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Supporting Online Material for

A Large-Scale Deforestation Experiment: Effects of Patch Area and Isolation on Amazon Birds

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Material and methods

Monitoring effort and previous inferences. Mist netting took place between 1979 and 1993, approximately 80 km north of Manaus, in the Brazilian state of Amazonas. Sampling effort was divided into primary occasions ('years') and secondary occasions ('visits' per year). In each visit to a 1-ha patch, we used only one line of eight mist nets (36-mm mesh, 12 x 2 m); in 10- and 100-ha patches, we used two and three lines of sixteen nets, respectively. The largest patches (500 and 600ha) were sampled with up to eight lines of sixteen nets each. Net lines were opened from 6:00 am to 2:00 pm at each visit and checked regularly. The monitoring effort was carried by dozens of students, interns, and field technicians over the years.

Shortly after forest clearing, at the beginning of the study, capture rates increased markedly in isolated patches, suggesting that some birds from the cleared forest took refuge in those patches (*S1*). This temporary increase, which we refer to as a 'year 1' effect, was apparently offset by local extinctions in later years, especially in the smaller patches (*S2, S3*). Some species apparently disappeared from isolated patches faster than others (*S4*) that persisted for several years (*S5*). With the partial abandonment of ranches, some grazing areas around isolated patches were replaced by forest regrowth. This led to recolonization by some of the locally extinct species, a process dependent on the number of years and type of regrowth (*S4*). This general picture of the system's dynamics is qualitative and influenced to an unknown degree by the failure to detect species at all sampling occasions. Such failure is not a statistical fine point, as the negative relationship between species detection probability and local extinction probability can easily produce misleading inferences (*S6, S7*).

The data. Data up to 1993 include 49,442 individual captures of 178 species in 49 patches. We focus on 55 well-sampled species and on patches that had 50 or more captures per year for at least four consecutive years. 'Well-sampled' species are those that appeared at least once in eight or more of the patches that eventually became isolated. We analyze sampling visits from the rainy season (January-June) of each year. Clear-cutting, fire, and other disturbances associated with patch isolation always took place during the dry months. Our data show whether each species was, or was not, detected in each visit (see Table S1).

The data on dispersal ability were based on the opinion of three expert Neotropical ornithologists with extensive and varied experience of work with the avifauna of our study region. The classification of species into two categories of dispersal ability: low and high, qualitatively measures a species' ability to occupy an empty patch.

Models and model fitting. Each model in Table S2 is expressed by a set of logit link functions that express an *a priori* hypothesis about the relation between covariates and the parameters of interest. Parameters of interest include detection probability, initial occupancy, local extinction, and colonization. Detection probability (p_t) is the probability that at least one individual of a species is detected in year t, given that the species is present in the sampled patch at year t. Initial occupancy (ψ_1) is the probability that a sampled patch is occupied by the species at the initial year. Local extinction probability,

(ε_t) is the probability that a patch occupied by the species at year t is no longer occupied by the species at year t+1. Local probability of colonization (γ_t) is the probability that a patch not occupied by the species at year t is occupied at year t+1. For simplicity, we drop the time indexes on p, ε, and γ here, and in the manuscript.

We model ψ_1 as a free parameter, never related to a covariate. Detection (p) takes different values for different species and is a function of effort alone, with effort measured in net*hours per visit. Time- and patch-specific probabilities of local extinction (ε) and colonization (γ) are functions of up to five patch covariates: patch size, isolation, 'year 1', regrowth, and 'late regrowth' (see Table S2). Patch size (ha) does not change through time. Isolation and 'year 1' are binary variables that take the value '1' in the case of isolation and in the first year after isolation, respectively. Regrowth and 'late regrowth' count the number of years since isolation, starting respectively, at year one and year two; the counting restarts every time a patch is re-isolated.

Just as in classic island biogeography (*S8*) and many metapopulation (*S9*) models, we hypothesize that colonization may be affected by isolation, but not by area. Our treatment of extinction, however, differs from many classic models (*S9*, *S10*) in admitting that isolation, and not just area, may contribute to the probability of extinction. We believe that species occasionally avoid local extinction through the arrival of immigrants, or they may go extinct from, and later re-colonize a patch between two consecutive samples (*S11*). If this 'rescue effect' is embedded in the data, our observation of extinction (or lack of it) should be affected by isolation and by area, because it would reflect a combination of both extinction and colonization processes. This is why we chose to model local extinction as a function of both area and isolation.

