

## **Data Supplement**

### **High dispersal ability inhibits speciation in a continental radiation of passerine birds**

Santiago Claramunt, Elizabeth P. Derryberry, J. V. Remsen, Jr. & Robb T. Brumfield

*Museum of Natural Science and Department of Biological Sciences, Louisiana State University, Baton Rouge, LA 70803, USA*

#### **HAND-WING INDEX AND FLIGHT PERFORMANCE IN NEOTROPICAL FOREST BIRDS**

We investigated the relationship between wing shape and flight distances determined during 'dispersal challenge' experiments conducted in Gatun Lake in the Panama Canal (Moore et al. 2008). During the experiments, birds were released from a boat at incremental distances from shore and the distance flown or the success or failure in reaching the coast was recorded. To investigate the relationship between the hand-wing index and flight distance in Neotropical birds we used data on mean distance flown from table 3 in ref. We estimated hand-wing indices for the 10 species reported in those experiments (Table S1). Wing measurements were taken by SC for four males of each species at LSUMNS. The relationship between the hand-wing index and distance flown was evaluated statistically using phylogenetic generalized least-squares (PGLS, Freckleton et al. 2002). We generated a phylogeny for the species involved in the experiment or an appropriate surrogate using DNA sequences of the slow-evolving RAG 1 gene from GenBank (Table S2). A maximum likelihood ultrametric tree was generated in PAUP\* (Swofford 2003) using a GTR+ $\Gamma$  model of nucleotide substitution rates, empirical nucleotide frequencies, and enforcing a molecular clock. We found that the hand-wing index was strongly related to mean distance flown ( $R^2 = 0.68$ ,  $F = 20$ ,  $d.f. = 1$ ,  $P = 0.002$ , model: distance flown [in meters] =  $127(\pm 28) \times \log(\text{hand-wing index}) - 192(\pm 79)$ , Figure S1), thus corroborating the expected link between wing morphology and flight performance.

#### **SUPPLEMENTAL REFERENCES**

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Table S1. Mean distance flown from dispersal experiments (Moore et al. 2008) and corresponding hand-wing index for 10 Neotropical bird species.

family	species	distance flown (m)	hand-wing index	
			mean	std. err.
Trochilidae	<i>Phaethornis longirostris</i>	315	61.7	0.2
Furnariidae	<i>Xiphorhynchus susurrans</i>	179	16.9	1.6
Thamnophilidae	<i>Thamnophilus atrinucha</i>	102	10.3	0.9
Thamnophilidae	<i>Epinecrophylla fulviventris</i>	24	10.9	0.3
Thamnophilidae	<i>Myrmeciza exsul</i>	41	5.0	0.5
Thamnophilidae	<i>Hylophylax naevioides</i>	52	12.1	0.7
Tyrannidae	<i>Mionectes oleagineus</i>	222	14.7	0.8
Pipridae	<i>Manacus vitellinus</i>	196	18.8	0.9
Pipridae	<i>Pipra mentalis</i>	226	17.0	0.3
Cardinalidae	<i>Habia fuscicauda</i>	160	15.3	0.4

Table S2. Sequences used for creating the phylogeny used in the phylogenetic least squares analysis of the correlation between flight distance and the hand-wing index.

Moore et al. species	phylogeny species	Genbank	source
<i>Phaethornis longirostris</i>	<i>Phaethornis griseogularis</i>	DQ482638	Barrowclough et al.
<i>Xiphorhynchus susurrans</i>	<i>Dendroplex picus</i>	FJ461167	Moyle et al.
<i>Thamnophilus atrinucha</i>	<i>Thamnophilus caeruleus</i>	FJ461176	Moyle et al.
<i>Epinecrophylla fulviventris</i>	<i>Myrmotherula axillaris</i>	FJ461183	Moyle et al.
<i>Myrmeciza exsul</i>	<i>Myrmeciza berlepschi</i>	FJ461203	Moyle et al.
<i>Hylophylax naevioides</i>	<i>Hypocnemoides maculicauda</i>	FJ461195	Moyle et al.
<i>Mionectes oleagineus</i>	<i>Mionectes macconnelli</i>	FJ501718	Tello et al.
<i>Manacus vitellinus</i>	<i>Manacus aurantiacus</i>	FJ501665	Tello et al.
<i>Pipra mentalis</i>	<i>Pipra erythrocephala</i>	FJ501713	Tello et al.
<i>Habia fuscicauda</i>	<i>Cardinalis cardinalis</i>	AY056982	Barker et al.

