Ecography

ECOG-04024
Ali, J. R. and Meiri, S. 2019. Biodiversity growth on the volcanic ocean islands and the roles of in situ cladogenesis and immigration: case with the reptiles. – Ecography doi: 10.1111/ecog.04024

Supplementary material

Appendix 1

Supplementary figure captions (A1, A2, A3 and A4)

1. Species occurrence data and phylogenetic information for the native land-locked reptiles on a, Cape Verde, Canary, Gulf of Guinea, Madeira and Comoro islands and Cocos Island. In addition to Zheng and Wiens (2016) and Roll et al. (2017), the compilation makes use of Loveridge (1947), Arnold et al. (2008), Miralles et al. (2011) and Vasconcelos et al. (2012) for the Cape Verde group; Arnold and Ovenden (2004), Carranza et al. (2008), Martin (2009), Cox et al. (2010) and IUCN Red List (2018) for the Canaries; Ceríaco et al. (2018) and Soares et al. (2018) for the Gulf of Guinea islands; IUCN Red List (2018) for the Madeira group; Mertens (1928), Horner (2007), Rocha et al. (2009), Hawlitschek et al. (2011, 2013, 2016, 2018) and Hawlitschek and Glaw (2013) for the Comoros; Harris and Kluge (1984), Savage (2002) for Cocos Island. Geographical data and island ages were derived from: Ramalho (2011) for Cape Verde; van den Bogaard (2013) for the Canaries; Fitton (1987) for the Gulf of Guinea; Geldmacher et al. (2005) for the Madeira group; Schlüter (2008) and Michon (2016) for the Comoros; Castillo et al. (1988) for Cocos Island. Areas for the small islands are rounded up to the nearest 1 km^2. Coding: N.K. = not known; 1 = the species is present, but in some instances is extirpated (*); cell shadings: soft pink = the form is found outside of the archipelago; blue = non-sister congenerics occupy the same island; yellow = possibility of cladogenesis; green = certain or high probability of cladogenesis (no species radiations were recorded for this set of archipelagoes and Cocos island). For the biological, geographical and geological-age information sources, see the main text. The lowermost row of each array denotes the clades (A, B, C…..) the animals belong to (also see Fig. 4).
2. Species occurrence data and phylogenetic information for the native land-locked reptiles on Galápagos Islands, Mascarenes, and the central Lesser Antilles. In addition to Zheng and Wiens (2016) and Roll et al. (2017), the compilation makes use of: Swash and Still (2005), Benavides et al. (2009), Gentile et al. (2009), Poulakakis et al. (2012), Torres-Carvajal et al. (2014), Uetz et al. (2018), Turtle Working Group (2018) for the Galápagos; Arnold (1980), Bullock et al. (1985),

Austin and Arnold (2001), Austin et al. (2004), Bauer and Günther (2004), Kraus (2005), Austin and Arnold (2006), Arnold and Bour (2008), Harmon et al. (2008) and Rocha et al. (2010) for the Mascarenes; and Miralles et al. (2009), Harvey et al. (2012) Hedges and Conn (2012) and Thorpe et al. (2018) for the Lesser Antilles. Note that we exclude the Galápagos “marine” iguana *Amblyrhynchus cristatus*, which is present on many islands in the archipelago (Miralles et al. 2017). Although it is a terrestrial reptile, it spends much time is spent at sea foraging hence it is highly probable that individuals of the species are occasionally involved in intra-archipelago transfers. Geographical data and island ages were derived from Wadge (1986; Lesser Antilles); Duncan and Hargraves (1990; Mascarenes); Geist et al. (2014; Galápagos). Areas for the small islands are rounded up to the nearest 1 km^2. Coding: N.K. = not known; 1 = the species is present, but in some instances is extirpated (†); cell shadings: soft pink = the form is found outside of the archipelago; blue = non-sister congenerics occupy the same island; yellow = possibility of cladogenesis; green = certain or high probability of cladogenesis; orange = part of a species radiation. Note that on Dominica and Martinique (Lesser Antilles) *G. pleei* and *G. underwoodi* (microteiids) are present, but the latter is thought to be introduced. They are, therefore, not categorized as "non-sister congenerics sharing the same island". For the biological, geographical and geological-age information sources, see the main text. The lowermost row of each array denotes the clades (A, B, C…..) the animals belong to (also see Fig. 4).

3. Bar chart summarizing the reptile group representatives that occur on the various islands.
4. Data summary: a, overview of the pattern on the main oceanic archipelagoes showing the low levels of cladogenesis; b, plot that enables an assessment of the role that island area and island age have in controlling *in situ* diversification (red font denotes those islands ≥10 Ma where the phenomenon is not recorded). On both plots, three symbols are shown for Mauritius: possible cladogenesis record within the *Leiolopisma* skinks, the cladogenesis record within the Bolyeriidae boas, and the radiation within some of the island’s *Phelsuma* geckos.

Supplementary table captions

1. Data used in the analyses associated with *in situ* diversification (also see Table A2) and the evaluation of the different archipelago assemblage types (clade-poor and clade-rich). For each island we list its area (in km^2), maximum altitude ("Height", in metres), age (in millions of years = Ma), distance from the nearest continent (in km), and number of native reptile species. We then list the number of these species arising through *in situ* cladogenesis unequivocally (Unequivocal cladogenesis) then the number that could potentially represent such *in situ* cladogenesis but available data are inconclusive (see text). We then list the number of species unequivocally arising through *in situ* cladogenesis as a proportion of all native species. Finally we list the proportion of species arising through *in situ* cladogenesis out of all native species, when equivocal cases are treated as if they represent this process.

