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Supplementary material

Appendix 1

Criteria and overall score (% of fulfilled criteria) for the assessment of quality of methodology. We assigned "1" for fulfilled and "0" for not fulfilled criteria. Criteria which were not applicable were not scored (indicated by "–").

Study	Report on sampling effort	Control for pseudo-replication	Study duration > 1 yr	Conduction of statistics	Methodological description of statistics	Spatial definition of fragments and control	Comparability of fragments and control	Score	%
Anciães and Marini 2000	1	1	0	1	1	1	0	5 of 7	71.4
Antongiovanni and Metzger 2005	0	–	0	1	1	0	1	3 of 6	50.0
Arriaga-Weiss et al. 2008	1	–	0	1	1	1	1	5 of 6	83.3
Bell and Donnelly 2006	0	0	0	1	1	1	0	3 of 7	42.9
Bernard and Fenton 2007	1	1	0	0	–	1	1	4 of 6	66.7
Chiarello 1999	1	–	1	1	1	1	1	6 of 6	100.0
Chiarello 2000	1	1	1	1	1	1	1	7 of 7	100.0
Christiansen and Pitter 1997	1	–	0	0	–	–	–	1 of 3	33.3
de Castro and Fernandez 2004	1	1	1	1	1	0	0	5 of 7	71.4
Estrada and Coates-Estrada 2002	0	1	1	1	1	0	0	4 of 7	57.1
Estrada et al. 2002	0	1	0	1	0	1	0	3 of 7	42.9
Faria 2006	1	1	1	1	1	1	1	7 of 7	100.0
Francisco et al. 2006	0	1	1	1	1	1	0	5 of 7	71.4
Funk and Mills 2003	0	1	0	1	1	1	1	5 of 7	71.4
Jorge 2008	0	1	0	1	1	0	0	3 of 7	42.9
Kumar and O'Donnell 2007	0	1	0	1	1	0	0	3 of 7	42.9
Marsden et al. 2001	0	–	0	1	1	0	0	2 of 6	33.3
Michalski and Peres 2005	0	–	0	1	1	0	0	2 of 6	33.3
Pardini 2004	1	1	1	1	1	1	1	7 of 7	100.0
Pardini et al. 2005	0	1	0	1	1	1	1	5 of 7	71.4
Püttker et al. 2008a	1	1	0	1	1	1	1	6 of 7	85.7
Püttker et al. 2008b	1	1	1	1	1	1	1	7 of 7	100.0
Schulze et al. 2000	1	1	0	1	1	1	0	5 of 7	71.4
Stoner et al. 2002	1	0	0	0	–	1	0	2 of 6	33.3
Stouffer and Bierregaard 1995	1	1	1	1	1	–	–	5 of 5	100.0
Stouffer et al. 2006	0	1	1	1	1	–	–	4 of 5	80.0
Stratford and Stouffer 1999	0	–	1	1	1	1	1	5 of 6	83.3
Stratford and Stouffer 2001	1	1	1	1	1	1	1	7 of 7	100.0
Uezu et al. 2005	1	–	1	1	1	1	1	6 of 6	100.0
Vargas and Simonetti 2004	1	1	0	0	–	1	0	3 of 6	50.0

Appendix 2

Criteria used for the classification of fragmentation effects* in each of the 30 studies included in the review (pos = positive, ind = indifferent, and neg = negative).

* We defined the same fragmentation effect more than once per study when authors had conducted different investigations (e.g. used two different study designs or analyzed several parameters (abundance, fitness-related parameters)) or results had been reported separately for each feeding guild.

