*Phytologia* (April 1990) 68(4):255-259.

# *HYMENOCALLIS PIMANA* (AMARYLLIDACEAE): A NEW SPECIES FROM NORTHWESTERN MÉXICO

Joseph E. Laferrière
Department of Ecology and Evolutionary Biology, University of Arizona, Tucson, Arizona 85721 U.S.A.

## ABSTRACT

**Hymenocallis pimana** Laferrière (Amaryllidaceae) is described as a new species from the States of Chihuahua and Sonora, México. It is distinguished from the closely related *H. graminifolia* Greenm. by larger size, longer floral bracts (44-82 mm long), a slightly longer perigone tube (5-10 cm long) and a longer style (11-18 cm long). It is distinguished from *H. sonorensis* Standl. and *H. durangoensis* T. Howard by a larger staminal cup (25-40 mm high and 25-50 mm broad) and narrower leaves (5-11 mm wide).

KEY WORDS: *Hymenocallis*, Amaryllidaceae, México, Chihuahua, Sonora.

## RESUMEN

**Hymenocallis pimana** Laferrière (Amaryllidáceas) se describe como nueva especie de los Estados de Chihuahua y Sonora, México. Se distingue de su congénero más cercano *H. graminifolia* Greenm. por su tamaño más grande, sus brácteas florales más largas (44-82 mm de largo), su tubo del perigonio más largo (5-10 cm de largo), y su estilo más largo (11-18 cm de largo). Se distingue de *H. sonorensis* Standl. y *H. durangoensis* T. Howard por su copa estaminal más grande (25-40 mm de altura y 25-50 mm de ancha), y por sus hojas mas angostas (5-11 mm de ancho).

The genus *Hymenocallis* is a group of approximately 70 species in the Amaryllidaceae, native to the warm regions of the Western Hemisphere. It is a rapidly evolving genus with new species being described rather frequently (Flory 1976, 1977; Raina & Khoshoo 1971).

The Sierra Madre Occidental of the Mexican states of Chihuahua and Sonora is home to a previously undescribed species of this genus. The plant was discussed as "*Hymenocallis* #5" by Bauml (1979) but the plant was not

formally named at that time since no living material and very little herbarium material was then available. I have recently had an opportunity to observe hundreds of living plants in the field, and to collect additional material. The results of this work establish consistent differences between this and previously known species. The plant is therefore described as a new species.

**Hymenocallis pimana** Laferrière, *sp. nov.* TYPE: MÉXICO. Chihuahua: Mpio. Temósachic, Nabogame, in grassy field near village, 1800 m, 28° 30′N, 108° 30′W, 23 Jun 1988, *Laferrière 1456* (HOLOTYPE: ARIZ; Isotypes: CHAP,ENCB,GH,MEXU,MO,TEX,UC,US). PARATYPES: MÉXICO. Chihuahua: Nabogame, in fruit, 12 Jul 1988, *Laferrière 1508* (ARIZ,CHAP,MEXU); Nabogame, seedlings, 22 Oct 1988, *Laferrière 2168* (ARIZ); Yepachi, in grassy cow pasture, 28° 25′N, 180° 20′W, 15 Jul 1988, *Laferrière 1515* (ARIZ); banks of Río Yepachi, 5 km S of Nabogame, 6 Jul 1988, *Laferrière 1492* (ARIZ); Mesa de Basaseachic, Río Mayo headwaters, 5 Jul 1936, *LeSueur 571* (ARIZ!,F,GH,MO,TEX). Sonora: Maycoba, 14 Jul 1988, *Laferrière 1514* (ARIZ).

Herba perennis, glabra. Radices carnosae, albae. Bulbus 20-65 mm longus, 15-45 mm latus, cum pseudocollo subterraneo 20-90 mm alto. Folia 4-8, ensiformia, interdum gradatim attenuatae infra, 10-60 cm longa, 5-11 mm lata. Scapi 1-2(-3), ancipites, 8-40 cm alti. Bracteae externae subulatae, scariosae, hyalinae, 44-72 (-82) mm longae. Inflorescentia capitata cum floribus (1-)2-6(-8), sessilibus, fragrantibus, erectis; perigonii tubus viridis, 5-10 cm longus; tepala alba, persistentia, effusa, 55-90 mm longa, 1.0-3.5 mm lata; poculum staminale infundibulare, album, 25-50 mm latum ad apicem, 25-40 mm longum, cum base viride leviter decrescente et dentibus 1-6 mm longis et 1-4 mm latis; filamenta 15-40 mm longa, alba infra, viridia superne; antherae luteae, versatiles, introrsae, 11-17 mm longae; stylus exsertus, 11-18 cm longus, viridis superne, albus infra, obtusangule trigonus, interdum spiralis superne; stigma viridis, capitatum, trilobatum; ovarium viridis, triangularis, trilocularis; septa lutea rumpentes ante maturationem; ovula 2-5 in quoque loculum, alba; placentatio axialis ad basalis. Capsula viridis, loculicida. Semina 1-15, viridia, laevia, elliptica ad clavata, germinantia mox post casum et producentia bulbus 2-5 cm longus et 6-12 mm latum.