2. Models of the degree of *in situ* cladogenesis as a function of island attributes. Age (in millions of years), area (in km^2) and maximum height (in meters) are log transformed, distance (in km) from the near source is not transformed. Significant values are in boldface.

Geographical and geological information: Cape Verde Islands							Gekk.		Phyllodactylidae geckos												Skinks						
Island	Rel. Pos.	Area (km^2)	Max. elev. (m)	Age (Ma)	Dist. Mainland (km)	Spec. Rich.	*Hemidactylus bouvieri*	*Hemidactylus lopezjuradoi*	*Tarentola caboverdiana*	*Tarentola substituta*	*Tarentola raziana*	*Tarentola gigas*	*Tarentola bocagei*	*Tarentola nicolauensis*	*Tarentola boavistensis*	*Tarentola maioensis*	*Tarentola darwini*	*Tarentola rudis*	*Tarentola fogoensis*	*Tarentola protogigas*	*Chioninia fogoensis*	*Chioninia coctei*	*Chioninia stangeri*	*Chioninia nicolauensis*	*Chioninia spinalis*	*Chioninia vaillantii*	*Chioninia delalandii*
Santo Antão	NW	779	1,979	3.0	835	2			1												1						
São Vicente	NW	227	725	7.0	820	3				1												1	1				
Santa Luzia	NW	35	395	?7.0	805	3					1											1	1				
Branco	NW	3	327	N.K.	800	4					1	1										1	1				
Raso	NW	7	395	N.K.	787	5	1				1	1										1	1				
São Nicolau	NW	388	1,340	6.5	730	3							1	1										1			
Sal	E	216	406	18.0	615	3	1								1										1		
Boavista	E	620	387	N.K.	575	3	1								1										1		
Maio	SW	269	436	16.5	605	2										1									1		
Santiago	SW	991	1,394	5.0	640	5											1	1							1	1	1
Fogo	SW	476	2,829	0.5	730	6		1											1	1					1	1	1
Brava	SW	67	976	?0.5	770	2														1							1
						41	A		B												C						

Geographical and geological information: Canary Islands							Phyllo. Geckos				Lacertids								Skinks			
Island	Rel. Pos.	Area (km^2)	Max. elev. (m)	Age (Ma)	Dist. Mainland (km)	Spec. Rich.	*Tarentola angustimentalis*	*Tarentola boettgeri*	*Tarentola delalandii*	*Tarentola gomerensis*	*Gallotia atlantica*	*Gallotia stehlini*	*Gallotia intermedia*	*Gallotia galloti*	*Gallotia caesaris*	*Gallotia bravoana*	*Gallotia auaritae*	*Gallotia simonyi*	*Chalcides simonyi*	*Chalcides sexlineatus*	*Chalcides viridanus*	*Chalcides coeruleopunctatus*
Lanzarote	E	846	671	15.0	130	3	1				1								1			
Fuerteventura	E	1,660	807	23.0	100	3	1				1								1			
Gran Canaria	C	1,560	1,949	15.0	205	3		1				1								1		
Tenerife	C	2,034	3,718	12.0	285	4			1				1	1							1	
La Gomera	W	370	1,487	11.0	340	4				1					1	1						1
La Palma	W	708	2,426	1.7	415	3			1					1			1					
El Hierro	W	269	1,501	1.1	385	4		1							1			1				1
						24	A	B			C								D			

Geographical and geological information: Gulf of Guinea Islands							Gekkonidae							Skinks							Colub.			Elap.	Lamp.		Typh.		
Island	Rel. Pos.	Area (km^2)	Max. elev. (m)	Age (Ma)	Dist. Mainland (km)	Spec. Rich.	*Hemidactylus principensis*	*Hemidactylus greeffii*	*Hemidactylus newtoni*	*Hemidactylus aporus*	*Lygodactylus delicatus*	*Lygodactylus thomensis*	*Lygodactylus wermuthi*	*Feylinia polylepis*	*Panaspis africanus*	*Panaspis thomensis*	*Panaspis annobonensis*	*Trachylepis principensis*	*Trachylepis thomensis*	*Trachylepis ozorii*	*Hapsidophrys principis*	*Philothamnus thomensis*	*Philothamnus girardi*	*Naja peroescobari*	*Boaedon sp. nov.*	*Boaedon bedriagae*	*Afrotyphlops elegans*	*Letheobia feae*	*Letheobia newtoni*
Príncipe	NE	136	948	24.0	215	8	1				1			1	1			1			1				1		1		
São Tomé (+Rol.)	C	854	2,024	15.7	235	11		1				1			1	1			1		1	1		1		1		1	1
Annobón	SW	17	598	18.4	350	6			1	1			1				1			1			1						
						25	A				B			C	D		E	F	G	H	I	J		K	L		M	N	

Geographical and geological information: Madeira Islands							Lac.
Island	Rel. Pos.	Area (km^2)	Max. elev. (m)	Age (Ma)	Dist. Mainland (km)	Spec. Rich.	*Teira dugesii*
Madeira	W	741	1,862	4.6	670	1	1
Porto Santo	NE	43	517	14.3	635	1	1
Desertas Is.	SE	14	442	~5.0	640	1	1
						1	A

