

# LYCIUM AROCHAE (SOLANACEAE), A NEW SPECIES FROM CENTRAL COAHUILA, MEXICO

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## ABSTRACT

*Lycium arochae* is a distinctive new species known from a single population in central Coahuila, Mexico, where it is a codominant species in extensive alluvial flats surrounding the playa of Laguna Colorada. The species shows relationships to *Lycium berlandieri* Dunal and *L. pallidum* Miers.

Recent field work by Wendt and Lott in conjunction with the Chihuahuan Desert flora project and toward a floristic and vegetational survey of central Coahuila, Mexico, has revealed a number of rarities and novelties. Among these is a new species of *Lycium*.

***Lycium arochae*** Chiang, Wendt, & Lott, sp. nov. a *L. berlandieri* Dunal et *L. pallido* Miers habitu compactiore, staminibus valde exsertis, filamentis in parte libera glabris, et praeterea a *priore* foliis glaucis, a *posteriore* floribus et foliis parvioribus recedit (Fig. 1).

Much branched, thorny shrubs 0.5–1.5 m tall. Young branches with ashy gray bark, turning brownish at maturity. Thorns slender, straight, 8–10 mm long. Leaves in fascicles of 3–6, glabrous, glaucous, bluish-green, semisucculent, obovate or oblong, mostly rounded at the apex, sessile, (2.5) 5–10 (12) mm long, (1.5) 2–3.5 mm broad. Flowers solitary at the leaf fascicles; pedicels slender, (5) 7–10 mm long, glabrous. Calyx campanulate to ovoid, 1.0–1.6 mm long; lobes 5, deltoid, subequal, 0.5–0.6 mm long, sparsely pubescent at the apex. Corolla 7 mm long; tube narrowly obconic, 5 mm long, glabrous; lobes 5, 2 mm long, violet, ovate, rounded at the apex, spreading or recurved, the margins sparsely ciliolate. Stamens unequal in length, often strongly exserted, surpassing the corolla lobes; filaments affixed to the corolla tube about 2 mm from the base, adnate to the tube for 1 mm, sparsely pilose where adnate, glabrous elsewhere. Style exserted. Fruit a many-seeded, ovoid, orange-red berry, 5–8 mm in diameter.

TYPE: Mexico, Coahuila, ca. 14.5 km SSE of Rancho Zacatosa (R. Arocha) in Laguna Colorada area, just north of Tanque El Revés



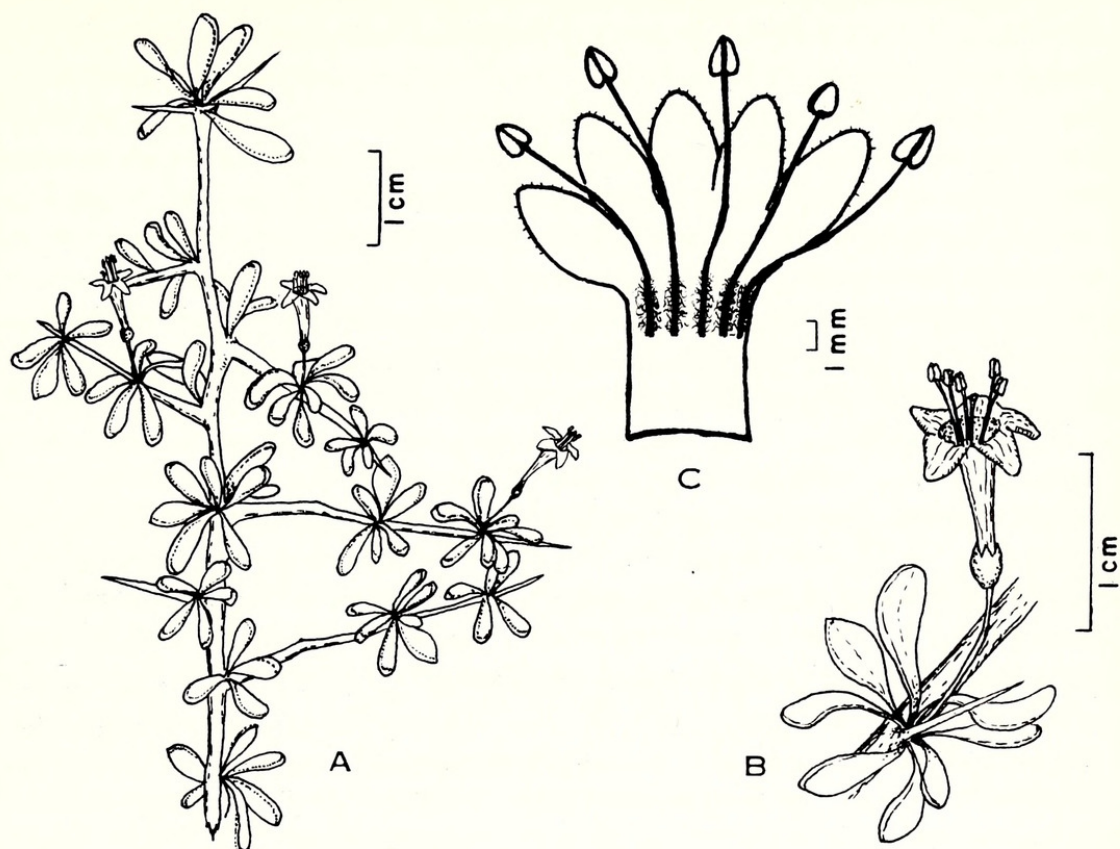


FIG. 1. *Lycium arochae*. A. Flowering branch. B. Enlargement of flower. C. Dissection of corolla.

