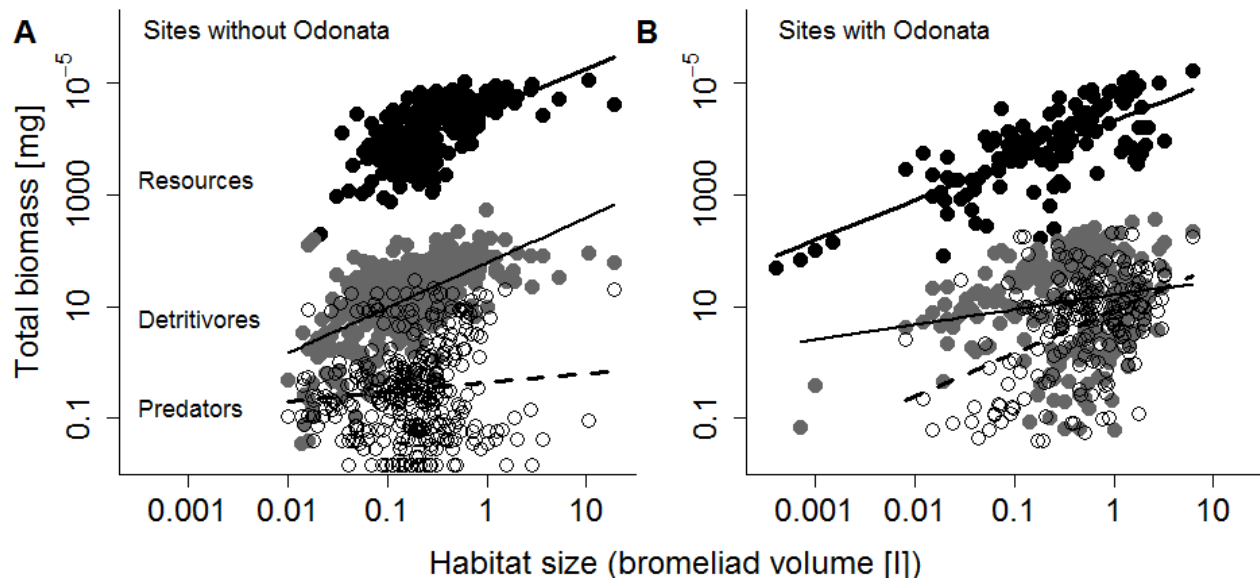


1 **Appendix A: Supplementary Figures A1-A5 and Tables A1-A3 showing the absolute**
2 **biomass of organisms, the effect of latitudinal location, the relative biomass of predator**
3 **species, habitat complexity, listing all species and statistical results.**