Geographical and geological information: Comoro Islands							Cham.		Gekkonidae										Skinks					Ig.	Lamp.			Typh.
Island	Rel. Pos.	Area (km^2)	Max. elev. (m)	Age (Ma)	Dist. Mainland (km)	Spec. Rich.	*Furcifer cephalolepis*	*Furcifer polleni*	*Ebenavia tuelinae*	*Ebenavia safari*	*Geckolepis humbloti*	*Paroedura sanctijohannis*	*Paroedura stellata*	*Phelsuma comorensis*	*Phelsuma v-nigra*	*Phelsuma nigristriata*	*Phelsuma pasteuri*	*Phelsuma robertmertensi*	*Trachylepis comorensis*	*Cryptoblepharus ater*	*Cryptoblepharus gloriosus*	*Cryptoblepharus quinquetaeniatus*	*Flexiseps johannae*	*Oplurus cuvieri*	*Liophidium mayottensis*	*Lycodryas cococola*	*Lycodryas maculatus*	*Madatyphlops comorensis*
Grande Comore	NW	1,025	2,361	0.1	510	12	1		1		1	1		1	1				1	1			1	1		1		1
Mohéli	C	211	860	5.0	455	8			1		1	1			1				1		1		1			1		
Anjouan	C	424	1,575	3.9	390	10		1	1		1	1			1				1			1	1				1	1
Mayotte	SE	374	660	7.7	300	12		1		1	1		1			1	1	1	1		1		1		1		1	
						42	A		B	C	D	E	F	G	H				I	J			K	L	M	N		O

Geographical and geological information: Cocos Island, Costa Rica							Anol.	Geck.
Island	Rel. Pos.	Area (km^2)	Max. elev. (m)	Age (Ma)	Dist. Mainland (km)	Spec. Rich.	*Anolis townsendii*	*Sphaerodactylus pacificus*
Cocos	NA	24	634	2.4	495	2	1	1
						2	A	B

