

Supplementary Table S1. List of 16 species-specific microsatellite markers primer sequences used in this study and primers used for mitochondrial sequencing for Southern Ground-Hornbill DNA analyses. * Indicates primers previously published in Molecular Ecology Resources Primer Development Consortium (2011). Na = number of alleles, PID = probability of identity, and PIDsibs = the probability of identity for siblings.

Name	Repeat	Forward primer (5' – 3')	Reverse primer (5' – 3')	Dye	Allele size range (Na)	PID	PIDsibs
GHB14*	Di	CTGGAATGAGAGTAGCTCCAG	CAGTTTTACCCTTTGGCTTCAC	NED	162-183 (8)	0.08	0.38
GHB15*	Tri	AGTGCTCCACCTCCAAAATAA	GGAAAACACCACAGACCAGATT	NED	130-160 (10)	0.06	0.37
GHB19*	Di	AATCTCACTTGTGTGCATGG	ATCCTCTCCCCACTCTGGTT	VIC	154-180 (9)	0.11	0.41
GHB20*	Di	AGGGTCAAGAACTGATGTCTG	GCAGATATGTCACCAACTACGC	VIC	169-183 (4)	0.55	0.75
GHB21*	Di	AGTCAGTTGGGGATGGAAGAG	GGCTCTCAGGGAAACAGAGTTA	VIC	149-179 (11)	0.08	0.38
GHB26*	Di	GAGGAAGAACCCTCTTGAGCTT	ATTCACTCCCCAATGTAAATGC	FAM	112-120 (5)	0.13	0.43
Buco02	Di	CAAACAAAACCAGAGCACA	AGACAGGTGCAGTCCTCCTT	VIC	180-182 (2)	0.41	0.63
Buco04	Di	TGCATACAGGCAGATAAGATGTG	TTGTTCTGACTTCCCCAGGT	PET	160-166 (3)	0.63	0.80
Buco09	Tri	ATGTGCTCCTGCAGGCTTT	AAGAGACAGGTGGTGGTGGT	FAM	170-203 (8)	0.05	0.35
Buco11	Tetra	TCATTTTGTGAAGGGCAGTG	TGGGTTTTGTTTCAGGTTGG	NED	159-167 (3)	0.31	0.56
Buco16	Di	AGCAGTCCCAGGAGAGAAT	CAAGGAATGACTCACTTCAACCT	FAM	166-186 (6)	0.19	0.50
Buco18	Di	GGTGAAAGCTGCTACATGG	GAGGTGAGGCAGGCATAC	NED	176-186 (6)	0.18	0.47
Buco19	Tri	CAGATCCACGCACCAGAA	AAATAGGAGACCGGGAGCAC	PET	172-178 (3)	0.66	0.82
Buco21	Tri	GTGCGGAACTCTGGAAGTA	AGGCTCAGGCCTGTCTCCTA	VIC	95-119 (6)	0.14	0.46
Buco24	Tetra	TGGGTGAGTGATGACTTGA	TGTAGCCATGCTTCCACAAG	FAM	185-231 (13)	0.02	0.31
Buco25	Di	GCACCCTTGACTCTGATGG	TGTGAACATTTACTTCACGAATAGC	VIC	131-135 (3)	0.38	0.62
COI		CCGGATCCTTYTGRTTYTTYGGNCAACC	CCGGATCCACANCRRTARTANGTRTCRTG				
CYTB		TGRTACAAAAAATAGGMCCMGAAGG	GGGTGGAAGGRATTTTRTC				
12S		TCAAATGACCCTAGCACTC	TCATACCCCTTCCGTAGAT				

Supplementary Table S2. Details of the selected model for each gene fragment with the lowest BIC scores (Bayesian Information Criterion) in MEGAX. AICc value (Akaike Information Criterion, corrected), Maximum Likelihood value (lnL), the number of parameters (including branch lengths) Gamma distribution (+G), evolutionarily invariable (+I) and nucleotide frequencies (Freq) are also presented.

Gene	Model	Parameters / bp	BIC	AICc	lnL	Invariant	Gamma	Freq A	Freq T	Freq C	Freq G
12S	HKY	93	3649.7 3	2889.2 5	- 1351.30	n/a	n/a	0.32	0.19	0.30	0.19
COI	K2	114	3703.6 4	2753.8 5	- 1262.50	n/a	n/a	0.25	0.25	0.25	0.25
Cyt b	TN93+ G	117	3451.9 3	2487.4 7	- 1126.24	n/a	0.05	0.26	0.25	0.34	0.16
ND2	HKY	113 (409 bp)	2363.5 5	1456.2 6	-614.57	n/a	n/a	0.30	0.23	0.34	0.14

Supplementary Table S3. Outgroup CYTB DNA sequences included in the molecular dating analysis and their NCBI accession numbers

GenBank Accession numbers	Species	Family
MN356327	<i>Bucorvus abyssinicus</i>	Bucorvidae
HM640209	<i>Bucorvus leadbeateri</i>	Bucorvidae
NC_015199	<i>Bucorvus leadbeateri</i>	Bucorvidae
ON697201	<i>Aceros cassidix</i>	Bucerotidae
HM755883	<i>Aceros corrugatus</i>	Bucerotidae
GU257913	<i>Aceros nipalensis</i>	Bucerotidae
GU257909	<i>Anorrhinus galeritus</i>	Bucerotidae
GU257907	<i>Anorrhinus tickelli</i>	Bucerotidae
GU257912	<i>Anthracoceros a. convexus</i>	Bucerotidae
NC_038152	<i>Anthracoceros coronatus</i>	Bucerotidae
GU257910	<i>Anthracoceros malayanus</i>	Bucerotidae
GU257917	<i>Bericornis comatus</i>	Bucerotidae
NC_38201	<i>Buceros bicornis</i>	Bucerotidae
MG596878	<i>Buceros r. silvestris</i>	Bucerotidae
AF346912	<i>Ceratogymna atrata</i>	Bucerotidae
GU257922	<i>Oryceros gingalensis</i>	Bucerotidae
NC_015087	<i>Penelopides panini</i>	Bucerotidae
GU257918	<i>Rhinoplax vigil</i>	Bucerotidae
GU257914	<i>Rhyticeros subruficollis</i>	Bucerotidae
GU257915	<i>Rhyticeros undulatus</i>	Bucerotidae
KJ456173	<i>Rhyticeros undulatus</i>	Bucerotidae
NC_24594	<i>Tachybaptus ruficollis</i>	Bucerotidae
MK060134	<i>Tockus camurus</i>	Bucerotidae
AF082071	<i>Tockus erythrorhynchus</i>	Bucerotidae
GU257921	<i>Tropicranus albocristatus</i>	Bucerotidae
U89184	<i>Coracias caudata</i>	Coraciidae
AJ604496	<i>Morphnus guianensis</i>	Accipitridae
MK060141	<i>Phoeniculus purpureus</i>	Phoeniculidae
DQ485908	<i>Rallus longirostris</i>	Rallidae
NC_11712	<i>Todiramphus santus</i>	Alcedinidae