality and confirmed its distinctiveness and specific status.

*Yucca linearifolia* Clary, sp. nov. (Fig. 1).

**TYPE:** MEXICO. Nuevo León: Along road from Galeana to Rayones, 9.28 road km northeast of junction with road to Los Llanitos (near Galeana), east side of road, in bottom of unnamed side canyon, 1300 m, 26 Jul 1993 (fr), *Clary 364* (HOLOTYPE: MEXU; ISOTYPES: ANSM, MO, TEX, US).

Species foliis linearibus denticulatisque fructibus carnisosis indehiscentibusque a congeneribus diversa.

Cauliscent, mostly unbranched woody perennials, 2–3.5 m tall, 30–50 cm dbh, forming isolated colonies of 3–15 ramets or

“individuals” from rhizomes and fallen, aged trees. Rosette radially symmetrical, with a somewhat flattened top. Leaves grayish green to glaucous (new growth), numerous, linear, twisting slightly outward distally, persistent with age, reflexing and completely covering the trunk, turning gray when dead with a mustard yellow band at the reflexed base, 34–38 cm long, 4–5 mm wide at middle with the upper half 1 mm wider than the middle and the lower half 1 mm narrower than the middle, convex on both surfaces on lower half, flattened to concave on inner surface above middle; margin thin, corneous, pale yellow and minutely denticulate; base 2.4–3 cm wide; spine dark reddish brown to black, 0.3–0.8 cm long, pungent. Panicle 60–80 cm long, moderately branched, erect, basally enclosed within the rosette on a short, somewhat succulent scape. Longest branches (base of inflorescence) 11–13 cm long, glabrous, with 4–6 flowers per branch. Flowers creamy white, campanulate, pendant; tepals free, glabrous, outer whorl elliptical in shape, 3–3.3 cm long, 1.5 cm wide, those of inner whorl obovate in shape, 3 cm long, 2 cm wide. Stamens 1.6–1.7 cm long; filaments reflexed for distal ¼

