Supplementary Table S1.1. Species for which mitochondrial genomes were sequenced in this study, with specimen voucher information.

Species	Specimen ID
Typhlops reticulatus	LSUMZ H-20102
Anolis carolinensis	CCA 8051
Ophisaurus attenuatus	LSUMZ H-15928
Varanus salvator	CCA 8037

LSUMZ = Louisiana State University Museum of Natural Science

CCA = Louisiana State University Museum of Natural Science - *Not Yet Cataloged*

Supplementary Table S1.2. Degenerate primers used for amplification of short fragments.

	Fragment	Forward Primer	Reverse Primer
Snakes	500 bp of 16sRNA	AACCCYYGTACCTYTTGCATCATG	CCGGTCTGAACTCAGATCACGT
	500 bp of COIII	GAAGCMGCWGCCTGATACTGACA	GGGTCRAAKCCRCATTCRTA
Lizards	500 bp of 12sRNA	AAACAAACTAGGATTAGATACCCTACTATGC	GAGGGTGACGGGCGGTGTGTGCG
	500 bp of COIII	CCAYATAGTMGACCCRAGCCC	GGKGCTTCGTARTATTCTATDGCTTG

Supplementary Table S1.3. Species-specific primers used for long PCRs to amplify the mitochondrial genome in two overlapping fragments.

	Species	Length	Forward Primer	Reverse Primer
Snakes	***Python regius***	**9kb**	CCTCGATGTTGGATCAGGACACCC	CCTGGGGGGACCAAGTGC
		8kb	TTCCAAGCACTTGGTCCCCC	GGGTGTCCTGATCCAACATCGAGG
	Typhlops reticulatus	**9kb**	CCTCGATGTTGGATCAGGACACCC	GTGGAGCTTTCTGCTTGGAAGGC
		8kb	CCAAGCAGAAAGCTCCACCAAAGG	GGGTGTCCTGATCCAACATCGAGG
Lizards	***Anolis carolinensis***	**9kb**	GCCTAGCCATTAACTGACACCC	GGGCTCATGTTACGGTAACGC
		8kb	TGTACAAAAGGGCCTGCGATATGGG	GGTGTCAGTTAATGGCTAGGCATAGTAGGG
	Ophisaurus attenuatus	**9kb**	CGCCCAACACAGCCTATATACCGCCG	CGGAGACCTGTTTGGACGGGTGGGG
		8kb	ACCCGTCCAAACAGGTCTCCG	GCGGTATATAGGCTGTGTTGGGCG
	Varanus salvator	**9kb**	CCCGACCACTACTAGCACCCC	GGAGTGGGACTTCGAATGGGTTAATGG
		8kb	TTCTTCTTCCTGGGATTCTTCTGAGCC	GGGGTGCTAGTAGTGGTCGGG