

**TITLE: Phylogeny and herbivory are related to avian cecal size**

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**Supplementary Information**

**Table S1:** Faunivory status (Fauniv= faunivorous, Non-Fauniv= non-faunivorous), dietary category (I= insectivorous, Fr= frugivorous, O= omnivorous, Gr/Fr= granivorous/ frugivorous, C= carnivorous, H= herbivorous, N= nectarivorous, AI= aquatic invertebrates) relative and dichotomous cecal size, absolute cecal length, absolute intestinal length, body mass, and flight ability status of 146 taxa of birds. These data were then mapped onto a consensus phylogenetic supertree (Davis and Page, 2014). Data primarily from DeGolier and colleagues (1999) and web databases (Axelson et al., 2017; Myers et al., 2017).

Avian Taxon	Faunivory Status	Dietary Category	Relative Cecal Size (%)	Cecal Length (cm)	Intestinal length (cm)	Dichotomous Cecal Size	Body Mass (g)	Body Mass (g)	Flight Status
<i>Tachycineta bicolor</i>	Fa	I	Medium (2.5)	0.4	15.8	Small/Absent	Medium (15.4)	15.4	Flighted
<i>Progne subis</i>	Fa	I	Absent (0.0)	0	17.8	Small/Absent	Medium (30.3)	30.3	Flighted
<i>Hirundo rustica</i>	Fa	I	Medium (2.1)	0.3	14.6	Small/Absent	Medium (31.4)	31.4	Flighted
<i>Piranga olivacea</i>	Fa	I	Absent (0.0)	0	20	Small/Absent	Medium (34.8)	34.8	Flighted
<i>Quiscalus quiscula</i>	Non-Fa	O	Medium (1.2)	0.4	32.2	Small/Absent	Medium (81.1)	81.1	Flighted
<i>Quiscalus major</i>	Non-Fa	O	Medium (1.4)	0.7	49.2	Small/Absent	Large (178.2)	178.2	Flighted
<i>Junco hyemalis</i>	Non-Fa	Gr/Fr	Medium (1.2)	0.3	24.7	Small/Absent	Medium (28.6)	28.6	Flighted
<i>Parula americana</i>	Fa	I	Absent (0.0)	0	9.9	Small/Absent	Small (4.3)	4.3	Flighted
<i>Geothlypis trichas</i>	Fa	I	Absent (0.0)	0	11	Small/Absent	Small (6.3)	6.3	Flighted
<i>Coccothraustes vespertinus</i>	Non-Fa	Gr/Fr	Small (0.4)	0.2	51	Small/Absent	Medium (80.0)	80	Flighted
<i>Hylocichla mustelina</i>	Fa	I	Medium (2.0)	0.5	24.6	Small/Absent	Medium (51.7)	51.7	Flighted
<i>Catharus ustulatus</i>	Fa	I	Small (1.0)	0.2	20.2	Small/Absent	Medium (42.1)	42.1	Flighted
<i>Turdus migratorius</i>	Fa	I	Medium (1.1)	0.3	28	Small/Absent	Medium (76.6)	76.6	Flighted
<i>Cyanocitta cristata</i>	Non-Fa	O	Medium (3.0)	1.1	36.8	Small/Absent	Medium (61.0)	61	Flighted
<i>Corvus corax</i>	Non-Fa	O	Medium (1.8)	2	112.3	Small/Absent	Large (874.0)	874	Flighted
<i>Lanius ludovicianus</i>	Fa	I	Medium (1.1)	0.3	28.7	Small/Absent	Medium (28.7)	28.7	Flighted
<i>Vireo flavifrons</i>	Fa	I	Medium (6.7)	1	15	Small/Absent	Medium (20.0)	20	Flighted
