

POACEAE*Hemarthria protensa* Nees ex Steud.

$n = 9$, CHN. India, Assam, Guwhati, Deepor Bheel, 52 m, 26°06'52.71"N, 91°39'03.71"E, 19 Apr 2014, *K.V.C. Gosavi 171* (SUK) [Fig. 11I].

***Lasiurus scindicus* Henrard

$n = 18$, CHN. India, Rajasthan, Jaisalmer District, Jaisalmer, 190 m, 18 Jan 2015, 26°57'42.24"N, 71°19'17.05"E, *K.N. Koli 167* (SUK) [Fig. 11J].

Manisuris myurus L.

$n = 8$, CHN. India, Tamil Nadu, Kanchipuram District, Wadajabad, 56 m, 12°48'28.89"N, 79°49'22.92"E, 10 Oct 2015, *K.V.C. Gosavi 196* (SUK) [Fig. 11K].

Mnesithea striata (Nees ex Steud.) de Koning & Sosef

$n = 18$, CHN. India, Meghalaya, Jowai, on the way, 1237 m, 25°27'23.57"N, 92°11'26.50"E, 12 Dec 2015, *K.V.C. Gosavi 235* (SUK) [Fig. 11L].

SAPOTACEAE**Chrysophyllum roxburghii* G. Don

$2n = 26$, CHN. India, Karnataka, Anmod Ghat, 629 m, 15°56'24.22"N, 73°59'41.66"E, 4 Jun 2017, *R.N. Mane 61* (SUK) [Fig. 11M].

José Ignacio Márquez-Corro,^{1**} Modesto Luceño,^{1#} Pedro Jiménez-Mejías,² Marcial Escudero,³ Santiago Martín-Bravo,⁴ Andrew L. Hipp,^{4,5} Kyong-Sook Chung,⁶ A. Muthama Muasya,⁷ Paul E. Rothrock,⁸ Jaime A. Weber⁴ & Robert Naczi⁹

1 Department of Molecular Biology and Biochemical Engineering, Universidad Pablo de Olavide, Carretera de Utrera km 1, 41013 Seville, Spain

2 Biology (Botany), Universidad Autónoma de Madrid, Ciudad Universitaria de Cantoblanco, Calle Francisco Tomás y Valiente, 7, 28049 Spain

3 Department of Plant Biology and Ecology, University of Seville, Reina Mercedes sn, 41012 Seville, Spain

4 The Morton Arboretum, 4100 Illinois Route 53, Lisle, Illinois 60532, U.S.A.

5 The Field Museum, Integrative Research Center, 1400 S Lake Shore Dr., Chicago, Illinois 60605, U.S.A.

6 Department of Medicinal Plant Science, Jungwon University, Goesan-gun, Chungbuk 28024, Korea

7 Department of Biological Sciences, University of Cape Town, Private Bag X3, Rondebosch, 7701 Cape Town, South Africa

8 Department of Biology, Indiana University, Bloomington, Indiana 47405, U.S.A.

9 New York Botanical Garden, 2900 Southern Boulevard, Bronx, New York 10458-5126, U.S.A.

The two first authors have equally contributed to this article.

* Author for correspondence: jimarcorr@gmail.com

* New cytotype for the species.

** First chromosome count for the species.

*** First chromosome count for the genus.

! First chromosome count for the subfamily.

Initials of the contributor(s) for each count appear as a superscript at the end of the corresponding species name. Meiotic configurations of chromosomes (I: monovalent, II: bivalent, III: trivalent, IV: tetra-valent) are reported after the diploid number.

Here we report chromosome number counts from the sedge family (Cyperaceae), most of which correspond to genus *Carex* from the Nearctic and western Palearctic. In addition, counts are reported for some Neotropical and Afrotropical sedges. We provide the first known chromosome counts for the subfamily Mapanioideae, 5 genera (*Lagenocarpus*, *Afroscirpoides*, *Dracoscirpoides*, *Trianoptiles*, *Calyptracarya*) and 45 species.

CYPERACEAE**SUBFAMILY CYPEROIDEAE****TRIBE ABILDGAARDIEAE***Fimbristylis spadicea* (L.) Vahl^{ML}

$2n = 20$ (10^{II}), CHN. Brazil, Pernambuco, Porto de Galinhas, 15 Aug 1996, *Luceño & al. s.n.* (UFP).

TRIBE BISBOECKELERAE****Calyptracarya glomerulata* (Brongn.) Urb.^{ML}

$2n = 20$ (10^{II}), CHN. Brazil, Pernambuco, Cabo, Ecological Reserve of Gurjaú, atlantic forest, 1995, *Luceño & al. s.n.* (UFP) [Fig. 12X].

TRIBE CARICEAE***Carex acidicola* Naczi^{RN}

$2n = 50$ (25^{II}), CHN. U.S.A., Georgia, Clarke County, 1 mi ESE of Athens, 0.5 mi S of end of Rock and Shoals Road, 19 Apr 1988, *Naczi 1783* (MICH, NY).

***Carex aethiopica* Schkuhr^{ML}

$2n = 74$ (37^{II}), CHN. South Africa, Western Cape Province, Cape Town, Table Mountain, 12 Sep 2009, *Luceño & al. s.n.* (BOL).

A chromosome number of $2n = 76$ (38^{II}) [Fig. 12A] was also found in a specimen of the same population.

***Carex amphibola* Steud.^{RN}

$2n = 56$ (28^{II}), CHN. U.S.A., Arkansas, Scott County, 2 mi N of Y City along W side of route 71, just S of Fourche LaFave River, 14 May 1991, *Naczi 2829* (MICH, NY).

