

ADDITIONS TO THE CYPERACEAE AND JUNCACEAE FLORA OF THE RÍO MAYO REGION, SONORA, MEXICO

Eric H. Roalson

*School of Biological Sciences
Washington State University
Pullman, WA 99164-4236, U.S.A.*

Thomas R. Van Devender and
Ana Lilia Reina G.

*Arizona-Sonora Desert Museum
2021 N. Kinney Rd.
Tucson, AZ 85743, U.S.A.*

ABSTRACT

Intensive floristic surveys of the Río Mayo region of the Mexican state of Sonora, particularly the Municipio de Yécora, have uncovered more species of Cyperaceae not previously reported from the region, the state of Sonora, or, in some cases, northern Mexico. Here we present 14 species of Cyperaceae and two species of Juncaceae not previously known to occur in the Río Mayo region, clarify the presence of three varieties of one *Cyperus* (Cyperaceae) species, and discuss the significance of the range extension involved with each new discovery. This brings the total number of Cyperaceae taxa known from the Río Mayo region to 99 and Juncaceae taxa to 14.

RESUMEN

Intensive floristic surveys of the Río Mayo region of the Mexican state of Sonora, particularly the Municipio de Yécora, have uncovered more species of Cyperaceae not previously reported from the region, the state of Sonora, or, in some cases, northern Mexico. Here we present 14 species of Cyperaceae and two species of Juncaceae not previously known to occur in the Río Mayo region, clarify the presence of three varieties of one *Cyperus* (Cyperaceae) species, and discuss the significance of the range extension involved with each new discovery. This brings the total number of Cyperaceae taxa known from the Río Mayo region to 99 and Juncaceae taxa to 14.

Gentry's 1942 Río Mayo Plants was a major contribution to the knowledge of the flora and vegetation of northwestern Mexico. The Río Mayo region includes the area in southern Sonora and adjacent Chihuahua between the Río Fuerte and Río Yaqui drainages. Beginning in the 1970s, a new network of roads, especially Mexico Federal Highway 16 (MEX 16) between Hermosillo, Sonora, and La Junta, Chihuahua, was completed in 1992 and provided access to many areas of the Sierra Madre Occidental not previously explored floristically (Búrquez et al. 1992). A revision of the Río Mayo flora (Martin et al. 1998) incorporated recent floras from the Cascada de Basaseachi (Spellenberg et al. 1996) and Nabogame (Laferrrière 1994), Chihuahua. The total of 2825 taxa reported for the Río Mayo region included 11 genera and 77 species of Cyperaceae and two genera and 12 species of Juncaceae.

An intensive floristic survey of the Municipio de Yécora, an area of 3,300 km² along MEX 16 in the Sierra Madre Occidental in eastern Sonora, was begun in 1995 (Reina et al. 1999; Van Devender et al. in press). The current total for the Municipio is 1648 taxa, raising the total for the Río Mayo region to over 3000

taxa. The families with the most taxa in the Municipio de Yécora flora are Compositae (248 taxa), Gramineae (186 taxa), Leguminosae (168 taxa), Cyperaceae (59 taxa), and Euphorbiaceae (56 taxa). The genus *Cyperus* with 29 species is especially diverse. This ongoing floristic work in the Río Mayo region has uncovered more species of Cyperaceae not previously reported from the region, the state of Sonora, or, in some cases, northern Mexico. Here we present 14 species of Cyperaceae and two species of Juncaceae not previously known to occur in the Río Mayo region, clarify the presence of three varieties of one *Cyperus* (Cyperaceae) species, and discuss the significance of the range extension involved with each new discovery. Specimens were determined by Eric H. Roalson, unless noted otherwise. Most of the noteworthy records are in ciénegas or other moist areas from 1200 to 2100 m elevation in oak woodland and pine-oak forest in the Municipio de Yécora, or the grasslands and mudflow barrens within them (Reina G. et al. 1999).

