



FIGURE SMI. Frequency density plots for current hierarchical taxonomic clade ages of birds based a) the Jetz et al. 2012 “Data only” phylogeny and species (6,670 species), and b) analysis of all bird species based on the Gill and Donsker (2013) IOC taxonomy. Result shown based on both the original taxonomy and the new phylogeny based temporal banding approach, in which time calibrated phylogenies are cut at specific points in time to delineate consistent hierarchical taxonomic groups. See main text for references.

TABLE 1. Consistency of time banding bird taxonomic clades (produced by two alternative approaches, see main text for methods) compared with currently used taxonomies for each hierarchical taxonomic level. “Cut off age” represents the age at which the relevant phylogeny is cut in order to return the same number of clades found within each taxonomic level. “Mean error per clade” represents the average absolute amount of time that taxonomic clades deviate from the relevant cut off age. “Standardised error scores” (as calculated in figure 1) can be compared between taxonomic levels and between taxonomic groups; a score of zero reflects no error (complete agreement between traditional taxonomy and temporal banding taxonomy) and a score of one is equal to the mean random expectation (based on randomly dividing the phylogenies into the required number of monophyletic clades). Monotypic taxonomic clades are defined as clades with only a single immediately subordinate taxonomic clade, e.g. a genus with one species or a family with one genus. Cut off age measured in millions of year ago (ma) and error measured in millions of years (myr).

Analysis	Taxonomic level	Cut off age (ma)	Mean absolute error per clade (myr)	Standardised error score	Number of clades with zero error (all)	Number of clades with zero error (monotypic)
Jetz et al. 2012 “Data only” phylogeny and species	Genus	11.075	3.40	0.81	680 of 1,880	424 of 906
	Family	37.000	6.71	0.50	65 of 194	32 of 63
	Order	65.000	4.68	0.20	17 of 40	10 of 23
Based on IOC taxonomy	Genus	10.905	3.87	0.91	661 of 2,232	330 of 921
	Family	34.400	6.72	0.51	71 of 236	33 of 80
	Order	65.000	4.55	0.21	17 of 40	9 of 22