

**Supplemental Material 1.** Thickness measurements from retina sections. Regions include the nasal (N), central (C), and fovea (F) regions. Layers include ganglion cell (GCL), inner nuclear (INL), and outer nuclear layers (ONL). Ratios between the layer thickness and total thickness were used for comparisons between regions. One-way ANOVAs found **significant** differences between the regions for each layer (**GCL, p-value = 0.026; INL, p-value = 0.011; ONL, p-value = 1.19e<sup>-8</sup>**). Two-tailed T-tests found no significant differences between GCL ratios (N vs. C, p-value = 0.052; N vs. F, p-value = 0.053; C vs. F, p-value = 0.924). Two-tailed T-tests found **one significant** difference between INL ratios (**N vs. C, p-value = 0.002**; N vs. F, p-value = 0.330; C vs. F, p-value = 0.090). Two-tailed T-tests found **two significant** differences between ONL ratios (N vs. C, p-value = 0.638; **N vs. F, p-value = 8.36e<sup>-6</sup>**; **C vs. F, p-value = 6.96e<sup>-6</sup>**).

Region	Layer	Replicate	Total Thickness (μm)	Layer Thickness (μm)	Ratio
N	GCL	1	192.2	14.3	0.07440167
N	GCL	2	188.2	9.1	0.04835282
N	GCL	3	186.3	12.0	0.06441224
N	GCL	4	186.0	11.2	0.06021505
N	GCL	5	189.2	13.7	0.07241015
C	GCL	1	201.5	8.5	0.04218362
C	GCL	2	200.8	11.9	0.05926295
C	GCL	3	200.1	10.1	0.05047476
C	GCL	4	201.5	10.6	0.05260546
C	GCL	5	202.2	10.3	0.05093966
F	GCL	1	193.0	8.9	0.04611399
F	GCL	2	191.0	9.4	0.04921466
F	GCL	3	188.7	9.9	0.05246423
F	GCL	4	196.4	10.9	0.05549898
F	GCL	5	189.7	10.2	0.05376911
N	INL	1	192.2	29.8	0.15504683
N	INL	2	188.2	29.0	0.15409139
N	INL	3	186.3	23.7	0.12721417
N	INL	4	186.0	26.1	0.14032258
N	INL	5	189.2	30.2	0.15961945
C	INL	1	201.5	36.5	0.18114144
C	INL	2	200.8	36.2	0.18027888
C	INL	3	200.1	36.2	0.18090955
C	INL	4	201.5	38.2	0.18957816
C	INL	5	202.2	38.4	0.18991098
F	INL	1	193.0	36.1	0.18704663
F	INL	2	191.0	34.0	0.17801047
F	INL	3	188.7	27.9	0.14785374
F	INL	4	196.4	24.8	0.12627291
F	INL	5	189.7	30.8	0.16236162
N	ONL	1	192.2	11.9	0.06191467
N	ONL	2	188.2	11.4	0.06057386

N	ONL	3	186.3	13.3	0.07139023
N	ONL	4	186.0	10.7	0.05752688
N	ONL	5	189.2	10.0	0.05285412
C	ONL	1	201.5	13.2	0.06550869
C	ONL	2	200.8	11.9	0.05926295
C	ONL	3	200.1	12.6	0.06296852
C	ONL	4	201.5	15.0	0.07444169
C	ONL	5	202.2	10.8	0.05341246
F	ONL	1	193.0	23.8	0.12331606
F	ONL	2	191.0	24.8	0.12984293
F	ONL	3	188.7	26.7	0.14149444
F	ONL	4	196.4	29.2	0.14867617
F	ONL	5	189.7	28.5	0.15023722

**Supplemental Material 2.** Cell density measurements from the outer nuclear layer (ONL) of retina sections. Regions include the nasal (N), central (C), and fovea (F) regions. Layers include ganglion cell (GCL), inner nuclear (INL), and outer nuclear layers (ONL). Ratios between the layer thickness and total thickness were used for comparisons between regions. One-way ANOVA found **significant** differences between the ONL cell densities of different regions (**p-value =  $8.29e^{-6}$** ). Two-tailed T-tests found **two significant** differences between ONL cell densities between regions (N vs. C, p-value = 0.146; **N vs. F, p-value = 0.002**; **C vs. F, p-value =  $4.81e^{-4}$** ).