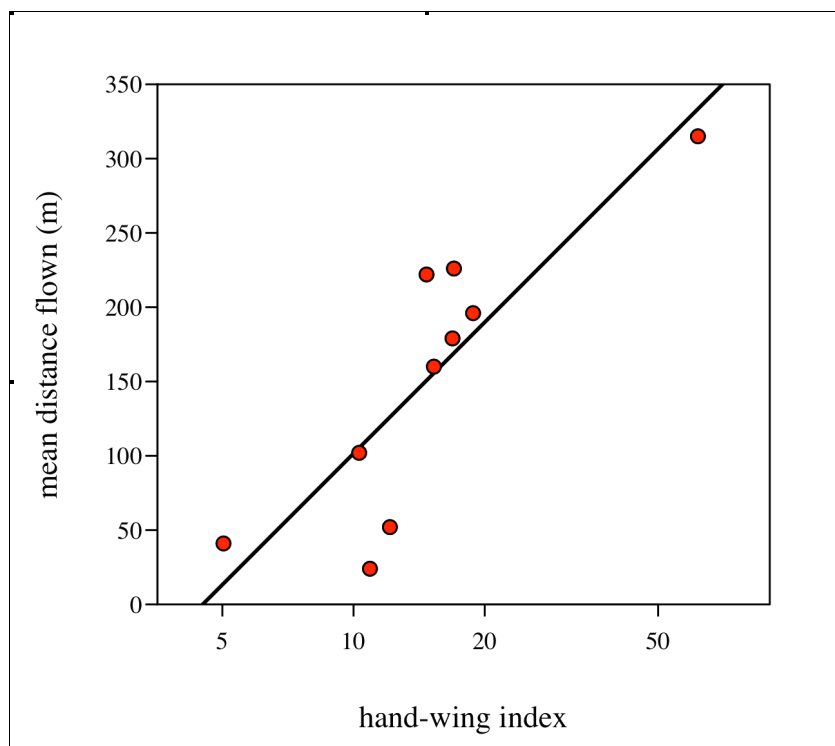


Figure S1. Relationship between the hand-wing index and mean distance flown over water for 10 Neotropical bird species. Regression line from a phylogenetic generalized least-squares model ( $R^2 = 0.68$ ,  $F = 20$ ,  $d.f. = 1$ ,  $P = 0.002$ ).

Table S3. Flight performance parameters for 35 species of Furnariidae. N, sample size; WS, wingspan; WA, area of a single wing; TA, total area including root box; AR, aspect ratio; WL, wing length; SL, wing length to first secondary feather; H, Hand-wing index.