Bulbostylis barbata (Rottb.) C.B. Clarke

This species is previously known from the southeast United States, Martinique, Guatemala, and the Old World tropics (Kral 1971). *Bulbostylis barbata* appears to be quite weedy and expanding its range in North America (Kral 1971). This is the first report of the species in Mexico.

Voucher specimens. **MÉXICO. Sonora. Municipio de Yécora:** 14.7 km E of Maycoba, 7.7 km E of El Kípor on MEX 16 (KM 342), pine-oak forest, 28°26'04"N 108°33'36"W, 1460 m elevation, locally common herb in soil pocket in bare area within forest, 15 Sep 1999, *Van Devender 99-647* (WS), with A.L. Reina G.

Bulbostylis pubescens (J. & C. Presl) Svenson

This species is widespread in the lowlands to the south along the Pacific slope of the Sierra Madre including the Mexican states of Sinaloa, Nayarit, Jalisco, Guerrero, Mexico, Oaxaca, and Chiapas, and south through Central America and northern South America (Kral 1971; McVaugh 1993). This is the first report of the species from the Río Mayo region and the state of Sonora.

Voucher specimens. **MÉXICO. Sonora. Municipio de Yécora:** NW of the cemetery in Yécora, spare oak woodland on barren volcanic hilltops, 28°22'40"N 108°56'W, 1540 m elevation, locally common on moist rock surfaces, 23 Sep 1997, *Reina G. 97-1172* (ARIZ, CAS, MEXU, NY, WS), with T.R. Van Devender and W. Trauba; 1.9 km SSW of Las Víboras on MEX 16 on road to Trigo Moreno, bare mudstone area in open pine-oak forest, 28°21'50"N 108°49'34"W, 1620 m elevation, locally common annual, 17 Aug 1998, *Van Devender 98-992* (ARIZ, WS), with A.L. Reina G., M.E. Fishbein, and G.M. Ferguson; tributary of Arroyo Los Pilares near bridge, 24.7 km W of Maycoba on MEX 16, oak woodland with scattered pines in shady, narrow, steep canyon, 28°23'40"N 108°47'35"W, 1300 m elevation, locally common annual in moist depressions on bare surfaces, 13 Sep 1999, *Reina G. 99-515* (WS), with T.R. Van Devender.

Carex planostachys Kunze

This species is previously known from Texas to Guatemala, and in Mexico, it is known from as far northwest as Chihuahua (Hermann 1974). This is the first report of this species in Sonora and the Río Mayo region.

Voucher specimens. **MÉXICO. Sonora. Municipio de Yécora:** 5.2 km W of Yécora on MEX 16, pine-oak forest, 28°21'48"N 108°59'12"W, 1720 m elevation, 11 Mar 1996, *Van Devender 96-87* (ARIZ, MEXU, RSA), with A.L. Reina G., S.L. Friedman, and W. Trauba, determined by Merriam C. Fritts.

Carex thurberi Dewey

This species is known from Arizona and localities across Mexico (Sonora, Chihuahua, Jalisco, Veracruz, and Chiapas), as well as Guatemala (Hermann 1974; although see McVaugh 1993; Espejo & López F. 1997). This is the first report of this species for the Río Mayo region.

Voucher specimen. **MÉXICO. Sonora. Municipio de Yécora:** ca. 2 km (by air) W of Yécora, pine-oak forest, 28°22'15"N 108°57'30"W, 1580 m elevation, uncommon herbaceous perennial in moist soil, 21 Jul 1998, *Trauba 425-98* (WS).

Cyperus arsenei O'Neil & Ben.Ayers

This species is previously known from the western Mexican states of Baja California Sur, Nayarit, and Michoacán and the Distrito Federal (Tucker 1994). This is the first record of this species in the state of Sonora and the Río Mayo region.

Voucher specimens. **MÉXICO. Sonora. Municipio de Yécora:** 1 km W of Yécora on volcanic ridges/outcrops, W of cemetery, E facing slope with occasional *Arctostaphylos*, *Bouteloua*, other *Cyperus* sp., *Hackelochloa*, *Juniperus*, *Muhlenbergia*, occasional *Pinus*, *Quercus*, *Schizachyrium*, *Scleria*, and *TraDESCANTIA*, 28°22'12"N 108°56'23"W, ca. 1600 m elevation, 5 Sep 1996, *Roalson 1364* (WS).