(26°55'45"N, 102°41'05"W), desert scrub, 1100 m, 27 Oct 1976, *T. Wendt and E. J. Lott* 1903 (Holotype: LL. Isotypes: MEXU, ENCB, and to be distributed).

Additional specimens examined: Mexico, Coahuila: road from Zacatosá southeasterly to Puerto Colorado, via Tanque Colorado, bottom of large valley SE of Zacatosá, common bush, 31 Aug 1941, *I. M. Johnston* 8644 (GH, LL), 8644A (GH, LL); ca. 13.2 km S of Rancho Zacatosá, W of Laguna Colorada, 3 Oct 1976, *T. Wendt, E. J. Lott, and M. Mispagel* 1886 (LL); ca. 11.0 km SSE of Rancho Zacatosá, 27 Oct 1976, *T. Wendt and E. J. Lott* 1902 (LL).

The epithet honors Sr. Leopoldo Arocha Treviño of Rancho Zacatosá (R. Arocha) in appreciation for friendship, hospitality, and assistance during numerous trips to the area.

The combination of small, glabrous, glaucous leaves; long-exserted stamens with filaments entirely glabrous in the free portion; and short-lobed, campanulate to ovoid calyx distinguishes the new species from other North American *Lycium* species. *L. arochae* is similar to *L. berlandieri* in flower size and corolla shape and approaches that species in leaf size and shape, but it differs in its strongly glaucous leaves, more compact habit, and long-exserted stamens glabrous in



the free portion. In its glaucous leaves *L. arochae* is similar to *L. pallidum*, but differs in leaf size (2–12 mm long in *L. arochae* versus 10–40 mm in *L. pallidum*), flower size (ca. 5–8 mm long versus 14–25 mm long), habit, and details of the stamens. Although populations of both *L. berlandieri* and *L. pallidum* occur within several kilometers of the single known population of *L. arochae*, the origin of the latter species from hybridization between these two species seems unlikely, because *L. arochae* differs from both in habit and details of the stamens. For the present, *L. arochae* must be considered a quite distinct but very local species.

*Lycium arochae* is known only from alluvial flats surrounding the lakebed of Laguna Colorada, where it is abundant over several thousand hectares. The Laguna Colorada basin, also known as the “Barreal del Junco”, is a small, relatively high, internal-drainage basin (ca. 1250 km<sup>2</sup> total potential watershed, playa elevation 1100 m) about 55 km west of the town of Cuatro Ciénegas, Coahuila. It lies in the immediate rainshadow of the 3000 m Sierra de la Madera to the north and northeast and the 2250 m Sierra de la Fragua to the east and southeast. Although no rainfall records are available for the basin, personal experience and information from local ranchers indicate that the average rainfall is probably less than that of the Cuatro Ciénegas area, which averaged 183.1 mm annually over 29 years (García, 1973). While the bajada and limestone slope vegetations are in many cases similar to those described by Pinkava (in press) for the adjacent Cuatro Ciénegas region, the basin floor is quite different, lacking entirely the springs and natural permanent water, as well as gypsum dunes and flats, characteristic of Cuatro Ciénegas. The small lakebed fills only in years of unusually high and intense precipitation, and the water table is very low, according to local sources. The soils in and near the playa are mostly fine-grained, light-colored alluvium derived from the predominating Cretaceous limestones of the area, but in some areas are quite reddish-brown due in part to sandstone-derived alluvium from the Colorada Formation, the type locality and only outcrop of which lies in the southern part of this basin (Charleston, 1974). These soils are not highly saline, as evidenced by general aspect and plant species composition (compare with lists in Henrickson, 1977), probably owing largely to the combination of very low rainfall, low water table, and small area of the drainage basin.

The central playa is quite sparsely vegetated with occasional *Prosopis glandulosa* Torr., *Koeberlinia spinosa* Zucc., and *Larrea tridentata* (DC.) Cov. Surrounding this is a zone of varying width composed of *Sericodes greggii* A. Gray, *Lycium arochae*, and *Atriplex obovata* Moq., several grasses including *Scleropogon brevifolius* Phil. and the annual *Bouteloua barbata* Lag., and scattered or local *Parthenium incanum* H.B.K., *Prosopis glandulosa*, *Opuntia leptocaulis* DC., and *Echinocereus enneacanthus* Engelm. The gray aspect of this



zone contrasts sharply with the olive-green of the surrounding typical Chihuahuan Desert lowland scrub, which here includes *Larrea tridentata*, *Flourensia cernua* DC., *Parthenium incanum*, *Cordia parvifolia* DC., and *Prosopis glandulosa*. A fairly narrow zone of intergradation is present. Although *Lycium arochae* is abundant in the "gray zone", it is quite uncommon in the *Larrea-Flourensia* zone, being found in association with these species only in small pockets or peninsulas surrounded by *Sericodes-Lycium-Atriplex* vegetation.

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