species	N	WS cm	WA cm <sup>2</sup>	TA cm <sup>2</sup>	AR	WL cm	SL cm	H
<i>Anabacerthia variegaticeps</i>	1	27.9	77	184	4.2	87.9	70.8	19.4
<i>Asthenes dorbignyi</i>	1	21.0	40	104	4.2	60.3	56.2	6.9
<i>Asthenes ottonis</i>	2	18.6	36	86	4.0	58.1	52.1	10.3
<i>Asthenes virgata</i>	2	22.3	52	125	4.0	66.8	61.9	7.4
<i>Campylorhamphus pusillus</i>	1	29.7	87	205	4.3	92.4	76.0	17.8
<i>Cinclodes taczanowskii</i>	1	34.0	115	250	4.6	116.1	87.6	24.5
<i>Cranioleuca curtata</i>	2	21.8	41	104	4.6	66.6	56.3	15.4
<i>Dendrocincla anabatina</i>	3	31.0	86	198	4.8	97.3	78.8	19.0
<i>Dendrocincla fuliginosa</i>	2	32.7	100	234	4.6	107.0	84.6	20.9
<i>Dendrocincla homochroa</i>	1	33.6	106	251	4.5	104.2	85.6	17.8
<i>Dendrocolaptes sanctithomae</i>	2	39.4	148	340	4.6	126.9	100.7	20.6
<i>Geositta cunicularia</i>	1	24.8	62	129	4.8	85.8	66.8	22.2
<i>Glyphorhynchus spirurus</i>	4	22.7	46	107	4.8	70.8	54.4	23.1
<i>Hellmayrea gularis</i>	3	18.4	33	82	4.1	56.6	51.0	9.8
<i>Hylocryptus erythrocephalus</i>	2	30.5	82	225	4.1	95.8	86.3	9.9
<i>Margarornis squamiger</i>	5	24.5	49	128	4.7	75.1	61.5	18.1
<i>Phacellodomus striaticeps</i>	2	22.2	46	119	4.1	69.3	64.0	7.7
<i>Premnoplex brunnescens</i>	5	19.6	35	88	4.3	59.5	51.8	13.0
<i>Premnornis guttuligera</i>	2	21.3	41	112	4.1	66.2	57.2	13.6
<i>Pseudocolaptes boissonneautii</i>	1	35.9	109	272	4.7	113.5	92.6	18.4
<i>Schizoeaca griseomurina</i>	1	19.5	31	84	4.5	58.4	51.8	11.3
<i>Sclerurus guatemalensis</i>	2	28.4	75	183	4.4	87.6	74.8	14.7
<i>Synallaxis brachyura</i>	1	19.4	34	90	4.2	54.6	49.1	10.0
<i>Synallaxis erythrothorax</i>	1	18.2	32	81	4.1	55.2	49.3	10.7
<i>Synallaxis unirufa</i>	3	18.7	34	87	4.0	56.2	51.1	9.2
<i>Syndactyla rufosuperciliata</i>	1	25.1	62	146	4.3	77.6	66.8	13.9
<i>Upucerthia jelskii</i>	1	27.6	78	181	4.2	83.9	75.7	9.8
<i>Xenerpestes minlosi</i>	1	16.6	29	65	4.2	54.3	44.2	18.7
<i>Xenerpestes singularis</i>	1	17.9	31	72	4.4	55.3	44.8	18.9
<i>Xenops minutus</i>	2	19.5	33	78	4.8	60.2	47.1	21.7
<i>Xiphocolaptes promeropirhynchus</i>	1	41.0	174	404	4.2	131.0	111.1	15.1
<i>Xiphorhynchus erythropygius</i>	1	35.8	115	270	4.8	113.4	88.1	22.3
<i>Xiphorhynchus flavigaster</i>	1	33.1	104	240	4.5	101.5	84.4	16.8
<i>Xiphorhynchus susurrans</i>	1	30.3	89	206	4.5	95.1	77.2	18.9
<i>Xiphorhynchus triangularis</i>	3	38.0	123	294	4.9	120.0	94.0	21.6

Table S4. Hand-wing index values in the Furnariidae. For species represented by a single specimens, the standard error reported is the average of standard deviations across the family. *n*, the number of specimens measured.

species	<i>n</i>	hand-wing index	
		mean	std. error
<i>Sclerurus mexicanus</i>	6	13.4	0.50
<i>Sclerurus rufigularis</i>	4	15.5	0.72
<i>Sclerurus guatemalensis</i>	3	15.1	0.30
<i>Sclerurus caudacutus</i>	4	16.8	0.49
<i>Sclerurus albigularis</i>	5	17.7	0.98
<i>Sclerurus scansor</i>	3	14.9	0.74
<i>Geositta peruviana</i>	6	22.9	0.47
<i>Geositta cunicularia</i>	10	24.3	1.03
<i>Geositta tenuirostris</i>	3	29.0	0.70
<i>Geositta antarctica</i>	3	36.9	1.47
<i>Geositta isabellina</i>	2	33.3	0.72
<i>Geositta saxicolina</i>	3	25.9	0.41
<i>Geositta maritima</i>	3	27.1	0.24
<i>Geositta punensis</i>	9	20.9	0.46
<i>Geositta rufipennis</i>	5	22.5	1.26
<i>Geositta poeciloptera</i>	4	21.0	1.36
<i>Geositta crassirostris</i>	4	14.9	0.67
<i>Xenops tenuirostris</i>	4	22.8	1.37
<i>Xenops minutus</i>	8	20.8	0.41
<i>Xenops rutilans</i>	6	23.2	0.74
<i>Berlepschia rikeri</i>	6	31.8	0.73
<i>Microxenops milleri</i>	4	21.5	0.99
<i>Pygarrhichas albogularis</i>	5	22.8	0.35
<i>Ochetorhynchus andaecola</i>	3	10.9	1.41
<i>Ochetorhynchus ruficaudus</i>	4	11.3	0.99
<i>Ochetorhynchus phoenicurus</i>	5	12.8	0.56
<i>Ochetorhynchus melanurus</i>	3	13.6	0.96
<i>Premnornis guttuligera</i>	5	13.7	0.65
<i>Pseudocolaptes lawrencii</i>	5	19.5	0.51
<i>Pseudocolaptes boissonneautii</i>	6	17.9	0.77
<i>Tarphonimus harterti</i>	4	8.4	0.72
<i>Tarphonimus certhioides</i>	3	14.9	1.07
<i>Upucerthia dumetaria</i>	3	25.7	0.83
<i>Upucerthia saturatior</i>	3	23.0	0.42
<i>Upucerthia albigula</i>	4	18.2	0.56
<i>Upucerthia jelskii</i>	3	14.8	0.51