***Carex asynchrona* Naczi^{RN}

$2n = 52$ (26^{II}), CHN. Mexico, Tamaulipas, 7 km WNW of Gómez Farias, vicinity of Rancho del Cielo Biological Station, 10 Apr 1992, *Naczi 2949* (MICH).

***Carex bolanderi* Olney^{KSC,ME,AH}

$2n = 50$ (25^{II}), CHN. U.S.A., Oregon, Clackamas County, south slope of Mt. Hood, above Timberline Lodge access road, 45°18'24.00"N, 121°54'42.00"W, 13 Sep 2009, *Zika 24689* (MOR).

$2n = 58$ (29^{II}), CHN. U.S.A., Greenhouse collection grown in Illinois, DuPage County, The Morton Arboretum, from material sent by collaborator; greenhouse voucher: *Norris 43* (MOR). Original population information: New Mexico, Catron County, Gila National Forest, Mogollon Mountains, Bursum Road above Mogollon, 33.370918°N, 108.721147°W, 23 Jul 2008, *Norris, Kleinman & Walkup 2008-7-23-43* (SNM).

**** *Carex borbonica* Lam.**^{ML}

$2n = 68$ (34^{II}), CHN. France, La Réunion, Plaine de Remparts, surroundings of Commerson crater, 21°13'15.00"S, 55°38'44.00"E, 2280 m, 1 Jan 2009, *Luceño & Guzmán 1ML09* (UPOS-3635) [Fig. 12B].

**** *Carex borbonica* Lam. × *C. boryana* Schkuhr**^{ML}

$2n = 68$ (34^{II}), CHN. France, La Réunion, Cirque de Mafate, Le Maïdo, 21°04'29.40"S, 55°23'14.50"E, 2180–2200 m, 6 Jan 2009, *Luceño & Guzmán 20ML09* (UPOS-3724) [Fig. 12C].

Carex boryana and *C. borbonica* constitute two ecologically and morphologically well-defined species (Escudero & Luceño, 2011). However, genetic differentiation has been shown to be scarce (Escudero & Luceño, 2009) and their chromosome number is herein reported to be the same. As this specimen presents morphological traits clearly intermediate between both species, it is worth mentioning that there were no irregularities found in the meiotic pairing (shown in Fig. 12C). Future genomic studies are required on these species, which might shed light on the apparently contrasting pattern of high morphological vs. low genetic/cytogenetic divergence.

**** *Carex boryana* Schkuhr**^{ML}

$2n = 68$ (34^{II}), CHN. France, La Réunion, Les Makes, La Fenêtre, 21°11'07.80"S, 55°25'57.80"E, 1500–1650 m, 5 Jan 2009, *Luceño & Guzmán 14ML09* (UPOS-3641) [Fig. 12D].

***Carex brevior* (Dewey) Mack. ex Lunell**^{KSC,AH}

$2n = 60$ (30^{II}), CHN. U.S.A., Iowa, Boone County, 42°01'24.348"N, 93°43'09.012"W, 322 m, 10 Jul 2008, *Norris & Thompson s.n.* (MOR).

**** *Carex brysonii* Naczi**^{RN}

$2n = 50$ (25^{II}), CHN. U.S.A., Alabama, Winston County, 10 mi N of Double Springs, Sipsey River Recreation Area of Bankhead National Forest, 10 Apr 1992, *Naczi 2950* (MICH, NY).

**** *Carex bulbostylis* Mack.**^{RN}

$2n = 54$ (27^{II}), CHN. U.S.A., Texas, Denton County, 4.2 mi W of junction of I-35 and Road 455 in Sanger, S of Road 455, along E side of Clear Creek, 26 Apr 1990, *Naczi 2328* (MICH, NY).

**** *Carex calcifugens* Naczi**^{RN}

$2n = 52$ (26^{II}), CHN. U.S.A., South Carolina, Dorchester County, 6 mi SW of Summerville, along E side of Ashley River, N of route 17A, 22 Apr 1989, *Naczi 2059* (MICH, NY, PH).

***Carex cespitosa* L.**^{PJM,ML}

$2n = 78$ (39^{II}), CHN. Spain, Navarra, Lesaka, Zalain, 43°16'33.50"N, 01°41'48.60"W, 30 m, 16 Jul 2006, *Jiménez-Mejías & al. 99PJM06* (UPOS-1930).

**** *Carex conoidea* Schkuhr ex Willd.**^{RN}

$2n = 68$ (34^{II}), CHN. Canada, New Brunswick, York County, Kings Landing, above St. John River, 26 Apr 1990, *Naczi 2347* (MICH, NY).

**** *Carex corrugata* Fernald**^{RN}

$2n = 58$ (29^{II}), CHN. U.S.A., Virginia, Sussex County, 2 mi W of Homeville, along E side of Nottoway River, 0.3 mi N of route 40 crossing, 10 Jun 1989, *Naczi 2238* (MICH, NY).

**** *Carex cusickii* Mack. ex Piper & Beattie**^{KSC,ME,AH}

$2n = 63$ (30^{II+III}), CHN. U.S.A., California, Butte County, Pat's Meadow, along Butte Creek, 0.6 mi W of Cherry Creek Campground, 40°05'55.50"N, 121°30'33.54"W, 19 Jul 2008, *Janeway & Gog 3197C* (MOR).