Study	Fragm. effect	Classification criterion
Anciães and Marini 2000	ind	p. 1023: no significant differences in fluctuating asymmetry between fragments and control for frugivores
	ind	p. 1023: no significant differences in fluctuating asymmetry between fragments and control for omnivores
	neg	p. 1018 + Table 4: relative fluctuating asymmetry on wings and tarsi higher in fragments than in control for insectivores
Antongiovanni and Metzger 2005	pos	p. 447: "positively affected species" (in terms of frequency of occurrence)
	neg	p. 447: "negatively and moderately affected species" (in terms of frequency of occurrence)
	neg	p. 447: "highly sensitive species" (in terms of frequency of occurrence)
Arriaga-Weiss et al. 2008	pos	p. 181: "… except scavengers, that were only present in small fragments"
	neg	p. 181: "feeding guilds were equally represented in all fragment sizes…" (with more species in larger fragments)
Bell and Donnelly 2006	ind	Table 2: fragmentation-tolerant species (present and medium to high densities in fragments)
	neg	Table 2: fragmentation-sensitive species (absent or low densities in fragments)
Bernard and Fenton 2007	pos	Table 2: Binomial-test: significant positive difference in capture rates between fragment + forest
	ind	Table 2: Binomial-test: no significant difference in capture rates between fragment + forest
	neg	Table 2: Binomial-test: significant negative difference in capture rates between fragment + forest
Chiarello 1999	pos	Table 4, Fig. 4 + p. 79: relative abundance of herbivores higher in fragments
	neg	Table 4, Fig. 4 + p. 79: relative abundance of frugivores lower in fragments
	neg	Table 4, Fig. 4 + p. 79: relative abundance of carnivores lower in fragments
	neg	Table 4, Fig. 4 + p. 79: relative abundance of omnivores lower in fragments
Chiarello 2000	neg	Figure 2: mean average density increases from small over medium to large fragments
Christiansen and Pitter 1997	pos	Table 1: species increasing after fragmentation
	neg	Table 1: species lost or decreasing after fragmentation
de Castro and Fernandez 2004	ind	Table 1: presence in continuous forest and at least 6 fragments (≥70%)
	neg	Table 1: presence in continuous forest and in less than 6 fragments (<70%)
		Trinomys eliasi missing because feeding guild could not be detected
Estrada and Coates-Estrada 2002	pos	Table 1: significant positive difference in capture rates between forest + fragments
	ind	Table 1: no significant difference in capture rates between forest + fragments
	neg	Table 1: significant negative difference in capture rates between forest + fragments
Estrada et al. 2002	neg	p. 50: troops in fragments smaller
Faria 2006	pos	Table 1: significant positive difference in capture frequency between interiors of large and small fragments
	ind	Table 1: no significant differences in capture frequency between interiors of large and small fragments
	neg	Table 1: significant negative difference in capture frequency between interiors of large and small fragments
Francisco et al. 2006	ind	p. 24: "genetic diversity was not significantly lower in the fragment population"
Funk and Mills 2003	neg	pp. 209–210: less individuals in fragments than in control
	neg	pp. 210–211: reduced clutch size and snout-vent lengths in fragments

Jorge 2008	pos	p. 621: *Dasyprocta* sp., „densities decreased with fragment size“
	neg	p. 621: *Myoprocta* sp., „densities increased with fragment size“
Kumar and O'Donnell 2007	neg	p. 585: "flocks of attending birds were larger at swarms in continuous forest"
Marsden et al. 2001	pos	Table 3: considerably more common in fragments
	ind	Appendix: species neither more common in reserve nor in fragments
	neg	Table 3: considerably more common in reserve
Michalski and Peres 2005	ind	species for which occupied forest patches were not significantly larger than unoccupied ones
	neg	p. 389: "occupied forest patches were significantly larger" (than unoccupied ones)
Pardini 2004	pos	Table 2: significant positive difference in abundance between small + large fragments
	ind	Table 2: no significant difference in abundance between small + large fragments
		O. laticeps missing because feeding guild could not be detected
Pardini et al. 2005	ind	Table 1: no significant differences in species' abundance between differently sized fragments
	neg	Table 1 + Fig. 5: species significantly more abundant in control
		Delomys sublineatus missing because feeding guilds could not be detected
Püttker et al. 2008a	ind	Table 2: no significant correlation of parasite load with fragment size and connectivity
	ind	Table 1: no significant correlation of condition index with fragment size and connectivity
	neg	Table 1: significant correlation of condition index with fragment size and connectivity
		D. sublineatus missing because feeding guild could not be detected
Püttker et al. 2008b	ind	p. 15: no significant correlation of population densities with fragment size and connectivity
		D. sublineatus missing because feeding guild could not be detected
Schulze et al. 2000	pos	Table 2: Binomial-test: significant positive difference in capture rates between forest + fragments
	ind	Table 2: Binomial-test: no significant difference in capture rates between forest + fragments
	neg	Table 2: Binomial-test: significant negative difference in capture rates between forest + fragments
Stoner et al. 2002	neg	Table 1: considerable difference in total visits at feeding trees between fragmented and control site
Stouffer and Bierregaard 1995	pos	Table 3: species present after fragmentation, but not before
	ind	p. 1090: "species' abundance changed little" (after fragmentation)
Stouffer et al. 2006	pos	Figure 1 + suppl. material: hummingbird capture rates increasing after fragmentation
	ind	Figure 1 + suppl. material: other insectivore + gap specialist overall capture rates neither increasing nor decreasing after fragmentation
	ind	Figure 1 + suppl. material: other frugivore capture rates neither increasing nor decreasing after fragmentation
	neg	Figure 1 + suppl. material: core frugivore capture rates decreasing after fragmentation
	neg	Figure 1 + suppl. material: insectivore capture rates decreasing after fragmentation
Stratford and Stouffer 1999	pos	Table 1: colonized two fragments
	neg	Table 1: persistence in less than 70% of fragments, i.e. gone extinct in at least three
Stratford and Stouffer 2001	ind	p. 724: no significant long-term trends in capture rates after fragmentation
	neg	p. 724: capture rates lower in smaller fragments
	neg	p. 725: …significant fragment effect (in feather growth rates)
Uezu et al. 2005	pos	p. 515: "*Batara cinerea* seems to benefit from fragmentation“ (in terms of abundance)
	ind	neither mentioned as positively nor negatively affected (in terms of abundance)
	neg	p. 514: "the three most sensitive species in this study" (in terms of abundance)
Vargas and Simonetti 2004	neg	Table 1: considerably more abundant in continuous forest than in fragments

Appendix 3

All possible variable combinations tested by LMM analyses and ranked by AIC values (lowest AIC value ranked first).