Cyperus manimae HBK

In Gentry's Río Mayo Plants (Martin et al. 1998), varieties of *C. manimae* were not distinguished. Tucker (1994) recognized three varieties of *C. manimae*, with only one of these (*C. manimae* var. *asperrimus*) known from Sonora. *Cyperus manimae* var. *divergens* is known from Chihuahua and Coahuila south to Chiapas in Mexico and south to Costa Rica and *C. manimae* var. *manimae* is known from Baja California, Sonora, and Durango to Chiapas in Mexico, south to Guatemala and northern South America (Tucker 1994; Espejo & López F. 1997). All three varieties are present in the Río Mayo region. This increases the range of var. *asperrimus* and var. *manimae* into the Río Mayo region, and the range of var. *divergens* west from Chihuahua into Sonora.

var. **asperrimus** (Liebm.) Kük.

Voucher specimens. **MÉXICO. Sonora. Municipio de Yécora:** Río Yepachic near junction with Arroyo Hondo, ca. 2 km (by air) W of Chihuahua border, oak woodland with canyon riparian forest with *Acer*, *Alnus*, *Cupressus*, and *Prunus gentryi*, 28°27'10"N 108°32'15"W, 1380 m elevation, locally common perennial on shady slope, 27 Sep 1998, *Van Devender 98-1783* (WS), with A.L. Reina G.

var. **divergens** (HBK) Kük.

Voucher specimens. **MÉXICO. Sonora. Municipio de Yécora:** Cañada La Ventana (Arroyo El Otro Lado), 2.5 km (by air) ESE of Yécora, rocky stream canyon in pine-oak forest, 28°21'38"N 108°53'55"W, 1520 m elevation, solitary perennial on rocky slope, 18 Sep 1998, *Van Devender 98-1340* (WS), with A.L. Reina G. and W. Trauba; near Rancho El Pedregoso, 15.6 km N of Yécora on road to Agua Blanca, oak woodland with grassland, 26°30'04"N 108°55'38"W, 1460 m elevation, locally common perennial in mud at edge of pond, 24 Sep 1998, *Van Devender 98-1659* (WS), with A.L. Reina G. and W. Trauba.

var. *manimae*

Voucher specimens. **MÉXICO. Sonora. Municipio de Yécora:** Pueblo Viejo on Río Mayo in Navojoa, 27°06'N 109°25'40"W, ca. 35 m elevation, locally common herbaceous perennial, 2 Oct 1995, *Van Devender 95-1127* (ARIZ, WS), with A.L. Reina G.; 2 km E of Yécora, northeast of Las Cabañas Los Champinoñes, disturbed pine-oak forest, 28°22'51"N 108°54'53"W, 1600 m elevation, common 60 cm tall herbaceous perennial in moist places, 3 Oct 1996, *Flores M. 4969* (USON, WS), with J. Sánchez; ca. 2 km NW of Yécora on old road to Santa Rosa, 28°22'33"N 108°56'24"W, 1560 m elevation, uncommon perennial in moist soil, 17 Aug 1998, *Van Devender 98-1009* (EIU, WS), with A.L. Reina G., M.E. Fishbein, and G.M. Ferguson; Cañada La Ventana (Arroyo El Otro Lado), 2.5 km (by air) ESE of Yécora, rocky stream canyon in pine-oak forest, 28°21'38"N 108°53'55"W, 1520 m elevation, uncommon perennial on rocky slope, 18 Sep 1998, *Van Devender 98-1342* (WS), with A.L. Reina G. and W. Trauba; Río Maycoba at MEX 16 (20.5 km W of Maycoba, 28.6 km E of Yécora), 28°22'15"N 108°45'30"W, 1220 m elevation, rare sedge at base of cliff, 26 Sep 1998, *Reina G. 98-1711* (WS), with T.R. Van Devender; road to Río Yepachic from MEX 16 near Arroyo Hondo (11.5 km E of El Kípor on MEX 16), oak woodland, 28°26'50"N 108°32'20"W, 1480 m elevation, very common on disturbed roadside, 27 Sep 1998, *Van Devender 98-1808* (WS), with A.L. Reina G.