In developing the set of *a priori* models, our task was to settle on a small number of models that included the most important potential effects on quantities of interest. This limitation of the model set (*S12*) is not the only approach to scientific learning, but is one that seems reasonable to us. We elected to model p as a function of effort alone. Effort was the most obvious covariate for the modeling of detection probability. Indeed, an entire class of models (catch-effort) used to estimate animal abundance and survival is based on the relationship between effort and detection probability (*S13*). Other covariates might arguably influence detection as well, but the rationale for the importance of effort (net*hours) on probability of detection is far stronger than for any other covariate that we could measure. Isolation, time, and rainfall were all plausible candidate covariates. Initial modelling of isolation on a subset of species produced discouraging results, however, thanks to poor model fits (providing little evidence that isolation was relevant to detection probability) and parameter identifiability problems. Time is most likely to affect detection due to temporal variations in effort – already expressed in the effort covariate. Finally, we could not model the effect of rainfall because we do not have daily information on this or any other weather variable. We thus became convinced that adding more covariates to the detection model would substantially increase the size and complexity of the model set without a comparable improvement in the interpretation of our data.

Apart from comparing models from an *a priori* model set, we also compare species by focusing on the slope parameter estimates from one same model fitted to every species. For this purpose, we chose Model 6, because it had the highest AIC weight (see next paragraph) across species. Model 6 hypothesises an additive effect of isolation and area on local extinction, and a fixed probability of colonization, unaffected by patch isolation. Why would such a simple model provide an adequate explanation of variation in our data? We do believe that many species cross the relatively open land that surrounds isolated patches, and thus have the ability to colonize isolated as well as continuous forest sites. However, our ability to infer any changes in colonization may be limited by (1) the greater opportunity to see extinctions than colonizations in our data (occupancy is conditional on patch state, and the "occupied" state was much more common than "unoccupied" for many species, especially at the beginning of the study) and (2) the generally greater difficulty in estimating quantities that are conditional on a state that cannot be directly observed, in this case the unoccupied state.

We use program PRESENCE (*S14*) to fit models, compute maximum likelihood estimates and rank models according to AIC (Akaike's Information Criterion) and AIC weight, w_j for model j. AIC weight can be loosely interpreted as the weight of evidence in favor of model j being the best model for the data when considered with respect to the entire model set (*S12*). 'Slope parameters' are estimated directly and relate a covariate to a parameter of interest (ε, γ). Estimates of parameters of interest are derived from the parameterized logit functions, and their variances are computed with the delta method (*S13*). The parameters ε and γ combine into a single population-dynamic metric that predicts equilibrium patch occupancy:

$$\psi^*_{i_s} = \frac{\gamma_i}{\gamma_i + \varepsilon_{i_s}}$$

where i denotes isolation and s denotes patch size. To obtain the vulnerability statistics I and A, the colonization probability for isolated sites is based on year 2 regrowth (second year after isolation). Equilibrium occupancy, $\psi^*_{i_s}$, is the probability of patch occupancy (or expected proportion of patches occupied) if the specified rates of colonization and extinction remain constant indefinitely (*S15*). Estimates of vulnerability to isolation, I, and sensitivity to area, A, were computed from the equilibrium occupancies as explained in the text. These estimates were based on the lowest AIC model from within models 6-15 that met the following criteria: 1) there were no identifiability problems and 2) estimated γ for continuous forest was >0, permitting computation of a non-zero equilibrium occupancy. Criterion 2) was needed in order for I to be defined (see Equation 2 in the text).

Species are fit by a variety of models, revealing a variety of possible responses to landscape change. For example, among the twelve species that were best fit by models with interaction between the effects of area and isolation on local extinction, six have negative and six have positive terms. Among species that have any model with interaction ranking above $w_j = 0.1$, nine have positive and 10 have negative terms. Thus

we find no evidence that a particular kind of interaction was consistent across species. This may simply indicate the overall unimportance of interactions or, alternatively, it may reflect variation among species in response to landscape change. Negative interactions would indicate species that do poorly in small isolated patches; whereas, positive interactions would indicate species that have a very dynamic use of space in the continuous forest – hence showing high rates of local extinction in small continuous forest patches (Figure S1). Our vulnerability metrics do incorporate this variety of responses, including interactions on local extinction and the effects of regrowth on colonization, because they are based on the best-fitting model for each species.