<i>Upucerthia validirostris</i>	4	15.7	0.67
<i>Geocerthia serrana</i>	4	9.0	0.81
<i>Cinclodes excelsior</i>	3	23.3	1.33
<i>Cinclodes aricomae</i>	2	22.9	0.46
<i>Cinclodes fuscus</i>	3	29.9	1.10
<i>Cinclodes albidiventris</i>	3	23.0	1.04
<i>Cinclodes albiventris</i>	3	22.0	0.67
<i>Cinclodes comechingonus</i>	3	24.5	1.18
<i>Cinclodes pabsti</i>	3	24.0	0.28
<i>Cinclodes olrogi</i>	3	25.2	1.37
<i>Cinclodes oustaleti</i>	4	23.5	0.87
<i>Cinclodes patagonicus</i>	3	26.1	0.10
<i>Cinclodes taczanowskii</i>	4	24.8	0.51
<i>Cinclodes nigrofumosus</i>	3	22.1	0.50
<i>Cinclodes antarcticus</i>	5	27.0	1.48
<i>Cinclodes atacamensis</i>	3	24.0	0.28
<i>Cinclodes palliatus</i>	5	17.9	0.60
<i>Furnarius figulus</i>	3	15.9	0.31
<i>Furnarius leucopus</i>	10	15.5	0.66
<i>Furnarius torridus</i>	4	13.5	0.39
<i>Furnarius minor</i>	4	13.8	1.01
<i>Furnarius rufus</i>	4	15.5	0.75
<i>Furnarius cristatus</i>	3	16.1	1.11
<i>Limnornis curvirostris</i>	3	12.7	1.01
<i>Phleocryptes melanops</i>	5	19.1	1.11
<i>Lochmias nematura</i>	8	9.5	0.44
<i>Aphrastura spinicauda</i>	4	20.2	0.58
<i>Sylviorthorhynchus desmursii</i>	3	12.0	1.09
<i>Leptasthenura yanacensis</i>	3	17.2	1.60
<i>Leptasthenura fuliginiceps</i>	3	16.0	0.56
<i>Leptasthenura platensis</i>	3	21.1	0.66
<i>Leptasthenura aegithaloides</i>	3	19.0	0.17
<i>Leptasthenura striolata</i>	3	17.3	1.21
<i>Leptasthenura pileata</i>	4	16.1	1.20
<i>Leptasthenura xenothorax</i>	4	15.2	0.21
<i>Leptasthenura striata</i>	5	16.3	0.86
<i>Leptasthenura andicola</i>	3	18.6	0.33
<i>Leptasthenura setaria</i>	3	19.9	0.44
<i>Spartonoica maluroides</i>	3	18.6	0.63
<i>Schizoeaca coryi</i>	3	10.5	0.64
<i>Schizoeaca perijana</i>	1	12.0	1.61