***Cyperus sphaerolepis* Boeck.**

This species is known from New Mexico, Arizona, and west Texas south to Puebla and the Distrito Federal in Mexico, and has been documented previously from Sonora (McVaugh 1993; Tucker 1994; Espejo & López F. 1997). This species was not listed, however, for the Río Mayo region (Martin et al. 1998). These specimens verify its presence there.

Voucher specimens. **MÉXICO. Sonora. Municipio de Yécora:** 1 km W of Yécora on mudflow ridges/outcrops, W of cemetery, E facing slope with occasional *Arctostaphylos*, *Bouteloua*, other *Cyperus* sp., *Hackelochloa*, *Juniperus*, *Muhlenbergia*, occasional *Pinus*, *Quercus*, *Schizachyrium*, *Scleria*, and *Tradescantia*, 28°22'12"N 108°56'23"W, ca. 1600 m elevation, 5 Sep 1996, *Roalson 1360*, 1362, and 1363 (all WS); NW of the cemetery in Yécora, sparse oak woodland on barren mudflow hilltops, 28°22'40"N 108°56'W, 1540 m elevation, uncommon sedge in wet area on bare mudflow hilltop, 23 Sep 1997, *Reina G. 97-1162* (WS) and *97-1183* (ARIZ, MEXU, WS), with T.R. Van Devender and W. Trauba; Ciénega de Camilo, 6.3 km E of El Kípor, 11.2 km W of Chihuahua border on MEX 16, sphagnum bog in clearing in shady riparian pine-oak forest, 28°46'43"N 108°31'50"W, 1580 m elevation, solitary in marsh, 25 Sep 1997, *Reina G. 97-1412* (WS), with T.R. Van Devender (Van Devender et al. in press); El Encinal, ca. 3.5 km E of Maycoba, 28°24'07"N 108°37'W, 1600 m elevation, locally common perennial in moist soil in open oak woodland, 20 Nov 1997, *Van Devender 97-1538* (ARIZ, WS), with A.L. Reina G., A.M. Rea, C. Cassa, and A.E. Gondor.

***Eleocharis macrostachya* Britton**

This is a widespread species known from much of the United States, southwestern Canada, and north-central Mexico. In Mexico it is previously known from Chihuahua, Durango, Aguascalientes, Jalisco, Michoacán, Mexico, Querétaro, the Distrito Federal, Oaxaca, Puebla, Hidalgo, and San Luis Potosí (McVaugh 1993). This is the first report for its presence in the Río Mayo region and the first report for Sonora.

Voucher specimen. **MÉXICO. Sonora. Municipio de Yécora:** Yécora, freshwater marsh, 28°22'02"N 108°55'47"W, 1505 m elevation, occasional herbaceous perennial in marsh, 16 Jul 1997, *Van Devender 97-816* (ARIZ, MEXU, USON, WS), with A.L. Reina G., D. Larson, P. Merlin, M.J. Martínez C., G. Fergu-

son, M. Kaib, and R.L. Bellsey; below El Llano on Mesa del Campanero (W of Yécora), 28°20'30"N 109°01'55"W, 2100 m elevation, locally common sedge in moist soil around well, 1 Jun 1999, *Reina G. 99-176* (WS), with T.R. Van Devender, K. Baker, P. West, and R. Scarborough.

Eleocharis svensoniana S.González E.

This species was described in 1985 from the state of Durango, Mexico (González E. 1985) and is also known from the states of Jalisco (McVaugh 1993) and Sinaloa (Espejo & López F. 1997). These collections represent the first record of this species in the Río Mayo region and Sonora and are a significant northward expansion of the species distribution from Durango and Sinaloa.

