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Evolution of Phenotype and Mitochondrial Genome Reveals Limbless and Body-elongated Squamates may Change Their Energy Basis for Locomotion

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Abstract Limb reduction in Squamata present the dramatic characteristic to focus and usually accompanied with particularly morphological modifications, impacting tremendous locomotion changing and might generate different energy requirement. Herein, we combined both morphological and mitochondrial genomic data to explore the evolution of phenotypic transformation and mitochondrial genome of limbless and body-elongated squamates. We collected phenotypic measurements of 503 individuals, representing limbed or limbless taxa across all major lineages in Squamata to investigate the morphological correlations with limb-reduction. Furthermore, we provided the mitochondrial genome of the representative limbless and elongated species *Dibamus bourreti* (Angel, 1935) to detect selective constraints on limbless clades with published mitogenomes of other squamate reptiles. Our results evidenced that body elongation had certain negative relationship with limb-reduction in Squamata lineage and Lacertilia lineage (R = –0.495, P < 2.2e-16; R= –0.332, P = 1.1e-13, respectively), while tail length showed slight correlation in both clades (R = 0.156, P = 4.3e-04; R= 0.192, P = 2.1e-05, respectively). Besides, detection demonstrated that *ATP6* has experienced accelerated evolution among limbless lineages, suggesting selective pressure on mitogenomes may play an essential role in energy disparity for locomotion of limbed and limbless squamates.

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1. Introduction

Remarkable morphological variations (i.e. the relative dimensions of the body, tail, and limbs), characteristic evolution and biotic interchange form the pattern of biodiversity and become one of the major goals in evolutionary biology (Carroll, 1997; Futuyma, 2005; Young *et al.*, 2007; Ren *et al.*, 2017; Jiang *et al.*, 2019; Yu *et al.*, 2021). Limb reduction in vertebrate exhibits the most intriguing trait, which repeatedly evolved in amphibians (Parra-Olea and Wake, 2001; Urosevic *et al.*, 2016), reptiles (Wiens *et al.*, 2006; Miralles *et al.*, 2015; Bergmann *et al.*, 2020), and mammals (Bejder and Hall, 2002; Law *et al.*, 2019). Squamates, in particular, present an excellent model to study this dramatic body form transformation. Transitions from a fully pentadactyl form to an almost or completely limbless body form have independently occurred in squamate reptiles (Wiens *et al.*, 2006; Brandley *et al.*, 2008), and frequently accompanies with several morphological alterations like body elongation, digit loss or tail lengthening on particular taxonomic groups such as *Bachia*, *Chalcides* and *Lerista* (Gans, 1975; Lande, 1978; Caputo *et al.*, 2000; Wiens and Slingluff, 2001; Galis *et al.*, 2010; Lee *et al.*, 2013). However, the morphological correlations with limb-reduction remains unexplored in the whole squamates lineage.

Reduction of limbs in squamates appears to induce locomotory mode changing (Gans, 1962; Morinaga and Bergmann, 2020). Locomotion of quadrupedal form is mainly supported by the rhythmic and coordinated movements of four limbs, whereas the propelling wave with different

undulation pattern propagated along the trunk becomes the predominant mode in snake-like body forms (Gans, 1986; Renous *et al.*, 1998; Bergmann and Morinaga, 2019; Bergmann *et al.*, 2020), suggesting enormous locomotory difference might exist between limbed and limbless squamates. Furthermore, locomotion is energy-consuming, with most of the required energy supplied by mitochondria through oxidative phosphorylation (OXPHOS) (Boore, 1999; Das, 2006; Sun *et al.*, 2011). Studies in birds and fishes indicated that locomotive patterns were closely related to the evolution of mitogenome (Shen *et al.*, 2009; Sun *et al.*, 2011). In this regard, we conjecture that phenotypic changes accompanied with locomotion might influence the evolution of mitochondrial genome in squamates.

Dibamids are a group of elongated, fossorial, and limbless lizards (only males have flap-like traces near cloaca) living beneath leaf-litter, rocks, and rotting logs (Townsend *et al.*, 2011; Quah *et al.*, 2017), therefore, they arouse much interest for their typical phenotype and locomotory style. In the present study, we provided the complete mitochondrial genome and morphologic characteristics of *Dibamus bourreti* (Angle, 1935) combining with other squamates to investigate the evolution of phenotypic and mitogenome in limbless and body-elongated squamate reptiles.

2. Material and Methods

2.1. Morphological data collection and analysis An adult male of *D. bourreti* (voucher No. CIB118200) was collected from Mangshan, Hunan, China, muscle tissues were taken and preserved in 95% ethanol and then stored at –20°C in the Herpetological Museum, Chengdu Institute of Biology, Chinese Academy of Sciences, Chengdu, China. We measured snout-vent length (SVL) and tail length (TL) using a measuring tape to the nearest 1 mm. Hindlimb length (HL) (the flap structure) was obtained by a digital slide caliper to the nearest 0.01 mm. All measurements were following the description of Bergmann and Irschick (2010). Morphometric data of other squamates was collected from previous studies (Wiens *et al.*, 2006; Siler *et al.*, 2011; Morinaga and Bergmann, 2017; Bergmann and Morinaga, 2019). Totally, we gathered 503 species including limbed and limbless species (Table S1), covering all major lineages of squamates. To summarize the pattern of morphological variation, we divided our samples into four groups based on the following: limbed lizards, limb-reduced lizards, limbless lizards, and snakes. Limb-reduced lizards referred to those lacking all fingers or toes but remaining forelimb or hindlimb, while limbless lizards lacked all limbs without any vestige. A principal component analysis (PCA) was conducted using the "prcomp" function and *ggbiplot* package in R (R core team, 2020)based on the dataset. Then we tested the characteristics correlation in Squamata clade using *Hmisc* package in R (R core team, 2020). The traits were defined as 0 (limbless), 1 (limb-reduced), or 2 (limbed). Snakes were included in limbless group therein. Considering the morphological peculiarity of snakes, we did the correlation test in Lacertilia clade independently.

2.2. Sequencing, mitogenome extraction and annotation Total genomic DNA was extract from muscle tissue and a pair-end Illumina library was constructed with insert size ranging from 300 bp to 500 bp. The library was sequenced on Illumina Hiseq 2500 to generate raw data. Clean data was obtained after removing contaminated reads, low quality reads and reads with more than 5% 'N' bases of raw data and the complete mitochondrial genome of *D. bourreti* was extracted using Novoplasty (Dierckxsens *et al.*, 2017) from it. The mitochondrial genome annotation web server (MITOS) was used for annotation (Bernt *et al.*, 2013) and the tRNA genes were scanned by tRNAScan-SE2.0 online website (http://lowelab.ucsc.edu/tRNAscan-SE/) (Lowe and Chan, 2016).

2.3. Detecting selective pressure Complete mitochondrial genomes were collected form GenBank for 27 species, representing disparate clades of Squamata (Table S2). The species tree was downloaded from Time Tree Database (http://www.timetree.org/). Based on the topology, the branch model of CODEML in PAML4.7 (Yang, 1997) was used to evaluate the ω parameter, which means the ratio of nonsynonymous substitution (dN) and synonymous substitution (dS) in protein-coding genes (PCGs). We tested the null hypothesis using the null model (model = 0) firstly, meaning the ω ratio in all branches are equal. An alternative hypothesis was subsequently detected (model = 2), allowing different ω ratios on branches of interest. All limbless clades were regarded as the same foreground and the others were background. Finally, we calculated the significance of the null hypothesis and the alternative hypothesis using Likelihood Rate Test (LRTs). Genes with a P value less than 0.05 were considered as evolving with significantly faster rate in foreground branches.

3. Results

3.1. Analyses of character correlation All species were clustered into four distinct groups in PCA analysis: limbed lizards, limb-reduced lizards, limbless lizards, and snakes (Figure 1) based on the four indices (SVL, TL, FL, and HL). The first component from the PCA result showed that PC1 explained 56.6% of variation (Table 1). Individuals loaded highly positively on PC1 represented the snake-like species, characterized by reduced limb and elongated body. By contrast, negatively loaded species were lizard-like with robust limbs. Therefore, we interpreted PC1 as the indicator for lizard-like or

snake-like groups since it contrasted variables associated with body elongation (SVL with positive loadings). PC2 explained 32.6% of the variance and characterized by strongly loadings of SVL and TL. PC3 and PC4 explained low variation (Table 1) and therefore were not considered further. The correlation test between morphological traits indicated certain negative correlation between SVL and limb-reduction in both Squamata lineage and Lacertilia lineage (R = –0.495, P < 2.2e-16; R = –0.332, P = 1.1e-13, respectively), while slight relationship existed between TL and limb-reduction in either Squamata or Lacertilia clade (R = 0.156, P = 4.3e-04; R = 0.192, P = 2.1e-05, respectively) (Table 2).

3.2. Mitogenome characterization of *D. bourreti* We totally obtained 241.5 million reads (~36 Gbp) clean data of *D. bourreti* from Illumina Hiseq 2500 platform. The circular mitogenome of was 16 706 bp in size (Table 3, Figure 2), with base composition of 31.6% A, 23.9% T, 30.0% C and 14.5% G.

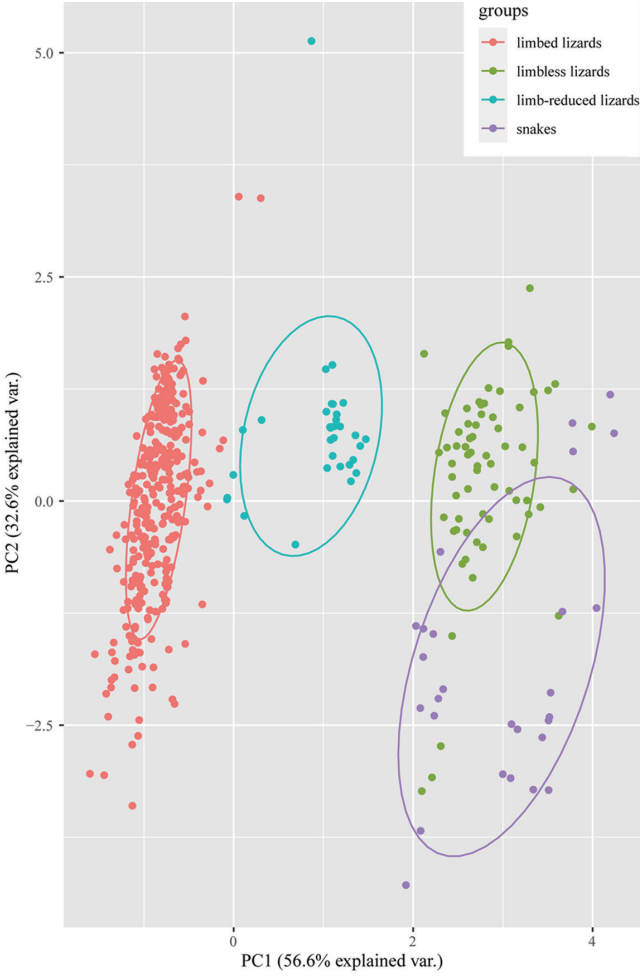

Figure 1 PCA plot of 503 squamate species based on the first two principal components (PCs). Ellipses indicate different groups with 68% confidence intervals.

