

CHROMOSOME NUMBERS IN LEGUMES II¹

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ABSTRACT

Original chromosome counts are presented for 95 species in 78 genera of Leguminosae. Of these, 50 are first reports for genera, and 71 are first reports for species. The evolutionary or systematic significance of much of the data has been discussed in a separate paper (Goldblatt, 1981), and this article serves mainly for full documentation of the counts. New information, not previously dealt with, concerns *Myroxylon* (Papilionoideae-Sophoreae). The genus was previously reported as $n = 14$, but material I have studied clearly has $2n = 26$, which is compatible with the number of $n = 13$ in the related genus *Myrospermum*.

INTRODUCTION

Counts presented here are largely the first reports for genera, or first counts for species in genera where the cytological record was confusing or seemed particularly interesting. As mentioned in a previous paper (Goldblatt & Davidse, 1977) this project was undertaken in preparation for the Conference on Leguminosae held at Kew, London in 1978. Since the Leguminosae are a very large family, it was impractical to attempt chromosome study of all species available, or even all uncounted species. Instead I have concentrated on filling gaps in the cytological record at generic level, or have examined species of certain genera where the existing record seemed confused or particularly interesting and thus worth further attention.

Almost all of the new generic records presented here have been mentioned in the paper (Goldblatt, 1981) presented at the Leguminosae Conference and this article serves to fully document these counts. This being the case there is no purpose in discussing the data here. A few counts made after publication of my review of cytology of Leguminosae are discussed briefly, notably that for *Myroxylon*. Methods employed with root tips were as described in several previous papers (Goldblatt, 1976; Goldblatt & Gentry, 1979) and involved hydroxyquinoline pretreatment, and squashing in lacto-propionic orcein. Data are presented in tabular form (Table 1). Genera arranged in subfamilies and tribes according to the classification system adopted in the published proceedings of the Leguminosae Conference (Polhill & Raven, 1981).

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TABLE 1. Chromosome numbers of Leguminosae. Entries preceded by one asterisk (*) are the first report for that species; entries with two asterisks (**) are the first report for that genus. Genera are arranged in tribes following the treatments in Polhill & Raven (1981).

Species	Chromosome Number		Collection and Voucher Data
	<i>n</i>	<i>2n</i>	
MIMOSOIDEAE			
<i>Mimoseae</i>			
** <i>Dinizia excelsa</i> Ducke	26 (-28)		Brazil, Manaus Exp. Station, km 60, <i>DaSilva</i> 295 (INPA).
<i>Schrankia leptocarpa</i> DC.	52		Brazil, Belem, Para, <i>Pires</i> 75/30 (MO)
<i>S. uncinata</i> Willd.	26		U.S.A., Nebraska; exact locality unknown; cult. MBG, <i>Goldblatt</i> 4664 (MO).
<i>Adenanthereae</i>			
** <i>Gagnebina pterocarpa</i> (Lam.) Baill.	26		Mauritius, Quatre Bornes, <i>Lorence</i> 2651 (MO).
** <i>G.</i> sp.	26		Comoro Is., Mayotte, <i>Lorence</i> 2846 (MO).
** <i>Goldmania foetida</i> (Jacq.) Standl.	26		Mexico, Sinaloa, <i>Gentry, Barclay & Arguelles</i> 19450 (US).
** <i>Parapiptadenia rigida</i> (Benth.) Brenan	26		Argentina, orig. loc. unknown, seed ex Jard. Bot. Carlos Thuys; cult. MBG, <i>Goldblatt</i> 4652 (MO).
<i>Ingeae</i>			
<i>Calliandra surinamensis</i> Benth.	16		Cult., Raya Bogor, origin unknown, cult. MBG, <i>Goldblatt</i> 5480 (MO).
<i>C. magdalenae</i> (Bert.) Benth.	16		Cult., Summit Gardens, Panama, origin unknown, <i>Mori & Kalunki</i> 5089 (MO).
* <i>C. confusa</i> Sprague & Riley	22		Costa Rica, Alajuela, Finca Los Ensayos, <i>Barquero s.n.</i> (MO).
** <i>Serianthes kanehirae</i> Fosberg	26		Caroline Is., Korrer Is., old temple grounds, cf., <i>Fosberg</i> 26770 (US).
** <i>Wallaceodendron celebicum</i> Koorders	26		Locality unknown, ex Wahiwa Bot. Garden, Hawaii, <i>Anon. s.n.</i> (MO).
CAESALPINIOIDEAE			
<i>Caesalpinieae</i>			
** <i>Pterolobium stellatum</i> (Forsk.) Brenan	24 (-26)		Kenya, Nairobi, Dagoretti, corner near bridge, <i>Gachathi</i> 180B (EA).
** <i>Sclerolobium</i> sp.	26		Brazil, orig. loc. unknown, cult. Jard. Bot. Rio de Janeiro, <i>de Lima</i> 1082 (US).
<i>Peltophorum</i> cf. <i>ferrugineum</i> Benth.	26		Cult. Jard. Bot. Facultad Agronomia U.C.V. Maracay, Venezuela, orig. loc. unknown, <i>Berry & Plowman</i> 3384 (MO).
** <i>Storkiella</i> sp. indet.	26		New Caledonia, <i>McPherson</i> 2128 (MO).
<i>Cassieae</i>			
<i>Apuleia leiocarpa</i> (Vogel) MacBride	28		Brazil, loc. unknown, cult. MBG, <i>Goldblatt</i> 4665 (MO).
<i>Ceratonia siliqua</i> L.	24		Israel, <i>Goldblatt</i> 5014 (MO).
<i>Cercideae</i>			
** <i>Adenolobus pechuelii</i> (Kuntze) Torre & Hillc.	28		Namibia, near Walvis Bay, <i>Seely s.n.</i> no voucher.
<i>Bauhinia</i> (<i>Lysiphyllum</i>) <i>hookeri</i> (F. Muell.) Pedley	26		Cult., Brisbane, Australia, origin unknown, <i>Pedley</i> A7771 (BRI, MO).
* <i>Bauhinia</i> (<i>Gigasiphon</i>) <i>macrosiphon</i> Harms	26		Kenya, Coast, Mua hills, <i>Gachathi s.n.</i> no voucher.