4

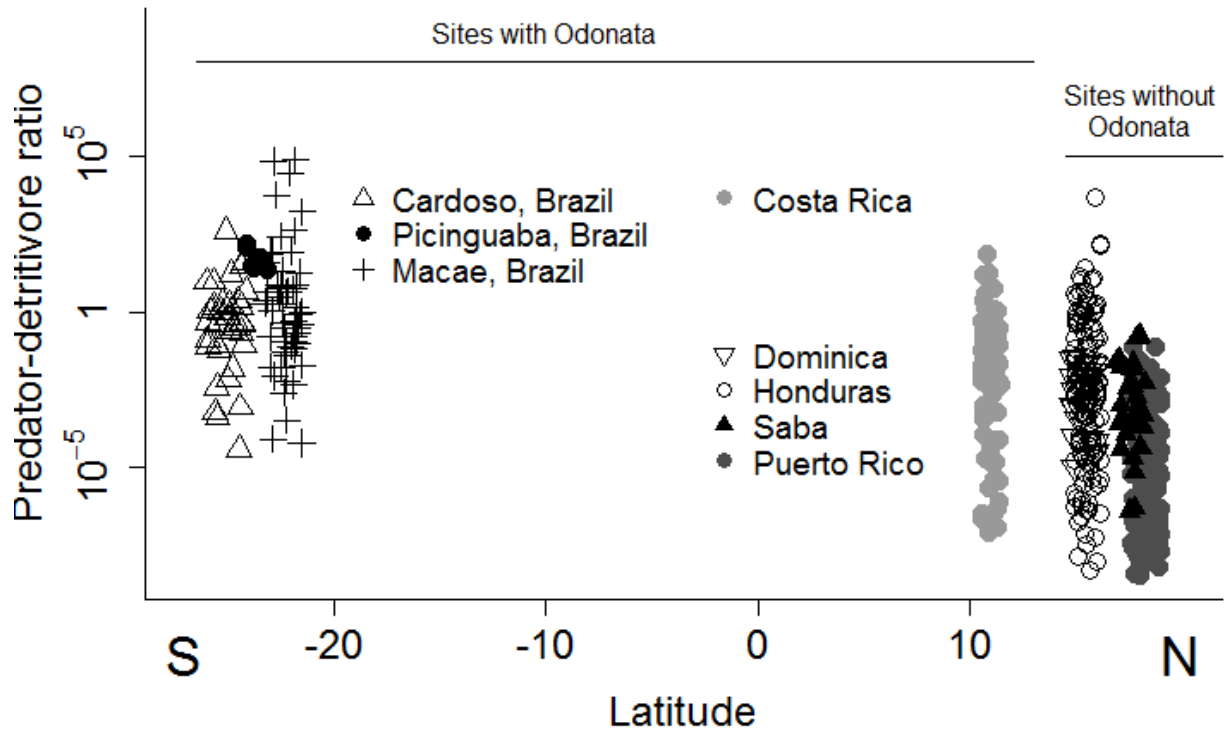
5 **Figures**



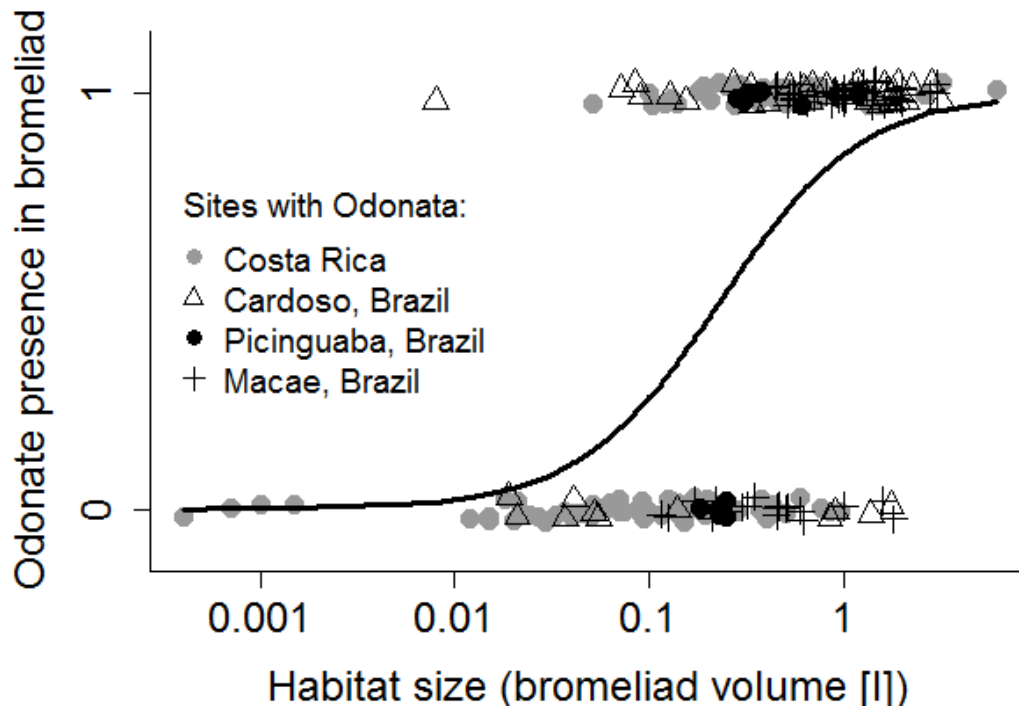
6

7 **Fig. A1.** Total biomass (log-transformed, in mg) of predators, detritivores and resources along
8 the habitat size gradient (log-transformed bromeliad volume in l) for A) sites without and B) sites
9 with odonates in the regional species pool. Predator biomass is depicted by open symbols and
10 dashed lines (significantly different slopes = 0.17 ± 0.09 and 0.78 ± 0.11 for sites without and
11 with odonates, respectively. See Table S1 for statistical analysis.), detritivore biomass by grey
12 filled symbols and medium solid lines (slopes = 0.81 ± 0.05 and 0.26 ± 0.09) and resource
13 biomass by black filled symbols and thick solid lines (slopes = 0.75 ± 0.07 and 0.71 ± 0.06).

