

Supplementary material of 'An overview of georeferenced chromosomes numbers of Moroccan Asteraceae', by A. Gounssa et al. (2025). Mediterr. Bot. 46(2), e97943.
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Table S1. Number of Asteraceae species strictly endemic to Morocco by regions and floristic division.

Regions	Floristic divisions of Morocco	Number of endemics
Rabat - Salé - Kenitra	Middle Atlantic Morocco The Mediterranean Coastline	6
Tanger - Tetouan - Al Hoceïma	The Rif The Mediterranean Coastline	13
L'Oriental	Plateaus of the Eastern Morocco Mountains of the Eastern Morocco Saharan Atlas	4
Drâa - Tafilalet	The Middle Atlas Eastern High Atlas Plateaus of the Eastern Morocco	16
Fez - Meknes	North Atlantic Morocco	9
Béni Mellal - Khenifra	Central High Atlas The Middle Atlas	9
Marrakech - Safi	Western High Atlas North Atlantic Morocco	15
Souss - Massa	The Anti Atlas North Atlantic Morocco	14
Guelmim - Oued Noun	Saharan Morocco	1
Dakhla - Oued Ed-Dahab	Saharan Morocco	0
Laâyoune - Sakia El Hamra	Saharan Morocco	0
Casablanca - Settat	North Atlantic Morocco	1

Table S2. Georeferenced threatened species following 3 categories: CRe, ENe and VUe*, with their endemic status: (•) Endemic to Morocco; (•A) Endemic to Morocco and Algeria; (•C) Endemic to Morocco and Spain (Canary Islands); (•I) Endemic to Morocco and The Iberian Peninsula (Spain and Portugal). (*) The suffix “e” indicates categories were assessed through expert judgment (Fennane, 2016-2017).

CRe		ENe		VUe	
<i>Anthemis zaianica</i> Oberpr.	(•)	<i>Anthemis abylaea</i> (Font Quer & Maire) Oberpr.	(•)	<i>Bellis rotundifolia</i> (Desf.) Boiss. & Reut.	(•A)
<i>Bellis perennis</i> L.		<i>Anthemis mauritiana</i> Maire & Sennen	(•A)	<i>Centaurea aspera</i> L. subsp. <i>gentilii</i> (Braun-Blanq. & Maire) Dobignard	(•C)
<i>Centaurea carolipauana</i> Fern. Casas & Susanna	(•)	<i>Calendula eckerleinii</i> Ohle	(•)	<i>Erigeron celerieri</i> Emb. & Maire	(•)
<i>Crepis balliana</i> Babç.	(•)	<i>Carthamus rhiphaeus</i> Font Quer & Pau	(•)	<i>Ismelia carinata</i> (Schousb.) Sch. Bip.	(•)
<i>Senecio hesperidum</i> Jahand. & al.	(•)	<i>Centaurea clementei</i> DC.	(•I)	<i>Rhodanthemum laouense</i> Vogt	(•)

<i>Sonchus bourgeaui</i> Sch. Bip.	(•C)	<i>Centaurea xaveri</i> Garcia Jacas & Susanna	(•)
<i>Sonchus fragilis</i> Ball	(•)	<i>Jacobaea maroccana</i> (P.H. Davis) Pelser	(•)
<i>Sonchus masquindalii</i> Pau & Font Quer	(•)	<i>Phagnalon platyphyllum</i> (Maire) Maire	(•)
<i>Taraxacum atlantis-majoris</i> H. Lindb.	(•)	<i>Rhodanthemum hosmariense</i> (Ball) B.H. Wilcox & al.	(•)
		<i>Scorzoneroides garnironii</i> (Emb. & Maire) Greuter & Talavera	(•)

Table S3. List of all the 54 published chromosomes number counts on Moroccan Asteraceae by authors. (*)
One count for a single taxon.

Author	Year	N. reports (*)
Alexander J. C. M., 1979. The mediterranean species of Senecio sections Senecio and Delphinifolius. Notes Roy. Bot. Gard. Edinburgh 37(3): 387-428	1979	6
Anderberg A., 1993. Cytology of Ighermia Wikl. (Asteraceae - Inulaeae) with notes on its systematic position. Comp. Newsl. 23: 7-9	1993	1
Berjano Pérez, R., Talavera Solís, M. M., Jiménez López, F. J., & Talavera Lozano, S. 2014. Asteraceae in Marhold (ed) IAPT/IOPB Chromosome data. Taxon, 63 (5), 1148-1155.	2014	8
Delay J. & Petit D., 1971. Informations annuelles de caryosystématique et cytogénétique. Cahier n°5: 1-16	1971	8
Dumé N. 1976. IOPB Chromosome number reports LIII. Taxon 25(4): 484	1976	3
El Alaoui Faris F. E., Tahiri H., Cubas P. & Pardo C. In Kamari & al. (eds). Mediterranean chromosome number reports. Reports (1688-1696) 19. Flora Medit. 19: 313-336	2009	1
El Alaoui Faris F. E., Tahiri H., Ibn Tattou M. & Molina J. A., 2010. Nombre chromosomique d'Angiospermes marocaines. Lagasalia 30: 19-28	2010	1
El Alaoui Faris F. E., Tahiri H., Molina J. A. & Al Issami A., 2011. Nombre chromosomique de quelques plantes à fleurs du Maroc. Lagasalia 31: 69-76.	2011	1
Favarger C., Galland N. & Küpfer Ph. In: Love, A. (ed.), Chromosome number reports LXXXVII. - Taxon 34: 346-351. 1985	1985	2
Fernandes Casas J. & Susanna A., 1982. De Centaureis occidentalibus notulae sparsae. Fontquera 1: 1-8	1982	1
Förther H. & Podlech D., 2002. Die Gattung <i>Hypochaeris</i> L. sect. <i>Hypochaeris</i> (<i>Compositae</i>) im westlichen Nordafrika. Sendtnera 8: 35-43	2002	3
Galland N., 1988. Recherche sur l'origine de la flore orophile du Maroc. Etude cytologique et cytogéographique. Trav. Inst. Sci., Série Bot. N°35: 147p.	1988	47
Garcia Jacas N. & Susanna A., 1993. <i>Centaurea xaveri</i> (<i>Compositae</i>), a new species from North Africa. Willdenowia 23 (1/2): 99	1993	1
Gomiz Garcia F., 2003. Notas sobre flora de Marruecos. IV. Anales Jard. Bot. Madrid 61(1): 224-225	2003	1
Gounssa A., Hormat K., El Aboudi A., El Alaoui Faris F. E. & M. Arahou., Karyological investigation of seven Moroccan Asteraceae., 2018 In Kamari & al. (eds). Mediterranean plant karyological data - 28 – Fl. Medit. 28: 440-445	2018	7