TABLE 1. Continued.

Species	Chromosome Number		Collection and Voucher Data
	<i>n</i>	<i>2n</i>	
* <i>Bauhinia (Barklya) syringifolia</i> (F. Muell.) Wunderlin		26	Cult. Botanic Gardens, Brisbane, Australia, origin unknown, <i>Pedley A1772</i> (BRI, MO).
<i>Detarieae</i>			
<i>Colophospermum mopane</i> Kirk.		34 (–36)	S. Africa, Transvaal, Letaba Rest Camp, cult. MBG, <i>Goldblatt 4663</i> .
** <i>Daniella oliveri</i> Hutch. & Dalz.		22	Ghana, loc. unknown, coll. A. Enti, cult. MBG, <i>Goldblatt 4662</i> (MO).
<i>Amhersteae</i>			
** <i>Brachystegia spiciformis</i> Benth.		24	Rhodesia, Salisbury, native plants in Botanic Garden, cult. MBG, <i>Goldblatt 4661</i> (MO).
PAPILIONOIDEAE			
<i>Swartzieae</i>			
* <i>Swartzia laevis</i> Amshoff		~28	Brazil, Amazonas, Rio Negro, <i>Monteiro & Coêlho 1369</i> (INPA 63866).
<i>Sophoreae</i>			
** <i>Cadia purpurea</i> (Picc.) Ait.		18	Kenya, cult. University of Nairobi, Chiromo, <i>Gachathi 184</i> (EA).
<i>Cladrastis lutea</i> (Michx.) K. Koch		28	Cult. MBG, origin unknown, <i>Lorence et al. 309</i> (MO).
<i>Myroxylon balsamiferum</i> (L.) Harms		26	Peru, Loreto, <i>Gentry 29117</i> (MO).
** <i>Myrospermum frutescens</i> Jacq.		26	Nicaragua, Chontales Dept., <i>Stevens 6456</i> (MO).
<i>Sophora japonica</i> L.		28	Cult. MBG, origin unknown, <i>Goldblatt 4987</i> (MO).
* <i>S. affinis</i> Torr.		28	U.S.A., Texas, Real Co., <i>Poole s.n.</i> (MO).
		28	U.S.A., Oklahoma, <i>Estes s.n.</i> (MO).
* <i>S. (Echinosophora) koreensis</i> Nakai		22	Cult. MBG, orig. loc. not known, ex Tokyo Bot. Gard., <i>Goldblatt 4986</i> .
* <i>S. arizonica</i> Watson		18	Mexico, Chihuahua, cult. MBG, <i>Goldblatt 5091</i> (MO).
** <i>Ammothamnus lehmannii</i> Bunge		18	Cult. MBG, orig. loc. unknown, ex Hort. Bot. Princip. Acad. Sci. USSR, Moscow (no voucher).
** <i>Ammodendron conollyi</i> Bunge ex Boiss.		18	U.S.S.R., Turkmenistan ex hort. Ashkabad, cult. MBG, <i>Goldblatt 4657</i> (MO).
* <i>Maackia chinensis</i> Takeda		18	Cult. MBG, orig. source unknown, <i>Goldblatt 4676</i> (MO).
* <i>Pericopsis (Afrormosia) angolensis</i> (Baker) Van Meeuwen		18	Malawi, Mzuzu, <i>Pawek 8241</i> (MO).
<i>Dalbergieae</i>			
** <i>Xeroderris stuhlmanii</i> (Taub.) Mendonca & Sousa		24	Rhodesia, exact locality unknown, cult. MBG, <i>Goldblatt 5481</i> (MO).
<i>Dahlergia sissoo</i> Roxb.		20	Cult. Israel, Ein Gedi, <i>Goldblatt s.n.</i> (MO).
** <i>Cyclolobium vecchii</i> A. Samp.		18	Brazil, Sao Paulo, Moji Gaussu Reserva Florestal, <i>Handro 879</i> (SP).
<i>Geoffraea decorticans</i> (Gill. ex Hook. & Arn.) Burk.		20	Chile, Prov. Antofagasta, San Pedro de Atacama, <i>Zöllner s.n.</i> , no voucher.