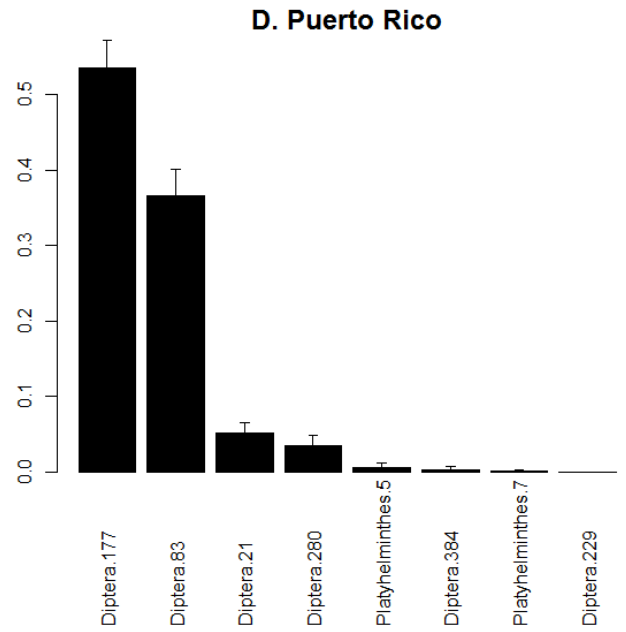
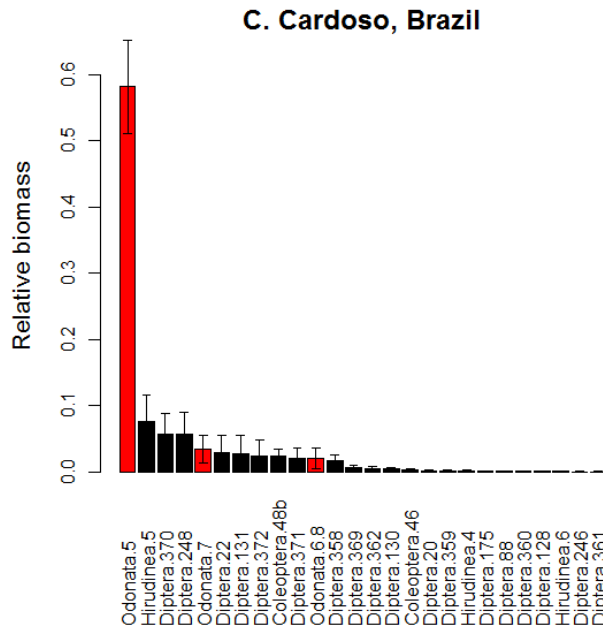
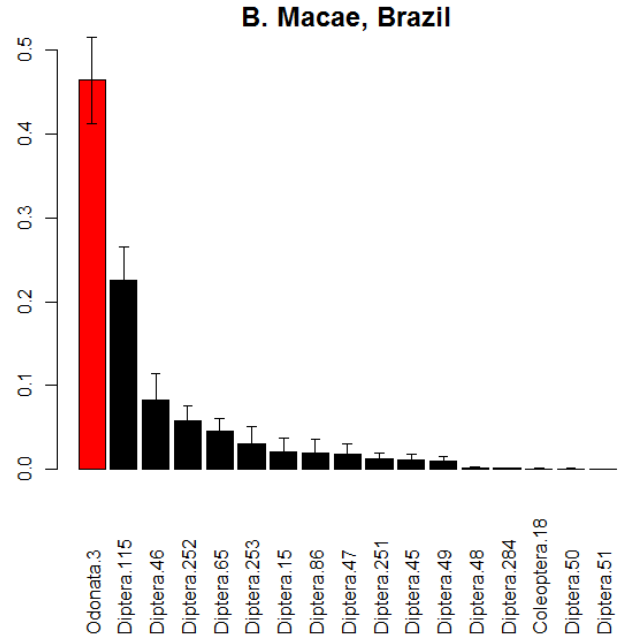
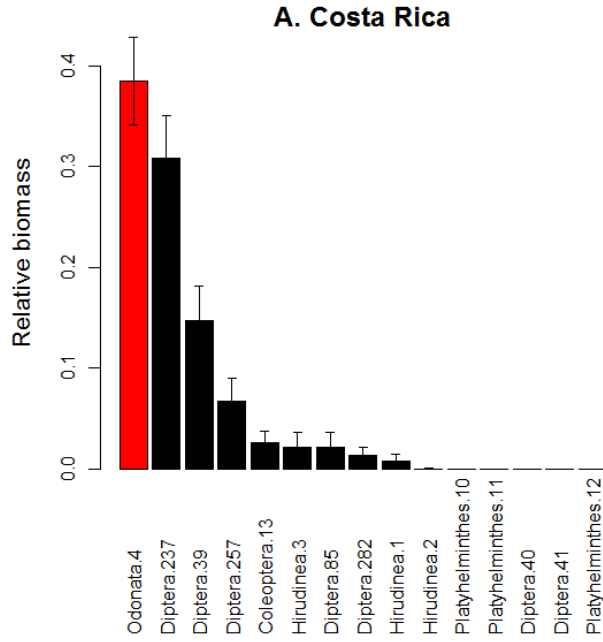
14



15
 16 **Fig. A2.** The latitudinal location of the sites and predator-detrivore biomass ratios in bromeliads
 17 at these sites. Data points represent individual bromeliads and are jittered along the x-axis for
 18 illustrative purposes.



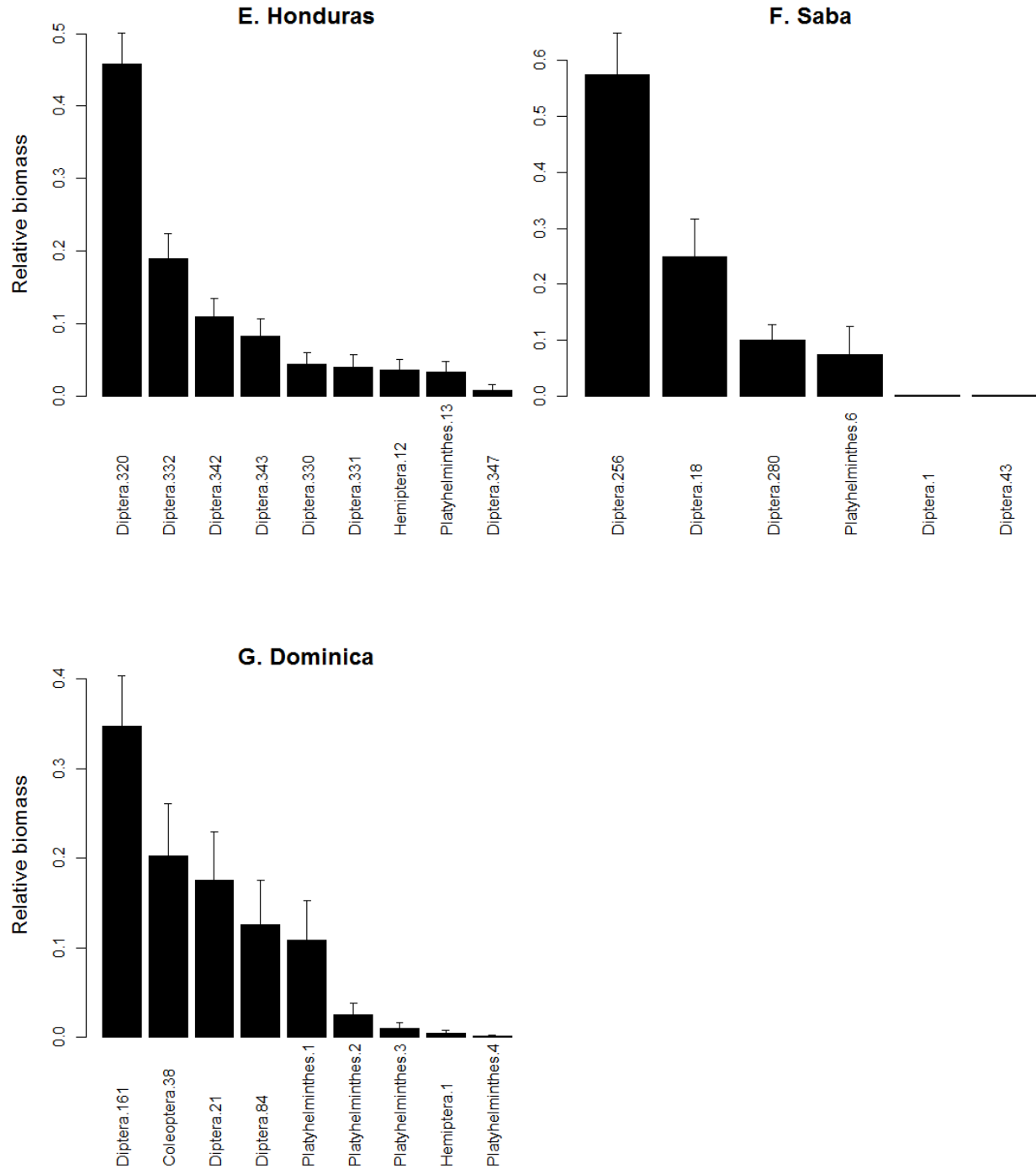
19
 20 **Fig. A3.** Odonate presence in individual bromeliads along the habitat size gradient (log-
 21 transformed bromeliad volume in l) for those sites with odonates in the regional pool. Data points
 22 are jittered along the y-axis for illustrative purposes. The relationship was fitted using a
 23 generalized linear model with binomial errors.



