

Appendix 1

The species examined following Sibley and Monroe (1990). Single or mean length measurements (mm) are given of primaries nine and ten (P9, P10) and primary covert nine (PC9) and the numbers of primaries (P) and primary coverts (PC). Relative length P_{10}/P_9 is the length of primary ten divided by the length of primary nine. Relative length P_{10}/PC_9 is the length of primary ten divided by the length of primary covert nine. N = number of specimens measured. 'Group' refers to the systematic groupings following the simplified phylogeny in Figure 1: (n) non-passerines, (s) suboscines, (m) Meliphagoidea, (c) Corvoidea, (p) Passerida. 'Insertions' refers to the number of insertions in exon 3 of the *c-myc* gene (Ericson et al. 2000): 0 = no insertions, 1 = one insertion and 2 = two insertions. * = One specimen of this species was dissected. Taxa generally considered 'nine-primaried' are highlighted in bold and the intermediate Vireonidae are set in italics. PC numbers (9) or (10) are uncertain, because numbers were hard to establish due to condition of the specimens. † = Both *Corvus monedula* examined had an extra feather that resembled a primary but might have been a covert of the wing margin, i.e. they had either ten or eleven primaries. The occasional occurrence of an extra feather in a group including Corvidae was mentioned by Gadow (1888).

							Length	Length	Length	Numbers	Numbers	Rel. length	Rel. length
Family	Subfamily	Tribe	Species	N	Group	Insertions	P 9	P 10	PC 9	P	PC	P 10/P 9	P 10/PC 9
Picidae			Colaptes auratus	1	n	0	95	38	16.5	10	10	0.4	2.3
Apodidae			Chaetura vauxi	1	n	0	88.5	85	16	10	10	1	5.3
Pittidae			Pitta elliotii	1	s	0	72	58	17	10	10	0.8	3.4
Tyrannidae	Tyranninae		Myiarchus tyrannulus	2	s	0	73.8	60	14	10	10	0.8	4.3
Tyrannidae	Tyranninae		Tyrannus verticalis	1	s	0	93	89	19	10	10	1	4.7
Thamnophilidae			Thamnophilus doliatius	1	s	0	46	35	8	10	10	0.8	4.4
Furnariidae	Furnarinae		Furnarius rufus	2	s	0	68.5	54.5	14	10	10	0.8	3.9
Furnariidae	Furnarinae		Phacellodomus rufifrons	1	s	0	50	36.5	9	10	10	0.7	4.1
Furnariidae	Furnarinae		Phacellodomus ruber	1	s	0	53	41	11	10	10	0.8	3.7
Furnariidae	Furnarinae		Coryphistera alaudina	1	s	0	55	46	10	10	10	0.8	4.6
Furnariidae	Dendrocolaptinae		Lepidocolaptes angustirostris	2	s	0	67	53.5	13	10	10	0.8	4.1
Meliphagidae			Myzomela cardinalis	1	m	0	48	23	7	10	9	0.5	3.3
Meliphagidae			Phylidonyris sp.	1	m	0	55.5	22	7	10	9	0.4	3.1
Meliphagidae			Anthochaera chrysoptera	1	m	0	89	49.5	17.5	10	10	0.6	2.8
Pardalotidae	Pardalotinae		Pardalotus sp.	1	m	0	47	5.5	4	10	9	0.1	1.4
Vireonidae			Cyclarhis gujanensis	1	c	0	51	32	8	10	9	0.6	4
Vireonidae			Vireo altiloquus	2	c	0	43	4	5	10	9	0.1	0.8
Vireonidae			Vireo gilvus	1	c	0	44	9	5	10	9	0.2	1.8
Corvidae	Corvinae	Corvini	Aphelocoma californica	2	c	0	71.3	46.8	11	10	(10)	0.7	4.3
Corvidae	Corvinae	Corvini	Cyanocorax cyanomelas	1	c	0	121	82	19	10	10	0.7	4.3
Corvidae	Corvinae	Corvini	Garrulus glandarius	1	c	0	112.5	71	21	10	(9)	0.6	3.9
Corvidae	Corvinae	Corvini	Perisoreus infaustus	2	c	0	82.5	53.8	14.5	10	10	0.7	3.7
Corvidae	Corvinae	Corvini	Pica pica *	1	c	0	114	61	21	10	9	0.5	2.9
Corvidae	Corvinae	Corvini	Nucifraga caryocatactes	1	c	0	120	71	22.5	10	10	0.6	3.2
Corvidae	Corvinae	Corvini	Corvus monedula	2	c	0	164	91	38	10 [□]	10	0.6	2.4
Corvidae	Corvinae	Oriolini	Lalage maculosa	1	c	0	71	16	10	10	(9)	0.2	1.6
Bombycillidae		Bombycillini	Bombycilla cedrorum	3	p	1	71.3	7	10.2	10	9	0.1	0.7
Muscicapidae	Turdinae		Catharus ustulatus	1	p	1	71	14.5	9	10	9	0.2	1.6
Muscicapidae	Turdinae		Catharus guttatus	2	p	1	63	15.5	7.3	10	9	0.3	2.1