TABLE 1. Continued.

Species	Chromosome Number		Collection and Voucher Data
	<i>n</i>	<i>2n</i>	
<i>Platymiscium</i> cf. <i>polystachyum</i> Benth. ex Seem.		20	Colombia, Dept. Cundinamarca, near Puerto Bogota, <i>Gentry 18115</i> (MO).
<i>Tephrosieae</i>			
** <i>Willardia mexicana</i> (Wats.) Rose		22	Mexico, Sonora, <i>Gentry s.n.</i> (no voucher); cult. MBG, <i>Goldblatt 4654</i> (MO).
** <i>Kunstleria blackii</i> (F. Muell.) Polhill		22	Australia, Queensland, Brisbane, <i>Pedley</i> <i>5005</i> (K, L, MO).
** <i>Barbieria pinnata</i> DC.		20	Peru, Amazonas, <i>Schunke 8307</i> (MO).
<i>Galegeae</i>			
** <i>Smirnovia turkestanica</i> Bunge		16	Iran, Kashan, Shuzeyd-ahad, <i>Moussain &</i> <i>Tehrani s.n.</i> (EVIN-30708E).
<i>Robinieae</i>			
** <i>Peteria scoparia</i> Gray	10		U.S.A., New Mexico, San Juan Co., <i>Spellenberg 4873</i> (MO).
** <i>Corynella pauciflora</i> DC.		20	Puerto Rico, Guiniquila, <i>Woodbury s.n.</i> , no voucher.
<i>Glottidium vesicarium</i> (Jacq.) Harper		12	Orig. locality not known, seed ex U.S.D.A. Plant Introd. Station, Savanna, Georgia, cult. MBG, <i>Goldblatt 4625A</i> (MO).
<i>Aeschynomeneae</i>			
** <i>Pictetia aculeata</i> (Vahl) Urban		20	Puerto Rico, <i>Raven 26620</i> (MO).
* <i>Kotschya uguenensis</i> (Taub.) F. White		28	Malawi, Northern Province, <i>Pawek 10063</i> (MO).
** <i>Amicia zygomis</i> DC.		38	Mexico, Chihuahua-Durango, 42 mi W of Parral, <i>Gentry, Correll & Arguelles 17934</i> (US, LL).
** <i>Chapmannia floridana</i> Torr. & Gray		22	U.S.A., Florida, Osceola Co., <i>Wunderlin &</i> <i>Shuey 5766</i> (MO).
<i>Desmodieae</i>			
** <i>Christia vespertilionis</i> (L.) Bak. f.		22	Seed from Bot. Gard. München, origin unknown, cult. MBG, <i>Goldblatt 4658</i> (MO).
<i>Phyllodium pulchellum</i> Desv.		22	Hong Kong, exact locality unknown, seed ex Department of Agriculture & Fisheries, cult. MBG, <i>Goldblatt 4660</i> (MO).
<i>Desmodium</i> (<i>Hanslia</i>) <i>ormocarpoides</i> DC.		22	New Guinea, Papua, Sankwap logging area, <i>Lae</i> (no voucher).
<i>Psoraleae</i>			
* <i>Psoralea frutescens</i> (L.) Druce		22	South Africa, Cape, C. Peninsula, <i>Goldblatt 5544</i> (MO).
<i>Phaseoleae-Erythrinae</i>			
* <i>Erythrina decora</i> Harms		42	Namibia, Okaukuejo dist., farm Otjitambi, <i>Geiss 13603</i> (WIND).
* <i>E. merrilliana</i> Kruk.		42	New Guinea, Papua, Bulolo, <i>Galore s.n.</i> (MO).
* <i>E. megistophylla</i> Diels		42	Ecuador, Rio Palenque, <i>Dodson s.n.</i> in 1978 (MO).
* <i>E. acanthocarpa</i> E. Mey.	42		S. Africa, original locality unknown, cult. plant in Oudtshoorn, Cape, <i>Goldblatt</i> <i>2966</i> (MO).

