

Cyperaceae in Mexico: Diversity and distribution

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Abstract

Background: Cyperaceae, with about 5,500 species and 90 genera worldwide, are the third largest family among Monocots. A unique combination of morphological and karyotypical features, among which stand holokinetic chromosomes, favors a rapid evolution and diversification and a high level of endemism in some groups. Preliminary checklists of Mexican sedges have been published but an updating of the taxonomy and nomenclature of the group for the country is required.

Questions: How many and which species and genera of Cyperaceae are in Mexico?, what patterns of geographic distribution display those species?, which are the main gaps in the systematic knowledge in the family?

Study site and years of study: Mexico, 1990 to 2016.

Methods: A database of Mexican Cyperaceae was generated with basis in literature review, study of herbarium specimens (11 herbaria in Mexico and the United States) and field work, the last mainly focused on *Carex*. Diversity and endemism level were calculated. Besides, we analyzed in different space scales their distributional range.

Results: Our dataset includes 460 species and 20 infraspecific taxa in 21 genera that belong to 10 of the 17 tribes of the family. Subfamily Cyperoideae includes almost 100 % of the Mexican sedges, as only one representative of subfamily Mapanioideae is known for the country. At the generic level, a drastic reduction in number (21) in comparison to previous inventories (27) results of recent phylogenetic and taxonomic rearrangements. The most diverse genera are *Carex* (138 taxa) and *Cyperus* (125), followed by *Rhynchospora* (65) and *Eleocharis* (57). Sedges in Mexico are found from sea level to above 4,300 m, in all types of vegetation. The highest diversity was found for Chiapas (237 taxa, 52 % of the total) and Veracruz (206 taxa, 45 %), followed by Oaxaca and Jalisco. Two genera (*Cypringlea* and *Karinia*) and 111 species or infraspecific taxa are endemic to Mexico (24 %), 43 of them micro-endemic (only known from one state in the country). Endemism increases to 57 % when the biogeographic extension known as Megamexico is included. Forty six names are excluded from the Mexican flora.

Conclusions: Regardless of the addition of taxa and refining of the databases, the checklist presented here is still preliminary. Collection deficiencies and insufficient taxonomic revision for Mexican sedges are reflected in gaps in their knowledge. There are at least 45 undescribed species; including them the richness of Mexican sedges would exceed 500 species. Many complexes of species are in need of taxonomic revision, mainly in *Carex* but also in *Bulbostylis*, *Cyperus*, *Eleocharis*, *Rhynchospora* and *Scleria*. To advance in the inventory and better understanding of the diversity of Mexican Cyperaceae, we propose some research topics to be addressed in the short term.

Key words: distribution, endemism, checklist, sedges, taxonomy.

Resumen

Antecedentes: La familia Cyperaceae es la tercera más grande entre las Monocotiledóneas, con unas 5,500 especies y 90 géneros. Presenta una combinación única de rasgos morfológicos y cariotípicos entre los que destacan los cromosomas holocinéticos (con centrómero no definido), lo cual favorece una rápida evolución cromosómica, una gran diversificación, altos ritmos de especiación y, en algunos grupos, altos grados de endemismo. Aunque se han publicado listas de las ciperáceas mexicanas, se requiere una actualización del conocimiento taxonómico y nomenclatural del grupo para el país.

Pregunta: ¿Cuántas y cuáles especies y géneros de Cyperaceae hay en México?, ¿Qué patrones de distribución geográfica presentan las especies?, ¿cuáles son las principales deficiencias en el conocimiento taxonómico de la familia?

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Sitio y años de estudio: México, de 1990 a 2016.

Métodos: Se generó una base de datos de las ciperáceas mexicanas a partir de revisión de literatura, estudio de especímenes en 11 herbarios de México y Estados Unidos y trabajo de campo, este último enfocado principalmente a *Carex*. Con base en esta información se cuantificó su riqueza y nivel de endemismo y se analizó a diferentes escalas espaciales su distribución geográfica.

Resultados: Se registran 460 especies y 20 taxa infraespecíficos de 21 géneros. Diez de las 17 tribus de la familia se encuentran representadas en México. La subfamilia Cyperoideae incluye casi el 100 % de las especies mexicanas, ya que para el país se conoce solamente un representante de la subfamilia Mapanioideae. Se reportan menos géneros (21) en comparación a inventarios previos (27), derivado de arreglos taxonómicos con base en estudios filogenéticos recientes. Los géneros más diversos son *Carex* (138 taxa) y *Cyperus* (125), seguidos por *Rhynchospora* (65) y *Eleocharis* (57). Cyperaceae tiene distribución cosmopolita. En México, sus especies se encuentran desde el nivel del mar hasta a más de 4,300 m, en todos los tipos de vegetación. A nivel estatal, la mayor diversidad se encontró para Chiapas (237 taxa, 52 % del total) y Veracruz (206 taxa, 45 %), seguidos por Oaxaca y Jalisco. Dos géneros (*Cypringlea* y *Karinia*) y 111 especies o taxa infraespecíficos son endémicos al país (24 %), 43 de ellos microendémicos (solo se registran de un estado). El endemismo se incrementa a 57 % cuando se calcula a nivel de las regiones de Megaméxico. Muchos nombres incluidos en registros previos corresponden a sinónimos y 46 nombres son excluidos de la flora del país.

Conclusiones: El listado florístico aquí presentado incluye varias adiciones a la flora ciperológica de México y actualizaciones nomenclaturales, a pesar de lo cual es todavía muy preliminar. La falta de suficientes colecciones y de revisiones taxonómicas de las ciperáceas mexicanas se refleja en huecos en su conocimiento. Hay por lo menos 45 especies por describir; si éstas se incluyen, la riqueza de ciperáceas mexicanas excedería las 500 especies. Se requieren revisiones taxonómicas en muchos complejos de especies en *Carex*, *Bulbostylis*, *Cyperus*, *Eleocharis*, *Rhynchospora* y *Scleria*. Se sugieren líneas de investigación futura para inventariar y caracterizar de manera más integral la diversidad de las ciperáceas mexicanas.

Palabras clave: ciperáceas, distribución, endemismo, listado, taxonomía.

Cyperaceae (Poales) are a cosmopolitan, monophyletic family, the third largest among Monocots after Orchidaceae and Poaceae and the seventh among angiosperms, with about 5,500 species (Muasya *et al.* 2009a, b, Escudero & Hipp 2013, Govaerts *et al.* 2015). Their origins are in the late Cretaceous (Escudero & Hipp 2013) in what is now South America (Spalink *et al.* 2016). Known as sedges, they superficially resemble grasses or rushes, Juncaceae being its sister group (Jones *et al.* 2007).

Cyperaceae possess a unique combination of cytogenetical features: holokinetic chromosomes, possibility of inverted meiosis, and pseudomonad development (asymmetric tetrads). These characteristics favor karyotype differentiation for agmatoploidy (fission), symploidy (fusion), and polyploidy (Luceño & Guerra 1997) as well as a broad variation in chromosome number ($2n = 4$ to $2n \geq 200$) (Roalson 2008). Chromosomes evolve more dynamically in sedges than in any other group of flowering plants and this, in turn, favors a rapid evolution and diversification and a high level of endemism in some groups (Hipp *et al.* 2006, 2009).

Sedges occur in a variety of habitats, being common in moist areas like wetlands, marshes, swamps, riverbanks, ponds and sandbank environments (Goetghebeur 1998), but they are well represented also in dry areas in many kinds of vegetation, including xerophytic scrub. Cyperaceae include several worldwide distributed genera. The largest genus is *Carex* L., one of the most species rich genera among angiosperms (Reznicek 1990a), with about 1,983 species, or nearly 2,000 species with the merger of satellite genera (The Global Carex Group 2015, 2016).

Most species have a great environmental value (*e.g.*, as habitat and food for wild species and soil stabilizers) and many have ethnobotanical and economic importance (Bye 1979, Diego-Pérez 1995, Simpson & Inglis 2001, Ludlow-Wiechers & Diego-Pérez 2002). Some are among the world's worst weeds, *e.g.*, *Cyperus rotundus* L., *C. esculentus* L. and *Fimbristylis miliacea* (L.) Vahl (Bryson & Carter 2008). Other species are used as food, as the tuberous nodules on the rhizomes of *Cyperus esculentus* and *Eleocharis dulcis* (Burm. f.) Trin. ex Hensch., or the rhizomes and tender young shoots of three species of *Schoenoplectus* (Rchb.) Palla, that were used by Native Americans (Rink & Licher 2015). Among the ornamentals are *Cyperus alternifolius*

Author Contributions:

M. Socorro González-Elizondo compiled the data, curated databases, wrote and reviewed the manuscript. Anton A. Reznicek compiled the data, curated databases, wrote and reviewed the manuscript. Jorge A. Tena-Flores analyzed the data, made figures, and critically reviewed the manuscript.

L., *C. involucratus* Rottb. and *C. papyrus* L. Several species of *Cyperus* L., *Eleocharis* R. Br. and *Schoenoplectus* are used in phytoremediation (Rice *et al.* 1997, Wang *et al.* 2010).

Among the taxonomic reviews of Cyperaceae for Mexico or larger regions including the country are those for *Abildgaardia*, *Bulbostylis* & *Fimbristylis* (Kral 1971), *Carex* (Hermann 1974), *Cyperus* (Tucker 1994), *Eleocharis* (Svenson 1929, 1932, 1934, 1937, 1939, 1957), *Fuirena* (Kral 1978), *Lipocarpus* (Goetghebeur & Van den Borre 1989), *Rhynchospora* (Küken-thal 1949, 1950a, b, 1951, Thomas 1984, 1992, 1994), *Scleria* (Core 1936, 1965), as well as sections of *Carex* (Reznicek 1986, 1993a, Reznicek & González-Elizondo 2001a, 2001b), *Cyperus* (Denton 1978), and *Hypolytrum* (Alves *et al.* 2015). Treatments of Cyperaceae for regional floras in Mexico include those in Flora Novo-Galiciana (McVaugh 1993, Reznicek 1993b, Tucker & McVaugh 1993); Flora Mesoamericana (Adams 1994); Yucatan (Diego-Pérez 1995); Guerrero (Diego-Pérez 1997); Veracruz (Diego-Pérez 2008, 2012) and Valle de México (González-Elizondo 2001).

Additional references for the family in Mexico include descriptions of new taxa (*e.g.*, Reznicek 1982, 1990b, González-Elizondo 1985, Tucker 1982, 1986, Cochrane 1981, Kral & Thomas 1986, Reznicek & González-Elizondo 1995, 1997, 1999, 2001a, González-Elizondo & Reznicek 1997, 2005, Roalson 1999, Strong & González-Elizondo 2000, Ramos-Álvarez & Diego-Pérez 2002, González-Elizondo *et al.* 2005, 2007a, 2009, Reznicek *et al.* 2007, Rosen 2009, Saarela *et al.* 2010, Gómez-Sánchez *et al.* 2012, LeBlond *et al.* 2015); data on taxonomy or distribution (González-Elizondo & Rzedowski 1983, 1984, Strong 1993, 1994, 2003, González-Elizondo & Peterson 1997, Diego-Pérez *et al.* 2001, González-Elizondo & Tena-Flores 2000, González-Elizondo *et al.* 2002, 2007b, Reznicek & González-Elizondo 2008, Rosen *et al.* 2007, 2008a,b, Herbario CICY 2010 onwards), and uses or bioprospecting of sedges for pharmacology or phytoremediation (Flores-Tavizón *et al.* 2005, González-Elizondo *et al.* 2005, López-Martínez *et al.* 2008, Pérez-López *et al.* 2009).

Preliminary checklists of Cyperaceae for Mexico include those of Espejo-Serna & López-Ferrari (1997), Diego-Pérez & González-Elizondo (2009) and Villaseñor (2016), but no conspectus of the family has been made for Mexico. An updating of the taxonomy and nomenclature of Mexican sedges is required to reflect recent taxonomic rearrangements in many genera as well as additions and exclusions of names for the Mexican flora. We present a checklist of the Cyperaceae currently known for Mexico with comments on diversity, endemism and distribution by state, and we discuss the main gaps in the knowledge of the family for the country.

