Appendix S1: Supplementary data

Table S1. Estimates of local species composition at 39 sites in Middle America based on data summarized by Duellman (2001). Locality numbers correspond to Table 2. References for body size and larval habitat data are found in Table S2.

Locality and elevation (country, state, specific location)	Species present	Body size	Larval habitat	Hylid clade	Subclade within Middle American clade
1) Mexico, Sonora, Alamos; 597 m	*Pachymedusa dacnicolor*	82.6	pond	Phyllomedusinae	
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
	Smilisca fodiens	62.6	pond	Middle American	*Smilisca* clade
2) Mexico, Sinaloa, Mazatlan; 9 m	*Pachymedusa dacnicolor*	82.6	pond	Phyllomedusinae	
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
	Smilisca fodiens	62.6	pond	Middle American	*Smilisca* clade
	Tlalocohyla smithii	26.0	pond	Middle American	*Tlalocohyla*
	Diaglena spatulata	85.9	pond	Middle American	*Smilisca* clade
3) Mexico, Durango, El Salto; 2603 m	*Hyla eximia*	35.0	pond	Middle American	*Hyla*
4) Mexico, Jalisco, Chamela; 11 m	*Dendropsophus sartori*	26.0	pond	*Dendropsophus*	
	Exerodonta smaragdina	26.0	stream	Middle American	*Plectrohyla* clade
	Pachymedusa dacnicolor	82.6	pond	Phyllomedusinae	
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
	Smilisca fodiens	62.6	pond	Middle American	*Smilisca* clade
	Tlalocohyla smithii	26.0	pond	Middle American	*Tlalocohyla*
	Diaglena spatulata	85.9	pond	Middle American	*Smilisca* clade
	Trachycephalus venulosus	101.0	pond	Lophiohylini	

5) Mexico, Michoacan, Nueva Italia (between Rio Marquez and Cuatro Caminos); 412 m	*Pachymedusa dacnicolor*	82.6	pond	Phyllomedusinae	
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
	Smilisca fodiens	62.6	pond	Middle American	*Smilisca* clade
	Tlalocohyla smithii	26.0	pond	Middle American	*Tlalocohyla*
	Diaglena spatulata	85.9	pond	Middle American	*Smilisca* clade
6) Mexico, D.F., Xochimilco; 2240 m	*Hyla eximia*	35.0	pond	Middle American	*Hyla*
7) Mexico, Guerrero, Puerto del Gallo; 2078 m	*Charadrahyla trux*	81.0	stream	Middle American	*Charadrahyla* clade
	Exerodonta melanomma	29.9	stream	Middle American	*Plectrohyla* clade
	Exerodonta pinorum	34.5	stream	Middle American	*Plectrohyla* clade
	Plectrohyla hazelae	38.6	stream	Middle American	*Plectrohyla* clade
	Plectrohyla mykter	42.3	stream	Middle American	*Plectrohyla* clade
	Plectrohyla pentheter	52.1	stream	Middle American	*Plectrohyla* clade
	Plectrohyla thorectes	34.2	stream	Middle American	*Plectrohyla* clade
	Ptychohyla leonardschultzei	35.6	stream	Middle American	*Ptychohyla* clade
8) Mexico, Oaxaca, Puerto Escondido; 2 m	*Dendropsophus sartori*	26.0	pond	*Dendropsophus*	
	Pachymedusa dacnicolor	82.6	pond	Phyllomedusinae	
	Scinax staufferi	29.0	pond	*Scinax*	
	Tlalocohyla smithii	26.0	pond	Middle American	*Tlalocohyla*
	Trachycephalus venulosus	101.0	pond	Lophiohylini	
	Diaglena spatulata	85.9	pond	Middle American	*Smilisca* clade
9) Mexico, Oaxaca, San Gabriel Mixtepec; 1768 m	*Charadrahyla altipotens*	75.0	stream	Middle American	*Charadrahyla* clade
	Exerodonta juanitae	35.8	stream	Middle American	*Plectrohyla* clade
	Exerodonta melanomma	29.9	stream	Middle American	*Plectrohyla* clade

	Exerodonta sumichrasti	27.7	stream	Middle American	*Plectrohyla* clade
	Megastomatohyla pellita	29.0	stream	Middle American	*Charadrahyla* clade
	Plectrohyla pentheter	52.1	stream	Middle American	*Plectrohyla* clade
	Plectrohyla thorectes	34.2	stream	Middle American	*Plectrohyla* clade
	Ptychohyla leonhardschultzii	35.6	stream	Middle American	*Ptychohyla* clade
10) Mexico, Oaxaca, Tehauntepec; 53 m	*Pachymedusa dacnicolor*	82.6	pond	Phyllomedusinae	
	Scinax staufferi	29.0	pond	*Scinax*	
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
	Triprion petasatus	60.8	pond	Middle American	*Smilisca* clade
11) Mexico, Tamaulipas, Gomez Farias; 361 m	*Hyla eximia*	35.0	pond	Middle American	*Hyla*
	Scinax staufferi	29.0	pond	*Scinax*	
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
12) Mexico, Hidalgo, El Chico; 2007 m	*Hyla eximia*	35.0	pond	Middle American	*Hyla*
	Hyla plicata	44.0	pond	Middle American	*Hyla*
	Plectrohyla robertsorum	47.9	pond	Middle American	*Plectrohyla* clade
13) Mexico, Puebla, ~14.4 km W of Huauchinango; 2253 m	*Ecnomiohyla miotympanum*	38.4	stream	Middle American	*Ptychohyla* clade
	Hyla euphorbiacea	29.6	pond	Middle American	*Hyla*
	Plectrohyla arborescandens	37.6	stream	Middle American	*Plectrohyla* clade
	Plectrohyla charadricola	44.4	stream	Middle American	*Plectrohyla* clade
14) Mexico, Veracruz, Mata de Oscura (5 km E); 767 m	*Scinax staufferi*	29.0	pond	*Scinax*	
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade

	Tlalocohyla godmani	38.0	pond	Middle American	*Tlalocohyla*
	Tlalocohyla picta	21.4	pond	Middle American	*Tlalocohyla*
15) Mexico, Veracruz, Huatusco (3 km SW); 1369 m	*Bromeliohyla dendroscarta*	31.6	arboreal	Middle American	*Ptychohyla* clade
	Charadrahyla taeniopus	65.9	stream	Middle American	*Charadrahyla* clade
	Ecnomiohyla miotympanum	38.4	stream	Middle American	*Ptychohyla* clade
	Megastomatohyla mixomaculata	29.1	stream	Middle American	*Charadrahyla* clade
	Megastomatohyla nubicola	36.7	stream	Middle American	*Charadrahyla* clade
	Plectrohyla arborescandens	37.6	stream	Middle American	*Plectrohyla* clade
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
16) Mexico, Veracruz, Acultzingo; 2093 m	*Ecnomiohyla miotympanum*	38.4	stream	Middle American	*Ptychohyla* clade
	Hyla euphorbiacea	29.6	pond	Middle American	*Hyla*
	Plectrohyla arborescandens	37.6	stream	Middle American	*Plectrohyla* clade
	Plectrohyla bistincta	53.8	stream	Middle American	*Plectrohyla* clade
17) Mexico, Veracruz, Cuatlapan; 1041 m	*Agalychnis moreletii*	65.7	pond	Phyllomedusinae	
	Anotheca spinosa	68.5	arboreal	Middle American	*Smilisca* clade
	Bromeliohyla dendroscarta	31.6	arboreal	Middle American	*Ptychohyla* clade
	Ecnomiohyla miotympanum	38.4	stream	Middle American	*Ptychohyla* clade
	Hyla eximia	35.0	pond	Middle American	*Hyla*

	Scinax staufferi	29.0	pond	*Scinax*	
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
	Tlalocohyla picta	21.4	pond	Middle American	*Tlalocohyla*
	Trachycephalus venulosus	101.0	pond	Lophiohylini	
18) Mexico, Veracruz, Los Tuxtlas; 1015 m	*Agalychnis moreletii*	65.7	pond	Phyllomedusinae	
	Anotheca spinosa	68.5	arboreal	Middle American	*Smilisca* clade
	Charadrahyla nephila	71.0	stream	Middle American	*Charadrahyla* clade
	Ecnomiohyla miotympanum	38.4	stream	Middle American	*Ptychohyla* clade
	Ecnomiohyla valancifer	77.7	?	Middle American	*Ptychohyla* clade
	Smilisca cyanosticta	56.0	pond	Middle American	*Smilisca* clade
19) Mexico, Veracruz, Estacion de Biologica Tropical, Los Tuxtlas; 350 m	*Agalychnis callidryas*	56.0	pond	Phyllomedusinae	
	Dendropsophus ebraccatus	27.8	pond	*Dendropsophus*	
	Dendropsophus microcephalus	25.0	pond	*Dendropsophus*	
	Ecnomiohyla valancifer	77.7	?	Middle American	*Ptychohyla* clade
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
	Smilisca cyanosticta	56.0	pond	Middle American	*Smilisca* clade
	Tlalocohyla loquax	44.7	pond	Middle American	*Tlalocohyla*
	Tlalocohyla picta	21.4	pond	Middle American	*Tlalocohyla*
20) Mexico, Oaxaca, Vista Hermosa; 876 m	*Agalychnis moreletii*	65.7	pond	Phyllomedusinae	
	Anotheca spinosa	68.5	arboreal	Middle American	*Smilisca* clade
	Bromeliohyla dendroscarta	31.6	arboreal	Middle American	*Ptychohyla* clade
	Charadrahyla nephila	71.0	stream	Middle American	*Charadrahyla* clade
	Duellmanohyla ignicolor	30.9	stream	Middle American	*Ptychohyla* clade

	Ecnomiohyla echinata	57.0	?	Middle American	*Ptychohyla* clade
	Megastomatohyla mixe	30.8	stream	Middle American	*Charadrahyla* clade
	Plectrohyla arborescandens	37.6	stream	Middle American	*Plectrohyla* clade
	Ptychohyla acrochorda	36.3	?	Middle American	*Ptychohyla* clade
21) Mexico, Oaxaca, Tuxtepec; 30 m	*Agalychnis callidryas*	56.0	pond	Phyllomedusinae	
	Dendropsophus ebraccatus	27.8	pond	*Dendropsophus*	
	Dendropsophus microcephalus	25.0	pond	*Dendropsophus*	
	Scinax staufferi	29.0	pond	*Scinax*	
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
	Tlalocohyla loquax	44.7	pond	Middle American	*Tlalocohyla*
	Tlalocohyla picta	21.4	pond	Middle American	*Tlalocohyla*
	Trachycephalus venulosus	101.0	pond	Lophiohylini	
22) Mexico, Chiapas, Rayon Mescalapan (6 km S); 1942 m	*Charadrahyla chaneque*	71.0	stream	Middle American	*Charadrahyla* clade
	Duellmanohyla chamulae	30.5	stream	Middle American	*Ptychohyla* clade
	Exerodonta bivocata	28.5	stream	Middle American	*Plectrohyla* clade
	Plectrohyla acanthodes	63.2	stream	Middle American	*Plectrohyla* clade
	Plectrohyla guatemalensis	76.1	stream	Middle American	*Plectrohyla* clade
	Plectrohyla ixil	41.6	stream	Middle American	*Plectrohyla* clade
23) Mexico, Yucatan, Piste; 30 m	*Agalychnis callidryas*	56.0	pond	Phyllomedusinae	
	Dendropsophus microcephalus	25.0	pond	*Dendropsophus*	
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
	Tlalocohyla loquax	44.7	pond	Middle American	*Tlalocohyla*

	Tlalocohyla picta	21.4	pond	Middle American	*Tlalocohyla*
	Trachycephalus venulosus	101.0	pond	Lophiohylini	
	Triprion petasatus	60.8	pond	Middle American	*Smilisca* clade
24) Guatemala, El Peten, Tikal; 254 m	*Agalychnis callidryas*	56.0	pond	Phyllomedusinae	
	Dendropsophus ebraccatus	27.8	pond	*Dendropsophus*	
	Dendropsophus microcephalus	25.0	pond	*Dendropsophus*	
	Scinax staufferi	29.0	pond	*Scinax*	
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
	Tlalocohyla loquax	44.7	pond	Middle American	*Tlalocohyla*
	Tlalocohyla picta	21.4	pond	Middle American	*Tlalocohyla*
	Triprion petasatus	60.8	pond	Middle American	*Smilisca* clade
25) Honduras, Copan, Quebrada Grande; 1324 m	*Agalychnis moreletii*	65.7	pond	Phyllomedusinae	
	Bromeliohyla bromeliacia	29.5	arboreal	Middle American	*Ptychohyla* clade
	Duellmanohyla soralia	32.3	stream	Middle American	*Ptychohyla* clade
	Ecnomiohyla salvaje	86.0	arboreal	Middle American	*Ptychohyla* clade
	Plectrohyla guatemalensis	76.1	stream	Middle American	*Plectrohyla* clade
	Plectrohyla matudai	46.0	stream	Middle American	*Plectrohyla* clade
	Ptychohyla hypomykter	41.2	stream	Middle American	*Ptychohyla* clade
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
26) Honduras, Copan, Laguna de Cerro; 1085 m	*Agalychnis callidryas*	56.0	pond	Phyllomedusinae	
	Agalychnis moreletii	65.7	pond	Phyllomedusinae	
	Duellmanohyla soralia	32.3	stream	Middle American	*Ptychohyla* clade
	Plectrohyla matudai	46.0	stream	Middle American	*Plectrohyla* clade
	Ptychohyla hypomykter	41.2	stream	Middle American	*Ptychohyla* clade