Table 1 Morphometric PCA result for all variables. PCA loadings and percent explained variance for each PC are presented. n = 503.

	PC1	PC2	PC3	PC4
SVL	0.349	−0.674	0.647	−0.065
TL	−0.277	−0.737	−0.611	−0.075
FL	−0.636	−0.031	0.237	0.734
HL	−0.629	−0.017	0.389	−0.6721
%Variance	56.63	32.61	7.75	3.01

Table 2 Correlation test of traits.

Variables		Squamata clade		Lacertilia clade	
X	Y	*R*	*P*	*R*	*P*
SVL	trait	-0.495	**< 2.2e-16**	-0.332	**1.1e-13**
SVL	FL	-0.073	0.1	0.332	**1.1e-13**
SVL	HL	-0.098	**0.03**	0.267	**3.4e-09**
SVL	TL	0.234	**1.1e-07**	0.468	**< 2.2e-16**
TL	trait	0.156	**4.3e-04**	0.192	**2.1e-05**
TL	FL	0.623	**< 2.2e-16**	0.669	**< 2.2e-16**
TL	HL	0.632	**< 2.2e-16**	0.669	**< 2.2e-16**

Note: Abbreviation of traits see method. Significant *P*-values are in bold (P < 0.05).

The mitochondrial genome contained 13 protein-coding genes (*ND1-6*, *ND4L*, *COI-III*, Cyt *b*, *ATP6*, and *ATP8*), two rRNA fragments (12s and 16s rRNA), 22 tRNA fragments, and a control region (D-loop) (Table 1). Most genes were coded on the H-strand except *ND6* and 8 tRNAs (tRNA-Gln, Ala, Asn, Cys, Tyr, Ser, Glu, and Pro). All the PCGs were initiated with typical start codon ATG (Chen *et al.*, 2019), except for *COI* with GTG. For the PSGs, the longest gene was *ND5* (1824 bp) and the shortest was *ATP8* (168 bp). The 22 tRNAs ranged from 64 bp of tRNA-Cys to 75 bp of tRNA-Leu in length. The 12S

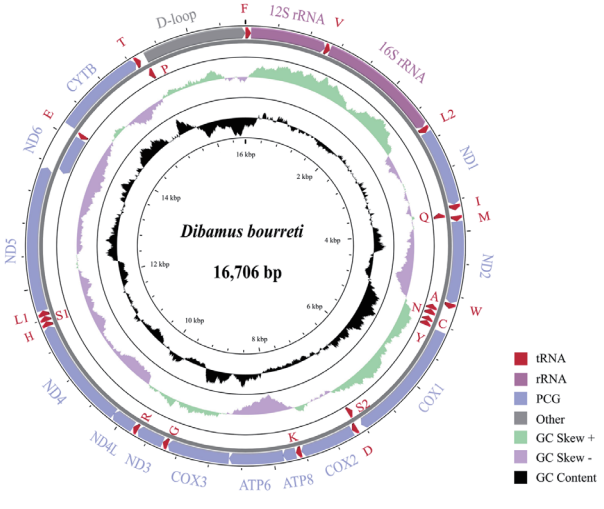

Figure 2 Mitochondrial gene organization of *Dibamus bourreti*. Genes encoded by the H-strand are outside the circle, while genes inside the circle are coded by the L-strand. All tRNA genes were denoted by IUPACIUB one-letter amino acid abbreviation.

rRNA and 16S rRNA were 948 bp and 1526 bp respectively. The mitogenome of *D. bourreti* had been deposited in GenBank under accession number MW368917.

3.3. Selection on mitogenomes of limbless squamates The topology of the phylogenetic tree reveals that limbless species were not recovered as a monophyletic group, suggesting limb-reduction evolved independently several times (Figure 3). In our result, the ratio of dN/dS substitutions of all genes were lower than 1, demonstrating more nonsynonymous substitutions than synonymous substitutions (Table 4). According to LRT, the selective pressure of *ATP6* therein has significantly difference between foreground and background branches (ω = 0.0376, 0.0191, $P < 0.05$, respectively), suggesting that *ATP6* of limbless species (foreground branch) experienced rapid evolution compared to the background branch.

4. Discussion

Here we integrate the morphological data to elucidate the pattern of morphological variations and test the morphological correlations with limb-reduction in squamates. All species were clustered into four groups based on the first principal component in our PCA plot (Figure 1), and correlation analysis showed definite relationship between SVL and limb-reduction in both Squamata and Lacertilia lineages (Table 2). It was obvious that quadrupedal squamates varied from snake-like squamates, but the discrepancy among limbless lizards and

Table 3 Annotation of whole mitogenome of *Dibamus bourreti*.

Gene	Strand	Start position	Length (bp)	Start codons	Stop codons	Anticodon
tRNA-Phe	H	1–71	71			GAA
12s rRNA	H	72–1019	948			
tRNA-Val	H	1018–1086	69			TAC
16s rRNA	H	1086–2611	1526			
tRNA-Leu2	H	2614–2688	75			TAA
ND1	H	2689–3657	969	ATG	TAA	
tRNA-Ile	H	3658–3730	73			GAT
tRNA-Gln	L	3730–3801	72			TTG
tRNA-Met	H	3801–3869	69			CAT
ND2	H	3870–4902	1033	ATG	CCT	
tRNA-Trp	H	4903–4974	72			TCA
tRNA-Ala	L	4974–5042	69			TGC
tRNA-Asn	L	5044–5116	73			GTT
tRNA-Cys	L	5143–5206	64			GCA
tRNA-Tyr	L	5207–5276	70			GTA
COX1	H	5278–6825	1548	GTG	AGA	
tRNA-Ser2	L	6819–6889	71			TGA
tRNA-Asp	H	6893–6960	68			GTC
COX2	H	6961–7648	688	ATG	CAT	
tRNA-Lys	H	7649–7718	70			TTT
ATP8	H	7720–7887	168	ATG	TAA	
ATP6	H	7878–8560	683	ATG	ATA	
COX3	H	8561–9344	784	ATG	CAT	
tRNA-Gly	H	9345–9414	70			TCC
ND3	H	9415–9760	346	ATG	AGT	
tRNA-Arg	H	9761–9829	69			TCG
ND4L	H	9831–10127	297	ATG	TAA	
ND4	H	10121–11501	1381	ATG	CCT	
tRNA-His	H	11502–11570	69			GTG
tRNA-Ser1	H	11571–11637	67			GCT
tRNA-Leu1	H	11639–11709	71			TAG
ND5	H	11711–13534	1824	ATG	TAA	
ND6	L	13531–14055	525	CTA	CAT	
tRNA-Glu	L	14056–14124	69			TTC
CYTB	H	14127–15268	1142	ATG	ATA	
tRNA-Thr	H	15269–15338	70			TGT
tRNA-Pro	L	15339–15410	72			TGG
D-loop	H	15411–16706	1296			

Table 4 The selective pressure of 13 protein-coding genes in mitogenomes.

Gene	lnL(null)	lnL(alternative)	statistics	DF	*P* value	ω (background)	ω (foreground)
ATP6	−13564.8254	−13562.7518	4.1471	1	0.0417	0.0191	0.0376
ATP8	−2480.7599	−2479.3168	2.8862	1	0.0894	0.2511	0.1442
COX1	−21176.4855	−21175.5594	1.8523	1	0.1735	0.0136	0.0171
COX2	−10967.4342	−10967.4166	0.0352	1	0.8512	0.0310	0.0293
COX3	−12405.8831	−12405.7840	0.1982	1	0.6562	0.0362	0.0336
CYTB	−19612.1791	−19611.4038	1.5506	1	0.2130	0.0348	0.0438
ND1	−16453.0110	−16452.9196	0.1829	1	0.6689	0.0293	0.0269
ND2	−17082.5685	−17081.1600	2.8170	1	0.0933	0.0236	0.0367
ND3	−6676.1213	−6675.4482	1.3463	1	0.2459	0.0505	0.0358
ND4	−27176.2422	−27175.3349	1.8145	1	0.1780	0.0445	0.0347
ND4L	−4066.9181	−4066.8527	0.1307	1	0.7177	0.0380	0.0329
ND5	−24949.9984	−24948.8601	2.2768	1	0.1313	0.0318	0.0414
ND6	−9069.5062	−9069.2681	0.4886	1	0.4846	0.0222	0.0306

snakes should also be noted. Distinctive modes for elongation might explain the different clusters of limbed, limb-reduced, limbless lizards and snakes in squamates. In squamates, limbless species elongated body forms in three ways: lengthening the trunk, the tail or the both (Wiens *et al.*, 2006; Brandley *et al.*, 2008; Morinaga and Bergmann, 2017). Snakes tended to display elongation in both trunk and tail region, whereas lizards appeared to elongate tails multiple times than trunks (Woltering, 2012). However, correlation between TL and limb-reduction showed slight support in either Squamata or Lacertilia in our study (Table 2), suggesting the lengthening of tails associating with limb reduction might occur in certain clades such as Anguidae (Wiens and Slingluff, 2001). Furthermore, our results demonstrated the association between body elongation