Materials and methods

A database of Mexican Cyperaceae was generated with basis in literature review, study of herbarium specimens and field work. Most of the references are cited in the text, mainly at the Background, Methods and Discussion sections. Field work, mainly focused on *Carex*, has been done from 1990 to date in the whole country with the exception of the states of Guerrero, Quintana Roo, Tlaxcala and Yucatan. Herbaria reviewed from Mexico and elsewhere include CIIDIR, ENCB, GBH, HCIB, IBUG, IEB, INEGI, MICH, MEXU, QMEX, and SLPN (herbarium acronyms according to Thiers, continuously updated). Refining of the database involved nomenclatural updating, detection of synonyms, review of doubtful names and exclusion from the Mexican flora of names of taxa whose presence in the country has not been corroborated. The classification at the subfamily and tribe levels follows Muasya *et al.* (2009a, b) and the circumscription of genera follows Dorr (2014), Larridon *et al.* (2011, 2013, 2014), Bauters *et al.* (2014), and The Global *Carex* Group (2015, 2016). To verify the names of species and authors, the web sites Tropicos (www.tropicos.org) and The International Plant Names Index (www.ipni.org) were used.

From the dataset obtained, we calculated diversity, distribution by state and endemism level. Those taxa with distribution restricted to the country are considered as endemic, whereas micro-endemic are those known from only a state. Endemicity to a zone known as Megamexico (Rzedowski 1991) was also considered. It slightly extends the ecological conditions of the country, including three regions: MM1 (Mexico and zones of the Sonoran and Chihuahuan deserts and Tamaulipan scrub that lie in southern United States), MM2 (Mexico and the area of Central America northern of the Nicaraguan depression) and MM3 (MM1 and MM2).

A comparison of the species richness among the Mexican states was made using absolute values, and also standardized values by applying Squeo *et al.* (1998) correction to soften the area effect: $S/\ln A$ (species number/natural logarithm of the state area in km^2).

Results

Cyperaceae are represented in Mexico by 460 species and 20 varieties or subspecies (480 taxa) which belong to 21 genera in 10 of the 17 family tribes. The checklist of taxa with state distribution and endemism level is presented in the Appendix 1. The two subfamilies currently recognized are in the country, with Cyperoideae including almost 100 % of the species and Mapanioideae represented by only one species. The most diverse genera are *Carex* (138 species and varieties) and *Cyperus* (125), followed by *Rhynchospora* (65) and *Eleocharis* (57) (Table 1, Figure 1). The species previously treated under *Uncina* are at present recognized as *Carex*, whereas *Kyllinga*, *Lipocarpa*, *Oxycaryum* and *Remirea* are included in *Cyperus*. The main synonyms for those combinations are presented in Table 2.

At the state level, the highest richness was found in Chiapas (237 taxa, 52 % of the total) and Veracruz (206, 45 %), followed by Oaxaca (171, 37 %) and Jalisco (148, 32 %) (Figure 2, 3; Appendix 1). Two genera (*Cypringlea* and *Karinia*) and 111 species or infraspecific taxa are endemic to the country (24 %), 78 of them at a regional level, including 43 micro-endemics. Endemism increases to 57 % when the biogeographic region known as Megamexico is included.

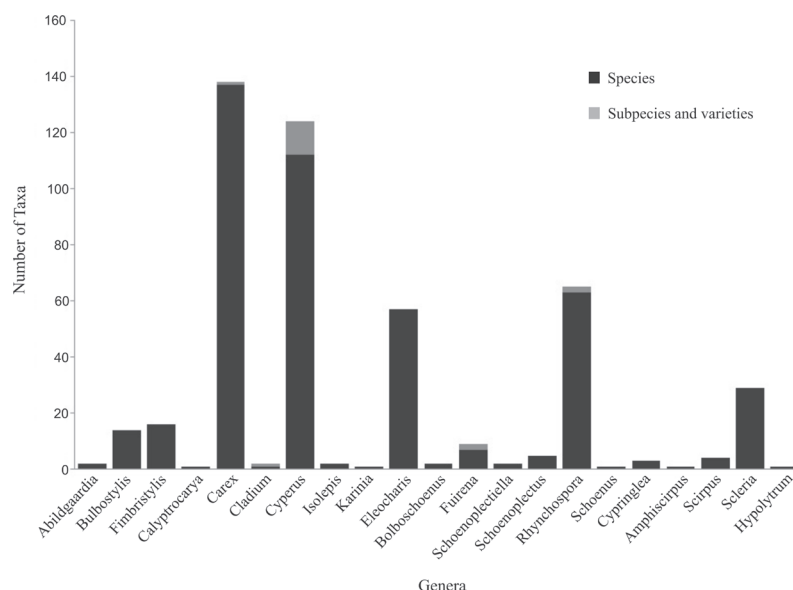
Discussion

The dataset of the Mexican sedge flora includes 460 species and 20 infraspecific taxa. Additionally, at least 45 undescribed species have been detected (not included in the checklist), which would increase to 525 the sedge taxa for the country.

Table 1. Cyperaceae in Mexico. Genera and number of species and subspecies/varieties by tribe and subfamily.

Subfamilies	Tribes	Genera	Species	Subsp./Var.
Cyperoideae	<i>Abildgaardieae</i>	<i>Abildgaardia</i>	2	
		<i>Bulbostylis</i>	14	
		<i>Fimbristylis</i>	16	
	<i>Cariceae</i>	<i>Carex</i>	137	1
	<i>Cypereae</i>	<i>Cyperus</i>	113	12
		<i>Isolepis</i>	2	
		<i>Karinia</i>	1	
	<i>Eleocharideae</i>	<i>Eleocharis</i>	55	2
	<i>Fuireneae</i>	<i>Bolboschoenus</i>	2	
		<i>Fuirena</i>	7	2
		<i>Schoenoplectiella</i>	2	
		<i>Schoenoplectus</i>	5	
	<i>Rhynchosporeae</i>	<i>Rhynchospora</i>	63	2
	<i>Schoeneae</i>	<i>Cladium</i>	1	1
		<i>Schoenus</i>	1	
	<i>Scirpeae</i>	<i>Amphiscirpus</i>	1	
		<i>Cypringlea</i>	3	
		<i>Scirpus</i>	4	
	<i>Sclerieae</i>	<i>Calyptracarya</i>	1	
		<i>Scleria</i>	29	
Mapanioideae	<i>Hypolytreae</i>	<i>Hypolytrum</i>	1	

Figure 1. Genera of Cyperaceae and number of species and infraspecific taxa in Mexico.

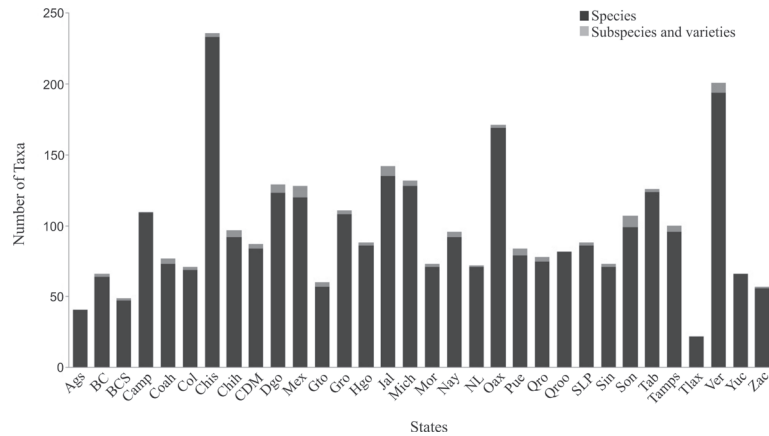


Suprageneric classification. The two subfamilies currently recognized (Cyperoideae and Mapanioideae) (Simpson *et al.* 2007, Muasya *et al.* 2009a) are in Mexico, although the predominantly tropical Mapanioideae is represented by only one species (*Hypolytrum nicaraguense*). As for the family tribes, 10 out of the 17 are in the country. The most diverse are Cariceae with 138 taxa and Cypereae with 128, whereas Hypolytreae is represented by one (Table 1). The Cariceae is a temperate group, mainly montane in Mexico, where represented by *Carex* (30 % of the taxa of this family). If compared with Madagascar, where the Cariceae are 11 % of the Cyperaceae (Muasya *et al.* 2011) or with Brazil (4.4 %, Alves *et al.* 2009), the group is fairly well represented in Mexico although still not quite as in any boreal zone, *e.g.*, North America, where it composes 57 % of the sedge flora (Ball & Reznicek 2002). On the other hand, the tribe Cypereae, mainly tropical, includes 28 % of the sedge flora in Mexico, a high proportion when compared with North America (13 %) or even with Brazil (20 %), but low in relation with Madagascar, where the clade composes about half of the species in the family (Muasya *et al.* 2011).

Table 2. Main synonyms under *Carex* and *Cyperus* proposed or confirmed in recent studies: 1. Bauters *et al.* (2014), 2. Dorr (2014), 3. Larridon *et al.* (2011), 4. Larridon *et al.* (2013), 5. Larridon *et al.* (2014), 6. The Global *Carex* Group (2015).

Previous name	Accepted name	Source
<i>Kyllinga brevifolia</i> Rottb.	<i>Cyperus brevifolius</i> (Rottb.) Endl. ex Hassk.	5
<i>Kyllinga odorata</i> Vahl	<i>Cyperus sesquiflorus</i> (Torr.) Mattf. & Kük.	5
<i>Kyllinga pumila</i> Michx.	<i>Cyperus hortensis</i> (Salzm. ex Schtdl.) Dorr	2, 5
<i>Lipocarpha mexicana</i> Liebm.	<i>Cyperus lipomexicanus</i> Goetgh.	1
<i>Lipocarpha micrantha</i> (Vahl) G. C. Tucker	<i>Cyperus subsquarrosus</i> (Muhl.) Bauters	1
<i>Lipocarpha microcephala</i> (R. Br.) Kunth	<i>Cyperus leptocarpus</i> (F. Muell.) Bauters	1
<i>Lipocarpha salzmänniana</i> Steud.	<i>Cyperus salzmännianus</i> (Steud.) Bauters	1
<i>Oxycaryum cubense</i> (Poeppig et Kunth) Palla	<i>Cyperus blepharoleptos</i> Steud.	3
<i>Remirea maritima</i> Aubl.	<i>Cyperus pedunculatus</i> (R. Br.) J. Kern	4
<i>Uncinia hamata</i> (Sw.) C.B. Clarke	<i>Carex hamata</i> Sw.	6
<i>Uncinia koyamae</i> Gómez-Laur.	<i>Carex koyamae</i> (Gómez-Laur.) J.R. Starr.	6
<i>Uncinia phleoides</i> (Cav.) Pers.	<i>Carex phleoides</i> Cav.	6
<i>Uncinia tenuis</i> Poepp. ex Kunth	<i>Carex firmula</i> (Kük.) J.R. Starr	6

Figure 2. Number of species and infraspecific taxa of Cyperaceae by state.



Current circumscription of genera. The number of genera recognized in the present contribution is 21, which means a drastic reduction in comparison to previous inventories (27 genera recorded in Diego-Pérez & González-Elizondo 2009 following Bruhl 1995; 26 genera in the checklist of Villaseñor 2016). This is a result of recent phylogenetic findings and taxonomic rearrangements (Larridon *et al.* 2011, 2013, 2014, Bauters *et al.* 2014, the Global *Carex* Group 2015, 2016). According to these references, *Uncinia* is included into *Carex*, whereas *Kyllinga*, *Lipocarpa*, *Oxycarium* and *Remirea* are now part of *Cyperus* (Table 2), besides *Pycnus* and *Torulinum*, previously subsumed. On the contrary, several genera are split from what was previously considered as *Scirpus s.l.* (Lye 2003, Strong 2003). The position of *Abildgaardia* is debatable. It is placed in *Fimbristylis* by some authors (*e.g.*, Govaerts *et al.* 2015), but it has a significantly different embryology and anatomy (Kral 2002).

The relationships of the two genera endemic to the country still require study. *Cypringlea* is closely related to *Trichophorum* Pers. (Léveillé-Bourret *et al.* 2014) whereas *Karinia* is related to *Scirpoides* Scheuchz. ex Seguer (Goetghebeur 1998) and has been recently combined under it as *Scirpoides mexicanus* (Reznicek & McVaugh) Goetghebeur ex C.S. Reid & J.R. Carter (Reid *et al.* 2017). Ball *et al.* (2002) pointed out that no consensus exists regarding the number of genera in Cyperaceae; that is still true in part, although new approaches to their study are rapidly increasing our understanding on the family.