***Carex demissa* Hornem.**^{PJM}

$2n = 70$, CHN. Portugal, Sintra, Colares, 38°46'40.00"N, 09°26'15.00"W, 351 m, 3 Jan 2005, *Jiménez-Mejías & al. 06PJM05* (UPOS); 2 May 2005, *Jiménez-Mejías & al. 185PJM05* (UPOS-2866); Spain, Ávila, Sierra de Gredos, trail to Laguna Grande, 1915 m, 5 Jul 2004, *Jiménez-Mejías & al. 201PJM04* (UPOS-3518); Spain, Cádiz, Tarifa, 36°04'34.30"N, 05°31'50.40"W, 364 m, 16 Nov 2003, *Jiménez-Mejías & al. 28PJM03* (UPOS).

***Carex demissa* Hornem. × *C. lepidocarpa* Tausch**^{PJM}

$2n = 68$ (34^{II}), CHN. Spain, Asturias, Cangas de Onís, Ercina lake, 2 Sep 2004, *Marín 15504JMM* (UPOS-3577); Spain, Asturias, Somiedo mountain pass, 19 Jul 2005, *Jiménez-Mejías & al. 451PJM05* (UPOS-2615).

$2n = 70$ (35^{II}), CHN. Spain, Lleida, Val d'Arán, Baños de Tredós, 1800 m, 16 Aug 2005, *Luceño & al. 9205MLbis* (UPOS-1405).

**** *Carex densa* (L.H.Bailey) L.H.Bailey**^{KSC,ME,AH}

$2n = 54$ (27^{II}), CHN. U.S.A., California, Butte County, Bidwell Park, 39°46'33.72"N, 121°45'47.04"W, 18 Jul 2008, *Janeway & Gog 3183A* (MOR).

***Carex distans* L.**^{ML,SMB}

$2n = 70$ (35^{II}), CHN. Turkey, Karaman, Sarıveliler, 36°41'32.40"N, 32°31'57.00"E, 1615 m, 29 Mar 2010, *Martín-Bravo & al. 112SMB10* (UPOS-7401) [Fig. 12F].

**** *Carex ecklonii* Nees**^{ML}

$2n = 64$ (32^{II}), CHN. South Africa, Western Cape, Gordons bay, 8 m, 12 Sep 2009, *Luceño & al. s.n.* (UPOS-6503) [Fig. 12E].

**** *Carex edwardsiana* E.L.Bridges & Orzell**^{RN}

$2n = 52$ (26^{II}), CHN. U.S.A., Texas, Bandera County, 4 mi N of Vanderpool, along E side of Sabinal River, just SE of Road 187, 26 Apr 1990, *Naczi 2321* (MICH, NY).

**** *Carex flaccosperma* Dewey**^{RN}

$2n = 46$ (23^{II}), CHN. U.S.A., Arkansas, Cleveland County, 2 mi NW of New Edinburg, at junction of routes 97 and 8, Marks' Mill Battleground historic monument, 9 Apr 1991, *Naczi 2733* (MICH, NY).

**** *Carex fracta* Mack.**^{KSC,AH}

$2n = 70$ (35^{II}), CHN. U.S.A., Oregon, Deschutes County, 44°27'17.928"N, 121°46'43.463"W, 3925 ft, 16 Aug 2008, *Wilson & Otting 15143* (MOR).

***Carex glaucodea* Tuck. ex Olney**^{RN}

$2n = 44$ (22^{II}), CHN. Canada, Ontario, Essex County, 3.5 mi ENE of Harrow, Colchester South Township, Concession III, lot 17, 10 Apr 1992, *Naczi 2954* (MICH, NY).

Agrees with counts of $2n = 22$ ^{II} reported by Wahl (1940) from two plants.