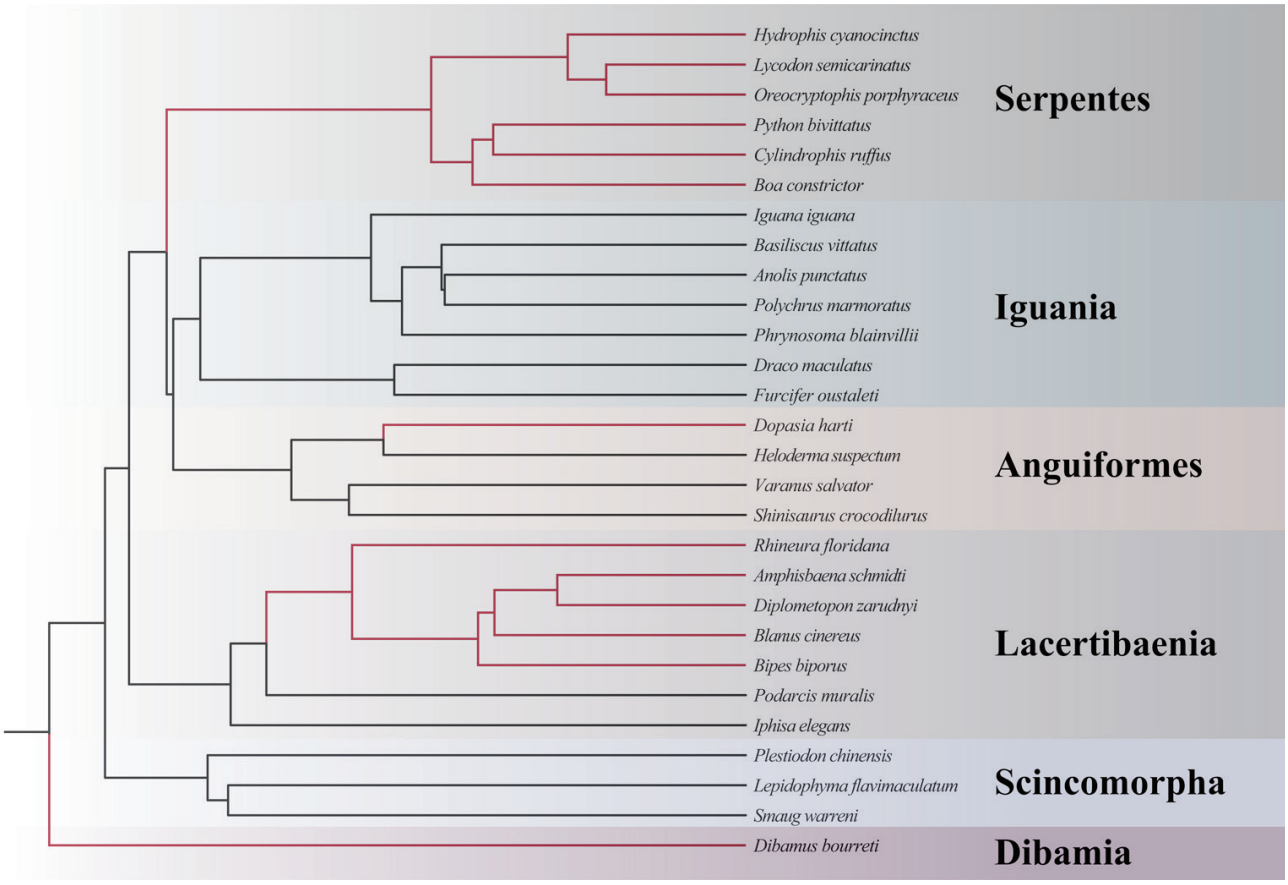

Figure 3 Phylogeny of 28 squamate species included in this study. Lines marked with red represent the elongated, limbless species and black lines represent the limbed, lizard-like species, respectively.

and limb reduction in Squamata, consistent with previous studies in amphibians (Parra-Olea and Wake, 2001; Bonett and Blair, 2017), reptiles (Wiens *et al.*, 2006; Brandley *et al.*, 2008; Grizante *et al.*, 2012) and mammals (Buchholtz and Schur, 2004; Buchholtz *et al.*, 2007; Law *et al.*, 2019), prompting that limb-reduction accompanied with elongated body forms tend to be a pervasive rule in vertebrate.

Previous studies had put forward three locomotive patterns for squamates with different degrees of limb loss: limbed squamates used their limbs for movement, limb-reduced squamates moved with their remaining limbs alternately with body swing and limbless squamates (including limbless lizards and snakes) relied on completely body swing (Gans, 1986; Gans and Gasc, 1990; Gans and Fusari, 1994). Distinct locomotive modes were considered to associate with energy metabolic as well as the evolutionary pattern of mitochondrial proteins (Shen *et al.*, 2009; Sun *et al.*, 2011; Jacobsen *et al.*, 2015). Mitochondria usually provide up to 95% energy in metabolism, which was directly produced by ATP synthase of mitochondrial respiratory chain, and support for locomotion (Sperl *et al.*, 2006; Shen *et al.*, 2010; Mitterboeck *et al.*, 2017). Researches in birds and insects prompted that selection pressure on mitochondrial genomes was closely related to locomotive abilities (Shen *et al.*, 2009; Mitterboeck and Adamowicz, 2013). Sun *et al.* (2011) evidenced that fishes with different locomotive patterns faced distinctive energy requirement and selective pressure on mitochondrial proteins vary among these groups, suggesting selective constrains exhibited by mitochondrial genome was due to the restriction of metabolism. By evaluating selective constrains on mitochondrial protein-coding sequences, our work showed that *ATP6* had undergone significantly accelerated evolution among limbless lineages comparing to the limbed lineages (Table 4). *ATP6* is a subunit of the F_0-proton channel in ATP synthase, catalyzing synthesis of ATP from ADP (Saraste, 1999). Jacobsen *et al.* (2015) investigated mutations in *ATP6* of two migratory groups in eels and demonstrated that positive selection in *ATP6* involved with different locomotive patterns in two life-history. Likewise, studies in mammals showed that mutations within *ATP6* indicated the association with differences in metabolism and selection linked to energetics (Fontanillas *et al.*, 2005; Kucharczyk *et al.*, 2010). Limbless and elongated forms facilitate undulate locomotion (Webb, 1982; Gans and Fusari, 1994; Morinaga and Bergmann, 2019) and moving through narrow tubes or cluttered habitats, experiencing less drag than their limbed counterpart (Gans, 1962; Gans and Gasc, 1990; Mehta *et al.*, 2010; Morinaga and Bergmann, 2020). Therefore, we speculate that limbless squamates perhaps receive different energetic requirement for their undulate locomotory pattern, and selective constraints on mitochondrial genes might play an important role in the evolution of locomotory patterns in squamate reptiles. But the role of *ATP6* involved in energy metabolism in different groups and whether other genes in the whole genome change to meet energetic requirement for locomotion need more evidence.

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Appendix

Table S1 Morphological data of 503 squamates in this study.

Species	SVL	TL	FL	HL	Fingers	Toes	Trait	Source
Dibamus bourreti	8.16	5.21	0.00	4.05	0	0	limb-reduced	This study
Brachymeles libayani	57.87	43.98	1.28	2.36	3	3	limbed	Bergmann and Morinaga, 2019
Brachymeles paeforum	59.44	46.57	1.45	2.62	3	3	limbed	Bergmann and Morinaga, 2019
Brachymeles muntingkamay	75.45	52.63	2.74	5.73	3	3	limbed	Bergmann and Morinaga, 2019
Brachymeles tridactylus	71.55	69.85	2.02	3.06	3	3	limbed	Bergmann and Morinaga, 2019
Chalcides guentheri	89.82	79.38	0.00	0.00	3	3	limbless	Bergmann and Morinaga, 2019
Chalcides chalcides	64.33	89.61	3.52	6.12	3	3	limbed	Bergmann and Morinaga, 2019
Chalcides striatus	146.87	94.73	7.31	9.09	3	3	limbed	Bergmann and Morinaga, 2019
Hemiergis tridactyla	59.82	52.75	2.46	8.69	3	3	limbed	Bergmann and Morinaga, 2019
Saiphos equalis	62.55	56.94	5.39	8.84	3	3	limbed	Bergmann and Morinaga, 2019
Hemiergis decresiensis	47.55	66.49	6.41	8.77	3	3	limbed	Bergmann and Morinaga, 2019
Lerista haroldi	38.14	36.21	6.14	12.83	3	3	limbed	Bergmann and Morinaga, 2019
Lerista terdigitata	57.17	38.52	8.21	17.66	3	3	limbed	Bergmann and Morinaga, 2019
Lerista tridactyla	54.45	43.83	7.81	15.75	3	3	limbed	Bergmann and Morinaga, 2019
Scelotes caffer	46.12	40.31	3.46	8.09	3	3	limbed	Bergmann and Morinaga, 2019
Bachia bicolor	55.06	62.77	3.31	2.30	4	1	limbed	Bergmann and Morinaga, 2019
Rhachisaurus brachylepis	60.13	66.44	7.07	11.40	4	4	limbed	Bergmann and Morinaga, 2019
Bachia heteropa	52.99	76.65	2.61	2.75	4	4	limbed	Bergmann and Morinaga, 2019
Bachia panoplia	82.60	128.18	5.27	7.97	4	4	limbed	Bergmann and Morinaga, 2019
Brachymeles elerae	70.51	60.06	3.37	4.99	4	4	limbed	Bergmann and Morinaga, 2019
Chalcides mionecton	71.85	49.33	7.14	14.54	4	4	limbed	Bergmann and Morinaga, 2019
Hemiergis peronii	73.50	59.40	6.75	13.18	4	4	limbed	Bergmann and Morinaga, 2019
Lerista aericeps	36.17	25.58	6.71	13.63	4	4	limbed	Bergmann and Morinaga, 2019
Lerista christinae	35.77	35.44	8.02	14.20	4	4	limbed	Bergmann and Morinaga, 2019
Lerista frosti	39.72	37.88	5.65	13.25	4	4	limbed	Bergmann and Morinaga, 2019
Lerista distinguenda	37.84	39.99	6.43	13.12	4	4	limbed	Bergmann and Morinaga, 2019
Lerista elegans	37.00	40.50	7.42	13.91	4	4	limbed	Bergmann and Morinaga, 2019
Lerista taeniata	43.18	41.69	6.39	14.03	4	4	limbed	Bergmann and Morinaga, 2019
Lerista orientalis	41.15	44.04	6.49	12.47	4	4	limbed	Bergmann and Morinaga, 2019
Lerista xanthura	37.40	47.57	6.99	13.62	4	4	limbed	Bergmann and Morinaga, 2019
Lerista dorsalis	48.37	47.81	6.33	15.05	4	4	limbed	Bergmann and Morinaga, 2019
Lerista flammicauda	50.44	59.61	8.49	13.68	4	4	limbed	Bergmann and Morinaga, 2019
Lerista zietzi	51.08	59.71	8.38	14.35	4	4	limbed	Bergmann and Morinaga, 2019
Scelotes tetradactylus	78.00	44.94	5.81	10.61	4	4	limbed	Bergmann and Morinaga, 2019
Heterodactylus imbricatus	70.01	139.42	12.76	20.79	4	5	limbed	Bergmann and Morinaga, 2019
Brachymeles pathfinderi	62.22	58.18	5.82	10.88	5	4	limbed	Bergmann and Morinaga, 2019
Colobodactylus taunayi	48.37	66.46	9.84	15.41	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles vulcani	75.43	53.79	8.34	14.24	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles tiboliorum	68.55	61.40	7.30	11.20	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles gracilis	67.54	62.33	6.97	12.17	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles hilong	74.16	67.08	8.48	14.56	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles boholensis	88.89	74.95	10.11	17.23	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles samad	71.02	75.89	9.09	14.30	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles taylori	87.32	78.01	9.83	17.12	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles boulengeri	85.93	80.99	10.66	17.47	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles mindorensis	101.94	90.92	11.50	20.52	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles tungaoi	102.55	100.91	12.36	21.13	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles orientalis	106.74	102.90	14.01	22.79	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles schadenbergi	106.59	106.88	11.93	20.36	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles talinis	119.12	112.43	14.49	24.21	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles makusog	114.48	112.56	14.79	22.39	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles kadwa	115.33	113.00	13.41	21.98	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles bicolor	140.01	154.70	10.71	17.92	5	5	limbed	Bergmann and Morinaga, 2019
Janetaescincus veseyfitzgeraldi	32.15	29.78	5.17	8.65	5	5	limbed	Bergmann and Morinaga, 2019