<i>Schizoeaca fuliginosa</i>	8	12.4	0.47
<i>Schizoeaca griseomurina</i>	4	11.1	0.76
<i>Schizoeaca palpebralis</i>	3	10.2	1.03
<i>Schizoeaca vilcabambae</i>	4	11.0	1.01
<i>Schizoeaca helleri</i>	4	9.7	0.55
<i>Schizoeaca harterti</i>	3	10.7	0.84
<i>Oreophylax moreirae</i>	3	10.5	0.74
<i>Schoeniophylax phryganophilus</i>	4	12.3	0.76
<i>Synallaxis ruficapilla</i>	3	11.4	0.72
<i>Synallaxis cinerascens</i>	3	11.6	0.49
<i>Synallaxis subpudica</i>	3	12.7	1.78
<i>Synallaxis frontalis</i>	3	12.7	0.81
<i>Synallaxis azarae</i>	12	10.9	0.55
<i>Synallaxis courseni</i>	4	11.0	0.89
<i>Synallaxis albescens</i>	7	14.6	0.34
<i>Synallaxis albigularis</i>	3	13.0	1.58
<i>Synallaxis spixi</i>	4	13.0	0.81
<i>Synallaxis hypospodia</i>	6	9.9	0.56
<i>Synallaxis rutilans</i>	5	11.9	0.88
<i>Synallaxis cherriei</i>	3	10.2	0.89
<i>Synallaxis erythrothorax</i>	4	11.6	0.44
<i>Synallaxis unirufa</i>	4	9.1	0.99
<i>Synallaxis castanea</i>	3	12.3	0.50
<i>Synallaxis brachyura</i>	3	11.8	1.56
<i>Synallaxis tithys</i>	4	11.9	0.59
<i>Synallaxis propinqua</i>	3	10.6	0.59
<i>Synallaxis macconnelli</i>	5	10.3	1.08
<i>Synallaxis moesta</i>	4	10.5	1.09
<i>Synallaxis cabanisi</i>	4	10.2	0.49
<i>Synallaxis maranonica</i>	3	9.8	0.53
<i>Synallaxis gujanensis</i>	6	12.0	0.99
<i>Synallaxis albilora</i>	5	13.1	1.02
<i>Synallaxis scutata</i>	4	12.0	1.85
<i>Synallaxis candei</i>	4	11.9	0.79
<i>Synallaxis kollari</i>	3	10.3	0.79
<i>Synallaxis cinnamomea</i>	3	12.4	1.50
<i>Synallaxis zimmeri</i>	2	12.0	0.54
<i>Synallaxis stictothorax</i>	8	13.5	0.87
<i>Siptornopsis hypochondriaca</i>	4	14.3	1.00
<i>Gyalophylax hellmayri</i>	3	9.8	0.55
<i>Hellmayrea gularis</i>	5	11.1	1.11



<i>Cranioleuca marcapatae</i>	3	10.4	1.12
<i>Cranioleuca albiceps</i>	4	11.2	1.41
<i>Cranioleuca vulpina</i>	6	14.4	0.31
<i>Cranioleuca vulpecula</i>	3	13.1	1.10
<i>Cranioleuca subcristata</i>	3	15.8	0.39
<i>Cranioleuca pyrrhophia</i>	4	15.0	1.37
<i>Cranioleuca obsoleta</i>	3	15.5	0.41
<i>Cranioleuca pallida</i>	3	15.9	1.55
<i>Cranioleuca semicinerea</i>	3	15.5	0.60
<i>Cranioleuca albicapilla</i>	4	14.6	0.34
<i>Cranioleuca erythroptis</i>	4	15.7	0.85
<i>Cranioleuca demissa</i>	2	15.9	0.61
<i>Cranioleuca hellmayri</i>	3	17.8	3.01
<i>Cranioleuca curtata</i>	5	16.8	0.77
<i>Cranioleuca antisiensis</i>	6	12.4	1.14
<i>Cranioleuca baroni</i>	4	13.2	0.51
<i>Cranioleuca gutturata</i>	3	15.4	1.30
<i>Cranioleuca muelleri</i>	3	15.0	0.52
<i>Cranioleuca sulphurifera</i>	3	17.3	0.79
<i>Limnodynastes rectirostris</i>	3	15.5	0.86
<i>Certhiaxis cinnamomeus</i>	4	13.9	1.52
<i>Certhiaxis mustelinus</i>	3	11.9	1.68
<i>Thripophaga cherriei</i>	3	12.3	0.44
<i>Thripophaga fusciceps</i>	5	15.6	0.78
<i>Thripophaga berlepschi</i>	4	13.0	0.19
<i>Roraimia adusta</i>	3	13.2	0.71
<i>Asthenes pudibunda</i>	5	8.6	0.90
<i>Asthenes ottonis</i>	4	10.3	0.56
<i>Asthenes pyrrholeuca</i>	3	17.9	1.39
<i>Asthenes modesta</i>	3	12.3	1.75
<i>Asthenes humilis</i>	4	10.2	0.63
<i>Asthenes wyatti</i>	8	12.6	0.57
<i>Asthenes sclateri</i>	2	16.5	0.53
<i>Asthenes anthoides</i>	5	18.3	0.53
<i>Asthenes hudsoni</i>	3	19.6	2.43
<i>Asthenes urubambensis</i>	3	11.0	0.83
<i>Asthenes flammulata</i>	10	9.4	0.47
<i>Asthenes virgata</i>	5	8.0	0.89
<i>Asthenes maculicauda</i>	3	11.0	1.84
<i>Asthenes dorbignyi</i>	11	12.7	0.52
<i>Asthenes baeri</i>	4	12.9	1.12