<i>Myiopsitta monachus</i>	Non-Fa	Gr/Fr	Absent (0.0)	0	52.6	Small/Absent	Large (376.6)	376.6	Flighted
<i>Psittacus erithacus</i>	Non-Fa	Gr/Fr	Absent (0.0)	0	114	Small/Absent	Large (429.8)	429.8	Flighted
<i>Cacatua galerita</i>	Non-Fa	Gr/Fr	Absent (0.0)	0	130.5	Small/Absent	Large (589.0)	589	Flighted
<i>Nymphicus hollandicus</i>	Non-Fa	Gr/Fr	Absent (0.0)	0	41.4	Small/Absent	Medium (76.0)	76	Flighted

<i>Selenidera spectabilis</i>	Fa	I	Absent (0.0)	0	20.6	Small/Absent	Large (149.3)	149.3	Flighted
<i>Colaptes auratus</i>	Fa	I	Absent (0.0)	0	29.5	Small/Absent	Medium (78.9)	78.9	Flighted
<i>Dryocopus pileatus</i>	Fa	I	Absent (0.0)	0	51	Small/Absent	Large (178.3)	178.3	Flighted
<i>Sphyrapicus varius</i>	Fa	I	Absent (0.0)	0	28.7	Small/Absent	Medium (38.9)	38.9	Flighted
<i>Megasceryle alcyon</i>	Fa	C	Absent (0.0)	0	97.2	Small/Absent	Large (22.1.8)	22.1.8	Flighted
<i>Coracias abyssinica</i>	Fa	I	Large (15.0)	3.7	24.7	Large	Large (119.8)	119.8	Flighted
<i>Trogon collaris</i>	Fa	I	Medium (4.4)	3.2	72.7	Small/Absent	Medium (55.5)	55.5	Flighted
<i>Trogon viridis</i>	Fa	I	Large (15.5)	3.6	23.3	Large	Medium (90.5)	90.5	Flighted
<i>Trogon violaceus</i>	Fa	I	Medium (6.2)	2.8	45	Small/Absent	Medium (47.5)	47.5	Flighted
<i>Coccyzus americanus</i>	Fa	I	Large (12.0)	3.7	30.9	Large	Medium (46.0)	46	Flighted
<i>Crotophaga ani</i>	Fa	I	Medium (9.8)	2.9	29.7	Large	Medium (70.0)	70	Flighted
<i>Geococcyx californianus</i>	Fa	I	Large (14.2)	6.5	45.8	Large	Large (171.1)	171.1	Limited Flight
<i>Archilochus colubris</i>	Non-Fa	N	Medium (1.8)	0.1	5.6	Small/Absent	Medium (28.6)	28.6	Flighted
<i>Calypte anna</i>	Non-Fa	N	Medium (5.0)	0.3	6	Small/Absent	Small (3.0)	3	Flighted
<i>Caprimulgus carolinensis</i>	Fa	I	Large (15.6)	4.3	27.6	Large	Medium (89.1)	89.1	Flighted
<i>Caprimulgus vociferus</i>	Fa	I	Large (13.4)	2.4	17.9	Large	Medium (34.3)	34.3	Flighted
<i>Pandion haliaetus</i>	Fa	C	Small (0.3)	0.5	204	Small/Absent	XL (1104.5)	1104.5	Flighted
<i>Accipiter cooperii</i>	Fa	C	Small (0.2)	0.1	46.5	Small/Absent	Large (411.6)	411.6	Flighted
<i>Accipiter striatus</i>	Fa	C	Absent (0.0)	0	36	Small/Absent	Medium (81.6)	81.6	Flighted
<i>Buteo platypterus</i>	Fa	C	Small (0.2)	0.1	60	Small/Absent	Large (227.2)	227.2	Flighted
<i>Buteo lineatus</i>	Fa	C	Absent (0.0)	0	96.9	Small/Absent	Large (459.7)	459.7	Flighted
<i>Falco sparverius</i>	Fa	I	Small (0.1)	0	35.6	Small/Absent	Medium (87.7)	87.7	Flighted
<i>Falco mexicanus</i>	Fa	C	Absent (0.0)	0	65.5	Small/Absent	Large (338.0)	338	Flighted
