
Eleocharis tenarum (Cyperaceae), a New Species from Durango and Zacatecas, Mexico

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ABSTRACT. *Eleocharis tenarum* S. González & M. González (Cyperaceae), an endemic to dry temperate forests in Mexico, is described from Zacatecas and Durango. It belongs to *Eleocharis* R. Brown sect. *Eleocharis* subser. *Truncatae* Svenson s.l. and can be recognized by its basally burgundy to rose-purple upper sheaths with oblique, not truncate or cuspidate apex, and its dark brown achenes that are finely reticulate with longitudinally elongated cells.

RESUMEN. Se describe *Eleocharis tenarum* S. González & M. González (Cyperaceae), nueva especie endémica de bosques de clima templado seco de los estados de Durango y Zacatecas, México. Forma parte de *Eleocharis* R. Brown sect. *Eleocharis* subser. *Truncatae* Svenson s.l. y se reconoce por sus vainas superiores basalmente de color rojo-vino a rosa-púrpura, con ápice oblicuo, no truncado ni cuspidado, y por su aquenio de color café oscuro finamente reticulado con celdillas longitudinalmente alargadas.

Key words: Durango, *Eleocharis*, IUCN Red List, Mexico, Zacatecas.

Eleocharis R. Brown (Cyperaceae) includes a wide diversity of groups (González & Peterson, 1997; González & Tena, 2000). No recent comprehensive worldwide taxonomic treatment of *Eleocharis* is available (Smith et al., 2002), and many species remain undescribed in Latin America. The subseries *Truncatae* Svenson (Svenson, 1932) includes species with the apex of the upper sheath truncate and usually cuspidate as well as other plants similar to the typical *Truncatae* in most aspects, but having the apex of the upper sheath oblique and not cuspidate. The species here described belongs to subseries *Truncatae* in this broad sense.

Eleocharis tenarum S. González & M. González, sp. nov. TYPE: Mexico. Zacatecas: Mpio. Sombrerete, Parque Nac. Sierra de Órganos, por vereda hacia la cascadita, en sitio arenoso cerca de arroyo, en bosque de *Pinus cembroides* y *Quercus*, 23°46'23"N, 103°47'38"W, 2350 m, 9 Aug. 2003, S. González 6808 con Georgina Tena (holotype, CIIDIR; isotypes, ENCB, IEB, MEXU, MO). Figure 1.

Eleochariti albibracteatae Nees & Meyen ex Kunth affinis sed ab ea caulibus altioribus, vagina superiore ad basim rubro-vinosa usque roseo-purpurea, spicula lanceolata pluriflora et achenio leviter reticulato differt; *E. dombeyanae* Kunth et *E. parishii* Britton similis sed ab eis vaginae superioris apice obliquo absque cuspidate, achenio reticulato et stylobasi conica differt.

Perennial, loosely caespitose, from ascendant to nearly vertical rootstocks from a horizontal rhizome; culms erect, somewhat stiff, 8–24(–31) cm × 0.6–0.9 mm, quadrangular and deeply sulcate or several-ridged, usually compressed, 0.3–0.4 mm thick, pale green, shiny. Basal sheaths loose, scarious, stramineous to pale purple-tinged, subtruncate to slightly oblique and rounded at the apex, easily disintegrating and often absent in herbarium specimens; upper sheath tight, cylindric, 1.2–4 cm, proximally deep burgundy to rose-purple or purple-striolate, distally pale green or stramineous, the apex of the upper sheath oblique and acute or slightly oblique and rounded at the apex, the mouth truncate to concave, the margin membranous, stramineous and minutely red-dotted or ± firm and callous, reddish or purple, lacking a cusp but sometimes the dorsal vein prolonged into a mucro not reaching the margin of the sheath or surpassing it by only 0.1–0.2 mm. Spikelets lanceoloid to ovoid-lanceoloid or narrowly fusiform, often somewhat compressed, 4.1–9.5 × 1.8–



Figure 1. *Eleocharis tenarum* S. González & M. González. —A. Habit. —B. Spikelet. —C. Achene. —D. Spikelet. —E. Achene. —F. Upper portion of distal leaf sheath. (A–C, F from the type *S. González et al.* 6808; D from *S. González et al.* 6020; E from *S. González et al.* 6416.) Scale bars: A = 1 cm; B–F = 1 mm.

2.3 mm, acute to subacuminate, rachilla 0.3–0.4 mm wide, ca. 13- to 26-flowered; floral scales polystichous, loosely arranged, appressed or subappressed, (2.2–)2.3–2.7 mm, 0.5–0.8 mm wide in lateral view, narrowly ovate, obtuse to acute, the midvein stramineous or reddish, the flanks membranous, burgundy to

red-purple, the margins and apex scarious, colorless, hyaline, cellulose-reticulate, 0.1–0.3 mm long; lowermost scale empty, amplexicaulous in immature spikelets, later subamplexicaulous, ovate, 1.8–2.4 mm, 1/5–1/3 the length of the spikelet, the apex translucent, to 0.8 mm, rounded to broadly acute; subprox-

imal scale empty or with flower. Perianth present, of ca. 5 to 7 erect bristles appressed to achene, quite variable in length, 0.1–1 mm, shorter than achene or equaling the achene body, colorless or slightly reddish brown, translucent, retrorsely scabrous with colorless irregular spines; style trifid; stamens 3, filaments 1.9–2.2 mm, not or barely exerted, colorless to pale reddish brown, anthers 1.1–1.3(–1.5) mm, yellow, the connective shortly prolonged. Achene 1–1.2(–1.3) mm including base and tubercle, the body (0.8–)0.9–1 × (0.65–)0.7 mm, trigonous with blunt slightly costulate angles and convex sides, obovoid to obpyriform in outline, chocolate to reddish or dark brown, finely striate-reticulate with many rows of longitudinally elongated cells, appearing nearly smooth to somewhat irregular, glossy, when immature yellow or lemon-green, reticulate and dark striolate; stylobase pyramidal to deltoid, slightly spongy, whitish, sometimes reddish brown, acute or minutely denticulate at the summit, contrasting with the color of the body of achene, 0.2–0.3 × 0.2–0.3 mm at the base.