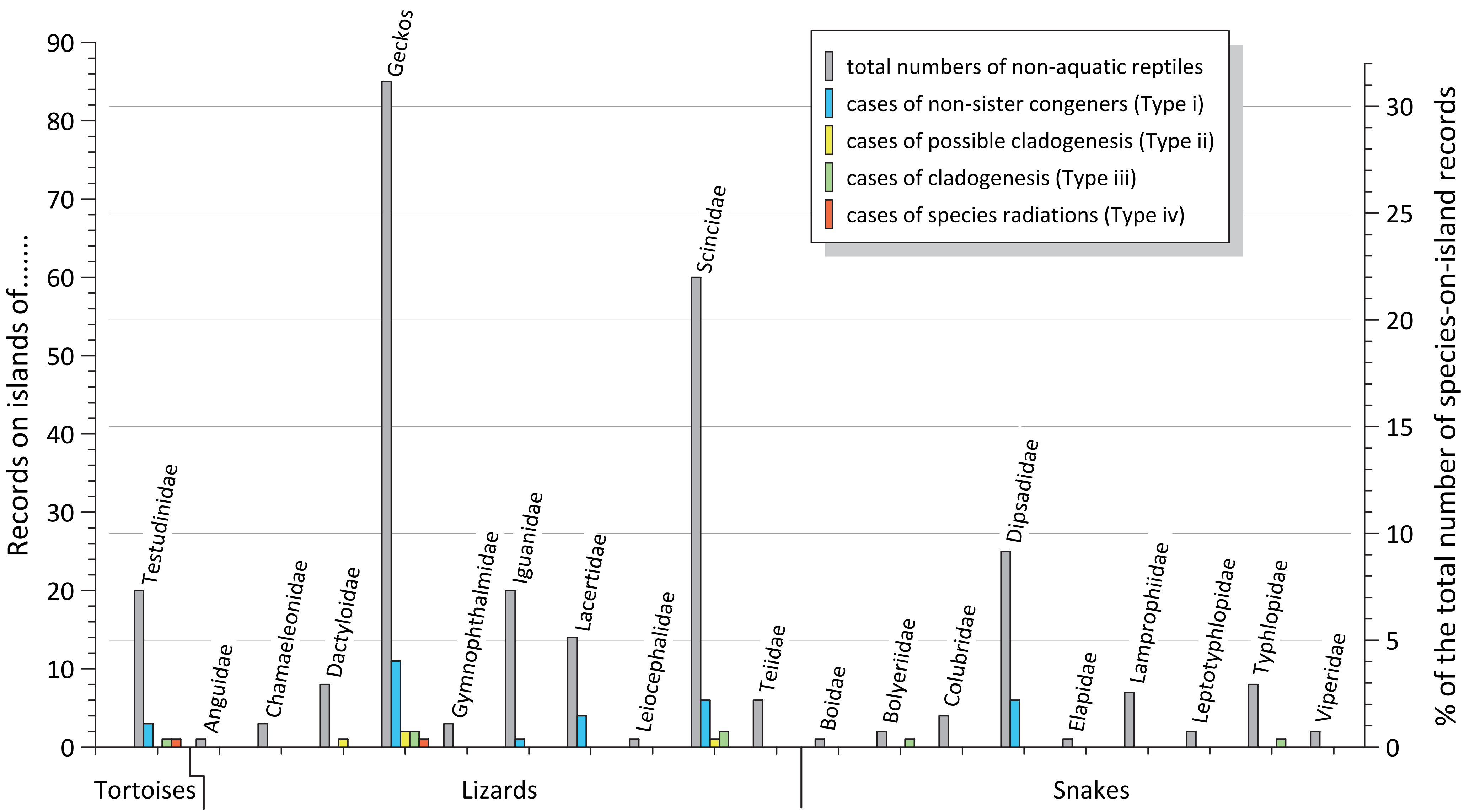
Figure A1

Geographical and geological information: Galápagos Islands							Phyllodact. geckos								Land iguanas			Lava lizards										Racer snakes						Tortoises													
Island	Rel. Pos.	Area (km^2)	Max. elev. (m)	Age (Ma)	Dist. Mainland (km)	Spec. Rich.	*Phyllodactylus galapagoensis*	*Phyllodactylus duncanensis*	*Phyllodactylus barringtonensis*	*Phyllodactylus leei*	*Phyllodactylus gorii*	*Phyllodactylus bauri*	*Phyllodactylus gilberti*	*Phyllodactylus darwini*	*Conolophus marthae*	*Conolophus subcristatus*	*Conolophus pallidus*	*Microlophus pacificus*	*Microlophus jacobii*	*Microlophus albemarlensis*	*Microlophus duncanensis*	*Microlophus indefatigabilis*	*Microlophus barringtonensis*	*Microlophus delanonis*	*Microlophus grayii*	*Microlophus habelii*	*Microlophus bivittatus*	*Pseudalsophis steindachneri*	*Pseudalsophis dorsalis*	*Pseudalsophis slevini*	*Pseudalsophis occidentalis*	*Pseudalsophis hoodensis*	*Pseudalsophis biserialis*	*Chelonoidis abingdonii* †	*Chelonoidis darwini*	*Chelonoidis becki*	*Chelonoidis microphyes*	*Chelonoidis guntheri*	*Chelonoidis vandenburghi*	*Chelonoidis vicina*	*Chelonoidis phantasticus* †	*Chelonoidis duncanensis*	*Chelonoidis donfaustoi*	*Chelonoidis porteri*	*Chelonoidis chathamensis*	*Chelonoidis hoodensis*	*Chelonoidis niger* †
Darwin	NNW	1	168	N.K.	1,285	0																																									
Wolf	NNW	1	253	N.K.	1,265	1							1																																		
Pinta	N&NE	60	777	0.7	1,105	2												1																1													
Marchena	N&NE	130	343	N.K.	1,065	1																				1																					
Santiago	"Core"	585	907	1.4	1,085	6	1									1			1									1	1						1												
Rábida - Santiago		5	367	1.6	1,095	3																						1	1									1									
Isabela		4,640	1,707	0.8	1,100	11	1								1	1				1										1	1					1	1	1	1	1							
Fernandina		642	1,476	0.07	1,170	5										1				1										1	1										1						
Pinzón		18	458	1.7	1,090	4		1													1									1												1					
Santa Cruz		986	740	2.3	1,035	6	1									1						1						1															1	1			
Baltra - Sta Cruz		26	100	N.K.	1,055	3										1												1	1																		
Santa Fe		24	259	2.9	1,010	5			1								1						1						1	1																	
San Cristóbal	E&S	558	730	4.0	930	5				1				1													1						1												1		
Española	E&S	60	206	3.5	960	4					1													1								1														1	
Floreana	E&S	173	640	2.3	1,040	4						1													1								1														1
						60	A						B	C	D			E								F		G						H													

Geographical and geological information: Mascarene Islands							Gekkonidae												Skinks					Boly.		Typh.	Tortoises				
Island	Rel. Pos.	Area (km^2)	Max. elev. (m)	Age (Ma)	Dist. Mainland (km)	Spec. Rich.	*Phelsuma inexpectata*	*Phelsuma borbonica*	*Phelsuma cepediana*	*Phelsuma guentheri*	*Phelsuma guimbeaui*	*Phelsuma ornata*	*Phelsuma rosagularis*	*Phelsuma edwardnewtoni* †	*Phelsuma gigas* †	*Nactus soniae* †	*Nactus coindemirensis*	*Nactus serpensinsula*	*Cryptoblepharus boutonii*	*Gongylomorphus bojerii*	*Leiolopisma ceciliae* †	*Leiolopisma mauritiana* †	*Leiolopisma telfairi*	*Bolyeria multicarinata* †	*Casarea dussumieri*	*Madatyphlops cariei*	*Cylindraspis indica* †	*Cylindraspis inepta* †	*Cylindraspis triserrata* †	*Cylindraspis peltastes* †	*Cylindraspis vosmaeri* †
Réunion	WSW	2,511	3,069	2.0	680	6	1	1								1				1	1						1				
Maurit. (+Rd+Ser.)	C	1,865	828	8.0	880	16			1	1	1	1	1				1	1	1	1		1	1	1	1	1		1	1		
Rodrigues	ENE	108	355	1.5	1,465	4								1	1															1	1
						26	A									B			C	D	E			F		G	H				