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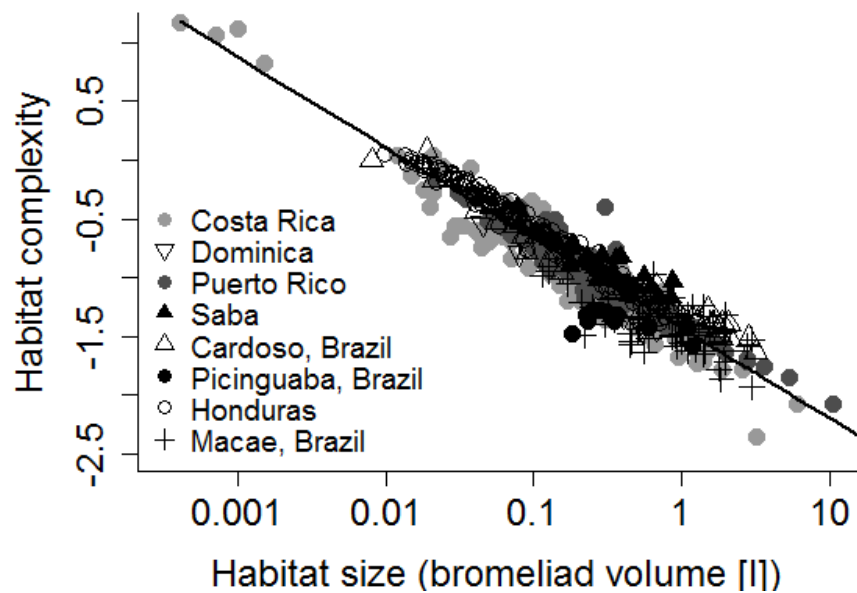
29

30 **Fig. A4.** Relative biomass for the different predator species, ranked by highest relative abundance
 31 per site. Relative biomass refers to the predator level only and was calculated per bromeliad, data
 32 were then averaged across bromeliads and years per site. Odonate species are shown in red. The
 33 species labels refer to the “working IDs” in Table S1. The Pinguaba site is not shown because it

34 lacks species-specific biomass data (analyses for this small data set are based on species
35 presence/absence and pooled biomass measurements at each trophic level).

36

37



40 **Fig. A5.** Habitat complexity in the bromeliad decreases with increasing habitat size (log-
41 transformed bromeliad volume in l). Complexity is calculated as $\log_{10}(\text{number of green}$
42 leaves/bromeliad volume).

43

44 **Tables**

45 **Table A1.** List of invertebrate species present in the bromeliads at our sites based on the surveys
 46 in this study. Many species were identified to species level but were distinguished using
 47 morphological characters and were assigned a unique “Working ID” (except for species in the
 48 small data set from the Picinguaba site). The morphological and molecular identification of those
 49 species is ongoing. Species were assigned to one of two trophic levels: P = Predator, D =
 50 Detritivore.