<i>Pseudasthenes cactorum</i>	5	11.9	0.33
<i>Pseudasthenes humicola</i>	3	11.2	0.49
<i>Pseudasthenes steinbachi</i>	3	12.6	0.88
<i>Pseudasthenes patagonica</i>	5	13.6	0.90
<i>Phacellodomus rufifrons</i>	3	13.6	0.75
<i>Phacellodomus sibilatrix</i>	3	10.2	0.91
<i>Phacellodomus striaticeps</i>	3	8.1	0.57
<i>Phacellodomus maculipectus</i>	4	10.5	1.08
<i>Phacellodomus striaticollis</i>	4	10.3	1.20
<i>Phacellodomus dorsalis</i>	3	10.0	0.08
<i>Phacellodomus ruber</i>	4	11.4	0.72
<i>Phacellodomus ferrugineigula</i>	3	6.4	0.67
<i>Anumbius annumbi</i>	7	20.5	0.80
<i>Coryphistera alaudina</i>	4	14.9	1.30
<i>Siptornis striaticollis</i>	3	21.8	1.13
<i>Metopothrix aurantiaca</i>	3	23.2	2.22
<i>Acrobatornis fonsecai</i>	1	26.1	1.61
<i>Xenerpestes minlosi</i>	2	20.4	1.74
<i>Xenerpestes singularis</i>	3	20.6	0.85
<i>Premnoplex brunnescens</i>	8	11.8	0.63
<i>Premnoplex tatei</i>	3	12.1	1.08
<i>Margarornis rubiginosus</i>	3	16.9	1.01
<i>Margarornis stellatus</i>	3	17.4	0.70
<i>Margarornis bellulus</i>	2	18.5	2.06
<i>Margarornis squamiger</i>	4	17.9	0.65
<i>Pseudoseisura unirufa</i>	3	14.9	1.76
<i>Pseudoseisura lophotes</i>	4	14.5	0.83
<i>Pseudoseisura gutturalis</i>	3	17.7	1.05
<i>Anabacerthia variegaticeps</i>	4	19.6	1.55
<i>Anabacerthia striaticollis</i>	5	18.6	1.08
<i>Anabacerthia amaurotis</i>	3	17.4	0.93
<i>Syndactyla guttulata</i>	3	16.4	0.85
<i>Syndactyla subalaris</i>	6	18.3	0.64
<i>Syndactyla rufosuperciliata</i>	4	14.9	0.95
<i>Syndactyla ruficollis</i>	5	15.2	0.86
<i>Syndactyla dimidiata</i>	3	17.1	0.30
<i>Syndactyla roraimae</i>	3	17.1	0.45
<i>Simoxenops ucayalae</i>	4	12.9	1.25
<i>Simoxenops striatus</i>	4	16.8	0.43
<i>Ancistrops strigilatus</i>	5	19.2	0.53
<i>Hyloctistes subulatus</i>	3	18.2	0.85

<i>Philydor ruficaudatum</i>	3	19.3	0.30
<i>Philydor fuscipenne</i>	3	19.2	0.63
<i>Philydor erythrocerum</i>	5	19.0	0.39
<i>Philydor lichtensteini</i>	3	18.6	0.61
<i>Philydor atricapillus</i>	4	16.2	0.54
<i>Philydor pyrrhodes</i>	4	16.9	0.11
<i>Philydor erythropterum</i>	3	19.4	0.34
<i>Philydor rufum</i>	4	18.7	0.24
<i>Anabazenops dorsalis</i>	4	13.3	0.82
<i>Anabazenops fuscus</i>	3	15.1	0.83
<i>Cichlocolaptes leucophrus</i>	4	16.8	1.09
<i>Thripadectes ignobilis</i>	3	13.7	1.27
<i>Thripadectes rufobrunneus</i>	3	11.7	1.28
<i>Thripadectes melanorhynchus</i>	3	12.5	0.43
<i>Thripadectes holostictus</i>	4	12.1	1.65
<i>Thripadectes virgaticeps</i>	3	13.3	1.55
<i>Thripadectes flammulatus</i>	4	7.7	0.87
<i>Thripadectes scrutator</i>	5	8.9	0.27
<i>Automolus ochrolaemus</i>	7	15.7	0.41
<i>Automolus infuscatus</i>	5	16.7	1.06
<i>Automolus paraensis</i>	3	18.1	1.01
<i>Automolus lammi</i>	2	18.2	0.30
<i>Automolus leucophthalmus</i>	3	15.7	1.16
<i>Automolus melanopezus</i>	4	14.1	0.65
<i>Automolus rubiginosus</i>	9	10.7	0.57
<i>Automolus rufipectus</i>	1	8.6	1.61
<i>Automolus rufipileatus</i>	4	14.8	0.98
<i>Clibanornis dendrocolaptoides</i>	3	11.2	0.55
<i>Hylocryptus erythrocephalus</i>	4	10.0	0.21
<i>Hylocryptus rectirostris</i>	3	10.5	1.03
<i>Heliobletus contaminatus</i>	3	19.5	0.36
<i>Megaxenops parnaguae</i>	3	14.3	0.43
<i>Dendrocincla tyrannina</i>	4	17.3	1.05
<i>Dendrocincla fuliginosa</i>	10	18.7	0.49
<i>Dendrocincla anabatina</i>	5	18.6	0.27
<i>Dendrocincla merula</i>	4	19.7	0.35
<i>Dendrocincla homochroa</i>	4	18.1	0.89
<i>Deconychura longicauda</i>	6	21.3	0.47
<i>Certhiasomus stictolaemus</i>	3	17.3	0.53
<i>Sittasomus griseicapillus</i>	19	22.1	0.48
<i>Glyphorynchus spirurus</i>	15	22.4	0.51

