Two new Marina (Leguminosae) from the southern Baja California peninsula, Mexico

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León-de la Luz, J. L., J. J. Pérez-Navarro & R. Domínguez-Cadena (Herbario HCIB, Centro de Investigaciones Biológicas del Noroeste, CIBNOR, Apdo. 128, La Paz, Baja California Sur, México 23000). Two new Marina (Leguminosae) from the southern Baja California peninsula, Mexico. Brittonia 54: 72–77. 2002.—**Marina victoriae** and **M. brevis** are newly described species from the southern Baja California peninsula, Mexico. The former is a perennial herb locally abundant in the eroded hillsides at the foothills of Sierra de la Victoria, where an oak woodland and a dry tropical forest meet. The latter is an elusive ephemeral inhabiting a narrow strip of land between the mangroves and the desert scrub on an island in the Gulf of California. These two new species belong to the series *Chrysorrhizae*, a group native to the Gulf of California basin.

Key words: *Marina*, Gulf Islands, Sierra La Victoria, Baja California, endemism.

Notable efforts were made to document the botanical resources of the arid peninsula of Baja California through the 20th century; as a result, two excellent descriptions of the flora have been published (Shreve & Wiggins, 1964; Wiggins, 1980). Several areas still remain poorly known. Among these is the southern tip of the peninsula, also known as the Cape Region, a natural area with a high rate of endemism in plants. Since the early list of Brandegee (1891), through the modern recompilation of Lenz (1992) and the more recent exploration-recompilation by León-de la Luz et al. (1999), the list of known plants has increased substantially. The discovery of the following two new taxa is a result of the botanical exploration in this region and neighboring ones.

Although it had already been suggested by early botanists, some species of the genus *Marina* were segregated by Barneby (1977) from *Dalea* based on several consistent differences, such as the presence of only one ovule and ten pairs of chromosomes. In *Dalea* there are two ovules and eight pairs of chromosomes.

Marina consists of two sections, *Marina* and *Carroa*. The section *Marina* seems to have the Gulf of California basin as the main center of speciation. In this section, the series *Chrysorrhizae* (17 spp.) is definitively the larger; it is characterized mostly by short and firm pedicels, a pubescent calyx, and gland-sprinkled banner. The two new species proposed here belong to this series.

Marina (sect. *Marina* ser. *Chrysorrhizae*) **victoriae** León-de la Luz, sp. nov. (Fig. 1)

TYPE: MEXICO. Baja California Sur: Sierra de La Victoria, near San Antonio de la Sierra ranch, 23°45′N, 109°43′W, ca. 840 m, eroded hillsides in oak woodland, 20 Jan 1994 (fl, fr), *R. Domínguez-Cadena 1180* (HOLOTYPE, HCIB; ISOTYPE, NY).

Herbae graciles basi suffruticulosae; foliola 9–15-binata; racemi pedunculati capitati 5–9-flori, bracteae interflorales deciduae; calycis tubus 1.3–1.7 mm longus, dentibus pilosulo-sericeis 1 mm longis; petala bicoloria, vexilo albido-purpuro.