Site	Higher taxonomic				Trophic level
	group	Family/Subfamily	Species	Working ID	
Cardoso, Brazil			Copelatus		
	Coleoptera	Dytiscidae	bimaculatus	Coleoptera.46	P
	Coleoptera	Hydrophilidae/Omicrini	NA (adult)	Coleoptera.48a	D
	Coleoptera	Hydrophilidae/Omicrini	NA (larvae)	Coleoptera.48b	P
	Coleoptera	Scirtidae	Scirtes sp.	Coleoptera.34	D
	Coleoptera	Scirtidae	Scirtes sp.	Coleoptera.35	D
	Diptera	Ceratopogonidae	Atrichopogon sp.	Diptera.349	D
	Diptera	Ceratopogonidae	Dasyhelea sp.	Diptera.4	D
			Forcipomyia		
	Diptera	Ceratopogonidae	(Phytohelea) sp.	Diptera.353	D
	Diptera	Chironomidae	Limnophyes sp.	Diptera.351	D
			Monopelopia aff.		
	Diptera	Chironomidae	caraguata	Diptera.175	P
			Polypedilum		
Diptera	Chironomidae	marcondesi	Diptera.206	D	
		Polypedilum			
Diptera	Chironomidae	kaingang	Diptera.207	D	

	Diptera	Chironomidae	Tanytarsus sp.	Diptera.263	D
	Diptera	Chironomidae/Orthoclaadiinae	NA	Diptera.191	D
	Diptera	Corethrellidae	Corethrella infuscata	Diptera.88	P
	Diptera	Culicidae	Anopheles bellator	Diptera.10	D
	Diptera	Culicidae	Culex (Microculex) sp.	Diptera.92	D
	Diptera	Culicidae	Culex (Microculex) sp.	Diptera.350	D
	Diptera	Culicidae	Wyeomyia sp.	Diptera.307	D
	Diptera	Ephydriidae	NA	Diptera.352	D
	Diptera	Psychodidae	NA	Diptera.215	D
	Diptera	Sciaridae	NA	Diptera.232	D
	Diptera	Syrphidae	NA	Diptera.355	D
	Diptera	Tabanidae	NA	Diptera.248	P
	Diptera	Tabanidae	NA	Diptera.246	P
	Diptera	Tipulidae	Trentepohlia sp.	Diptera.274	D
	Diptera	Tipulidae	Trentepohlia sp.	Diptera.293	D
	Hirudinea	NA	NA	Hirudinea.4	P
	Odonata	Coenagrionidae	Leptagrion andromache	Odonata.5	P
	Odonata	Coenagrionidae	Phylloicus		
	Trichoptera	Calamoceratidae	bromeliarum	Trichoptera.1	D
Dominica	Coleoptera	Hydrophilidae/Sphaeridiinae	NA	Coleoptera.38	P
	Coleoptera	Ptilodactylidae	NA	Coleoptera.22	D
	Coleoptera	Scirtidae	Scirtes sp.	Coleoptera.26	D
	Diptera	Ceratopogonidae	Bezzia sp.	Diptera.21	P
	Diptera	Ceratopogonidae/Forcipomyiinae	NA	Diptera.153	D

			Larsia/Monopelopia		
Diptera	Chironomidae	sp.	Diptera.161	P	
Diptera	Chironomidae	Metriocnemus sp.	Diptera.172	D	
Diptera	Chironomidae	NA	Diptera.70	D	
Diptera	Chironomidae	Polypedilum sp.	Diptera.205	D	
		Tanytarsus			
Diptera	Chironomidae	bromelicola	Diptera.262	D	
		Corethrella			
Diptera	Corethrellidae	caribbeana	Diptera.84	P	
Diptera	Culicidae	Culex bisulcatus	Diptera.95	D	
Diptera	Culicidae	Wyeomyia greyii	Diptera.304	D	
Diptera	NA	NA	Diptera.182	D	
Diptera	NA	NA	Diptera.183	D	
Diptera	Sphaeroceridae	NA	Diptera.235	D	
Diptera	Stratiomyidae	NA	Diptera.239	D	
Diptera	Tipulidae	Dolichozepe sp.	Diptera.126	D	
Diptera	Tipulidae	Limonia sp.	Diptera.165	D	
		Trentepohlia			
Diptera	Tipulidae	dominicana	Diptera.292	D	
Diptera	Tipulidae/Hexatominiae	NA	Diptera.160	D	
Oligochaeta	Enchytridae	NA	Oligochaeta.8	D	
Platyhelminthes	Planariidae	Planaria sp.	Platyhelminthes.1	P	
Platyhelminthes	Planariidae	Planaria sp.	Platyhelminthes.2	P	
Platyhelminthes	Planariidae	Planaria sp.	Platyhelminthes.3	P	
Platyhelminthes	Planariidae	Planaria sp.	Platyhelminthes.4	P	
Honduras	Coleoptera	Scirtidae	Ora sp.	Coleoptera.45	D
	Diptera	Aulacigastridae	Aulacigaster	Diptera.346	D
	Diptera	Ceratopogonidae	NA	Diptera.323	D

Diptera	Ceratopogonidae	NA	Diptera.324	D
Diptera	Ceratopogonidae	NA	Diptera.325	D
Diptera	Chironomidae	NA	Diptera.318	D
Diptera	Chironomidae	NA	Diptera.319	D
Diptera	Chironomidae	NA	Diptera.320	P
Diptera	Chironomidae	NA	Diptera.321	D
Diptera	Chironomidae	NA	Diptera.322	D
Diptera	Culicidae	Aedes sp.	Diptera.328	D
Diptera	Culicidae	Aedes sp.	Diptera.329	D
Diptera	Culicidae	Culex sp.	Diptera.327	D
Diptera	Culicidae	Toxorhynchites sp.	Diptera.330	P
Diptera	Culicidae	Wyeomia sp.	Diptera.331	P
Diptera	Dolichopodidae	NA	Diptera.343	P
Diptera	NA	NA	Diptera.341	D
Diptera	NA	NA	Diptera.342	P
Diptera	NA	NA	Diptera.344	D
Diptera	Psychodidae	NA	Diptera.340	D
Diptera	Psychodidae	Telmatoscopus sp.	Diptera.339	D
Diptera	Sciaridae	NA	Diptera.345	D
Diptera	Syrphidae	Copestylum sp.	Diptera.335	D
Diptera	Syrphidae	Copestylum sp.	Diptera.336	D
Diptera	Syrphidae	Copestylum sp.	Diptera.337	D
Diptera	Syrphidae	Copestylum sp.	Diptera.338	D
Diptera	Syrphidae	Copestylum sp.	Diptera.333	D
Diptera	Syrphidae	Meromacrus sp.	Diptera.334	D
Diptera	Syrphidae	Ocyptamus sp.	Diptera.332	P
Diptera	Tabanidae	NA	Diptera.347	P
Diptera	Tipulidae	Trentepohlia sp.	Diptera.326	D