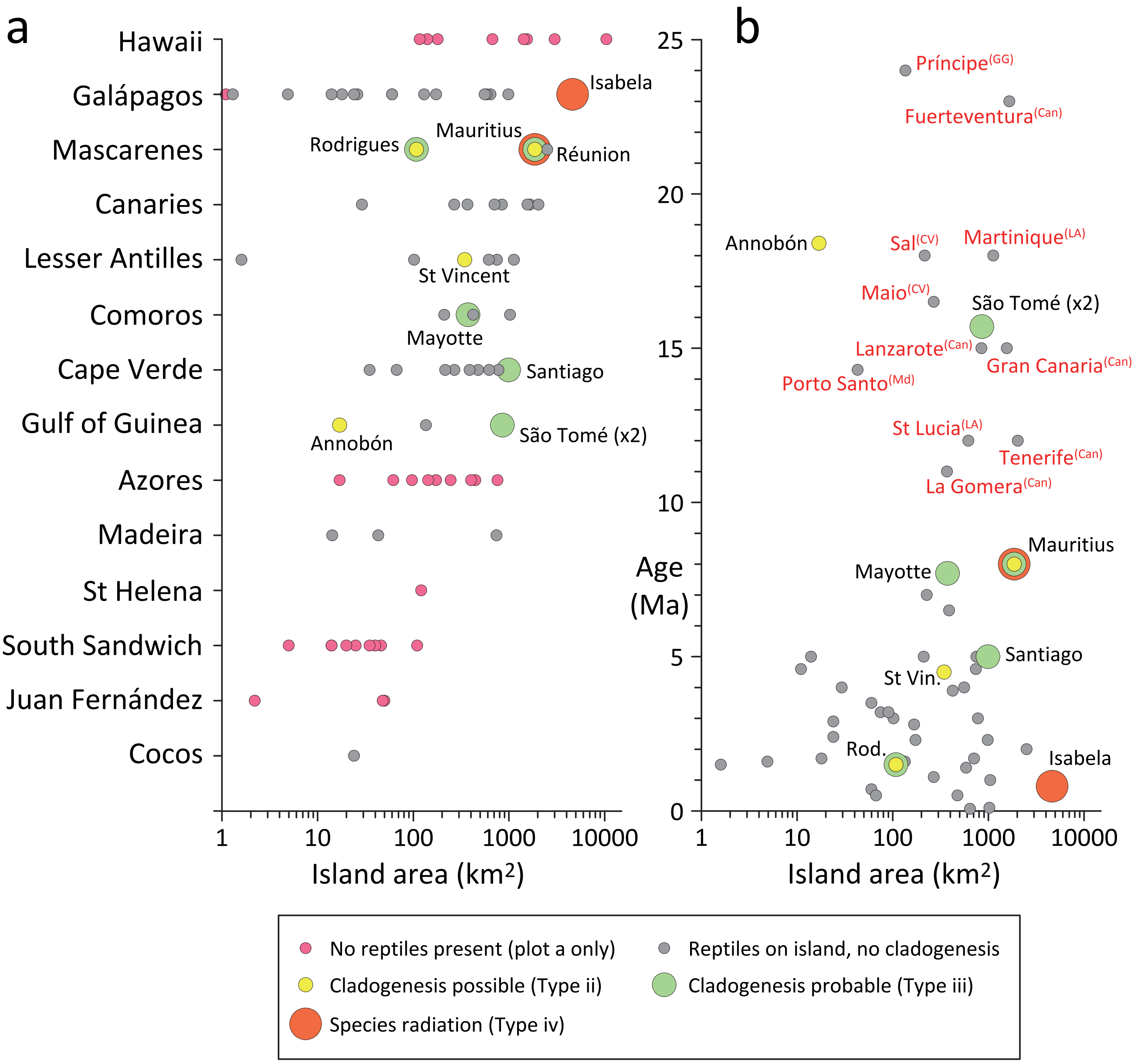
Geographical and geological information: central Lesser Antilles							Anoles							Galli.	Sphaero. geckos			Ig.	CTL	Macroteiids						M'tei	Skinks								Boa	Pit vip.		Racer snakes								Lepto-typh.		Typh.	
Island	Rel. Pos.	Area (km^2)	Max. elev. (m)	Age (Ma)	Dist. Mainland (km)	Spec. Rich.	*Anolis nubilis*	*Anolis lividus*	*Anolis oculatus*	*Anolis roquet*	*Anolis luciae*	*Anolis griseus*	*Anolis trinitatis*	*Diploglossus montisserrati*	*Sphaerodactylus fantasticus*	*Sphaerodactylus vincenti*	*Sphaerodactylus microlepis*	*Iguana delicatissima*	*Leiocephalus herminieri* †	*Pholidoscelis atratus*	*Pholidoscelis pluvianotatus*	*Pholidoscelis fuscatus*	*Pholidoscelis major*	*Cnemidophorus vanzoi*	*Ameiva ameiva* †	*Gymnophthalmus pleei*	*Copeoglossum redondae*	*Copeoglossum aurae*	*Mabuya montserratae*	*Mabuya dominicana*	*Mabuya mabouya*	*Capitellum metallicum*	*Alinea luciae*	*Marisora aurulae*	*Corallus cookii*	*Bothrops lanceolatus*	*Bothrops caribbaeus*	*Alsophis manselli*	*Alsophis sibonius*	*Erythrolamprus juliae*	*Erythrolamprus cursor*	*Erythrolamprus ornatus*	*Clelia errabunda*	*Chironius vincenti*	*Mastigodryas bruesi*	*Tetracheilostoma bilineatum*	*Tetracheilostoma breuili*	*Antillotyphlops monastus*	*Antillotyphlops dominicanus*
Redonda	LW	1	295	1.5	675	3	1													1							1																						
Montserrat	LW	102	915	3.0	656	7		1						1	1						1								1										1										1	
Dominica	LW	750	1,387	5.0	490	10			1						1	1		1				1				1				1									1	1									1
Martinique	WW	1,128	1,397	18.0	410	11				1						1		1	1				1			1					1	1				1					1					1			
St Lucia	WW	617	950	12.0	340	10					1					1	1							1		1							1				1					1	1				1		
St Vincent	WW	345	1,234	4.0	265	9						1	1			1									1			1						1	1									1	1				
						50	A		B					C	D			E	F	G				H	I	J	K		L			M	N	O	P	Q		R		S			T	U	V	W		X	

Figure A2



total numbers of non-aquatic reptiles
cases of non-sister congeners (Type i)
cases of possible cladogenesis (Type ii)
cases of cladogenesis (Type iii)
cases of species radiations (Type iv)
Records on islands of.......
% of the total number of species-on-island records
0
10
20
30
40
50
60
70
80
90
0
5
10
15
20
25
30
Testudinidae
Anguidae
Chamaeleonidae
Dactyloidae
Geckos
Gymnophthalmidae
Iguanidae
Lacertidae
Leiocephalidae
Scincidae
Teiidae
Boidae
Bolyeriidae
Colubridae
Dipsadidae
Elapidae
Lamprophiidae
Leptotyphlopidae
Typhlopidae
Viperidae
Tortoises
Lizards
Snakes