	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
	Tlalocohyla loquax	44.7	pond	Middle American	*Tlalocohyla*
	Tlalocohyla picta	21.4	pond	Middle American	*Tlalocohyla*
27) Honduras, Gracias a Dios, Barra Patuka; 2 m	*Agalychnis callidryas*	56.0	pond	Phyllomedusinae	
	Dendropsophus microcephalus	25.0	pond	*Dendropsophus*	
	Scinax staufferi	29.0	pond	*Scinax*	
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
	Tlalocohyla loquax	44.7	pond	Middle American	*Tlalocohyla*
	Tlalocohyla picta	21.4	pond	Middle American	*Tlalocohyla*
	Trachycephalus venulosus	101.0	pond	Lophiohylini	
28) Honduras, Atlantida, Quebrada de Oro; 1132 m	*Duellmanohyla salvavida*	28.0	stream	Middle American	*Ptychohyla* clade
	Plectrohyla chrysopleura	65.6	stream	Middle American	*Plectrohyla* clade
	Ptycholyla spinipollex	41.2	stream	Middle American	*Ptychohyla* clade
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
29) Honduras, Atlantida, La Ceiba; 10 m	*Dendropsophus microcephalus*	25.0	pond	*Dendropsophus*	
	Scinax staufferi	29.0	pond	*Scinax*	
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
	Tlalocohyla loquax	44.7	pond	Middle American	*Tlalocohyla*
	Tlalocohyla picta	21.4	pond	Middle American	*Tlalocohyla*
	Trachycephalus venulosus	101.0	pond	Lophiohylini	
30) Costa Rica, Heredia, Volcan Barba; 2802 m	*Isthmohyla angustilineata*	34.2	pond	Middle American	*Isthmohyla*
	Isthmohyla picadoi	32.8	arboreal	Middle American	*Isthmohyla*
	Isthmohyla pictipes	39.0	stream	Middle American	*Isthmohyla*
	Isthmohyla pseudopuma	41.4	pond	Middle American	*Isthmohyla*

	Isthmohyla rivularis	34.0	stream	Middle American	*Isthmohyla*
31) Costa Rica, Cartago, Moravia; 1172 m	*Agalychnis annae*	73.9	pond	Phyllomedusinae	
	Anotheca spinosa	68.5	arboreal	Middle American	*Smilisca* clade
	Dendropsophus ebraccatus	27.8	pond	*Dendropsophus*	
	Duellmanohyla rufioculis	30.0	stream	Middle American	*Ptychohyla* clade
	Duellmanohyla uranochroa	36.8	stream	Middle American	*Ptychohyla* clade
	Hyloscirtus colymba	37.0	stream	Cophomantini	
	Isthmohyla lancasteri	33.6	stream	Middle American	*Isthmohyla*
	Isthmohyla pseudopuma	41.4	pond	Middle American	*Isthmohyla*
	Hylomantis lemur	40.8	pond	Phyllomedusinae	
	Smilisca phaeota	65.0	pond	Middle American	*Smilisca* clade
	Tlalocohyla loquax	44.7	pond	Middle American	*Tlalocohyla*
32) Costa Rica, Heredia, La Selva; 54 m	*Cruziohyla calcarifer*	80.5	pond	Phyllomedusinae	
	Agalychnis callidryas	56.0	pond	Phyllomedusinae	
	Agalychnis saltator	46.7	pond	Phyllomedusinae	
	Dendropsophus ebraccatus	27.8	pond	*Dendropsophus*	
	Dendropsophus phlebodes	23.6	pond	*Dendropsophus*	
	Hypsiboas rufitelus	49.2	pond	Cophomantini	
	Scinax boulengeri	48.7	pond	*Scinax*	
	Scinax elaeochrous	37.7	pond	*Scinax*	
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
	Smilisca phaeota	65.0	pond	Middle American	*Smilisca* clade
	Smilisca puma	38.0	pond	Middle American	*Smilisca* clade
	Tlalocohyla loquax	44.7	pond	Middle American	*Tlalocohyla*

33) Costa Rica, Puntarenas, Rincon de Osa; 38 m	*Agalychnis callidryas*	56.0	pond	Phyllomedusinae	
	Agalychnis spurrelli	75.6	pond	Phyllomedusinae	
	Dendropsophus ebraccatus	27.8	pond	*Dendropsophus*	
	Hypsiboas rosenbergi	90.0	pond	Cophomantini	
	Hypsiboas rufitelus	49.2	pond	Cophomantini	
	Scinax boulengeri	48.7	pond	*Scinax*	
	Scinax elaeochrous	37.7	pond	*Scinax*	
	Smilisca phaeota	65.0	pond	Middle American	*Smilisca* clade
	Smilisca sila	45.0	stream	Middle American	*Smilisca* clade
	Smilisca sordida	45.0	stream	Middle American	*Smilisca* clade
	Trachycephalus venulosus	101.0	pond	Lophiohylini	
34) Costa Rica, Las Canas, Finca Taboga; 13 m	*Dendropsophus microcephalus*	25.0	pond	*Dendropsophus*	
	Scinax boulengeri	48.7	pond	*Scinax*	
	Scinax staufferi	29.0	pond	*Scinax*	
	Smilisca baudinii	76.0	pond	Middle American	*Smilisca* clade
	Smilisca sordida	45.0	stream	Middle American	*Smilisca* clade
	Trachycephalus venulosus	101.0	pond	Lophiohylini	
35) Costa Rica, Puntarenas, Las Cruces; 1349 m	*Agalychnis annae*	73.9	pond	Phyllomedusinae	
	Anotheca spinosa	68.5	arboreal	Middle American	*Smilisca* clade
	Dendropsophus ebraccatus	27.8	pond	*Dendropsophus*	
	Dendropsophus microcephalus	25.0	pond	*Dendropsophus*	
	Duellmanohyla rufioculis	30.0	stream	Middle American	*Ptychohyla* clade
	Ecnomiohyla miliaria	110.0	arboreal	Middle American	*Ptychohyla* clade

	Isthmohyla lancasteri	33.6	stream	Middle American	*Isthmohyla*
	Isthmohyla pseudopuma	41.4	pond	Middle American	*Isthmohyla*
	Ptychohyla legleri	36.7	stream	Middle American	*Ptychohyla* clade
	Smilisca sordida	45.0	stream	Middle American	*Smilisca* clade
36) Panama, Colon, Achiote; 27 m	*Agalychnis callidryas*	56.0	pond	Phyllomedusinae	
	Dendropsophus ebraccatus	27.8	pond	*Dendropsophus*	
	Dendropsophus phlebodes	23.6	pond	*Dendropsophus*	
	Hypsiboas rufitelus	49.2	pond	Cophomantini	
	Scinax boulengeri	48.7	pond	*Scinax*	
	Scinax ruber	41.0	pond	*Scinax*	
	Smilisca phaeota	65.0	pond	Middle American	*Smilisca* clade
37) Panama, Cocle, El Valle; 643 m	*Anotheca spinosa*	68.5	arboreal	Middle American	*Smilisca* clade
	Dendropsophus ebraccatus	27.8	pond	*Dendropsophus*	
	Dendropsophus microcephalus	25.0	pond	*Dendropsophus*	
	Dendropsophus phlebodes	23.6	pond	*Dendropsophus*	
	Ecnomiohyla miliaria	110.0	arboreal	Middle American	*Ptychohyla* clade
	Hypsiboas crepitans	63.0	pond	Cophomantini	
	Hylomantis lemur	40.8	pond	Phyllomedusinae	
	Scinax altae	26.0	pond	*Scinax*	
	Smilisca sila	45.0	stream	Middle American	*Smilisca* clade
38) Panama, Darien, Rio Tuira at Rio Mono; 490 m	*Agalychnis callidryas*	56.0	pond	Phyllomedusinae	
	Agalychnis litodryas	70.2	pond	Phyllomedusinae	

	Dendropsophus ebraccatus	27.8	pond	*Dendropsophus*	
	Hypsiboas boans	132.0	pond	Cophomantini	
	Hypsiboas rosenbergi	90.0	pond	Cophomantini	
	Phyllomedusa venusta	86.3	pond	Phyllomedusinae	
	Smilisca phaeota	65.0	pond	Middle American	*Smilisca* clade
39) Panama, Barro Colorado Island; 31 m	*Agalychnis callidryas*	56.0	pond	Phyllomedusinae	
	Agalychnis spurrelli	75.6	pond	Phyllomedusinae	
	Cruziohyla calcarifer	80.5	pond	Phyllomedusinae	
	Dendropsophus microcephalus	25.0	pond	*Dendropsophus*	
	Dendropsophus phlebodes	23.6	pond	*Dendropsophus*	
	Hypsiboas rufitelus	49.2	pond	Cophomantini	
	Scinax boulengeri	48.7	pond	*Scinax*	
	Smilisca phaeota	65.0	pond	Middle American	*Smilisca* clade
	Smilisca sila	45.0	stream	Middle American	*Smilisca* clade
	Trachycephalus venulosus	101.0	pond	Lophiohylini	

Table S2. Data on body size and larval habitat and original literature sources.

Species	Maximum male SVL (mm)	Larval habitat	Source- male size (SVL)	Source - larval habitat
Acris crepitans	29	pond	Duellman 2001	Duellman 2001
Acris gryllus	29	pond	Lannoo 2005	IUCN et al. 2006
Agalychnis annae	73.9	pond	Duellman 2001	Duellman 2001
Agalychnis callidryas	56	pond	Duellman 2001	Duellman 2001
Agalychnis litodryas	70.2	pond	Duellman 2001	Duellman 2001
Agalychnis moreletii	65.7	pond	Duellman 2001	Duellman 2001
Agalychnis saltator	46.7	pond	Duellman 2001	Duellman 2001
Agalychnis spurrelli	75.6	pond	Duellman 2001	Duellman 2001
Anotheca spinosa	68.5	arboreal	Duellman 2001	Duellman 2001
Aparasphenodon brunoi	75	pond	Cochran 1955	IUCN et al. 2006
Aplastodiscus albofrenatus	40	stream	Lutz 1973	IUCN et al. 2006
Aplastodiscus albosignatus	42	direct	Heyer et al. 1990	IUCN et al. 2006
Aplastodiscus arildae	42	stream	Heyer et al. 1990	IUCN et al. 2006
Aplastodiscus callipygius	50.7	stream	Cruz and Peixoto 1984	IUCN et al. 2006
Aplastodiscus cavicola	38	stream	Duellman 2001	Duellman 2001
Aplastodiscus cochranae	46.5	pond	Garcia et al. 2001	IUCN et al. 2006
Aplastodiscus leucopygius	44	stream	Heyer et al. 1990	IUCN et al. 2006
Aplastodiscus perviridis	45	pond	Cei 1980	IUCN et al. 2006
Aplastodiscus weygoldti	?	stream		IUCN et al. 2006
Argenteohyla siemersi	70	pond	Cei 1980	IUCN et al. 2006
Bokermannohyla astartea	41.5	arboreal	Heyer et al. 1990	IUCN et al. 2006
Bokermannohyla circumdata	70	stream	Lutz 1973	IUCN et al. 2006
Bokermannohyla hylax	61.5	stream	Heyer et al. 1990	IUCN et al. 2006
Bokermannohyla martinsi	64	stream	Lutz 1973	IUCN et al. 2006
Bromeliohyla bromeliacia	29.5	arboreal	Duellman 2001	Duellman 2001
Bromeliohyla dendroscarta	31.6	arboreal	Duellman 2001	Duellman 2001
Charadrahyla altipotens	75	stream	Duellman 2001	Duellman 2001
Charadrahyla chaneque	71	stream	Duellman 2001	Duellman 2001

Charadrahyla nephila	71	stream	Duellman 2001	Duellman 2001
Charadrahyla taeniopus	65.9	stream	Duellman 2001	Duellman 2001
Charadrahyla trux	81	stream	Duellman 2001	Duellman 2001
Corythomantis greeningi	73	stream	Jared et al. 1999	IUCN et al. 2006
Cruziohyla calcarifer	80.5	pond	Duellman 2001	Duellman 2001
Cyclorana australis	100	pond	Cogger 1992	IUCN et al. 2006
Dendropsophus allenorum	21.4	pond	Duellman and Hoogmoed 1992	Duellman 2005
Dendropsophus anceps	40	pond	Lutz 1973	IUCN et al. 2006
Dendropsophus aperomeus	21.3	pond	Duellman 1982	Duellman 2001
Dendropsophus berthalutzae	21	stream	Lutz 1973	IUCN et al. 2006
Dendropsophus bifurcus	28	pond	Duellman 1978	Duellman 1978
Dendropsophus bipunctatus	25	pond	Lutz 1973	IUCN et al. 2006
Dendropsophus brevifrons	22	pond	Duellman 1978	Duellman 1978
Dendropsophus carnifex	27.7	pond	Duellman and Trueb 1983	IUCN et al. 2006
Dendropsophus ebraccatus	27.8	pond	Duellman 2001	Duellman 2001
Dendropsophus elegans	29.6	pond	Bastos and Haddad 1996	IUCN et al. 2006
Dendropsophus giesleri	25	pond	Weygoldt and Peixoto 1987	IUCN et al. 2006
Dendropsophus koechlini	24	pond	Rodríguez and Duellman 1994	IUCN et al. 2006
Dendropsophus labialis	43	pond	Amezquita 1999	IUCN et al. 2006
Dendropsophus leali	23	pond	Rodríguez and Duellman 1994	IUCN et al. 2006
Dendropsophus leucophyllatus	36	pond	Duellman 1978	Duellman 1978
Dendropsophus marmoratus	44	pond	Rodríguez and Duellman 1994	IUCN et al. 2006
Dendropsophus microcephalus	24.5	pond	Duellman 2001	Duellman 2001
Dendropsophus minusculus	20.6	pond	Duellman 1997	IUCN et al. 2006
Dendropsophus minutus	23	pond	Duellman 1997	IUCN et al. 2006
Dendropsophus miyatai	18.1	pond	Rodríguez and Duellman 1994	IUCN et al. 2006
Dendropsophus nanus	22	pond	Lutz 1973	IUCN et al. 2006
Dendropsophus parviceps	21.9	pond	Duellman 2005	IUCN et al. 2006
Dendropsophus pelidna	36.9	pond	Duellman and Hillis 1989	Duellman 2001
Dendropsophus phlebodes	23.6	pond	Duellman 2001	Duellman 2001
Dendropsophus rhodopeplus	24.2	pond	Duellman and Hoogmoed 1992	Duellman 2005
Dendropsophus riveroi	20	pond	Rodríguez and Duellman 1994	IUCN et al. 2006
Dendropsophus robertmertensi	26.4	pond	Duellman 2001	Duellman 2001