(Continued Table S1)

Species	SVL	TL	FL	HL	Fingers	Toes	Trait	Source
Chalcides thierryi	59.60	39.19	3.92	7.36	5	5	limbed	Bergmann and Morinaga, 2019
Janetaescincus braueri	36.77	39.47	7.06	11.87	5	5	limbed	Bergmann and Morinaga, 2019
Pamelaescincus gardineri	43.57	43.25	8.98	15.89	5	5	limbed	Bergmann and Morinaga, 2019
Chalcides boulengeri	63.39	46.68	7.66	15.71	5	5	limbed	Bergmann and Morinaga, 2019
Chalcides bedriagai	58.29	48.99	8.34	13.77	5	5	limbed	Bergmann and Morinaga, 2019
Chalcides sepsoides	72.50	55.89	6.10	16.11	5	5	limbed	Bergmann and Morinaga, 2019
Chalcides viridanus	51.95	60.58	10.64	13.74	5	5	limbed	Bergmann and Morinaga, 2019
Gongylomorphus bojerii	50.63	65.90	11.12	20.22	5	5	limbed	Bergmann and Morinaga, 2019
Chalcides ocellatus	82.53	71.58	17.99	25.31	5	5	limbed	Bergmann and Morinaga, 2019
Chalcides sexlineatus	69.65	86.73	16.29	24.08	5	5	limbed	Bergmann and Morinaga, 2019
Chalcides polylepis	104.04	103.48	23.49	30.39	5	5	limbed	Bergmann and Morinaga, 2019
Chalcides bottegi	114.03	107.60	16.63	26.69	5	5	limbed	Bergmann and Morinaga, 2019
Hemiergis initialis	46.21	29.60	3.97	6.08	5	5	limbed	Bergmann and Morinaga, 2019
Hemiergis millewae	41.13	30.99	7.58	11.69	5	5	limbed	Bergmann and Morinaga, 2019
Eulamprus quoyii	90.85	60.73	23.40	40.57	5	5	limbed	Bergmann and Morinaga, 2019
Calyptotis ruficauda	43.69	63.83	10.55	14.13	5	5	limbed	Bergmann and Morinaga, 2019
Eremiascincus pardalis	62.66	68.81	14.69	25.11	5	5	limbed	Bergmann and Morinaga, 2019
Glaphyromorphus pumilus	51.36	77.61	7.21	9.24	5	5	limbed	Bergmann and Morinaga, 2019
Eulamprus martini	52.45	79.24	17.13	24.35	5	5	limbed	Bergmann and Morinaga, 2019
Eulamprus brachyosoma	64.47	82.08	18.54	27.65	5	5	limbed	Bergmann and Morinaga, 2019
Gnypetoscincus queenslandiae	62.50	83.06	20.28	31.13	5	5	limbed	Bergmann and Morinaga, 2019
Eulamprus tigrinus	80.22	92.79	24.88	36.38	5	5	limbed	Bergmann and Morinaga, 2019
Eulamprus kosciuskoi	70.19	93.77	18.64	27.11	5	5	limbed	Bergmann and Morinaga, 2019
Eremiascincus fasciolatus	81.83	96.70	19.57	31.95	5	5	limbed	Bergmann and Morinaga, 2019
Eulamprus tympanum	67.86	97.46	18.29	25.86	5	5	limbed	Bergmann and Morinaga, 2019
Eremiascincus richardsonii	88.47	98.75	29.14	30.91	5	5	limbed	Bergmann and Morinaga, 2019
Hemiergis gracilipes	65.68	113.40	8.97	0.00	5	5	limb-reduced	Bergmann and Morinaga, 2019
Eulamprus murrayi	95.25	118.55	27.29	38.03	5	5	limbed	Bergmann and Morinaga, 2019
Lerista viduata	37.36	35.27	7.71	13.59	5	5	limbed	Bergmann and Morinaga, 2019
Lerista microtis	42.66	42.00	8.79	16.96	5	5	limbed	Bergmann and Morinaga, 2019
Lerista bougainvillii	58.48	56.58	8.92	17.03	5	5	limbed	Bergmann and Morinaga, 2019
Lerista arenicola	48.88	56.90	11.86	22.09	5	5	limbed	Bergmann and Morinaga, 2019
Scelotes capensis	51.24	48.42	3.60	8.80	5	5	limbed	Bergmann and Morinaga, 2019
Madascincus intermedius	53.42	49.02	8.49	15.58	5	5	limbed	Bergmann and Morinaga, 2019
Madascincus melanopleura	51.32	54.86	7.47	14.93	5	5	limbed	Bergmann and Morinaga, 2019
Amphiglossus splendidus	75.37	67.69	11.16	17.49	5	5	limbed	Bergmann and Morinaga, 2019
Scelotes uluguruensis	65.38	69.75	7.47	12.20	5	5	limbed	Bergmann and Morinaga, 2019
Amphiglossus anosyensis	70.49	69.80	13.25	21.60	5	5	limbed	Bergmann and Morinaga, 2019
Madascincus stumpffi	78.95	74.19	13.46	24.18	5	5	limbed	Bergmann and Morinaga, 2019
Proscelotes eggeli	80.80	85.71	9.76	14.16	5	5	limbed	Bergmann and Morinaga, 2019
Madascincus mouroundavae	57.79	87.11	12.56	19.41	5	5	limbed	Bergmann and Morinaga, 2019
Amphiglossus melanurus	69.11	88.34	13.29	17.56	5	5	limbed	Bergmann and Morinaga, 2019
Amphiglossus frontoparietalis	65.22	88.59	14.75	25.79	5	5	limbed	Bergmann and Morinaga, 2019
Amphiglossus punctatus	66.68	99.66	14.66	19.95	5	5	limbed	Bergmann and Morinaga, 2019
Amphiglossus tsaratananensis	75.38	103.79	12.76	19.86	5	5	limbed	Bergmann and Morinaga, 2019
Amphiglossus macrocercus	91.69	105.52	18.79	28.37	5	5	limbed	Bergmann and Morinaga, 2019
Amphiglossus mandokava	143.65	179.71	16.91	28.52	5	5	limbed	Bergmann and Morinaga, 2019
Amphiglossus astrolabi	135.42	187.86	22.84	37.41	5	5	limbed	Bergmann and Morinaga, 2019
Brachymeles sp6 PalayPalay	74.52	28.61	0.92	1.42	0	0	limb-reduced	Bergmann and Morinaga, 2019
Brachymeles sp3 Marinduque	61.28	37.82	0.89	1.34	0	0	limb-reduced	Bergmann and Morinaga, 2019
Brachymeles miriamae	90.34	43.02	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Brachymeles minimus	63.05	47.01	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Brachymeles sp2 Masbate	67.46	54.17	0.92	1.36	0	0	limb-reduced	Bergmann and Morinaga, 2019
Brachymeles sp4 Zambales	93.65	60.32	0.97	1.36	0	0	limb-reduced	Bergmann and Morinaga, 2019
Brachymeles sp7 Gonzaga	74.99	61.58	1.23	1.72	0	0	limb-reduced	Bergmann and Morinaga, 2019

(Continued Table S1)

