

SUPPLEMENTARY MATERIALS

Table S1: Description of the functional traits used to calculate functional diversity derived from Wilman et al. (2014) and Hockey et al. (2005). Measurements relating to diet consisted of 5 continuous variables ranging from 0-100, each representing percentage of a food type, and 5 continuous variables ranging from 0-100, each representing percentage time spent foraging in each canopy layer. Habitat preference was measured using 5 categorical variables, each a habitat type with categories 0, 1, 2, and 3, representing preference levels.

Description of functional trait	Categorical or quantitative
Percentage of diet made up by invertebrates	quantitative
Percentage of diet made up by fruit	quantitative
Percentage of diet made up by nectar	quantitative
Percentage of diet made up by seed	quantitative
Percentage of diet made up by other resources	quantitative
Percentage of time foraging on ground	quantitative
Percentage of time foraging in understory	quantitative
Percentage of time foraging in midhigh level	quantitative
Percentage of time foraging in canopy	quantitative
Percentage of time foraging aerially	quantitative
Body mass	quantitative
Body mass to wing length ratio	quantitative
Nest site	categorical
Habitat preference for forest	categorical
Habitat preference for woodland	categorical
Habitat preference for savanna	categorical
Habitat preference for other habitat type	categorical

Habitat preference for agricultural land

categorical

Clutch size

quantitative

Table S2: Variable loadings for the principal component axes representing landscape composition (PC1) and landscape configuration (PC2). SS loadings represent the sum of squared loadings, and proportion variance represents the proportion of variance explained.

	PC1	PC2
Land-cover richness	0.72	0.00
Land-cover diversity	0.72	0.00
Number of Patches	0.00	0.61
Large Patch Index	0.00	-0.89
Total Edge	0.00	0.93
Cohesion	0.00	-0.96
Division	0.00	-0.96
SS loadings	1.03	3.88
Proportion variance	0.51	0.78

Table S3: List of species recorded, total number of detections, and the proportion of the abundance of each species detected within the lower and upper 50% of each heterogeneity metric for all sampling landscapes.

Species	Total detections	lower 50% SHDI	higher 50% SHDI	lower 50% TE	higher 50% TE	lower 50% COHESION	higher 50% COHESION
<i>Andropadus importunus</i>	75	0.35	0.65	0.61	0.39	0.88	0.12
<i>Anthoscopus caroli</i>	3	1	0	1	0	0	1
<i>Anthreptes collaris</i>	19	0.53	0.47	0.63	0.37	0.84	0.16
<i>Apalis flavida</i>	120	0.56	0.44	0.57	0.43	0.68	0.33
<i>Apalis thoracica</i>	3	1	0	1	0	0.67	0.33
<i>Batis molitor</i>	195	0.54	0.46	0.6	0.4	0.55	0.45
<i>Bradornis pallidus</i>	7	0.57	0.43	0.71	0.29	0.71	0.29
<i>Buphagus erythrorhynchus</i>	45	0.09	0.91	0.27	0.73	0.67	0.33
<i>Bycanistes bucinator</i>	1	0	1	1	0	0	1
<i>Camaroptera brachyura</i>	35	0.37	0.63	0.46	0.54	0.69	0.31
<i>Campephaga flava</i>	5	0.2	0.8	0.8	0.2	0.6	0.4
<i>Campethera abingoni</i>	20	0.35	0.65	0.65	0.35	0.5	0.5
<i>Cisticola chiniana</i>	89	0.36	0.64	0.4	0.6	0.49	0.51
<i>Cisticola erythropus</i>	1	0	1	0	1	1	0
<i>Colius striatus</i>	17	0.12	0.88	0.06	0.94	0.88	0.12
<i>Coracias caudatus</i>	2	0	1	0	1	1	0
<i>Cossypha heuglini</i>	4	0	1	0.5	0.5	1	0
<i>Cossypha humeralis</i>	3	0	1	1	0	0.67	0.33
<i>Cypsiurus parvus</i>	2	1	0	1	0	0	1
<i>Dendropicos fuscescens</i>	17	0.65	0.35	0.53	0.47	0.53	0.47
<i>Dicrurus adsimilis</i>	95	0.51	0.49	0.52	0.48	0.45	0.55
<i>Dryoscopus cubla</i>	77	0.61	0.39	0.53	0.47	0.6	0.4
<i>Emberiza flaviventris</i>	26	0.46	0.54	0.73	0.27	0.69	0.31
<i>Eremomela icteropygialis</i>	2	0.5	0.5	0.5	0.5	0.5	0.5
<i>Erythropygia leucophrys</i>	118	0.53	0.47	0.46	0.54	0.59	0.41
<i>Erythropygia quadrivirgata</i>	5	1	0	0.8	0.2	0.8	0.2
<i>Halcyon albiventris</i>	8	0.63	0.38	0.63	0.38	0.63	0.38
<i>Halcyon chelicuti</i>	1	0	1	0	1	0	1
<i>Hypargos margaritatus</i>	8	0.63	0.38	0.75	0.25	1	0
<i>Indicator indicator</i>	5	0.6	0.4	0.6	0.4	0.8	0.2
<i>Indicator variegatus</i>	1	0	1	0	1	1	0
<i>Lamprotornis australis</i>	3	1	0	1	0	0	1
<i>Lamprotornis nitens</i>	34	0.65	0.35	0.38	0.62	0.68	0.32
<i>Laniarius ferrugineus</i>	28	0.5	0.5	0.75	0.25	0.61	0.39