<i>Athene cunicularia</i>	Fa	C	Large (13.4)	4.6	34.3	Large	Large (117.9)	117.9	Flighted
<i>Bubo virginianus</i>	Fa	C	Large (11.2)	9.9	88.4	Large	XL (1057.2)	1057.2	Flighted
<i>Strix varia</i>	Fa	C	Large (11.7)	8.9	76.2	Large	Large (651.0)	651	Flighted
<i>Otus asio</i>	Fa	C	Large (15.9)	4.4	27.9	Large	Medium (83.2)	83.2	Flighted
<i>Otus kennicottii</i>	Fa	C	Large (15.7)	4.1	26.2	Large	Medium (79.7)	79.7	Flighted

<i>Tyto alba</i>	Fa	C	Large (12.1)	6.9	57	Large	Large (419.6)	419.6	Flighted
<i>Cathartes aura</i>	Fa	C	Absent (0.0)	0	130.5	Small/Absent	XL (2097.0)	2097	Flighted
<i>Podiceps nigricollis</i>	Fa	AI	Medium (4.8)	6	125.4	Small/Absent	Large (347.4)	347.4	Flighted
<i>Tachybaptus ruficollis</i>	Fa	AI	Small (0.5)	0.4	79.5	Small/Absent	Large (202.2)	202.2	Flighted
<i>Phoenicopterus minor</i>	Fa	AI	Small (1.0)	3.2	317.8	Small/Absent	XL (1158.0)	1158	Flighted
<i>Phoenicopterus ruber</i>	Fa	AI	Medium (3.4)	9	266.5	Small/Absent	XL (1878.3)	1878.3	Flighted
<i>Egretta rufescens</i>	Fa	C	Small (0.9)	1.8	198	Small/Absent	Large (786.0)	786	Flighted
<i>Butorides striatus</i>	Fa	C	Absent (0.0)	0	91	Small/Absent	Large (178.8)	178.8	Flighted
<i>Ardea herodias</i>	Fa	C	Small (0.5)	1	193.1	Small/Absent	XL (1914.0)	1914	Flighted
<i>Bubulcus ibis</i>	Fa	C	Small (0.4)	0.2	55.2	Small/Absent	Large (220.7)	220.7	Flighted
<i>Nyctanassa violacea</i>	Fa	AI	Small (0.3)	0.4	137.1	Small/Absent	Large (511.0)	511	Flighted
<i>Nycticorax nycticorax</i>	Fa	C	Small (0.8)	1	127.9	Small/Absent	Large (486.9)	486.9	Flighted
<i>Egretta caerulea</i>	Fa	C	Small (0.6)	0.6	98	Small/Absent	Large (253.6)	253.6	Flighted
<i>Egretta thula</i>	Fa	C	Small (0.7)	0.7	97.3	Small/Absent	Large (289.3)	289.3	Flighted
<i>Botaurus lentiginosus</i>	Fa	C	Small (0.6)	0.7	113.9	Small/Absent	Large (248.0)	248	Flighted
<i>Ixobrychus exilis</i>	Fa	C	Absent (0.0)	0	68.5	Small/Absent	Medium (61.5)	61.5	Flighted
<i>Pelecanus occidentalis</i>	Fa	C	Medium (2.0)	4.7	239.6	Small/Absent	XL (1947.7)	1947.7	Flighted
<i>Eudocimus ruber</i>	Fa	AI	Small (0.5)	0.5	103	Small/Absent	Large (611.9)	611.9	Flighted
<i>Ajaia ajaja</i>	Fa	C	Small (0.5)	0.8	161.6	Small/Absent	XL (1543.0)	1543	Flighted
<i>Mycteria americana</i>	Fa	C	Small (0.2)	0.6	295.5	Small/Absent	XL (1800.0)	1800	Flighted
<i>Anhinga anhinga</i>	Fa	C	Small (0.1)	0.1	115.8	Small/Absent	Large (605.6)	605.6	Flighted
<i>Phalacrocorax auritus</i>	Fa	C	Small (0.9)	1.1	127.7	Small/Absent	Large (803.3)	803.3	Flighted
<i>Morus bassanus</i>	Fa	C	Small (0.9)	1.1	122.8	Small/Absent	XL (1731.3)	1731.3	Flighted