Guinochet M., 1957. Contribution à l'étude caryologique du genre <i>Centaurea</i> L. (s.l.). Bull. Soc. His. Nat. Afr. Nord 48: 282-300	1957	2
Hanelt P., 1963. Monographische Übersicht der Gattung <i>Carthamus</i> L. (Compositae). Feddes Repert. Spec. Nov. Regni Veg. 67: 41-180	1963	1
Hellwig F. H., 1994. Chromosomenzahlen aus der Tribus <i>cardueae</i> (Compositae). Willdenowia 24: 249-248	1994	7
Hellwig F. H., Oberprieler Ch., Vogt R. & Wagenitz G., 1994. chromosome numbers of North phanerogams. III. Some counts in <i>Centaurea</i> (Compositae, Cardueae). Willdenowia 24: 249-254	1994	8
Heyn C. C., Dagan O. & Nachman B. 1974. The annual <i>Calendula</i> species: Taxonomy and Relationships. Isr. J. Bot. 23: 169-201	1974	1
Hidalgo O., Garcia-Jacas N., Garnatje T., Susanna A. & Siljak-Yakovlov., 2007. Karyological evolution in <i>Rhaponticum</i> Vaill. (Asteraceae, Cardueae) and related genera. Bot. J. Linn. Soc. 153: 193-201	2007	1
Humphries C.J. Murray B.G., Bocquet G. & Vasudevan K. N. 1978. Chromosome numbers of phanerogams from Morocco and Algeria Bot. Notiser 131: 391-406	1978	59
Izuzquiza A. 1991a. Numéros cromosomaticos de plantas occidentales, 777-779. Anales Jard. Bot. Madrid 56(1) :119	1991	2
Izuzquiza A. 1991b. A new species and two new combinations of <i>Leontodon</i> (Asteraceae, Hypochaeridinae). Nord. J. bot. 11(1): 33-40.	1991	1
Katinas L., Tellería M. C., Susanna A. & Ortiz S., 2008. Warionia (Asteraceae): a relict genus of Cichorieae? Anales Jard. Bot. Madrid 65(2): 367-381.	2008	1
Kilian N., Oberprieler Ch. & Vogt R., 1995. Chromosome numbers of North African phanerogams. V. Some counts in <i>Launaea</i> (Compositae). Willdenowia 25(1): 278	1995	8
Larsen K. 1960. Stray cintribution to the cytology of the vascular plants. Bot. Tiddsk. 55 (4): 313-315	1960	1
Lopez Gonzalez G. 1990. Acerca de la clasificación natural del género <i>Carthamus</i> L., s.l. Anales Jard. Bot. Madrid 47: 11-34	1990	10
Mejías, J. A., Chambouleyron, M., Kim, S. H., Infante, M. D., Kim, S. C., & Léger, J. F. 2018. Phylogenetic and morphological analysis of a new cliff-dwelling species reveals a remnant ancestral diversity and evolutionary parallelism in <i>Sonchus</i> (Asteraceae). Plant Systematics and Evolution, 304, 1023-1040.	2018	2
Meusel H. & Ohle H., 1966. Zur Taxonomie und Cytologie der Gattung <i>Calendula</i> . Österr. Bot. Zeitschr. 113(2): 191-209	1966	1
Oberprieler C. & Vogt R., 2002. <i>Hypochaeris arachnoidea</i> Poir., a hitherto neglected species in NW Africa. Willdenowia 32: 231-236	2002	4
Oberprieler Ch. 1994. <i>Anthemis gharbensis</i> (Compositae, Anthemideae), a new species from NW Morocco. Willdenowia 23: 83	1994	1
Oberprieler Ch. & Vogt R., 1993. Chromosome numbers of North African phanerogams. II. Willdenowia 23: 211-238	1993	43
Vogt R. & Oberprieler Ch., 1994. Chromosome numbers of North African phanerogams. IV. Candollea 49:549-570	1994	19
Oberprieler Ch., 1998. The systematics of <i>Anthemis</i> L. (Compositae, Anthemideae) in west and centre North Africa. Bocconea 9, 328 p., Palermo.	1998	11
Ohle H., 1957. Beiträge zur Taxonomie der Gattung <i>Calendula</i> L. III. Revision der marokkanischen perennierenden Sippen unter Berücksichtigung einiger marokkanischer Annueller. Feddes Repert. 86: 1-17.	1957	2