<i>Lanius collaris</i>	1	0	1	0	1	1	0
<i>Lybius torquatus</i>	20	0.4	0.6	0.45	0.55	0.45	0.55
<i>Macronyx croceus</i>	3	0	1	1	0	0.33	0.67
<i>Malaconotus blanchoti</i>	12	0.5	0.5	0.58	0.42	0.58	0.42
<i>Melaenornis pammelaina</i>	47	0.43	0.57	0.55	0.45	0.55	0.45
<i>Merops pusillus</i>	2	1	0	0	1	0	1
<i>Mirafraga africana</i>	1	0	1	1	0	1	0
<i>Muscicapa caerulescens</i>	4	1	0	0.25	0.75	0.5	0.5
<i>Myioparus plumbeus</i>	8	0.13	0.88	0.38	0.63	0.75	0.25
<i>Nectarinia mariquensis</i>	10	0.4	0.6	0.5	0.5	0.5	0.5
<i>Nectarinia senegalensis</i>	95	0.45	0.55	0.45	0.55	0.34	0.66
<i>Nectarinia talatala</i>	255	0.45	0.55	0.47	0.53	0.55	0.45
<i>Nicator gularis</i>	30	0.67	0.33	0.6	0.4	0.6	0.4
<i>Nilaus afer</i>	11	0.36	0.64	0.55	0.45	0.82	0.18
<i>Oriolus larvatus</i>	29	0.59	0.41	0.45	0.55	0.38	0.62
<i>Parus niger</i>	80	0.41	0.59	0.41	0.59	0.53	0.48
<i>Passer diffusus</i>	11	0.82	0.18	0.55	0.45	0.36	0.64
<i>Petronia superciliaris</i>	59	0.47	0.53	0.41	0.59	0.46	0.54
<i>Phoeniculus purpureus</i>	41	0.76	0.24	0.44	0.56	0.17	0.83
<i>Phyllastrephus terrestris</i>	18	0.33	0.67	0.33	0.67	0.83	0.17
<i>Ploceus ocularis</i>	3	0	1	0	1	1	0
<i>Ploceus velatus</i>	5	1	0	1	0	0	1
<i>Pogoniulus pusillus</i>	5	1	0	0.8	0.2	0.8	0.2
<i>Prinia subflava</i>	24	0.38	0.63	0.54	0.46	0.5	0.5
<i>Prionops plumatus</i>	58	0.55	0.45	0.47	0.53	0.47	0.53
<i>Prionops retzii</i>	8	1	0	0.38	0.63	0.38	0.63
<i>Psophocichla litsitsirupa</i>	1	1	0	1	0	0	1
<i>Pycnonotus barbatus</i>	263	0.44	0.56	0.48	0.52	0.58	0.42
<i>Pytilia melba</i>	1	0	1	1	0	1	0
<i>Rhinopomastus cyanomelas</i>	14	0.5	0.5	0.64	0.36	0.64	0.36
<i>Serinus mozambicus</i>	102	0.27	0.73	0.63	0.37	0.43	0.57
<i>Serinus sulphuratus</i>	4	0.25	0.75	0	1	0.75	0.25
<i>Streptopelia capicola</i>	33	0.36	0.64	0.58	0.42	0.33	0.67
<i>Streptopelia semitorquata</i>	12	0.17	0.83	0.42	0.58	0.67	0.33
<i>Sylvietta rufescens</i>	98	0.49	0.51	0.64	0.36	0.62	0.38
<i>Tchagra australis</i>	4	0	1	0.75	0.25	0.5	0.5
<i>Tchagra senegalus</i>	14	0.36	0.64	0.36	0.64	0.36	0.64
<i>Telophorus sulfureopectus</i>	4	0	1	0.5	0.5	0.75	0.25
<i>Telophorus viridis</i>	5	0	1	0.4	0.6	1	0
<i>Thripas namaquus</i>	20	0.65	0.35	0.65	0.35	0.55	0.45
<i>Tockus leucomelas</i>	9	0.44	0.56	0.33	0.67	0.33	0.67
<i>Tockus nasutus</i>	1	1	0	1	0	0	1
<i>Trachyphonus vaillantii</i>	1	0	1	0	1	0	1

<i>Treron calvus</i>	6	0.5	0.5	0.33	0.67	0.17	0.83
<i>Tricholaema leucomelas</i>	1	0	1	1	0	1	0
<i>Turdoides jardineii</i>	15	1	0	1	0	0	1
<i>Turdus libonyanus</i>	20	0.45	0.55	0.55	0.45	0.7	0.3
<i>Turtur chalcospilos</i>	32	0.69	0.31	0.63	0.38	0.59	0.41
<i>Upupa epops</i>	6	0.17	0.83	0.5	0.5	0.33	0.67
<i>Uraeginthus angolensis</i>	56	0.25	0.75	0.57	0.43	0.8	0.2
<i>Urocolius indicus</i>	123	0.36	0.64	0.54	0.46	0.86	0.14

Table S4: Median, minimum, and maximum values of biodiversity metrics per plot.

Biodiversity Metric	Median	Minimum	Maximum
Species Richness (raw)	15	4	28
Species Richness (jackknife estimate)	22	7	39
Simpson's Diversity Index	9.9	2.8	17.5
Functional Dispersion Standard Effect Size	-0.6	-2.9	1.9
Mean Phylogenetic Pairwise Distance Standard Effect Size	-1.6	-3.6	1.2