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CHROMOSOME NUMBERS IN THE GENUS *MILLA* CAV. (LILIACEAE)

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Prior to Moore's (1953) treatment of the genus *Milla* Cav., only two species were recognized: *M. biflora* Cav., distributed from New Mexico and Arizona to Guatemala, and *M. bryanii* I. M. Johnston, restricted to the calcareous mountains of Coahuila in northern Mexico. Moore added *M. rosea* from Nuevo Leon and *M. delicata, M. mortoniana,* and *M. magnifica* from the state of Guerrero, Mexico. As a result of extensive plant explorations carried on within recent years by T. M. Howard of San Antonio, Texas, various new liliaceous taxa have come to light, a number of them referable to *Milla.* The genus is being monographed by T. M. Howard and myself. Because the appearance of this monograph has been delayed by the receipt of new material it seems best to publish the chromosome counts at this time.

MATERIALS AND METHODS

Dormant corms were planted in small plastic pots in a mixture of peatmoss and sand and placed on the greenhouse bench. When roots appeared along the outside of the ball of peatmoss and sand, the corms were washed and the root tips harvested. The corms were then replanted in pots of soil and grown on for further study. Root tips were placed in a .004 M solution of 8-Quinolinol (Eastman Chemicals) to which was added one drop per vial of naphthalene monobromide (Fisher Scientific) and held at 12 C for 3 hr after which they were fixed in 3:1 absolute alcohol and acetic acid. Aceto-orcein was used as a stain. Voucher specimens are deposited in the Rancho Santa Ana Botanic Garden herbarium.

CHROMOSOME NUMBERS

TAXON	*n*	*2n*	LOCALITY
Milla biflora Cav.		14	Mexico, Hidalgo: hwy 126, west of Actopan on Tula-Actopan rd, 18 June, 1967, *T. M. Howard 67–A.*
		14	Mexico, Jalisco: hwy 80 at km 616, 4 Aug., 1967, *T. M. Howard 67–81.*
		14	Mexico, Mexico: north of Toluca, hwy 55, 3 Aug., 1967, *T. M. Howard 67–90A.*

CHROMOSOME NUMBERS (continued)

TAXON	*n*	2*n*	LOCALITY
Milla biflora Cav. (cont'd)		14; 28	Mexico, Michoacan: rec'd from Bailey Hortorium, Ithaca, N.Y., BH: 65–104.
		42; (43)	Purchased from C. G. van Tubergen, Haarlem, Holland, 1964.
Milla bryanii I. M. Johnston		18	Mexico, Coahuila: corms from a native collector, *T. M. Howard 66–165.*
Milla magnifica H. E. Moore		18	Mexico, Guerrero: between Iguala and Teloloapan above Rio de los Sabinos, Nov., 1949, *H. E. Moore 5974* (type corms).
		18	Mexico, Guerrero: north of Taxco, July, 1964, *T. M. Howard* s.n.
Milla rosea H. E. Moore		20	Mexico, Nuevo Leon: 1 km south of Mamanlique Pass, ca. 100 miles south of Laredo, Texas, *T. M. Howard* s.n.
Milla sp.		16	Mexico, probably state of Guerrero: Chilpancingo-Zumpango area, *T. M. Howard 6234.*
Milla sp.		16	Mexico, Colima: south of city of Colima, *T. M. Howard 65–50.*
Milla sp.		16	Mexico, Oaxaca: common around city of Oaxaca, *T. M. Howard 66–95.*
Milla sp.		16	Mexico, Oaxaca: a few miles north of Yanhuitlan, northwestern Oaxaca, 8 July, 1968, *T. M. Howard 68–235.*
Milla sp.		18	Mexico, Morelos: east of Cuernavaca, between Yantepec and Cuautla, 3 July, 1964, *T. M. Howard 64–79.*
Milla sp.		18	Mexico, San Luis Potosi: hwy 80 at km 513, 20 miles south of city of San Luis Potosi, 3 Aug., 1967, *T. M. Howard 67–84.*
Milla sp.		32	Guatemala: a few miles south of Huehuetenango, *T. M. Howard 64–95.*
Milla sp.		32	Mexico, Puebla: 1–2 km south of Acatepec, hwy 125, 10 July, 1968, *T. M. Howard 68–250.*
Milla sp.		42	Mexico, San Luis Potosi: hwy 80 at km 535, 3 Aug., 1967, *T. M. Howard 67–82.*
Milla sp.		48	Mexico, Durango: east of city of Durango, hwy 40 at km 853, 22 July, 1967, *T. M. Howard 67–12.*
Milla sp.		54	Mexico, Puebla: south of Tehuacan and southwest of Izucar de Matamoros, *T. M. Howard 62–44.*

DISCUSSION

The only previous chromosome counts for members of the genus are those of Sato (1942) (*in* Darlington & Wylie, 1955) who reported $2n=39$ for *M. biflora*, and Lenz (1966) who reported $2n=42$ for *M. biflora* and $2n=18$ for *M. magnifica*. Results of the present study indicate that there is a dysploid series of $n=7, 8, 9, 10$. The karyotype of *M. rosea* does not indicate that it is a tetraploid based on $x=5$. These results are in line with recent findings in related genera which also show dysploidy, i.e., *Triteleia* with $n=5, 6, 7, 8$ (Lenz, 1966, 1969, and unpub.), and *Allium* with $n=7, 8, 9$. Within the widely distributed *M. biflora* is found a polyploid series based on the haploid number of seven with diploids, tetraploids and hexaploids. Two collections identified as *M. biflora* appear to be based on a haploid number of eight, one of them a diploid with $2n=16$ and the second a possible hexaploid with $2n=48$.

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