Ouyahya A. & Viano J., 1981. Cytologie de taxons endémiques marocains du genre <i>Artemisia</i> L. Bol. Soc. Brot., Sér. 2, 53(2): 907-919	1981	6
Ouyahya A. & Viano J., 1988. Recherche cytogénétique sur le genre <i>Artemisia</i> L. au Maroc. Bol. Soc. Brot., Sér. 2, 61: 105-124	1988	6
Quezel P. 1957. Peuplement végétal des hautes montagnes de l'Afrique du Nord. Encycl. Biol. Ecol., Paris, 463 P	1957	12
Reese G., 1957. Über die Polyploidiespektren in der nordsaharischen Wüstenflora. Flora. 144 (4): 598-634	1957	8
Robinson H., Carr G. D., King R. M. and Powell M., 1997. Chromosome numbers in Compositae XVII: Senecioneae. Ann. Miss. Bot. Garden 84(4): 893-906	1997	1
Ruiz de Clavijo E., 1991. Notas cariológicas sobre algunas especies norteafricanas. Acta Bot. Malac. 16(2): 449-454	1991	1
Serra C., Valdés B., Marcucci R. & Tornadore N., 2001. Reports (1256-1263). In Kamari & al. 'eds). Méditerranéan chromosome number reports 11. Flora Medit. 11: 466-167	2001	2
Silvestre S. 1991. Números cromosómicos de plantas occidentales, 639-648. Anales Jard. Bot. Madrid 49(1): 95	1991	1
Talavera S., Devesa J. A. & Fernandez-Galiano., 1984. Notas cariosistematicas sobre plantas norteafricanas. 1. Compositae. Candollea 39: 271-280	1984	13
Talavera S., M. Ortiz Arista P. L. & Bastida F., 1994. Notas cariológicas sobre algunas compuestas de Marruecos. Acta Bot. Malac. 19: 97-101	1994	12
Valdés B. & Parra R., 1997. Numeros cromosómicos de plantas de Marruecos, I. Lagasalia 20(1): 161-166	1997	2
Valdés B. Parra R., Parrilla E. & Reina C., 1998. Números cromosómicos de plantas de Marruecos, II. Lagasalia 20(2): 223-230	1998	6
Valdés B. Parra R., Sanchez A. M. & Diaz M. D., 1999. Números cromosómicos de plantas de Marruecos, IV. Lagasalia 21(1): 235-240	1999	2
Vallès J. & Torrell M., 1995. In Kamari & al. (eds). Mediterranean chromosome number reports 5. Flora Medit. 5: 361	1995	1
Vogt R. & Oberprieler Ch. 2009. In Marhold (eds). IAPT/IOPB chromosome data 8. Taxon 58(4): 1282-1283	2009	1
Vogt R. & Oberprieler Ch. 2012. Chromosome numbers of North African phanerogams. X. Plants collected during Iter Mediterranean V of OPTIMA in Morocco. Ann. Naturhist. Mus. Wien. B 113: 113: 193-121	2012	72
Vogt R. & Oberprieler Ch., 1993. Chromosome numbers of North African phanerogams. I. Flora Medit. 3:187-210	1993	32
Vogt R. a& Oberprieler Ch., 2006. The genus <i>Plagius</i> (Compositae, Anthemideae). Willdenowia 36 (Special Issue): 47-68	2006	1
Vogt R. & Oberprieler Ch., 2008. Chromosome numbers of North Adrican phanerogams. VIII. More counts in Compositae. Willdenowia 38: 497-519	2008	77
Wilcox B.H. 1982: Cytological and hybridization studies in <i>Leucanthemum</i> (Compositae-Anthemideae) from North Africa. - Pl. Syst. Evol. 139: 179-195.	1982	1

Table S4. The number of species and subspecies subject to karyological studies for each genus of the Asteraceae family in Morocco, with their respective percentage and the total numbers of genera, species and subspecies of the Asteraceae family in Morocco.

	Genus	Species	Subspecies	Number of studied species	Number of studied subspecies	% of studied species	% of studied subspecies
1	<i>Aaronsohnia</i>	1	2	1	0	100 %	0 %
2	<i>Achillea</i>	7	2	1	0	14,28 %	0 %
3	<i>Ambrosia</i>	1	0	0		0 %	
4	<i>Anacyclus</i>	8	2	5	2	62,5 %	100 %
5	<i>Andryala</i>	9	7	1	2	11,11 %	28.57 %
6	<i>Anthemis</i>	11	8	5	6	45,45 %	75 %
7	<i>Anvillea</i>	2	1	0	0	0 %	0 %
8	<i>Arctium</i>	1	0	0		0 %	
9	<i>Arctotheca</i>	1	0	1		100 %	
10	<i>Arnoseris</i>	1	0	0		0 %	
11	<i>Artemisia</i>	17	3	11	3	64,70 %	100 %
12	<i>Aster</i>	1	0	0		0 %	
13	<i>Astericus</i>	6	2	3	0	50 %	0 %
14	<i>Atractylis</i>	13	0	2		15,38 %	
15	<i>Bellis</i>	9	0	5		55,55 %	
16	<i>Bidens</i>	3	0	1		33,33 %	
17	<i>Bombycilaena</i>	2	0	1		50 %	
18	<i>Brocchia</i>	1	0	1		100 %	
19	<i>Calendula</i>	8	5	6	1	75 %	20 %
20	<i>Carduus</i>	10	8	7	0	70 %	0 %
21	<i>Carlina</i>	8	0	2		25 %	
22	<i>Carthamus</i>	21	2	7	0	33,33 %	0 %
23	<i>Catananche</i>	5	0	2		40 %	
24	<i>Centaurea</i>	54	23	16	5	29.62 %	21.73 %
25	<i>Chamaemelum</i>	2	0	1		50 %	
26	<i>Cheirolophus</i>	3	0	0		0%	
27	<i>Chiliadenus</i>	4	0	0		0%	
28	<i>Chondrilla</i>	1	0	0		0%	
29	<i>Chrysanthoglossum</i>	1	0	0		0%	
30	<i>Cichorium</i>	2	0	1		0%	
31	<i>Cirsium</i>	10	1	1	0	10 %	0 %
32	<i>Cladanthus</i>	5	0	3		60 %	
33	<i>Coleostephus</i>	1	0	0		0 %	
34	<i>Cotula</i>	2	0	1		50 %	
35	<i>Crepis</i>	12	5	5	2	41.66	40 %
36	<i>Crupina</i>	3	0	2		66.66	
37	<i>Cyanus</i>	2	0	0		0 %	
38	<i>Cynara</i>	4	1	0	0	0 %	0 %
39	<i>Daveaua</i>	1	0	1		100 %	
40	<i>Dittrichia</i>	2	0	1		50 %	