Voucher specimen. **MÉXICO. Sonora. Municipio de Yécora:** NW of the cemetery in Yécora, sparse oak woodland on barren volcanic hilltops, 28°22'40"N 108°56'W, 1540 m elevation, uncommon on moist rock surfaces, 23 Sep 1997, *Reina G. 97-1171* (WS), with T.R. Van Devender and W. Trauba; Ciénega de Camilo, 6.3 km E of El Kípor, 11.2 km W of Chihuahua border on MEX 16, sphagnum bog in clearing in shady riparian pine-oak forest, 28°46'43"N 108°31'50"W, 1520 m elevation, abundant sedge in mud at edge of ciénega, 27 Sep 1998, *Van Devender 98-1827* (WS), with A.L. Reina G. (Van Devender et al. in press).

Eleocharis yecorensis E.H.Roalson

This species was described in 1999 from material collected in a freshwater marsh on the outskirts of Yécora (Roalson 1999). It now appears that this species is quite widespread, with documented localities as far south as Nicaragua (Stevens et al. 2001).

Voucher specimens. **MÉXICO. Sonora. Municipio de Yécora:** 2.0 km S of MEX 16 at Yécora, fresh water marsh in grassland, 28°21'42"N 108°55'48"W, 1540 m elevation, 7 Sep 1996, *Reina G. 96-486* (ARIZ, WS), with T.R. Van Devender and W. Trauba; SSW side of Yécora, 28°22'09"N 108°56'04"W, ca. 1500 m elevation, 8 Sep. 1996, *Roalson 1385* (Type collection; MEXU, MICH, MO, RSA, UC, WS); Yécora, 28°22'02"N 108°55'47"W, 1,505 m, 16 Jul 1997, *Van Devender 97-810* (ARIZ, WS).

Fimbristylis complanata (Retz.) Link

This species is previously known from the New and Old World tropics (Kral 1971; McVaugh 1993), and prior to Martin et al.'s (1998) discovery of it in Chihuahua, the northernmost record of this species in the New World was from Durango. This is the first report of this species from Sonora. This species has also recently been collected by Richard S. Felger and colleagues N of Guaymas, Sonora (Municipio de Guaymas, Cañón La Balandrona, N side of Sierra El Aguaje, 28°04.27'N, 111°04.44'W, 825 ft. elevation, 19 Dec 2001, *Felger 01-659* (USON, ARIZ, MEXU), with J. Sánchez E. and P.A. West; R.S. Felger, pers. comm.).

Voucher specimen. **MÉXICO. Sonora. Municipio de Yécora:** Arroyo La Cueva, 8 km N of Yécora on the road to Agua Blanca, rocky stream canyon in pine-oak forest, 28°26'27"N 108°55'29"W, 1520 m elevation, uncommon perennial in moist soil at edge of stream, 24 Sep 1998, *Van Devender 98-1633* (WS), with A.L. Reina G. and W. Trauba.

Fimbristylis decipiens Kral

This species was described by Kral in 1971 "... to represent an intermediate morphology between *F. dichotoma* and *F. annua*." It is difficult to tell *F. decipiens*

from *F. dichotoma* and *F. annua*, but the two specimens listed below seem to fall within Kral's circumscription. Kral recognized this species in the southeast United States, but suggested it was likely in Central and South America and the Old World (Kral 1971). This is the first report for Sonora and the Río Mayo region.

Voucher specimen. **MÉXICO. Sonora. Municipio de Yécora:** 2.1 km W of Arroyo Hondo, 6.1 km W of Chihuahua border on MEX 16, open pinyon-juniper-oak woodland on steep pink and white volcanic ash, 28°26'24"N 108°33'20"W, 1400 m elevation, 25 Sep 1997, *Reina G. 97-1374* (ARIZ, MEXU, NY, WS), with T.R. Van Devender; Arroyo El Toro on NE edge of Yécora, 28°22'45"N 108°55'15"W, 1520 m elevation, locally common sedge in mud near stream, 2 Oct 1998, *Van Devender 98-1997* (WS), with A.L. Reina G.