	Oligochaeta	Enchytridae	NA	Oligochaeta.15	D
	Platyhelminthes	NA	NA	Platyhelminthes.13	P
Macaé,					
Brazil	Coleoptera	Elmidae	NA	Coleoptera.14	D
	Coleoptera	Hydrophilidae	NA	Coleoptera.18	P
	Coleoptera	Scirtidae	Scirtes sp.	Coleoptera.27	D
	Coleoptera	Scirtidae	Scirtes sp.	Coleoptera.28	D
	Coleoptera	Scirtidae	Scirtes sp.	Coleoptera.29	D
	Coleoptera	Scirtidae	Scirtes sp.	Coleoptera.30	D
	Diptera	Ceratopogonidae	Atrichopogon sp.	Diptera.15	P
	Diptera	Ceratopogonidae	Bezzia sp.	Diptera.46	P
	Diptera	Ceratopogonidae	Bezzia sp.	Diptera.47	P
	Diptera	Ceratopogonidae	Bezzia sp.	Diptera.48	P
	Diptera	Ceratopogonidae	Bezzia sp.	Diptera.50	P
	Diptera	Ceratopogonidae	Culicoides sp.	Diptera.45	P
	Diptera	Ceratopogonidae	Forcypomyia sp.	Diptera.115	P
	Diptera	Ceratopogonidae	NA	Diptera.49	P
	Diptera	Ceratopogonidae	NA	Diptera.51	P
	Diptera	Chironomidae	Larsia sp.	Diptera.65	P
	Diptera	Chironomidae	NA	Diptera.354	D
	Diptera	Chironomidae	Polypedilum sp.	Diptera.64	D
	Diptera	Chironomidae	Polypedilum sp.	Diptera.66	D
	Diptera	Chironomidae	Polypedilum sp.	Diptera.68	D
	Diptera	Chironomidae	Tanytarsus sp.	Diptera.67	D
	Diptera	Corethrellidae	Corethrella sp.	Diptera.86	P
	Diptera	Culicidae	Culex sp.	Diptera.101	D
	Diptera	Culicidae	Culex sp.	Diptera.102	D
	Diptera	Culicidae	Culex sp.	Diptera.103	D

Diptera	Culicidae	Culex sp.	Diptera.104	D
Diptera	Culicidae	Culex sp.	Diptera.105	D
Diptera	Culicidae	Culex sp.	Diptera.106	D
Diptera	Culicidae	Microculex sp.	Diptera.113	D
Diptera	Culicidae	Toxorhynchites sp.	Diptera.284	P
Diptera	Culicidae	Wyeomyia sp.	Diptera.300	D
Diptera	Empididae	NA	Diptera.133	D
Diptera	Empididae	NA	Diptera.134	D
Diptera	Empididae	NA	Diptera.135	D
Diptera	Ephydriidae	NA	Diptera.143	D
Diptera	Ephydriidae	NA	Diptera.144	D
Diptera	Psychodidae	NA	Diptera.219	D
Diptera	Syrphidae	NA	Diptera.355	D
Diptera	Tabanidae	NA	Diptera.251	P
Diptera	Tabanidae	NA	Diptera.252	P
Diptera	Tabanidae	NA	Diptera.253	P
Diptera	Tipulidae	NA	Diptera.278	D
Odonata	Coenagrionidae	Leptagrion sp.	Odonata.3	P

Picinguaba,

Brazil

Coleoptera	Scirtidae	Scirtes sp.	NA	D
Diptera	Ceratopogonidae	NA	NA	D
Diptera	Chironomidae	NA	NA	D
Diptera	Chironomidae	NA	NA	D
Diptera	Chironomidae/Tanypodinae	NA	NA	P
Diptera	Corethrelidae	NA	NA	P
Diptera	Culicidae	NA	NA	D
Diptera	Culicidae	NA	NA	D
Diptera	Culicidae	NA	NA	D