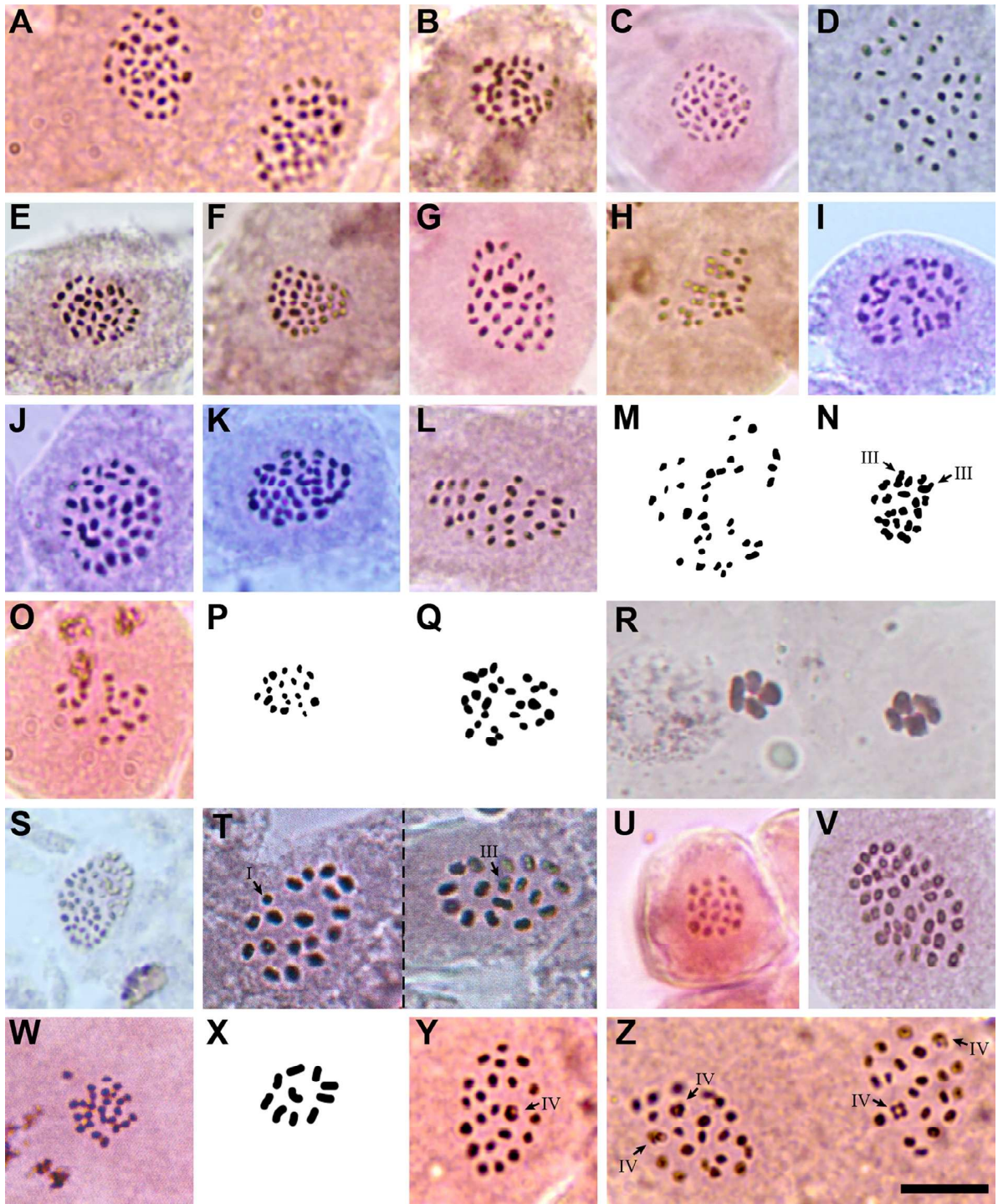


Fig. 12. Cyperaceae chromosomes. All images depict the metaphase of the meiosis I, except for *Carex rainbowii*, *Cyperus fuscus* and *Trianoptiles capensis*, taken from pollen grain mitosis. **A**, *Carex aethiopica*, $2n = 76$ (38^{II}); **B**, *C. borbonica*, $2n = 68$ (34^{II}); **C**, *C. borbonica* × *boryana*, $2n = 68$ (34^{II}); **D**, *C. boryana*, $2n = 68$ (34^{II}); **E**, *C. ecklonii*, $2n = 64$ (32^{II}); **F**, *C. distans*, $2n = 70$ (35^{II}); **G**, *C. oedipostyla*, $2n = 68$ (34^{II}); **H**, *C. rainbowii*, $n = 29$; **I**, *C. reuteriana* subsp. *mauritanica*, $2n = 74$ (37^{II}); **J**, *C. reuteriana* subsp. *mauritanica*, $2n = 74$ (37^{II}); **K**, *C. trinervis*, $2n = 82$ (41^{II}); **L**, *C. vixidentata*, $2n = 62$ (31^{II}); **M**, *Lagenocarpus guianensis*, $2n = 34$ (17^{II}); **N**, *Eleocharis confervoides* (= *Websteria submersa*), $2n = 40$ ($2^{III}+17^{II}$); **O**, *Cyperus fuscus*, $n = 18$; **P**, *C. salzmannianus* (= *Lipocarpa salzmanniana*), $2n = 38$ (19^{II}); **Q**, *C. subsquarrosus* (= *Hemicarpha micrantha*), $2n = 52$ (26^{II}); **R**, *Isolepis marginata*, $2n = 8$ (4^{II}); **S**, *Dracoscirpoides ficinioides*, $2n = 104$ (52^{II}); **T**, *Afroscirpoides dioeca* (= *Scirpoides dioeca*), $2n = 35$ ($17^{II}+1^I$, $1^{III}+16^{II}$); **U**, *Rhynchospora brownii*, $2n = 36$ (18^{II}); **V**, *R. modesti-lucennoi*, $2n = 84$ (42^{II}); **W**, *Trianoptiles capensis*, $n = 26$; **X**, *Calyptracarya glomerulata*, $2n = 20$ (10^{II}); **Y & Z**, *Chrysitrix capensis*, $2n = 46$ ($1^{IV}+21^{II}$, $2^{IV}+19^{II}$). — Scale bar = 10 μ m.

** *Carex glomerabilis* V.I.Krecz. ^{JMC,ML}

$2n = 60$ (30^{II}), CHN. South Africa, Western Cape, Wilderness, Brown Hooded Kingfisher trail, between 33°59'01.30"S, 22°39'03.60"E and 33°58'36.90"S, 22°39'12.80"E, between 24 and 52 m, 14 Oct 2017, Márquez-Corro & al. 196JMC17 (UPOS-9968).

** *Carex godfreyi* Naczi ^{RN}

$2n = 50$ (25^{II}), CHN. U.S.A., Florida, Clay County, 1 mi N of Green Cove Springs, Magnolia Springs, 0.4 mi N of route 17, W of Haven Avenue and S of stream, 13 Apr 1991, Naczi 2740 (MICH, NY).

** *Carex grisea* Wahlenb. ^{RN}

$2n = 56$ (28^{II}), CHN. Canada, Québec, Deux Montagnes County, Oka, Parc Paul-Sauvé, floodplain of Lac des Deux Montagnes, near La Crête campground, 7 Apr 1988, Naczi 1768 (MICH, NY).

The chromosome number report for *C. grisea* by Wahl (1940) is based on a misidentification. His voucher (Wahl 15106, BH, NCU, PAC) is *C. amphibola*.

Carex hitchcockiana Dewey ^{RN}

$2n = 54$ (27^{II}), CHN. Canada, Ontario, Hastings County, ca. 10 mi E of Belleville, W of Salmon River, along S side of route 401, 19 Apr 1988, Naczi 1786 (MICH, NY).