Muscicapidae	Turdinae		Turdus philomelos *	1	p	1	82	16	9	10	9	0.2	1.8
Muscicapidae	Turdinae		Turdus rufiventris	1	p	1	83	29	9.5	10	9	0.4	3.1
Muscicapidae	Turdinae		Turdus amaurochalinus	1	p	1	82	25	9	10	9	0.3	2.8
Muscicapidae	Turdinae		Turdus migratorius	1	p	1	90	19	11	10	9	0.2	1.7
Muscicapidae	Muscicapinae	Saxicolini	Erithacus rubecula *	2	p	1	45.5	22.5	6	10	9	0.5	3.8
Muscicapidae	Muscicapinae	Saxicolini	Cossypha caffra	2	p	1	57	29	9.3	10	9	0.5	3.1
Muscicapidae	Muscicapinae	Saxicolini	Saxicola rubetra	1	p	1	53	13	8	10	9	0.3	1.6
Muscicapidae	Muscicapinae	Saxicolini	Oenanthe oenanthe	4	p	1	73.1	14.8	10.3	10	9	0.2	1.4
Muscicapidae	Muscicapinae	Saxicolini	Oenanthe lugens	2	p	1	68.5	19.5	10.5	10	9	0.3	1.9
Sturnidae		Sturnini	Gracula religiosa	1	p	1	112	28	16	10	9	0.3	1.8
Sturnidae		Mimini	Mimus polyglottos	1	p	1	72	40	15	10	(9)	0.6	2.7
Sturnidae		Mimini	Nesomimus trifasciatus	1	p	1	83	41	13.5	10	9	0.5	3.0
Sturnidae		Mimini	Toxostoma redivivum	1	p	1	67	45	14	10	10	0.7	3.2
Certhiidae	Troglodytinae		Troglodytes troglodytes	1	p	1	30	18.5	4.5	10	9	0.6	4.1
Certhiidae	Troglodytinae		Troglodytes aedon	2	p	1	33.3	19.5	5	10	(10)	0.6	3.9
Certhiidae	Poliophtilinae		Poliophtila sp.	1	p	1	32	15	4	10	(9)	0.5	3.8
Paridae	Parinae		Parus ater	1	p	1	40	17	4	10	9	0.4	4.3
Paridae	Parinae		Parus major	2	p	1	48	21.8	7	10	(9)	0.5	3.1
Paridae	Parinae		Parus caeruleus *	3	p	1	44	16	5.7	10	9	0.4	2.8
Aegithalidae			Psaltriparus minimus	1	p	1	28	13	3	10	9	0.5	4.3
Hirundinidae	Pseudochelidoninae		Progne sp.	2	p	1	104.5	10.8	13	10	9	0.1	0.8
Regulidae			Regulus calendula	1	p	1	41	15.5	5	10	9	0.4	3.1
Regulidae			Regulus regulus	1	p	1	34	14.5	4	10	9	0.4	3.6
Pycnonotidae			Pycnonotus aurigaster	2	p	1	54.8	31	10	10	10	0.6	3.1
Zosteropidae			Zosterops japonicus	1	p	1	43	4	5,5	10	9	0.1	0.7
Zosteropidae			Zosterops sp.	1	p	1	39	4	4	10	9	0.1	1
Sylviidae	Acrocephalinae		Acrocephalus dumetorum	2	p	1	43	11	5.8	10	9	0.3	1.9
Sylviidae	Acrocephalinae		Phylloscopus trochilus *	4	p	1	48	13.8	6.4	10	9	0.3	2.2
Sylviidae	Acrocephalinae		Phylloscopus borealis	1	p	1	45	10	5	10	9	0.2	2
Sylviidae	Sylviinae	Timaliini	Panurus biarmicus	1	p	1	37	18	7	10	9	0.5	2.6
Sylviidae	Sylviinae	Sylviini	Sylvia atricapilla	3	p	1	51	17	8	10	(9)	0.3	2.1
Sylviidae	Sylviinae	Sylviini	Sylvia borin	1	p	1	57	11	7	10	(9)	0.2	1.6
Sylviidae	Sylviinae	Sylviini	Sylvia hortensis	1	p	1	54	10	7,5	10	9	0.2	1.3
Nectariniidae	Nectariniinae	Nectariniini	Nectarinia sovimanga	1	p	1	35	16	5	10	9	0.5	3.2