41	<i>Dronicum</i>	1	0	0		0 %	
42	<i>Echinops</i>	2	3	0	0	0 %	0 %
43	<i>Eclipta</i>	1	0	0		0 %	
44	<i>Endopappus</i>	1	2	1	0	100 %	0 %
45	<i>Erigeron</i>	8	1	3	1	37.5 %	100 %
46	<i>Eupatorium</i>	1	0	0		0 %	
47	<i>Evacidium</i>	1	0	0		0 %	
48	<i>Filago</i>	26	4	2	0	7.69 %	0 %
49	<i>Galactites</i>	2	0	1		50 %	
50	<i>Galatella</i>	1	0	0		0 %	
51	<i>Galinsoga</i>	1	0	0		0 %	
52	<i>Geropogon</i>	1	0	1		100 %	
53	<i>Glebionis</i>	2	0	2		100 %	
54	<i>Glossopappus</i>	1	2	1	2	100 %	100 %
55	<i>Gnaphalium</i>	2	0	1		50 %	
56	<i>Gymnarrhena</i>	1	0	0		0 %	
57	<i>Hedypnois</i>	2	0	2		100 %	
58	<i>Helianthus</i>	1	0	0		0 %	
59	<i>Helichrysum</i>	5	2	1	0	20 %	0 %
60	<i>Heliocauta</i>	1	0	1		100 %	
61	<i>Helminthotheca</i>	5	3	1	0	20 %	0 %
62	<i>Hertia</i>	1	0	1		100 %	
63	<i>Heteranthemis</i>	1	0	1		100 %	
64	<i>Heteromera</i>	1	0	0		0 %	
65	<i>Heterotheca</i>	1	0	0		0 %	
66	<i>Hieracium</i>	12	11	1	2	8.33 %	18.18 %
67	<i>Hymenostemma</i>	1	0	0		0 %	
68	<i>Hyoseris</i>	2	0	1		50 %	
69	<i>Hypochaeris</i>	8	2	7	0	87.5 %	0 %
70	<i>Ifloga</i>	1	0	0		0 %	
71	<i>Inula</i>	2	0	0		0 %	
72	<i>Ismelia</i>	1	0	1		100 %	
73	<i>jacobaea</i>	7	1	2	0	28.57 %	0 %
74	<i>Jurinea</i>	1	0	1		100 %	
75	<i>Klasea</i>	4	0	1		25 %	
76	<i>Kleinia</i>	1	0	0		0 %	
77	<i>Koelpinia</i>	1	0	0		0 %	
78	<i>Lactuca</i>	7	2	3	1	42.85 %	50 %
79	<i>Laphangium</i>	1	0	1		100 %	
80	<i>Lapsana</i>	1	2	0	0	0 %	0 %
81	<i>Lasiopogon</i>	1	0	0		0 %	
82	<i>Launaea</i>	10	3	5	3	50 %	100 %
83	<i>Leontodon</i>	7	3	1	1	14.28 %	33.33 %
84	<i>Leucanthemopsis</i>	1	0	1		100 %	

85	<i>Leysera</i>	1	0	1		100 %	
86	<i>Lifago</i>	1	0	0		0 %	
87	<i>Limbarda</i>	1	1	1	0	100 %	0 %
88	<i>Lonas</i>	1	0	0		0 %	
89	<i>Mantiscalca</i>	4	0	1		25 %	
90	<i>Matricatia</i>	3	0	0		0 %	
91	<i>Mauranthemum</i>	4	1	2	0	50 %	0 %
92	<i>Mecomischus</i>	1	0	0		0 %	
93	<i>Micropus</i>	1	0	0		0 %	
94	<i>Nivellea</i>	1	0	1		100 %	
95	<i>Nolletia</i>	1	0	1		100 %	
96	<i>Notobasus</i>	1	0	1		100 %	
97	<i>Onopordum</i>	7	3	1	0	14.28 %	0 %
98	<i>Otospermum</i>	1	0	1		100 %	
99	<i>Pallenis</i>	5	5	3	4	60 %	80 %
100	<i>Parralderia</i>	2	2	0	0	0 %	0 %
101	<i>Pentzia</i>	1	0	0		0 %	
102	<i>Phagnalon</i>	10	7	5	3	50 %	42.85 %
103	<i>Picnomon</i>	1	0	0		0 %	
104	<i>Picris</i>	5	2	2	1	40 %	50 %
105	<i>Pilosella</i>	5	0	1		20 %	
106	<i>Plagius</i>	1	0	1		100 %	
107	<i>Pluchea</i>	1	0	0		0 %	
108	<i>Podospermum</i>	1	0	1		100 %	
109	<i>Ptilostemon</i>	4	0	1		25 %	
110	<i>Pulicaria</i>	10	3	4	1	40 %	33.33 %
111	<i>Reichardia</i>	4	0	4		100 %	
112	<i>Rhagadiolus</i>	2	0	2		100 %	
113	<i>Rhanterium</i>	1	0	0		0 %	
114	<i>Rhaponticoides</i>	2	0	0		0 %	
115	<i>Rhaponticum</i>	6	1	3	0	50 %	0 %
116	<i>Rhetinolepis</i>	1	0	0		0 %	
117	<i>Rhodanthemum</i>	13	8	8	5	61.53 %	62.5 %
118	<i>Santolina</i>	3	0	1		33.33 %	
119	<i>Scolymus</i>	3	2	0	0	0 %	0 %
120	<i>Scorzonera</i>	6	4	1	0	16.66 %	0 %
121	<i>Scorzoneroides</i>	4	3	4	0	100 %	0 %
122	<i>Senecio</i>	17	8	7	6	41.17 %	75 %
123	<i>Silybum</i>	2	0	1		50 %	
124	<i>Solidago</i>	1	0	0		0 %	
125	<i>Solvía</i>	1	0	0		0 %	
126	<i>Sonchus</i>	14	3	9	1	69.23 %	33.33 %
127	<i>Staezelina</i>	1	0	0		0 %	
128	<i>Symphyotrichum</i>	1	0	1		100 %	

129	<i>Tagetes</i>	1	0	0		0 %	
130	<i>Tanacetum</i>	3	0	0		0 %	
131	<i>Taraxacum</i>	13	0	4		30.76 %	
132	<i>Tolpis</i>	4	0	2		50 %	
133	<i>Tourneuxia</i>	1	0	0		0 %	
134	<i>Tragopogon</i>	5	0	1		20 %	
135	<i>Tussilago</i>	1	0	0		0 %	
136	<i>Urospermum</i>	2	0	2		100 %	
137	<i>Verbesina</i>	1	0	1		100 %	
138	<i>Volutaria</i>	7	2	4	2	57.14 %	100 %
139	<i>Warionia</i>	1	0	1		100 %	
140	<i>Xanthium</i>	3	2	0	0	0 %	0 %
141	<i>Xeranthemum</i>	2	0	1		50 %	
Total		594	170	222	54		
%		*	*	37.37 %	31.76 %		
Total of species and subspecies in the Asteraceae family		764		276			
% of species and subspecies studied		***	***	35.99 %			

Table S5. The 19 WorldClim bioclimatic variables (Esri, www.esri.com/).

