Supplemental data for:

Causse, S., Kaczmarek, T., Dubois, C., Achigan-Dako, E. G., Adjebeng-Danquah, J., Agyare, R. Y., Akanvou, L., Bakasso, Y., Barry, M. B., Diop, B. M., Gueye, M. C., Ibrahim Bio Yerima, A. R., Oselebe, H. O., Saidou Idi, S., Uyoh, E. A., Vancoppenolle, S., Barnaud, A., Billot, C., Rami, J.-F. and Leclerc, C. (2025) "A fast and effective method to distinguish cultivated fonio species: conservation and evaluation perspectives", *Genetic Resources*, 6(12), pp. 83–94. doi: 10.46265/genresj.JDUT8893.

Contents

Supplemental Tables

Supplemental Table 1. Sampling details: number of accessions by countries and species.

Country of harvest	Samples	Harvest site / country	Genetic identification of the species	
			Digitaria exilis	*Digitaria iburua*
Benin	5	Atakora Department	5	0
Burkina Faso	4	Boucle du Mouhoun Region	4	0
	3	Cascades Region	3	0
	1	Centre-Sud Region	1	0
	3	Hauts-Bassins Region	3	0
	1	Sahel Region	1	0
	Subtotal		12	0
Ghana	1	Northern Region	1	0
Guinea	3	Faranah Region	3	0
	4	Kankan Region	4	0
	2	Kindia Region	2	0
	2	Labé Region	2	0
	Subtotal		11	0
Mali	3	Kayes Region	3	0
	4	Koulikoro region	4	0
	3	Mopti Region	3	0
	1	Ségou Region	1	0
	1	Sikasso Region	1	0
	Subtotal		12	0
Niger	10	Dosso Region	10	0
Nigeria	1	Bauchi State	1	0
	4	Benue State	4	0
	1	Nassarawa State	1	0
	34	Plateau State	14	20
	9	Taraba State	9	0
	Subtotal		29	20
Senegal	2	Kédougou Region	2	0
	3	Kolda Region	3	0
	1	Tambacounda Region	1	0
	1	Ziguinchor region	1	0
	Subtotal		7	0
Togo	1	Centrale Region	1	0
	3	Kara Region	3	0
	5	Plateaux Region	5	0
	2	Savanes Region	2	0
	Subtotal		11	0
Total			**98**	**20**

Supplemental Table 2: Information on the 118 accessions analyzed.

ID: accession number, Country: country of origin, Species: species name, Number of grains: Number of grains detected in the image, Outliers percentage: percentage of outlier grains detected with 3IQR method, Sample mass: mass of the sample analysed for each accession.