Figure A3



a
Hawaii
Galápagos
Mascarenes
Canaries
Lesser Antilles
Comoros
Cape Verde
Gulf of Guinea
Azores
Madeira
St Helena
South Sandwich
Juan Fernández
Cocos
Isabela
Mauritius
Rodrigues
Réunion
St Vincent
Mayotte
Santiago
Annobón
São Tomé (x2)
1
10
100
1000
10000
Island area (km2)
b
25
20
15
10
5
0
Age
(Ma)
Príncipe(GG)
Fuerteventura(Can)
Annobón
Sal(CV)
Martinique(LA)
Maio(CV)
São Tomé (x2)
Lanzarote(Can)
Gran Canaria(Can)
Porto Santo(Md)
St Lucia(LA)
Tenerife(Can)
La Gomera(Can)
Mauritius
Mayotte
Santiago
St Vin.
Rod.
Isabela
1
10
100
1000
10000
Island area (km2)
No reptiles present (plot a only)
Reptiles on island, no cladogenesis
Cladogenesis possible (Type ii)
Cladogenesis probable (Type iii)
Species radiation (Type iv)

Figure A4

Supplementary Table A1. Data used in the analyses associated with *in situ* diversification (also see Table A2) and the evaluation of the different archipelago assemblage types (clade-poor and clade-rich).

Archipelago	Island	Area (km^2)	Height (m)	Age (Ma)	Distance (km)	Native reptiles	Unequivocal cladogenesis	Possible cladogenesis	cladogenesis proportion (restrictive)	cladogenesis proportion (permissive)
Canaries	El Hierro	269	1,501	1.1	385	4	0	0	0.000	0.000
Canaries	Fuerteventura	1,660	807	23.0	100	3	0	0	0.000	0.000
Canaries	Gran Canaria	1,560	1,949	15.0	205	3	0	0	0.000	0.000
Canaries	La Gomera	370	1,487	11.0	340	4	0	0	0.000	0.000
Canaries	La Palma	708	2,426	1.7	415	3	0	0	0.000	0.000
Canaries	Lanzarote	846	671	15.0	130	3	0	0	0.000	0.000
Canaries	Tenerife	2,034	3,718	12.0	285	4	0	0	0.000	0.000
Cape Verde	Boavista	620	387	18.0	575	3	0	0	0.000	0.000
Cape Verde	Branco	3	327	7.0	800	4	0	0	0.000	0.000
Cape Verde	Brava	67	976	0.5	770	2	0	0	0.000	0.000
Cape Verde	Fogo	476	2,829	0.5	730	6	0	0	0.000	0.000
Cape Verde	Maio	269	436	16.5	605	2	0	0	0.000	0.000
Cape Verde	Raso	7	395	7.0	787	5	0	0	0.000	0.000
Cape Verde	Sal	216	406	18.0	615	3	0	0	0.000	0.000
Cape Verde	Santa Luzia	35	395	7.0	805	3	0	0	0.000	0.000
Cape Verde	Santiago	991	1,394	5.0	640	5	2	0	0.400	0.400
Cape Verde	Santo Antao	779	1,979	3.0	835	2	0	0	0.000	0.000
Cape Verde	Sao Nicolau	388	1,340	6.5	730	3	0	0	0.000	0.000
Cape Verde	Sao Vicente	227	725	7.0	820	3	0	0	0.000	0.000
Comoros	Anjouan	424	1,575	3.9	390	10	0	0	0.000	0.000
Comoros	Grande Comore	1,025	2,361	0.1	510	12	0	0	0.000	0.000
Comoros	Mayotte	374	660	7.7	300	12	2	0	0.167	0.167
Comoros	Moheli	211	860	5.0	455	8	0	0	0.000	0.000
Galapagos	Baltra	26	100	2.3	1,055	3	0	0	0.000	0.000
Galapagos	Española	60	206	3.5	960	4	0	0	0.000	0.000
Galapagos	Fernandina	642	1,476	0.07	1,170	5	0	0	0.000	0.000
Galapagos	Floreana	173	640	2.3	1,040	4	0	0	0.000	0.000
Galapagos	Isabela	4,640	1,707	0.8	1,100	11	4	0	0.364	0.364
Galapagos	Marchena	130	343	0.8	1,065	1	0	0	0.000	0.000
Galapagos	Pinta	60	777	0.7	1,105	2	0	0	0.000	0.000
Galapagos	Pinzon	18	458	1.7	1,090	4	0	0	0.000	0.000
Galapagos	Rabida	5	367	1.6	1,095	3	0	0	0.000	0.000
Galapagos	San Cristobal	558	730	4.0	930	5	0	0	0.000	0.000
Galapagos	Santa Cruz	986	740	2.3	1,035	6	0	0	0.000	0.000
Galapagos	Santa Fe	24	259	2.9	1,010	5	0	0	0.000	0.000
Galapagos	Santiago	585	907	1.4	1,085	6	0	0	0.000	0.000
Galapagos	Wolf	1	253	1.8	1,265	1	0	0	0.000	0.000
Gulf of Guinea	Annobon	17	598	18.4	350	6	0	2	0.000	0.333
Gulf of Guinea	Príncipe	136	948	24.0	215	8	0	0	0.000	0.000
Gulf of Guinea	Sao Tome	854	2,024	15.7	235	11	4	0	0.364	0.364
Lesser Antilles (C)	Dominica	750	1,387	5.0	490	10	0	0	0.000	0.000
Lesser Antilles (C)	Martinique	1,128	1,397	18.0	410	11	0	0	0.000	0.000
Lesser Antilles (C)	Montserrat	102	915	3.0	656	7	0	0	0.000	0.000
Lesser Antilles (C)	Redonda	1	295	1.5	675	3	0	0	0.000	0.000
Lesser Antilles (C)	St Lucia	617	950	12.0	340	10	0	0	0.000	0.000
Lesser Antilles (C)	St Vincent	345	1,234	4.0	265	9	0	2	0.000	0.222
Madeira	Desertas	14	442	5.0	640	1	0	0	0.000	0.000
Madeira	Madeira	741	1,862	4.6	670	1	0	0	0.000	0.000
Madeira	Porto Santo	43	517	14.3	635	1	0	0	0.000	0.000
Mascarenes	Mauritius	1,865	828	8.0	880	16	7	2	0.438	0.563
Mascarenes	Reunion	2,511	3,069	2.0	680	5	0	0	0.000	0.000
Mascarenes	Rodrigues	108	355	1.5	1,465	4	2	2	0.500	1.000
NA	Cocos	24	634	2.4	495	2	0	0	0.000	0.000