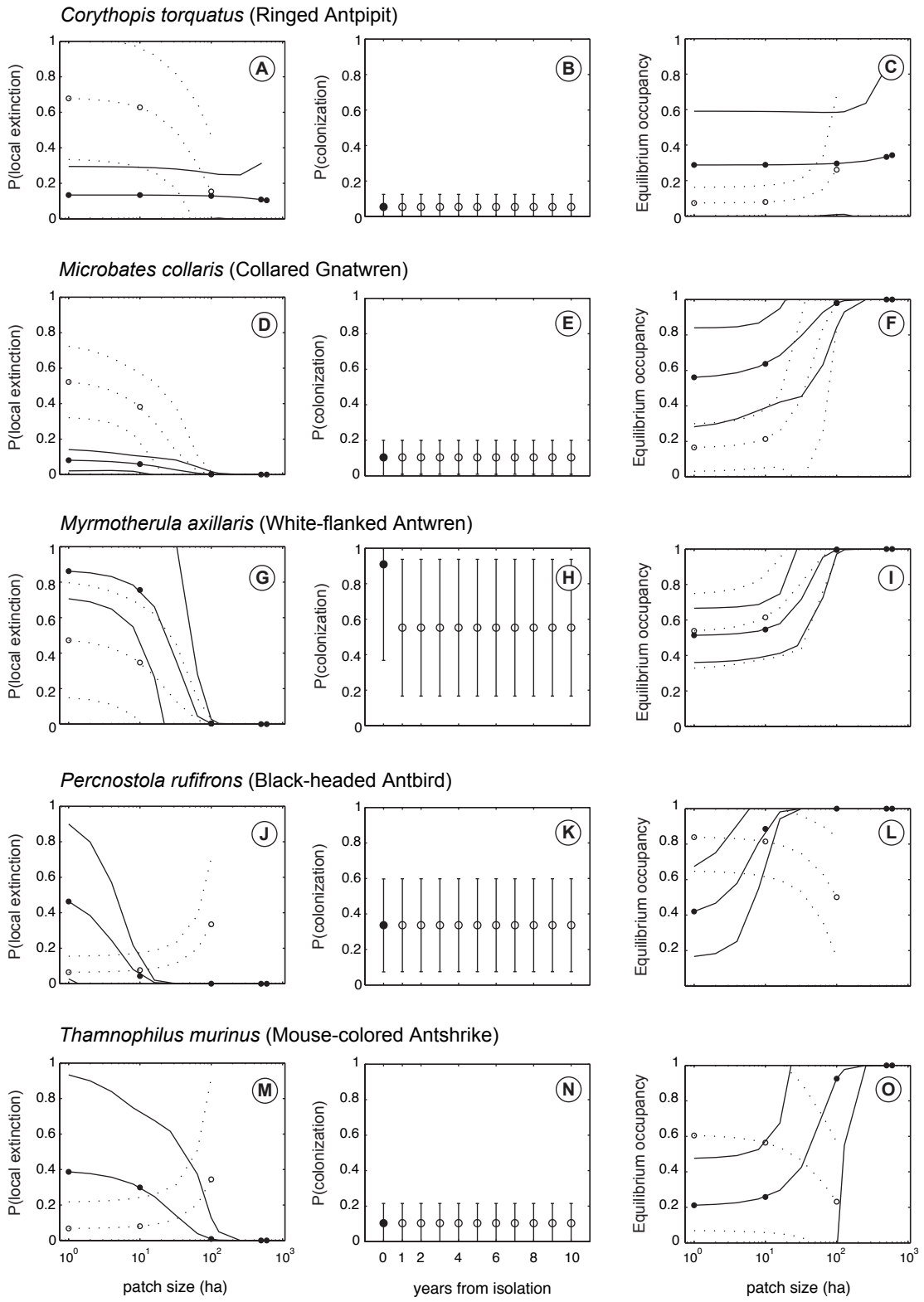

Fig. S1. Local extinction, colonization, and equilibrium occupancy estimates for five species modeled with an interaction between patch size and patch isolation on local extinction. *Corythopis torquatus* (A-C) and *Microbates collaris* (D-F) have negative interaction terms; whereas *Myrmotherula axillaris* (G-I), *Percnostola rufifrons* (J-L), and *Thamnophilus murinus* (M-O), have positive interaction terms. Filled and empty circles show estimates for continuous forest and isolated patches, respectively; error bars and lines without symbols show 95% confidence intervals. Note the effect of isolation on colonization in *M. axillaris* (H).

Table S1. The Excel file ‘Data.xls’ shows the data used in this study. The first worksheet explains the data file in detail; worksheets 2 to 56 show one data table per species. The last worksheet shows the sampling effort and the timing of patch isolation. Each row on a data table corresponds to one BDFFP study patch with the location name on the left and the size class in ha; numbered columns show sampling years. Ones and zeros represent visits to the site, with ‘1’ standing for detection of the species and ‘0’ for no detection. A dash means no visits for that site-year combination. For example, in 1984, the Dimona 100ha patch was visited four times but the species *Automolus infuscatus* was only detected there on the third visit; in 1989 there were no visits to that patch. Shaded areas show samples under isolation whereas clear areas correspond to continuous-forest samples. The number of visits per site per year stays constant across species, only the detections change. All the visits shown took place between the months of January and June.

