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 (Laferrière 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 TR. Van Devender and W. Trauba; 1.9 km SSW of Las Viboras 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 TR. 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.

**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.


**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.


**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:** Rio Yepachic near junction with Arroyo Honda, ca. 2 km (by air) W de Chihuahua, 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.

var. manimae


**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. **MEXICO. 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 clearings 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°57"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 Rio Mayo region and the first report for Sonora.

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).


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.).


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 Rio Mayo region.


**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 Rio Mayo region in Chihuahua. This collection expands its range into the Sonoran portion of the Rio Mayo region.

Voucher specimen. **MÉXICO. Sonora. Municipio de Yécora:** 1.0 km SSW of Las Víboras 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.

**Lipocarpha 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 Rio Mayo region and the state of Sonora, with the closest documented locality to the south in Jalisco and Nayarit (Espejo & López F. 1997).


**Scleria interrupta** Rich.
Two collections from the Rio 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.


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.


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 Rio Mayo region.

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