Species	SVL	TL	FL	HL	Fingers	Toes	Trait	Source
Brachymeles burksi	74.91	62.74	1.21	1.68	0	0	limb-reduced	Bergmann and Morinaga, 2019
Brachymeles lukbani	78.63	62.88	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Brachymeles apus	106.15	69.13	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Coeranoscincus frontalis	72.66	26.98	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Anomalopus swansoni	89.01	41.82	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Ophioscincus ophioscincus	88.11	53.05	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Lerista apoda	72.46	33.56	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Melanoseps ater	73.68	14.45	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Feylinia polylepis	113.76	18.62	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Melanoseps rondoensis	83.05	21.12	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Melanoseps loveridgei	85.88	26.56	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Typhlacontias brevipes	96.53	26.68	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Scelotes arenicolus	70.28	28.20	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Typhlacontias gracilis	73.75	29.67	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Scelotes anguineus	60.20	33.71	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Feylinia currori	146.81	33.83	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Paracontias holomelas	103.62	35.57	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Typhlacontias punctatissimus	73.41	37.28	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Paracontias hildebrandti	27.86	39.60	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Voeltzkowia rubrocaudata	77.23	41.61	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Typhlacontias rohani	60.74	42.28	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Voeltzkowia mira	52.43	59.37	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Feylinia grandisquamis	125.10	65.41	0.00	0.00	0	0	limbless	Bergmann and Morinaga, 2019
Lerista haroldi	38.14	36.21	6.14	12.83	3	3	limbed	Morinaga and Bergmann, 2017
Lerista terdigitata	61.00	57.05	8.44	18.04	3	3	limbed	Morinaga and Bergmann, 2017
Lerista terdigitata	58.29	54.27	8.16	17.21	3	3	limbed	Morinaga and Bergmann, 2017
Lerista terdigitata	52.21	4.25	8.04	17.74	3	3	limbed	Morinaga and Bergmann, 2017
Lerista terdigitata	49.32	46.67	7.98	14.97	3	3	limbed	Morinaga and Bergmann, 2017
Lerista tridactyla	59.50	48.44	8.19	16.14	3	3	limbed	Morinaga and Bergmann, 2017
Lerista tridactyla	61.28	35.02	8.04	17.13	3	3	limbed	Morinaga and Bergmann, 2017
Lerista tridactyla	50.38	45.34	6.87	15.00	3	3	limbed	Morinaga and Bergmann, 2017
Lerista tridactyla	51.78	43.68	7.97	15.53	3	3	limbed	Morinaga and Bergmann, 2017
Lerista aericeps	37.81	50.37	6.51	13.80	4	4	limbed	Morinaga and Bergmann, 2017
Lerista aericeps	36.86	5.77	6.88	12.46	4	4	limbed	Morinaga and Bergmann, 2017
Lerista aericeps	33.85	20.60	6.73	14.64	4	4	limbed	Morinaga and Bergmann, 2017
Lerista christinae	36.74	42.74	7.91	13.25	4	4	limbed	Morinaga and Bergmann, 2017
Lerista christinae	37.23	31.84	8.79	15.40	4	4	limbed	Morinaga and Bergmann, 2017
Lerista christinae	34.76	45.13	8.25	14.17	4	4	limbed	Morinaga and Bergmann, 2017
Lerista christinae	35.97	33.18	7.65	14.82	4	4	limbed	Morinaga and Bergmann, 2017
Lerista christinae	32.36	32.03	7.99	13.67	4	4	limbed	Morinaga and Bergmann, 2017
Lerista christinae	38.01	31.12	7.94	13.61	4	4	limbed	Morinaga and Bergmann, 2017
Lerista christinae	35.29	32.02	7.59	14.50	4	4	limbed	Morinaga and Bergmann, 2017
Lerista distinguenda	37.68	37.60	6.56	13.02	4	4	limbed	Morinaga and Bergmann, 2017
Lerista distinguenda	38.39	49.84	7.31	13.04	4	4	limbed	Morinaga and Bergmann, 2017
Lerista distinguenda	39.50	39.23	6.31	12.65	4	4	limbed	Morinaga and Bergmann, 2017
Lerista distinguenda	33.87	39.41	5.77	12.70	4	4	limbed	Morinaga and Bergmann, 2017
Lerista distinguenda	38.56	48.97	6.53	14.34	4	4	limbed	Morinaga and Bergmann, 2017
Lerista distinguenda	37.22	29.25	5.67	13.44	4	4	limbed	Morinaga and Bergmann, 2017
Lerista distinguenda	37.53	39.27	6.26	13.19	4	4	limbed	Morinaga and Bergmann, 2017
Lerista dorsalis	52.21	34.05	6.61	15.62	4	4	limbed	Morinaga and Bergmann, 2017
Lerista dorsalis	53.46	53.82	6.72	16.17	4	4	limbed	Morinaga and Bergmann, 2017
Lerista dorsalis	45.33	45.11	6.23	14.10	4	4	limbed	Morinaga and Bergmann, 2017
Lerista dorsalis	42.05	46.55	5.93	13.13	4	4	limbed	Morinaga and Bergmann, 2017
Lerista dorsalis	46.90	57.34	5.82	15.22	4	4	limbed	Morinaga and Bergmann, 2017
Lerista dorsalis	50.67	58.34	6.56	16.63	4	4	limbed	Morinaga and Bergmann, 2017

(Continued Table S1)

Species	SVL	TL	FL	HL	Fingers	Toes	Trait	Source
Lerista dorsalis	44.87	50.26	6.08	14.22	4	4	limbed	Morinaga and Bergmann, 2017
Lerista dorsalis	51.50	36.97	6.69	15.31	4	4	limbed	Morinaga and Bergmann, 2017
Lerista elegans	42.01	43.77	7.94	14.73	4	4	limbed	Morinaga and Bergmann, 2017
Lerista elegans	40.04	40.91	7.21	13.79	4	4	limbed	Morinaga and Bergmann, 2017
Lerista elegans	37.46	38.24	6.68	13.27	4	4	limbed	Morinaga and Bergmann, 2017
Lerista elegans	34.76	35.19	7.75	14.82	4	4	limbed	Morinaga and Bergmann, 2017
Lerista elegans	35.70	36.10	6.86	12.73	4	4	limbed	Morinaga and Bergmann, 2017
Lerista elegans	38.21	43.55	7.70	14.23	4	4	limbed	Morinaga and Bergmann, 2017
Lerista elegans	31.37	40.27	7.45	12.82	4	4	limbed	Morinaga and Bergmann, 2017
Lerista elegans	36.42	45.94	7.75	14.88	4	4	limbed	Morinaga and Bergmann, 2017
Lerista flammicauda	44.96	58.56	8.74	13.98	4	4	limbed	Morinaga and Bergmann, 2017
Lerista flammicauda	54.66	42.53	8.48	13.49	4	4	limbed	Morinaga and Bergmann, 2017
Lerista flammicauda	56.37	65.55	8.82	14.54	4	4	limbed	Morinaga and Bergmann, 2017
Lerista flammicauda	49.74	72.43	8.51	14.31	4	4	limbed	Morinaga and Bergmann, 2017
Lerista flammicauda	49.77	62.40	6.45	12.15	4	4	limbed	Morinaga and Bergmann, 2017
Lerista flammicauda	55.02	41.14	8.88	14.63	4	4	limbed	Morinaga and Bergmann, 2017
Lerista flammicauda	48.20	72.34	9.09	13.68	4	4	limbed	Morinaga and Bergmann, 2017
Lerista flammicauda	44.82	61.95	8.98	12.62	4	4	limbed	Morinaga and Bergmann, 2017
Lerista frosti	39.51	40.40	5.55	12.61	4	4	limbed	Morinaga and Bergmann, 2017
Lerista frosti	38.75	43.54	5.93	13.32	4	4	limbed	Morinaga and Bergmann, 2017
Lerista frosti	40.91	29.71	5.46	13.81	4	4	limbed	Morinaga and Bergmann, 2017
Lerista orientalis	45.62	33.92	6.02	12.78	4	4	limbed	Morinaga and Bergmann, 2017
Lerista orientalis	46.46	58.67	6.64	13.04	4	4	limbed	Morinaga and Bergmann, 2017
Lerista orientalis	38.67	41.14	7.32	13.61	4	4	limbed	Morinaga and Bergmann, 2017
Lerista orientalis	37.81	44.62	7.02	12.93	4	4	limbed	Morinaga and Bergmann, 2017
Lerista orientalis	39.00	31.98	5.64	10.38	4	4	limbed	Morinaga and Bergmann, 2017
Lerista orientalis	39.33	53.90	6.30	12.10	4	4	limbed	Morinaga and Bergmann, 2017
Lerista taeniata	45.06	42.43	6.00	13.18	4	4	limbed	Morinaga and Bergmann, 2017
Lerista taeniata	43.14	38.19	6.94	14.49	4	4	limbed	Morinaga and Bergmann, 2017
Lerista taeniata	45.84	48.61	6.88	14.58	4	4	limbed	Morinaga and Bergmann, 2017
Lerista taeniata	38.69	37.52	5.72	13.86	4	4	limbed	Morinaga and Bergmann, 2017
Lerista xanthura	36.16	48.96	6.17	13.01	4	4	limbed	Morinaga and Bergmann, 2017
Lerista xanthura	38.63	46.17	7.80	14.24	4	4	limbed	Morinaga and Bergmann, 2017
Lerista zietzi	53.32	45.16	8.70	13.36	4	4	limbed	Morinaga and Bergmann, 2017
Lerista zietzi	48.70	66.87	7.57	15.71	4	4	limbed	Morinaga and Bergmann, 2017
Lerista zietzi	52.46	43.62	8.04	14.22	4	4	limbed	Morinaga and Bergmann, 2017
Lerista zietzi	50.39	63.22	9.33	14.43	4	4	limbed	Morinaga and Bergmann, 2017
Lerista zietzi	52.75	54.31	8.07	13.62	4	4	limbed	Morinaga and Bergmann, 2017
Lerista zietzi	47.66	68.53	7.66	13.14	4	4	limbed	Morinaga and Bergmann, 2017
Lerista zietzi	53.83	72.34	8.04	14.16	4	4	limbed	Morinaga and Bergmann, 2017
Lerista zietzi	49.52	63.61	9.65	16.13	4	4	limbed	Morinaga and Bergmann, 2017
Lerista arenicola	46.81	57.63	13.11	20.37	5	5	limbed	Morinaga and Bergmann, 2017
Lerista arenicola	50.02	62.75	12.24	21.52	5	5	limbed	Morinaga and Bergmann, 2017
Lerista arenicola	44.07	43.91	11.29	22.16	5	5	limbed	Morinaga and Bergmann, 2017
Lerista arenicola	48.34	60.59	11.37	22.65	5	5	limbed	Morinaga and Bergmann, 2017
Lerista arenicola	50.59	55.96	11.47	21.94	5	5	limbed	Morinaga and Bergmann, 2017
Lerista arenicola	48.87	51.23	12.37	23.09	5	5	limbed	Morinaga and Bergmann, 2017
Lerista arenicola	55.05	62.55	11.61	23.26	5	5	limbed	Morinaga and Bergmann, 2017
Lerista arenicola	47.27	60.54	11.42	21.73	5	5	limbed	Morinaga and Bergmann, 2017
Lerista bougainvilli	56.64	51.51	8.27	16.51	5	5	limbed	Morinaga and Bergmann, 2017
Lerista bougainvilli	60.33	61.64	9.56	17.56	5	5	limbed	Morinaga and Bergmann, 2017
Lerista microtis	39.90	52.48	9.68	18.15	5	5	limbed	Morinaga and Bergmann, 2017
Lerista microtis	47.09	36.14	8.09	15.98	5	5	limbed	Morinaga and Bergmann, 2017
Lerista microtis	42.75	38.36	8.54	16.42	5	5	limbed	Morinaga and Bergmann, 2017
Lerista microtis	38.97	49.20	9.46	16.51	5	5	limbed	Morinaga and Bergmann, 2017

(Continued Table S1)