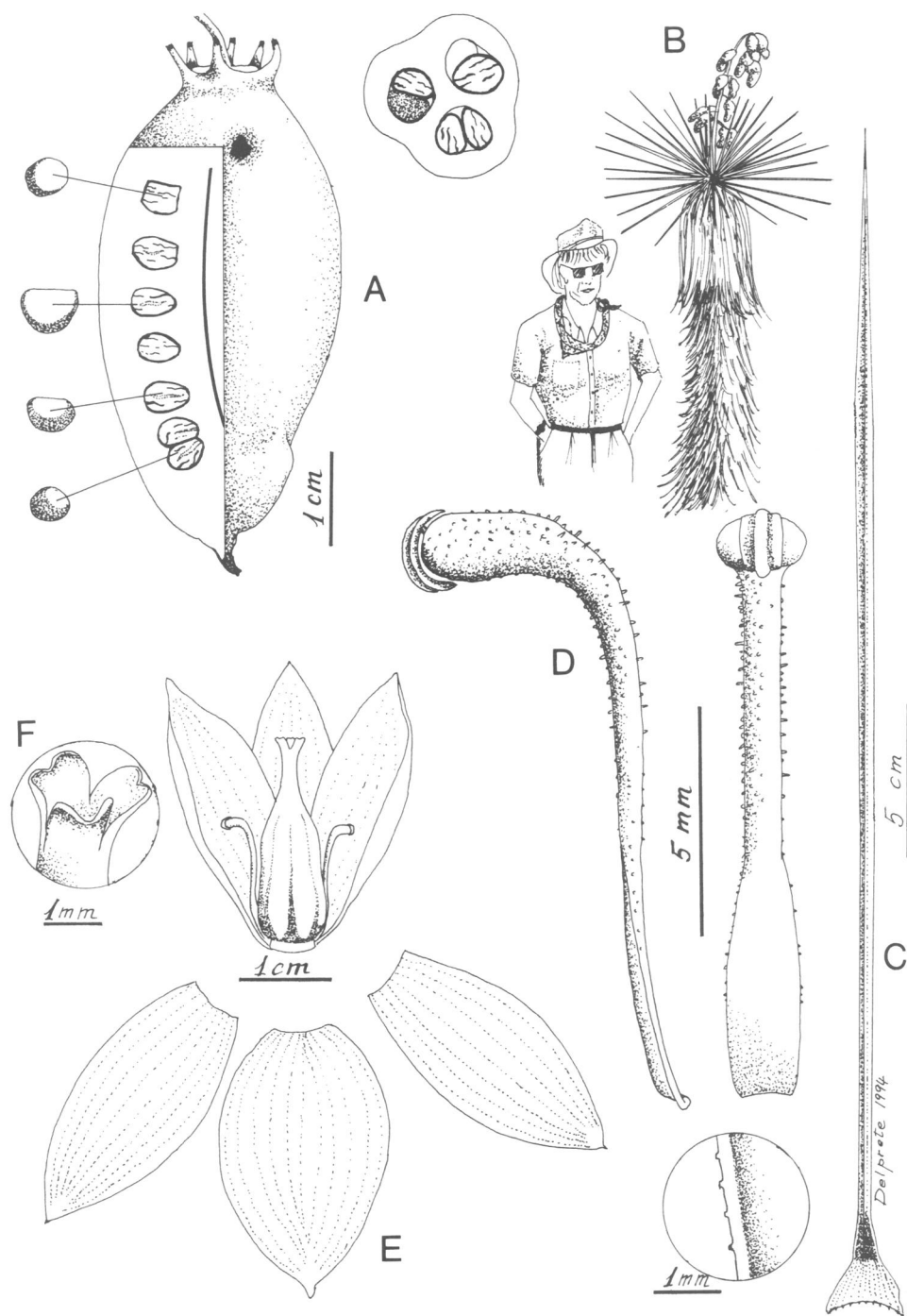


FIG. 1. *Yucca linearifolia*. A. Fruit. Longitudinal section shows position of polymorphic seeds. Note exit hole of *Yucca* moth larvae (*Tegeticula yuccasella*) near base of fruit. Cross section shows ruminant endosperm of sectioned seeds. B. Habit. C. Representative leaf, abaxial surface, with leaf margin magnified 1.2 $\times$ . D. Stamen, front view and side view, slightly enlarged. E. Flower; inset, detail of stigma lobes. (A-C from Clary 364; D-E from Clary 375 [TEX]).

of the length, basally flattened, gradually widening toward apex, with echinate papillae, attached to ventral side of anthers at the base; anthers 1–2 mm long, with elongate, rounded, basal lobes. Pistil 2.3–2.7 cm long; ovary oblong-cylindric, 0.9–1 cm wide, with deep carpellary sutures at the base and surmounted by long-tapering shoulders toward style; styles 3, 6–7 mm long, with each lobe retuse, erect to spreading and the style branches papillose for 3 mm from the apex. Fruit fleshy, indehiscent, pendant, asymmetrical, 5–7 cm long, 2.3–2.5 cm wide, narrowly ovoid with apex constricted and forming an angle of about 15° with the axis; base bears persistent swollen recurved stamen bases. Seeds polymorphic, black, dull; those from middle of fruit D-shaped to cuculate, 5–7 mm long, 4–6 mm wide, thinner near placental edge (2.5 mm) thicker toward outside (4 mm); those from base and apex smaller, spherical to flattened, conforming to shape of fruit; endosperm copious, ruminate.

*Habitat*.—Desert scrub vegetation. This uncommon species appears to be endemic to the *Lutita* (shale) formation of the region, where it grows in small, scattered populations. It occurs both on open, exposed slopes and on the steep sides and bottoms of narrow, shaded canyons of the Sierra Santa Maria between 1100 and 1300 m in the extremely dry rain shadow of the Sierra Madre Oriental.

*Associated species*.—Exposed slopes: *Yucca filifera* Chab., *Dasylyrion* sp., *Agave striata* Zucc., *Opuntia* sp. Canyons: *Mimosa* sp., *Gochnatia hypoleuca* DC., *Acacia* sp., *Celastrus* sp., *Karwinskia humboldtiana* (R. & S.) Zucc., *Rhus virens* Gray, *Cercis* sp., *Tamaulipa* sp., *Ageratina* sp., and *Aloysia* sp.

Additional specimens examined: MEXICO. Nuevo León: Juquialanes, on floor of wide canyon along W side of road at Juquialanes, on the southeastern outskirts of Rayones, 26 July 1994, *Clary* 365 (ANSM, MEXU, MO, TEX, US); on west-facing slope about ½ km from new road between Rayones and Galeana, 6.5 mi S of turnoff from junction with Rayones–Monte-

morelos Rd., 4 April 1994 (fl), *Clary* 375 (ANSM, MEXU, MO, TEX, US). Coahuila: 15 km NE of General Zepeda, along highway to Parras de la Fuente, 1200 m, *García Mendoza* 5946 (planted specimens at Jardín Botánico, UNAM).

The most striking difference between this species and seemingly close relatives *Yucca queretaroensis* Pina L. (Pina Lujan, 1989, 1990) and *Y. rostrata* (Engelm.) Trel. (Trel. 1902, 1907) is its fleshy, indehiscent fruit. *Yucca linearifolia* is the only fleshy-fruited yucca with narrow, denticulate leaves. *Yucca linearifolia* belongs to sect. *Sarcocarpa*, and both dry-fruited *Y. queretaroensis* and *Y. rostrata* belong to sect. *Chaenocarpa*. However, narrow, denticulate leaves are characteristic of the dry-fruited yuccas (sect. *Chaenocarpa*) within ser. *Rupicolae* from the region. *Yucca linearifolia* also differs from *Y. queretaroensis* in that the pistil of the former is narrower and the style is longer; the leaves are not convex on both surfaces for their entirety and the pedicels and panicle branches are not tomentose.

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