***Fimbristylis pentastachya* Boeck.**

This species has been traditionally known from southern Mexico (Kral 1971). McVaugh (1993) listed *F. pentastachya* from southern Sonora and Martin et al. (1998) listed it for the Río Mayo region in Chihuahua. This collection expands its range into the Sonoran portion of the Río Mayo region.

Voucher specimen. **MÉXICO. Sonora. Municipio de Yécora:** 1.0 km SSW of Las Viboras on MEX 16 on road to Trigo Moreno, bare mudstone area in open pine-oak forest, 28°22'18"N 108°49'42"W, 1620 m elevation, uncommon herbaceous perennial in moist soil, 17 Aug 1998, *Van Devender 98-998* (WS), with A.L. Reina G., M.E. Fishbein, and G.M. Ferguson.

***Lipocarpa maculata* (Michx.) Torr.**

This species is previously known from the southeastern United States, in Mexico the states of Nayarit, Jalisco, Veracruz, and Chiapas, Central and South America, and the West Indies, although this species is thought to be uncommon in Mexico (McVaugh 1993). This is the first report of this species from the Río Mayo region and the state of Sonora, with the closest documented locality to the south in Jalisco and Nayarit (Espejo & López F. 1997).

Voucher specimen. **MÉXICO. Sonora. Municipio de Yécora:** SSW side of Yécora, 28°22'09"N 108°56'04"W, approximately 1500 m elevation, 8 Sep. 1996, *Roalson 1389* (WS); Cañada La Ventana (Arroyo El Otro Lado), 2.5 km (by air) ESE of Yécora, rocky stream canyon in pine-oak forest, 28°21'38"N 108°53'55"W, 1520 m elevation, locally abundant dwarf sedge on shallow soil on mud flow slope, 1 Oct 1998, *Reina G. 98-1967* (ARIZ, WS), with T.R. Van Devender and W. Trauba.

***Scleria interrupta* Rich.**

Two collections from the Río Mayo region apparently fall within the circumscription of *Scleria interrupta* (Konraed Camelbeke, pers. comm.). This is an extreme range extension with the closest localities of this species in Chiapas (Espejo & López F. 1997). The two collections vary somewhat in the characteristics of pubescence and extent of the tubercles on the achene. *Reina G. 97-1373* has achenes with a large number of tubercles covering the surface which at times approach a reticulate pattern and most of the bracts subtending the spikes are covered in bristly hairs on the margins and midrib. This appears to fit well within the circumscription of *S. interrupta*, somewhat tending towards the sometimes-segregate *S. pinetorum* Britton which is included in synonymy of *S.*

interrupta here (Core 1936; Raynal 1976; Konraed Camelbeke, pers. comm.). The other collection, *Reina G. 97-1174*, includes plants with achenes that are mostly smooth with a few tubercles at the achene apex and the bracts subtending the spikes are often near glabrous with few, scattered, bristly hairs. These plants do not fit as well in the circumscription of *S. interrupta*, and approach *S. verticillata* Muhl. (due to the lack of bristly hairs), or maybe *S. distans* Poir. (due to the smooth achenes; Core 1936). For now these two collections are treated as *S. interrupta*, but more detailed studies of the variation in achene ornamentation and pubescence in these annual *Scleria* species is necessary.

Voucher specimens. **MÉXICO. Sonora. Municipio de Yécora:** NW of the cemetery in Yécora, spare oak woodland on barren volcanic hilltops, 28°22'40"N 108°56'W, 1540 m elevation, locally common on moist rock surface, 23 Sep 1997, *Reina G. 97-1174* (ARIZ, NY, WS), with T.R. Van Devender and W. Trauba; 2.1 km W of Arroyo Hondo, 6.1 km W of Chihuahua border on MEX 16, open pinyon-juniper-oak woodland on steep pink and white mottled volcanic ash, 28°26'24"N 108°33'20"W, 1400 m elevation, locally common in moist soil depression on rocky slope, 25 Sep 1997, *Reina G. 97-1373* (WS), with T.R. Van Devender.