Distribution and ecology. The state distribution data are preliminary. The highest richness was found in Chiapas and Veracruz, followed by Oaxaca (Figure 2, 3). Jalisco, Michoacán, Tabasco, Durango and the state of Mexico form the next richest group. However, it is possible that Durango and the state of Mexico are not actually among the richest states but they have just a more complete inventory of sedges. The data of species richness standardized with the logarithm of the state surface area (Figure 3) corroborates that the higher diversity is located in Chiapas and Veracruz and reveals that the lower is in Baja California Sur and Tlaxcala. As already said, this may be related to the thoroughness of the inventories. However, the richness by state is strikingly similar to the obtained by Dávila-Aranda *et al.* (in rev.) for Mexican Poaceae, with Chiapas, Veracruz, Oaxaca and Jalisco as the most diverse (in the same order than for Cyperaceae), and Baja California Sur and Tlaxcala among the three less diverse states, also as with sedges. Although Oaxaca is ranked as the richest state of vascular plants in Mexico (Villaseñor 2016), with regard to grasses and sedges it holds the third position, behind Chiapas and Veracruz. This may be a result of under-representation of grasses and sedges from Oaxaca in herbaria and floristic lists and a better knowledge about them for Chiapas and Veracruz, or it may be explained for ecological reasons (*e.g.*, perhaps the open habitats preferred by sedges and grasses are less available in Oaxaca). These ideas are beyond of the scope of the present work and demand future research.

Sedges in Mexico are found from sea level to above 4,300 m and grow practically in all types of land vegetation, from tropical forests to xerophytic scrub. Besides, a little more than a fourth

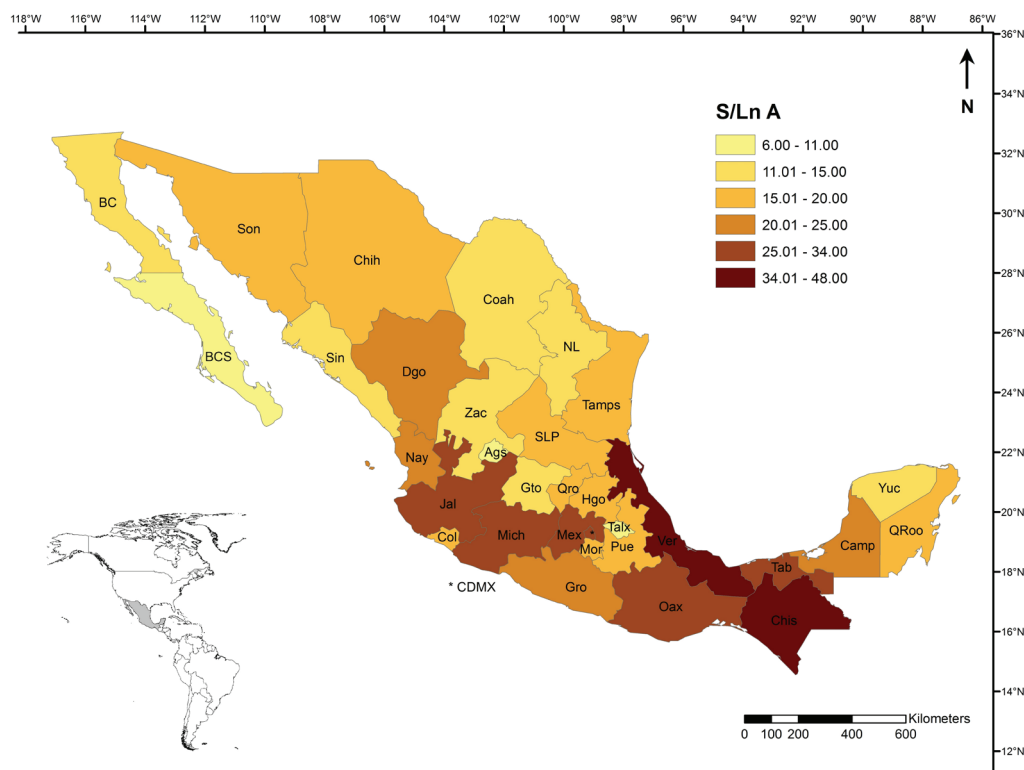


Figure 3. Cyperaceae species richness by state/surface area.

of the Mexican sedges are aquatic or subaquatic (Diego-Pérez & González-Elizondo 2013), and many others, although not strictly aquatic, can be dominant in moist areas. However, other species can grow in dry areas in many types of vegetation. The wide variety of habitats that sedges can occupy explains in part the high diversity of this family in Mexico. Wetland loss and degradation, as well as overgrazing, are the main threats for many species of sedges (González-Elizondo & Tena-Flores 2017).

Endemism. Two genera (*Cypringlea* and *Karinia*) and 109 species (and two infraspecific taxa) are endemic to the country (24 %). A total of 78 of those endemic species display a very narrow geographical range; in fact, 43 are known from only a state (micro-endemics) and almost a half of them belong to *Carex*. The proportion of sedges endemic to the country is almost the same as the proportion of endemic grasses (22.5 %) reported by Dávila-Aranda *et al.* (in rev.), mirroring the striking similitude of the distribution by state of sedges and grasses above discussed. Although, the proportion of sedges with distribution restricted to a single state is slightly higher than for grasses (38.7 and 32.6 %, respectively).

Most of the species with a very restricted distribution are montane, *e.g.*, *Carex austromexicana*, *C. durangensis*, *C. evadens*, *Eleocharis cryptica*, *E. svenssoniana*. Environmental heterogeneity and niche diversity in montane habitats foster restricted distribution and speciation in many species, as also occurs in groups like Asteraceae or *Salvia* (Lamiaceae) (Villaseñor *et al.* 1998, González-Zamora *et al.* 2007, Cornejo-Tenorio & Ibarra-Manríquez 2011). Jiménez-Mejías *et al.* (2011) found that small ecological changes are drivers for speciation in a group of European *Carex*. But the main driver for fast speciation in small populations in sedges appears to be the chromosomal plasticity and differentiation via fission, fusion, and polyploidy favoured by the diffuse kinetochore that is typical of sedges (Luceño & Guerra 1996, Hipp *et al.* 2007).

Karinia mexicana, from the Mexican high plateau, is an example of regional endemism. Other species, although present in two or more states, have a restricted distribution, *e.g.*, *Carex eburnea* in the Sierra Madre Oriental in Queretaro and San Luis Potosi; *C. cochraniei*, *C. her-*

mannii and *C. interjecta* in small areas of the Neovolcanic Belt; another example is *Cypringlea coahuilensis*, confined to limestone ridges in desert habitats in Coahuila and Nuevo Leon.

Sedge endemism in Mexico (24 %) is lower than in Brazil (30 %, Alves *et al.* 2009) and Madagascar (37 % from out 321 species, Muasya *et al.* 2011). On the other hand, there are no genera endemic to Brazil and only one is endemic to Madagascar. As a no insular country, Mexico shares a high proportion of its flora with neighbor countries. Nevertheless, endemism increases remarkably when the biogeographic region known as Megamexico (MM) (Rzedowski 1991) is considered (for a description see Methods section). As for Cyperaceae, 57 % of the species are endemic to this region, which represents more than two-fold the ammount of sedges restricted to the political limits of the country. Some (*e.g.*, *Bulbostylis schaffneri*, *Carex bella*, *C. muriculata*) are known from southwestern United States of America to northern or central Mexico (MM1); others, as *Carex koyamae* and *E. yecorensis*, are distributed from Mexico to Nicaragua (MM2); and a third group (*e.g.*, *Carex geophila*, *C. planostachys*) distribute from southern United States of America to Central America (MM3). Another kind of regional endemics are those restricted to the Californian region, *e.g.*, *Carex globosa* and *C. triquetra*, the first from moist places with conifers and the second from dry grasslands and scrub (Ball & Reznicek 2002).

Excluded names for the Mexican flora. About 46 names are excluded from the Mexican flora. Among them are *Bulbostylis juncooides* (Vahl) Kük. ex Osten, and *Carex brehmeri* Boeckeler, whose distribution is restricted to South America, as well as *Bolboschoenus fluviatilis* (Torr.) Soják, *Carex atrata* L., *Carex aurea* Nutt., *Carex densa* (L.H. Bailey) L.H. Bailey, *C. leporina* L., and *C. leptopoda* Mack., which are known from North America or are Holarctic in distribution, but not known to reach Mexico.

Bulbostylis hirta (Thunb.) Svenson is a synonym of *Fimbristylis squarrosa* Vahl, a pantropical species whose presence in Mexico has not been confirmed; the Mexican and North American plants to which the name *B. hirta* has been misapplied shall be called *Bulbostylis hispidula* (Lye 2006). *Lipocarpus humboldtiana* Nees (= *Cyperus sellowianus* (Kunth) T. Koyama) is known from Honduras to South America, and *Lipocarpus maculata* (Michaux) Torrey (= *Cyperus neotropicalis* Alain), from eastern North America (Washington, D.C. to Florida). *Lipocarpus mexicana* (= *Cyperus lipomexicanus* Goetgh.) is considered as a synonym of *L. maculata* in recent catalogs but is recognized as an independent species in a revision of the group (Bauters *et al.* 2014).

Given that many previously cited names correspond to synonyms and 46 names are excluded here, the current number of recognized species (460) is lower than the 489 listed by CONABIO (Diego-Pérez & González Elizondo 2009), although higher than the 416 species included in the checklist of Villaseñor (2016).

Some gaps in the knowledge of Mexican Cyperaceae. The cytology of a few species has been studied in *Eleocharis* (Tena-Flores *et al.* 2013) and *Schoenoplectus* (Tena-Flores *et al.* 2014) and Mexican species have been included in several molecular studies elsewhere. Nevertheless, many of the endemic species have not been cytogenetically or molecularly analyzed.

Collection deficiencies and insufficient taxonomic revision for Mexican sedges are reflected in gaps in their knowledge. It is very probable that species that are widely distributed may be in Mexico but have not yet been discovered in its territory. For example, *Eleocharis confervoides* (Poir.) Steud. is known from southeastern United States and eastern Central America and may be in coastal areas of Campeche and Yucatan. Some *Cyperus* are cited by Tucker (1994) as of probable presence in Mexico given that they are known from localities close to the Mexican border: *Cyperus hayesii* (C.B. Clarke) Standley from the Pacific coast from Guatemala to Colombia, and *C. setigerus* Torr. & Hook. and *C. strigosus* L. from the United States of America reaching San Diego County and the Rio Grande plains, respectively.

Many complexes of species are in need of taxonomic revision. The main gaps in taxonomic knowledge are in *Carex*, as noted also elsewhere by Reznicek (1989), The Global Carex Group (2015), Jiménez-Mejías *et al.* 2016, among others. However, many problems remain to be solved also in *Bulbostylis*, *Cyperus*, *Eleocharis*, *Rhynchospora* and *Scleria*. Additional to the

460 species recorded for the country, there are at least 45 undescribed species. With them, the net richness of Mexican sedges is of about 505 species plus 20 infraspecific taxa.

Therefore, regardless of the addition of taxa and refinement of the database of sedges for Mexico, the checklist presented here is still preliminary. There is still much basic work to be done before Mexican Cyperaceae are well understood.

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Appendix 1. Checklist of Mexican Cyperaceae with state distribution and endemism level.

Numbers following the name of each genus indicate: (number of species in Mexico/endemic to the country/endemic to a state). Before species name: *endemic to the country, **endemic to a state. Number following author in some species indicate endemism to the Megamexico region (explanation in Methods section) or to the Californian region: 1 (Mexico and southern United States), 2 (Mexico and Central America northern of the Nicaraguan depression), 3 (1 + 2), and 4 (Northwestern Mexico and California).

States: Aguascalientes (Ags), Baja California (BC), Baja California Sur (BCS), Campeche (Cam), Ciudad de Mexico (CDM), Chiapas (Chis), Chihuahua (Chih), Coahuila (Coah), Colima (Col), Durango (Dgo), Estado de Mexico (Mex), Guanajuato (Gto), Guerrero (Gro), Hidalgo (Hgo), Jalisco (Jal), Michoacan (Mich), Morelos (Mor), Nayarit (Nay), Nuevo Leon (NL), Oaxaca (Oax), Puebla (Pue), Queretaro (Qro), Quintana Roo (QRoo), San Luis Potosi (SLP), Sinaloa (Sin), Sonora (Son), Tabasco (Tab), Tamaulipas (Tam), Tlaxcala (Tlx), Veracruz (Ver), Yucatan (Yuc), Zacatecas (Zac).