Slender microphylous, seemingly perennial herb from taproot ±2.5 mm diam. at

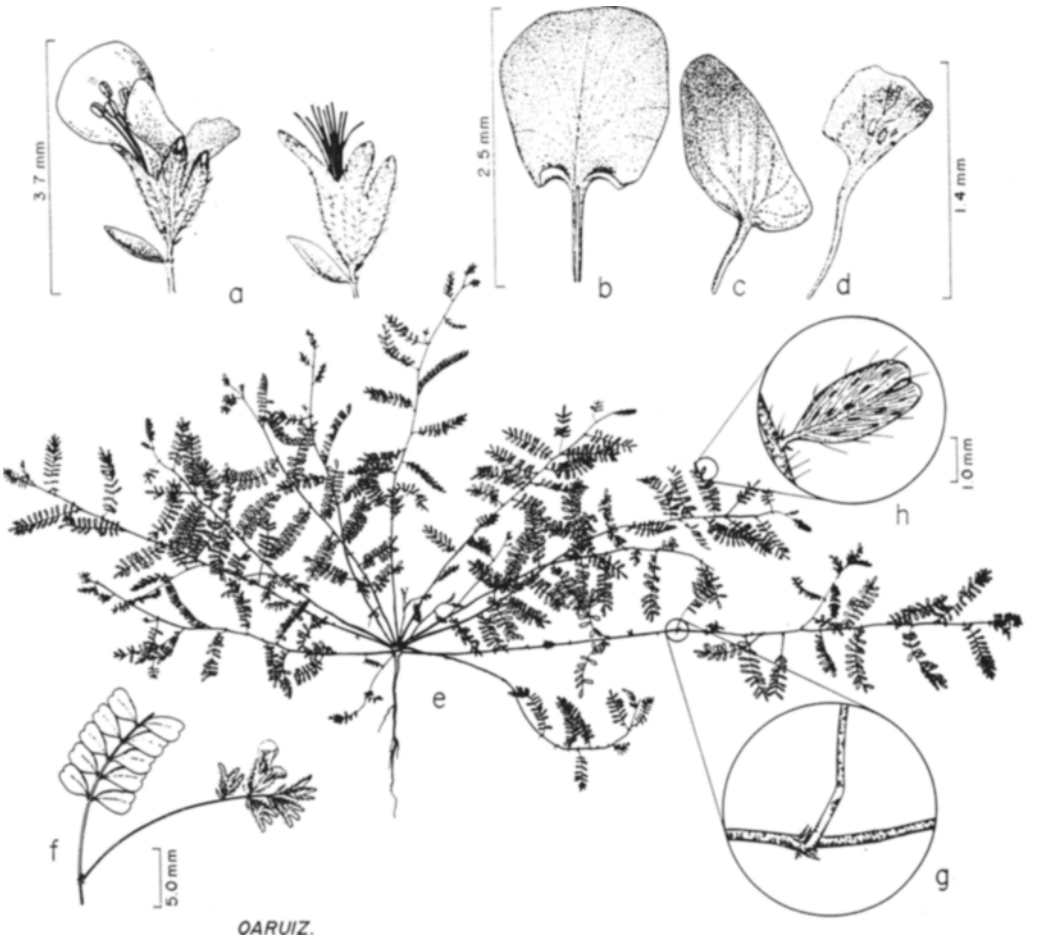

FIG. 1. *Marina victoriae*. **a.** Flower, showing the bractlet and stamen sheath. **b.** Keel (ventral view). **c.** Wing. **d.** Banner. **e.** Flowering specimen. **f.** Flowering branchlet. **g.** Branching node. **h.** Leaflet. (From *R. Domínguez 1180* and *M. Domínguez 2897*.)

apex, radiating from the root-crown, the filiform diffuse or hemifuse repeatedly forked stem attaining 2.5 mm diam., nearly smooth proximally, thinly pilosulous distally. Stipules lance-ovate, 0.7–1.4 mm, persistent. Leaf stalks including short petiole 4–8 mm long, the post-petiolular glands ovoid–acute, 0.1–0.25 mm diam.; leaflets 9–15 pairs, oblanceolate-ovate, obtuse, loosely conduplicate, the larger ones 2–2.5 × 0.6–0.8 mm, tuberculate-glandular dorsally, smooth. Peduncle filiform, 10–20 mm long; racemes loosely (3–)5–7-flowered; bracts narrowly ovate, nearly 1.5 mm long, deciduous at anthesis; flowers short-pedicellate, the glanduliform bracteoles to 0.35 mm long; calyx white-pilosulous below the herbaceous, purple-tipped, dorsally glabrous teeth, the tube prominently 10-nerved, ca. 1.3–1.7 mm long, the narrowly oblong teeth ca. 1 mm long, tipped with a prominent gland; petals bicolored, white and mainly amethyst-purple, the vexillum 2.5 mm long, its subquadrate blade ca. 2 × 1.4 mm, open at throat; keel blades ca. 1 × 1.4 mm, the wings 1.3–1.5 mm long, the claw 0.4–0.5 mm long, the obliquely-obovate blade 0.9 × 0.5 mm; androecium 10-merous, 2.8–3 mm long, the longest filament free for at least 1.2 mm, the yellowish gland-tipped anthers 0.2–0.3 mm long; ovule solitary; pod ±2 × 1.5 mm, mem-

branous at base, charged distally with an oblique crescent of small blister glands; ripe seeds not seen.

Additional specimens examined: MEXICO. **Baja California Sur**: Sierra de la Victoria, Rancho San Antonio de la Sierra, 23°45'S, 109°43'W, 840 m, 28 Sep 2000, *M. Domínguez L. 2897* (HCIB, NY), *2997* (HCIB, MEXU, SD).