Dendropsophus rubicundulus	24	pond	Lutz 1973	IUCN et al. 2006
Dendropsophus sanborni	17	pond	Lutz 1973	IUCN et al. 2006
Dendropsophus sarayacuensis	29	pond	Rodríguez and Duellman 1994	IUCN et al. 2006
Dendropsophus sartori	26	pond	Duellman 2001	Duellman 2001
Dendropsophus schubarti	29.5	pond	Duellman 2005	IUCN et al. 2006
Dendropsophus seniculus	37.7	pond	Heyer et al. 1990	IUCN et al. 2006
Dendropsophus triangulum	28	pond	Rodríguez and Duellman 1994	IUCN et al. 2006
Dendropsophus walfordi	19.5	pond	Bokermann 1962	IUCN et al. 2006
Diaglena spatulata	85.9	pond	Duellman 2001	Duellman 2001
Duellmanohyla chamulae	30.5	stream	Duellman 2001	Duellman 2001
Duellmanohyla ignicolor	30.9	stream	Duellman 2001	Duellman 2001
Duellmanohyla rufioculis	30	stream	Duellman 2001	Duellman 2001
Duellmanohyla salvavida	28	stream	Duellman 2001	Duellman 2001
Duellmanohyla soralia	32.3	stream	Duellman 2001	Duellman 2001
Duellmanohyla uranochroa	36.8	stream	Duellman 2001	Duellman 2001
Ecnomiohyla echinata	57	?	Duellman 2001	Duellman 2001
Ecnomiohyla miliaria	110	arboreal	Duellman 2001	Duellman 2001
Ecnomiohyla minera	83.1	?	Duellman 2001	
Ecnomiohyla miotympanum	38.4	stream	Duellman 2001	Duellman 2001
Ecnomiohyla salvaje	86	arboreal	Duellman 2001	Duellman 2001
Ecnomiohyla valancifer	77.7	?	Duellman 2001	Duellman 2001
Exerodonta abdivita	27.5	?	Duellman 2001	
Exerodonta bivocata	28.5	stream	Duellman 2001	Duellman 2001
Exerodonta chimalapa	24.9	stream	Duellman 2001	Duellman 2001
Exerodonta juanitae	35.8	stream	Duellman 2001	Duellman 2001
Exerodonta melanomma	29.9	stream	Duellman 2001	Duellman 2001
Exerodonta perkinsi	?	stream		IUCN et al. 2006
Exerodonta pinorum	34.5	stream	Duellman 2001	Duellman 2001
Exerodonta smaragdina	26	stream	Duellman 2001	Duellman 2001
Exerodonta sumichrasti	27.7	stream	Duellman 2001	Duellman 2001
Exerodonta xera	27.9	stream	Duellman 2001	Duellman 2001
Hyla andersonii	51	pond	Conant and Collins 1991	IUCN et al. 2006
Hyla annectans	35	pond	Fei et al. 1999	IUCN et al. 2006

Hyla arborea	50	pond	Arnold 2003	IUCN et al. 2006
Hyla arenicolor	51.2	pond&stream	Duellman 2001	Duellman 2001
Hyla avivoca	39	pond	Lannoo 2005	IUCN et al. 2006
Hyla chinensis	32	pond	Fei et al. 1999	IUCN et al. 2006
Hyla chrysoscelis	60	pond	Conant and Collins 1991	IUCN et al. 2006
Hyla cinerea	57	pond	Conant and Collins 1991	IUCN et al. 2006
Hyla euphorbiacea	29.6	pond	Duellman 2001	Duellman 2001
Hyla eximia	35	pond	Duellman 2001	Duellman 2001
Hyla femoralis	44	pond	Conant and Collins 1991	IUCN et al. 2006
Hyla gratiosa	70	pond	Conant and Collins 1991	IUCN et al. 2006
Hyla japonica	39	pond	Goris and Maeda 2004	IUCN et al. 2006
Hyla meridionalis	65	pond	Arnold 2003	IUCN et al. 2006
Hyla plicata	44	pond	Duellman 2001	Duellman 2001
Hyla savignyi	40	pond	Tarkhnishvili and Gokhelashvili 1999	IUCN et al. 2006
Hyla squirella	41	pond	Conant and Collins 1991	IUCN et al. 2006
Hyla versicolor	60	pond	Conant and Collins 1991	IUCN et al. 2006
Hyla walkeri	35.9	pond	Duellman 2001	Duellman 2001
Hyla wrightorum	44	pond	Degenhardt et al. 1996	Degenhardt et al. 1996
Hylomantis granulosa	37.4	stream	Cruz 1988	IUCN et al. 2006
Hylomantis lemur	40.8	pond	Duellman 2001	Duellman 2001
Hyloscirtus armatus	68.5	pond&stream	Duellman et al. 1997	IUCN et al. 2006
Hyloscirtus charazani	55	stream	Vellard 1970	IUCN et al. 2006
Hyloscirtus colymba	37	stream	Duellman 2001	Duellman 2001
Hyloscirtus lascinius	38	stream	Rivero 1969	IUCN et al. 2006
Hyloscirtus lindae	68.1	stream	Duellman and Altig 1978	IUCN et al. 2006
Hyloscirtus pacha	60.8	stream	Duellman and Hillis 1990	Duellman 2001
Hyloscirtus palmeri	45	stream	Duellman 2001	Duellman 2001
Hyloscirtus pantostictus	63	stream	Duellman and Berger 1982	IUCN et al. 2006
Hyloscirtus phyllognathus	34	stream	Duellman 1972	IUCN et al. 2006
Hyloscirtus simmonsi	37.8	stream	Duellman 1989	Duellman 2001
Hyloscirtus tapichalaca	63.8	stream	Kizirian et al. 2003	IUCN et al. 2006
Hypsiboas albomarginatus	55	pond	Lutz 1973	IUCN et al. 2006

Hypsiboas albopunctatus	75	pond	Cei 1980	IUCN et al. 2006
Hypsiboas andinus	60	pond	Cei 1980	IUCN et al. 2006
Hypsiboas balzani	50.4	stream	Duellman et al. 1997	IUCN et al. 2006
Hypsiboas benitezi	37	stream	Rivero 1961	IUCN et al. 2006
Hypsiboas bischoffi	46.1	pond	Heyer et al. 1990	IUCN et al. 2006
Hypsiboas boans	132	pond	Duellman 2001	Duellman 2001
Hypsiboas caingua	33.1	stream	Lavilla and Cei 2001	IUCN et al. 2006
Hypsiboas calcaratus	47.5	pond	Duellman and Hoogmoed 1992	IUCN et al. 2006
Hypsiboas cinerascens	44	pond	Rodríguez and Duellman 1994	Duellman 2005
Hypsiboas cordobae	50	pond	Lutz 1973	IUCN et al. 2006
Hypsiboas crepitans	63	pond	Lutz 1973	IUCN et al. 2006
Hypsiboas ericae	34	stream	Caramaschi and Cruz 2000	IUCN et al. 2006
Hypsiboas faber	104	pond	Heyer et al. 1990	IUCN et al. 2006
Hypsiboas fasciatus	40.3	pond	Duellman and Hoogmoed 1992	IUCN et al. 2006
Hypsiboas geographicus	62	pond	Rodríguez and Duellman 1994	IUCN et al. 2006
Hypsiboas guentheri	40	pond	Lutz 1973	IUCN et al. 2006
Hypsiboas heilprini	48	stream	Hedges 2006	IUCN et al. 2006
Hypsiboas joaquini	51.5	pond&stream	Lutz 1973	IUCN et al. 2006
Hypsiboas lanciformis	80	pond	Rodríguez and Duellman 1994	IUCN et al. 2006
Hypsiboas latistriatus	40.6	?	Caramaschi and Cruz 2004	
Hypsiboas lemai	30.4	stream	Duellman 1997	IUCN et al. 2006
Hypsiboas leptolineatus	31.6	pond	Cruz and Caramaschi 1998	IUCN et al. 2006
Hypsiboas lundii	76	stream	Bokermann and Sazima 1973	IUCN et al. 2006
Hypsiboas marginatus	51.1	stream	Caramaschi and Cruz 2000	IUCN et al. 2006
Hypsiboas marianitae	56.8	pond	Duellman et al. 1997	IUCN et al. 2006
Hypsiboas microderma	34	pond	Rodríguez and Duellman 1994	Rodríguez and Duellman 1994
Hypsiboas multifasciatus	57.3	pond	Duellman 1997	IUCN et al. 2006
Hypsiboas pardalis	69	pond	Lutz 1973	IUCN et al. 2006
Hypsiboas pellucens	61.6	pond	Cochran and Goin 1970	IUCN et al. 2006
Hypsiboas picturatus	?	stream		IUCN et al. 2006
Hypsiboas polytaenius	31.4	pond	Cruz and Caramaschi 1998	IUCN et al. 2006
Hypsiboas prasinus	55	pond&stream	Lutz 1973	IUCN et al. 2006

Hypsiboas pulchellus	50	pond	Cei 1980	IUCN et al. 2006
Hypsiboas punctatus	40	pond	Rodríguez and Duellman 1994	IUCN et al. 2006
Hypsiboas raniceps	71	pond	Caramaschi and Niemeyer 2003	IUCN et al. 2006
Hypsiboas riojanus	45	pond	Cei 1980	IUCN et al. 2006
Hypsiboas roraima	45.5	stream	Duellman and Hoogmoed 1992	IUCN et al. 2006
Hypsiboas rosenbergi	90	pond	Duellman 2001	Duellman 2001
Hypsiboas rufitelus	49.2	pond	Duellman 2001	Duellman 2001
Hypsiboas semiguttatus	42	stream	Lutz 1973	IUCN et al. 2006
Hypsiboas semilineatus	?	pond		IUCN et al. 2006
Hypsiboas sibleszi	34.9	pond	Duellman 1997	IUCN et al. 2006
Isthmohyla angustilineata	34.2	pond	Duellman 2001	Duellman 2001
Isthmohyla lancasteri	33.6	stream	Duellman 2001	Duellman 2001
Isthmohyla picadoi	32.8	arboreal	Duellman 2001	Duellman 2001
Isthmohyla pictipes	39	stream	Duellman 2001	Duellman 2001
Isthmohyla pseudopuma	41.4	pond	Duellman 2001	Duellman 2001
Isthmohyla rivularis	34	stream	Duellman 2001	Duellman 2001
Isthmohyla tica	34.1	stream	Duellman 2001	Duellman 2001
Isthmohyla zeteki	23.5	arboreal	Duellman 2001	Duellman 2001
Itapotihyla langsdorffii	77	pond	Lutz 1973	IUCN et al. 2006
Litoria aurea	85	pond	Cogger 1992	IUCN et al. 2006
Litoria caerulea	100	pond	Cogger 1992	IUCN et al. 2006
Litoria freycineti	45	pond	Cogger 1992	IUCN et al. 2006
Litoria infrafrenata	110	pond	Cogger 1992	IUCN et al. 2006
Litoria meiriana	20	pond	Cogger 1992	IUCN et al. 2006
Lysapsus laevis	22	pond	Parker 1935	IUCN et al. 2006
Lysapsus limellum	20	pond	Cei 1980	IUCN et al. 2006
Megastomatohyla mixe	30.8	stream	Duellman 2001	Duellman 2001
Megastomatohyla mixomaculata	29.1	stream	Duellman 2001	Duellman 2001
Megastomatohyla nubicola	36.7	stream	Duellman 2001	Duellman 2001
Megastomatohyla pellita	29	stream	Duellman 2001	Duellman 2001
Myersiohyla inparquesi	50.4	pond&stream	Ayarzagüena and Señaris 1993	IUCN et al. 2006
Myersiohyla kanaima	48	?	Goin and Woodley 1969	
Nyctimantis rugiceps	67.5	arboreal	Duellman and Trueb 1976	Duellman 1978

Nyctimystes foricula	40	pond&stream	Menzies 1977	IUCN et al. 2006
Osteocephalus alboguttatus	46	stream	Duellman 1978	IUCN et al. 2006
Osteocephalus buckleyi	48.1	stream	Rodríguez and Duellman 1994	IUCN et al. 2006
Osteocephalus cabrerai	?	stream		IUCN et al. 2006
Osteocephalus leprieurii	48	pond	Jungfer and Hödl 2002	IUCN et al. 2006
Osteocephalus mutabor	50.3	pond&stream	Jungfer and Hödl 2002	IUCN et al. 2006
Osteocephalus oophagus	47.2	arboreal	Jungfer and Schiesari 1995	IUCN et al. 2006
Osteocephalus planiceps	65.9	arboreal	Duellman and Mendelson 1995	IUCN et al. 2006
Osteocephalus taurinus	85	pond	Rodríguez and Duellman 1994	IUCN et al. 2006
Osteocephalus verruciger	54.3	pond	Trueb and Duellman 1971	IUCN et al. 2006
Osteopilus brunneus	52	arboreal	Hedges 2006	IUCN et al. 2006
Osteopilus crucialis	100	arboreal	Hedges 2006	IUCN et al. 2006
Osteopilus dominicensis	66	pond	Hedges 2006	IUCN et al. 2006
Osteopilus marianae	40	arboreal	Hedges 2006	IUCN et al. 2006
Osteopilus pulchrilineatus	32	pond	Hedges 2006	IUCN et al. 2006
Osteopilus septentrionalis	89	pond	Duellman 2001	Duellman 2001
Osteopilus vastus	109	stream	Hedges 2006	IUCN et al. 2006
Osteopilus wilderi	28	arboreal	Hedges 2006	IUCN et al. 2006
Pachymedusa dacnicolor	82.6	pond	Duellman 2001	Duellman 2001
Phasmahyla cochranae	33.9	stream	Heyer et al. 1990	IUCN et al. 2006
Phasmahyla guttata	35	stream	Cochran 1955	IUCN et al. 2006
Phrynomedusa marginata	31	stream	Izecksohn and Cruz 1976	IUCN et al. 2006
Phyllodytes auratus	29	arboreal	Murphy 1997	IUCN et al. 2006
Phyllodytes luteolus	23	arboreal	Bokermann 1966	IUCN et al. 2006
Phyllomedusa atelopoides	37.4	pond	Duellman and Hoogmoed 1992	IUCN et al. 2006
Phyllomedusa bicolor	115	pond	Duellman 1974	IUCN et al. 2006
Phyllomedusa duellmani	54.2	pond	Cannatella 1982	Cannatella 1982
Phyllomedusa hypochondrialis	40	pond	Cei 1980	IUCN et al. 2006
Phyllomedusa palliata	49.1	pond	Duellman 2005	IUCN et al. 2006
Phyllomedusa tarsius	97	pond	Duellman 1978	Duellman 1978
Phyllomedusa tetraploidea	69.4	pond	Pombal and Haddad 1992	IUCN et al. 2006
Phyllomedusa tomopterna	48	pond	Rodríguez and Duellman 1994	IUCN et al. 2006
Phyllomedusa vaillantii	59.9	pond&stream	Duellman and Mendelson 1995	Duellman 1978