<i>Calonectris diomedea</i>	Fa	C	Medium (1.9)	1	53.1	Small/Absent	Large (404.9)	404.9	Flighted
<i>Puffinus lherminieri</i>	Fa	C	Small (0.8)	0.3	40.2	Small/Absent	Large (107.0)	107	Flighted
<i>Puffinus gravis</i>	Fa	C	Small (0.8)	0.6	72.4	Small/Absent	Large (380.0)	380	Flighted
<i>Pterodroma hasitata</i>	Fa	C	Small (0.7)	0.5	69	Small/Absent	Large (446.0)	446	Flighted
<i>Oceanites oceanicus</i>	Fa	C	Small (0.9)	0.4	42.8	Small/Absent	Large (144.8)	144.8	Flighted

<i>Phoebastria immutabilis</i>	Fa	C	Small (0.8)	1.5	180	Small/Absent	XL (2460.0)	2460	Flighted
<i>Gavia immer</i>	Fa	C	Medium (3.4)	5.3	157	Small/Absent	XL (1797.6)	1797.6	Flighted
<i>Porzana carolina</i>	Non-Fa	H	Medium (8.9)	3.4	38.2	Large	Medium (51.2)	51.2	Flighted
<i>Fulica americana</i>	Non-Fa	O	Large (16.5)	15.3	92.8	Large	Large (383.8)	383.8	Limited Flight
<i>Gallinula chloropus</i>	Non-Fa	H	Medium (8.7)	11	126.7	Large	Large (225.3)	225.3	Flighted
<i>Laterallus jamaicensis</i>	Fa	I	Medium (6.1)	1.2	19.7	Small/Absent	Medium (18.5)	18.5	Limited Flight
<i>Rallus limicola</i>	Fa	AI	Large (12.2)	5	40.9	Large	Large (129.7)	129.7	Limited Flight
<i>Porphyrio martinica</i>	Non-Fa	O	Medium (7.3)	3.5	47.7	Large	Large (163.9)	163.9	Limited Flight
<i>Aramus guarauna</i>	Fa	AI	Medium (8.3)	5.9	71	Large	Large (591.6)	591.6	Flighted
<i>Phalaropus tricolor</i>	Fa	AI	Large (11.5)	3.9	34	Large	Medium (61.2)	61.2	Flighted
<i>Calidris canutus</i>	Fa	I	Large (10.1)	4.1	40.6	Large	Large (102.6)	102.6	Flighted
<i>Calidris melanotos</i>	Fa	I	Medium (7.5)	1.9	25.5	Large	Medium (27.6)	27.6	Flighted
<i>Calidris alba</i>	Fa	I	Large (10.7)	3	28.1	Large	Medium (51.5)	51.5	Flighted
<i>Calidris pusilla</i>	Fa	I	Medium (9.5)	2.5	26.3	Large	Medium (22.5)	22.5	Flighted
<i>Arenaria interpres</i>	Fa	I	Medium (9.7)	4.1	42.5	Large	Medium (79.4)	79.4	Flighted
<i>Gallinago undulata</i>	Fa	I	Medium (8.5)	2.7	31.9	Large	Medium (69.3)	69.3	Flighted
<i>Fratercula cirrhata</i>	Fa	C	Small (0.7)	0.6	84.5	Large	Large (913.5)	913.5	Flighted
<i>Sterna maxima</i>	Fa	C	Medium (1.4)	0.9	65.8	Large	Large (260.5)	260.5	Flighted
<i>Sterna hirundo</i>	Fa	C	Medium (1.7)	0.6	36.4	Small/Absent	Medium (76.3)	76.3	Flighted
<i>Sterna caspia</i>	Fa	C	Small (1.0)	0.8	83.7	Large	Large (423.2)	423.2	Flighted
<i>Sterna fuscata</i>	Fa	C	Small (0.4)	0.2	46.9	Large	Large (195.0)	195	Flighted
<i>Sterna antillarum</i>	Fa	C	Small (0.9)	0.2	23	Small/Absent	Medium (24.8)	24.8	Flighted
<i>Larus atricilla</i>	Fa	C	Small (0.9)	0.5	54.6	Large	Large (267.5)	267.5	Flighted