Rank	Model with possible variable combinations of:						AIC
	Vertebrate group	Feeding guild	Forest dependency	Body size	Parameter studied	Study design	
1		Feeding guild					1137.7
2		Feeding guild				Study design	1139.4
3		Feeding guild	Forest dependency				1139.5
4		Feeding guild	Forest dependency			Study design	1141.0
5		Feeding guild		Body size			1142.3
6	Vertebrate group	Feeding guild					1142.7
7		Feeding guild			Parameter studied	Study design	1142.8
8		Feeding guild	Forest dependency	Body size			1143.9
9		Feeding guild		Body size		Study design	1144.0
10	Vertebrate group	Feeding guild				Study design	1144.1
11		Feeding guild			Parameter studied		1144.2
12		Feeding guild	Forest dependency		Parameter studied	Study design	1144.7
13	Vertebrate group	Feeding guild	Forest dependency				1144.8
14		Feeding guild	Forest dependency	Body size		Study design	1145.5
15		Feeding guild	Forest dependency		Parameter studied		1146.0
16	Vertebrate group	Feeding guild	Forest dependency			Study design	1146.0
17	Vertebrate group	Feeding guild		Body size			1147.2
18	Vertebrate group	Feeding guild			Parameter studied	Study design	1147.3
19		Feeding guild		Body size	Parameter studied	Study design	1147.4
20	Vertebrate group	Feeding guild		Body size		Study design	1148.5
21		Feeding guild		Body size	Parameter studied		1148.8
22	Vertebrate group	Feeding guild	Forest dependency	Body size			1149.0
23	Vertebrate group	Feeding guild			Parameter studied		1149.2
24		Feeding guild	Forest dependency	Body size	Parameter studied	Study design	1149.3
25	Vertebrate group	Feeding guild	Forest dependency		Parameter studied	Study design	1149.4
26	Vertebrate group	Feeding guild	Forest dependency	Body size		Study design	1150.2
27		Feeding guild	Forest dependency	Body size	Parameter studied		1150.5
28	Vertebrate group	Feeding guild	Forest dependency		Parameter studied		1151.2
29	Vertebrate group	Feeding guild		Body size	Parameter studied	Study design	1151.7
30	Vertebrate group	Feeding guild		Body size	Parameter studied		1153.6
31	Vertebrate group	Feeding guild	Forest dependency	Body size	Parameter studied	Study design	1153.7
32	Vertebrate group	Feeding guild	Forest dependency	Body size	Parameter studied		1155.4
33			Forest dependency				1167.7
34						Study design	1169.2
35			Forest dependency			Study design	1170.1
36				Body size			1170.9
37	Vertebrate group						1171.1
38			Forest dependency	Body size			1171.6
39					Parameter studied	Study design	1172.1
40	Vertebrate group					Study design	1172.5
41	Vertebrate group		Forest dependency				1172.6
42					Parameter studied		1173.0
43			Forest dependency		Parameter studied	Study design	1173.3
44	Vertebrate group		Forest dependency			Study design	1173.6
45				Body size		Study design	1173.7

46		Forest dependency	Body size		Study design	1174.2
47		Forest dependency		Parameter studied		1174.2
48	Vertebrate group			Parameter studied	Study design	1174.8
49	Vertebrate group		Body size			1175.3
50	Vertebrate group	Forest dependency	Body size			1176.1
51	Vertebrate group	Forest dependency		Parameter studied	Study design	1176.2
52			Body size	Parameter studied	Study design	1176.7
53	Vertebrate group		Body size		Study design	1176.8
54	Vertebrate group	Forest dependency	Body size		Study design	1177.3
55			Body size	Parameter studied		1177.5
56		Forest dependency	Body size	Parameter studied	Study design	1177.5
57	Vertebrate group			Parameter studied		1177.7
58		Forest dependency	Body size	Parameter studied		1178.1
59	Vertebrate group	Forest dependency		Parameter studied		1179.1
60	Vertebrate group		Body size	Parameter studied	Study design	1179.1
61	Vertebrate group	Forest dependency	Body size	Parameter studied	Study design	1180.0
62	Vertebrate group		Body size	Parameter studied		1181.9
63	Vertebrate group	Forest dependency	Body size	Parameter studied		1182.7