Table S2. Diagram of model structures. The filled circles on the left indicate covariates used to model colonization (γ) and local extinction (ε) within each model. 'Isolation' and 'Year 1' are binary variables; 'Year 1' accounts for a possible increase in colonization immediately after the onset of isolation. 'Regrowth' is 0 up to and including the year of isolation; it starts counting at 1 the first year after isolation. 'Late Regrowth' counts the years of regrowth for models with an effect of 'Year 1', starting at 2 the second year after isolation. Models 1-5 consider only the effect of patch 'Size' on local extinction; models 6-10 consider an additive effect of 'Size' and 'Isolation'; finally, models 11-15 consider an interaction of 'Size' and 'Isolation' on local extinction. Initial occupancy (ψ_1) is always a free parameter and probability of detection (*p*) is assumed to vary with sampling effort alone.

EFFECTS							MODEL NUMBER AND NAME
Colonization				Local extinction			
Isolation	Year 1	Regrowth	Late Regrowth	Size	Isolation	Size×Isolation	
				●			1. {ψ_1(.),γ(.),ε(size),p(effort)}
●				●			2. {ψ_1(.),γ(isol),ε(size),p(effort)}
●	●			●			3. {ψ_1(.),γ(isol+year1),ε(size),p(effort)}
●		●		●			4. {ψ_1(.),γ(isol+regrowth),ε(size),p(effort)}
●	●		●	●			5. {ψ_1(.),γ(isol+year1+late regrowth),ε(size),p(effort)}
				●	●		6. {ψ_1(.),γ(.),ε(size+isol),p(effort)}
●				●	●		7. {ψ_1(.),γ(isol),ε(size+isol),p(effort)}
●	●			●	●		8. {ψ_1(.),γ(isol+year1),ε(size+isol),p(effort)}
●		●		●	●		9. {ψ_1(.),γ(isol+regrowth),ε(size+isol),p(effort)}
●	●		●	●	●		10. {ψ_1(.),γ(isol+year1+late regrowth),ε(size+isol),p(effort)}
				●	●	●	11. {ψ_1(.),γ(.),ε(size×isol),p(effort)}
●				●	●	●	12. {ψ_1(.),γ(isol),ε(size×isol),p(effort)}
●	●			●	●	●	13. {ψ_1(.),γ(isol+year1),ε(size×isol),p(effort)}
●		●		●	●	●	14. {ψ_1(.),γ(isol+regrowth),ε(size×isol),p(effort)}
●	●		●	●	●	●	15. {ψ_1(.),γ(isol+year1+late regrowth),ε(size×isol),p(effort)}