Juncus dichotomus Elliott

This species is quite widespread, occurring from Alaska, across the United States, Mexico, Central America, and South America (Balslev 1996; Espejo & López F. 1996; Brooks & Clemants 2000). This is the first report of *J. dichotomus* for the Río Mayo region.

Voucher specimens. **MÉXICO. Sonora. Municipio de Yécora:** El Divisidero (El Bordo), 1 km SE of El Llano on road to Bermudez, Mesa del Campanero, pine-oak forest, 28°16'48"N 109°02'31"W, 1800 m elevation, common rush in moist soil, 26 May 1996, *Reina G. 96-244* (ARIZ, MEXU, NY, WS), with T.R. Van Devender, A. Búrquez M., and L. Varela; Mesa del Campanero, Arroyo Largo, upper tributary or Barranca El Salto, pine-oak forest, 28°21'18"N 109°01'48"W, 2000 m elevation, locally common, 14 Jul 1997, *Van Devender 97-698* (ARIZ, WS), with A.L. Reina G., P. Merlin, A. Búrquez M., G. Ferguson, D. Larson, M. Kaib, and M.J. Martínez C.; Arroyo Hondo, 11.5 km E of El Kípor, 4 km W of Chihuahua border on MEX 16, pine-oak forest, 28°26'30"N 108°32'30"W, 1460 m elevation, locally common herbaceous perennial in water in rocks, 25 Sep 1997, *Reina G. 97-1392* (WS), with T.R. Van Devender; 2.3 km above Restaurant Puerto de la Cruz on road to microwave tower, Mesa del Campanero, pine-oak forest, 28°22'18"N 109°01'54"W, ca. 2150 m elevation, uncommon herbaceous perennial on moist roadside, 16 Aug 1998, *Reina G. 98-939* (WS), with T.R. Van Devender, M.E. Fishbein, R. Spellenberg, and G.M. Ferguson; Cañada La Ventana (Arroyo El Otro Lado), 2.5 km (by air) ESE of Yécora, rocky stream canyon in pine-oak forest, 28°21'38"N 108°53'55"W, 1520 m elevation, solitary clump in moist soil in narrow side canyon, 18 Sep 1998, *Van Devender 98-1303* (ARIZ, WS), with A.L. Reina G. and W. Trauba; Ciénega de Camilo, 6.3 km E of El Kípor, 11.2 km W of Chihuahua border on MEX 16, sphagnum bog in clearing in shady riparian pine-oak forest, 28°46'43"N 108°31'50"W, 1520 m elevation, solitary rush in moist soil, 27 Sep 1998, *Van Devender 98-1850* (WS), with A.L. Reina G. (Van Devender et al. in press).

Juncus liebmanii J.F. Macbr. var. **polycephalus** Balslev

This species is known from Chihuahua in Mexico south to Ecuador. The northern Mexican collections are considered part of *J. liebmanii* var. *liebmanii* or var. *polycephalus* Balslev (Balslev 1996). The Sonoran collection belongs to var. *polycephalus*. This is the first report of this species for Sonora and the Río Mayo region.

Voucher specimens. **MÉXICO. Sonora. Municipio de Yécora:** Arroyo La Cueva, 8 km N of Yécora on the road to Agua Blanca, rocky stream canyon in pine-oak forest, 28°26'27"N 108°55'29"W, 1520 m elevation, uncommon perennial in moist soil at edge of stream, 24 Sep 1998, *Van Devender 98-1634* (WS), with A.L. Reina G. and W. Trauba.