	Diptera	NA	NA	NA	D
	Diptera	NA	NA	NA	D
	Diptera	NA	NA	NA	D
	Diptera	Psychodidae	NA	NA	D
	Diptera	Tabanidae	NA	NA	P
	Diptera	Tipulidae	NA	NA	D
	Diptera	Tipulidae	NA	NA	D
	Odonata	NA	NA	NA	P
	Trichoptera	NA	NA	NA	D
Costa Rica	Coleoptera	Dytiscidae	NA	Coleoptera.13	P
	Coleoptera	Scirtidae	NA	Coleoptera.31	D
	Diptera	Ceratopogonidae	NA	Diptera.39	P
	Diptera	Ceratopogonidae	NA	Diptera.40	P
	Diptera	Ceratopogonidae	NA	Diptera.41	P
	Diptera	Chironomidae	Chironomus sp.	Diptera.81	D
	Diptera	Chironomidae	Monopelopia sp.	Diptera.257	P
	Diptera	Chironomidae	NA	Diptera.54	D
	Diptera	Chironomidae	NA	Diptera.55	D
	Diptera	Chironomidae	NA	Diptera.57	D
	Diptera	Chironomidae	NA	Diptera.56	D
	Diptera	Chironomidae	Polypedilum sp.	Diptera.203	D
	Diptera	Chironomidae/Orthoclaadiinae	NA	Diptera.188	D
	Diptera	Corethrellidae	Corethrella sp.	Diptera.85	P
	Diptera	Culicidae	Anopheles kompii	Diptera.11	D
	Diptera	Culicidae	Anopheles neivai	Diptera.12	D
			Culex		
	Diptera	Culicidae	daumastocampa	Diptera.96	D
	Diptera	Culicidae	Culex jenningsi	Diptera.97	D

Diptera	Culicidae	Orthopodomyia sp.	Diptera.192	D
Diptera	Culicidae	Toxorhynchites sp.	Diptera.282	P
Diptera	Culicidae	Wyeomyia abebela	Diptera.296	D
		Wyeomyia		
Diptera	Culicidae	circumcincta	Diptera.297	D
		Wyeomyia		
Diptera	Culicidae	melanopus	Diptera.298	D
Diptera	Dolichopodidae	NA	Diptera.124	D
Diptera	Ephydriidae	NA	Diptera.136	D
Diptera	NA	NA	Diptera.120	D
Diptera	NA	NA	Diptera.121	D
Diptera	NA	NA	Diptera.122	D
Diptera	NA	NA	Diptera.118	D
Diptera	NA	NA	Diptera.119	D
Diptera	NA	NA	Diptera.117	D
Diptera	NA	NA	Diptera.311	D
Diptera	Periscelididae	NA	Diptera.196	D
Diptera	Psychodidae	Pericoma sp.	Diptera.209	D
Diptera	Syrphidae	Copestylum sp.	Diptera.82	D
Diptera	Syrphidae	NA	Diptera.243	D
Diptera	Syrphidae	NA	Diptera.310	D
		Stibasoma		
Diptera	Tabanidae	fulvohirtum	Diptera.237	P
Diptera	Tipulidae	NA	Diptera.270	D
Diptera	Tipulidae	NA	Diptera.271	D
Diptera	Tipulidae	NA	Diptera.314	D
Diptera	Tipulidae	NA	Diptera.315	D
Diptera	Tipulidae	Trentepholia sp.	Diptera.269	D

	Hirudinea	NA	NA	Hirudinea.1	P
	Hirudinea	NA	NA	Hirudinea.2	P
	Hirudinea	NA	NA	Hirudinea.3	P
			Mecistogaster		
	Odonata	Pseudostigmatidae	modesta	Odonata.4	P
	Oligochaeta	NA	NA	Oligochaeta.14	D
	Oligochaeta	Naididae	Aulophorus sp.	Oligochaeta.13	D
	Platyhelminthes	NA	NA	Platyhelminthes.11	D
	Platyhelminthes	NA	NA	Platyhelminthes.10	D
	Platyhelminthes	NA	NA	Platyhelminthes.12	D
	Unknown	NA	NA	Unknown.1	D
	Unknown	NA	NA	Unknown.2	D
	Unknown	NA	NA	Unknown.3	D
Puerto Rico	Coleoptera	Ptilodactylidae	NA	Coleoptera.22	D
	Coleoptera	Scirtidae	Scirtes sp.	Coleoptera.26	D
	Diptera	Ceratopogonidae	Bezzia sp.	Diptera.21	P
	Diptera	Ceratopogonidae/Forcipomyiinae	NA	Diptera.153	D
	Diptera	Ceratopogonidae/Forcipomyiinae	NA	Diptera.154	D
	Diptera	Ceratopogonidae/Forcipomyiinae	NA	Diptera.155	D
	Diptera	Ceratopogonidae/Forcipomyiinae	NA	Diptera.149	D
	Diptera	Ceratopogonidae/Forcipomyiinae	NA	Diptera.150	D
	Diptera	Ceratopogonidae/Forcipomyiinae	NA	Diptera.151	D
	Diptera	Ceratopogonidae/Leptoconopinae	NA	Diptera.384	P
	Diptera	Chironomidae	Boreochlus.sp.	Diptera.387	D
	Diptera	Chironomidae	Metriocnemus sp.	Diptera.174	D
	Diptera	Chironomidae	Metriocnemus sp.	Diptera.385	D
	Diptera	Chironomidae	Monopelopia sp.	Diptera.177	P
	Diptera	Chironomidae	Paratanytarsus sp.	Diptera.388	D