Table S3. Model selection results and slope parameter estimates for 55 species, grouped by family. 'Dispersal ability' is expressed as high ('H') or low ('L') according to the opinion of three experts. 'MODEL SELECTION' indicates whether covariates 'Isolation' and 'Regrowth' entered high ranking models ($w_j > 0.2$); 'Regrowth' stands for regrowth proper or late regrowth, as explained in Table S2; 'Y' = yes, 'N' = no; dashes refer to species that had no models with $w_j > 0.2$. Isolation may enter as a covariate of either extinction or colonization. 'SLOPE PARAMETER' shows the slope parameter estimates for patch size and for isolation in the logit function for local extinction under Model 6. Values are shown as estimate ± 1 SE. For some species, we could not estimate the variance, or the estimated SE was larger than 10. In those cases we report the estimated parameter only. Signs in parentheses show the sign of estimates that were very close to zero.

SPECIES	Dispersal Ability	MODEL SELECTION		SLOPE PARAMETERS	
		Isolation	Regrowth	Size	Isolation
Micrastur gilvicollis	H	Y	N	-1.67 ± 1.394	3.39 ± 1.982
Geotrygon montana	L	N	N	-2.15 ± 1.136	-0.02 ± 0.008
Phaethornis bourcieri	H	Y	N	-14.71 ± 9.243	0.01 ± 0.004
Phaethornis superciliosus	H	Y	Y	-3.84 ± 2.292	-0.00 ± 0.003
Thalurania furcata	H	Y	Y	-0.93 ± 1.322	-0.15 ± 1.649
Momotus momota	H	Y	N	-1.58 ± 1.210	-1.72 ± 1.341
Galbula albirostris	L	Y	Y	-0.21 ± 0.266	-0.08 ± 0.955
Malacoptila fusca	L	Y	Y	-2.47 ± 1.422	-2.55 ± 1.298
Dendrocincla merula	H	Y	N	-1.52 ± 1.677	28.14
Deconychura longicauda	L	Y	Y	-121.12 ± 0.145	0.02
Deconychura stictolaema	L	Y	N	-272.97	25.27 ± 3.297
Sittasomus griseicapillus	H	Y	Y	-61.15 ± 2.074	-270.08 ± 2.116
Glyphorynchus spirurus	H	Y	N	-2660.60 ± 0.015	1.09 ± 1.418
Hylexetastis perrotii	L	Y	N	-2.56 ± 1.492	(-) 0.00 ± 0.002
Dendrocolaptes certhia	L	N	N	-0.24 ± 0.364	-24.92
Xiphorhynchus pardalotus	H	Y	Y	-32.46 ± 0.035	0.01
Campylorhamphus procurvoides	L	Y	N	-152.62 ± 1.262	-1.12 ± 1.496