Taxon	Distribution in Mexico
Abildgaardia (2/1/0)	
* <i>Abildgaardia mexicana</i> (Palla) Kral	Ags, Chis, CDM, Dgo, Gro, Gto, Hgo, Jal, Mex, Mich, Oax, Pue, Qro, SLP, Zac
<i>Abildgaardia ovata</i> (Burm. f.) Kral	Cam, Chis, QRoo, Tab, Tam, Ver, Yuc
Amphiscirpus (1/0/0)	
<i>Amphiscirpus nevadensis</i> (S. Wats.) Oteng-Yeb.	Mex
Bolboschoenus (2/0/0)	
<i>Bolboschoenus maritimus</i> (L.) Palla in W. D. J. Koch subsp. <i>paludosus</i>	BC, BCS, CDM, Chih, Coah, Col, Dgo, Mex, Mich, Sin, Son
<i>Bolboschoenus robustus</i> (Pursh) Soják	Tab, Tam, Ver
Bulbostylis (14/3/2)	
* <i>Bulbostylis arcuata</i> Kral	Ags, BC, BCS, Chih, Dgo, Jal, Sin, Zac
<i>Bulbostylis barbata</i> (Rottb.) C.B. Clarke	QRoo?
<i>Bulbostylis capillaris</i> (L.) C.B. Clarke	Ags, BC, BCS, Cam, CDM, Chih, Chis, Coah, Col, Dgo, Gro, Gto, Hgo, Jal, Mex, Mich, Mor, Nay, NL, Oax, Pue, Qro, QRoo, Sin, SLP, Son, Tab, Tam, Tlx, Ver, Zac
<i>Bulbostylis funckii</i> (Steud.) C.B. Clarke	Ags, CDM, Chih, Chis, Dgo, Gro, Hgo, Jal, Mex, Mich, Nay, NL, Oax, Qro, Pue, SLP, Son, Ver, Zac
<i>Bulbostylis hispidula</i> (Vahl) R.W. Haines in R.W. Haines & K.A. Lye	BCS, Chis, Col, Jal, Nay, Oax, Ver
<i>Bulbostylis junciiformis</i> (Kunth) C.B. Clarke	Chis, Col, Jal, Oax, Tab, Tam, Ver
** <i>Bulbostylis nesiotica</i> (I. M. Johnst.) Fernald	Col
<i>Bulbostylis paradoxa</i> (Spreng.) Lindm.	Chis, Oax, Ver
<i>Bulbostylis pubescens</i> (J. Presl & C. Presl) Svenson	Chis, Gro, Jal, Mex, Mor, Nay, Oax, Sin, Son
<i>Bulbostylis schaffneri</i> (Boeckeler) C.B. Clarke ¹	Chih, Dgo, SLP
** <i>Bulbostylis sepiacea</i> Kral	Col
<i>Bulbostylis tenuifolia</i> (Rudge) J. F. MacBr.	Chis, Hgo, Jal, Mich, Nay, Oax, Pue, Son, Tab, Ver
<i>Bulbostylis trilobata</i> Kral ²	Chis, Oax, Ver
<i>Bulbostylis vestita</i> (Kunth) C.B. Clarke	Cam, CDM, Chis, Col, Gro, Jal, Mex, Mich, Nay, Oax, QRoo, Sin, Ver
Calyptracarya (1/0/0)	
<i>Calyptracarya glomerulata</i> (Brongn.) Urb.	Cam, Chis, QRoo, Tab
Carex (137/58/23)	
<i>Carex agrostoides</i> Mack. ¹	Chih, Son
* <i>Carex albicans</i> var. <i>australis</i> (L.H. Bailey) Rettig	Hgo, Pue, Ver
<i>Carex alma</i> L.H. Bailey	BC, Chih, Son
<i>Carex angustata</i> Boott	BC
** <i>Carex angustispica</i> Reznicek & S. González	Oax
* <i>Carex anisostachys</i> Liebm.	Chis, CDM, Hgo, Mex, Mich, Oax, Qro, Pue, Ver
* <i>Carex arsenei</i> Kük.	Jal, Mex, Mich
* <i>Carex asynchrone</i> Naczi	Chis, Qro, SLP, Tam
<i>Carex athrostachya</i> Olney	BC, Mich
* <i>Carex atractodes</i> F. J. Herm.	Chis, SLP

Appendix 1. Continuation.

Taxon	Distribution in Mexico
<i>Carex aureolensis</i> Steudel	Coah, NL
** <i>Carex austromexicana</i> Reznicek	Oax
* <i>Carex azteca</i> Mack.	Chis, Mex, Oax
** <i>Carex ballsii</i> Nelm.	Ver
<i>Carex bartlettii</i> O'Neill ²	Cam, Chis, Q Roo, Yuc
<i>Carex bella</i> L.H. Bailey ¹	NL
<i>Carex bolanderi</i> Olney	Chih, Dgo
<i>Carex boliviensis</i> van Heurck & Müll. Arg. subsp. <i>boliviensis</i>	CDM, Col, Dgo, Gro, Hgo, Jal, Mex, Mich, Oax, Pue
* <i>Carex boliviensis</i> van Heurck & Müll. Arg. subsp. <i>occidentalis</i> Reznicek & S. González	Chih, Dgo, Gro, Jal, Zac
<i>Carex bonplandii</i> Kunth	Chis
<i>Carex brachycalama</i> Griseb.	Mex
<i>Carex brevior</i> (Dewey) Mack.	Tam
<i>Carex bromoides</i> Willd.	Hgo
<i>Carex brunnipes</i> Reznicek ²	Chis, CDM, Hgo, Mex, Mor
* <i>Carex caeligena</i> Reznicek	Tam
<i>Carex capitata</i> L.	Chih, Son
* <i>Carex chiapensis</i> F. J. Herm.	Chis, Oax
<i>Carex chordalis</i> Liebm.	Chis, CDM, Gro, Hgo, Jal, Mex, Mich, Oax, Pue, Ver
* <i>Carex ciliaris</i> Fernald	Ags, Dgo, Hgo, Mex, Mich, Qro
* <i>Carex cochranii</i> Reznicek	Mex, Mich
<i>Carex comosa</i> Boott	Hgo, Mex, Mich
** <i>Carex complanata</i> Torr. & Hook. subsp. <i>tropicalis</i> Reznicek & S. González	Chis
<i>Carex congestiflora</i> Reznicek & S. González ²	Chis
* <i>Carex conspecta</i> Mack.	CDM, Pue, Ver
* <i>Carex coulteri</i> W. Boott ex Hemsl.	CDM, Gto, Hgo, Mex, Mich, Qro, SLP, Ver
* <i>Carex curvculmis</i> Reznicek	Chis, CDM, Gto, Mex, Mich, Pue, Qro
<i>Carex diandra</i> Schrank	BC?
<i>Carex distentiflora</i> F. J. Herm. ²	Hgo, Chis
<i>Carex donnell-smithii</i> L.H. Bailey ²	Chis, Gro, Oax, Ver
<i>Carex douglasii</i> Boott	BC
** <i>Carex durangensis</i> Reznicek & S. González	Dgo
<i>Carex eburnea</i> Boott	Qro, SLP
<i>Carex echinata</i> Murray subsp. <i>townsendii</i> (Mack.) Reznicek ²	Chih, Chis, CDM, Dgo, Mex, Mich, Mor, Oax, Pue, SLP, Ver
<i>Carex emoryi</i> Dewey	Chih, Coah
<i>Carex endlichii</i> Kük. ¹	Chih, Dgo
** <i>Carex evadens</i> S. González & Reznicek	Qro
** <i>Carex festiveloides</i> Reznicek	Chih
<i>Carex filifolia</i> Nutt. var. <i>filifolia</i>	Chih
<i>Carex firmula</i> (Kük.) J.R. Starr	Oax
** <i>Carex flexirostris</i> Reznicek	Oax
<i>Carex fracta</i> Mack.	BC
** <i>Carex fructus</i> Reznicek	Tam
<i>Carex galeottiana</i> C. Meyer	Chis, CDM, Hgo, Jal, Mex, Oax, Pue, Ver

Appendix 1. Continuation.

Taxon	Distribution in Mexico
<i>Carex geophila</i> Mack. ³	BCS, Chih, Chis, CDM, Hgo, Mex, Pue, Ver
<i>Carex globosa</i> Boott ⁴	BC
<i>Carex hamata</i> Sw.	Chis, CDM, Hgo, Mex, Mor, Oax, Tam, Ver
<i>Carex hassei</i> L.H. Bailey	BC
* <i>Carex hermannii</i> Cochrane	Mex, Pue
<i>Carex huehueteca</i> Standl. & Steyerl.	Chis [no confirmado]
* <i>Carex hultenii</i> Aspl.	Chis, Hgo, Pue, Qro
<i>Carex humboldtiana</i> Steud.	Chis, CDM, Gro, Mex, Mich, Oax, Pue, Ver
<i>Carex hystericina</i> Muhl.	Coah, Mex?, Ver
<i>Carex interior</i> L.H. Bailey	Chih
* <i>Carex interjecta</i> Reznicek	Mex, Mor
** <i>Carex ixtapalucensis</i> Reznicek	Mex
<i>Carex kelloggii</i> W. Boott var. kelloggii	Chih? Dgo, Mor, Son?
<i>Carex koyamae</i> (Gómez-Laur.) J.R.Starr. ²	Chis, Oax
<i>Carex laevivaginata</i> (Kük.) Mack.	Mich
* <i>Carex lagunensis</i> M. E. Jones	BCS, Chih, CDM, Dgo, Mex, Mor
<i>Carex lativena</i> S. D. Jones & G. D. Jones ¹	Coah
<i>Carex leptalea</i> Wahlenberg	Chis
* <i>Carex leucodonta</i> Holm.	Chih, Dgo, Gto, Hgo, Jal, Mich, Nay, NL, Qro, Sin, Son, SLP, Son, Tam, Zac
* <i>Carex longicaulis</i> Boeckeler	Ags, CDM, Dgo?, Gto, Hgo, Jal, Mex, Mich, Mor, Oax, Pue, Tlx, Ver
<i>Carex longii</i> Mack.	Chis, CDM, Dgo, Hgo, Jal, Mex, Mich, Oax, Pue, Qro, SLP, Ver
** <i>Carex longiligula</i> Reznicek & S. González	Chis
** <i>Carex longissima</i> M. E. Jones	BCS
<i>Carex lurida</i> Wahlenb.	Chis, Hgo, Ver
** <i>Carex mackenziana</i> Weath.	NL
* <i>Carex madrensis</i> L.H. Bailey	Dgo, Gro, Jal, Mich, Mor, Qro, Ver
* <i>Carex marianensis</i> Stacey	Chih, Chis, CDM, Dgo, Gro, Hgo, Jal, Mex, Mich, Mor, Oax, Son, Tlx
** <i>Carex mcvaughii</i> Reznicek	Jal
<i>Carex meadii</i> Dewey	Chih
<i>Carex melanosperma</i> Liebm. ²	Chis, Mex, Mor, Pue, Tab, Ver
** <i>Carex michoacana</i> Reznicek, Hipp & S. González	Mich
<i>Carex microptera</i> Mack.	Coah, Dgo, Mex
<i>Carex muriculata</i> F.J. Hermann ¹	Chih, Coah
<i>Carex nigromarginata</i> Schwein.	Pue
** <i>Carex novogaliciana</i> Reznicek	Jal
* <i>Carex oaxacana</i> L.H. Bailey	Chis, Oax
<i>Carex occidentalis</i> L.H. Bailey	BC, Coah, Hgo?
<i>Carex oreocharis</i> Holm.	Coah
<i>Carex orizabae</i> Liebm. ²	CDM, Mex, Mich, Mor, Oax, Pue, Ver
<i>Carex pellita</i> Muhl. ex Willd.	BC, Chis?, Dgo, SLP
* <i>Carex percostata</i> F. J. Herm.	Chih, Dgo, Gro
* <i>Carex perlonga</i> Fernald	Hgo, Oax, Ver
* <i>Carex perstricta</i> Mack.	Coah, Hgo, NL, Qro, SLP, Tam
<i>Carex pertenuis</i> L.H. Bailey ²	Chis, Tab, Ver

Appendix 1. Continuation.