Phyllomedusa venusta	86.3	pond	Duellman 2001	Duellman 2001
Plectrohyla acanthodes	63.2	stream	Duellman 2001	Duellman 2001
Plectrohyla ameibothalame	43.1	stream	Canseco-Márquez et al. 2002	Canseco-Márquez et al. 2002
Plectrohyla arborescandens	37.6	stream	Duellman 2001	Duellman 2001
Plectrohyla bistincta	53.8	stream	Duellman 2001	Duellman 2001
Plectrohyla calthula	56.1	stream	Duellman 2001	Duellman 2001
Plectrohyla charadricola	44.4	stream	Duellman 2001	Duellman 2001
Plectrohyla chrysopleura	65.6	stream	Duellman 2001	Duellman 2001
Plectrohyla cyclada	39.5	stream	Duellman 2001	Duellman 2001
Plectrohyla glandulosa	49.1	stream	Duellman 2001	Duellman 2001
Plectrohyla guatemalensis	76.1	stream	Duellman 2001	Duellman 2001
Plectrohyla hazelae	38.6	stream	Duellman 2001	Duellman 2001
Plectrohyla ixil	41.6	stream	Duellman 2001	Duellman 2001
Plectrohyla matudai	46	stream	Duellman 2001	Duellman 2001
Plectrohyla mykter	42.3	stream	Duellman 2001	Duellman 2001
Plectrohyla pentheter	52.1	stream	Duellman 2001	Duellman 2001
Plectrohyla robertsorum	47.9	pond	Duellman 2001	Duellman 2001
Plectrohyla siopela	46.2	stream	Duellman 2001	Duellman 2001
Plectrohyla thorectes	34.2	stream	Duellman 2001	Duellman 2001
Pseudacris brachyphona	38	pond	Conant and Collins 1991	IUCN et al. 2006
Pseudacris brimleyi	32	pond	Conant and Collins 1991	IUCN et al. 2006
Pseudacris cadaverina	36	stream	Duellman 2001	IUCN et al. 2006
Pseudacris clarkii	29	pond	Duellman 2001	Duellman 2001
Pseudacris crucifer	37	pond	Conant and Collins 1991	IUCN et al. 2006
Pseudacris feriarum	40	pond	Conant and Collins 1991	IUCN et al. 2006
Pseudacris illinoensis	48	pond	Conant and Collins 1991 (as *P. streckeri*)	IUCN et al. 2006
Pseudacris kalmi	40	pond	Conant and Collins 1991 (as *P. triseriata*)	IUCN et al. 2006
Pseudacris maculata	37	pond	Conant and Collins 1991	IUCN et al. 2006
Pseudacris nigrita	32	pond	Conant and Collins 1991	IUCN et al. 2006
Pseudacris ocularis	15.5	pond	Lannoo 2005	IUCN et al. 2006

Pseudacris ornata	39	pond	Lannoo 2005	IUCN et al. 2006
Pseudacris regilla	37.8	pond	Duellman 2001	Duellman 2001
Pseudacris streckeri	39	pond	Lannoo 2005	IUCN et al. 2006
Pseudacris triseriata	40	pond	Conant and Collins 1991	IUCN et al. 2006
Pseudis minuta	40	pond	Cei 1980	IUCN et al. 2006
Pseudis paradoxa	57	pond	Duellman and Hoogmoed 1992	Duellman 2005
Ptychohyla acrochorda	36.3	?	Duellman 2001	Duellman 2001
Ptychohyla dendrophasma	84.1	unknown	Duellman 2001	IUCN et al. 2006
Ptychohyla euthysanota	38.1	stream	Duellman 2001	Duellman 2001
Ptychohyla hypomykter	41.2	stream	Duellman 2001 (as *P. spinipollex*)	Duellman 2001
Ptychohyla legleri	36.7	stream	Duellman 2001	Duellman 2001
Ptychohyla leonhardschultzei	35.6	stream	Duellman 2001	Duellman 2001
Ptychohyla salvodorensis	34.2	stream	Duellman 2001	Duellman 2001
Ptychohyla spinipollex	41.2	stream	Duellman 2001	Duellman 2001
Ptychohyla zophodes	37.4	stream	Duellman 2001	Duellman 2001
Scarthyla goinorum	21	stream	Rodríguez and Duellman 1994	IUCN et al. 2006
Scinax acuminatus	45	pond	Lutz 1973	IUCN et al. 2006
Scinax altae	26	pond	Duellman 2001	Duellman 2001
Scinax berthae	22.2	pond	Faivovich 2005	IUCN et al. 2006
Scinax boulengeri	48.7	pond	Duellman 2001	Duellman 2001
Scinax catharinae	35.1	pond	Faivovich 2005	IUCN et al. 2006
Scinax crospedospilus	33.3	pond	Heyer et al. 1990	IUCN et al. 2006
Scinax elaeochrous	37.7	pond	Duellman 2001	Duellman 2001
Scinax fuscovarius	47.1	pond	de la Riva 1993	IUCN et al. 2006
Scinax garbei	42.2	pond	Duellman and Wiens 1993	IUCN et al. 2006
Scinax nasicus	37	pond	Lutz 1973	IUCN et al. 2006
Scinax ruber	41.2	pond	Duellman and Wiens 1993	IUCN et al. 2006
Scinax squalirostris	29	pond	Lutz 1973	IUCN et al. 2006
Scinax staufferi	29	pond	Duellman 2001	Duellman 2001
Scinax sugillatus	42	pond	Duellman 1973	IUCN et al. 2006
Scinax uruguayus	25.8	pond	Langone 1990	IUCN et al. 2006
Smilisca baudinii	76	pond	Duellman 2001	Duellman 2001
Smilisca cyanosticta	56	pond	Duellman 2001	Duellman 2001

Smilisca fodiens	62.6	pond	Duellman 2001	Duellman 2001
Smilisca phaeota	65	pond	Duellman 2001	Duellman 2001
Smilisca puma	38	pond	Duellman 2001	Duellman 2001
Smilisca sila	45	stream	Duellman 2001	Duellman 2001
Smilisca sordida	45	stream	Duellman 2001	Duellman 2001
Sphaenorhynchus dorisae	29	pond	Rodríguez and Duellman 1994	IUCN et al. 2006
Sphaenorhynchus lacteus	41.5	pond	Duellman and Hoogmoed 1992	Duellman 2005
Sphaenorhynchus orophilus	32	pond	Heyer et al. 1990	IUCN et al. 2006
Tepuihyla edelcae	40.2	pond	Mijares-Urrutia et al. 1999	IUCN et al. 2006
Tlalocohyla godmani	38	pond	Duellman 2001	Duellman 2001
Tlalocohyla loquax	44.7	pond	Duellman 2001	Duellman 2001
Tlalocohyla picta	21.4	pond	Duellman 2001	Duellman 2001
Tlalocohyla smithii	26	pond	Duellman 2001	Duellman 2001
Trachycephalus coriaceus	63	arboreal	Rodríguez and Duellman 1994	IUCN et al. 2006
Trachycephalus hadroceps	53.9	arboreal	Duellman and Hoogmoed 1992	Duellman 2001
Trachycephalus imitatrix	57.1	pond	Lutz 1973	IUCN et al. 2006
Trachycephalus jordani	75.9	stream	Dan Moen, unpublished	IUCN et al. 2006
Trachycephalus mesophaeus	85	pond	Lutz 1973	IUCN et al. 2006
Trachycephalus nigromaculatus	86	pond	Cochran 1955	IUCN et al. 2006
Trachycephalus resinifrictix	76	arboreal	Rodríguez and Duellman 1994	IUCN et al. 2006
Trachycephalus venulosus	101	pond	Duellman 2001	Duellman 2001
Triprion petasatus	60.8	pond	Duellman 2001	Duellman 2001
Xenohyla truncata	?	pond		IUCN et al. 2006

Table S3. Morphometric data for hylid frogs. All measurements are in millimeters and were conducted on males. Variables are described in the text and labeled here as follows: (1) snout-to-vent length (SVL); (2) tibia length (TIBL); (3) foot length (FOOT); (4) head length (HLEN); (5) head width (HWID); (6) interorbital distance (IOD); (7) internarial distance (IND); (8) eye-to-nostril distance (ENOS); (9) eye diameter (EYE); (10) hand length (HNDL); (11) thumb length (THBL); (12) radioulnar length (RDL); (13) maximum width of terminal digit of finger 3 (DIG3); and (14) tympanum width (TYMP).

Species	Museum number	SVL	TIBL	FOOT	HLEN	HWID	IOD	IND	ENOS	EYE	HNDL	THBL	RDL	DIG3	TYMP
Acris crepitans	USNM 514868	22.24	12.16	11.49	6.87	8.35	1.68	1.88	1.90	2.49	5.64	1.85	4.52	0.60	1.19
Acris crepitans	USNM 514841	21.18	11.53	11.92	6.51	7.63	1.55	2.19	2.02	2.29	6.04	1.73	4.74	0.46	1.16
Agalychnis callidryas	USNM 563405	44.63	23.29	14.94	13.78	14.77	5.25	3.37	4.49	5.09	10.20	4.13	12.33	2.03	2.96
Agalychnis callidryas	USNM 563406	51.20	26.70	16.84	15.21	16.88	6.05	3.98	5.29	5.08	13.18	5.44	13.44	2.87	2.89
Anotheca spinosa	USNM 219621	67.05	36.06	28.87	23.20	26.28	9.25	5.54	6.65	6.19	22.56	8.05	18.56	4.41	6.08
Anotheca spinosa	USNM 219622	66.84	33.56	30.92	20.66	23.52	8.65	4.88	6.25	6.36	24.07	6.43	18.90	3.81	5.37
Aparasphenodon brunoi	USNM 164158	44.38	17.23	13.42	15.20	11.76	5.78	2.66	6.94	4.06	10.51	4.10	8.89	1.38	2.23
Aparasphenodon brunoi	USNM 164160	39.58	16.23	11.68	15.17	12.04	5.95	2.13	6.47	4.04	10.60	3.96	9.07	1.29	2.28
Aplastodiscus leucopygius	USNM 208406	42.93	21.46	18.04	14.27	14.83	6.18	2.96	5.70	3.39	11.89	4.56	10.38	2.28	3.40
Aplastodiscus perviridis	USNM 303652	36.06	17.66	18.33	11.09	12.61	3.71	3.29	2.99	3.52	12.18	4.25	10.14	1.34	1.89
Argenteohyla siemersi	USNM 200048	43.32	19.32	16.89	13.45	13.89	5.55	3.34	4.32	3.60	11.46	3.88	10.05	1.39	2.69
Bokermannohyla hylax	USNM 247811	55.74	29.29	23.88	18.93	20.22	7.20	4.12	6.10	5.51	16.34	6.72	14.78	3.03	3.67
Bromeliohyla bromeliacia	USNM 523171	28.36	14.01	10.37	9.75	9.58	3.47	2.26	3.10	3.25	6.57	3.17	6.53	1.36	1.49
Bromeliohyla bromeliacia	USNM 523172	29.52	15.13	11.65	9.92	10.09	4.01	2.60	3.18	3.03	6.64	3.42	7.67	1.26	1.61
Corythomantis greeningi	USNM 565106	66.01	27.67	22.89	20.45	19.20	8.99	4.56	6.82	5.32	16.78	5.01	14.92	2.48	3.32
Cruziohyla calcarifer	USNM 559748	68.48	35.10	24.63	23.10	24.21	7.54	5.81	7.16	4.96	19.52	7.62	18.70	4.81	4.95
Cruziohyla calcarifer	USNM 563933	69.81	39.60	26.00	21.71	24.65	8.93	6.31	7.03	4.61	20.07	9.32	19.17	4.26	4.65
Cyclorana australis	USNM 128236	56.73	27.00	21.88	23.03	24.53	5.10	4.70	6.10	5.55	13.31	6.74	15.20	0.80	4.38
Cyclorana australis	USNM 203883	58.17	24.56	22.77	22.60	25.57	5.29	4.45	5.34	5.88	14.04	6.09	15.68	0.44	3.44
Dendropsophus leucophyllatus	USNM 288971	27.75	14.59	12.78	7.67	9.97	3.80	2.93	2.75	2.93	8.23	3.04	6.72	1.33	1.54
Dendropsophus leucophyllatus	USNM 288974	28.88	14.17	11.44	9.22	10.17	3.45	1.75	2.55	3.04	7.34	2.95	6.74	1.36	1.52