<i>Nasica longirostris</i>	5	18.6	0.52
<i>Dendrexetastes rufigula</i>	5	13.6	0.81
<i>Hylexetastes stresemanni</i>	3	11.9	0.97
<i>Hylexetastes perrotii</i>	6	13.9	0.77
<i>Xiphocolaptes promeropirhynchus</i>	8	16.0	0.57
<i>Xiphocolaptes falcistrostris</i>	3	12.1	0.70
<i>Xiphocolaptes albicollis</i>	3	14.5	1.20
<i>Xiphocolaptes major</i>	4	15.0	0.69
<i>Dendrocolaptes sanctithomae</i>	3	20.5	1.16
<i>Dendrocolaptes certhia</i>	4	17.1	1.42
<i>Dendrocolaptes picumnus</i>	5	18.1	0.87
<i>Dendrocolaptes hoffmannsi</i>	3	19.1	0.30
<i>Dendrocolaptes platyrostris</i>	3	17.5	0.94
<i>Dendroplex picus</i>	4	17.7	0.72
<i>Dendroplex kienerii</i>	5	18.3	1.04
<i>Xiphorhynchus obsoletus</i>	4	18.6	1.00
<i>Xiphorhynchus fuscus</i>	4	18.8	0.93
<i>Xiphorhynchus ocellatus</i>	3	18.8	0.62
<i>Xiphorhynchus chunchotambo</i>	5	21.3	0.56
<i>Xiphorhynchus elegans</i>	4	15.9	0.70
<i>Xiphorhynchus spixii</i>	3	23.1	2.05
<i>Xiphorhynchus pardalotus</i>	6	21.3	0.91
<i>Xiphorhynchus susurrans</i>	6	18.8	0.77
<i>Xiphorhynchus guttatus</i>	7	16.3	0.78
<i>Xiphorhynchus flavigaster</i>	5	18.0	0.53
<i>Xiphorhynchus lachrymosus</i>	4	22.1	0.46
<i>Xiphorhynchus erythropygius</i>	4	21.6	0.53
<i>Xiphorhynchus triangularis</i>	5	21.9	0.51
<i>Lepidocolaptes souleyetii</i>	3	21.5	1.13
<i>Lepidocolaptes angustirostris</i>	4	19.6	0.68
<i>Lepidocolaptes leucogaster</i>	4	28.8	0.40
<i>Lepidocolaptes affinis</i>	3	22.9	1.39
<i>Lepidocolaptes lacrymiger</i>	3	22.7	0.87
<i>Lepidocolaptes falcinellus</i>	4	21.5	0.80
<i>Lepidocolaptes albolineatus</i>	4	21.3	0.67
<i>Drymornis bridgesii</i>	3	16.1	0.79
<i>Drymotoxeres pucherani</i>	4	14.0	0.96
<i>Campylorhamphus trochilirostris</i>	13	14.2	0.52
<i>Campylorhamphus falcularius</i>	4	14.6	0.68
<i>Campylorhamphus procurvoides</i>	3	17.2	0.63
<i>Campylorhamphus pusillus</i>	4	15.8	0.86