Taxon	Distribution in Mexico
<i>Carex peucophila</i> Holm. ²	Ags, Chih, Chis, CDM, Gto, Hgo, Mex, Mich, Mor, NL?, Oax, Pue, Qro, SLP, Ver
<i>Carex phleoides</i> Cav.	CDM
** <i>Carex pinophila</i> Reznicek & S. González	Qro
<i>Carex planostachys</i> Kunze ³	Chih, Chis, Coah, CDM, Dgo, Gto, Mex, NL, Oax, Qro, SLP, Son?, Tab?, Tam, Tlx, Ver, Zac
<i>Carex polystachya</i> Sw. ex Wahlenb. var. <i>polystachya</i>	Cam, Chis, Col, CDM, Dgo, Gro, Hgo, Jal, Mex, Mich, Mor, Nay, Oax, Qro, SLP, Tam, Ver, Zac
<i>Carex polysticha</i> Boeckeler	Ver
* <i>Carex potosina</i> Hemsl.	Coah, NL, SLP, Zac
<i>Carex praegracilis</i> W. Boott	BC, BCS, Chih, Coah, CDM, Dgo, Hgo, Mex, Mich, Mor, Son
* <i>Carex pringlei</i> L.H. Bailey	Coah, SLP
** <i>Carex pubigluma</i> Reznicek	Chis
** <i>Carex queretarensis</i> Reznicek & S. González	Qro
<i>Carex quichensis</i> F.J. Herm. ²	Oax
* <i>Carex rhynchopterigynium</i> S. D. Jones & Reznicek	Hgo, NL, Qro
<i>Carex rossii</i> Boott	BC
** <i>Carex rzedowskii</i> Reznicek & S. González	Mich
* <i>Carex schiedeana</i> Kunze	Hgo, Pue, Qro, Ver
<i>Carex schottii</i> Dewey ⁴	BC
* <i>Carex seatoniana</i> L.H. Bailey	Hgo, Jal?, Mex?, Oax, Pue
<i>Carex senta</i> Boott ex Olney ¹	BC, Chih
<i>Carex spilocarpa</i> Steud. ²	Chis, Hgo, Mex, Mor, Oax, Ver
<i>Carex spissa</i> L.H. Bailey ¹	BC
<i>Carex standleyana</i> Steyer. ²	Chis, Oax, Ver
* <i>Carex stellata</i> Mack.	Coah, Gto, Hgo, NL, Qro, SLP, Tam, Zac
<i>Carex steyermarkii</i> Standl. ²	Chis
<i>Carex subfusca</i> W. Boott	BC
** <i>Carex tenejapensis</i> Reznicek & S. González	Chis
<i>Carex tetrastachya</i> Scheele	Coah
<i>Carex thurberi</i> Dewey ³	Chih, Chis, Coah, Dgo, Jal, Son, Ver
** <i>Carex tolucensis</i> (F. J. Herm.) Reznicek	Mex
<i>Carex tribuloides</i> Wahlenb. var. <i>sangamonensis</i> Clokey	Ver
<i>Carex triquetra</i> Boott ⁴	BC
* <i>Carex tuberculata</i> Liebm.	CDM, Hgo, Mex, Pue
<i>Carex tunimanensis</i> Standl. & Steyer. ²	Chis
* <i>Carex turbinata</i> Liebm.	Ags, Chih, Coah, CDM, Dgo, Gto, Hgo, Jal, Mex, Mich, Mor, Nay, Oax, Pue, Sin, SLP, Son, Zac
<i>Carex ultra</i> L.H. Bailey ¹	Coah, Son
<i>Carex utriculata</i> Boott	BC, Mor
* <i>Carex vallicola</i> var. <i>hidalgensis</i> F. J. Herm.	CDM, Hgo, Mex
** <i>Carex vizarronensis</i> Gómez-Sánchez, A. Cabrera L., S. González & Reznicek	Qro
<i>Carex vulpinoidea</i> Michx.	Oax, Son, Ver
<i>Carex wootonii</i> Mack. ¹	Chih, Coah, Dgo, NL

Appendix 1. Continuation.

Taxon	Distribution in Mexico
<i>Carex xalapensis</i> Kunth ²	Chih, Chis, CDM, Dgo, Gto, Hgo, Mex, Mich, Oax, Qro, SLP, Tam, Ver
<i>Cladium</i> (1/0/0)	
<i>Cladium jamaicense</i> Crantz subsp. <i>jamaicense</i>	Cam, Chis, Coah, Col, Hgo, NL, QRoo, SLP, Tab, Tam, Ver, Yuc
<i>Cladium jamaicense</i> Crantz subsp. <i>californicum</i> (S. Watson)	Coah, Son
<i>Cyperus</i> (113/19/8)	
<i>Cyperus acuminatus</i> Torr. & Hook.	Coah, NL, Tam
<i>Cyperus aggregatus</i> (Willd.) Endl.	Ags, Cam, Chih, Chis, CDM, Coah, Col, Dgo, Gro, Gto, Hgo, Jal, Mex, Mich, Mor, Nay, NL, Oax, Pue, Qro, Sin, SLP, Son, Tab, Tam, Tlx, Ver, Yuc, Zac
<i>Cyperus amabilis</i> Vahl var. <i>amabilis</i>	BCS, Chih, Chis, Coah, Col, Dgo, Gro, Jal, Mex, Mich, Nay, Oax, Sin, SLP, Son, Ver
<i>Cyperus andinus</i> Palla ex Kük.	CDM, Dgo, Jal, Mex, Mich, SLP, Zac
* <i>Cyperus arsenei</i> O'Neill & Ben. Ayers.	BCS, CDM, Jal, Mex, Mich, Nay, Sin, Son
<i>Cyperus articulatus</i> L.	BCS, Cam, Chis, Col, CDM, Gro, Gto, Hgo, Jal, Mich, Mor, Nay, NL, Oax, Qro, QRoo, Sin, SLP, Son, Tab, Tam, Ver, Yuc, Zac
* <i>Cyperus aschenbornianus</i> Boeckeler	CDM, Jal, Mex, Mich, Mor, Nay, Oax, Ver
<i>Cyperus blepharoleptos</i> Steud.	Cam, Chis, Gro, Gto, Jal, Mich, Nay, QRoo, Tab, Tam, Ver, Yuc
** <i>Cyperus breedlovei</i> G. C. Tucker	Chis
<i>Cyperus brevifolius</i> (Rottb.) Endl. ex Hassk.	BC, Cam, Chis, Jal, Mich, Mor, Nay, NL, Oax, Pue, QRoo, Tab, Tam, Ver
* <i>Cyperus calderoniae</i> S. González	CDM, Dgo, Gto, Hgo, Jal, Mex, NL, Qro, SLP, Zac
<i>Cyperus camphoratus</i> Liebm.	Chis, Gro, Oax, Tab, Ver
<i>Cyperus canus</i> J. Presl & C. Presl	Chis, Col, Dgo, Gro, Hgo, Jal, Mex, Mich, Mor, Nay, NL, Oax, Qro, Sin, SLP, Son, Tab, Tam, Ver, Yuc
<i>Cyperus chorisanthos</i> C.B. Clarke ²	Cam, Chis, Oax
<i>Cyperus ciliatus</i> Jungh. ²	Chis, Gro, Oax, Ver
<i>Cyperus compressus</i> L.	Cam, Chis, Col, Dgo, Gro, Jal, Mich, Nay, NL?, Oax, QRoo, Sin, Son, Tab, Tam, Ver, Yuc
<i>Cyperus conservator-davidii</i> G.C. Tucker	Chis, Oax
<i>Cyperus costaricensis</i> Gómez-Laur.	Cam, Yuc
<i>Cyperus croceus</i> Vahl	Cam, QRoo, Tab, Yuc
<i>Cyperus cuspidatus</i> Kunth	Chih, Chis, Dgo, Gro, Jal, Mex, Mor, Nay, Oax, SLP, Ver
<i>Cyperus dentoniae</i> G. C. Tucker	Chih, Chis, Col, Dgo, Gro, Jal, Mich?, Nay, Oax, Sin, Son, Ver
<i>Cyperus difformis</i> L.	Introduced: BTC, Chih, Dgo, Gto, Jal, Mich, Sin, Son
<i>Cyperus digitatus</i> Roxburgh	Cam, Chis, Col, Gro, Hgo, Jal, Mich, Nay, NL, Oax, Qro, QRoo, Sin, SLP, Tab, Tam, Ver, Yuc
* <i>Cyperus dioicus</i> I. M. Johnst.	BC, BCS
<i>Cyperus dipsaceus</i> Liebm. ¹	BCS, Chih, Dgo?, Nay, Sin, Son, Ver
<i>Cyperus distans</i> L.f.	Introduced: Chis, Gro
** <i>Cyperus duripes</i> I. M. Johnst.	Col
<i>Cyperus elegans</i> L.	Cam, Chis, QRoo, Yuc
<i>Cyperus entrerianus</i> Boeckeler	BCS, Chis, Col, Dgo, Gto, Jal, Mich, Nay, Oax, Sin, SLP, Son, Tam, Ver, Zac
<i>Cyperus eragrostis</i> Lam.	Coah, Mich, Oax
<i>Cyperus erythrorhizos</i> Muhl.	BC, BCS, Son, Tam, Tab
<i>Cyperus esculentus</i> L.	Ags, BC, BCS, Cam, Chih, Chis, CDM, Coah, Col, Dgo, Gro, Gto, Hgo, Jal, Mex, Mich, Mor, Nay, NL, Oax, Pue, Qro, QRoo, Sin, SLP, Son, Tab, Tam, Tlx, Ver, Yuc, Zac

Appendix 1. Continuation.

Taxon	Distribution in Mexico
<i>Cyperus fendlerianus</i> Boeckeler	BC, BCS, Chih, Coah, CDM, Dgo, Mex, Mich, NL, Qro, SLP, Son, Tlx, Tam
<i>Cyperus flavescens</i> L. var. <i>piceus</i> (Liebm.) Fernald	Ags, Chih, Chis, CDM, Coah, Col, Dgo, Gto, Gro, Hgo, Jal, Mex, Mich, Mor, Nay, NL, Oax, Pue, Qro, Sin, SLP, Son, Tam, Tlx, Ver, Zac
<i>Cyperus flavicomus</i> Michx.	BC, Chih, Chis, Dgo, Gro, Gto, Jal, Mich, Nay, Oax, Sin, Son, Tam, Zac
<i>Cyperus floribundus</i> (Kük.) J. Rich. Carter & S. D. Jones ¹	NL, SLP, Tam
<i>Cyperus fugax</i> Liebm.	Chih, Chis, Col, Dgo, Gro, Jal, Nay, Oax, Sin, Son, Ver
<i>Cyperus gardneri</i> Nees	Cam, QRoo, Tab
<i>Cyperus giganteus</i> Vahl	Chis, Col, Jal, Oax, QRoo, Tab, Tam, Ver
<i>Cyperus haspan</i> L.	BCS, Cam, Chis, Gro, Jal, Mich, Nay, Oax, Sin, Tab, Tam, Ver, Yuc
<i>Cyperus hermaphroditus</i> (Jacq.) Standl.	Ags, BC, BCS, Cam, Chih, Chis, CDM, Coah, Col, Dgo, Gro, Gto, Hgo, Jal, Mex, Mich, Mor, Nay, NL, Oax, Pue, Qro, QRoo, Sin, SLP, Son, Tab, Tam, Tlx, Ver, Zac
<i>Cyperus hortensis</i> (Salzm. ex Schltdl.) Dorr	Introduced: Cam, Chis, CDM, Gro, Hgo, Jal, Mex, Mich, Mor, Nay, Oax, Pue, Qro, SLP, Tab, Tam, Ver, Yuc
<i>Cyperus humilis</i> Kunth	Cam, Chis, Dgo, Gro, Oax, Qro, QR, SLP, Tab, Tam, Ver
<i>Cyperus hypopitys</i> G.C. Tucker ¹	Chih, Dgo, Sin, Son
<i>Cyperus imbricatus</i> Retz.	Chis, Col, Gro, Jal, Mich, Nay, Tab, Ver
<i>Cyperus involucratus</i> Rottb.	Introduced: BC, Chih, Chis, Col, CDM, Jal, Mor, NL, Oax, Qro, Sin, Son, Tab, Tam, Ver, Yuc
<i>Cyperus iria</i> L.	Introduced: Cam, Chih, Chis, Col, Dgo, Gro, Jal, Mich, Nay, Oax, QRoo, Sin, SLP, Son, Tab, Tam, Ver
<i>Cyperus ischnos</i> Schltdl.	Chih, Chis, Dgo, Gro, Jal, Mex, Mich, Nay, Oax, Sin, Son, Ver
<i>Cyperus laevigatus</i> L.	Introduced: Ags, BC, BCS, Cam, Chih, Chis, CDM, Coah, Col, Dgo, Gro, Gto, Hgo, Jal, Mex, Mich, NL, Oax, Pue, Qro, Sin, SLP, Son, Tab, Tam, Tlx, Ver, Yuc, Zac
<i>Cyperus lanceolatus</i> Poir.	BC, BCS, Cam, Chih, Chis, Col, Dgo, Gro, Hgo, Jal, Mich, Mor, Nay, NL, Oax, Pue, QRoo, Sin, SLP, Son, Tam, Ver
<i>Cyperus laxus</i> Lam.	Chis, Gro, Jal, Mex, Mich, Mor, Nay, Oax, Tab, Tam, Ver
<i>Cyperus lentiginosus</i> Millsp. & Chase	Cam, Chis, Gro, QRoo, SLP, Tam, Ver, Yuc
<i>Cyperus leptocarpus</i> (F. Muell.) Bauters	Introduced: Chis
<i>Cyperus ligularis</i> L.	BCS, Cam, Chis, Col, Dgo, Gro, Jal, Mich, Nay, Oax, QRoo, Sin, Son, Tab, Tam, Ver, Yuc
<i>Cyperus lipomexicanus</i> Goetgh.	Chis, Dgo, Gro, Jal, Nay, Oax, Ver
<i>Cyperus lundellii</i> O'Neill	Cam, Chis, QRoo, Tam
<i>Cyperus luzulae</i> (L.) Rottb. ex Retz.	Cam, Chis, Mich, Nay, Oax, QRoo, Sin, SLP, Tab, Tam, Ver, Yuc
<i>Cyperus macrocephalus</i> Liebm. var. <i>eggersii</i> (Boeckeler) S.D. Jones	Cam, Tab, Tam, Ver, Yuc
<i>Cyperus macrocephalus</i> Liebm. var. <i>macrocephalus</i>	Cam, Chis, Gro, QRoo, Tab, Ver, Yuc
<i>Cyperus manimae</i> Kunth var. <i>apiculatus</i> (Liebm.) C.D. Adams	Mex
<i>Cyperus manimae</i> Kunth var. <i>asperrimus</i> (Liebm.) Kük.	BCS, Chih, Chis, Coah, CDM, Dgo, Hgo, Jal, Mex, Mich, Mor, Nay, Oax, Pue, SLP, Son, Tam, Ver
<i>Cyperus manimae</i> Kunth var. <i>divergens</i> (Kunth) Kük. ²	Chih, Chis, Coah, CDM, Dgo, Gro, Gto, Hgo, Jal, Mex, Mich, Pue, Qro, Son, Ver
<i>Cyperus manimae</i> Kunth var. <i>manimae</i>	Ags, BCS, Chih, Chis, Coah, CDM, Dgo, Mex, Gro, Gto, Hgo, Jal, Mex, Mich, Mor, Nay, NL, Oax, Pue, Qro, Sin, SLP, Son, Tam, Tlx, Ver, Zac
<i>Cyperus manimae</i> Kunth var. <i>phaeocephalus</i> (Griseb.) O'Neill & Ben. Ayers	CDM, Dgo, Mex, Hgo, Pue, Ver.
** <i>Cyperus matudae</i> G. C. Tucker	Chis