Dendropsophus marmoratus	USNM 560322	36.01	18.33	15.61	10.00	11.98	3.70	3.06	3.49	3.63	10.99	3.91	8.34	1.74	2.25
Dendropsophus marmoratus	USNM 560331	34.48	17.33	15.45	9.82	11.67	3.44	2.67	3.51	3.98	10.94	3.78	8.55	1.98	2.05
Dendropsophus microcephalus	USNM 242778	21.25	11.62	9.22	6.30	6.57	2.73	1.73	1.80	2.12	5.36	2.13	5.59	0.87	1.06
Dendropsophus microcephalus	USNM 242784	19.98	10.04	7.50	5.43	6.07	2.09	1.77	1.72	2.29	4.93	1.65	4.79	0.84	1.11
Dendropsophus parviceps	USNM 345223	19.01	10.29	7.91	5.75	7.10	2.78	1.71	1.93	2.48	5.39	1.58	5.35	1.01	1.11
Dendropsophus parviceps	USNM 345224	19.18	10.42	7.90	6.49	6.52	2.21	1.65	1.86	2.59	5.22	1.42	5.17	0.98	1.24
Dendropsophus parviceps	USNM 345229	20.22	10.59	8.19	5.76	6.98	2.60	1.72	1.98	2.60	5.77	1.78	5.22	0.96	1.06
Dendropsophus parviceps	USNM 345231	20.31	10.28	8.40	5.93	7.07	2.92	1.81	1.93	2.67	5.95	1.86	5.32	1.05	1.16
Dendropsophus parviceps	USNM 345233	19.77	10.28	8.02	5.64	7.12	2.67	1.50	1.91	2.61	5.58	1.54	5.07	1.01	1.10
Duellmanohyla soralia	USNM 514515	29.30	14.50	10.57	9.67	9.24	3.69	2.20	3.06	2.94	8.07	3.09	7.94	1.30	1.58
Duellmanohyla soralia	USNM 514520	28.60	14.58	11.57	9.48	9.79	3.61	2.77	2.79	2.66	8.51	2.90	7.89	1.29	1.39
Ecnomiohyla miliaria	USNM 563949	97.39	46.71	47.20	31.85	37.66	11.24	7.26	9.47	8.41	32.14	10.88	23.73	6.45	6.02
Ecnomiohyla miliaria	USNM 563950	94.71	48.81	45.37	31.33	37.23	10.91	7.13	10.63	7.55	33.78	12.50	24.13	6.51	6.06
Ecnomiohyla miotympanum	USNM 304929	29.62	15.96	12.72	9.46	9.95	3.04	2.34	2.87	2.89	8.34	2.31	7.83	1.78	1.60
Ecnomiohyla miotympanum	USNM 304929	27.58	14.38	11.22	8.45	9.83	2.86	2.27	2.59	2.72	7.47	2.30	7.21	1.21	1.34
Exerodonta sumichrasti	USNM 114190	21.08	11.21	8.44	7.08	7.00	3.26	1.93	2.46	2.04	5.63	1.84	4.80	0.86	1.05
Hyla cinerea	USNM 530227	37.62	17.67	14.38	10.21	11.21	3.79	2.68	3.08	3.11	8.86	2.47	8.70	1.47	2.08
Hyla cinerea	USNM 530233	38.38	17.94	15.95	10.28	11.75	3.69	2.68	3.20	3.29	9.86	3.25	8.43	1.55	2.48
Hylomantis lemur	USNM 286444	42.89	20.33	14.57	13.04	13.54	4.75	3.47	4.29	4.66	9.39	4.26	12.06	1.95	1.51
Hylomantis lemur	USNM 286449	41.15	20.44	14.43	13.42	12.89	4.93	3.37	4.05	4.56	10.95	4.43	11.47	2.19	1.98
Hyloscirtus phyllognathus	USNM 298222	34.46	17.25	13.73	9.56	11.48	3.78	2.55	2.58	3.19	9.71	4.09	8.82	1.69	1.40
Hyloscirtus phyllognathus	USNM 298226	34.86	16.66	13.92	10.86	11.19	4.51	2.92	3.04	3.09	10.31	3.54	9.03	2.00	1.80
Hypsiboas boans	USNM 298726	91.71	50.51	39.04	32.15	34.94	12.32	5.89	12.26	7.60	27.18	12.37	20.79	5.07	4.68
Hypsiboas boans	USNM 298727	93.77	50.35	41.64	29.60	32.63	10.71	5.85	11.66	7.60	27.85	11.76	24.24	4.87	4.85
Hypsiboas geographicus	USNM 298853	50.74	26.87	19.25	17.72	19.09	6.71	3.59	5.97	5.68	14.09	6.01	12.52	2.66	4.31
Hypsiboas geographicus	USNM 298855	43.82	22.40	16.38	13.99	15.02	4.58	3.00	4.94	4.53	12.02	4.11	9.99	2.29	2.69
Hypsiboas geographicus	USNM 298858	49.31	25.05	17.36	15.97	17.45	5.18	3.14	5.40	4.74	13.57	4.49	11.21	2.62	3.03
Hypsiboas geographicus	USNM 298859	45.62	23.00	17.07	15.29	15.81	5.10	3.22	5.10	4.80	12.29	4.33	10.96	2.25	2.78
Hypsiboas geographicus	USNM 342938	46.67	22.91	16.80	15.82	17.16	5.12	3.22	5.07	4.85	12.47	5.26	10.87	2.22	3.30
Hypsiboas lanciformis	USNM 317318	66.67	47.23	32.47	23.74	19.99	6.78	5.58	8.46	6.24	20.42	9.82	17.00	2.75	4.31
Hypsiboas lanciformis	USNM 317320	71.28	47.82	35.14	26.14	21.94	8.29	6.01	8.04	7.44	21.72	9.59	17.47	3.06	4.50
Isthmohyla pseudopuma	USNM 219895	39.13	20.35	18.70	12.66	11.80	4.49	2.52	3.33	4.17	10.45	4.26	10.43	2.07	2.68
Isthmohyla pseudopuma	USNM 219896	36.81	20.52	17.03	11.22	11.38	4.13	2.55	3.28	3.60	10.05	3.09	10.27	1.87	2.06
Itapotihyla langsdorffii	USNM 121337	82.86	44.46	32.80	25.73	26.22	10.83	6.03	8.51	7.60	25.88	8.96	19.11	4.78	4.84

Litoria aurea	USNM 149672	73.48	35.87	33.30	23.63	24.17	5.49	4.15	6.04	6.09	20.08	7.57	17.96	2.21	4.82
Litoria aurea	USNM 149674	72.89	35.48	33.34	23.45	24.20	5.76	4.16	5.34	6.60	19.92	7.09	17.44	2.04	5.10
Litoria bicolor	USNM 195493	19.41	9.88	7.33	5.24	5.89	2.33	1.84	2.10	2.23	4.16	1.53	4.22	0.68	1.13
Litoria caerulea	USNM 195501	78.65	30.13	28.77	20.82	25.65	7.47	6.09	6.55	5.76	20.25	7.08	16.42	4.65	3.87
Litoria caerulea	USNM 212762	75.75	30.52	27.67	21.53	26.13	6.84	5.90	6.45	6.06	18.91	5.81	22.12	4.47	4.39
Litoria eucnemis	USNM 166199	36.57	23.66	14.60	11.47	12.84	4.03	3.45	4.29	3.85	10.98	3.98	9.98	1.91	2.43
Litoria eucnemis	USNM 166200	44.40	24.97	18.31	15.68	16.00	4.83	3.57	4.80	5.02	11.46	3.84	11.03	2.18	3.23
Litoria ewingii	USNM 63177	33.02	16.70	14.46	9.76	11.05	3.58	2.70	3.19	3.83	8.37	3.25	9.88	1.45	2.38
Litoria gracilenta	USNM 203913	33.37	17.03	13.24	9.30	11.85	4.71	3.01	2.76	3.29	7.89	2.24	8.18	1.60	2.43
Litoria lesueurii	USNM 203916	54.74	35.14	27.03	17.64	18.92	5.78	4.62	5.99	5.41	15.54	7.11	14.56	1.89	3.77
Litoria nannotis	USNM 269406	43.70	24.85	18.47	13.67	15.96	4.52	4.12	4.06	4.11	12.20	5.04	12.45	2.19	0.00
Litoria nasuta	USNM 212347	42.22	29.32	24.13	15.11	12.56	3.48	3.87	4.23	3.66	10.70	5.47	10.06	0.83	3.16
Litoria peronii	USNM 203920	51.24	27.66	24.86	14.22	16.20	4.65	3.89	4.54	4.69	16.56	6.42	12.88	3.09	3.38
Litoria peronii	USNM 203921	50.22	28.94	23.89	16.12	17.43	6.37	3.52	4.62	4.63	18.18	6.59	12.91	3.03	3.94
Litoria rubella	USNM 199224	32.45	12.06	11.21	6.98	9.93	3.24	2.27	3.25	2.78	7.87	2.56	6.96	1.39	2.17
Litoria rubella	USNM 199225	32.34	12.72	11.09	8.23	9.60	3.44	2.42	2.94	2.90	7.88	3.28	7.36	1.40	2.10
Litoria thesaurensis	USNM 340152	50.05	27.27	22.16	15.13	15.51	6.53	3.62	5.55	4.17	14.15	5.35	12.25	2.68	2.58
Litoria thesaurensis	USNM 340155	50.15	27.59	20.99	16.03	15.85	5.34	3.56	4.76	4.59	14.09	5.76	12.61	2.62	2.82
Myersiohyla kanaima	USNM 561828	46.70	23.86	17.21	17.01	16.05	4.59	3.53	6.09	5.49	12.62	5.89	12.77	2.50	2.67
Myersiohyla kanaima	USNM 561829	44.10	23.07	15.98	16.90	16.09	3.65	3.10	5.00	5.01	12.45	5.81	11.86	2.20	2.43
Nyctimantis rugiceps	USNM 198707	63.59	32.34	25.90	22.23	22.64	7.60	5.60	8.11	6.50	19.21	6.92	15.82	3.91	4.12
Nyctimantis rugiceps	USNM 198708	59.95	32.15	24.15	20.99	22.30	8.14	5.61	7.13	5.50	17.17	6.49	15.77	2.22	4.02
Nyctimystes cheesmani	USNM 269473	34.66	19.25	13.99	11.52	12.26	3.45	3.25	3.32	3.99	9.92	3.80	9.12	1.26	1.56
Nyctimystes cheesmani	USNM 269475	33.36	18.83	14.20	11.73	11.85	3.55	3.23	3.30	3.50	10.40	3.42	9.16	1.44	1.74
Osteocephalus leprieurii	USNM 342602	50.91	29.96	22.44	16.63	16.62	5.88	3.60	5.66	5.10	15.87	6.05	13.63	2.87	4.02
Osteocephalus leprieurii	USNM 343216	44.60	25.77	19.65	14.79	15.07	5.51	3.20	4.59	4.05	12.73	4.72	12.20	2.32	3.35
Osteocephalus taurinus	USNM 222205	74.33	38.05	30.18	21.81	24.00	8.38	5.02	8.06	6.23	24.23	7.88	18.93	4.73	6.09
Osteocephalus taurinus	USNM 222210	78.77	39.61	32.74	24.05	24.47	9.21	5.12	8.24	6.97	25.12	8.84	18.26	4.60	5.80
Osteocephalus taurinus	USNM 247614	78.34	41.21	32.67	22.58	24.41	9.22	4.92	7.82	6.35	22.90	7.66	19.26	4.38	5.31
Osteopilus vastus	KU 264729	105.00	56.29	46.54	32.03	36.18	11.58	8.96	8.68	8.72	34.54	14.57	27.56	6.59	4.99
Osteopilus vastus	KU 264734	108.11	58.11	46.62	32.18	35.40	13.40	9.26	9.20	9.25	30.83	11.92	27.50	6.59	4.92
Osteopilus wilderi	KU 287833	24.75	13.66	9.51	8.02	8.82	3.55	2.04	2.47	2.16	6.52	2.35	6.24	1.02	1.15
Osteopilus wilderi	KU 287849	25.85	13.95	9.44	8.17	9.10	3.42	1.79	2.51	2.35	6.76	1.90	6.18	1.11	1.35
Pachymedusa dacnicolor	USNM 238118	63.95	25.32	22.99	18.52	19.71	6.24	5.29	5.11	6.20	16.49	6.37	17.73	2.36	3.87
Pachymedusa dacnicolor	USNM 238125	65.89	25.43	21.66	19.39	20.59	7.12	5.28	6.32	6.04	17.76	6.94	16.62	1.88	3.99
Phyllodytes auratus	USNM 244419	31.43	14.60	11.38	10.13	10.56	3.85	1.94	3.29	2.81	8.00	2.85	7.03	1.49	0.00

Phyllomedusa atelopoides	USNM 342650	35.80	14.38	11.44	12.44	14.04	5.56	3.36	3.42	4.24	8.90	3.36	13.19	0.88	3.11
Phyllomedusa tarsius	USNM 560397	81.95	38.27	27.39	23.91	25.85	7.94	6.54	7.20	7.88	23.14	8.67	24.10	3.44	3.59
Phyllomedusa tarsius	USNM 560398	80.92	37.86	26.95	23.34	26.17	9.68	6.34	6.97	7.66	21.97	9.37	24.68	3.07	3.63
Phyllomedusa tomopterna	USNM 343278	45.19	21.75	15.30	14.04	15.10	5.16	3.75	4.08	4.69	12.06	4.38	13.98	1.82	2.73
Phyllomedusa tomopterna	USNM 343279	41.91	20.08	14.51	12.64	13.76	4.97	3.36	3.92	4.72	10.78	4.27	13.45	1.87	2.47
Phyllomedusa tomopterna	USNM 537736	43.30	20.53	14.82	14.28	14.35	5.18	3.21	4.03	4.83	10.60	4.17	13.17	1.58	2.78
Phyllomedusa tomopterna	USNM 537737	40.63	22.42	15.64	13.08	13.64	5.00	3.47	4.09	4.32	11.25	5.09	13.81	2.09	2.73
Plectrohyla guatemalensis	USNM 523195	52.22	26.70	24.18	14.89	16.73	5.05	4.35	3.66	4.83	16.00	6.07	14.30	2.29	2.47
Plectrohyla guatemalensis	USNM 523200	51.70	25.95	23.18	13.50	17.23	5.21	4.53	3.33	4.48	16.11	5.42	14.42	2.55	?
Pseudacris crucifer	USNM 534798	29.14	14.63	12.22	8.67	9.80	2.89	2.33	2.66	2.80	6.10	2.31	7.67	1.00	1.42
Pseudacris crucifer	USNM 534820	29.44	13.53	12.13	8.72	10.32	3.22	2.39	2.84	3.02	7.83	2.32	7.03	1.09	1.81
Pseudis limellum	USNM 341861	17.33	10.60	8.82	5.80	6.53	1.66	0.93	1.65	1.90	5.02	2.30	4.26	0.30	1.74
Pseudis limellum	USNM 341875	19.11	11.95	10.01	6.23	7.06	1.92	1.12	1.72	1.69	6.08	2.66	4.76	0.36	1.57
Pseudis paradoxus	USNM341880	49.97	23.98	22.16	15.17	17.34	3.31	3.33	3.11	4.50	11.92	6.11	13.22	0.49	4.23
Pseudis paradoxus	USNM341885	48.72	25.95	25.54	14.63	17.59	3.22	3.09	3.21	4.34	10.50	6.30	12.66	0.40	3.72
Ptychohyla spinipollex	USNM 514366	37.02	18.83	15.11	10.77	11.38	3.90	3.20	2.82	3.77	10.09	3.62	8.93	1.60	1.77
Ptychohyla spinipollex	USNM 514381	40.29	19.16	15.76	11.47	12.07	3.89	3.59	3.08	3.89	10.59	4.10	9.59	1.71	1.90
Scarthyla goinorum	USNM 342385	16.74	10.02	7.78	5.53	5.01	2.23	1.80	1.88	1.93	4.76	1.68	4.36	0.65	1.12
Scinax acuminatus	USNM 303691	42.42	21.19	16.23	14.38	15.37	4.06	3.02	5.17	3.69	11.25	4.38	9.49	1.97	2.71
Scinax catharinae	USNM 217742	28.83	15.90	12.37	9.95	9.22	2.80	2.17	3.52	3.15	8.81	3.23	7.35	1.54	1.61
Scinax catharinae	USNM 217742	30.55	17.18	12.55	9.73	9.63	2.91	2.29	3.72	3.44	8.73	3.80	7.13	1.51	1.98
Scinax garbei	USNM 537707	38.38	20.52	16.30	13.80	11.25	3.83	3.17	5.40	3.49	11.64	4.54	9.00	2.42	2.23
Scinax garbei	USNM 537708	38.70	21.84	16.53	12.79	12.73	3.99	3.32	5.29	3.33	11.57	4.93	9.46	2.03	2.07
Scinax ruber	USNM 346097	33.43	15.40	13.12	10.70	10.40	3.87	2.59	3.73	3.56	8.67	3.09	7.86	1.63	1.96
Scinax ruber	USNM 346100	34.71	16.93	13.95	11.00	10.44	3.79	2.58	4.07	3.01	9.24	3.82	7.65	1.81	2.03
Scinax staufferi	USNM 514439	26.16	11.62	8.95	7.15	8.51	2.57	1.86	2.89	2.31	5.69	2.00	5.64	1.04	1.39
Scinax staufferi	USNM 514440	26.90	11.54	9.06	7.73	9.11	3.49	2.07	3.04	2.37	6.78	2.29	5.68	1.11	1.61
Smilisca baudinii	USNM 559240	56.63	27.68	23.48	17.10	19.67	6.50	4.12	4.56	5.81	14.75	4.99	13.80	2.50	4.23
Smilisca baudinii	USNM 559253	57.15	27.82	23.90	18.36	20.14	6.01	4.14	4.59	5.55	15.91	5.14	13.44	2.68	3.63
Sphaenorhynchus lacteus	USNM 281733	30.42	15.03	14.68	7.21	9.52	4.62	2.29	3.10	2.66	9.75	3.03	7.85	1.29	1.13
Sphaenorhynchus lacteus	USNM 281746	37.25	18.11	15.78	8.47	10.75	4.68	2.58	3.32	3.15	10.38	3.81	8.30	1.50	1.27
Tlalocohyla godmani	USNM 514229	40.57	20.59	17.56	11.23	13.62	4.92	3.50	3.19	3.63	12.05	4.04	10.03	1.36	2.17
Tlalocohyla godmani	USNM 514229	41.17	20.31	16.67	11.25	13.65	5.46	3.50	3.59	3.68	11.95	4.21	9.72	1.94	2.31
Tlalocohyla picta	USNM 333083	17.53	9.30	7.18	5.40	5.73	3.00	1.59	1.84	2.00	4.33	1.49	4.24	0.68	0.94
Trachycephalus jordani	USNM 285292	70.22	34.63	29.75	20.85	22.19	10.08	4.53	7.89	5.47	19.80	7.73	16.96	3.74	4.22
Trachycephalus jordani	USNM 285294	70.45	33.37	28.07	22.17	22.51	10.94	4.06	7.81	5.11	22.00	7.53	16.55	3.62	4.09