Diptera	Chironomidae	Smittia sp.	Diptera.386	D
Diptera	Chironomidae	Stempellinella sp.	Diptera.389	D
		Tanytarsus		
Diptera	Chironomidae	bromelicola	Diptera.390	D
Diptera	Corethrellidae	Corethrella belkini	Diptera.83	P
		Culex		
Diptera	Culicidae	antillumagnorum	Diptera.93	D
Diptera	Culicidae	Culex sp.	Diptera.391	D
		Toxorhynchites		
Diptera	Culicidae	guadeloupensis	Diptera.280	P
Diptera	Culicidae	Wyeomyia sp.	Diptera.301	D
Diptera	Muscidae	NA	Diptera.394	D
Diptera	Phoridae	NA	Diptera.395	D
Diptera	Psychodidae	Alepiea zavortinkii	Diptera.9	D
Diptera	Psychodidae	NA	Diptera.210	D
Diptera	Psychodidae	NA	Diptera.220	D
Diptera	Rhagionidae	NA	Diptera.229	P
Diptera	Scatopsidae	NA	Diptera.231	D
Diptera	Sphaeroceridae	NA	Diptera.392	D
Diptera	Sphaeroceridae	NA	Diptera.393	D
Diptera	Sphaeroceridae	NA	Diptera.235	D
Diptera	Stratiomyidae	NA	Diptera.239	D
Diptera	Tipulidae	Brachypremna sp.	Diptera.396	D
Diptera	Tipulidae	Limonia sp.	Diptera.165	D
Diptera	Tipulidae	NA	Diptera.397	D
		Trentepohlia		
Diptera	Tipulidae	dominicana	Diptera.292	D
Diptera	Tipulidae/Hexatominiae	NA	Diptera.160	D

	Oligochaeta	Enchytridae	NA	Oligochaeta.8	D
			Aulophorus		
	Oligochaeta	Naididae	superterrenus	Oligochaeta.2	D
	Platyhelminthes	NA	NA	Platyhelminthes.5	P
	Platyhelminthes	NA	NA	Platyhelminthes.7	P
Saba	Diptera	Stratiomyidae	NA	Diptera.240	D
	Diptera	Ceratopogonidae	Bezzia sp.	Diptera.18	P
	Diptera	Ceratopogonidae	Culicoides sp.	Diptera.1	P
	Diptera	Ceratopogonidae	NA	Diptera.43	P
	Diptera	Ceratopogonidae/Forcipomyiinae	NA	Diptera.153	D
	Diptera	Ceratopogonidae/Forcipomyiinae	NA	Diptera.154	D
	Diptera	Ceratopogonidae/Forcipomyiinae	NA	Diptera.155	D
	Diptera	Ceratopogonidae/Leptoconopinae	NA	Diptera.294	D
			Larsia/Monopelopia		
	Diptera	Chironomidae	sp.	Diptera.256	P
	Diptera	Chironomidae	Metriocnemus sp.	Diptera.173	D
	Diptera	Chironomidae	Polypedilum sp.	Diptera.205	D
			Tanytarsus		
	Diptera	Chironomidae	bromelicola	Diptera.262	D
	Diptera	Culicidae	Culex bisulcatus	Diptera.95	D
			Toxorhynchites		
	Diptera	Culicidae	guadeloupensis	Diptera.280	P
	Diptera	NA	NA	Diptera.182	D
	Diptera	Sphaeroceridae	NA	Diptera.235	D
	Diptera	Tipulidae	Limonia sp.	Diptera.165	D
			Trentepohlia		
	Diptera	Tipulidae	dominicana	Diptera.292	D
	Diptera	Tipulidae/Hexatominiae	NA	Diptera.160	D

Oligochaeta	Enchytridae	NA	Oligochaeta.6	D
		Aulophorus		
Oligochaeta	Naididae	superterreneus	Oligochaeta.13	D
Platyhelminthes	NA	NA	Platyhelminthes.6	P

51

52

53 **Table A2.** Results of the linear mixed effects model analysis testing main effects and two-way

54 interactions on the absolute biomass of resources, detritivores and predators in each bromeliad

55 (all log-transformed) with “site” as a random effect. Habitat size = log-transformed bromeliad

56 volume [ml], df= degrees of freedom (numerator df, denominator df). P values <0.05 printed in

57 bold.

	Biomass resources			Biomass detritivores			Biomass predators		
	df	F	P	df	F	P	df	F	P
Latitude	1,3	3.50	81	1,5	9.45	7	1,5	5.69	8
			0.49			0.373			0.250
Odonate presence	1,3	0.61	13	1,5	0.95	9	1,5	1.69	1
		346.	<0.0		341.1	<0.00	1,53		<0.00
Habitat size	1,352	30	001	1,632	5	01	3	68.27	01
Latitude x Habitat			0.76			0.621	1,53		0.081
size	1,352	0.09	13	1,632	0.24	3	3	3.04	6
Odonate presence x			0.32			0.858	1,53		<0.00
Habitat size	1,352	0.95	92	1,632	0.03	7	3	21.64	01

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59

60 **Table A3.** Results of the linear mixed effects model analysis testing main effects and two-way
 61 interactions on biomass ratios (log-transformed) with “site” as a random effect. Here, we test the
 62 effect of tabanid presence in the regional pool instead of odonate presence. Habitat size = log-
 63 transformed bromeliad volume [ml], df= degrees of freedom (numerator df, denominator df). P
 64 values <0.05 printed in bold.

	Detritivore-resource ratio			Predator-detritivore ratio		
	df	F	P	df	F	P
Latitude	1,3	4.37	0.1278	22.5	7	0.005
Tabanid presence	1,3	1.01	0.3895	1,5	0.79	0.413
	1,35					6
Habitat size	0	19.8	<0.0001	1,529	2.88	0.090
	1,35	6				2
Latitude x Habitat size	0	0.82	0.3671	1,529	3.01	0.083
Tabanid presence x	1,35					1
Habitat size	0	1.45	0.2293	1,529	0.15	0.700
						8

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