Species	SVL	TL	FL	HL	Fingers	Toes	Trait	Source
Lerista microtis	49.25	41.13	7.91	16.93	5	5	limbed	Morinaga and Bergmann, 2017
Lerista microtis	39.30	33.52	9.28	16.03	5	5	limbed	Morinaga and Bergmann, 2017
Lerista microtis	37.90	44.42	8.80	17.10	5	5	limbed	Morinaga and Bergmann, 2017
Lerista microtis	46.10	40.73	8.53	18.56	5	5	limbed	Morinaga and Bergmann, 2017
Lerista viduata	42.42	46.98	7.96	13.04	5	5	limbed	Morinaga and Bergmann, 2017
Lerista viduata	39.14	22.88	7.77	15.34	5	5	limbed	Morinaga and Bergmann, 2017
Lerista viduata	33.90	42.38	6.87	13.29	5	5	limbed	Morinaga and Bergmann, 2017
Lerista viduata	37.69	28.39	7.24	13.46	5	5	limbed	Morinaga and Bergmann, 2017
Lerista viduata	36.47	35.49	8.62	13.04	5	5	limbed	Morinaga and Bergmann, 2017
Lerista viduata	34.55	35.51	7.78	13.36	5	5	limbed	Morinaga and Bergmann, 2017
Lerista humphriesi	40.40	30.48	0.00	1.61	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista humphriesi	39.11	32.73	0.00	1.95	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista humphriesi	54.42	33.86	0.00	1.53	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista humphriesi	50.63	36.45	0.00	2.37	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista humphriesi	54.14	38.13	0.00	1.78	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista humphriesi	50.19	36.86	0.00	2.01	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista karlschmidti	63.26	56.45	0.00	2.13	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista karlschmidti	48.03	41.42	0.00	2.01	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista praepedita	50.18	46.41	0.00	1.25	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista praepedita	56.86	47.02	0.00	1.86	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista praepedita	56.50	46.40	0.00	1.45	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista praepedita	53.84	40.48	0.00	1.51	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista praepedita	53.35	44.21	0.00	1.77	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista praepedita	58.78	53.55	0.00	1.20	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista praepedita	53.97	43.11	0.00	1.47	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista praepedita	57.74	40.58	0.00	1.43	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista stylis	74.37	55.74	0.00	0.60	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista stylis	74.54	36.55	0.00	0.66	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista stylis	75.85	38.44	0.00	0.95	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista stylis	66.57	53.14	0.00	1.07	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista stylis	70.65	47.21	0.00	0.68	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista stylis	75.08	50.92	0.00	0.53	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista stylis	70.53	49.61	0.00	0.78	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista stylis	69.11	37.65	0.00	1.04	0	0	limb-reduced	Morinaga and Bergmann, 2017
Lerista apoda	70.48	42.75	0.00	0.00	0	0	limbless	Morinaga and Bergmann, 2017
Lerista apoda	71.37	23.53	0.00	0.00	0	0	limbless	Morinaga and Bergmann, 2017
Lerista apoda	75.66	43.22	0.00	0.00	0	0	limbless	Morinaga and Bergmann, 2017
Lerista apoda	74.98	14.79	0.00	0.00	0	0	limbless	Morinaga and Bergmann, 2017
Lerista apoda	71.53	38.79	0.00	0.00	0	0	limbless	Morinaga and Bergmann, 2017
Lerista apoda	75.32	43.55	0.00	0.00	0	0	limbless	Morinaga and Bergmann, 2017
Lerista apoda	67.86	28.31	0.00	0.00	0	0	limbless	Morinaga and Bergmann, 2017
Brachymeles muntingkamay	75.45	52.63	2.74	5.73	3	3	limbed	Siler and Brown, 2011
Brachymeles samarensis Leyte	59.44	46.57	1.45	2.62	3	3	limbed	Siler and Brown, 2011
Brachymeles tridactylus	71.55	69.85	2.02	3.06	3	3	limbed	Siler and Brown, 2011
Brachymeles elerae	70.51	60.06	3.37	4.99	4	4	limbed	Siler and Brown, 2011
Brachymeles pathfinderi	62.22	58.18	5.82	10.88	5	4	limbed	Siler and Brown, 2011
Brachymeles bicolor	140.01	154.70	10.71	17.92	5	5	limbed	Siler and Brown, 2011
Brachymeles boholensis	88.89	74.95	10.11	17.23	5	5	limbed	Siler and Brown, 2011
Brachymeles boulengeri	85.93	80.99	10.66	17.47	5	5	limbed	Siler and Brown, 2011
Brachymeles gracilis	67.54	62.33	6.97	12.17	5	5	limbed	Siler and Brown, 2011
Brachymeles hilong	74.16	67.08	8.48	14.56	5	5	limbed	Siler and Brown, 2011
Brachymeles kadwa	115.33	113.00	13.41	21.98	5	5	limbed	Siler and Brown, 2011
Brachymeles makusog	114.48	112.56	14.79	22.39	5	5	limbed	Siler and Brown, 2011
Brachymeles mindorensis	101.94	90.92	11.50	20.52	5	5	limbed	Siler and Brown, 2011
Brachymeles orientalis	106.74	102.90	14.01	22.79	5	5	limbed	Siler and Brown, 2011

(Continued Table S1)

Species	SVL	TL	FL	HL	Fingers	Toes	Trait	Source
Brachymeles schadenbergi	106.59	106.88	11.93	20.36	5	5	limbed	Siler and Brown, 2011
Brachymeles talinis	119.12	112.43	14.49	24.21	5	5	limbed	Siler and Brown, 2011
Brachymeles taylori	87.32	78.01	9.83	17.12	5	5	limbed	Siler and Brown, 2011
Brachymeles tungaoi	102.55	100.91	12.36	21.13	5	5	limbed	Siler and Brown, 2011
Brachymeles apus	106.15	69.13	0.00	0.00	0	0	limbless	Siler and Brown, 2011
Brachymeles bonitae	74.99	61.58	1.23	1.72	0	0	limb-reduced	Siler and Brown, 2011
Brachymeles bonitae Masbate	67.46	54.17	0.92	1.36	0	0	limb-reduced	Siler and Brown, 2011
Brachymeles bonitae Mindoro	74.91	62.74	1.21	1.68	0	0	limb-reduced	Siler and Brown, 2011
Brachymeles miriamae	90.34	43.02	0.00	0.00	0	0	limbless	Siler and Brown, 2011
Brachymeles lukbani	78.63	62.88	0.00	0.00	0	0	limbless	Siler and Brown, 2011
Brachymeles minimus	63.05	47.01	0.00	0.00	0	0	limbless	Siler and Brown, 2011
Chalcides chalcides	136.01	151.08	5.60	8.30	3	3	limbed	Wiens *et al.*, 2006
Coeranoscincus reticulatus	181.00	210.50	11.00	11.50	3	3	limbed	Wiens *et al.*, 2006
Saiphos equalis	68.00	79.50	6.00	7.50	3	3	limbed	Wiens *et al.*, 2006
Scelotes caffer	46.72	59.54	2.80	8.50	3	3	limbed	Wiens *et al.*, 2006
Sepsina angolensis	71.11	63.74	2.40	7.40	3	3	limbed	Wiens *et al.*, 2006
Sauresia agasepsoides	60.00	61.00	3.40	6.80	4	4	limbed	Wiens *et al.*, 2006
Wetmorena haetiana	68.70	72.00	6.90	11.10	4	4	limbed	Wiens *et al.*, 2006
Tetradactylus tetradactylus	66.19	194.16	6.10	7.50	4	4	limbed	Wiens *et al.*, 2006
Rhachisaurus brachylepis	60.11	134.04	5.70	10.40	4	4	limbed	Wiens *et al.*, 2006
Chalcides mionecton	86.79	67.20	6.50	15.10	4	4	limbed	Wiens *et al.*, 2006
Hemiergis peronii	49.50	81.50	8.00	11.50	4	4	limbed	Wiens *et al.*, 2006
Colobodactylus dalcyanus	38.49	74.51	7.60	11.10	4	5	limbed	Wiens *et al.*, 2006
Gymnophthalmus leucomystax	36.41	61.17	8.10	9.60	4	5	limbed	Wiens *et al.*, 2006
Micrablepharus maximiliani	39.15	66.74	9.80	15.00	4	5	limbed	Wiens *et al.*, 2006
Procellosaurinus erythrocercus	27.46	42.37	5.80	9.80	4	5	limbed	Wiens *et al.*, 2006
Procellosaurinus tetradactylus	26.03	38.21	5.30	9.40	4	5	limbed	Wiens *et al.*, 2006
Psilophthalmus paeminosus	32.01	43.17	4.00	7.50	4	5	limbed	Wiens *et al.*, 2006
Vanzosaura rubricauda	29.58	38.95	5.40	9.90	4	5	limbed	Wiens *et al.*, 2006
Colobodactylus tanuayi	51.84	123.05	9.70	17.50	5	5	limbed	Wiens *et al.*, 2006
Heterodactylus imbricatus	87.62	189.08	11.50	22.60	5	5	limbed	Wiens *et al.*, 2006
Sphenops boulengeri	83.87	67.89	7.50	17.70	5	5	limbed	Wiens *et al.*, 2006
Teius teyou	115.56	247.25	34.40	72.40	5	4	limbed	Wiens *et al.*, 2006
Abronia graminea	96.16	144.01	22.90	30.50	5	5	limbed	Wiens *et al.*, 2006
Barisia imbricata	110.30	139.40	22.00	28.00	5	5	limbed	Wiens *et al.*, 2006
Celestus enneagrammus	72.60	99.20	11.00	16.10	5	5	limbed	Wiens *et al.*, 2006
Diploglossus bilobatus	70.30	97.00	10.70	16.20	5	5	limbed	Wiens *et al.*, 2006
Diploglossus pleei	87.20	97.60	9.60	15.30	5	5	limbed	Wiens *et al.*, 2006
Elgaria coerulea	86.50	149.30	19.80	27.30	5	5	limbed	Wiens *et al.*, 2006
Elgaria kingii	79.60	165.10	14.20	19.10	5	5	limbed	Wiens *et al.*, 2006
Elgaria multicarinata	110.40	204.50	25.50	32.00	5	5	limbed	Wiens *et al.*, 2006
Elgaria panamintina	109.90	192.70	24.60	31.10	5	5	limbed	Wiens *et al.*, 2006
Elgaria paucicarinata	87.60	132.50	16.20	23.30	5	5	limbed	Wiens *et al.*, 2006
Gerrhonotus liocephalus	131.70	238.80	24.00	28.40	5	5	limbed	Wiens *et al.*, 2006
Mesaspis moreleti	66.80	103.80	15.10	19.00	5	5	limbed	Wiens *et al.*, 2006
Cordylus cataphractus	88.96	86.08	29.80	39.40	5	5	limbed	Wiens *et al.*, 2006
Cordylus cordylus	82.42	87.78	26.80	39.10	5	5	limbed	Wiens *et al.*, 2006
Cordylus jordani	93.56	114.18	32.90	46.00	5	5	limbed	Wiens *et al.*, 2006
Cordylus warreni	108.59	127.29	34.10	50.30	5	5	limbed	Wiens *et al.*, 2006
Platysaurus rhodesianus	97.34	141.58	37.30	51.40	5	5	limbed	Wiens *et al.*, 2006
Pseudocordylus microlepidotus	122.37	159.24	40.30	57.20	5	5	limbed	Wiens *et al.*, 2006
Coleonyx elegans	76.89	75.47	24.70	31.00	5	5	limbed	Wiens *et al.*, 2006
Diplodactylus damaeus	50.41	44.12	14.20	20.60	5	5	limbed	Wiens *et al.*, 2006
Gecko gekko	146.22	132.50	37.10	44.30	5	5	limbed	Wiens *et al.*, 2006
Gonatodes albogularis	39.16	47.75	12.10	17.00	5	5	limbed	Wiens *et al.*, 2006

