

## Appendix S1. Data matrix of fern presence in each operational geographic unit (OGU).

















































Vittariaceae	Vittaria	guineensis	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	0	0	0	0	1	0	0	0	0	0	0	15		
Vittariaceae	Vittaria	hildebrandtii	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1		
Vittariaceae	Vittaria	humblotii	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
Vittariaceae	Vittaria	isoetifolia	0	0	0	0	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	1	13	
Vittariaceae	Vittaria	owariensis	1	1	0	0	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	7	
Vittariaceae	Vittaria	schaeferi	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Vittariaceae	Vittaria	scolopendrina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
Vittariaceae	Vittaria	vittarioides	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	
Vittariaceae	Vittaria	volkensii	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	5	
		Total / area	167	123	39	51	184	113	139	80	204	42	117	28	76	242	313	337	188	206	101	85	48	163	31	10	9	36	30	29	557

Appendix S2. Climatic variables in the OGUs. Most data were obtained from the IPCC and WMO web pages (<http://ipcc-ddc.cru.uea.ac.uk/> and <http://www.wmo.ch/indexflash.html>) and from *CLINO* 1931-1960) (Anonymous, 1971). No climatic data were available for Annobón and Porto Principe. When one of selected areas has more than one place with complete climatic information we show the mean among these data.

OGU	Kira warmth index	Difference between max. and min. of monthly mean of temperatures (°C)	Mean sun hours / year	Relative humidity (%)	Mean year rainfall (mm)	Driest month rainfall (mm)	Cloudiness (%)
Madagascar	141	6.3	222	79.58	1191	10	58.7
Kipengere	191	6.3	223	69.58	1124	0	59.5
Aberdares	150	3.9	211.2	72.75	925	26	76.4
Rukiya	218	3.2	241.3	68.33	1540	16	82.3
Drakensberg	149	9.5	255.4	64.25	840	0	40.7
Bioko	220	2.2	101	86	4200	24	86.4
Inyangaland	163	7.2	236	67.17	863	0	57.5
Cameroon Mt	257	2.7	106.2	85.75	4109	61	83.3
Loma Mt	258	3.8	215.8	67.5	1596	0	62
Angola	163	4.7	190.4	58.25	1341	0	60.7
S. Tomé	246	3.8	138.8	81.08	872	0	92.8
Kwahu pl.	247	3.3	162.1	78.58	1465	26	74
Río Muni	233	2.3	106	86.08	1857	23	84.3
Moukandé Mt	234	2.9	180	81.25	1861	7	90
Knysna mts.	125	6.6	237.2	78.83	777	34	46.3
Table mts.	131	8.7	254.9	74.92	526	11	43.7
Porto Principe	-	-	-	-	-	-	-
Ethiopia	141	4.8	209.2	61.25	446	5	45.4
Oku Mt	196	2.7	196.5	75.17	2096	7	72
Namibia	168	10.2	294.7	34.42	375	0	25.5
Annobón	-	-	-	-	-	-	-
Togo Mt	251	3.9	180	75.25	1450	19	69.4
Tristan da Cunha I.	115	6.4	100.1	81.58	1655	88	75.2
Helena I.	158	4.7	165	80	1250	10	75.8
Gough I.	82.6	5.4	118.8	80.33	3397	197	76.8

Cape Verde	219	7.4	250	57	650	0	43
Jebel Marra	237	10.8	276	36.67	287	0	51.6
Ascension I.	248	3.5	170	83	1800	4	72.4
Marion I.	1.3	4.1	10.22	82.33	2451	167	75.3

Appendix S3. Correlation coefficients and signification (in brackets) in standard pairwise regression analysis (SPR) of the environmental factors