Supplementary Table A2 - Models of the degree of *in situ* cladogenesis as a function of island attributes.

In all parts area, age and height are log(10) transformed. Ma = millions of years ago. Significant values are in bold.

A. glm, inclusive dataset (both possible and unequivocal cases of cladogenesis considered)

Factor	slope	se	t	p
Intercept	-10.017	6.512	-1.538	0.131
Area (km^2)	0.885	0.707	1.253	0.217
Age (Ma, linear)	2.179	1.548	1.407	0.166
Age (Ma, quadratic)	-0.056	0.508	-0.111	0.912
Isolation (km)	0.004	0.002	1.933	0.059
Height (m)	0.543	2.055	0.264	0.793

B. glm, restricted dataset (only unequivocal cases of cladogenesis considered)

Factor	slope	se	t	p
Intercept	-11.965	6.537	-1.83	0.074
Area (km^2)	**1.886**	**0.847**	**2.227**	**0.031**
Age (Ma, linear)	2.215	1.511	1.466	0.149
Age (Ma, quadratic)	-0.118	0.53	-0.223	0.824
Isolation (km)	0.003	0.002	1.733	0.09
Height (m)	0.188	2.071	0.091	0.928

C. glmer, inclusive dataset (both possible and unequivocal cases of cladogenesis considered)

Factor	slope	se	z	Pr(>|z|)
Intercept	5.16	8.352	0.618	0.537
Area (km^2)	**2.789**	**1.262**	**2.211**	**0.027**
Age (Ma, linear)	0.129	1.357	0.095	0.925
Age (Ma, quadratic)	-0.919	0.602	-1.525	0.127
Isolation (km)	0.002	0.002	0.882	0.377
Height (m)	-5.034	3.126	-1.61	0.107

D. glmer, restricted dataset (only unequivocal cases of cladogenesis considered)

Factor	slope	se	z	Pr(>|z|)
Intercept	8.158	20.207	0.404	0.686
Area (km^2)	7.878	4.913	1.603	0.109
Age (Ma, linear)	0.366	2.711	0.135	0.893
Age (Ma, quadratic)	-2.088	1.89	-1.105	0.269
Isolation (km)	0.003	0.005	0.687	0.492
Height (m)	-11.148	9.36	-1.191	0.234

References specifically associated with Supplementary Figures A1 and A2

Arnold, E.N. 1980. Recently extinct reptile populations from Mauritius and Réunion, Indian Ocean. – J. Zool. 191: 33–47.

Arnold, E.N. and Ovenden, D.W. 2004. *A field guide to the reptiles and amphibians of Britain and Europe, 2nd Edn*. Collins, London.

Arnold, E.N. et al. 2008. Systematics, biogeography and evolution of the endemic *Hemidactylus* geckos (Reptilia, Squamata, Gekkonidae) of the Cape Verde Islands: based on morphology and mitochondrial and nuclear DNA sequences. – Zool. Scrip. 37: 619–636.

Austin, J.J. and Arnold, E.N. 2001. Ancient mitochondrial DNA and morphology elucidate an extinct island radiation of Indian Ocean giant tortoises (*Cylindraspis*). – Proc. Roy. Soc. Lond. B 268: 2515–2523.

Austin, J.J. et al. 2004. Reconstructing an island radiation using ancient and recent DNA: the extinct and living day geckos (*Phelsuma*) of the Mascarene islands. – Mol. Phylogenet. Evol. 31: 109–122.

Benavides, E. et al. 2009. Island biogeography of Galápagos lava lizards (Tropiduridae: *Microlophus*): species diversity and colonization of the archipelago. – Evolution 63: 1606–1626.

Bullock, D.J. et al. 1985. A new endemic gecko (Reptilia: Gekkonidae) from Mauritius. – J. Zoo. 206: 591–599.

Carranza, S. et al. 2008. Radiation, multiple dispersal and parallelism in the skinks, *Chalcides* and *Sphenops* (Squamata: Scincidae), with comments on *Scincus* and *Scincopus* and the age of the Sahara Desert. – Mol. Phylogenet. Evol. 46: 1071–1094.

Castillo, P. et al. 1988. Anomalously young volcanoes on old hot-spot traces: I. Geology and petrology of Cocos Island. – Geol. Soc. Amer. Bull. 100: 1400–1414.

Cox, S.C. et al. 2010. Divergence times and colonization of the Canary Islands by *Gallotia* lizards. – Mol. Phylogenet. Evol., 56: 747–757.

Duncan, R.A. and Hargraves, R.B. 1990. 40Ar/39Ar geochronology of basement rocks from the Mascarene Plateau, the Chagos Bank, and the Maldives Ridge. – Proc. Ocean Drill. Prog. Sci. Res. 115: 43–51.