(Continued Table S1)

Species	SVL	TL	FL	HL	Fingers	Toes	Trait	Source
Oedura coggeri	71.29	43.75	17.10	21.10	5	5	limbed	Wiens *et al.*, 2006
Teratoscincus scincus	96.69	57.08	32.80	44.50	5	5	limbed	Wiens *et al.*, 2006
Angolossaurus skoogi	132.41	119.28	38.00	53.80	5	5	limbed	Wiens *et al.*, 2006
Cordylosaurus trivittata	40.96	75.35	9.40	14.80	5	5	limbed	Wiens *et al.*, 2006
Gerrhosaurus major	210.29	271.33	51.10	71.00	5	5	limbed	Wiens *et al.*, 2006
Gerrhosaurus nigrolineatus	96.84	241.26	22.90	43.50	5	5	limbed	Wiens *et al.*, 2006
Tetradactylus seps	51.62	94.24	9.30	17.00	5	5	limbed	Wiens *et al.*, 2006
Tracheloptychus madagascariensis	55.38	103.80	17.80	38.60	5	5	limbed	Wiens *et al.*, 2006
Zonosaurus ornatus	121.53	163.24	25.90	47.90	5	5	limbed	Wiens *et al.*, 2006
Alopoglossus atriventrils	45.41	68.60	13.80	21.10	5	5	limbed	Wiens *et al.*, 2006
Alopoglossus carinicaudatus	54.86	92.98	14.30	22.20	5	5	limbed	Wiens *et al.*, 2006
Alopoglossus copii	51.63	88.62	14.90	25.50	5	5	limbed	Wiens *et al.*, 2006
Arthrosaura kockii	48.49	81.72	14.50	22.90	5	5	limbed	Wiens *et al.*, 2006
Arthrosaura reticulata	59.13	98.23	15.10	25.30	5	5	limbed	Wiens *et al.*, 2006
Cercosaura argulus	42.12	89.59	14.10	18.70	5	5	limbed	Wiens *et al.*, 2006
Cercosaura eigenmanni	40.83	51.89	13.10	17.90	5	5	limbed	Wiens *et al.*, 2006
Cercosaura ocellata	48.65	129.88	16.60	23.90	5	5	limbed	Wiens *et al.*, 2006
Cercosaura quadrilineatus	39.93	89.88	10.60	13.90	5	5	limbed	Wiens *et al.*, 2006
Cercosaura schreibersi	39.79	86.16	10.70	13.90	5	5	limbed	Wiens *et al.*, 2006
Colobosaura modesta	45.44	103.76	9.10	16.50	5	5	limbed	Wiens *et al.*, 2006
Ecpleopus affinis	48.37	87.33	13.30	20.10	5	5	limbed	Wiens *et al.*, 2006
Iphisa elegans	54.72	113.00	9.60	16.60	5	5	limbed	Wiens *et al.*, 2006
Leposooma percarinatum	34.68	55.98	10.00	12.60	5	5	limbed	Wiens *et al.*, 2006
Neusticurus ecpleopus	59.70	93.61	17.20	27.10	5	5	limbed	Wiens *et al.*, 2006
Neusticurus rudis	72.51	124.47	22.60	34.70	5	5	limbed	Wiens *et al.*, 2006
Pholidobolus montium	50.94	80.19	14.30	22.20	5	5	limbed	Wiens *et al.*, 2006
Placosoma glabellum	53.08	125.10	14.70	19.90	5	5	limbed	Wiens *et al.*, 2006
Proctoporus bolivianus	56.97	85.53	13.30	19.40	5	5	limbed	Wiens *et al.*, 2006
Proctoporus simoterus	64.51	58.03	12.00	15.50	5	5	limbed	Wiens *et al.*, 2006
Ptychoglossus brevifrontalis	51.88	84.80	10.40	18.50	5	5	limbed	Wiens *et al.*, 2006
Tretioscincus agilis	60.28	84.97	17.20	26.40	5	5	limbed	Wiens *et al.*, 2006
Heloderma suspectum	300.30	124.30	75.20	82.10	5	5	limbed	Wiens *et al.*, 2006
Basiliscus basiliscus	163.87	454.33	64.90	138.90	5	5	limbed	Wiens *et al.*, 2006
Calotes versicolor	83.53	257.20	39.60	61.90	5	5	limbed	Wiens *et al.*, 2006
Dipsosaurus dorsalis	123.12	226.60	41.60	79.70	5	5	limbed	Wiens *et al.*, 2006
Enyalioides laticeps	112.06	192.28	53.30	89.40	5	5	limbed	Wiens *et al.*, 2006
Gambelia wislizenii	100.22	193.73	36.60	69.60	5	5	limbed	Wiens *et al.*, 2006
Leiocephalus carinatus	108.07	154.55	38.30	65.20	5	5	limbed	Wiens *et al.*, 2006
Leiolepis belliana	120.92	255.25	38.70	72.60	5	5	limbed	Wiens *et al.*, 2006
Phrynocephalus versicolor	52.37	58.38	22.00	36.60	5	5	limbed	Wiens *et al.*, 2006
Polychrus marmoratus	129.26	321.33	42.20	54.00	5	5	limbed	Wiens *et al.*, 2006
Urosaurus ornatus	48.92	71.76	17.20	26.50	5	5	limbed	Wiens *et al.*, 2006
Meroles cuneirostris	50.91	81.18	17.90	38.10	5	5	limbed	Wiens *et al.*, 2006
Podarcis sicula	71.35	115.67	19.50	32.10	5	5	limbed	Wiens *et al.*, 2006
Psammodromus hispanicus	37.53	61.42	12.80	21.40	5	5	limbed	Wiens *et al.*, 2006
Takydromus smaragdinus	48.18	151.34	17.20	23.80	5	5	limbed	Wiens *et al.*, 2006
Lanthanotus borneensis	168.98	188.58	26.10	33.00	5	5	limbed	Wiens *et al.*, 2006
Amphiglossus astrolabi	190.53	273.29	32.60	44.70	5	5	limbed	Wiens *et al.*, 2006
Amphiglossus igneocaudatus	52.80	56.73	7.00	16.40	5	5	limbed	Wiens *et al.*, 2006
Amphiglossus intermedius	67.99	63.05	9.30	18.30	5	5	limbed	Wiens *et al.*, 2006
Amphiglossus macrocercus	68.66	116.90	15.10	22.70	5	5	limbed	Wiens *et al.*, 2006
Amphiglossus melanopleura	43.65	72.31	7.40	13.30	5	5	limbed	Wiens *et al.*, 2006
Amphiglossus melanurus	65.22	109.04	9.00	14.90	5	5	limbed	Wiens *et al.*, 2006
Amphiglossus mouroundavae	57.86	88.70	13.20	19.40	5	5	limbed	Wiens *et al.*, 2006
Amphiglossus ornaticeps	55.02	76.24	4.30	7.80	5	5	limbed	Wiens *et al.*, 2006

(Continued Table S1)