- BIO1 = Annual Mean Temperature
- BIO2 = Mean Diurnal Range (Mean of monthly (max temp – min temp))
- BIO3 = Isothermality (BIO2/BIO7) (×100)
- BIO4 = Temperature Seasonality (standard deviation ×100)
- BIO5 = Max Temperature of Warmest Month
- BIO6 = Min Temperature of Coldest Month
- BIO7 = Temperature Annual Range (BIO5-BIO6)
- BIO8 = Mean Temperature of Wettest Quarter
- BIO9 = Mean Temperature of Driest Quarter
- BIO10 = Mean Temperature of Warmest Quarter
- BIO11 = Mean Temperature of Coldest Quarter
- BIO12 = Annual Precipitation
- BIO13 = Precipitation of Wettest Month
- BIO14 = Precipitation of Driest Month
- BIO15 = Precipitation Seasonality (Coefficient of Variation)
- BIO16 = Precipitation of Wettest Quarter
- BIO17 = Precipitation of Driest Quarter
- BIO18 = Precipitation of Warmest Quarter
- BIO19 = Precipitation of Coldest Quarter

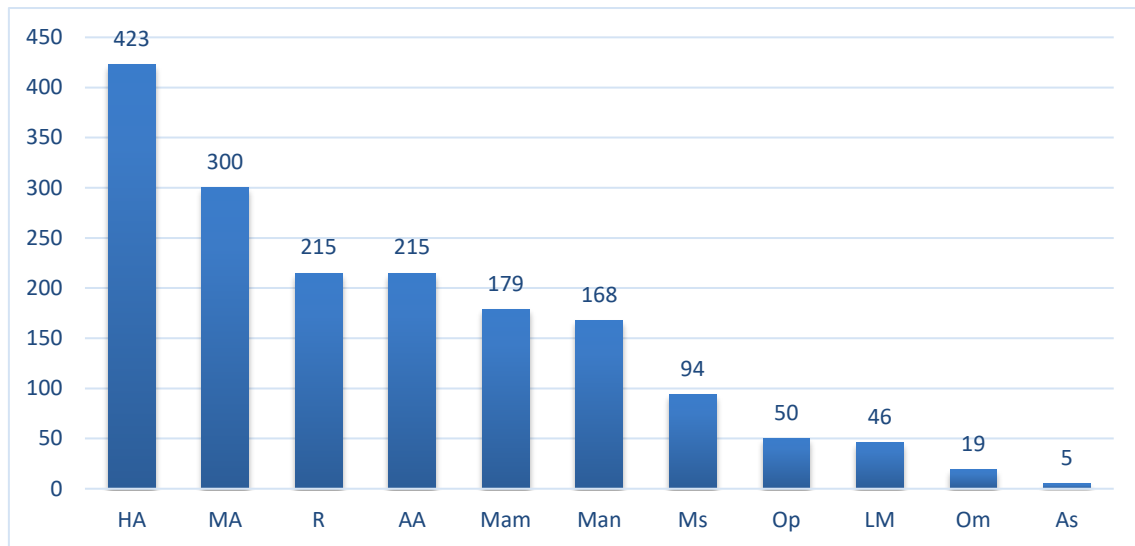


Figure S1. Number of endemics in Morocco by floristic divisions (Fennane and Ibn Tattou 1999; Fennane 2004). HA: High Atlas, MA: Middle Atlas, R: Rif, AA: Anti Atlas; Mam: Middle Atlantic of Morocco, Man: North Atlantic of Morocco, Ms: Moroccan Sahara, Op: Plateaus of the Eastern Morocco, LM: Mediterranean Coast, Om: Eastern Mountains, As: Atlas Sahara.