Agrees with $2n = 27$ ^{II} reported by Wahl (1940) from one plant.

** *Carex impressinervia* Bryson, Kral & Manhart ^{RN}

$2n = 46$ (23^{II}), CHN. U.S.A., Mississippi, Marion County, ca. 17 mi SSE of Columbia, 1 mi N of Pearl River County border, 2.3 mi E of route 43, 10 Apr 1992, Naczi 2956 (MICH, NY).

** *Carex leporinella* Mack. ^{KSC,ME,AH}

$2n = 82$ (41^{II}), CHN. U.S.A., Idaho, Valley County, Snowbank Mountain, near pond beside the road up mountain, 44°25'08.472"N, 116°07'54.911"W, 20 Aug 2009, Wilson & al. 15858 (MOR).

** *Carex mariposana* L.H.Bailey ex Mack. ^{KSC,ME,AH}

$2n = 81$ (39^{II}+1^{III}), CHN. U.S.A., California, Tuolumne County, Yosemite National Park, Gaylor Lake, 37°52'50.484"N, 119°23'53.483"W, 11 Aug 2009, Taylor & al. 20752 (MOR).

** *Carex mesochorea* Mack. ^{KSC,ME,AH}

$2n = 48$ (24^{II}), CHN. U.S.A., Michigan, Washtenaw County, 14 Jul 2011, Reznicek s.n. (MOR).

* *Carex molesta* Mack. ex Bright ^{KSC,AH}

$2n = 72$ (36^{II}), CHN. U.S.A., Wisconsin, Dane County, 43°02'21.54"N, 89°25'55.2"W, 896 m, 17 Jun 2008, Hipp & Gog 3137 (MOR).

** *Carex nervina* L.H.Bailey ^{KSC,ME,AH}

$2n = 52$ (26^{II}), CHN. U.S.A., California, Butte County, just E of Philbrook Reservoir, 40°01'20.28"N, 121°27'13.439"W, 18 Jul 2009, Janeway & Gog 3195C (MOR).

Carex nigra (L.) Reichard ^{PJM,ML,SMB}

$2n = 83$ (40^{II}+1^{III}), CHN. Portugal, Guarda, Covilha, Serra da Estrela, 40°18'51.00"N, 07°37'27.00"W, 1885 m, 1 Aug 2006, Martín-Bravo 216SMB06 (UPOS); Spain, Ávila, Pinar de Hoyocasero, 1200 m, 3 Jul 2004, Marín & Luceño 40JMM04 (UPOS); 12 May 2006, Jiménez-Mejías & al. 31PJM06 (UPOS-2253); Spain, Granada,

Sierra Nevada National Park, 2860 m, 19 Aug 2006, Jiménez-Mejías & Escudero 160PJM06 (UPOS); Spain, Zamora, Puebla de Sanabria, Cubillas lagoon, 42°11'40.00"N, 06°43'41.00"W, 1800 m, 28 Aug 2007, Martín-Bravo & al. 153SMB07 (UPOS).

$2n = 84$ (42^{II}), CHN. France, Corse, Ghisoni, 42°04'16.80"N, 09°11'12.10"E, 804 m, 4 May 2007, Escudero & Luceño 89ME07 (UPOS); Greece, Epiro, Konitsa, Vasilitsa, 1580 m, 12 Jul 2004, Vargas & Luceño 284PV04 (UPOS-831).

$2n = 84$ (1^I+40^{II}+1^{III}, 11 cells; 39^{II}+2^{III}, 4 cells; 42^{II}, 1 cell), CHN. Portugal, Guarda, Covilha, Serra da Estrela, 40°18'51.00"N, 07°37'27.00"W, 1885 m, 1 Aug 2006, Martín-Bravo 216SMB06 (UPOS).

$2n = 84$ (42^{II}), CHN. Spain, Ávila, pathway to Circo de Gredos, 13 May 2006, Jiménez-Mejías 36PJM06 (UPOS).

$2n = 84$ (42^{II}, 2 indiv.), CHN. Spain, Almería, Bayárcal, 37°06'14.00"N, 03°00'28.00"W, 2350 m, 7 Aug 2006, Jiménez-Mejías & García 153PJM06 (UPOS); Spain, Burgos, Sierra de Neila, 18 Jul 2006, Jiménez-Mejías & al. 136PJM06 (UPOS-2220); Spain, Granada, Sierra Nevada National Park, 3085 m, 19 Aug 2006, Jiménez-Mejías & Escudero 157PJM06 (UPOS).

$2n = 84$ (39^{II}+2^{III}+f), CHN. Spain, Soria, between Duruelo and Covaleta, 18 Jul 2006, Jiménez-Mejías & al. 137PJM06 (UPOS-2221).

$2n = 85$ (41^{II}+1^{III}), CHN. Morocco, Marrakech, Oukaimedem, 31°11'04.00"N, 07°50'43.00"W, 12 May 2005, Chaparro & al. 07AJC05 (UPOS-1632); Morocco, Rif, Djbel Tidighine, May 2007, Jiménez-Mejías & al. 88PJM07 (UPOS-4750); Spain, Soria, Covaleta, 41°54'03.30"N, 02°49'27.60"W, 1134 m, 18 Jul 2006, Jiménez-Mejías & al. 135PJM06 (UPOS-2218).

$2n = 85$ (41^{II}+1^{III}, 2 indiv.), CHN. Spain, Almería, Bayárcal, 37°06'14.00"N, 03°00'28.00"W, 2350 m, 7 Aug 2006, Jiménez-Mejías & García 153PJM06 (UPOS).