ID	Country	Species	Number of grains	Outliers percentage	Sample mass (mg)
NGA_2015_01_026	Nigeria	*Digitaria iburua*	184	2.17	129.6
NGA_2015_NA02_027	Nigeria	*Digitaria iburua*	161	7.45	140.7
NGA_2015_NA02_028	Nigeria	*Digitaria iburua*	160	1.88	117.3
NGA_2015_NA02_029	Nigeria	*Digitaria iburua*	213	4.23	137.2
NGA_2015_NA02_030	Nigeria	*Digitaria iburua*	162	1.23	113.5
NGA_2015_04_031	Nigeria	*Digitaria iburua*	151	0.66	132.4
NGA_2015_05_032	Nigeria	*Digitaria iburua*	160	1.25	119.2
NGA_2015_07_033	Nigeria	*Digitaria iburua*	214	2.80	146.8
NGA_2015_08_034	Nigeria	*Digitaria iburua*	210	3.33	124.3
NGA_2015_09_035	Nigeria	*Digitaria iburua*	159	8.81	124.8
NGA_2015_10_036	Nigeria	*Digitaria iburua*	187	1.60	133.3
NGA_2015_11_037	Nigeria	*Digitaria iburua*	182	2.20	130.1
NGA_2015_12_038	Nigeria	*Digitaria iburua*	166	3.01	127.0
Q01_01_02	Nigeria	*Digitaria exilis*	232	3.88	127.1
Q02_01_02	Nigeria	*Digitaria exilis*	220	0.91	120.3
Q02_02_02	Nigeria	*Digitaria exilis*	236	1.27	124.9
Q10_02_01	Nigeria	*Digitaria exilis*	244	6.56	130.4
Q11_01_02	Nigeria	*Digitaria iburua*	204	2.45	143.8
Q11_01_03	Nigeria	*Digitaria iburua*	222	1.80	138.2
Q19_01_01	Nigeria	*Digitaria iburua*	159	3.14	125.3
Q19_03_01	Nigeria	*Digitaria iburua*	196	8.67	148.0
Q20_01_01	Nigeria	*Digitaria iburua*	191	8.38	131.6
Q24_08_02	Nigeria	*Digitaria iburua*	154	3.90	114.0
Q24_10_01	Nigeria	*Digitaria iburua*	180	2.22	123.2
Q25_01_01	Nigeria	*Digitaria exilis*	194	2.58	120.7
Q25_06_01	Nigeria	*Digitaria exilis*	195	3.08	116.7
Q27_02_01	Nigeria	*Digitaria exilis*	228	1.32	128.0
NGA_2015_02_001	Nigeria	*Digitaria exilis*	198	0.51	112.3
NGA_2015_NA06_020	Nigeria	*Digitaria exilis*	240	5.42	123.3
Q01_05_01	Nigeria	*Digitaria exilis*	243	5.35	135.1
Q02_06_01	Nigeria	*Digitaria exilis*	255	0.39	138.5
Q02_09_01	Nigeria	*Digitaria exilis*	258	0.78	137.3
Q05_06_01	Nigeria	*Digitaria exilis*	224	0.89	114.5
Q05_08_01	Nigeria	*Digitaria exilis*	298	1.68	140.6
Q05_08_02	Nigeria	*Digitaria exilis*	232	1.29	125.5
Q06_07_02	Nigeria	*Digitaria exilis*	280	0.00	132.9
Q10_05_03	Nigeria	*Digitaria exilis*	275	5.82	134.9
Q13_09_01	Nigeria	*Digitaria exilis*	209	0.00	122.8
Q16_03_01	Nigeria	*Digitaria exilis*	208	2.40	118.6
Q23_01_01	Nigeria	*Digitaria exilis*	273	1.47	124.3