Nectariniidae	Nectariniinae	Nectariniini	Nectarinia kilimensis	1	p	1	55	20	7.5	10	9	0.4	2.7
Passeridae	Passerinae		Passer montanus *	4	p	1	50.9	7.5	4.8	10	9	0.1	1.6
Passeridae	Motacillinae		Motacilla capensis	4	p	2	62.8	5.3	8.4	10	9	0.1	0.6
Passeridae	Motacillinae		Motacilla citreola	1	p	2	67	5.5	9	10	9	0.1	0.6
Passeridae	Motacillinae		Anthus novaseelandiae	1	p	2	71	7	8	10	9	0.1	0.9
Passeridae	Motacillinae		Anthus trivialis *	1	p	2	68	6	9	10	9	0.1	0.7
Passeridae	Ploceinae		Ploceus sp.	1	p	1	57	9.5	7	10	(9)	0.2	1.4
Passeridae	Estrildinae	Estrildini	Taeniopygia guttata *	2	p	1	41.8	4.8	4	10	9	0.1	1.2
Fringillidae	Fringillinae	Fringillini	Fringilla coelebs	1	p	2	68	4	7	10	9	0.1	0.6
Fringillidae	Fringillinae	Fringillini	Fringilla montifringilla *	1	p	2	72	7.5	10	10	9	0.1	0.8
Fringillidae	Fringillinae	Carduelini	Carduelis chloris *	1	p	2	66	6	8.5	10	9	0.1	0.7
Fringillidae	Fringillinae	Carduelini	Carduelis pinus	1	p	2	55	5	7	10	9	0.1	0.7
Fringillidae	Fringillinae	Carduelini	Carduelis tristis	1	p	2	54	6	6.5	10	9	0.1	0.9
Fringillidae	Fringillinae	Carduelini	Carduelis psaltria	1	p	2	47	3.5	5.5	10	9	0.1	0.6
Fringillidae	Fringillinae	Carduelini	Carduelis flammea	1	p	2	58	6	8	10	9	0.1	0.8
Fringillidae	Fringillinae	Carduelini	Carpodacus mexicanus	1	p	2	59	5	7.5	10	9	0.1	0.7
Fringillidae	Emberizinae	Emberizini	Emberiza pusilla	1	p	2	52	6	6.5	10	9	0.1	0.9
Fringillidae	Emberizinae	Emberizini	Melospiza lincolni	2	p	2	46.5	4.8	6.3	10	9	0.1	0.8
Fringillidae	Emberizinae	Emberizini	Zonotrichia leucophrys	1	p	2	56	6.5	8	10	9	0.1	0.8
Fringillidae	Emberizinae	Emberizini	Junco hyemalis	1	p	2	52	5	6	10	9	0.1	0.8
Fringillidae	Emberizinae	Emberizini	Passerculus sandwichensis	2	p	2	56.8	5	6.3	10	9	0.1	0.8
Fringillidae	Emberizinae	Emberizini	Amphispiza bilineata	1	p	2	47.5	5.5	6.5	10	9	0.1	0.8
Fringillidae	Emberizinae	Emberizini	Pipilo crissalis	1	p	2	53	5	7	10	9	0.1	0.7
Fringillidae	Emberizinae	Emberizini	Pipilo aberti	2	p	2	54.8	5.5	7.5	10	9	0.1	0.7
Fringillidae	Emberizinae	Emberizini	Paroaria capitata	2	p	2	58	5	6.5	10	9	0.1	0.8
Fringillidae	Emberizinae	Parulini	Dendroica petechia	1	p	2	47	4	6	10	9	0.1	0.7
Fringillidae	Emberizinae	Parulini	Dendroica coronata	2	p	2	63	6.3	7	10	9	0.1	0.9
Fringillidae	Emberizinae	Parulini	Wilsonia pusilla	1	p	2	41.5	3	4	10	9	0.1	0.8
Fringillidae	Emberizinae	Thraupini	Coereba flaveola	2	p	2	46.8	4.5	5.5	10	9	0.1	0.8
Fringillidae	Emberizinae	Thraupini	Hemithraupis ruficapilla	1	p	2	50	6	6	10	9	0.1	1
Fringillidae	Emberizinae	Thraupini	Piranga ludoviciana	2	p	2	72.5	5.5	7.5	10	9	0.1	0.7
Fringillidae	Emberizinae	Thraupini	Thraupis sayaca	1	p	2	67	9	8	10	9	0.1	1.1
Fringillidae	Emberizinae	Thraupini	Poospiza melanoleuca	5	p	2	40.4	4	4.5	10	9	0.1	0.9

Fringillidae	Emberizinae	Cardinalini	Saltator coerulescens	4	p	2	70.4	8	9.8	10	9	0.1	0.8
Fringillidae	Emberizinae	Cardinalini	Saltator similis	1	p	2	65	7.5	8	10	9	0.1	0.9
Fringillidae	Emberizinae	Cardinalini	Cyanocompsa brissonii	1	p	2	53	4.5	6	10	9	0.1	0.8
Fringillidae	Emberizinae	Icterini	Icterus cayanensis	2	p	2	62.5	5.8	7.5	10	9	0.1	0.8
Fringillidae	Emberizinae	Icterini	Icterus galbula bullockii	1	p	2	73.5	6.5	9	10	9	0.1	0.7
Fringillidae	Emberizinae	Icterini	Agelaius phoeniceus	4	p	2	88	9	10.5	10	9	0.1	0.9
Fringillidae	Emberizinae	Icterini	Euphagus cyanocephalus	1	p	2	90	10	11.5	10	9	0.1	0.9
Fringillidae	Emberizinae	Icterini	Molothrus ater	5	p	2	80.7	8	10	10	9	0.1	0.8