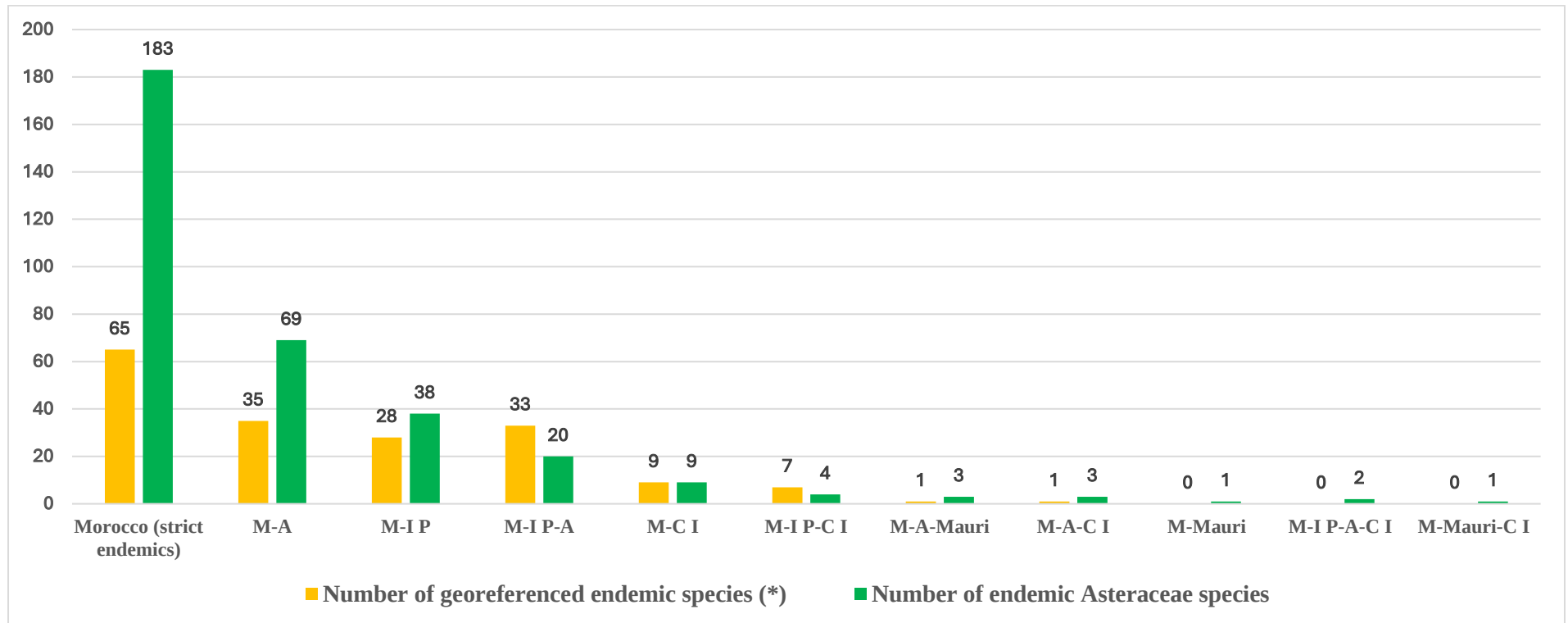


Figure S2. Comparison between the number of georeferenced endemic (strict and shared) Asteraceae species in this study and the number of endemics in the Asteraceae family in the Moroccan flora. (*) numbers without repetition of localities records. Morocco (strict endemics). **M-A**: Morocco – Algeria; **M-I P**: Morocco - Iberian Peninsula (Spain and Portugal); **M-I P-A**: Morocco - Iberian Peninsula (Spain and Portugal) – Algeria; **M-C I**: Morocco – Spain (Canary Islands); **M-I P-C I**: Morocco - Iberian Peninsula (Spain and Portugal) and Spain (Canary Islands); **M-A-Mauri**: Morocco - Algeria – Mauritania; **M-A-C I**: Morocco - Algeria – Spain (Canary Islands); **M-Mauri**: Morocco – Mauritania; **M-I P-A-C I**: Morocco - Iberian Peninsula - Algeria – Spain (Canary Islands); **M-Mauri-C I**: Morocco - Mauritania – Spain (Canary Islands).

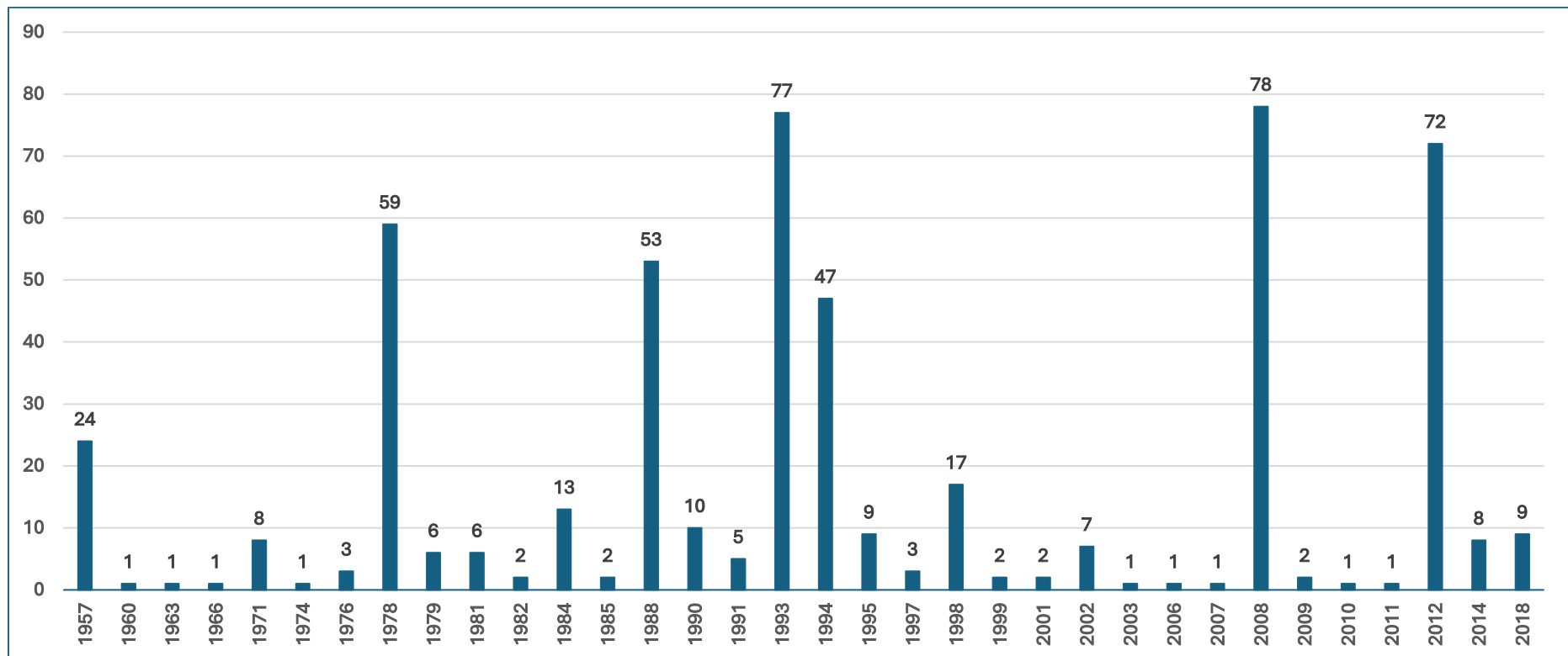


Figure S3. Summary of the number of chromosome counts published since 1957 to 2018.