$2n = 86$ (41^{II}+1^{IV}), CHN. Morocco, Rif, Djbel Tidighine, May 2007, Jiménez-Mejías & al. 88PJM07 (UPOS-4750).

** *Carex oedipostyla* Duval-Jouve ^{ML}

$2n = 68$ (34^{II}), CHN. Spain, Cádiz, Alcalá de los Gazules, pathway to Aljibe peak, 36°30'42.00"N, 05°37'30.00"W, 860 m, Jul 2011, Luceño & al. IML11 (UPOS-6228); 36°33'53.66"N, 05°36'06.61"W, 450 m, 23 Feb 2013, Maguilla & al. IEMS13 (UPOS-5127) [Fig. 12G].

Carex oligocarpa Schkuhr ex Willd. ^{RN}

$2n = 54$ (27^{II}), CHN. U.S.A., Illinois, Kane County, Elgin, along W side of route 25, S of I-90, Trout Park, 14 May 1991, Naczi 2902 (MICH, NY).

Agrees with count of $2n = 27$ ^{II} reported by Wahl (1940) from one plant.

* *Carex oronensis* Fernald ^{KSC,AH}

$2n = *68, *71, 74$ (34^{II}, 30^{II}+2^{III}+1^V, 37^{II}), CHN. U.S.A., Maine, Penobscot County, E side of Maine Hwy 2 across from Mt. Hope Cemetery in Veazie, opposite main entrance and just S of Mt. Hope Ave, 44°49'21"N, 68°43'16"W, 27 Jun 2009, Reznicek 11968 (MOR).

** *Carex ouachitana* Kral, Manhart & Bryson ^{RN}

$2n = 52$ (26^{II}), CHN. U.S.A., Arkansas, Polk County, summit of Rich Mountain, N of route 88 across from fire tower, 7 Apr 1988, Naczi 1774 (MICH, NY).

* *Carex pachycarpa* Mack. ^{KSC,AH}

$2n = 70$ (35^{II}), CHN. U.S.A., Oregon, Lake County, 42°03'44.712"N, 120°09'35.28"W, 5734 ft, 10 Jul 2008, Otting & Wilson 1945B (MOR).

42°03'35.104"N, 120°09'53.083"W, 10 Jul 2008; *Wilson & Otting 14947* (MOR), *Wilson & Otting 14948* (MOR); 42°03'29.611"N, 120°10'4.29"W, 10 Jul 2008, *Wilson & N. Otting 14949* (MOR); 42°03'35.104"N, 120°09'53.082"W, 5808 ft, 24 Jul 2008, *Wilson & Otting 15017* (MOR).

**2n* = 74 (37^{II}), CHN. U.S.A., Oregon, Lake County, 42°03'35.104"N, 120°09'53.083"W, 24 Jul 2008, *Wilson 15018* (MOR).

**Carex pachystachya* Cham. ex Steud. ^{KSC,AH}

2n = 82 (41^{II}), CHN. U.S.A., Oregon, Lake County, 43°36'50.586"N, 122°07'3.752"W, 4310 ft, 25 Jul 2008, *Wilson 15052* (MOR).

***Carex paeninsulae* Naczi, E.L.Bridges & Orzell ^{RN}

2n = 48 (24^{II}), CHN. U.S.A., Florida, Clay County, 1 mi N of Green Cove Springs, Magnolia Springs, 0.4 mi N of route 17, W of Haven Avenue and S of stream, 10 Apr 1992, *Naczi 2958* (MICH, NY).

***Carex petasata* Dewey ^{KSC,AH}

2n = 74 (37^{II}), CHN. U.S.A., Oregon, Lake County, 42°03'45.775"N, 120°09'18.064"W, 5749 ft, 24 Jul 2008, *Wilson 15019* (MOR).

***Carex pigra* Naczi ^{RN}

2n = 56 (28^{II}), CHN. U.S.A., Alabama, Morgan County, 2 mi N of Falkville along W side of route 31, 9 Apr 1991, *Naczi 2735* (MICH, NY).

***Carex planispicata* Naczi ^{RN}

2n = 50 (25^{II}), CHN. U.S.A., Alabama, Madison County, Huntsville, Monte Sano State Park, along hiking trail near the Sinks, 22 Apr 1989, *Naczi 2060* (MICH, NY).

Carex projecta Mack. ^{KSC,AH}

2n = 62 (31^{II}), CHN. U.S.A., Michigan, Menominee County, *Rothrock 4070* (MOR).

2n = 64 (32^{II}), CHN. U.S.A., Ontario, Simcoe County, *Rothrock 3971* (MOR).

2n = 66 (33^{II}), CHN. U.S.A., Maine, Washington County, *Rothrock 3970* (MOR). U.S.A., Wisconsin, Price County, *Rothrock 4289* (MOR).

One population of *2n* = 66 and the counts *2n* = 62 and *2n* = 64 correspond to the unpublished data cited by Hipp (2007).

Carex radiata (Wahlenb.) Small ^{KSC,AH}

2n = 58 (29^{II}), CHN. U.S.A., Wisconsin, Dane County, 43°02'25.14"N, 89°25'50.58"W, 880 ft, 17 Jun 2008, *Hipp & Gog 3133* (MOR).

***Carex rainbowii* Luceño, Jim.Mejías, M.Escudero & Martín-Bravo ^{ME,ML,SMB}

n = 29 (pollen grain mitosis), CHN. South Africa, KwaZulu-Natal, Rainbow gorge, 28°57'35.00"S, 29°13'34.00"E, 1525 m, 13 Nov 2011, *Martín-Bravo & Luceño 120SMB11* (UPOS-5030) [Fig. 12H].