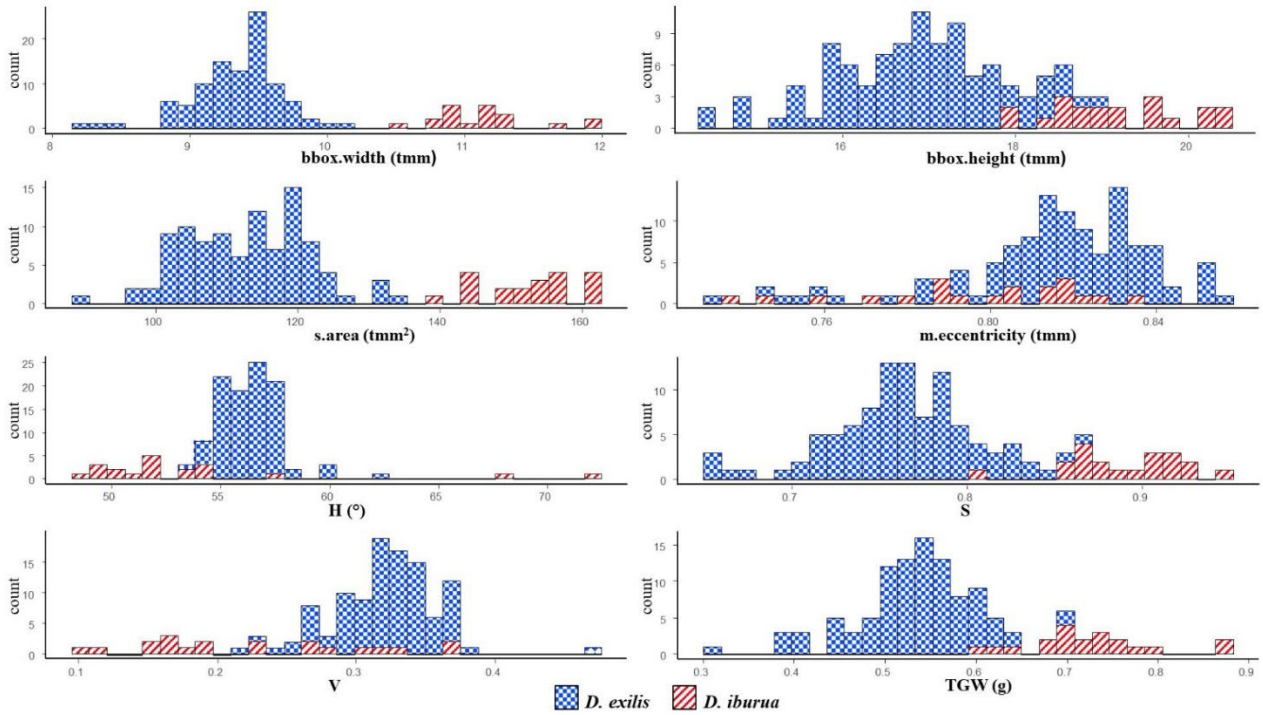
Q25_03_01	Nigeria	*Digitaria exilis*	217	1.84	122.4
Q25_03_02	Nigeria	*Digitaria exilis*	200	3.00	114.1
Q26_05_03	Nigeria	*Digitaria exilis*	201	1.00	124.0
Q27_02_02	Nigeria	*Digitaria exilis*	204	1.47	114.4
Q27_04_01	Nigeria	*Digitaria exilis*	231	2.16	120.2
Q31_02_02	Nigeria	*Digitaria exilis*	223	0.90	122.3
Q31_04_01	Nigeria	*Digitaria exilis*	232	0.86	123.6
Q32_07_02	Nigeria	*Digitaria exilis*	229	1.31	124.1
Q37_01_01	Nigeria	*Digitaria exilis*	273	1.83	113.6
CM04489a	Benin	*Digitaria exilis*	453	1.10	142.4
CM04493	Benin	*Digitaria exilis*	364	2.20	138.7
CM04487	Benin	*Digitaria exilis*	278	1.80	124.2
P10_02_F01	Benin	*Digitaria exilis*	304	1.64	121.1
P22_01_F01	Benin	*Digitaria exilis*	291	0.69	141.5
CM07902	Burkina Faso	*Digitaria exilis*	287	1.05	143.8
CM06496	Burkina Faso	*Digitaria exilis*	205	1.46	142.6
CM06501	Burkina Faso	*Digitaria exilis*	197	0.00	124.3
CM07900	Burkina Faso	*Digitaria exilis*	231	2.60	125.9
CM07888	Burkina Faso	*Digitaria exilis*	331	1.81	133.4
CM07885	Burkina Faso	*Digitaria exilis*	240	2.08	124.4
CM06510	Burkina Faso	*Digitaria exilis*	229	2.18	135.5
CM07903	Burkina Faso	*Digitaria exilis*	224	0.45	122.8
CM07895	Burkina Faso	*Digitaria exilis*	253	2.77	148.8
CM06513	Burkina Faso	*Digitaria exilis*	218	3.21	111.7
CM07909	Burkina Faso	*Digitaria exilis*	220	2.27	110.5
CM07908	Burkina Faso	*Digitaria exilis*	240	2.92	127.1
G01_01_01	Ghana	*Digitaria exilis*	225	2.22	112.1
CM08598	Guinea	*Digitaria exilis*	262	4.96	151.4
CM08655	Guinea	*Digitaria exilis*	245	2.45	133.8
CM08677	Guinea	*Digitaria exilis*	250	1.20	142.9
CM08562	Guinea	*Digitaria exilis*	205	0.49	123.9
CM08653	Guinea	*Digitaria exilis*	221	2.26	124.8
CM07350	Guinea	*Digitaria exilis*	264	0.38	134.1
CM07249	Guinea	*Digitaria exilis*	255	3.53	141.6
CM07354	Guinea	*Digitaria exilis*	231	0.00	123.9
CM07226	Guinea	*Digitaria exilis*	246	1.63	130.3
CM07360	Guinea	*Digitaria exilis*	241	0.41	126.6
CM07317	Guinea	*Digitaria exilis*	253	2.77	141.9
CM05737	Mali	*Digitaria exilis*	221	1.36	118.8
CM05746	Mali	*Digitaria exilis*	262	0.38	140.6
CM05796	Mali	*Digitaria exilis*	223	1.35	111.9
CM05803	Mali	*Digitaria exilis*	257	3.11	134.2
CM05754	Mali	*Digitaria exilis*	231	3.90	123.5
CM05767	Mali	*Digitaria exilis*	254	1.18	123.0
CM05849	Mali	*Digitaria exilis*	219	0.46	132.2
CM05856	Mali	*Digitaria exilis*	167	0.60	116.4