Geist, D. et al. 2014. Paleogeography of the Galápagos Islands and biogeographical implications. *The Galápagos: a Natural Laboratory for the Earth Sciences* (eds. Harpp K. et al.) Amer. Geophys. Union Monogr. 204, Washington, DC.

Geldmacher, J. et al. 2005. New 40Ar/39Ar age and geochemical data from seamounts in the Canary and Madeira volcanic provinces: support for the mantle plume hypothesis. – Earth Planet. Sci. Lett. 237: 85–101.

Gentile, G. et al. 2009. An overlooked pink species of land iguana in the Galápagos. – Proc. Nat. Acad. Sci., USA 106: 507–511.

Harris, D. M. and Kluge, A.G. 1984. *The* Sphaerodactylus *(Sauria: Gekkonidae) of Middle America*. Occasion. Pap. Mus. Zool. Univ. Michigan, 706.

Harvey, M.B. et al. 2012. Review of teiid morphology with a revised taxonomy and phylogeny of the Teiidae (Lepidosauria: Squamata). – Zootaxa 3459: 1–156.

Hawlitschek, O. and Glaw, F. 2013. The complex colonization history of nocturnal geckos (*Paroedura*) in the Comoros Archipelago. – Zool. Scrip. 42: 135–150.

Hawlitschek, O. et al. 2016. Resurrection of the Comoran fish scale gecko *Geckolepis humbloti* Vaillant, 1887 reveals a disjunct distribution caused by natural overseas dispersal. – Organ. Divers. Evol. 16: 289–298.

Hawlitschek, O. et al. 2011. Integrating field surveys and remote sensing data to study distribution, habitat use and conservation status of the herpetofauna of the Comoro Islands. – ZooKeys 144: 21–79.

Hawlitschek, O. et al. 2013. Reliable DNA barcoding performance proved for species and island populations of Comoran squamate reptiles. – PLoS ONE 8: Article No. e73368.

Hawlitschek, O. et al. 2018. Computational molecular species delimitation and taxonomic revision of the gecko genus *Ebenavia* Boettger, 1878. – The Science of Nature: Article No 105/49.

Hedges, S.B. and Conn, C.E. 2012. A new skink fauna from Caribbean islands (Squamata, Mabuyidae, Mabuyinae). – Zootaxa 3288: 1–244.

Horner, P. 2007. Systematics of the snake-eyed skinks, Cryptoblepharus Wiegmann (Reptilia: Squamata: Scincidae) – an Australian-based review. – The Beagle, supplement, 3: 21–198.

IUCN Red List 2018. www.iucnredlist.org.

Kornilios, P. et al. 2013. Phylogenetic position, origin and biogeography of Palearctic and Socotran blind-snakes (Serpentes: Typhlopidae). – Mol. Phylogenet. Evol. 68: 35–41.

Kraus, F. 2005. The genus *Nactus* (Lacertilia: Gekkonidae): a phylogenetic analysis and description of two new species from the Papuan Region. – Zootaxa 1061: 1–28.

Loveridge, A. 1947. Revision of the African lizards of the family Gekkonidae. – Bull. Mus. Comp. Zool. 98: 1–469.

Martin, A. 2009. The Loch Ness monster and La Palma giant lizard *Gallotia auaritae*: are they really extant? – Oryx 43: 17.

Mertens, R. 1928. Neue inselrassen von *Cryptoblepharus boutonii* (Desjardin). – Zoologischer Anzeiger 78: 82–89.

Miralles, A. et al. 2011. An integrative taxonomic revision of the Cape Verdean skinks (Squamata, Scincidae). – Zool. Scrip. 40: 16–44.

Miralles, A. et al. 2017. Shedding light on the Imps of Darkness: an integrative taxonomic revision of the Galápagos marine iguanas (genus *Amblyrhynchus*). – Zool. J. Linn. Soc. 181: 678–710.

Rocha, S. et al. 2010. Phylogenetic systematics of day geckos, genus *Phelsuma*, based on molecular and morphological data (Squamata: Gekkonidae). – Zootaxa 2429: 1–28.

Rocha, S. et al. 2009. Multigene phylogeny of Malagasy day geckos of the genus *Phelsuma*. – Mol. Phylogenet. Evol. 52: 530–537.

Savage, J.M. 2002. *The amphibians and reptiles of Costa Rica: a herpetofauna between two continents, between two seas*. University of Chicago Press, Chicago.

Schlüter, T. 2008. *Geological Atlas of Africa*. Springer-Verlag, Berlin and Heidelberg.

Siler, C.D. et al. 2011. Phylogeny of Philippine slender skinks (Scincidae: *Brachymeles*) reveals underestimated species diversity, complex biogeographical relationships, and cryptic patterns of lineage diversification. – Mol. Phylogenet. Evol. 59: 53–65

Soares, L.B. et al. 2018. Review of the leaf-litter skinks (Scincidae: *Panaspis*) from the Gulf of Guinea oceanic islands, with the description of a new species. – Afr. J. Herp. doi: 10.1080/21564574.2017.1413015.

Torres-Carvajal, O. et al. 2014. Older than the islands: origin and diversification of Galápagos leaf-toed geckos (Phyllodactylidae: *Phyllodactylus*) by multiple colonizations. – J. Biogeogr. 41: 1883–1894.

Uetz, P. et al. (eds.) 2018. The Reptile Database, http://www.reptile-database.org.

Vasconcelos, R. et al. 2012. An integrative taxonomic revision of the *Tarentola* geckos (Squamata, Phyllodactylidae) of the Cape Verde Islands. – Zool. J. Linn. Soc. 164: 328–360.

Wadge, G. 1986. The dykes and structural setting of the volcanic front in the Lesser Antilles island arc. – Bull. Volcanol. 48: 349–372.