**Carex retroflexa* Muhl. ex Willd. ^{KSC,ME,AH}

2n = 42 (29^{II}), CHN. U.S.A., Michigan, Washtenaw County, Huron Parkway Nature Area, 14 Jun 2009, *Reznicek & Walters s.n.* (MOR).

Carex reuteriana subsp. *mauritanica* (Boiss. & Reut.)

Jim.Mejías & Luceño ^{PJM}

2n = 74 (37^{II}, 2 indiv.), CHN. Spain, Huelva, La Nava, Múrtiga river, 5 Jan 2005, *Jiménez-Mejías & al. 22PJM05* (UPOS) [Fig. 12I].

2n = 74 (37^{II}), CHN. Spain, Córdoba, Villaviciosa de Córdoba,

38°05'03.00"N, 04°57'15.00"W, 24 Mar 2005, *Escudero & al. 4ME05* (UPOS) [Fig. 12J].

***Carex simulata* Mack. ^{KSC,ME,AH}

2n = 64 (32^{II}), CHN. U.S.A., Colorado, Boulder County, Redrock Lake, 40°04'53.40"N, 105°32'23.74"W, 2 Aug 2009, *Chung & Lederer 1039* (MOR).

***Carex subbracteata* Mack. ^{KSC,ME,AH}

2n = 80 (40^{II}), CHN. U.S.A., Washington, San Juan County, 48°28'48.00"N, 123°03'42.00"W, 29 Aug 2009, *Zika 24641* (MOR).

**Carex subfusca* W.Boott ^{KSC,ME,AH}

2n = 82 (41^{II}), CHN. U.S.A., Oregon, Lake County, 42°29'19.383"N, 120°44'08.89"W, 6078 ft, 4 Aug 2008, *Wilson & al. 15068* (MOR).

**2n* = 86 (43^{II}), CHN. U.S.A., Nevada, Washoe County, Tahoe Meadows, 1.5 air km SW of Mt. Rose Highway summit, on Route 341, northern Sierra Nevada Highlands, 39°18'00.00"N, 119°54'00.00"W, 20 Aug 2009, *Zika 24619* (MOR).

***Carex thornei* Naczi ^{RN}

2n = 50 (25^{II}), CHN. U.S.A., Georgia, Decatur County, Army Corps of Engineers' East Bank Campground on Lake Seminole, 14 Apr 1988, *Naczi 1779* (MICH, NY).

**Carex tinctoria* (Fernald) Fernald ^{KSC,AH}

2n = 72 (36^{II}), CHN. U.S.A., Maine, Hancock County, 44°35'35.02"N, 68°30'36.00"W, 4 Jul 1999, *Reznicek 10919A* (MOR).

Carex tribuloides Wahlenb. ^{KSC,AH}

2n = 70 (35^{II}), CHN. U.S.A., Indiana, Grant County, *Rothrock 4243* (MOR). U.S.A., Indiana, St. Joseph County, *Rothrock 3839C* (MOR).

2n = 72 (36^{II}), CHN.U.S.A., Indiana, St. Joseph County, *Rothrock 3839A* (MOR).

**Carex trinervis* Degl. ^{ML}

**2n* = * 82, 84 (41^{II}, 42^{II}), CHN. Portugal, Coimbra, Figueira da Foz, Lagoa da Vela, 4 Jan 2005, *Jiménez-Mejías & al. 10PJM05* (UPOS) [Fig. 12K].

***Carex vernacula* L.H.Bailey ^{KSC,ME,AH}

2n = 52 (26^{II}), CHN. U.S.A., Colorado, Gunnison County, summit of Cement Creek, 38°58'16.536"N, 106°46'30.144"W, 4 Aug 2009, *Chung 1063* (MOR).

Carex viridula Michx. ^{ML}

2n = 70 (35^{II}), CHN. Greece, Pellas, Pamagista, Voras mountain, 2200 m, 15 Aug 2004, *Luceño 1404ML* (UPOS-691).

***Carex vixdentata* (Kük.) G.A.Wheeler ^{ML}

2n = 62 (31^{II}), CHN. Argentina, Buenos Aires, Mar de Ajó, 3 Dec 2002, *Marín 2102JMM* (UPOS-849) [Fig. 12L].

TRIBE CARPHEAE

****Trianoptiles capensis* (Steud.) Harv. ^{ML}

2n = 52 (26^{II}), CHN. South Africa, Western Cape Province, Cape Town, Kenilworth Race Course, Sep 2009, *Muasya & al. 4549* (BOL) [Fig. 12W].

TRIBE CRYPTANGIEAE****Lagenocarpus guianensis* Nees^{ML}

$2n = 34$ (17^{II}), CHN. Brazil, Pernambuco, Dois Irmãos, Açude do Prata, 1995, *Luceño & al. s.n.* (UFP) [Fig. 12M].

TRIBE CYPEREAE****Afroscirpoides dioeca* (Kunth) García-Madr. & Muasya (≡ *Scirpoides dioeca* (Kunth) J.Browning)^{ML}

$2n = 35$ (17^{II}+1^I, 1^{III}+16^{II}), CHN. South Africa, Western Cape Province, Yzerfontein, Sep 2009, *Muasya & al. 4557* (BOL) [Fig. 12T].

Cyperus fuscus L.^{ML}

$2n = 36$ (18^{II}), CHN. Spain, Seville, Pablo de Olavide University campus, Jul 2009, *M. Luceño s.n.* (UPOS) [Fig. 12O].