<i>Larus argentatus</i>	Non-Fa	O	Medium (1.1)	1.1	96.5	Large	Large (787.9)	787.9	Flighted
<i>Larus hyperboreus</i>	Non-Fa	O	Small (0.8)	1	123.5	Small/Absent	XL (1132.0)	1132	Flighted
<i>Larus californicus</i>	Fa	I	Small (0.5)	0.5	106.4	Large	Large (470.0)	470	Flighted
<i>Larus delawarensis</i>	Non-Fa	O	Medium (1.2)	0.9	74.1	Large	Large (359.7)	359.7	Flighted
<i>Rynchops niger</i>	Fa	C	Medium (2.0)	0.9	44.7	Large	Large (288.2)	288.2	Flighted

<i>Charadrius vociferus</i>	Fa	I	Large (11.4)	2.8	24.6	Large	Medium (25.6)	25.6	Flighted
<i>Recurvirostra americana</i>	Non-Fa	O	Medium (9.0)	6.7	74.3	Large	Large (320.5)	320.5	Flighted
<i>Haematopus palliatus</i>	Fa	AI	Medium (5.3)	4.9	93.2	Large	Large (461.0)	461	Flighted
<i>Pluvialis dominica</i>	Fa	I	Medium (2.8)	2.3	81.3	Large	Large (158.6)	158.6	Flighted
<i>Columba livia</i>	Non-Fa	Gr/Fr	Small (0.6)	0.5	84.3	Large	Large (286.0)	286	Flighted
<i>Streptopelia capicola</i>	Non-Fa	Gr/Fr	Small (0.4)	0.2	52	Large	Large (119.4)	119.4	Flighted
<i>Zenaida asiatica</i>	Non-Fa	Gr/Fr	Absent (0.0)	0	56	Large	Large (140.1)	140.1	Flighted
<i>Zenaida macroura</i>	Non-Fa	Gr/Fr	Absent (0.0)	0	49.5	Small/Absent	Large (100.7)	100.7	Flighted
<i>Columbina passerina</i>	Non-Fa	Gr/Fr	Absent (0.0)	0	31.3	Small/Absent	Medium (32.3)	32.3	Flighted
<i>Opisthocomus hoazin</i>	Non-Fa	H	Medium (4.9)	4	82.2	Large	Large (750.0)	750	Limited Flight
<i>Numida meleagris</i>	Non-Fa	H	Large (15.0)	39.4	262.7	Large	XL (1351.0)	1351	Flighted
<i>Gallus gallus</i>	Non-Fa	Gr/Fr	Medium (9.6)	18.3	191.5	Large	XL (2045.0)	2045	Flighted
<i>Bonasa umbellus</i>	Non-Fa	O	Large (40.1)	41.8	104.3	Large	Large (397.9)	397.9	Flighted
<i>Canachites canadensis</i>	Non-Fa	H	Large (34.5)	40	116	Large	Large (576.0)	576	Limited Flight
<i>Tetrao urogallus</i>	Non-Fa	Gr/Fr	Large (29.4)	52	177	Large	XL (2500.0)	2500	Limited Flight
<i>Centrocercus urophasianus</i>	Non-Fa	Gr/Fr	Large (49.2)	73	148	Large	XL (1427.0)	1427	Flighted
<i>Dendragapus obscurus</i>	Non-Fa	Gr/Fr	Large (36.2)	50	138	Large	XL (1250.0)	1250	Limited Flight
<i>Tympanuchus phasianellus</i>	Non-Fa	H	Large (36.2)	49	135.5	Large	Large (850.0)	850	Flighted
<i>Tympanuchus cupido</i>	Non-Fa	Gr/Fr	Large (34.4)	45	131	Large	XL (1120.0)	1120	Flighted
<i>Lagopus lagopus</i>	Non-Fa	H	Large (45.4)	47	103.5	Large	Large (525.0)	525	Limited Flight
<i>Lagopus mutus</i>	Non-Fa	H	Large (40.9)	47	115	Large	Large (502.0)	502	Flighted
<i>Meleagris gallopavo</i>	Non-Fa	O	Large (20.0)	46.5	232.8	Large	XL (6775.0)	6775	Flighted
<i>Chrysolophus pictus</i>	Non-Fa	Gr/Fr	Large (13.2)	9.6	72.7	Large	Large (366.7)	366.7	Limited Flight