Philydor erythrocercum	H	Y	N	-2.01 ± 1.156	0.01 ± 0.010
Automolus infuscatus	H	Y	N	-292.67	27.14 ± 3.580
Automolus ochrolaemus	L	Y	Y	-0.77 ± 0.493	-0.29 ± 1.069
Sclerurus caudacutus	L	Y	N	-9.82 ± 0.743	-0.01
Sclerurus rufigularis	L	-	-	-246.51 ± 0.004	54.08
Frederickena viridis	L	Y	N	-315.96 ± 0.036	24.51 ± 0.351
Thamnophilus murinus	L	-	-	-0.70 ± 0.419	-0.74 ± 1.273
Thamnomanes ardesiacus	L	Y	Y	-14.33	2.36 ± 1.356
Thamnomanes caesius	L	Y	Y	-32.54 ± 0.108	25.7 ± 1.633
Myrmotherula axillaris	H	Y	N	-6.81 ± 3.253	-0.00 ± 0.003
Myrmotherula guttata	L	Y	Y	-18.53	1.95 ± 1.165
Myrmotherula gutturalis	H	Y	N	-22.67	26.88 ± 4.521
Myrmotherula longipennis	H	Y	Y	-17.69	1.24 ± 1.137
Myrmotherula menetriesii	H	Y	Y	-2.78 ± 1.179	(-) 0.00 ± 0.006
Hypocnemis cantator	L	N	N	-1.75 ± 1.249	(+) 0.00 ± 0.001
Percnostola rufifrons	L	Y	N	-0.19 ± 0.418	0.09 ± 0.928
Myrmeciza ferruginea	L	Y	N	-0.71 ± 0.872	1.43 ± 1.185
Pithys albifrons	H	Y	Y	-2.11 ± 1.086	3.64 ± 1.101
Gymnopithys rufigula	H	Y	Y	-3.05 ± 1.107	27.97 ± 1.708
Myrmornis torquata	L	Y	N	-32.77 ± 0.928	-0.16 ± 0.009
Conopophaga aurita	L	Y	Y	-0.13 ± 0.238	1.96 ± 0.901
Mionectes macconnelli	H	Y	N	-8.47 ± 9.010	23.12 ± 2.945
Corythopis torquatus	L	Y	N	-0.16 ± 0.323	1.57 ± 0.775
Platyrinchus coronatus	L	Y	N	-114.88	0.01 ± 0.004
Platyrinchus saturatus	L	Y	Y	-6.38 ± 4.086	3.20 ± 1.055
Terenotriccus erythrurus	L	-	-	-3.76 ± 3.456	0.01 ± 0.009
Myiobius barbatus	H	Y	Y	-12.95	4.00 ± 2.098
Schiffornis turdina	L	Y	N	-2.39 ± 1.459	1.81 ± 0.788
Pipra erythrocephala	H	Y	N	-3.63 ± 2.143	(-) 0.00 ± 0.007
Pipra pipra	H	-	-	-26.81	2.93 ± 3.973
Lepidothrix serena	L	Y	Y	-4.82 ± 3.157	3.70 ± 2.081
Microcerculus bambla	L	Y	N	-23.94	1.11 ± 1.293
Cyphorhinus arada	L	-	-	-0.97 ± 0.859	0.90 ± 0.877
Turdus albicollis	H	Y	N	-30.97	2.42 ± 1.208
Microbates collaris	L	Y	N	-5.35 ± 3.828	2.27 ± 0.996
Cyanocompsa cyanoides	L	Y	Y	-4.34 ± 0.922	-4.80 ± 1.013
Tachyphonus surinamus	H	Y	N	-0.10 ± 0.202	-0.28 ± 0.893
Hylophilus ochraceiceps	L	Y	N	-554.73	91.18 ± 2.222