Marina (sect. *Marina* ser. *Chrysorrhyzae*) **brevis** León-de la Luz, sp. nov. (Fig. 2)

TYPE: MEXICO. **Baja California Sur**: S point at San José I. (Gulf of California), 24°52'N, 110°35'W, 2 m, saline soil near a mangrove stand, 22 Oct 1995 (fl), *J. L. León-de La Luz 8061* (HOLOTYPE, HCIB; ISOTYPES, NY–2).

Herbae graciles radice annua; racemi pedunculati capitati 12(–15–20)-flori, bracteae interflorales deciduae 2 mm longae; foliola 9–17-binata; calycis tubus 1.8–2.2 mm longus, dentis calycini pilosulo-sericeis 0.7–1 mm longis; petala bicoloria albido-purpurea.

Slender microphyll, annual from taproot; stems radiating from the root crown, 1.5 mm at base, height 12–15 cm, some branches more delicate upward in the stem, thinly pilosulous to pilose in branches, leaflets, inflorescences and calyces. Stipules lance-ovate, 1–1.2 mm, persistent. Leaf stalks including short petiole 3–4 mm long, the post-petiolular glands ovoid-acute, 0.1–0.2 mm; leaflets 9–17 pairs, 3 × 1.5 mm, the undersurface with 20–25 tiny glands, some flaveolate, obovate-oblanceolar, obtuse, the upper surface glabrous. Peduncle filiform, 15–25 mm; racemes densely 12(–15–20)-flowered, the bracts lance-obovate, to 2 mm long, deciduous at maturity; pedicels very short; calyx externally white-pilose on all the teeth, the tube 1.8–2.2 mm, the teeth narrowly oblong ca. 0.7–1 mm, 2–3-nerved, purple-tipped; petals bicolored, white and purple, the vexillum falling as soon as it expands, 2.2–2.4 mm, open at throat; wings 1.8–2 mm long, the claw 0.2 mm long, the subquadrate blade 1.8 × 0.9 mm; keel blades small, ca. 0.6–0.8 mm; androecium 10-merous, 2.4–2.6 mm long, the longest filament free for at least 1 mm, the yellowish gland-tipped anthers 0.1–0.2 mm long; ovule solitary; pod ca. 2 × 1.5 mm, 1-seeded, charged centrally with large and small glands.

Additional specimens examined: MEXICO. **Baja California Sur**: Isla San José, Laguna del Manglar, Punta Sur, 24°52'N, 110°35'W, 2 m, 24 Oct 1996, *J. J. Pérez-Navarro 456* (HCIB, MEXU, NY, SD).

Distribution and Ecology

Both new species have restricted habitats. *Marina victoriae* has been collected only on eroded slopes in the foothills of Sierra de la Victoria, in a transitional vegetation between the dry tropical forest and an oak woodland; apparently it prefers shadier places than *M. parryi* (Torr. & A. Gray) Barneby, which also grows in the same environment. This area has been used for cattle raising for the last few centuries. At the present time, advanced erosion is seen since gullies and rills are common in the landscape. Soils are sandy, poor in organic matter, and derived from granitic rocks. The abundance of this species is local and clumped. Due to the grazing of goats and cows in the area, the only known population of *M. victoriae* should be considered as endangered. This is a perennial herb or subshrub; flowers appear after the rainy period that in the area begins in August and ends in September–October. Only a few flowers are developed in each spike. As in many *Marina*, the ripening of fruits occurs well after anthesis, so it is difficult to find individuals with both structures at the same time.

Marina brevis has a more restricted distribution than *M. victoriae*, and the only known population occupies a few hectares in the southern tip of San José Island, where the rains are erratic. This species could be described as an elusive ephemeral because, when enough water is available in the soil, it is able to complete its life cycle in as little as three or four weeks. During some years we tried to collect specimens, but the plants did not appear or died before anthesis because of lack of water in the soil. The only known population grows in stony clay soils in a strip of land behind of a mangrove stand jointly with some facultative halophytes such as *Atriplex barclayana* (Benth.) D. Diet. Due to the relative abundance of