TABLE 1. Continued.

Species	Chromosome Number		Collection and Voucher Data
	<i>n</i>	<i>2n</i>	
<i>Phaseoleae-Kennediinae</i>			
** <i>Vandasias retusa</i> (Benth.) Domin.		22	Australia, Queensland near Mossman, <i>Stables 2329</i> (BRI).
<i>Phaseoleae-Glycininae</i>			
** <i>Nogra grahamii</i> (Benth.) Merrill		22	India, Jashpur M.P., <i>Tiwari s.n.</i> (no voucher).
** <i>Eminia antennulifera</i> Taub.		22	Malawi, Rumphi district, <i>Pawek 8866</i> (MO).
** <i>Neorautanenia mitis</i> (A. Rich.) Verdc.		22	Malawi, Karonga-Chitipa, <i>Pawek s.n.</i> , no voucher, cult. MBG, <i>Goldblatt 4655</i> (MO).
** <i>Pseudovigna argentea</i> (Willd.) Verdc.		22	Tanzania, University of Dar es Salaam Campus, <i>Wingfield s.n.</i> (no voucher).
<i>Phaseoleae-Phaseolinae</i>			
<i>Dipogon lignosus</i> (L.) Verdc.		22	S. Africa, Cape, Cape Peninsula, <i>Esterhuysen s.n.</i> (no voucher).
<i>Phaseoleae-Diocleinae</i>			
<i>Pachyrrhizus erosus</i> (L.) Urban		22	Rep. Dominica, Rio Arriba, <i>Jimenez 8697</i> (MO).
** <i>Oxyrhynchus volubilis</i> Brandeg.		24	Bahama Islands, New Providence, <i>Correll</i> <i>48408</i> (MO).
<i>Phaseoleae-Cajaninae</i>			
** <i>Bolusafra bituminosa</i> (L.) Kuntze		22	S. Africa, Cape, Kalk Bay Mt., <i>Goldblatt</i> <i>1526</i> (MO).
<i>Trifolieae</i>			
** <i>Factorovskya aschersoniana</i> Eig		14	Israel, exact locality unknown, cult. MBG, <i>Goldblatt 4656</i> (MO).
<i>Coronilleae</i>			
<i>Securigera securidaca</i> (L.) Degen. & Doerfl.		12	Turkey, between Ahlat and Karahasan, <i>Osman Tosun 1403</i> (Herb. Agrorum Turcicum, Ankara).
** <i>Antopetitia abyssinica</i> A. Rich.		14	Malawi, Vipya Mts. cf. <i>Pawek 6733</i> (MO).
<i>Hedysareae</i>			
** <i>Eversmannia subspinos</i> (Fisch.) B. Fedtsch.		16	ex Hort. Bot. Acad. Sci. Uz. SSR, Tashkent, original loc. unknown, cult. MBG, <i>Goldblatt 4653</i> (MO).
** <i>Taverniera numullaria</i> DC.		16	Pakistan, Masriot, near Rawalpindi, cult. MBG, <i>Goldblatt 4653</i> (MO).
<i>Bossiaeeae</i>			
** <i>Ptychosema trifoliatum</i> F. Muell.		18	Western Australia, 12 mi N of Cue, <i>Demarz</i> <i>5679</i> (PERTH).
** <i>Lamprolobium fruticosum</i> Benth.		18	Queensland, Hales Siding, W of Herberton, <i>Jacks s.n.</i> (MO).
** <i>Muelleranthus stipularis</i> (Black) Lee		18	N. Territory, Hamilton Downes Stn., <i>Nelson 2442</i> (NT).
<i>Podalyrieae</i>			
** <i>Cyclopia maculata</i> (Andr.) Kies		36	S. Africa, Cape, exact locality not known, ex hort. Kirstenbosch, <i>Henderson 2130</i> (NBG).