Appendix 1. Continuation.

Taxon	Distribution in Mexico
* <i>Cyperus michoacanensis</i> Britton ex C.B. Clarke	Jal, Mich
<i>Cyperus microbrunneus</i> G. C. Tucker	Chis, Oax
<i>Cyperus mutisii</i> (Kunth) Griseb. var. <i>asper</i> (Liebm.) Kük.	Col, Jal, Mex, Nay, Pue, Sin, Son, Ver
<i>Cyperus mutisii</i> (Kunth) Griseb. var. <i>mutisii</i>	Ags, BCS, Chih, Chis, CDM, Dgo, Gro, Hgo, Jal, Mex, Mich, Mor, Nay, NL, Oax, Pue, Qro, QRoo, Sin, Son, Tlx, Ver, Zac
* <i>Cyperus nayaritensis</i> G. C. Tucker	Col, Jal, Mich, Nay
<i>Cyperus niger</i> Ruiz & Pav. var. <i>capitatus</i> (Britton) O'Neill	BC, BCS, Chih, Jal, Son, Tam
<i>Cyperus niger</i> Ruiz & Pav. var. <i>niger</i>	Ags, BC, BCS, Chih, Chis, Coah, CDM, Dgo, Gro, Gto, Hgo, Jal, Mex, Mich, Mor, NL, Oax, Pue, Qro, QRoo, SLP, Sin, Son, Tab, Tam, Tlx, Ver, Zac
<i>Cyperus ochraceus</i> Vahl	Cam, Chis, Coah, Col, Gro, Hgo, Jal, Mex, Mich, Mor, Nay, NL, Oax, Pue, Qro, QRoo, Sin, SLP, Son, Tab, Tam, Ver, Yuc, Zac
<i>Cyperus odoratus</i> L.	Ags, BC, BCS, Cam, Chis, Chih, CDM, Coah, Col, Dgo, Gro, Gto, Hgo, Jal, Mex, Mich, Mor, Nay, NL, Oax, Pue, Qro, QRoo, Sin, SLP, Son, Tab, Tam, Ver, Yuc, Zac
<i>Cyperus oxylepis</i> Nees ex Steud.	Introduced: Chis, Col, Gro, Oax, Sin, Son, Tam
<i>Cyperus pallidicolor</i> (Kük.) G. C. Tucker	Ags, BC, BCS, Chih, Chis, Coah, CDM, Dgo, Hgo, Jal, Mex, Mich, Mor, Nay, NL, Oax, Pue, Son, Tlx, Ver, Zac
<i>Cyperus panamensis</i> (C. B. Clarke) Britton ex Standl.	Chis, Gro, Oax, Sin, Ver
<i>Cyperus papyrus</i> L.	Introduced: Mich, Mor, Ver
<i>Cyperus parishii</i> Britton ¹	Son
<i>Cyperus pedunculatus</i> (R. Br.) J. Kern	QRoo, Yuc
** <i>Cyperus penicillatus</i> Konz.	Oax
<i>Cyperus pennellii</i> O'Neill & Ben. Ayers.	Dgo, Mex, Mich
* <i>Cyperus perennis</i> (M. E. Jones) O'Neill	BC, BCS, Son
<i>Cyperus planifolius</i> Rich.	Cam, QRoo, Yuc
<i>Cyperus polystachyos</i> Rottb.	Cam, Chis, Gro, Oax, QRoo, Son, Tab, Tam, Ver, Yuc
<i>Cyperus prolixus</i> Kunth	Chis, CDM, Dgo, Hgo, Jal, Mex, Mich, Nay, Oax, Sin, Son, Tam, Ver
<i>Cyperus pseudothyrsiflorus</i> (Kük.) J. Rich. Carter & S.D. Jones ¹	NL, Qro
<i>Cyperus pseudovegetus</i> Steud. var. <i>megalanthus</i> Kük. ²	Cam, Chis, Qro, QRoo, SLP, Tam, Ver, Yuc
* <i>Cyperus pycnostachyus</i> (Kunth) Kunth	CDM, Mex, Mich, Pue, Tlx
<i>Cyperus reflexus</i> Vahl	CDM, Gto, Hgo, Jal, Mex, Mich, Qro, SLP, Ver
<i>Cyperus regiomontanus</i> Britton ³	Chis, Col, Gro, Jal, Oax, Mich, Sin, Son
<i>Cyperus retroflexus</i> Buckley	Chih, Coah, NL, Qro, Sin, Son, Tab, Tam, Ver
<i>Cyperus retroflexus</i> Buckley var. <i>pumilus</i> ¹	Tab
<i>Cyperus retrorsus</i> Chapm.	Tam
<i>Cyperus rotundus</i> L.	BCS, Cam, Chih, Chis, Col, CDM, Dgo, Gto, Gro, Hgo, Jal, Mex, Mich, Mor, Nay, NL, Oax, Pue, Qro, QRoo, SLP, Sin, SLP, Son, Tab, Tam, Ver, Yuc, Zac
<i>Cyperus salzmannianus</i> (Steud.) Bauters	Ver
** <i>Cyperus sanguineo-ater</i> Boeckeler var. <i>floribundus</i> Kük.	Mor
<i>Cyperus sanguineo-ater</i> Boeckeler var. <i>sanguineo-ater</i>	Chih, CDM, Dgo, Gro, Gto, Jal, Mex, Mich, Mor, Nay, Pue, Qro, Oax, Sin, Son, Zac
* <i>Cyperus schaffneri</i> Boeckeler	CDM
<i>Cyperus schweinitzii</i> Torr.	Chih, Dgo
<i>Cyperus semiochraceus</i> Boeckeler ²	BCS, Chih, CDM, Gro, Gto, Jal, Mex, Mich, Mor, Nay, Oax, Pue, Son, Ver
<i>Cyperus seslerioides</i> Kunth	Ags, Chih, Chis, CDM, Dgo, Gro, Gto, Hgo, Jal, Mex, Mich, Mor, Nay, Oax, Pue, Qro, Sin, SLP, Son, Tlx, Ver, Yuc, Zac

Appendix 1. Continuation.

Taxon	Distribution in Mexico
<i>Cyperus sesquiflorus</i> (Torr.) Mattf. & Kük.	Chis, Col, CDM, Dgo, Gro, Gto, Hgo, Jal, Mex, Mich, Mor, Nay, Oax, Qro, Pue, SLP, Sin, Son, Tam, Tlx, Ver
<i>Cyperus simplex</i> Kunth	Chis, Oax
* <i>Cyperus sordidus</i> J. Presl & C. Presl	Col, Gro, Jal, Nay, Sin
<i>Cyperus spectabilis</i> Link	Ags, Chih, Chis, CDM, Coah, Col, Dgo, Gro, Gto, Hgo, Jal, Mex, Mich, Mor, Nay, NL, Oax, Pue, Qro, Sin, SLP, Tam, Ver, Zac
* <i>Cyperus spectabilis</i> Link var. <i>parryi</i> (C. B. Clarke) Kük.	CDM, Gto, Mex, SLP
<i>Cyperus sphaerolepis</i> Boeckeler ¹	Ags, Chih, Coah, CDM, Dgo, Gto, Hgo, Jal, Mex, NL, Pue, Qro, SLP, Son, Tlx, Zac
<i>Cyperus squarrosus</i> L.	Ags, BC, BCS, Cam, Chih, Chis, Coah, CDM, Dgo, Gro, Gto, Jal, Mex, Mich, Mor, NL, Oax, Pue, Qro, QRoo, Sin, SLP, Son, Tab, Tam, Tlx, Ver, Yuc, Zac
<i>Cyperus subsquarrosus</i> (Muhl.) Bauters	BC, BCS, Chih, Chis, Col, Dgo, Gro, Jal, Mex, Mich, Mor, Nay, Oax, Pue, Sin, SLP, Son, Tam, Tlx, Ver, Zac
<i>Cyperus surinamensis</i> Rottb.	Ags, BCS, Cam, Chis, Col, Dgo, Gro, Gto, Jal, Mex, Mich, Mor, Nay, Oax, Pue, Qro, QRoo, Sin, SLP, Son, Tab, Tam, Ver, Yuc
<i>Cyperus svensonii</i> G. C. Tucker ²	Chis
<i>Cyperus swartzii</i> (A. Dietr.) Boeckeler ex Kük.	SLP, Ver
* <i>Cyperus tempeae</i> G. C. Tucker	SLP, Tam, Ver
<i>Cyperus tenerrimus</i> J. Presl & C. Presl	Chis, Col, Dgo, Gro, Jal, Mex, Mich, Mor, Nay, Oax, Pue, Sin, Son, Ver
<i>Cyperus tenuis</i> Sw.	BC, BCS, Cam, Chis, Mex, Mich, Nay, Oax, Pue, Qro, QRoo, SLP, Son, Tab, Ver, Yuc
<i>Cyperus thyrsoiflorus</i> Jungh.	Cam, Chis, Coah, Hgo, Mich, Mor, Nay, NL, Oax, Pue, QRoo, SLP, Tab, Tam, Ver
<i>Cyperus trachynotus</i> Torr. ¹	BC, BCS, Col, Gro, Jal, Mich, Nay, NL, Oax, Pue, Qro, SLP, Sin, Son, Tab, Tam, Ver
<i>Cyperus uncinulatus</i> Schrad. ex Nees	Chis, Oax
<i>Cyperus unioides</i> R. Br.	Chis, CDM, SLP, Tab, Oax, Ver
<i>Cyperus virens</i> Michx. var. <i>drummondii</i> (Torr. & Hook.) Kük.	Dgo
<i>Cyperus virens</i> Michx. var. <i>minarum</i> (Boeckeler) Denton	Chis, Mex
<i>Cyperus virens</i> Michx. var. <i>virens</i>	Ags, Chis, CDM, Coah, Col, Dgo, Gto, Hgo, Jal, Mex, Mich, Nay, Oax, Qro, SLP, Son, Tab, Ver, Zac
** <i>Cyperus wilburii</i> G. C. Tucker	Oax
** <i>Cyperus</i> sp. [<i>Kyllinga microcephala</i> Liebm. non Steud.]	Ver
Cypringlea (3/3/0)	
* <i>Cypringlea analecta</i> (Beetle) M. T. Strong	Hgo, NL, Qro, SLP, Tam
* <i>Cypringlea coahuilensis</i> (Svenson) M. T. Strong	Coah, NL
* <i>Cypringlea evadens</i> (C.D. Adams) Reznicek et S. González	Chis, Gro, Oax, Pue
Eleocharis (55/10/5)	
<i>Eleocharis acicularis</i> (L.) Roem. & Schult.	Ags, BC, Chih, Chis, CDM, Dgo, Gto, Hgo, Jal, Mex, Mich, Mor, Oax, Pue, Qro, SLP, Ver, Zac
<i>Eleocharis acutangula</i> (Roxb.) Schult. subsp. <i>acutangula</i>	Chis, Hgo, Jal, Nay, Oax, Tab, Tam, Ver, Yuc
<i>Eleocharis acutangula</i> (Roxb.) Schult. subsp. <i>brevisetata</i> D.J. Rosen	Cam, Chis, Gro
<i>Eleocharis albibracteata</i> Nees & Meyen ex Kunth	Chis, Gro
<i>Eleocharis albida</i> Torr. ³	Tam, Yuc
** <i>Eleocharis arsenifera</i> S. González, J. Tena et T. Alarcón	Chih
<i>Eleocharis atropurpurea</i> (Retz.) J. Presl & C. Presl	Cam, Chis, Dgo, Gro, Jal, Oax, Son, Yuc
<i>Eleocharis bella</i> (Piper) Svenson	BC, Chih, Dgo, Son

Appendix 1. Continuation.