Species	SVL	TL	FL	HL	Fingers	Toes	Trait	Source
Amphiglossus punctatus	60.70	89.06	13.20	19.40	5	5	limbed	Wiens *et al.*, 2006
Amphiglossus stumpffi	86.88	87.77	12.70	21.60	5	5	limbed	Wiens *et al.*, 2006
Amphiglossus tsaratananensis	84.06	105.42	11.90	17.80	5	5	limbed	Wiens *et al.*, 2006
Amphiglossus waterlotti	121.01	181.25	23.70	31.40	5	5	limbed	Wiens *et al.*, 2006
Brachymeles gracilis	75.01	75.20	8.30	13.80	5	5	limbed	Wiens *et al.*, 2006
Brachymeles talinis	108.43	104.54	12.50	20.90	5	5	limbed	Wiens *et al.*, 2006
Calyptotis scutirostrum	43.60	59.20	8.00	11.20	5	5	limbed	Wiens *et al.*, 2006
Chalcides ocellatus	119.47	121.86	22.20	30.30	5	5	limbed	Wiens *et al.*, 2006
Chalcides polylepis	109.29	130.28	21.20	29.00	5	5	limbed	Wiens *et al.*, 2006
Ctenotus leonhardii	73.20	141.80	22.60	37.00	5	5	limbed	Wiens *et al.*, 2006
Ctenotus pantherinus	87.00	115.00	24.00	33.00	5	5	limbed	Wiens *et al.*, 2006
Ctenotus robustus	83.00	167.38	23.00	36.50	5	5	limbed	Wiens *et al.*, 2006
Egernia whitii	79.86	124.14	21.57	30.00	5	5	limbed	Wiens *et al.*, 2006
Eremiascincus richardsonii	91.25	121.00	24.25	31.00	5	5	limbed	Wiens *et al.*, 2006
Eugongylus rufescens	118.57	188.71	26.71	35.86	5	5	limbed	Wiens *et al.*, 2006
Eulamprus amplus	98.00	129.75	29.50	42.25	5	5	limbed	Wiens *et al.*, 2006
Eulamprus murrayi	87.50	117.75	24.00	33.50	5	5	limbed	Wiens *et al.*, 2006
Eulamprus quoyii	82.60	132.80	24.20	37.20	5	5	limbed	Wiens *et al.*, 2006
Eumeces schneideri	126.46	205.25	33.00	46.90	5	5	limbed	Wiens *et al.*, 2006
Glaphyromorphus gracilipes	70.33	111.67	10.00	15.33	5	5	limbed	Wiens *et al.*, 2006
Glaphyromorphus isolepis	56.73	86.27	13.36	19.82	5	5	limbed	Wiens *et al.*, 2006
Gnypetoscincus queenslandiae	60.00	76.00	17.57	26.14	5	5	limbed	Wiens *et al.*, 2006
Gongylomorphus bojeri	46.99	66.90	12.20	19.90	5	5	limbed	Wiens *et al.*, 2006
Hakaria simonyi	45.29	49.34	5.00	9.40	5	5	limbed	Wiens *et al.*, 2006
Janetaescincus braueri	52.84	61.47	8.00	12.40	5	5	limbed	Wiens *et al.*, 2006
Lamprolepis smaragdinus	85.00	121.50	31.25	38.50	5	5	limbed	Wiens *et al.*, 2006
Lerista bougainvilli	52.67	53.33	7.83	12.83	5	5	limbed	Wiens *et al.*, 2006
Mesoscincus managuae	86.23	140.51	17.90	24.00	5	5	limbed	Wiens *et al.*, 2006
Mesoscincus schwartzei	108.08	174.37	27.10	37.00	5	5	limbed	Wiens *et al.*, 2006
Morethia butleri	44.71	62.43	11.43	18.29	5	5	limbed	Wiens *et al.*, 2006
Nangura spinosa	91.20	77.40	27.80	35.60	5	5	limbed	Wiens *et al.*, 2006
Notoscincus ornatus	36.14	52.57	9.86	14.57	5	5	limbed	Wiens *et al.*, 2006
Pamelaescincus gardineri	63.56	73.72	13.20	18.80	5	5	limbed	Wiens *et al.*, 2006
Plestiodon egregius	46.99	81.36	8.80	13.30	5	5	limbed	Wiens *et al.*, 2006
Plestiodon elegans	84.34	151.88	24.50	34.20	5	5	limbed	Wiens *et al.*, 2006
Plestiodon fasciatus	66.68	112.85	19.50	27.10	5	5	limbed	Wiens *et al.*, 2006
Plestiodon inexpectatus	71.65	118.94	20.80	29.30	5	5	limbed	Wiens *et al.*, 2006
Plestiodon laticeps	109.67	167.00	33.90	46.50	5	5	limbed	Wiens *et al.*, 2006
Plestiodon longirostris	66.15	101.52	21.80	31.80	5	5	limbed	Wiens *et al.*, 2006
Plestiodon lynxe	58.72	82.84	13.60	18.80	5	5	limbed	Wiens *et al.*, 2006
Plestiodon obsoletus	105.66	161.21	27.70	34.80	5	5	limbed	Wiens *et al.*, 2006
Prasinohaema virens	51.00	68.75	19.00	21.25	5	5	limbed	Wiens *et al.*, 2006
Proscelotes eggeli	87.01	110.29	8.40	12.50	5	5	limbed	Wiens *et al.*, 2006
Scelotes mirus	75.31	88.49	5.90	11.50	5	5	limbed	Wiens *et al.*, 2006
Scincopus fasciatus	150.52	95.35	43.90	47.70	5	5	limbed	Wiens *et al.*, 2006
Scincus scincus	117.18	77.56	31.60	37.70	5	5	limbed	Wiens *et al.*, 2006
Tiliqua adelaidensis	88.55	55.18	17.91	18.27	5	5	limbed	Wiens *et al.*, 2006
Tribolonotus gracilis	70.00	73.50	24.50	33.00	5	5	limbed	Wiens *et al.*, 2006
Shinisaurus crocodilurus	135.50	162.00	40.70	48.90	5	5	limbed	Wiens *et al.*, 2006
Sphenodon punctatus	216.74	206.10	62.90	87.00	5	5	limbed	Wiens *et al.*, 2006
Ameiva ameiva	191.30	400.11	61.40	123.20	5	5	limbed	Wiens *et al.*, 2006
Aspidocelis sexlineatus	63.87	140.79	20.70	41.80	5	5	limbed	Wiens *et al.*, 2006
Dicrodon guttulatum	120.11	273.26	40.10	82.50	5	5	limbed	Wiens *et al.*, 2006
Varanus griseus	303.50	355.30	73.90	90.40	5	5	limbed	Wiens *et al.*, 2006
Lepidophyma flavimaculatum	85.72	122.86	26.30	34.70	5	5	limbed	Wiens *et al.*, 2006

(Continued Table S1)

Species	SVL	TL	FL	HL	Fingers	Toes	Trait	Source
Xantusia vigilis	39.65	48.53	10.10	14.00	5	5	limbed	Wiens *et al.*, 2006
Xenosaurus grandis	100.50	90.30	30.70	37.80	5	5	limbed	Wiens *et al.*, 2006
Agamadon anguliceps	74.67	8.34	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Amphisbaena alba	473.99	40.14	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Blanus cinereus	174.88	21.75	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Chirindia swimmertoni	125.96	14.54	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Diplometopon zarudnyi	148.69	12.29	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Geocalamus acutus	230.69	26.31	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Monopeltis capensis	298.70	9.30	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Rhineura floridana	317.15	16.45	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Trognophis wiegmanni	157.45	10.94	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Anguis fragilis	142.30	148.10	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Anniella geronimensis	118.50	51.90	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Anniella pulchra	137.90	62.90	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Ophisaurus attenuatus	200.20	508.70	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Ophisaurus harti	205.20	317.50	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Ophisaurus ventralis	212.70	419.60	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Aprasia pseudopulchella	140.08	84.08	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Acontias litoralis	114.03	27.38	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Acontias meleagris	197.93	40.57	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Acontias percivali	206.95	31.23	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Acontophiops lineatus	166.89	33.04	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Anomalopus swansoni	90.44	69.78	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Feylinia polylepis	130.56	49.95	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Melanoseps occidentalis	120.47	39.05	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Ophiomorus punctatissimus	74.78	81.80	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Ophioscincus ophioscincus	92.25	76.50	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Paracontias brocchii	118.16	81.94	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Paracontias hildebrandti	47.20	44.13	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Paracontias holomelas	115.91	87.13	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Scelotes anguina	56.49	52.78	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Scelotes arenicola	68.82	59.04	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Typhlacontias brevipes	94.48	35.70	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Typhlacontias punctatissimus	65.56	36.34	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Typhlosaurus caecus	190.12	29.40	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Typhlosaurus lineatus lineatus	141.05	22.72	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Voeltzkowia lineata	64.64	54.69	0.00	0.00	0	0	limbless	Wiens *et al.*, 2006
Acrochordus granulatus	675.94	82.39	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Agkistrodon contortrix	677.00	97.41	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Anilius scytale	725.01	25.19	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Casarea dussumieri	496.00	187.00	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Causus maculatus	486.78	37.61	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Cerberus rynchops	482.86	122.56	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Cylindrophus maculatus	322.70	6.30	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Elaphe guttata	771.00	145.56	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Farancia abacura	931.00	123.03	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Leptotyphlops humilis	232.25	11.31	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Micrurus fulvius	673.20	79.90	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Nerodia sipedon	555.50	175.33	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Pareas kuangtungensis	438.33	127.15	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Typhlops angolensis	403.85	7.54	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Uropeltis ceylonicus	266.44	13.24	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Xenopeltis unicolor	611.06	68.51	0.00	0.00	0	0	snakes	Wiens *et al.*, 2006
Trachyboa boulengeri	287.04	32.68	0.00	0.40	0	0	snakes	Wiens *et al.*, 2006
Candoia carinata	526.16	88.84	0.00	1.00	0	0	snakes	Wiens *et al.*, 2006

(Continued Table S1)

Species	SVL	TL	FL	HL	Fingers	Toes	Trait	Source
Ungaliophis continentalis	458.13	60.51	0.00	1.50	0	0	snakes	Wiens *et al.*, 2006
Charina bottae	406.81	53.79	0.00	0.60	0	0	snakes	Wiens *et al.*, 2006
Eryx johni	635.38	80.62	0.00	0.90	0	0	snakes	Wiens *et al.*, 2006
Calabaria reinhardtii	694.75	56.85	0.00	1.80	0	0	snakes	Wiens *et al.*, 2006
Chondropython viridis	938.50	177.50	0.00	1.10	0	0	snakes	Wiens *et al.*, 2006
Loxocemus bicolor	595.26	72.24	0.00	0.70	0	0	snakes	Wiens *et al.*, 2006
Tropidophis haetianus	385.21	53.55	0.00	1.10	0	0	snakes	Wiens *et al.*, 2006
Epircrates striatus	1213.60	240.00	0.00	3.90	0	0	snakes	Wiens *et al.*, 2006
Exiliboa plicata	360.27	55.34	0.00	1.40	0	0	snakes	Wiens *et al.*, 2006

Table S2 GenBank accession numbers for the 28 species in this study.

Species	Family	Accession	References
Dibamus bourreti	Dibamidae	MW368917	This study
Blanus cinereus	Blanidae	EU443257.1	Albert *et al.*, 2009
Phrynosoma blainvillii	Phrynosomatidae	NC_036492.1	Ayala *et al.*, 2017
Varanus salvator	Varanidae	EU747731.1	Castoe *et al.*, 2008
Boa constrictor	Boidae	NC_007398.1	Dong and Kumazawa, 2005
Cylindrophis ruffus	Cylindrophiidae	NC_007401.1	Dong and Kumazawa, 2005
Oreocryptophis porphyraceus	Colubridae	GQ181130.1	Direct Submission
Python bivittatus	Pythonidae	NC_021479	Direct Submission
Iguana iguana	Iguanidae	AJ278511.2	Janke *et al.*, 2001
Lycodon semicarinatus	Colubridae	NC_001945.1	Kumazawa *et al.*, 1998
Smaug warreni	Cordylidae	AB079613.1	Kumazawa, 2004
Furcifer oustaleti	Chamaeleonidae	AB185326.1	Kumazawa, 2007
Heloderma suspectum	Helodermatidae	NC_008776.1	Kumazawa, 2007
Lepidophyma flavimaculatum	Xantusiidae	AB162908.1	Kumazawa, 2007
Shinisaurus crocodilurus	Shinisauridae	HQ008865.1	Li *et al.*, 2012
Amphisbaena schmidti	Amphisbaenidae	AY605475.1	Macey *et al.*, 2004
Bipes biporus	Bipedidae	AY605481.1	Macey *et al.*, 2004
Rhineura floridana	Rhineuridae	NC_006282.1	Macey *et al.*, 2004
Diplometopon zarudnyi	Trogonophidae	NC_006283.1	Macey *et al.*, 2004
Anolis punctatus	Dactyloidae	NC_044125.1	Nogueira Dumans *et al.*, 2019
Polychrus marmoratus	Polychrotidae	NC_012839.1	Okajima and Kumazawa, 2009
Basiliscus vittatus	Corytophanidae	AB218883.1	Okajima and Kumazawa, 2009
Dopasia harti	Anguidae	KF279681.1	Pan *et al.*, 2013
Podarcis muralis	Lacertidae	FJ460597.1	Podnar *et al.*, 2009
Draco maculatus	Agamidae	NC_047179.1	Qiu *et al.*, 2019a
Hydrophis cyanocinctus	Elapidae	NC_046795.1	Qiu *et al.*, 2019b
Iphisa elegans	Gymnophthalmidae	MT472615.1	Vacher *et al.*, 2020
Plestiodon chinensis	Scincidae	NC_029352.1	Zhang *et al.*, 2016

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