TABLE 1. Continued.

Species	Chromosome Number		Collection and Voucher Data
	<i>n</i>	<i>2n</i>	
<i>Virgilia oroboides</i> (Berg.) Salter		54	S. Africa, Cape, Hermanus, Fernkloof, Goldblatt 5174 (MO).
<i>Liparieae</i>			
** <i>Liparia splendens</i> (Burm. f.) Bos & de Wit ssp. <i>splendens</i>		18	S. Africa, Cape, Trolley Track, Kirstenbosch, Compton 10320 (NBG).
** <i>Hypocalyptus sophoroides</i> (Berg.) Baill.		20	S. Africa, Cape, Worcester distr., Esterhuysen s.n. (no voucher).
** <i>H. coluteoides</i> (Lam.) R. Dahlgr.		20	S. Africa, Cape, Garcias Pass., Goldblatt 4898 (MO).
** <i>H. oxalidifolius</i> (Baill.) Phill.		20 + 1-2B	S. Africa, Cape, Near Hermanus, Goldblatt 4787 (MO).
<i>Crotalarieae</i>			
* <i>Rafnia triflora</i> Thunb.		16	S. Africa, Cape, Kalk Bay Mt., Goldblatt 5101 (MO).
* <i>R. amplexicaulis</i> Thunb.		16	S. Africa, Cape, mts. W of Trawal, Goldblatt 4026 (MO).
<i>Lotononis serpens</i> (E. Mey.) R. Dahlgr.		18	S. Africa, Cape, Nieuwoudtville, Goldblatt 3970 (MO).
* <i>Lotonis platycarpus</i> (Viv.) Pic. Serm. var. <i>abyssinica</i> (Hochst. ex A. Rich.) Pic. Serm.		18	Namibia, Otjimbingwe, Geiss 10468 (MO).
** <i>Dichilus lebeckioides</i> DC.		28	S. Africa, Transvaal, Silverton, Nel 261 (PRE).
<i>D. sp. indet.</i>		28	Zimbabwe (Rhodesia), Corby 1189 (SRGH).
** <i>Anarthrophyllum andicola</i> (Gil.) Reiche		24	Chile, Prov. Colchagua, Zöllner 9180 (MO).
** <i>A. elegans</i> Phil. f.		24	Chile, Prov. Santiago, San Gabriel, Schlegel s.n. (no voucher).
<i>Thermopsideae</i>			
<i>Pickeringia montana</i> Nutt.		28	U.S.A., California, San Diego Co., Zedler s.n. (MO).
** <i>Ammopiptanthus nanus</i> (Popov) S.H.		20	Orig. local. unknown, ex Hort. Bot. Acad. Sci. Uzbek R.S.S., cult. MBG, Goldblatt 4985 (MO).
<i>Genisteae</i>			
** <i>Gonocytisus angulatus</i> (L.) Spach		50	Turkey, Izmir, Banova-Manisa roadsides, Osman Tosun 1148 (Herb. Agrorum Turcicum, Ankara).

DISCUSSION

Two counts were made too late for inclusion in my review paper (Goldblatt, 1981) on cytology of Leguminosae. The first is a second report of $2n = 28$ in *Dichilus*, which further supports the record of polyploidy in this genus, *D. lebeckioides*, the only other species counted, also having $2n = 28$.

The other concerns the small, possibly ditypic Neotropical genus *Myroxylon* of the tribe Sophoreae. Atchison (1951) previously reported $2n = 28$ in *M. pe-*

reirae, a synonym of *M. balsamiferum*, and the same species I counted. Moreover her illustration of the count clearly shows $2n = 18$. Quite clearly the material I counted, the identity of which is not in doubt, has $2n = 26$. Atchison's count must be regarded as erroneous, possibly due to misidentification of the plants studied. The closest relative of *Myroxylon* is *Myrospermum*, also $n = 13$ and these appear to constitute a natural grouping within Sophoreae. The report here of $n = 13$ in *Myroxylon* substantiates the belief that they are related.

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