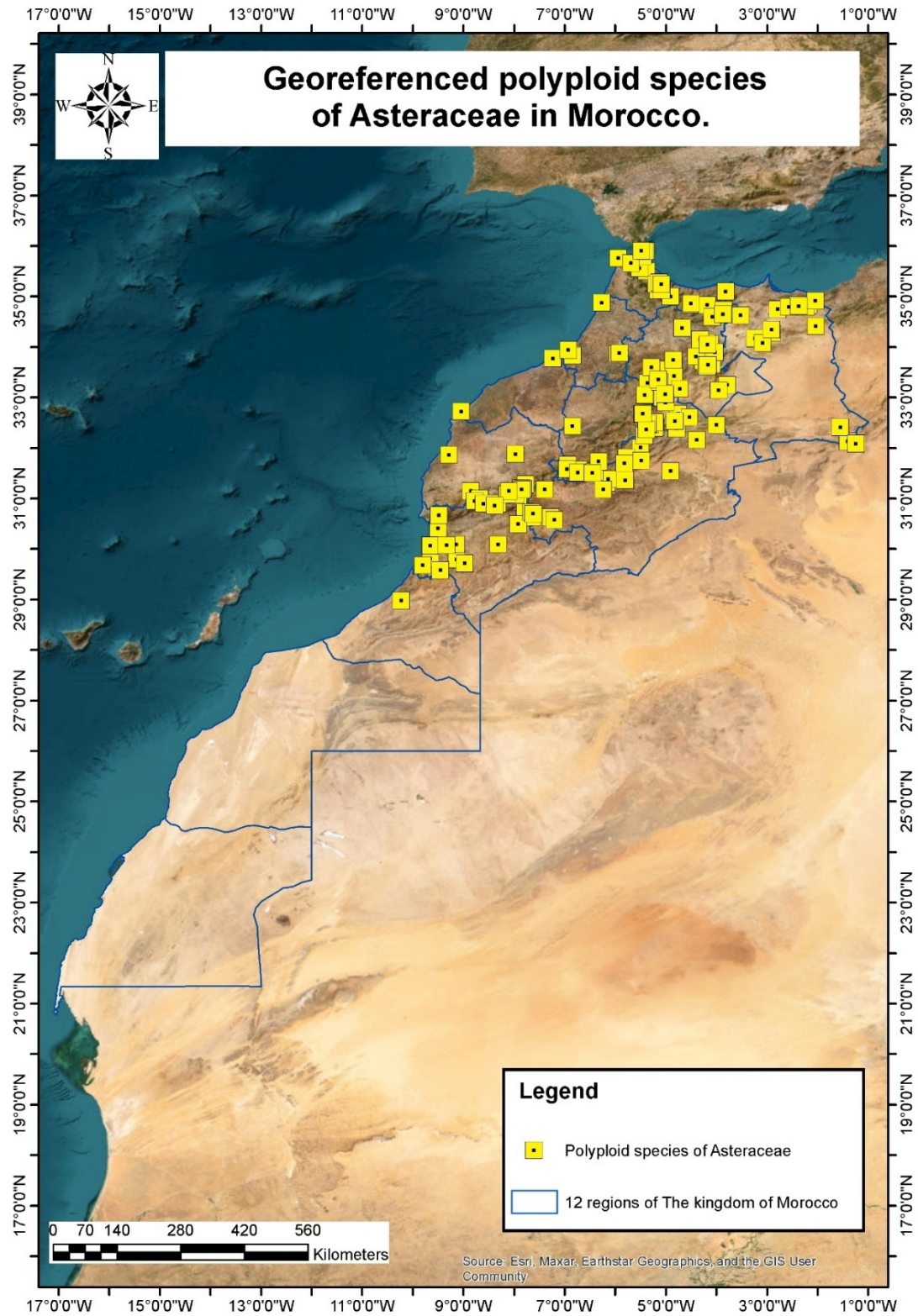


Figure S4. Georeferenced polyploid species of Asteraceae in Morocco.