Trachycephalus venulosus	USNM 247254	72.68	33.27	29.08	20.97	22.24	6.27	5.00	5.66	5.92	22.16	8.34	16.79	3.39	4.55
Trachycephalus venulosus	USNM 247255	65.84	31.12	26.62	19.38	21.62	6.29	4.95	5.85	4.83	20.28	7.47	16.30	3.24	3.65
Trachycephalus venulosus	USNM 247616	62.88	30.43	26.14	18.64	20.33	5.71	4.81	5.55	5.22	18.93	7.56	15.71	3.44	3.50
Trachycephalus venulosus	USNM 342966	64.79	30.29	24.68	18.63	19.30	6.38	4.61	5.33	6.06	19.45	6.05	15.18	3.41	4.07
Trachycephalus venulosus	USNM 343219	68.97	32.85	27.70	19.76	22.52	6.61	4.81	5.98	5.73	20.79	7.03	17.01	3.93	3.90
Triprion petasatus	USNM 118660	51.95	21.42	16.86	17.68	14.63	11.45	1.68	7.49	4.41	11.92	3.82	10.76	2.23	3.10
Triprion petasatus	USNM 118661	50.61	21.21	17.34	17.92	14.69	11.32	1.76	8.20	3.25	13.31	4.52	10.23	2.20	2.69
Xenohyla truncata	USNM 565111	34.73	14.91	13.33	8.44	11.87	5.47	2.13	3.78	2.58	9.02	3.35	7.88	1.72	1.64

Table S4. Results of principal components analysis (PCA) on the hylid morphometric data (Table S3), showing the loadings of each original variable on PC1 (left) and the proportion of the total variation represented by each PC axis (right). Variable acronyms are as above in Table S3. We only present the principal components loadings for the first PC axis due to the low amount of variation represented by all other axes. "All hylids" represents a PCA conducted on the data from a sample of all hylid species (i.e., regardless of region), while "MA hylids" represents the same analysis conducted on a subset of the data that includes only Middle American species.

	PC1 loadings	
Variable	All hylids	MA hylids
SVL	0.27724	0.27534
TIBL	0.27323	0.27393
FOOT	0.27095	0.27203
HLEN	0.27504	0.27527
HWID	0.27456	0.27572
IOD	0.25232	0.24225
IND	0.26377	0.25789
ENOS	0.25873	0.25502
EYE	0.26756	0.26353
HNDL	0.27547	0.27386
THBL	0.27144	0.27101
RDL	0.27189	0.27254
DG3	0.25380	0.26753
TYMP	0.25371	0.26339

	% Variation	
PC Axis	All hylids	MA hylids
1	91.227	92.870
2	2.481	3.481
3	1.730	1.114
4	1.268	0.888
5	0.995	0.598
6	0.599	0.273
7	0.437	0.217
8	0.400	0.172
9	0.277	0.145
10	0.184	0.087
11	0.171	0.067
12	0.087	0.046
13	0.084	0.026
14	0.061	0.018

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Figure legends

Figures S1–S3. Phylogeny of Hylidae that was used for all analyses, estimated by (1) separate Bayesian analyses of each major South American clade (from Moen and Wiens 2009) and the Middle American Clade (Smith et al. 2007), (2) converting branch lengths into units of time using the program r8s, and (3) connecting these clades together by placing on an ultrametric phylogeny (with branch lengths in units of time) of the Hylidae, as estimated by Wiens et al. (2006b). See Methods for further details. Branch lengths are in units of time, with the scale bar reflecting divergence times estimated using the younger set of calibration dates. Branch colors reflect biogeographic designations (for species at tips) and ancestral-state estimates (for internal nodes), estimated under the DEC model of Ree and Smith (2008). This model distinguishes between range evolution along branches with changes that occur at cladogenesis events; thus, we show changes as occurring mid-branch (for changes along branches) or as vertical branches differing from their common ancestor (for changes at cladogenesis). Note that the position of changes along branches could not be inferred, so our mid-branch designation for changes is arbitrary and was chosen for visual clarity. Branch colors reflect states with the highest likelihood, and dashed branches represent cases where alternative reconstructions fell within two ln-likelihood units (Ree and Smith 2008). In most of these latter cases the displayed resolution still had a much higher likelihood than all other possible resolutions, with the exception of the nodes in the vicinity of the Middle American *Hyla* in Fig. S3. Because of the extreme amount of ambiguity in this case (no potential resolution had a normalized likelihood higher than 0.44 and 3–5 alternative resolutions were possible), we considered it most likely that *Hyla* recolonized Middle America only once. However, considering this clade as representing multiple colonization events did not influence our results (not shown).

Figure S4. Effect of community size on the power of ROTI null model analyses. The vertical axis is represented as 1 – *P*, or one minus the *P*-value from the likelihood ratio test (i.e., values ≥ 0.95 favor rejecting the null model). Thus, these are analogous to power curves, but are different in that power curves instead compare the proportion of overlap of an alternative distribution with that of a null distribution. Note that we varied the ROTI continuously from 0.0 to 1.0 to aid visual demonstration of the change in power, but this also means that many of these ROTIs correspond to fractions of ISE events per community (especially in smaller communities), so it should be understood that many of the values along these curves are only of theoretical interest.

Figure S5. Results of varying the body-size cutoff for our ecological similarity analyses. Even under very stringent similarity criteria (e.g. same larval habitat and body sizes within 1 or 2 mm), we see many instances of similar species co-occurring (open circles), with many of those co-occurrences a consequence of independent colonizations of Middle America (black squares).

Appendix S2: Null models

In this section, we develop null models for testing whether the value of a given index for a given community differs significantly from expectations based on chance. We focus on the ROTI (Regional Origin Trait Index), which is the major emphasis of our paper. For the CTDI (Community Trait Dispersal Index), development of a null model is very difficult because one cannot simply shuffle species among communities (the basis for most null models in community ecology). Shuffling species among communities would change the number of communities in which each trait origin is represented, a value upon which this index is calculated. Determining null values for the CTDI seems impossible without an extensive simulation study with a very large parameter space.

Below we create a null model for the ROTI using the hypergeometric distribution, which relates the fraction of species with character-state origins due to ISE vs. ECD (i.e., the ROTI) in a given community with that expected based on a random sampling of species from a regional species pool. We then discuss and illustrate how changes in the regional species pool and number of species in communities influence the ROTI, and we present results from these null models for Middle American hylid communities. Finally, we conclude with a brief discussion on the realism of these null models and how these considerations affect the interpretation of one’s results.

The Basic Model

We examine the significance of a given value of ROTI for a community, given the overall frequency of ISE and ECD events among species within the region as a whole. Thus, we ask how deviant a given community's ROTI is when considered in light of the overall number of species whose character states were the consequence of ISE and ECD events within the region as a whole. As a simple example, we might see a high ROTI in communities composed of species derived from a within-region radiation in which many character states originated in the region by in-situ evolution. Conversely, communities composed of many recent colonists from outside the region may have a significantly low ROTI.

Values for a null model can be generated in at least three different ways. First, one could conduct a simulation, in which one simulates the details of a system but without the process of interest. Second, one could reshuffle the data in a way that creates a null distribution that does not reflect the process of interest (e.g., shuffle species among communities to assume ecological equivalence). Third, if a reasonable probability distribution can be specified for the process of interest, one can model the process and calculate probabilities directly. We take this third approach here.

We test for the statistical significance of the ROTI by considering community assembly as a process of sampling species without replacement from a larger regional pool, using the hypergeometric probability distribution (Sokal and Rohlf 1995). Using this distribution, one can calculate the probability of observing the number of species with a character state derived from ISE as a consequence of random assembly versus assembly in which one type of regional origin (ISE or ECD) might be favored.

The hypergeometric probability distribution is a model of sampling from a population without replacement, where the "population" here is the regional pool of all Middle American hylid species (see below for variations), and the "sample" is a community. This distribution is appropriate when sampling units can be classified into discrete categories; in this case, a sampled species has a character state (body-size class or larval habitat type) that can be classified as having originated in the region by an ISE or ECD event. We can model the statistical significance of the ROTI in this way because it is calculated as the number of species with a character-state that originated through ISE in the region (d_I) divided by the total number of species in the community (n). Thus, under the null model of random assembly, the probability that, for a given character, a community of size n has d_I species with ISE is

$$P(x = d_I \mid n, D_I, D_E) = \frac{\binom{D_I}{d_I}\binom{D_E}{n - d_I}}{\binom{D_I + D_E}{n}} \qquad (1)$$

where D_I and D_E are the total number of species with character-state origins by ISE and ECD, respectively, within the sampled population (i.e., the regional source pool; Sokal and Rohlf 1995). Note that the term "$n – d_I$" could also be represented by d_E, the number of species whose character state originated by ECD.

The hypergeometric distribution as described above is appropriate for obtaining the probability under “random” assembly of a given number of species in a community with their character states from ISE. However, various processes may lead to a predominance of species that trace their traits to ISE or ECD (e.g., a community that is more isolated from dispersal from other regions, due to geographic or ecological barriers, may have less species with traits derived through ECD). In other words, if more species with character states that originated in a region through ISE (or ECD) enter the community during community assembly, then a bias in “sampling” from the regional pool would exist. To incorporate this bias, we use the non-central hypergeometric distribution (McCullagh and Nelder 1989). This distribution incorporates additional parameters to estimate the bias in sampling from the different categories. Here, the sampling biases for ISE and ECD are represented as ω_I and ω_E, respectively. Thus, the probability of a particular number of species within a community whose character-state origin was by ISE, conditioned on the sampling biases, regional pool (D_I and D_E), and number of species within the community (n) is

$$P(x = d_I \mid \omega_I, \omega_E, n, D_I, D_E) = \omega_I^{d_I} \omega_E^{n-d_I} \frac{\binom{D_I}{d_I}\binom{D_E}{n-d_I}}{\binom{D_I + D_E}{n}} Q^{-1} \qquad (2)$$

where Q is a normalization constant. Because ω_I and ω_E are interdependent (e.g., as one goes up the other must go down), we reparameterized the equation (following Munch and Conover 2003; see also McCullagh and Nelder 1989) to compare the bias parameters to each other, with the ratio $\psi = \omega_I / \omega_E$. Additionally, the terms that do not depend on d_I and d_E, can be taken out of the equation because those constant terms will also be in the normalization constant and thus will cancel out.

$$P(x = d_I \mid \psi, n, D_I, D_E) = \left(\frac{\psi^{d_I}}{d_I!(n-d_I)!(D_I - d_I)!(D_E - n + d_I)!} \right) Q^{-1} \tag{3}$$

where the normalization constant, Q, is equal to

$$Q = \sum_{i=0}^{n} \left(\frac{\psi^{i}}{i!(n-i)!(D_I - i)!(D_E - n + i)!} \right) \tag{4}$$

The standard (random assembly) and non-central hypergeometric models are compared via a likelihood ratio (LR) test, which can be used to compare nested models (Edwards 1972). Here, the random assembly model is a special case of (i.e., nested within) the biased assembly model when $\psi = 1$. The LR-test statistic is

$$LR = 2 \ln \frac{\ell(\psi = \hat{\psi})}{\ell(\psi = 1)}$$

(5)

where $\hat{\psi}$ = maximum likelihood estimate of the bias parameter. Given the random assembly model, this *LR* is expected to be asymptotically distributed as $\chi^2_{p,\alpha}$, where p = the number of free parameters differing between the two models and α = the desired level of statistical significance. In this case, $p = 1$ and we set $\alpha = 0.05$. We calculated the bias parameter estimate and likelihoods of the two models in MatLab (ver. 6.5, The MathWorks Inc., Natick, MA), and the code is available from the authors upon request.