Herb, perennial, geophytic, glabrous. Roots fleshy, white. Bulbs 20-65 mm high, 15-45 mm broad, with a subterranean neck 20-90 mm high; bulb tunic light brown. Leaves 4-8, ensiform, sometimes very gradually attenuate below, bright green to slightly glaucous, 10-60 cm long, 5-11 mm broad. Scapes 1-2 (-3), ancipitous, 8-40 cm tall. Outer floral bracts subulate, scarious, hyaline, 44-72(-82) mm long. Inflorescence capitate; flowers (1-)2-6(-8), sessile, fragrant,

erect; perigone tube green, 5-10 cm long; tepals white, persistent, spreading, 55-90 mm long, 1.0-3.5 mm wide; staminal cup funnelform, white, 25-50 mm broad at apex, 25-40 mm high, with slightly tapering green base and teeth 1-6 mm long and 1-4 mm broad; filaments inserted between teeth, 15-40 mm long, white below, green above; anthers yellow, versatile, introrse, 11-17 mm long; style exserted, 11-18 cm long, green above, white below, obtusely triangular in cross section, sometimes twisted helically above; stigma green, capitate, 3 lobed; ovary green, triangular, 3 loculate; septa yellow, rupturing before maturity; ovules 2-5 per locule, white; placentation axial to basal. Capsule green, loculicidal. Seeds 1-15, green, smooth, elliptical to clavate, 5-10 mm in diameter, germinating soon after falling and producing a bulb 2-5 cm long and 6-12 mm wide.

Additional specimens cited by Bauml (1979): MÉXICO. Chihuahua: Yepachi, 7 Jul 1970, *Pennington 26* (TEX); Tosanachic, 2000 m, 20 Jun 1947, *Hewitt 217* (GH). Sonora: Sierra Madre, 1891, *Lumholtz Exp. s.n.* (GH); Maicobita [Maycovita], ca 3 km from Maycoba, 1500 m, Jul 1968, *Pennington 183* (TEX).

The plant is named "*pimana*" in honor of the Mountain Pima who detoxified and ate the bulbs of this plant until the early part of this century (Laferrière & Perry, in prep.). The plant is found in sunny locations in fields and along streams, often in the vicinity of past or present human habitation. It forms large colonies of several thousand individuals and hence is extremely conspicuous at anthesis. The size of the type population was estimated at approximately 70-80,000 individuals. Flower buds are formed underground, and the anthers are already yellow before the buds break through the soil surface. This enables the plant to be one of the first species to flower at the start of the rainy season in June or July. Leaves appear simultaneously with the flowers.

The species is assignable to the Mexicana alliance of subgenus *Hymenocallis* (Traub 1962). It is distinguished from the closely related *H. graminifolia* Greenm. by larger size, longer floral bracts, longer perigone tube and longer style (Greenman 1903; Sealy 1954; Bauml 1979), and from *H. sonorensis* Standl. and *H. durangoensis* T. Howard by its broader leaves and larger staminal cup (Standley 1937; Shreve & Wiggins 1964; Bauml 1979). A key separating these four taxa is as follows:

1. Staminal cup 15-25 mm high and 15-26 mm broad; leaves (8.5-)10-23(-30) mm broad ..... 2

    2. Perigone tubes (6.5-)7-13 cm long; style 11.8-20.3 cm long; lowland Sonora, Sinaloa and Nayarit below 1500 m *Hymenocallis sonorensis*

    2′ Perigone tubes (3.3-)4-5.4(-7) cm long; style 7.9-12 cm long; Durango *Hymenocallis durangoensis*

1′ Staminal cup 25-40 mm high and 25-50 mm broad; leaves 4-11 mm broad ..... 3

3. Scapes 8-40 cm tall; flowers (1-)2-6(-8); floral bracts 44-82 mm long; perigone tube 5-10 cm long; style 11-18 cm long; montane Chihuahua and Sonora above 1500 m ..... *Hymenocallis pimana*

3′ Scapes 6-16 cm tall; flowers 1-2(-4); floral bracts 25-40 mm long; perigone tube 3-5 cm long; style 9.8-12 cm long; central Morelos ..... *Hymenocallis graminifolia*

## ACKNOWLEDGMENTS

This work was funded by an NSF doctoral dissertation grant to the author and Dr. Willard Van Asdall. I also thank James A. Bauml, Charles T. Mason, Thad M. Howard, David J. Lehmiller, Pierfelice Ravenna, Walter S. Flory and Alan Meerow for helpful comments on an earlier draft of this manuscript, and Edward J. Whalen for providing the Latin description.

## REFERENCES

Bauml, J.A. 1979. A study of the genus *Hymenocallis* (Amaryllidaceae) in Mexico. M.S. Thesis, Cornell University, Ithaca, NY, 189 pp.

Flory, W.S. 1976. Distribution, chromosome numbers and types of various species and taxa of *Hymenocallis*. Nucleus 19:204-227.

———. 1977. Overview of chromosome evolution in the Amaryllidaceae. Nucleus 20:70-88.

Greenman, J.M. 1903. New and otherwise noteworthy angiosperms from Mexico and Central America. Proc. Amer. Acad. Arts 39(5):71-120.

Laferrière, J.E. & D. Perry. In prep. Detoxification of *Hymenocallis* bulbs by the Mountain Pima.

Raina, S.N. & T.N. Khoshoo. 1971. Chromosomal variation and evolution in *Hymenocallis*. Cellule 68:239-255.

Sealy, J.R. 1954. Review of the genus *Hymenocallis*. Kew Bull. 9(2):201-240.

Shreve, F. & I.L. Wiggins. 1964. *Vegetation and Flora of the Sonoran Desert*. Stanford University Press, Stanford, CA.

Standley, P.C. 1937. Studies of American plants, VIII. Field Mus. Nat. Hist., Bot. Ser. 17:227-284.

Traub, H.P. 1962. Key to the subgenera, alliances, and species of *Hymenocallis*. Plant Life 18:55-69.