Log area (Log m <sup>2</sup> )	Log Kira warmth index (Log)	Log difference between max. and min. temperatures (Log °C)	Log mean sun hours / year (Log h)	Arc-sin of relative humidity (Arc-sin of proportion)	Log mean humidity (Arc-sin of proportion)	Log mean rainfall (Arc-sin of proportion)	Log driest month rainfall (Log mm)	Arc-sin of cloudiness (Arc-sin of proportion)	Log elevation	Log distance to the nearest site (Log Km)
Log Kira warmth index (Log)		1 p= ---								
Log difference between max. and min. temperatures (Log °C)	0.151 (0.450)	-0.083 (0.678)	1 p= ---							
Log mean sun hours / year (Log h)	0.449 (0.019)	0.820 (0.000)	0.371 (0.056)	1 p= ---						
Arc-sin of mean relative humidity (Arc-sin of proportion)	-0.394 (0.042)	-0.135 (0.501)	-0.643 (0.000)	-0.439 (0.022)	1 p= ---					
Log mean year rainfall (Log mm)	-0.421 p=0.028	-0.151 p=0.452	-0.778 p=0.000	-0.554 p=0.003	0.726 p=0.000	1 p= ---				
Log driest month rainfall (Log mm)	-0.417 p=0.030	-0.433 p=0.024	-0.403 p=0.037	0.251 (0.206)	0.604 p=0.001	0.616 p=0.001	1 p= ---			
Arc-sin of cloudiness (Arc-sin of proportion)	-0.401 p=0.038	-0.020 p=0.920	-0.798 p=0.000	-0.455 p=0.017	0.732 p=0.000	0.771 p=0.000	0.481 p=0.011	1 p= ---		
Log elevation	0.453 p=0.017	0.187 p=0.350	0.025 p=0.899	0.229 p=0.249	-0.255 p=0.199	-0.123 p=0.541	-0.270 p=0.172	-0.032 p=0.872	1 p= ---	
Log distance to the nearest site (Log Km)	0.040 p=0.842	-0.305 p=0.121	0.350 p=0.073	-0.109 p=0.588	-0.268 p=0.175	-0.234 p=0.240	-0.225 p=0.258	-0.261 p=0.187	0.023 p=0.907	1 p= ---

Appendix S4. Number of species and endemics included in the genera which resulted in group 1 of termophilous ferns. First is the number of species, and after the bar is the number of endemics. The sites are ordinated by from highest to lowest species richness.

Appendix S5. Number of species and endemics included in the genera which resulted in group 2 (cold-tolerant ferns). First is the number of species, in brackets is the number of species shared with South America and after the bar is the number of endemics. The sites are ordinated by from highest to lowest species richness

OGU	<u>Polystichu</u>	<u>Blechnum</u>	<u>Grammiti</u>	<u>Lycopodium</u>	<u>Huperzia</u>	<u>Elaphoglossum</u>	Total	Total non-endemic
	<u>m</u>	<u>s</u>	<u>m</u>					
Madagascar	6/5	11/5	11(1)/5	2/0	21/14	35/23	86(1)/52	34
Kipengere	3/1	6/0	2/0	1/0	9/0	16/0	37/1	36
Aberdares	5/1	5/0	4/0	2/1	9/0	14/0	39/2	37
Rukiya	2/0	1/0	-	1/0	7/0	10/0	21/0	21
Drakensberg	8/2	6/0	-	1/0	5/0	7/1	27/3	24
Bioko	2/0	1/0	-	1/0	4/0	7/0	15/0	15
Inyanga	3/0	5/0	1/0	1/0	5/0	8/0	23/0	23
Cameroon Mt	2/0	1/0	-	-	5/0	9/0	17/0	17
Loma Mt	-	-	-	-	7/0	5/0	12/0	12
Angola	-	-	-	-	-	2/0	2/0	2
S. Tomé	-	1/0	3/2	1/0	5/0	6/0	16/2	14
Kwahu pl.	-	-	-	-	-	-	-	-
Río Muni	-	-	-	-	1/0	1/0	2/0	2
Moukandé Mt	-	-	-	-	-	-	-	-
Knysna mts.	-	-	-	2/0	2/0	3/0	7/0	7
Table mts.	-	-	-	2/0	2/0	2/0	6/0	6
Ethiopia	-	-	-	1/0	-	4/0	5/0	5
Oku Mt	2/0	-	-	-	2/0	2/0	6/0	6
Namibia	-	-	-	-	-	-	-	-
Togo Mt	-	-	-	-	-	-	-	-
P. Príncipe	-	-	1/0	-	2/0	3/0	6/0	6
Tristan da Cunha I.	1(1)/0	3(1)/0	2/0	2(1)/0	2(1)/0	7/3	17(4)/3	14
Helena I.	-	-	-	1/1	1/0	4/3	6/3	3
Gough I.	1(1)/0	3(1)/0	2/0	2(1)/0	2(1)/0	5/0	15(4)/0	15
Annobón	-	-	-	-	1/0	-	1/0	1
Cape Verde	-	-	-	-	-	-	-	-
Jebel Marra	-	-	-	-	-	-	-	-
Ascension I.	-	-	-	-	-	-	-	-
Marion I.	2(1)/1	1(1)/0	1/0	1(1)/0	2(1)/0	1/1	8(4)/2	6

Appendix S6. Number total of species and endemics included in group 3 (drought-tolerant ferns). First is the number of species, in brackets is the number of species shared with South America and after the bar is the number of endemics. The sites are ordinated by from highest to lowest species richness