We note here two important considerations. First, in theory, one could instead simply conduct an exact randomization test (sensu Sokal and Rohlf 1995, p. 803). Here, one calculates the probability of obtaining the observed and more deviant outcomes under the null model, in this case the standard hypergeometric model [i.e., random assembly; equation (1) above], and compares this probability to a significance value, such as $\alpha = 0.05$. In the current framework, one would be asking how probable it is to obtain the observed or more extreme (i.e., closer to 0.0 or 1.0) ROTIs given the null model. Under most circumstances, this should give very similar results to our approach. However, the advantage of our approach is that it is more general, allowing investigators to extend tests to more complicated questions. For example, the approach outlined above will be necessary if one wants to calculate whether two communities differ from each other (i.e., compare the likelihood of each community having its own unique bias parameter versus the likelihood that their bias parameters are the same). Second, the number of species within a community (community size) is the effective sample size in these analyses, so this number will influence the power of statistical analyses. To quantitatively examine the influence of community size, we also conduct a simple simulation, varying the number of species in artificial communities and testing whether the ROTI was significantly different than the random expectation. To do this, we tested similar ROTI values (varied continuously from 0.0 to 1.0) for increasingly larger communities (varied from 2 to 30 species). For these analyses we used a regional pool of 180 species, 90 each with character-state origins due to ISE and ECD (D_I = 90, D_E = 90).

Variations on the Model

In theory, statistical significance of the ROTI may be influenced by the size or characterization of the regional species pool. Varying the regional pool, then, may reveal important drivers of significantly high or low ROTI values. For example, altering the probabilities of randomly sampling species from the regional pool in proportion to dispersal ability may reveal whether dispersal ability is more strongly correlated with one type of character-state origin (e.g. ECD) than another (ISE; see below). Alternatively, changing the geographic size of the regional pool may suggest at what scale dispersal limitation breaks down. For example, given a significantly high ROTI, we might suspect that localized ISE events and dispersal limitation lead to a predominance of ISE in a community (and thus a high ROTI). In this case, reducing the geographic extent of the regional pool should result in a ROTI going from significant to non-significant.

To address these situations, we examine two variations on the regional species pool. We first alter the regional pool by weighting species by a proxy for dispersal ability (see below for details). Second, we vary the geographic extent of the regional pool for communities in Costa Rica and Panama.

One way to alter the regional pool would be to weight species representation in the regional pool by overall abundance in the region, by the size of their geographic range within the region relative to the region's size as a whole, by known dispersal ability (which is unknown for many organisms), or by their frequency in the communities of the region. Herein we examine the latter weighting scheme [corresponding to the "occurrence distribution" of Connor and Simberloff (1978)]. In this analysis, our overall regional pool was limited to the species that occurred in the communities we considered, and each species occurred in the regional pool as many times as it occurred across our entire sample of communities (e.g., a species that occurred in five communities was listed five times in the regional pool, whereas a species that was only in one community was listed once, as before). The consequence of this characterization of the regional pool is to upweight the species that have dispersed widely throughout the region and downweight those with limited distributions. This might be more reasonable in cases where one type of trait origin (ISE or ECD) is found in widespread species, thus reducing the significance of seeing many communities with high amounts of that type of trait origin. For Middle American hylids, the original regional pool contains 73 species with character-state origins due to ISE of body size and 82 due to ECD for body size (i.e., a ratio of 73:82), and a ratio of 119:37 for larval habitat, whereas the ratios under the frequency-weighted regional pools were 146:110 and 151:105, respectively.

A second way to alter the regional pool is to change the geographic scale over which it occurs. Certainly, an optimal regional pool would be one within which all species can be expected to disperse freely (an assumption of many sampling models of community assembly, but see below for a discussion on this assumption in our model), but it can be quite difficult in practice to specify exactly such a pool (Connor and Simberloff 1978, Graves and Gotelli 1993). Thus, we examined the effect of progressively larger regional pools. For this analysis we examined the communities of Costa Rica and Panama, testing significance with the “regional pool” set at the scale of the individual countries, the two countries combined, and all of Middle America (cf. Swenson et al. 2006). The ratios of ISE to ECD in the two countries combined were 20:31 and 27:25 for body size and larval habitat, respectively. The ratios for Costa Rica only were 18:22 and 24:17, and those for Panama were 16:29 and 22:23 for body size and larval habitat, respectively.

Results

The results for our null model analyses of each community’s ROTI are presented in Tables S5–S6. In general, we found only communities with the most extreme deviations from the regional pool (i.e., very high or low ROTI) to be statistically significant. Though many communities were close to the null expectation of the regional pool (and thus would not expected to be significant), our data also illustrate the low statistical power experienced by analyses of small community size (e.g., community 1 vs. 2 for body size ROTI; Table S5).

Our simulation results of varied community size are presented in Fig. S4, showing the large increase in power with moving from communities of $n = 2$ (no ROTIs significant) to those of $n = 10$ (ROTI = 0.0–0.20 significantly low, 0.80–1.0 significantly high) to $n = 20$ (ROTI = 0.0–0.29, 0.71–1.0 significant). However, it should be noted that the primary aim of our empirical study of treefrogs is not to test for significant deviations from random expectations, but rather to test for correlates of ROTI among communities (e.g., with elevation).

Modification of the regional species pool strongly influenced the results. *P*-values for the ROTIs of both body size and larval habitat were often quite different when comparing the “standard” regional pool with the regional pool constructed by weighting species by their frequency across communities, though they were still correlated (Body size: $r_s = 0.624$, $P < 0.0001$; Larval habitat: $r_s = 0.619$, $P < 0.0001$). For body size, all ROTI values statistically significant under one regional pool were also significant under the other (Table S5). However, for larval habitat, statistical significance often changed based on the regional pool (Table S6), possibly reflecting the larger asymmetry in the ISE:ECD ratio in these two pools for larval habitat relative to the regional pools for body size.

When we varied the geographic scale of the regional pool for Panamanian communities, the general consequence of reducing the size of the regional pool was to make results more liberal for body size and more conservative for larval habitat. These results seem to be influenced largely by the relative shift in the symmetry of ISE to ECD events represented in the regional pool. Despite this tendency, communities with a significant larval habitat ROTI under the Middle American regional pool (i.e., the largest pool) were still statistically significant when the regional pool was reduced to Panama alone (i.e., the smallest pool). Similar relationships extended to the analyses of Costa Rican communities. In both cases, it is clear from the results that the consequences of altering the regional pool will be highly data dependent, contingent on the ratio of ISE to ECD events in the regional pool. Thus, we suggest that future analyses under this framework similarly examine the influence of the regional pool and base conclusions under the most realistic regional pool if the results are not robust to the regional pool specification.

Discussion of Model Assumptions

We note here two important model considerations. First, the idea of sampling from a regional pool to assemble communities is not realistic in many cases. In particular, here we are inferring the importance of evolution within a region (ISE) versus character-state origins from dispersal from outside the region (ECD). Clearly, then, the idea of a static regional pool from which species assemble into communities is not realistic. For ISE, character-states are presumably generated by in-situ evolution within certain types of communities (which are then represented by a sample of that type of community in our analyses, such as stream breeders in montane forests in hylids). In other words, at some level, the communities are helping to generate the regional pool, rather than strictly vice versa. Despite this discrepancy between the null model and our understanding of the evolution of a regional pool of species, we see our null models as useful because they form a method to point out whether a ROTI is significantly higher or lower under one type of random expectation. Violations of the null model form a basis for further investigation into the processes that create the patterns we are testing (instead of a basis for rejecting the methodology).

Second, many models of random community assembly from a regional pool assume no dispersal limitation among sites (i.e., all species within the regional pool could, in principle, be found in a given community; Vamosi et al. 2009). However, this is not an assumption of the ROTI. In fact, without dispersal limitation, we might not expect to see any significant deviations from a random draw from the species pool. For example, evolution within a small area within a region (ISE), coupled with dispersal limitation (e.g., at high elevations), would suggest that most species within communities from that area will have their character-state origins from ISE and thus would have a high ROTI.

It is important to distinguish here between our null model for the ROTI and the increasing use of very similar null models for detecting competition, environmental filtering, or other phenotype-specific processes in community assembly (e.g. Webb 2000; Kraft et al. 2007). In order to isolate the role of specific processes in community assembly (such as competition), one must assume dispersal equivalency in both the null and alternative models. However, the ROTI only relates to how many species within a community have a character state that originated within the region via ISE or ECD and makes no reference to the value of the character state itself (which *is* important in the former case of determining such processes as environmental filtering and competition). Thus, dispersal limitation is a perfectly valid alternative model to explain why a community has a high ROTI, as in the example given above.

Appendix S2 Literature Cited

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Table S5. Results of ROTI null model analyses for body size, showing ROTI value for each community and its associated *P*-value under different regional pools. Community numbers refer to communities as listed in Table S1. Communities with significant P-values are boldfaced.

Community	Number of species	Body Size ROTI	Whole region	Freq. weighted	Costa Rica + Panama	Costa Rica	Panama
1	**3**	**1.00**	**0.033**	0.065			
2	**5**	**1.00**	**0.006**	**0.017**			
3	1	0.00	0.259	0.194			
4	8	0.75	0.100	0.279			
5	**5**	**1.00**	**0.006**	**0.017**			
6	1	0.00	0.259	0.194			
7	8	0.50	0.866	0.685			
8	6	0.67	0.326	0.622			
9	8	0.75	0.100	0.279			
10	**4**	**1.00**	**0.013**	**0.033**			
11	3	0.67	0.492	0.730			
12	**3**	**0.00**	**0.050**	**0.024**			
13	4	0.25	0.359	0.190			
14	4	0.75	0.251	0.449			
15	7	0.43	0.818	0.445			
16	4	0.50	0.907	0.777			
17	9	0.56	0.602	0.930			
18	6	0.83	0.061	0.162			
19	8	0.63	0.371	0.746			
20	9	0.44	0.870	0.440			
21	8	0.50	0.866	0.685			
22	6	0.67	0.326	0.622			
23	7	0.57	0.587	0.993			
24	8	0.63	0.371	0.746			
25	8	0.75	0.100	0.279			
26	8	0.63	0.371	0.746			
27	7	0.57	0.587	0.993			
28	4	0.75	0.251	0.449			
29	6	0.50	0.885	0.727			
30	**5**	**0.00**	**0.011**	**0.003**	**0.022**	**0.011**	
31	11	0.36	0.457	0.157	0.828	0.502	
32	12	0.58	0.418	0.922	0.128	0.274	
33	11	0.55	0.609	0.867	0.249	0.461	
34	6	0.50	0.885	0.727	0.573	0.792	
35	10	0.40	0.642	0.268	0.955	0.716	
36	7	0.43	0.818	0.445	0.834		0.667
37	9	0.56	0.602	0.930	0.279		0.174
38	7	0.43	0.818	0.445	0.834		0.667
39	10	0.60	0.399	0.842	0.142		0.076

Table S6. Results of ROTI null model analyses for larval habitat, showing ROTI value for each community and its associated *P*-value under different regional pools. Community numbers refer to communities as listed in Table S1. Communities with significant P-values are boldfaced.

Community	Number of species	Larval Habitat ROTI	Whole region	Freq. weighted	Costa Rica + Panama	Costa Rica	Panama
1	3	0.67	0.705	0.779			
2	5	0.80	0.840	0.308			
3	1	0.00	0.090	0.183			
4	8	0.63	0.372	0.828			
5	5	0.80	0.840	0.308			
6	1	0.00	0.090	0.183			
7	**8**	**1.00**	**0.035**	**0.003**			
8	6	0.33	0.023	0.201			
9	**8**	**1.00**	**0.035**	**0.003**			
10	4	0.50	0.250	0.720			
11	3	0.33	0.113	0.371			
12	3	0.33	0.113	0.371			
13	4	0.75	0.952	0.494			
14	4	0.75	0.952	0.494			
15	**7**	**1.00**	**0.049**	**0.006**			
16	4	0.75	0.952	0.494			
17	9	0.56	0.160	0.839			
18	6	0.83	0.668	0.190			
19	8	0.63	0.372	0.828			
20	**9**	**0.89**	0.324	**0.042**			
21	**8**	**0.38**	**0.016**	0.215			
22	**6**	**1.00**	0.069	**0.011**			
23	7	0.57	0.255	0.927			
24	8	0.50	0.098	0.607			
25	8	0.88	0.414	0.070			
26	8	0.75	0.931	0.328			
27	7	0.43	0.053	0.387			
28	**4**	**1.00**	0.139	**0.038**			
29	6	0.50	0.156	0.658			
30	**5**	**1.00**	0.097	**0.020**	**0.008**	**0.017**	
31	11	0.64	0.330	0.736	0.383	0.690	
32	**12**	**0.33**	**0.001**	0.066	0.143	**0.038**	
33	**11**	**0.27**	**0.000**	**0.029**	0.065	**0.015**	
34	**6**	**0.33**	**0.023**	0.201	0.334	0.183	
35	10	0.70	0.639	0.453	0.201	0.397	
36	**7**	**0.14**	**0.000**	**0.013**	**0.027**		**0.039**
37	**9**	**0.33**	**0.005**	0.114	0.221		0.298
38	**7**	**0.14**	**0.000**	**0.013**	**0.027**		**0.039**
39	**10**	**0.20**	**0.000**	**0.010**	**0.022**		**0.035**