Distribution and habitat. *Eleocharis tenarum* is known from southern Durango and Zacatecas, Mexico, on low mountains and on the eastern side of the Sierra Madre Occidental. It grows in patches in open, sandy or gravelly sites on igneous rocks between 2300 and 2700 m.s.m., in areas that may temporarily flood but that are dry most of the year. It is found in dry forests (*Pinus cembroides* Zuccarini and *Quercus* L.) or in semi-humid *Quercus–Pinus* L. forests, often associated with annual herbs, mainly *Tagetes micrantha* Cavanilles and *Muhlenbergia* Schreber.

IUCN Red List category. *Eleocharis tenarum* should be considered Near Threatened (NT) according to IUCN Red List criteria (IUCN, 2001) given its restricted, patchy distribution, habitat degradation by overgrazing practices, and the rapid changes that are occurring in the temperate forests of the region.

Etymology. It is a pleasure to dedicate this species to Georgina A. Tena-González and Sandra M. Tena-González, daughters of two of the authors (MSGE and JATF). They have enthusiastically participated in many botanical surveys of the CIIDIR herbarium, including the collection of the type of this species.

Discussion. *Eleocharis tenarum* belongs in *Eleocharis* subg. *Eleocharis* sect. *Eleocharis*. In its general aspect, it is morphologically similar to Mexican representatives of subseries *Truncatae*, especially *E. dombeyana* and *E. parishii*, from which *E. tenarum* differs in the oblique, nontruncate and noncuspidate apex of the upper sheath, the burgundy to rose color of the upper sheath, the achene that is finely reticulate with longitudinally elongated cells, and the conic, not mucronate or lanceolate stylobase. From *E. montevidensis* Kunth and *E. ignota* S. González & Reznicek, it differs in the apex of the upper sheath, the shape and color of the spikelet and floral scales, and the more finely reticulate achene. *Eleocharis tenarum* appears to be related to the complex of *E. albibracteata* in the similar apex of the upper sheath, but it differs mainly in its longer culms, longer and narrower spikelets with more flowers, longer proximal floral scale, and the more finely reticulate, bumpy achene. A comparison of these species is presented in a key.

KEY TO *ELEOCHARIS TENARUM* AND MORPHOLOGICALLY RELATED SPECIES

- 1a. Apex of the upper sheath oblique and acute or slightly oblique and rounded at the apex, membranous to slightly callous, without a cusp, sometimes a mucro 0.1–0.2 mm present 2
- 2a. Culms deeply sulcate; base of the upper sheath deep burgundy to rose-purple or purple-striolate; spikelets lanceoloid to ovoid-lanceoloid or narrowly fusiform, 13- to 26-flowered; floral scales burgundy to red-purple; achene (0.65–)0.7 mm wide, finely striate-reticulate with longitudinally elongated cells (30×). *E. tenarum*
- 2b. Culms slightly sulcate; base of the upper sheath purple or brown; spikelets ellipsoid to subfusiform, 2- to 8-flowered, floral scales reddish brown to almost black, colorless when immature; achene 0.7–0.9 mm wide, reticulate (30×) *E. albibracteata*
- 1b. Apex of the upper sheath truncate to very slightly oblique, callous, with a cusp (0.1–)0.5–2 mm long. 3
- 3a. Rhizomes thick, ligneous, not creeping; cusp on apex of the upper sheath (0.5–)0.8–2 mm long, 0.1–0.2 mm wide at the base *E. ignota*
- 3b. Rhizomes slender, creeping; cusp on apex of the upper sheath 0.1–1.2 mm long, 0.2–0.3 mm wide at the base 4
- 4a. Spikelets ovoid, ellipsoid, or subcylindrical; apex of floral scales broadly rounded, usually horizontally wrinkled; achene surface coarsely reticulate, appearing subcancellate (30×); stylobase pyramidal to deltoid, 0.1–0.3 mm long *E. montevidensis*
- 4b. Spikelets ovoid, narrowly lanceoloid, or cylindric, acute to subacute; apex of floral scales rounded to acute, not wrinkled; achene surface almost smooth to reticulate (30×); stylobase mucroniform to lanceoloid, 0.2–0.5 mm long 5
- 5a. Floral scales dark purple to almost black; achene broadly obovoid to obpyriform, 0.7–1 mm wide, nearly smooth (30×) *E. dombeyana*
- 5b. Floral scales brown to purple; achene ellipsoid or obovoid to narrowly obpyriform, 0.5–0.7 mm wide, reticulate (30×) *E. parishii*

Paratypes. MEXICO. **Durango:** Mpio. Durango, Km 51.2 carr. Durango–Mazatlán, 23°54'37"N, 104°58'50"W, 3 Sep. 1997, S. González 6020 con S. Acevedo (ANSM, CIIDIR, IEB, MEXU, MICH, NMSU); Mpio. Sunchil, Res. Biosfera La Michilía, Mesa El Burro, 23°24'N, 104°17'W, 18 Sep. 1985, S. González 3221 (CIIDIR, IEB, MEXU). **Zacatecas:** Mpio. Sombrerete, Parque Nac. Sierra de Órganos, mesita, ca. 0.7 km al S de la entrada al parque, 23°46'45"N, 103°47'26"W, 22 Sep. 2001, S. González 6416 con D. Enríquez, M. Adame y L. Chávez (CIIDIR, ZAC).

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