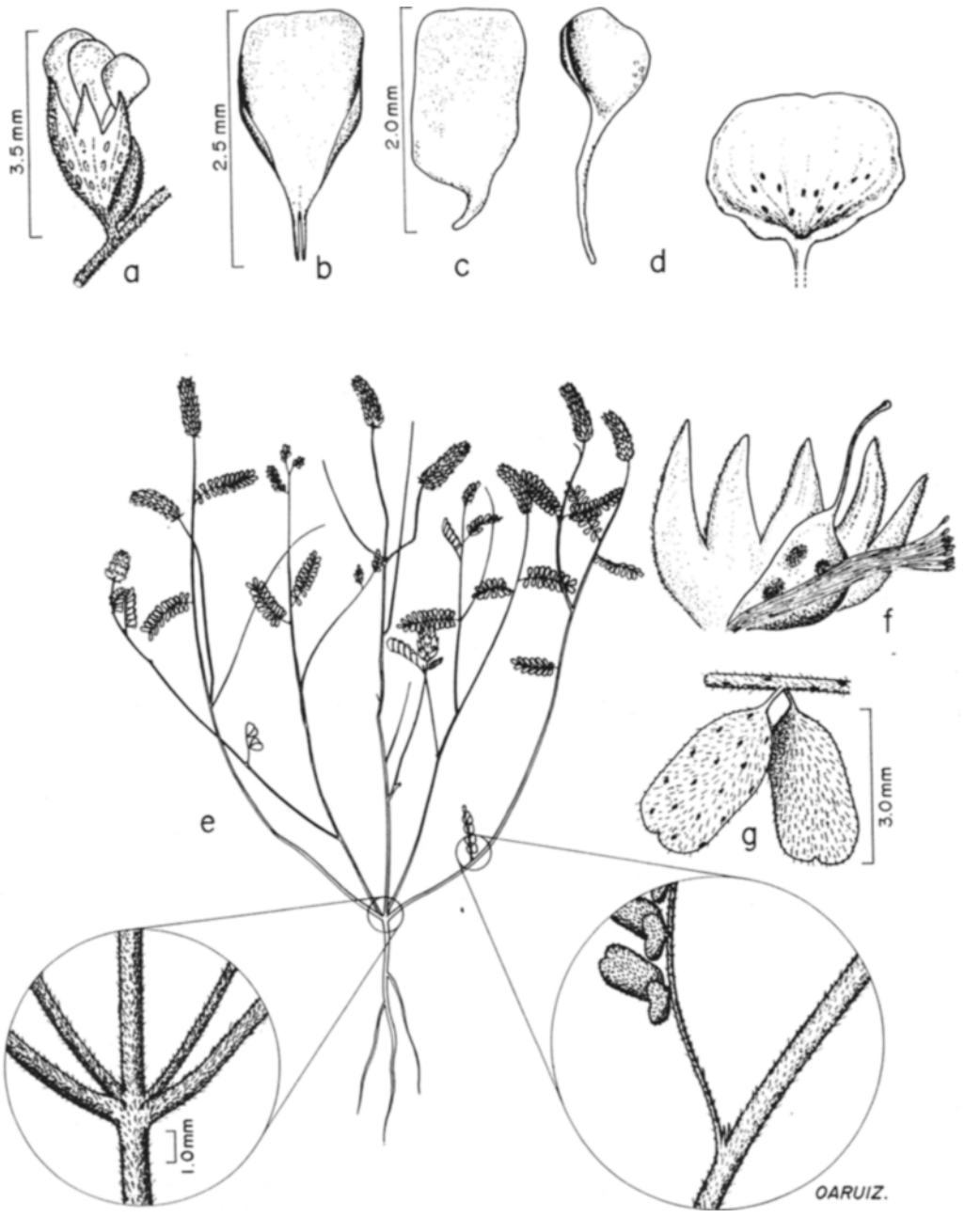

FIG. 2. *Marina brevis*. **a.** Flower. **b.** Keel (ventral view). **c.** Wing. **d.** Banner (profile and ventral view). **e.** Flowering specimen with details of root crown and leaf. **f.** Fruiting calyx and stamen sheath. **g.** Leaflet pair. (From *J. L. León-de la Luz 8061.*)

similar habitats in the region as that of the known population, it may be possible to find additional populations outside of the island, or even dispersed in other areas of the same region. Other *Marina* that grow on the hillsides are *M. parryi* and *M. vetula* (Brandegee) Barneby, but they are absent from the saline soils.

Taxonomic and Ecological Relationships

Marina brevis, *M. chrysorrhiza* (A. Gray) Barneby, *M. interstes* Barneby, and *M. peninsularis* (Rose) Barneby form a cluster of *Chrysorrhizae* native on sandy soils throughout the Baja California peninsula. The latter three seem to succeed each other in a replacement series going south to north in the peninsula. These four species could be considered slender annual herbs, with *M. brevis* being the most delicate and *M. peninsularis* the shrubbiest because it can reach 90 cm tall.