Table S4. Model fits, model selection statistics, estimated detection probability and vulnerability metrics for 55 species. We selected one model per species from the subset of models 6-15, those including an effect of isolation on local extinction. Whenever the lowest AIC model of the initial set of fifteen is not part of this subset, we note its number in parentheses. When a selected model does not permit calculation of vulnerability metrics, we base these metrics on the next best-fitting model. ΔAIC is the difference between AIC of the model used to compute vulnerability metrics and the lowest AIC model. AIC weight is indicated by w_j. The values in square brackets show approximate 95% confidence intervals for parameters *p*, *I*, and *A*. *p* is the probability of detecting a species that is present, after eight hours of mist-netting with sixteen twelve-meter nets. Vulnerability to isolation (*I*) and the index of area requirement (*A*) are the vulnerability metrics described in the text. We omit 95% confidence intervals for those cases where we could not compute parameter variances. *T. caesius* could not be fit by any of the models in the 6-15 subset.

SPECIES	Model		ΔAIC	w_j	Detection probability (*p*)		Vulnerability to Isolation (*I*)		Sensitivity to Area (*A*)	
M. gilvicollis	10		1.75	0.17	0.14	[0.090 - 0.197]	1.00	[1.000 - 1.000]	0.37	[0.226 - 0.521]
G. montana	6	(1)	10.38	<0.01	0.28	[0.210 - 0.348]	0.00	[-0.005 - 0.001]	0.52	[0.388 - 0.646]
P. bourcieri	7		0.00	0.20	0.32	[0.265 - 0.382]	0.31	[0.035 - 0.587]	0.39	[0.292 - 0.489]
P. superciliosus	6	(1)	6.11	0.01	0.44	[0.376 - 0.502]	0.00	[0.000 - 0.000]	0.33	[0.166 - 0.491]
T. furcata	12	(2)	6.42	0.01	0.17	[0.131 - 0.214]	-0.20	[-0.216 - -0.190]	0.36	[0.188 - 0.538]
M. momota	11	(1)	4.67	0.04	0.21	[0.143 - 0.272]	-0.30	[-0.614 - 0.022]	0.64	[0.507 - 0.777]
G. albirostris	7	(1)	4.33	0.03	0.18	[0.108 - 0.246]	0.00	[-0.003 - 0.003]	0.24	[-0.148 - 0.626]
M. fusca	6	(1)	7.03	0.02	0.15	[0.093 - 0.198]	-0.39	[-0.809 - 0.039]	0.57	[0.436 - 0.706]
D. merula	8		6.56	0.02	0.33	[0.265 - 0.404]	0.92	[0.807 - 1.029]	0.16	[-0.088 - 0.399]
D. longicauda	11	(1)	3.75	0.03	0.15	[0.096 - 0.213]	0.25	[0.019 - 0.477]	0.88	[0.720 - 1.035]
D. stictolaema	6		0.00	0.60	0.46	[0.398 - 0.503]	0.64	[0.268 - 1.018]	0.79	-
S. griseicapillus	8	(1)	13.68	<0.01	0.21	[0.078 - 0.345]	0.51	[0.413 - 0.605]	0.83	-
G. spirurus	10	(5)	12.36	<0.01	0.57	[0.528 - 0.619]	0.00	[0.000 - 0.000]	0.00	[0.000 - 0.000]
H. perrotii	6	(1)	7.90	<0.01	0.13	[0.052 - 0.201]	0.00	[0.000 - 0.000]	0.70	[0.459 - 0.945]
D. certhia	7	(1)	3.80	0.04	0.06	[0.026 - 0.101]	-0.60	[-1.963 - 0.755]	0.29	[-0.014 - 0.597]
X. pardalotus	7	(3)	49.22	<0.01	0.51	[0.456 - 0.571]	0.39	[-0.240 - 1.024]	0.36	[0.125 - 0.589]
C. procurvoides	7		0.00	0.62	0.09	[0.044 - 0.134]	1.00	[0.999 - 1.000]	0.52	[0.274 - 0.760]
P. erythrocercum	11		34.30	<0.01	0.13	[0.069 - 0.191]	0.36	[0.085 - 0.643]	0.45	[0.110 - 0.789]
A. infuscatus	6		0.00	0.62	0.29	[0.231 - 0.342]	0.83	[0.528 - 1.130]	0.81	-
A. ochrolaemus	7		5.27	0.02	0.12	[0.073 - 0.172]	0.25	[-0.419 - 0.917]	0.87	[0.528 - 1.213]