CM05740	Mali	*Digitaria exilis*	257	2.72	129.7
CM05742	Mali	*Digitaria exilis*	224	1.79	121.6
CM05865	Mali	*Digitaria exilis*	235	1.70	139.4
CM05827	Mali	*Digitaria exilis*	282	0.71	123.7
CM12246	Niger	*Digitaria exilis*	250	2.00	131.4
NER_2011_01_04_171	Niger	*Digitaria exilis*	240	0.83	111.6
NER_2011_01_09_173	Niger	*Digitaria exilis*	255	0.78	135.6
NER_2011_08_85_208	Niger	*Digitaria exilis*	342	0.88	129.9
NER_2011_11_116_220	Niger	*Digitaria exilis*	293	1.02	132.2
NER_2011_11_123_224	Niger	*Digitaria exilis*	236	0.00	112.6
NER_2011_14_144_235	Niger	*Digitaria exilis*	271	0.00	140.7
NER_2011_18_177_2	Niger	*Digitaria exilis*	250	0.80	133.3
NER_2011_19_180_5	Niger	*Digitaria exilis*	266	2.63	120.4
NER_2011_38_397_166	Niger	*Digitaria exilis*	238	1.26	128.6
CM03437	Togo	*Digitaria exilis*	202	1.98	126.6
CM03431	Togo	*Digitaria exilis*	194	0.52	114.6
CM03439	Togo	*Digitaria exilis*	219	0.00	128.7
CM03438	Togo	*Digitaria exilis*	213	1.41	122.0
CM03380	Togo	*Digitaria exilis*	223	0.45	113.2
CM03430	Togo	*Digitaria exilis*	210	0.48	120.5
CM03434	Togo	*Digitaria exilis*	230	1.74	110.1
CM03423	Togo	*Digitaria exilis*	243	0.82	136.8
CM03403	Togo	*Digitaria exilis*	253	1.98	129.7
CM03396	Togo	*Digitaria exilis*	297	2.36	149.1
CM03390	Togo	*Digitaria exilis*	300	0.00	114.0
G04_02_F_A01	Senegal	*Digitaria exilis*	190	0.53	110.0
G07_09_F_A01	Senegal	*Digitaria exilis*	171	5.26	110.5
G09_05_F_A01	Senegal	*Digitaria exilis*	207	1.93	125.1
I07_07_F_A01	Senegal	*Digitaria exilis*	222	1.80	133.0
M01_06_F_A01	Senegal	*Digitaria exilis*	214	0.00	132.2
M06_07_F_A01	Senegal	*Digitaria exilis*	227	1.76	128.9
M09_02_F_A01	Senegal	*Digitaria exilis*	227	0.44	136.5