As distinctive characteristics from other *Chrysorrhizae*, this group is comprised of precociously flowering herbs with pliantly diffuse, never stiff or suffruticose stems, and small flowers (the vexillum <2.5 mm). Although *Marina* (*Petalostemon*) *evanescens* (Brandegee) Barneby also has small flowers, it is easily separated from them because of the reduction of the androecium to five or six stamens.

Marina brevis is sympatric with *M. parryi* and *M. vetula*, but they are easily differentiated. The former grows on saline soils, and the others are only found away from these habitats in hillsides and arroyos. Among other morphological characteristics, *M. parryi* is a perennial herb. Some first-year-flowering plants look like annual forms, but they have small round and flat leaflets distantly disposed along the rachis, and loose racemes, whereas *M. vetula* has practically glabrous stems but densely pilose racemes.

Because of the tiny leaflets and growth habit, *Marina victoriae* looks like *M. chrysorrhiza*. The pilosity in their young branches is similar. The forms of trichomes on the stems are useful to separate them. Also, *M. peninsularis* is morphologically similar to *M. victoriae*. *Marina victoriae* has bigger leaflets, the calyx has numerous glands, and the inflorescence is capitate and more densely flowered. Due to their geographical ranges and type of flowers, *M. interstes* and *M. capensis* are similar to *M. victoriae*, but the number of leaflets and growth habit easily differentiate them.

Key to species of Marina, series *Chrysorrhizae*, from the Cape Region of the Baja California peninsula (based on Barneby, 1977)

1. Androecium drastically reduced to 5(6) stamens ..... *M. evanescens*
1. Androecium 10-merous.
   2. Vexillum to 2.4 mm long; plants ephemerals ..... *M. brevis*
   2. Vexillum at least 2.5 mm long; plants annual and perennial herbs.
      3. Stems pilosulous, or at least at some upper nodes and distally, with relatively stiff, widely spreading or subretrorse hairs.
         4. Leaflets mostly 4–8 pairs, obovate to oblong-obovate; racemes mostly (8–)10–25-flowered; stems pubescent throughout length with appressed hair ..... *M. peninsularis*
         4. Leaflets mostly 8–11 pairs, narrowly oblong-oblanceolate; racemes shortly but loosely 4–12-flowered, the axis to 1 cm long in fruit; stems thinly pilosulous with erect hairs distally, glabrous or nearly so proximally ..... *M. chrysorrhiza*
      3. Stems glabrous or pubescent, but if pubescent the vesture strigulose-pilulous, the hairs subappressed or narrowly incurved-ascending (rarely subtomentulose), never widely divergent.
         5. Flowers small, the calyx 2.1–3 mm, the keel blades 2.2–3.7 mm.
            6. Leaflets 4–8 pairs; racemes mostly 1–2.5 cm long.
               7. Slender annuals with flexuously radiating stems ..... *M. interstes*
               7. Perennial or annual herbs with the main stem diffuse or hemifuse, repeatedly forked ..... *M. victoriae*
            6. Leaflets 11–18 pairs; racemes mostly 2.5–4.5 cm long; annual or perennial herbs ..... *M. capensis*
         5. Flowers larger, the calyx at least 3 mm, the keel blades mostly at least 4 mm long.
            8. Flowers of moderate size, the keel blade mostly 3.7–5 mm long; petals bicolored, the inner ones usually bright blue or purple in the inner half, white pale in outer half; leaflets of larger cauline leaves usually under 12 pairs.
               9. Intervals between the calyx-ribs charged from base to summit with a chain of (4–)5–6 small glands ..... *M. parryi*

9. Intervals between the calyx-ribs charged only above middle of tube with (1–) 2–3 glands.
   10. Stems mostly glabrous and glaucesent-pruinose; calyx glabrous externally; leaflets glabrous to hirsutulous dorsally; plants occurring in different habitats except sand dunes ..... *M. divaricata*
   10. Stems densely strigulose or tomentulose; calyx pubescent externally, as least above middle; leaflets strigulose-hirsutulous on both sides; plants known only on dunes and washes opening on the sea ..... *M. maritima*
8. Flowers large, the keel blade 5–7 mm long; petals all vivid blue, the wings and keel not pale along the outer edges; leaflets of larger cauline leaves >12 pairs.
   11. Calyx glabrous except for the thinly ciliolate orifice; leaflets of relatively thin texture 3–11 mm long ..... *M. oculata*
   11. Calyx pilosulous from base upward; leaflets carnosulous, 1–2.2 mm long ..... *M. catalinae*

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