S. caudacutus	10	(3)	2.38	0.05	0.21	[0.049 - 0.374]	1.00	-	0.72	[0.399 - 1.039]
S. rufigularis	7		8.72	<0.01	0.25	[0.186 - 0.306]	1.00	[0.999 - 1.000]	0.20	[-0.295 - 0.704]
F. viridis	7		5.04	0.04	0.10	[0.051 - 0.148]	0.03	[-0.557 - 0.621]	0.78	[0.535 - 1.031]
T. murinus	12	(2)	0.76	0.11	0.13	[0.080 - 0.183]	-1.85	[-5.846 - 2.142]	0.79	[0.523 - 1.053]
T. ardesiacus	6		0.00	0.34	0.45	[0.386 - 0.507]	0.81	[0.443 - 1.179]	0.76	[0.030 - 1.480]
T. caesius	-	(4)	-	-	-	-	-	-	-	-
M. axillaris	12		0.50	0.18	0.27	[0.210 - 0.339]	-0.05	[-0.461 - 0.363]	0.49	[0.333 - 0.639]
M. guttata	6		3.53	0.10	0.25	[0.189 - 0.318]	0.55	[-0.062 - 1.158]	0.87	[0.677 - 1.070]
M. gutturalis	6		3.43	0.12	0.34	[0.287 - 0.397]	0.88	[0.770 - 0.982]	0.00	[0.000 - 0.000]
M. longipennis	10		0.00	0.41	0.31	[0.244 - 0.375]	1.00	[1.000 - 1.000]	0.56	[0.232 - 0.892]
M. menetriesii	6	(1)	4.86	0.03	0.23	[0.157 - 0.309]	0.00	[0.000 - 0.000]	0.61	[0.459 - 0.769]
H. cantator	1		1.49	0.14	0.28	[0.220 - 0.332]	0.00	[0.000 - 0.000]	0.27	[0.138 - 0.395]
P. rufifrons	11		0.00	0.50	0.43	[0.374 - 0.478]	-0.99	[-2.195 - 0.207]	0.58	[0.326 - 0.833]
M. ferruginea	8	(3)	5.70	0.02	0.17	[0.080 - 0.251]	0.79	[0.525 - 1.047]	0.36	[-0.040 - 0.754]
P. albifrons	11		6.57	0.03	0.62	[0.554 - 0.683]	0.80	[0.667 - 0.933]	0.27	[-0.208 - 0.742]
G. rufigula	11		7.42	0.01	0.42	[0.358 - 0.488]	0.67	[0.320 - 1.028]	0.35	-
M. torquata	6	(5)	10.49	<0.01	0.24	[0.170 - 0.318]	-0.02	[-0.043 - 0.005]	0.79	[0.686 - 0.886]
C. aurita	6		1.25	0.13	0.24	[0.144 - 0.344]	0.53	[0.188 - 0.870]	0.35	[-0.580 - 1.271]
M. macconnelli	6		0.00	0.43	0.35	[0.300 - 0.406]	0.49	[0.332 - 0.652]	0.00	[0.000 - 0.000]
C. torquatus	11		0.00	0.29	0.36	[0.286 - 0.443]	0.74	[0.484 - 1.002]	0.16	[-1.410 - 1.730]
P. coronatus	10		8.89	<0.01	0.26	[0.175 - 0.341]	0.29	[0.172 - 0.416]	0.71	[0.547 - 0.875]
P. saturatus	6		0.74	0.22	0.36	[0.299 - 0.430]	0.68	[0.460 - 0.904]	0.47	[0.082 - 0.852]
T. erythrurus	6	(1)	0.52	0.15	0.12	[0.074 - 0.165]	0.00	[-0.005 - 0.013]	0.71	[0.397 - 1.020]
M. barbatus	6		0.00	0.28	0.35	[0.294 - 0.409]	0.84	[0.618 - 1.060]	0.33	[-0.503 - 1.160]
S. turdina	6		1.02	0.17	0.48	[0.414 - 0.542]	0.67	[0.363 - 0.983]	0.74	[0.390 - 1.089]
P. erythrocephala	6	(3)	5.52	0.02	0.09	[0.015 - 0.159]	0.00	[-0.002 - 0.002]	0.72	[0.436 - 0.997]
P. pipra	7		0.00	0.18	0.46	[0.407 - 0.518]	0.60	[0.149 - 1.057]	0.11	[-0.769 - 0.992]
L. serena	6		0.00	0.26	0.29	[0.219 - 0.359]	0.75	[0.331 - 1.161]	0.38	[-0.458 - 1.222]
M. bambla	6		4.23	0.05	0.21	[0.153 - 0.263]	0.32	[-0.226 - 0.860]	0.91	[0.722 - 1.094]
C. arada	6	(5)	4.50	0.02	0.19	[0.128 - 0.255]	0.42	[-0.224 - 1.072]	0.89	[0.675 - 1.111]
T. albicollis	6		0.00	0.37	0.41	[0.348 - 0.465]	0.66	[0.277 - 1.041]	0.68	[0.309 - 1.055]
M. collaris	11		0.00	0.29	0.44	[0.383 - 0.501]	0.70	[0.596 - 0.812]	0.44	[0.160 - 0.718]
C. cyanoides	14		6.84	0.01	0.17	[0.098 - 0.239]	-2.02	[-4.309 - 0.277]	0.94	[0.850 - 1.020]
T. surinamus	7		0.00	0.30	0.17	[0.115 - 0.221]	0.00	[0.000 - 0.008]	0.90	[0.687 - 1.107]
H. ochraceiceps	6		0.00	0.39	0.25	[0.203 - 0.303]	0.95	[0.877 - 1.019]	0.00	-

Supporting references and notes

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