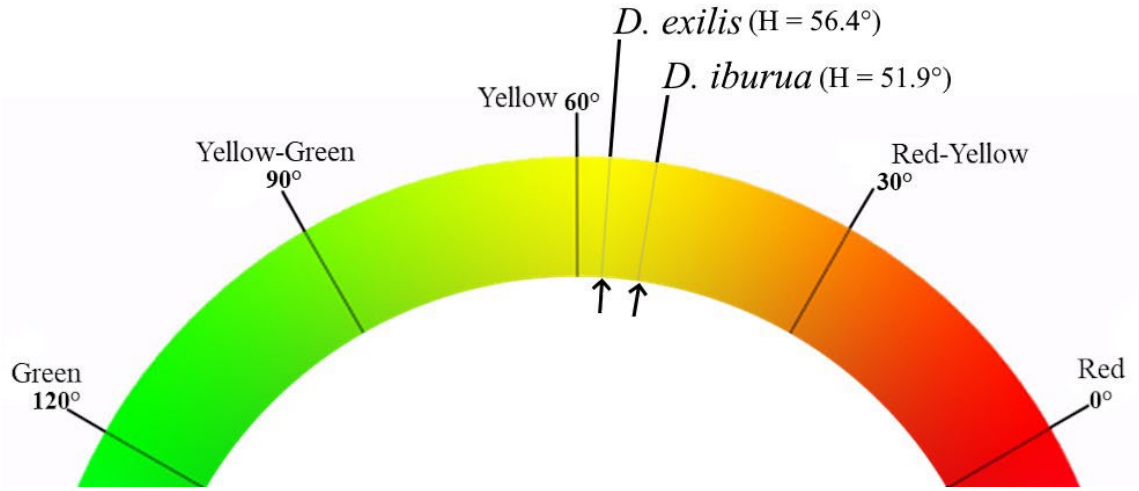
Supplemental Table 3. Results for the Principal Component Analysis carried out on the seven selected morphometric variables and the 118 fonio accessions.

Variables contribution (%) to each principal component						
	PC1	PC2	PC.3	PC4	PC5	PC6
bbox.width	22.03	1.49	0.42	17.60	0.26	38.03
bbox.height	16.22	22.46	2.80	3.54	0.00	40.47
s.area	23.31	2.27	0.78	8.47	0.33	0.21
H	4.06	3.88	79.86	0.91	11.26	0.02
S	18.50	6.23	3.23	19.91	51.23	0.28
V	15.02	2.93	11.14	36.82	34.01	0.03
m.eccentricity	0.86	60.73	1.77	12.75	2.90	20.97
Quality (cos2, %) of variable representation on principal components						
	PC1	PC2	PC.3	PC4	PC5	PC6
bbox.width	85.13	2.11	0.41	11.94	0.02	0.33
bbox.height	62.70	31.79	2.72	2.40	0.00	0.35
s.area	90.07	3.21	0.75	5.75	0.02	0.00
H	15.69	5.49	77.53	0.62	0.67	0.00
S	71.49	8.81	3.14	13.51	3.04	0.00
V	58.03	4.15	10.81	24.99	2.02	0.00
m.eccentricity	3.32	85.95	1.72	8.65	0.17	0.18