<i>Perdix perdix</i>	Non-Fa	Gr/Fr	Large (28.2)	19	67.3	Large	Large (395.0)	395	Limited Flight
<i>Alectoris graeca</i>	Non-Fa	Gr/Fr	Large (22.1)	19	86	Large	Large (576.0)	576	Limited Flight
<i>Coturnix japonica</i>	Non-Fa	Gr/Fr	Large (16.6)	26.3	158.4	Large	Medium (90.0)	90	Flighted
<i>Oreortyx pictus</i>	Non-Fa	Gr/Fr	Large (19.9)	17.5	88	Large	Large (250.0)	250	Limited Flight

<i>Callipepla squamata</i>	Non-Fa	Gr/Fr	Large (15.3)	10.5	68.5	Large	Large (175.0)	175	Flighted
<i>Callipepla californica</i>	Non-Fa	Gr/Fr	Large (16.2)	13.9	86	Large	Large (173.0)	173	Flighted
<i>Callipepla gambelii</i>	Non-Fa	Gr/Fr	Large (12.6)	11.3	89	Large	Large (188.0)	188	Flighted
<i>Colinus virginianus</i>	Non-Fa	O	Large (15.1)	11.3	74.7	Large	Large (161.1)	161.1	Flighted
<i>Cyrtonyx montezumae</i>	Non-Fa	O	Large (21.5)	11.5	53.5	Large	Large (186.0)	186	Flighted
<i>Cairina moschata</i>	Non-Fa	O	Medium (9.3)	12.8	137.9	Large	Large (585.0)	585	Flighted
<i>Aix sponsa</i>	Fa	C	Medium (8.1)	8.9	109.5	Large	Large (537.3)	537.3	Flighted
<i>Anas fulvigula</i>	Fa	C	Medium (8.9)	12.6	142	Large	Large (543.9)	543.9	Flighted
<i>Anas platyrhynchos</i>	Non-Fa	Gr/Fr	Large (11.5)	16.1	169.5	Large	Large (929.5)	929.5	Flighted
<i>Anas americana</i>	Non-Fa	H	Large (15.6)	22.5	144.4	Large	Large (530.0)	530	Flighted
<i>Anas discors</i>	Non-Fa	Gr/Fr	Medium (6.2)	6.6	106.1	Large	Large (250.3)	250.3	Flighted
<i>Aythya collaris</i>	Non-Fa	H	Large (10.5)	13.3	126.9	Large	Large (612.1)	612.1	Flighted
<i>Mergus serrator</i>	Fa	C	Medium (1.9)	2.8	144.6	Large	Large (461.4)	461.4	Flighted
<i>Anser cygnoides</i>	Non-Fa	H	Large (11.9)	90.2	758.0	Large	XL (3150.0)	3150	Flighted
<i>Struthio camelus</i>	Non-Fa	H	Medium (6.5)	94	1440	Large	XL (122000)	122000	Flightless
<i>Dromaius novaehollandiae</i>	Non-Fa	O	Medium (2.7)	8.6	312	Large	XL (38300)	38300	Flightless
<i>Apteryx mantelli</i>	Fa	I	Large (12.2)	16.5	135.1	Large	XL (2012)	2012	Flightless
<i>Rhea americana</i>	Non-Fa	H	Large (26.7)	48	180	Large	XL (8500)	8500	Flightless
<i>Crypturellus tataupa</i>	Non-Fa	Gr/Fr	Medium (3.0)	1.25	42.3	Large	Large (220)	220	Limited Flight
<i>Nothoprocta cinerascens</i>	Fa	I	Medium (4.7)	2.4	51.3	Large	Large (526)	526	Limited Flight
<i>Nothoprocta ornata</i>	Non-Fa	Gr/Fr	Medium (2.3)	18.7	82.4	Large	Large (514)	514	Limited Flight
<i>Nothura darwini</i>	Non-Fa	Gr/Fr	Medium (2.3)	14.1	60.8	Large	Large (234)	234	Limited Flight
<i>Nothura maculosa</i>	Non-Fa	Gr/Fr	Medium (6.5)	3.1	48	Large	Large (247)	247	Limited Flight