Taxon	Distribution in Mexico
<i>Eleocharis bonariensis</i> Nees	CDM, Dgo, Mex, Mich, Oax, Qro
<i>Eleocharis brachycarpa</i> Svenson ¹	Tam
<i>Eleocharis cancellata</i> S. Watson ¹	Chih, CDM, Gto, Mex, SLP
<i>Eleocharis cellulosa</i> Torr.	Cam, Chis, Coah, Gro, Jal, Nay, NL, QRoo, Tab, Tam, Ver, Yuc
<i>Eleocharis coloradoensis</i> (Britton) Gilly	BC, Coah, Chih, Dgo, Sin, Tam, Ver
**Eleocharis cryptica Saarela, P.M. Peterson, S. González & D.J. Rosen	Dgo
<i>Eleocharis densa</i> Benth. ²	Ags, Chis, CDM, Dgo, Gto, Hgo, Jal, Mex, Mich, Mor, Oax, Pue, Qro, SLP, Ver, Zac
<i>Eleocharis dombeyana</i> Kunth	Chis, CDM, Coah, Dgo, Hgo, Jal, Mex, Mich, Mor, Oax, Pue, SLP, Son, Ver, Zac
<i>Eleocharis elegans</i> (Kunth) Roem. & Schult.	Cam, Chis, Col, Gro, Gto, Hgo, Jal, Mex, Mich, Mor, Nay, Oax, Pue, Qro, QRoo, Sin, SLP, Son, Tab, Tam, Ver, Yuc
<i>Eleocharis elongata</i> Chapm.	Cam?, Yuc?
<i>Eleocharis filiculmis</i> Kunth	Cam, Chis, Gto, Gro, Jal, Mor, Oax, Pue, Qro, QRoo, Tab, Ver
<i>Eleocharis flavescens</i> (Poir.) C.B. Clarke	BCS, Coah, Chis, Jal, Mor, SLP, Son, Tam, Ver
<i>Eleocharis geniculata</i> (L.) Roem. & Schult.	Ags, BC, BCS, Cam, Chih, Chis, CDM, Coah, Col, Dgo, Gro, Gto, Hgo, Jal, Mex, Mich, Mor, NL, Oax, Pue, Qro, QRoo, Sin, SLP, Son, Tab, Tam, Tlx, Ver, Yuc, Zac
**Eleocharis gonzaleziae D.J. Rosen	Dgo
*Eleocharis ignota S. González & Reznicek	Dgo, Gto, Jal, Mich, Zac
<i>Eleocharis interstincta</i> (Vahl) Roem. & Schult.	Cam, Chis, Col, Tab, Tam, Ver, Yuc
<i>Eleocharis macrostachya</i> Britton	Ags, BC, Chih, Chis, Coah, CDM, Dgo, Gto, Hgo, Jal, Mex, Mich, Mor, NL, Oax, Pue, Qro, Sin, SLP, Son, Tam, Zac
<i>Eleocharis maculosa</i> (Vahl) R. Br.	Chis
<i>Eleocharis minima</i> Kunth	Cam, Chis, Dgo, Gro, Jal, Mich, Nay, Oax, Qro, QRoo, Sin, Tab, Tam, Ver
<i>Eleocharis minutissima</i> Britton	Cam, Chis, Oax, QRoo
<i>Eleocharis montana</i> (Kunth) Roem. & Schult.	Ags, Cam, Chis, Coah, CDM, Dgo, Gro, Gto, Hgo, Jal, Mex, Mich, Mor, Nay, Oax, Pue, Qro, QRoo, SLP, Son, Ver, Yuc, Zac
<i>Eleocharis montevidensis</i> Kunth	Ags, BC, BCS, Chih, Chis, Coah, CDM, Dgo, Gro, Gto, Hgo, Jal, Mex, Mich, Mor, Oax, Pue, Qro, SLP, Son, Tam, Tlx, Ver, Zac
*Eleocharis moorei M. Strong & S. González	Hgo, Ver
<i>Eleocharis mutata</i> (L.) Roem. & Schult.	Cam, Chis, Coah, Col, Gro, Jal, Nay, QRoo, Sin, Tab, Tam, Ver, Yuc
<i>Eleocharis nigrescens</i> (Nees) Steud.	Ags, Cam, Chis, Jal, QRoo, Tab, Ver, Yuc
<i>Eleocharis obtusetrigona</i> (Lindl. & Nees) Steud.	Ver
<i>Eleocharis pachystyla</i> (C. Wright) C.B. Clarke	Chis, Oax, Tab, Ver
<i>Eleocharis palustris</i> (L.) Roem. & Schult.	BC
<i>Eleocharis parishii</i> Britton	Ags, BC, BCS, Chih, Coah, Dgo, NL, Son, Zac
<i>Eleocharis parvula</i> (Roem. & Schult.) Link ex Bluff, Nees & S. Schauer.	BC, Cam, Chis, Tab, Ver
<i>Eleocharis plicarhachis</i> (Griseb.) Svenson	Cam, Chis, Tab, Yuc
<i>Eleocharis quinqueflora</i> (Hartmann) O. Schwarz	BC
<i>Eleocharis quinqueflora</i> (Hartmann) O. Schwarz var. <i>bernardina</i> (Munz & I.M. Johnst.) S. González & P.M. Peterson ⁴	BC
<i>Eleocharis radicans</i> (A. Dietr.) Kunth	BC, Chih, Chis, Coah, Dgo, Gro, Mex, Mich, Oax, Son, Tab, Tam, Ver
<i>Eleocharis ravenelii</i> Britton ¹	SLP, Tam?
<i>Eleocharis retroflexa</i> (Poir.) C.B. Clarke	Cam, Chis, Oax, Tab, Ver
*Eleocharis reznicekii S. González, D.J. Rosen, R. Carter & P.M. Peterson	Ags, Dgo, Gto, Zac

Appendix 1. Continuation.

Taxon	Distribution in Mexico
<i>Eleocharis rostellata</i> (Torr.) Torr.	BC, Chih, Chis, Coah, Dgo, Mich, NL, Pue, Son, Tam, Zac
**Eleocharis rzedowskii S. González	NL
<i>Eleocharis schaffneri</i> Boeckeler	Ags, Chih, Chis, Dgo, Gto, Jal, Mich, Oax, Qro, SLP, Zac
<i>Eleocharis sellowiana</i> Kunth	Chis
**Eleocharis subcancellata C.B. Clarke	Jal
*Eleocharis svensoniana S. González	Chih, Dgo, Jal, Sin, Son
*Eleocharis tenarum S. González & M. González E.	Ags, Dgo, Gto, Mex, Qro, Zac
<i>Eleocharis tiarata</i> Gómez-Laur.	Cam
<i>Eleocharis urceolata</i> (Liebm.) Svenson	Cam, Chis, Ver
<i>Eleocharis xyridiiformis</i> Fernald & Brackett	CDM, Dgo, Mex, Zac
<i>Eleocharis yecorensis</i> E. Roalson ²	Dgo, Gto, Jal, Mex, Nay, Son, Zac
Fimbristylis (16/2/0)	
<i>Fimbristylis annua</i> (Allioni) Roem. & Schult.	Ags, BC, Cam, CDM, Chih, Dgo, Gro, Gto, Jal, Mex, Mich, Nay, Pue, Qro, QRoo, Sin, Son, Tab, Ver, Zac
*Fimbristylis argillicola Kral	Ags, CDM, Dgo, Gro, Gto, Jal, Mex, Mich, Pue, Zac
<i>Fimbristylis autumnalis</i> (L.) Roem. & Schult.	Chis, Oax, Sin, SLP, Tab, Ver
<i>Fimbristylis caroliniana</i> (Lam.) Fernald	Tab, Tam, Ver
<i>Fimbristylis castanea</i> (Michaux) Vahl	Tam, QRoo, Yuc
<i>Fimbristylis complanata</i> (Retz.) Link	BCS, Cam, Chih, Chis, Dgo, Gro, Jal, Mex, Mich, Nay, NL, Oax, Pue, SLP, Son, Tab, Tam, Ver, Yuc
<i>Fimbristylis cymosa</i> R. Br.	Cam, Chis, Col, Gro, Jal, Mich, Nay, Oax, QRoo, Sin, Son, Tab, Tam, Ver, Yuc
<i>Fimbristylis dichotoma</i> (L.) Vahl	Ags, BC, BCS, Cam, Chis, Chih, Dgo, Gto, Gro, Jal, Mex, Mich, Nay, Oax, Qro, Sin, Son, Tab, Tam, Ver, Yuc
<i>Fimbristylis ferruginea</i> (L.) Vahl	Cam, QRoo, Yuc
<i>Fimbristylis littoralis</i> Gaudich.	Cam, Col, Chis, Gro, Jal, Mex, Mich, Mor, Nay, NL, Oax, Sin, SLP, Tab, Ver
*Fimbristylis pentastachya Boeckeler	Gro, Jal, Mich, Nay, Oax, Sin, Son, Ver
<i>Fimbristylis puberula</i> (Michx.) Vahl	Cam, Chih, SLP, Tam
<i>Fimbristylis quinquangularis</i> (Vahl) Kunth	Dgo, Jal, Nay, Oax, Sin
<i>Fimbristylis spadicea</i> (L.) Vahl	Cam, Chis, Coah, Col, Gro, Jal, Mex, Mich, Nay, Oax, QRoo, Sin, Tab, Tam, Ver, Yuc
<i>Fimbristylis thermalis</i> S. Watson ¹	BC, Chih, Coah, SLP, Son
<i>Fimbristylis vahlilii</i> (Lam.) Link	BC, Chis, NL, Son, Tab, Tam
Fuirena (7/3/1)	
<i>Fuirena camptotricha</i> C. Wright	Cam, Chis, QRoo, Tab, Ver, Yuc
<i>Fuirena incompleta</i> Nees var. <i>incompleta</i>	Chis, Dgo, Mex, Mich, Ver
*Fuirena incompleta Nees var. <i>obliterata</i> Kral	Dgo, Gto, Jal, Mex, Nay, Son
*Fuirena repens Boeckeler	Dgo, Qro, SLP
<i>Fuirena robusta</i> Kunth	Cam, Tab
*Fuirena simplex Vahl var. <i>aristulata</i> (Torr.) Kral	BC, Son
<i>Fuirena simplex</i> Vahl var. <i>simplex</i>	BC, BCS, Cam, Chih, Chis, Coah, Dgo, Gro, Hgo, Jal, Mex, Mor, NL, Oax, Pue, Qro, Sin, SLP, Son, Tab, Tam, Ver, Yuc
**Fuirena stephani Ramos & N. Diego	Cam
<i>Fuirena umbellata</i> Rottb.	Tab, Yuc
Hypolytrum (1/0/0)	
<i>Hypolytrum nicaraguense</i> Liebm.	Chis, Oax, Tab, Ver

Appendix 1. Continuation.