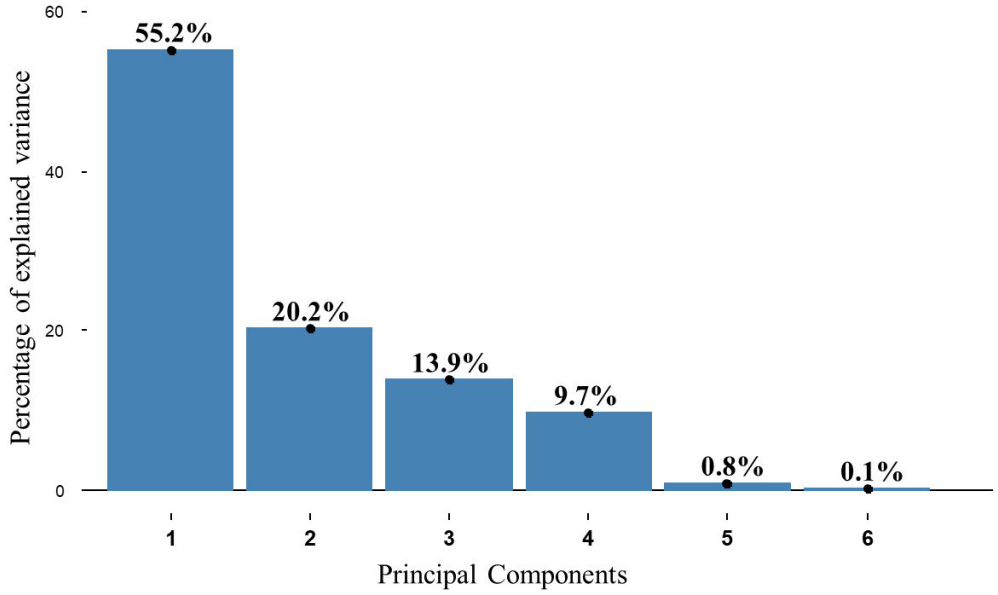
Supplemental Figures



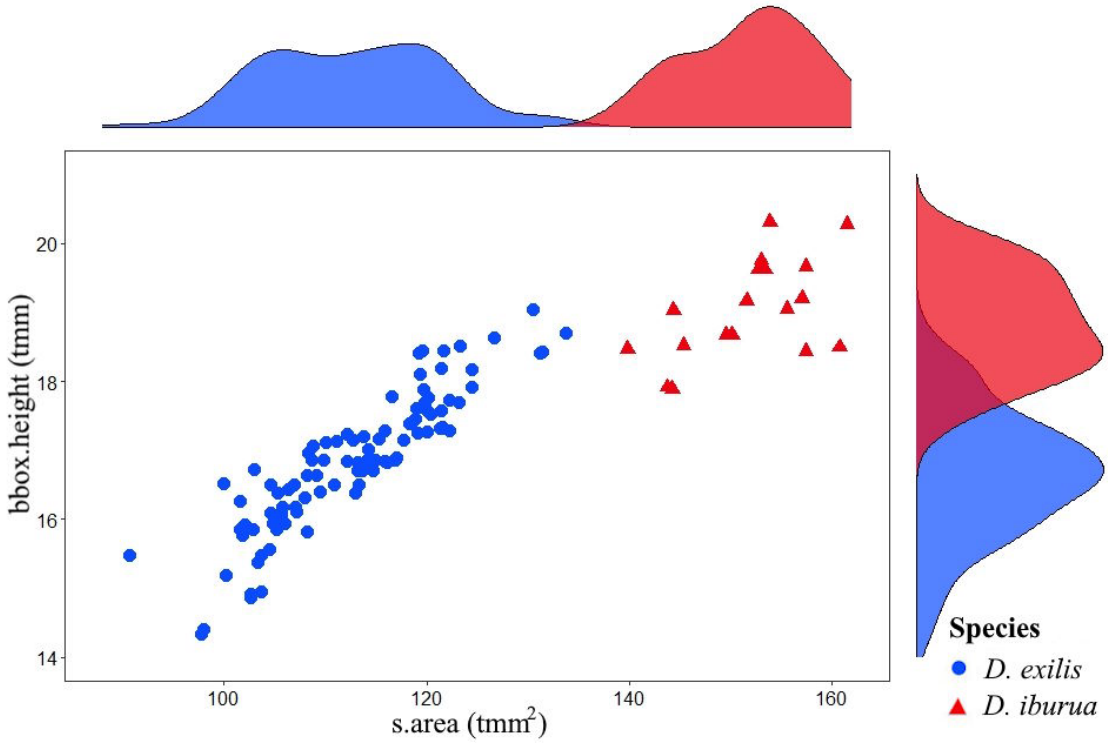
Supplemental Figure 1: Histogram of median morphometric values by accession and TGW (thousand grain weight) for the two species.