Figure S1

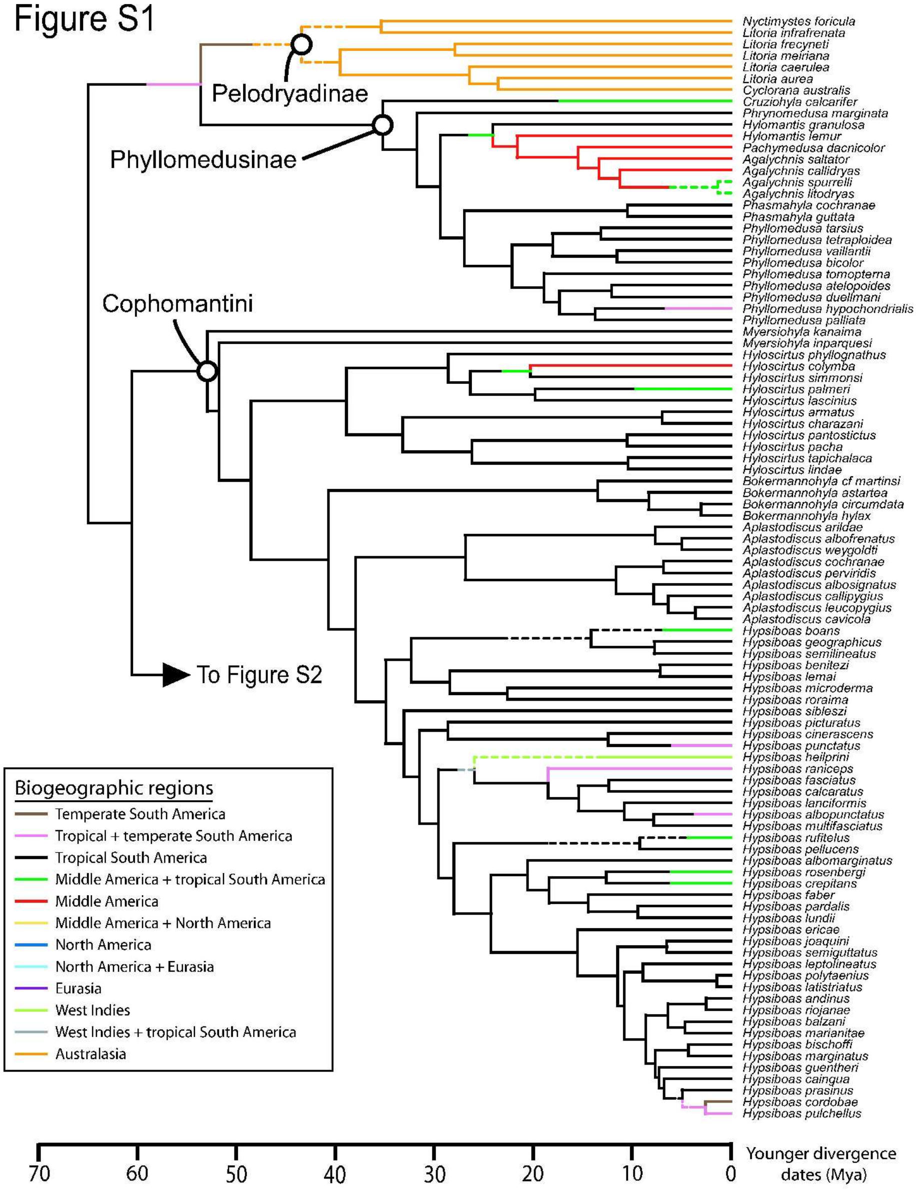

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Figure S2

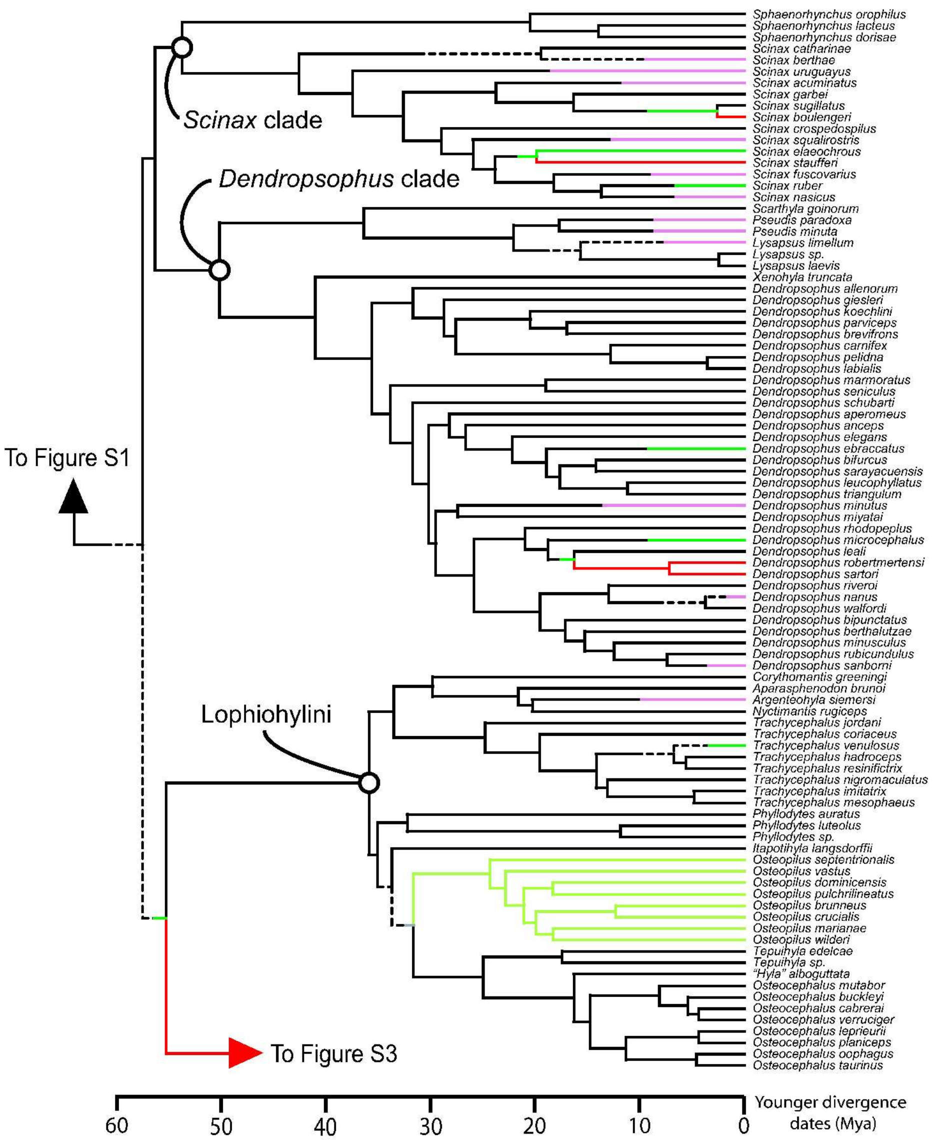

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Figure S3

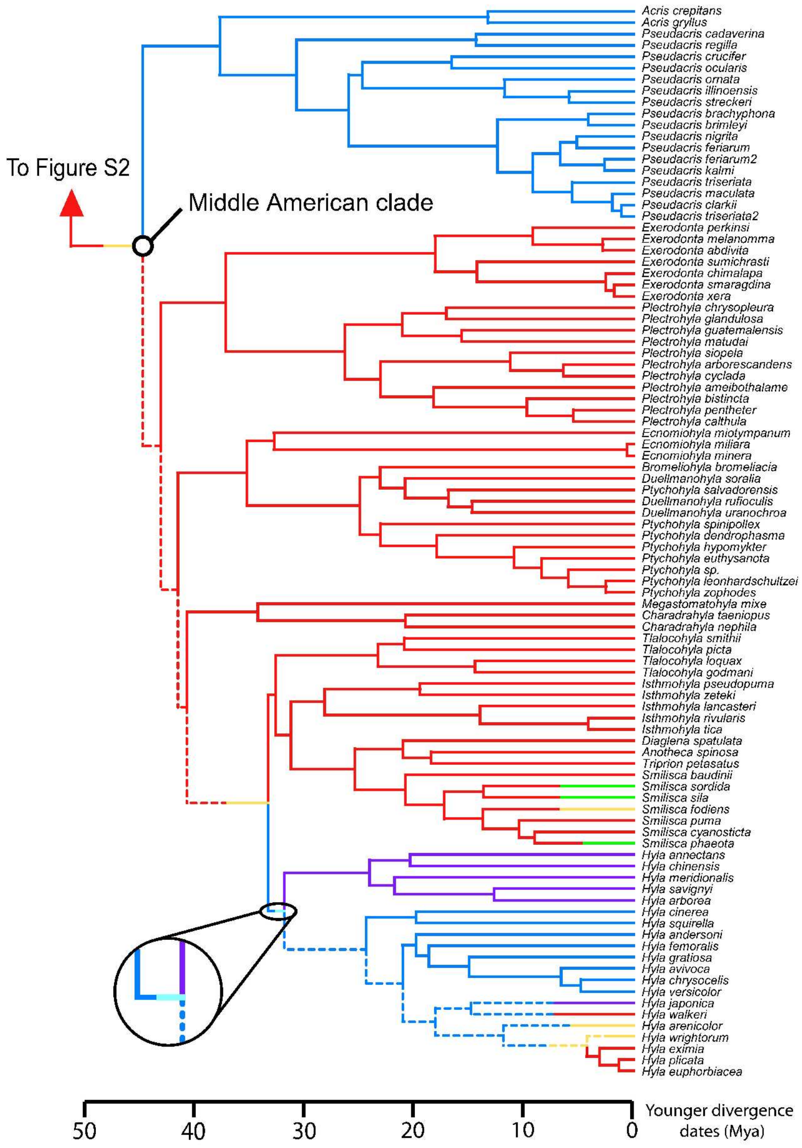

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Figure S4

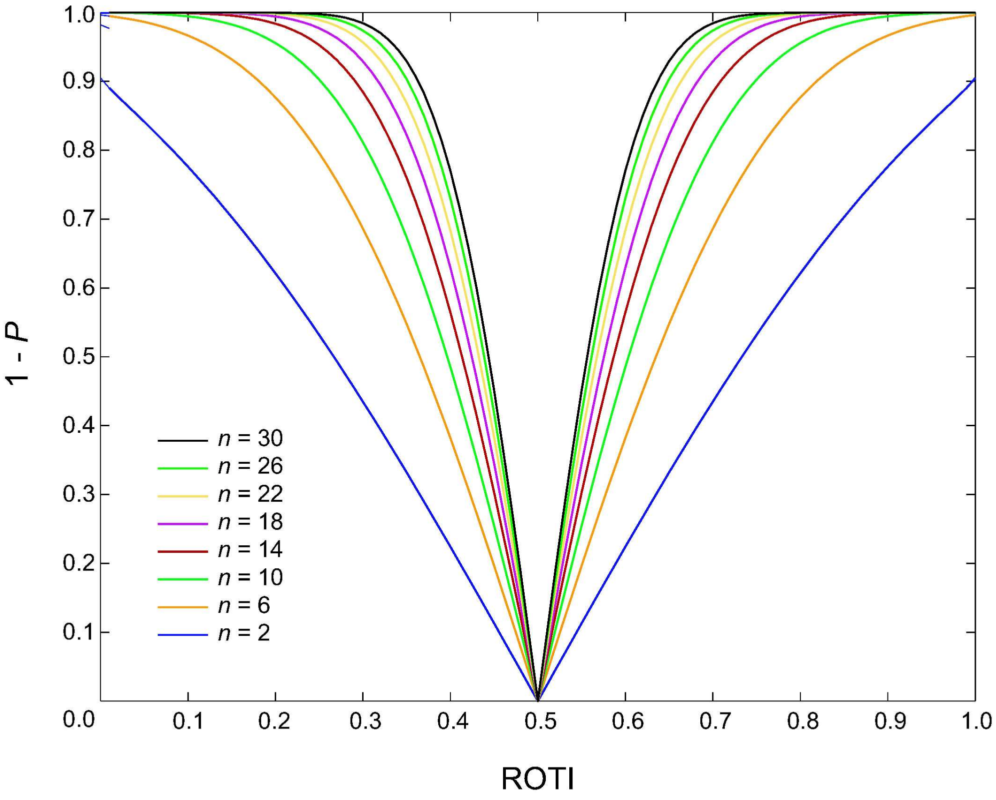

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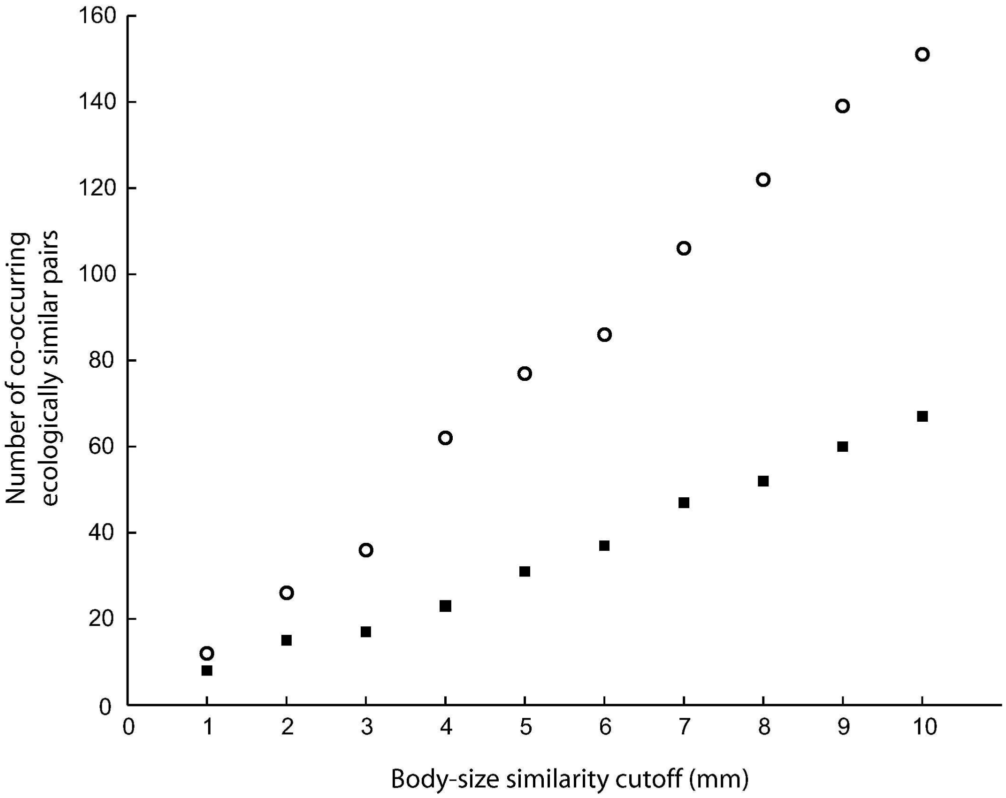
Figure S5



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