***Cyperus salzmannianus* (Steud.) Bauters (= *Lipocarpha salzmanniana* Steud.)^{ML}

$2n = 38$ (19^{II}), CHN. Brazil, Rio Grande do Norte, Genipabú, 1995, *M. Luceño & al. s.n.* (UFP) [Fig. 12P].

$n = 18, 19, 20$ (pollen grain mitosis), CHN. Brazil, Pernambuco, Porto de Galinhas, 1996, *Luceño & Guerra s.n.* (UFP).

***Cyperus sesquiflorus* (Torr.) Mattf. & Kük.(= *Kyllinga odorata* Vahl)^{ML}

$2n = 108$ (54^{II}), CHN. Brazil, Pernambuco, Recife, Cidade Universitária, Universidade Federal de Pernambuco campus, 1995, *Luceño & al. s.n.* (UFP).

***Cyperus subsquarrosus* (Muhl.) Bauters (= *Hemicarpha micrantha* (Vahl) Britton)^{ML}

$2n = 52$ (26^{II}), CHN. Brazil, Pernambuco, Recife, Cidade Universitária, Universidade Federal de Pernambuco campus, 1995, *Luceño & al. s.n.* (UFP) [Fig. 12Q].

$2n = 54$ (27^{II}), CHN. Brazil, Pernambuco, Recife, Cidade Universitária, Universidade Federal de Pernambuco campus, 1995, *Luceño & al. s.n.* (UFP).

The same chromosome number was found in other specimen of the same population.

****Dracoscirpoides ficinoides* (Kunth) Muasya^{ML}

$2n = 104$ (52^{II}), CHN. South Africa, KwaZulu-Natal, Garden Castle, 29°45'01.10"S, 29°12'43.10"E, 1803 m, 16 Nov 2012, *Maguilla & al. 79EMS12* (UPOS) [Fig. 12S].

***Isolepis marginata* (Thunb.) A.Dietr.^{MM}

$2n = 8$ (4^{II}), CHN. South Africa, Cape Town, Rhodes Memorial, Sep 2009, *Muasya & al. 4516* (BOL) [Fig. 12R].

TRIBE ELEOCHARIDEAE***Eleocharis confervoides* (Poir.) Steud. (= *Websteria submersa* (C.Wright) Britton)^{ML}

$2n = 38, 40, 41$ (19^{II}, 1 indiv.; 2^{III}+17^{II}, 1 indiv.; 2^{III}+17^{II}, 1^{III}+18^{II}+1^I, 1^{III}+19^{II}, 1 indiv.), $n = 20–21$ (in pollen grain mitosis), CHN. Brazil, Pernambuco, Dois Irmãos, Açude do Prata, 1995, *Luceño & al. s.n.* (UFP) [Fig. 12N].

TRIBE RHYNCHOSPOREAE*Rhynchospora brownii* Roem. & Schult.^{ML}

$2n = 36$ (18^{II}), CHN. South Africa, KwaZulu-Natal, Drakensberg,

Cathedral Peak, 29°56'39.20"S, 29°13'29.50"E, 1377 m, 20 Dec 2008, *Luceño & al. 125ML08* (UPOS-3707) [Fig. 12U].

***Rhynchospora modesti-lucennoi* Castrov.^{ML}

$2n = 84$ (42^{II}), CHN. Portugal, Setúbal, Alcácer do Sal, 38°23'43.70"N, 08°40'05.10"W, 11 m, 30 Apr 2005, *Jiménez-Mejías & al. 113PJM05* (UPOS-1394) [Fig. 12V].

TRIBE SCHOENEAE**Schoenus nigricans* L.^{ML}

$2n = 76$ (38^{II}), CHN. Spain, Huelva, Doñana National Park, Punta del Malandar, 25 Feb 2007, *Jiménez-Mejías & al. 3PJM07* (UPOS-2857).

SUBFAMILY MAPANIOIDEAE**TRIBE CHRYSITRICHEAE**! *Chrysitrix capensis* L.^{ML}

$2n = 46$ (1^V+21^{II}, 2^{IV}+19^{II}, 1^{III}+21^{II}+1^I), CHN. South Africa, Western Cape Province, Cape Town, Table Mountain, Sep 2009, *Muasya & al. 4540* (BOL) [Fig. 12Y, Z].

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Antonina V. Natyaganova,¹ Elena V. Mincheva,¹ Yurii S. Bukin,¹ Lyubov S. Kravtsova,¹ Tatiana E. Peretolchina,¹ Tatiana I. Triboy¹ & Denis A. Krivenko^{2,3*}

- 1 *Limnological Institute of the Siberian Branch of the Russian Academy of Sciences, Ulan-Batorskaya Str. 3, 664033 Irkutsk, Russia*
- 2 *Siberian Institute of Plant Physiology & Biochemistry of the Siberian Branch of the Russian Academy of Sciences, Lermontov Str. 132, 664033 Irkutsk, Russia*
- 3 *Western Baikal Protected Areas, Baikalskaya Str. 291B, 664050 Irkutsk, Russia*

* Author for correspondence: krivenko.irk@gmail.com

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HYDROCHARITACEAE*Elodea canadensis* Michx.

$2n = 48$, CHN. Russia, Irkutskaya Oblast', Irkutsk city, Akademgorodok, left bank of Angara River, 52°15'03"N, 104°17'00"E, in water, 10 Oct 2017, *A.V. Natyaganova & Yu.S. Bukin 50785* (IRK) [Fig. 13A]; Russia, Irkutskaya Oblast', Irkutskii District, Lake Baikal, 2 km SW of Bol'shie Koty village, opposite of Zhilishche fold, 51°53'32"N,