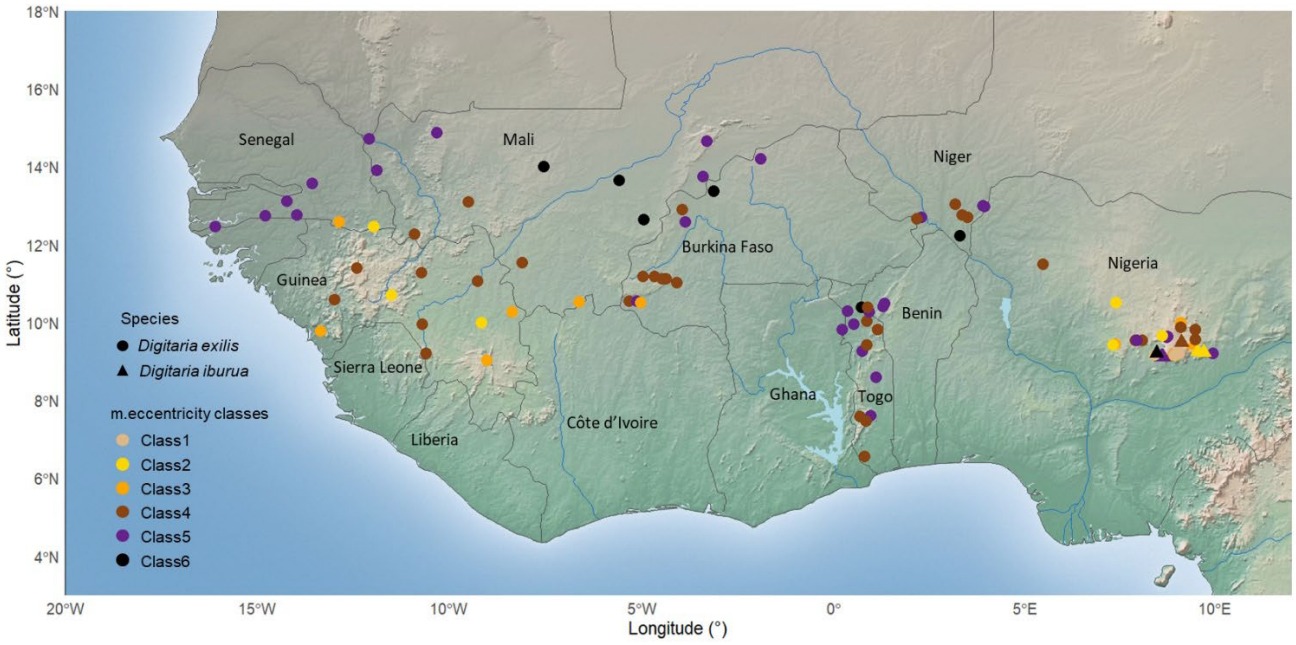
Supplemental Figure 2: Position of the two fonio species, according to their median hue values, on the diagram representing a part of the sequence of Hue.



Supplemental Figure 3: Principal component analysis carried out on the seven selected morphometric variables and the 118 fonio accessions. Scree Plot: percentage of total variation explained by each principal component.



Supplemental Figure 4: Scatterplot with marginal distribution of seed area (x) and seed length (y) of the 118 fonio accessions.



Supplemental Figure 5: Projection on a map of seed shape values (m.eccentricity descriptor cut into classes). Classes were defined based on the distribution of m.eccentricity values: Class1 [0.745 - 0.762], Class2 [0.758 - 0.796], Class3 [0.787 - 0.809], Class4 [0.803 - 0.826], Class5 [0.814 - 0.842], Class6 [0.836 - 0.858].