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Table S5. Parameter estimates for trait-dependent speciation and extinction QuaSSE models relating hand-wing index and diversification rates in the Furnariidae.  $\lambda$ , constant speciation rate;  $\lambda_0$  speciation rate at a hand-wing index = 0 (i.e. intercept of linear models) or rate at lowest values of the index for sigmoid and unimodal models;  $\lambda_l$ , speciation rate at highest values of the index;  $\beta$ , slope of linear models;  $x_{mid}$ , inflection point of the sigmoid or the place of the maximum for modal models;  $r$ , steepness of the sigmoid function;  $\lambda_{max}$ , maximum speciation rate;  $s^2$ , width (variance) of the Gaussian function;  $\mu$ , constant rate of extinction or the extinction rate at a hand-wing index = 0;  $\sigma^2$ , Brownian diffusion rate of trait evolution.

speciation				extinction		diffusion	directional
constant							
$\lambda$				$\mu$	$\beta$	$\sigma^2$	
0.143						0.844	
0.143				$1.1 \times 10^{-9}$		0.844	
0.143				$6.0 \times 10^{-2}$	$-1.5 \times 10^4$	0.844	
linear							
$\lambda_0$	$\beta$			$\mu$	$\beta$	$\sigma^2$	
0.188	$-2.7 \times 10^{-3}$					0.845	
0.242	$-5.9 \times 10^{-3}$			$8.9 \times 10^{-8}$		0.846	
0.242	$-5.9 \times 10^{-3}$			$-1.1 \times 10^{-1}$	$3.1 \times 10^{-3}$	0.846	
sigmoid							
$\lambda_0$	$\lambda_l$	$x_{mid}$	$r$	$\mu$	$\beta$	$\sigma^2$	
0.176	0.110	16.6	1.38			0.845	
0.176	0.110	16.6	1.38	$4.6 \times 10^{-9}$		0.845	
0.186	0.115	15.7	$2.2 \times 10^3$	$8.9 \times 10^2$	$-1.1 \times 10^2$	0.939	
0.181	0.103	15.8	$5.5 \times 10^5$	$1.2 \times 10^5$	$-1.6 \times 10^4$	0.925	0.151
unimodal							
$\lambda_0$	$\lambda_{max}$	$x_{mid}$	$s^2$	$\mu$	$\beta$	$\sigma^2$	
0.108	0.187	12.5	8.64			0.851	
0.108	0.188	12.5	8.46	$1.3 \times 10^{-10}$		0.850	
0.107	0.201	10.2	17.5	$2.3 \times 10^3$	-297	0.936	

**Figure S2**

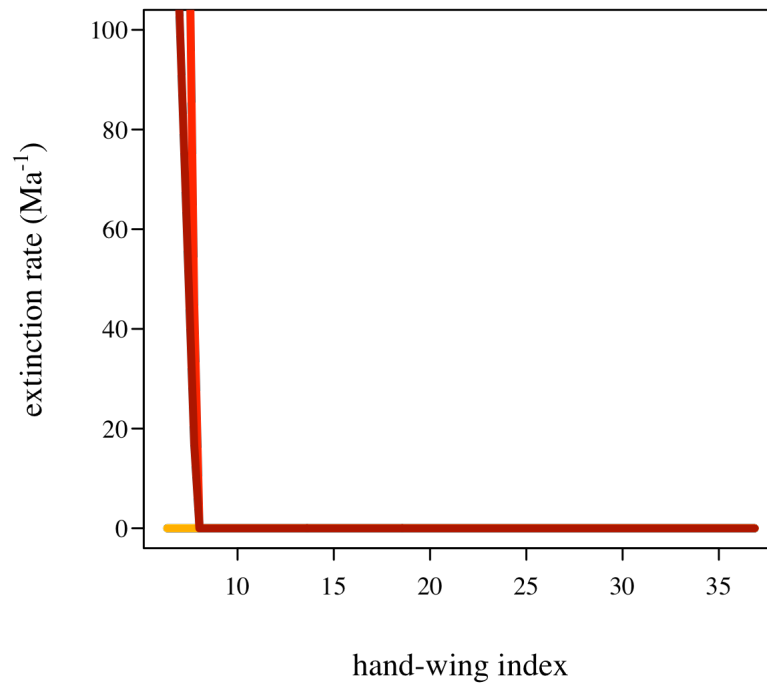


Figure S2. Extinction rates predicted from QuaSSE models that included a linear relationship between the hand-wing index and extinction rates (Table 2): sigmoid speciation (dark red), unimodal speciation (light red), linear speciation (yellow).