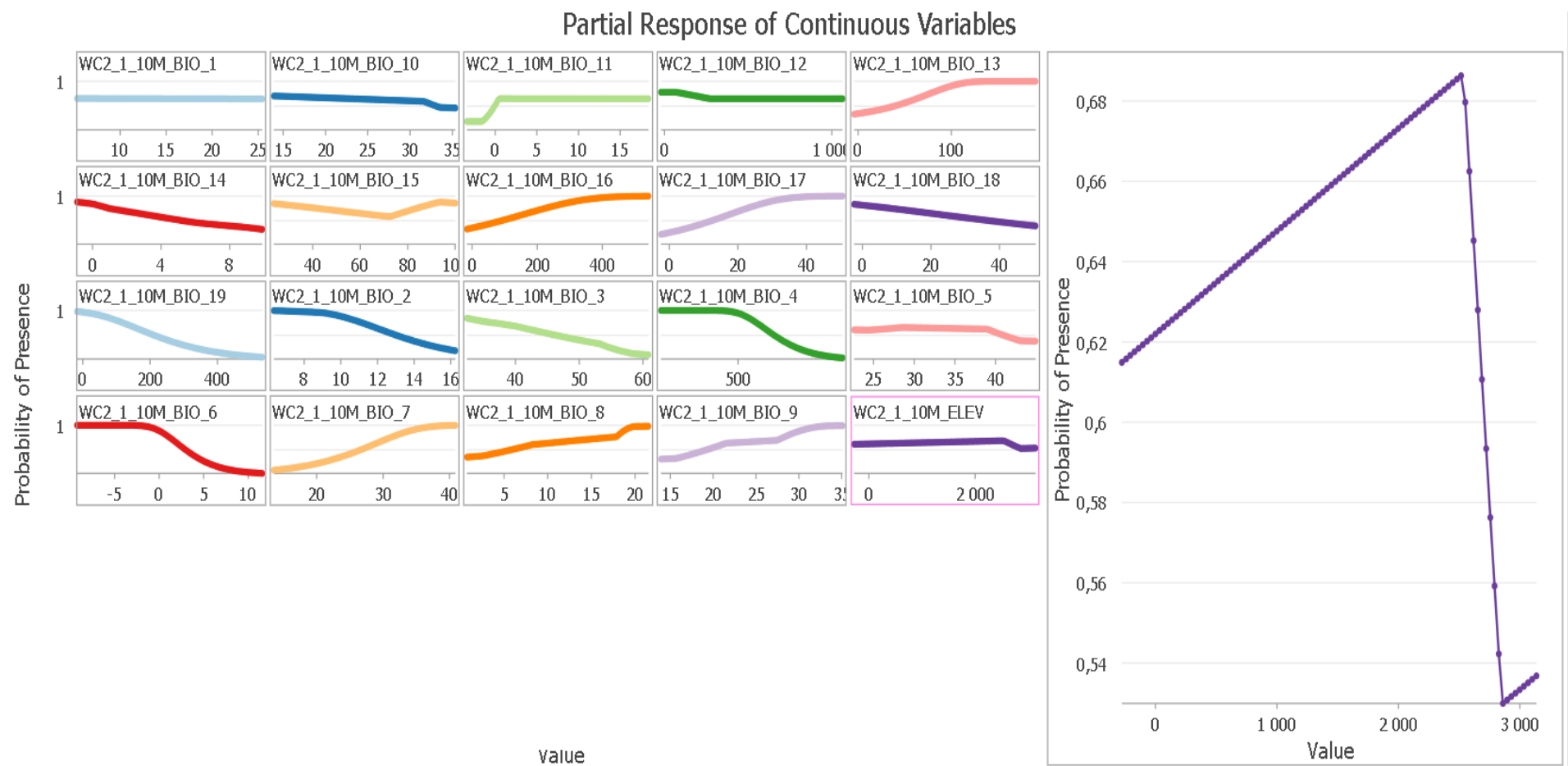


Figure S5: Partial response of continuous variables chart for Asteraceae species with known chromosome numbers across Morocco.

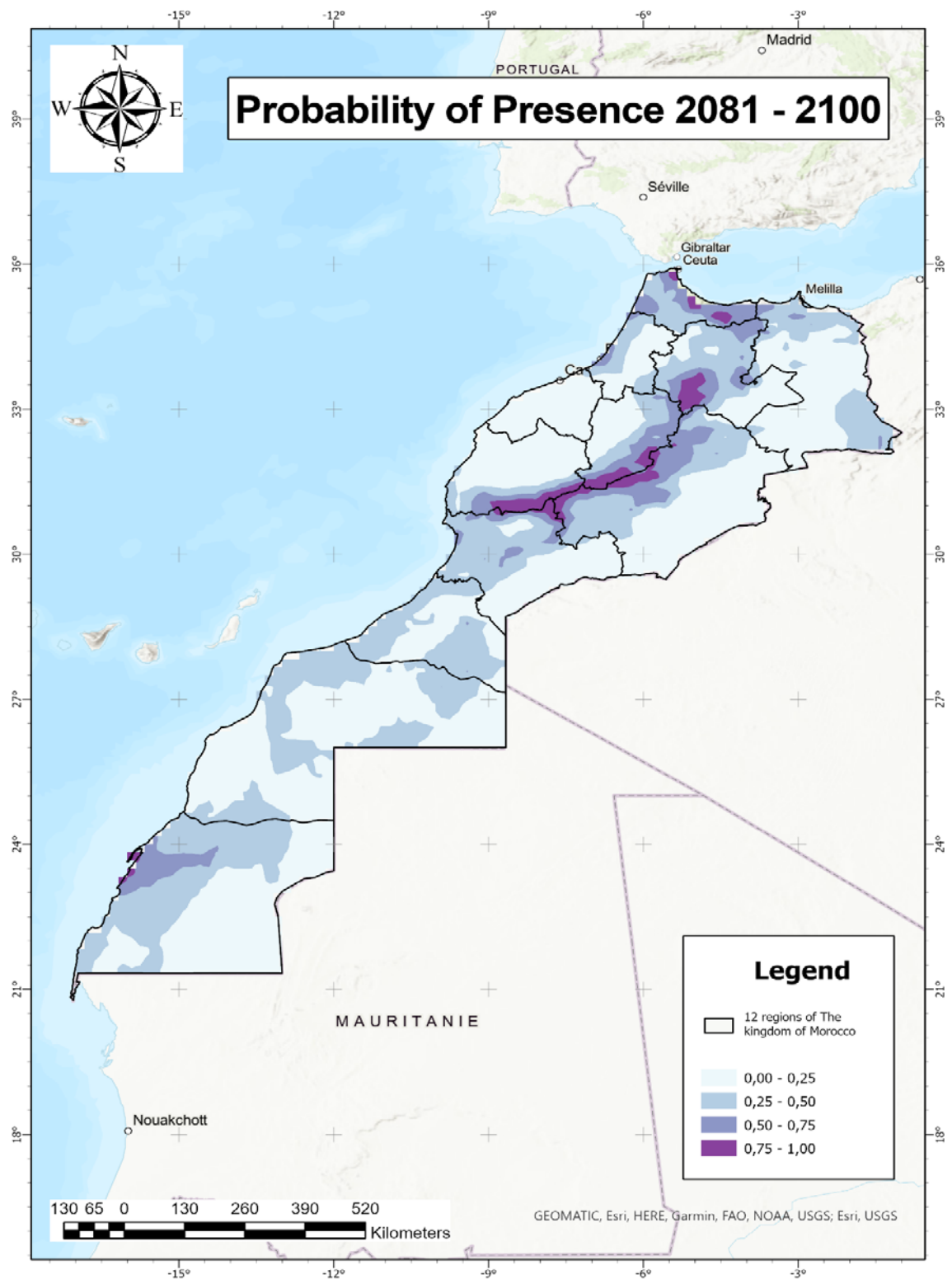


Figure S6. Possibility of presence of Asteraceae species with known chromosome numbers across Morocco (under future Climate Conditions: 2081-2100).