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REFERENCES

- BALSLEV, H. 1996. Flora neotropica. Monograph 68. Juncaceae. The New York Botanical Garden, Bronx.
- BROOKS, R.E. and S.E. CLEMANTS. 2000. Juncaceae. In: Flora of North America Editorial Committee, Flora of North America, Volume 22. Oxford University Press, Oxford, UK. Pp. 211–255.
- BÚRQUEZ, A., A. MARTÍNEZ Y., and P.S. MARTIN. 1992. From the high Sierra Madre to the coast: changes in vegetation along highway 16, Maycoba-Hermosillo. In: K.F. Clark, J. Roldán, and R.H. Schmidt, eds. Geology and Mineral Resources of the Northern Sierra Madre Occidental. Guidebook, El Paso Geological Survey Publication No. 24, El Paso. Pp. 239–252.
- CORE, E.L. 1936. The American species of *Scleria*. Brittonia 2:1–105.
- ESPEJO S., A. and A.R. LÓPEZ F. 1996. Las Monocotiledóneas Mexicanas. Una sinopsis florística. 1. Lista de referencia. Parte VI. Dioscoreaceae a Nolinaceae. Consejo Nacional de la Flora de México, A. C., UAM Iztapalapa, CONABIO. México, D.F.
- ESPEJO S., A. and A.R. LÓPEZ F. 1997. Las Monocotiledóneas Mexicanas. Una sinopsis florística. 1. Lista de referencia. Parte V. Cyperaceae. Consejo Nacional de la Flora de México, A. C., UAM Iztapalapa, CONABIO. México, D.F.
- GENTRY, H.S. 1942. Río Mayo plants. A Study of the Río Mayo, Sonora. Carnegie Institution of Washington Publication 527, Washington, D.C.
- GONZÁLEZ E., M.S. 1985. Tres nuevas especies Mexicanas de Cyperaceae. Phytologia 57: 381–385.
- HERMANN, F.J. 1974. Manual of the Genus *Carex* in Mexico and Central America. U.S. Dept. Agric. Agric. Handbook No. 467.
- KRAL, R. 1971. A treatment of *Abildgaardia*, *Bulbostylis* and *Fimbristylis* (Cyperaceae) for North America. Sida 4:57–227.
- LAFERRIÈRE, J.E. 1994. Vegetation and flora of the Mountain Pima village of Nabogame, Chihuahua, Mexico. Phytologia 77:102–140.
- MARTIN, P.S., D. YETMAN, M. FISHBEIN, P. JENKINS, T.R. VAN DEVENDER, and R.K. WILSON. 1998. Gentry's Río Mayo Plants. The University of Arizona Press, Tucson.

- McVAUGH, R. 1993. Flora Novo-Galiciana. Volume 13. Limnocharitaceae to Typhaceae. The University of Michigan Herbarium, Ann Arbor, Michigan.
- RAYNAL, J. 1976. Notes Cyperologiques: 27. Identification de deux *Scleria* de Poiret. *Adansonia*, ser. 2, 16:211–217.
- REINA G., A.L., T.R. VAN DEVENDER, W. TRAUBA, and A. BÚRQUEZ M. 1999. Caminos de Yécora. Notes on the vegetation and flora of Yécora, Sonora. In: D. Vasquez del Castillo, M. Ortega N., C.A. Yocupicio C., eds. *Symposium Internacional sobre la Utilización y Aprovechamiento de la Flora Silvestre de Zonas Áridas*, Universidad de Sonora, Hermosillo. Pp. 137–144.
- Roalson, E.H. 1999. *Eleocharis yecorensis* (Cyperaceae), a new species of spike-sedge from Mexico. *Aliso* 18:57–60.
- SPELLENBERG, R.S., T. LEBGUE, and R. CORRAL D. 1996. A specimen-based, annotated checklist of the plants of Parque Nacional "Cascada de Basaseachi" and immediately adjacent areas, southwestern Chihuahua, Mexico. *Listados Florísticos de México*, Instituto de Biología, Universidad Nacional Autónoma de México, México, D.F.
- STEVENS, W.D., C. U. ULLOA, A. POOL, and O.M. MONTIEL (eds.). 2001. *Flora de Nicaragua*. Missouri Botanical Garden Press, St. Louis.
- TUCKER, G.C. 1994. Revision of the Mexican species of *Cyperus* (Cyperaceae). *Syst. Bot. Monogr.* 43:1–213.
- VAN DEVENDER, T.R., A.L. REINA G., M.C. PEÑALBA G., and C.I. ORTEGA R. In press. The Ciénega de Camilo: a threatened habitat in the Sierra Madre Occidental of eastern Sonora, Mexico. *Madroño*.