Taxon	Distribution in Mexico
<i>Isolepis</i> (2/0/0)	
<i>Isolepis carinata</i> Hook. & Arn. ex Torr.	BC?
<i>Isolepis cernua</i> (Vahl) Roem. & Schult.	BC, BCS, Son
<i>Karinia</i> (1/1/0)	
* <i>Karinia mexicana</i> (C.B. Clarke, ex Britton) Reznicek & McVaugh	Ags, CDM, Dgo, Gto, Jal, Mex, Mich, Qro, Pue, SLP, Zac
<i>Rhynchospora</i> (63/7/3)	
** <i>Rhynchospora angosturensis</i> W. W. Thomas	SLP
<i>Rhynchospora aristata</i> Boeckeler var. <i>aristata</i>	Chis, CDM, Hgo, Jal, Mex, Oax, Ver
* <i>Rhynchospora aristata</i> Boeckeler var. <i>suberecta</i> Kük.	Dgo, Mex, Gro, Jal, Mich, Nay, Oax
<i>Rhynchospora barbata</i> (Vahl) Kunth	Cam, Chis, QRoo, Tab, Ver
<i>Rhynchospora berteroi</i> (Spreng.) C.B. Clarke	Cam, QRoo, Yuc?
<i>Rhynchospora boliviensis</i> C.B. Clarke	Oax
<i>Rhynchospora brevirostris</i> Griseb.	Chis, Gro, Jal, Mich, Mor, Nay, Oax
<i>Rhynchospora brittonii</i> Gale	Tab
<i>Rhynchospora brownii</i> Roem. & Schult. subsp. <i>americana</i> Guagl.	Chis
<i>Rhynchospora cephalotes</i> (L.) Vahl	Cam, Chis, Gro, Oax, Tab, Ver, Yuc
<i>Rhynchospora ciliata</i> (G. Mey.) Kük.	Cam, Chis, Oax, QRoo, Tab, Ver, Yuc
<i>Rhynchospora colorata</i> (L.) H. Pfeiff.	Cam, Chis, CDM, Coah, Col, Dgo, Gro, Jal, Mex, Mor, NL, Oax, Qro, QRoo, SLP, Tab, Tam, Ver, Yuc
<i>Rhynchospora consanguinea</i> (Kunth) Boeckeler	Chis, Oax, Tab, Ver
<i>Rhynchospora contracta</i> (Nees) J. Raynal	Cam, Chis, Dgo, Gro, Jal, Mex, Nay, Oax, QRoo, Sin, Tab, Ver, Yuc
<i>Rhynchospora corymbosa</i> (L.) Britton	Cam, Chis, Tab, Ver
<i>Rhynchospora divergens</i> Chapm. ex M. A. Curtis	Chis
<i>Rhynchospora dives</i> Standl. ²	Chis, Tab, Ver
* <i>Rhynchospora durangensis</i> Kral & W. W. Thomas	Dgo, Zac
<i>Rhynchospora eximia</i> (Nees) Boeckeler	Cam, Chis, Col, Gro, Jal, Nay, Tab, Ver
<i>Rhynchospora fascicularis</i> (Michx.) Vahl	Cam, Tab, Ver
<i>Rhynchospora filifolia</i> A. Gray	Tab
<i>Rhynchospora filiformis</i> Vahl	Cam, Chis, Tab, QRoo
<i>Rhynchospora floridensis</i> (Britton ex Small) H. Pfeiff.	Cam, Chis, Oax, QRoo, Yuc
<i>Rhynchospora gigantea</i> Link	Cam, Tab, Ver
<i>Rhynchospora globosa</i> (Kunth) Roem. & Schult.	Cam, Chis, Oax, QRoo, Tab, Ver
<i>Rhynchospora globularis</i> (Chapm.) Small var. <i>recognita</i> Gale	Chis
<i>Rhynchospora gracilentia</i> A. Gray	Chis
<i>Rhynchospora harveyi</i> W. Boott. var. <i>harveyi</i>	Coah
<i>Rhynchospora hassleri</i> C.B. Clarke	Ver
<i>Rhynchospora hirsuta</i> (Vahl) Vahl	Cam, Chis, Tab
<i>Rhynchospora holoschoenoides</i> (Rich.) Herter	Cam, Chis, Jal, Nay, Oax, QRoo, Tab, Ver, Yuc
<i>Rhynchospora inundata</i> (Oakes) Fern.	Tab
* <i>Rhynchospora jaliscensis</i> McVaugh	Dgo, Jal
* <i>Rhynchospora jubata</i> Liebm.	Chis, Tab, Ver
<i>Rhynchospora kunthii</i> Nees ex Kunth	Chih, Chis, CDM, Dgo, Gro, Hgo, Jal, Mex, Mich, Nay, Oax, Pue, SLP, Tab, Ver
<i>Rhynchospora lindeniana</i> Griseb. var. <i>bahamensis</i> (Britton) Gale	QRoo, Yuc
<i>Rhynchospora marisculus</i> Lindl. & Nees ex Nees	Chis, Ver

Appendix 1. Continuation.

Taxon	Distribution in Mexico
<i>Rhynchospora marliniana</i> Naczi, W. M. Knapp & W.W. Thomas	Tab
<i>Rhynchospora mexicana</i> (Liebm.) Steud.	Chis, Jal, Oax
<i>Rhynchospora nervosa</i> (Vahl) Boeckeler	Cam, Chis, Gro, Jal, Mex, Nay, Oax, QRoo, SLP, Sin, Tab, Tam, Ver
<i>Rhynchospora cf. nitens</i> (Vahl) A. Gray	Yuc
<i>Rhynchospora nivea</i> Boeckeler ¹	Coah
<i>Rhynchospora oligantha</i> A. Gray	Cam
<i>Rhynchospora plumosa</i> Elliott	QRoo, Tab
<i>Rhynchospora polyphylla</i> (Vahl) Kunth	Chis, Ver
<i>Rhynchospora pusilla</i> Chapm. ex M. A. Curtis	Chis, Tab
<i>Rhynchospora radicans</i> (Schltdl. & Cham.) H. Pfeiff. subsp. <i>microcephala</i> (Bertero ex Spreng.) W. W. Thomas	Chis, Gro, QRoo, Tab, Ver, Yuc
<i>Rhynchospora radicans</i> (Schltdl. & Cham.) H. Pfeiff. subsp. <i>radicans</i>	Cam, Chis, Hgo, Oax, Pue, Qro, QRoo, SLP, Tab, Ver
<i>Rhynchospora robusta</i> (Kunth) Boeckeler	Chis, Tab, Ver [Pendiente]
**Rhynchospora rosae W.W. Thomas	Chis
<i>Rhynchospora rugosa</i> (Vahl) Gale	Chis, Oax, Tab, Ver
<i>Rhynchospora ruiziana</i> Boeckeler	Chis, Oax
<i>Rhynchospora schiedeana</i> Kunth	Chis, Ver
<i>Rhynchospora scutellata</i> Griseb.	Cam, Gro, Mich, Tab, Yuc
<i>Rhynchospora tenerrima</i> Nees ex Spreng.	Cam, Chis, Tab
<i>Rhynchospora tenuis</i> Link	Cam, Chis, Jal, Nay, Sin, Ver
<i>Rhynchospora tracyi</i> Britton	Yuc
<i>Rhynchospora triflora</i> Vahl	Cam
<i>Rhynchospora trispicata</i> (Nees) Schrad. ex Steud.	Cam, Chis, Tab, Ver
<i>Rhynchospora tuerckheimii</i> C.B. Clarke ex Kük.	Chis, Gro, Ver
<i>Rhynchospora velutina</i> (Kunth) Boeckeler	Cam, Chis, Tab, Ver
<i>Rhynchospora vulcani</i> Boeckeler	Chis
<i>Rhynchospora watsonii</i> (Britton) Davidse	Cam, Chis, QRoo, Tab, Ver
**Rhynchospora zacualtipanensis M. Strong	Hgo
Schoenoplectiella (2/0/0)	
<i>Schoenoplectiella erecta</i> (Poir.) Lye	NL, QRoo, Tam, Yuc
<i>Schoenoplectiella saximontana</i> (Fernald) Lye	BC, BCS, Chih, Coah, NL, Qro, SLP, Tam
Schoenoplectus (5/0/0)	
<i>Schoenoplectus acutus</i> (Muhlenberg ex Bigelow) Á. Löve & D. Löve var. <i>occidentalis</i> (S. Watson) S. G. Smith	Ags, BC, Chih, Coah, Dgo, Mich, NL, Son, Zac
<i>Schoenoplectus americanus</i> (Pers.) Volkart ex Schinz et R. Keller	Ags, BC, BCS, Chih, Chis, CDM, Coah, Col, Dgo, Gto, Hgo, Jal, Mex, Mich, Mor, NL, Oax, Qro, Pue, Sin, SLP, Son, Tam, Tlx, Ver, Zac
<i>Schoenoplectus californicus</i> (C. A. Meyer) Soják	Ags, BC, BCS, Chih, Chis, CDM, Coah, Col, Dgo, Gto, Hgo, Jal, Mex, Mich, Mor, NL, Oax, Pue, Qro, SLP, Son, Tam, Tlx, Ver, Zac
<i>Schoenoplectus pungens</i> (Vahl) Palla	BC, BCS, Coah, Gto, Jal, Mich, Son, Tam, Ver
<i>Schoenoplectus tabernaemontani</i> (C. C. Gmelin) Palla	Cam, Chih, Chis, CDM, Coah, Col, Dgo, Jal, Mex, Mich, Mor, Nay, NL, Oax, Pue, QRoo, Qro, Son, Tab, Tam, Tlx, Ver, Yuc
Schoenus (1/0/0)	
<i>Schoenus nigricans</i> L.	Cam, Chis, Coah, Dgo, NL, Oax, QRoo, SLP, Yuc
Scirpus (4/0/0)	
<i>Scirpus atrovirens</i> Willd.	Chih
<i>Scirpus cyperinus</i> (L.) Kunth	Hgo, Ver

Appendix 1. Continuation.

Taxon	Distribution in Mexico
<i>Scirpus microcarpus</i> J. Presl & C. Presl	BC, Dgo
<i>Scirpus pendulus</i> Muhl.	Coah
Scleria (29/2/1)	
<i>Scleria anceps</i> Liebm.	Chis, Ver
<i>Scleria bellii</i> LeBlond	Dgo, Jal
* <i>Scleria bourgeauii</i> Boeckeler	Chih, Chis, Dgo, Jal, Nay, Ver
<i>Scleria bracteata</i> Cav.	Cam, Chis, Gro, Oax, QRoo, Tab, Ver, Yuc
<i>Scleria ciliata</i> Michx.	Cam, Chis, Dgo, Jal, Mex, Nay, QRoo
<i>Scleria distans</i> Poir.	Chis, QRoo, Tab
<i>Scleria eggersiana</i> Boeckeler	Cam, Chis, QRoo, Tab, Ver, Yuc
<i>Scleria flagellum-nigrorum</i> P. J. Bergius	Tab, Ver
<i>Scleria georgiana</i> Core	Cam
<i>Scleria hirtella</i> Sw.	Chis, Mich, Nay, Oax, Tab, Ver
<i>Scleria interrupta</i> Rich.	Cam, Chis, Jal?
<i>Scleria latifolia</i> Sw.	Chis
<i>Scleria lithosperma</i> (L.) Sw.	Cam, Chis, Col, Gro, Mich, Oax, QRoo, SLP, Tab, Tam, Ver, Yuc
<i>Scleria macrophylla</i> J. Presl & C. Presl	BC, BCS, Cam, Chis, Gro, Oax, Tab, Ver
<i>Scleria melaleuca</i> Rchb. ex Schltdl. & Cham.	Cam, Chis, Gro, Oax, SLP, Tab, Tam, Ver
<i>Scleria mexicana</i> (Liebm.) Boeckeler	Chis, Gro, Tab, Ver
<i>Scleria microcarpa</i> Nees ex Kunth	Cam, Chis, QRoo, Tab, Ver
<i>Scleria muehlenbergii</i> Steudel	Cam, Chis, Dgo, Gro, Gto, Jal, Mex, Mich, Nay, NL, Oax, QRoo, Sin, Son, Tab, Ver
<i>Scleria oligantha</i> Michx.	Cam, Chis, Dgo, NL, Qro, Tab, Tam, Ver
<i>Scleria phylloptera</i> C. Wright ex Griseb.	Chis, Tab
<i>Scleria purdiei</i> C.B. Clarke	Chis
<i>Scleria scabriuscula</i> Schltdl. ²	Chis, Jal, Nay, Ver
<i>Scleria schiedeana</i> Schltdl.	Gro, Jal, Nay, Oax, Ver
<i>Scleria secans</i> (L.) C.B. Clarke	Cam, Chis, Jal, QRoo, Tab, Ver, Yuc
<i>Scleria setuloso-ciliata</i> Boeckeler	Cam, Chis, Gro, QRoo, Tab, Ver, Yuc
** <i>Scleria</i> sp. [<i>S. hirta</i> Boeckeler]	Ver
<i>Scleria tenella</i> Kunth	Jal, Oax, Ver
<i>Scleria vaginata</i> Steud.	QRoo
<i>Scleria verticillata</i> Muhl.	NL, Tam