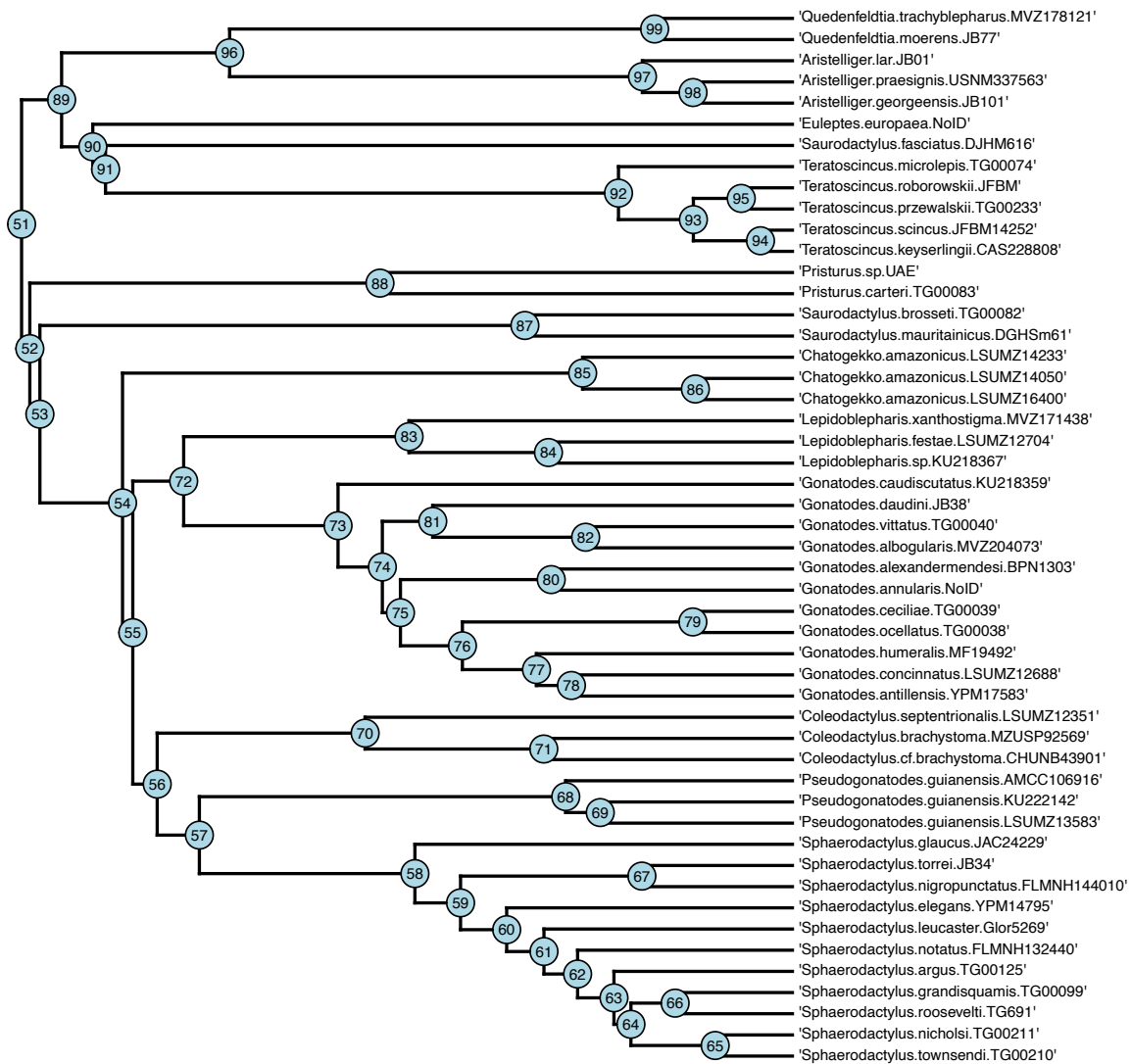
<b>Region</b>	<b>Area (mm<sup>2</sup>)</b>	<b>Cell Count</b>	<b>Density (cells/mm<sup>2</sup>)</b>
N	0.021313	18	844.555
N	0.018240	15	822.368
N	0.025807	23	891.231
C	0.014357	15	1044.787
C	0.022121	21	949.324
C	0.014772	13	880.043
F	0.015607	31	1986.288
F	0.012846	25	1946.131
F	0.008452	15	1774.728

**Supplemental Material 3.** Comparison among transition rates models in ancestral character reconstruction for either the Gamble et al. (2015) phylogeny trimmed to only include sphaerodactylids (S) or Gekkota-wide (G) for the following scenarios: 1) *Aristelliger* coded as nocturnal (i.e. character states of Gamble et al. 2015) and 2) most recent common ancestor of *Aristelliger* and *Quedenfeldtia* coded as diurnal. The number of parameters (d.f.), log-likelihood, Akaike Information Criterion (AIC), and AIC with correction (AICc) are listed for each model. Models include equal rates (ER) and all rates different (ARD).

<b>Phylogeny/Scenario</b>	<b>Model</b>	<b>d.f.</b>	<b>log-likelihood</b>	<b>AIC</b>	<b>AICc</b>
S/1	ER	1	-20.837277	43.674554	43.757887
S/1	ARD	2	-20.014992	44.029984	44.285304
S/2	ER	1	-21.481745	44.963490	45.045123
S/2	ARD	2	-20.518478	45.036955	45.286955
G/1	ER	1	-93.611720	189.223440	189.237828
G/1	ARD	2	-92.426082	188.852164	188.895485
G/2	ER	1	-93.611719	189.223439	189.237776
G/2	ARD	2	-92.426081	188.852163	188.895328

**Supplemental Material 4.** Summaries of two ancestral character reconstruction (ACR) scenarios: 1) *Aristelliger* coded as nocturnal (i.e. character states of Gamble et al. 2015) and 2) most recent common ancestor of *Aristelliger* and *Quedenfeldtia* coded as diurnal. Using either the Gamble et al. (2015) phylogeny trimmed to only include sphaerodactylids (S) or Gekkota-wide (G). The stochastic character mapping simulated with 100 trees under equal rates model for the S tree. The stochastic character mapping simulated with 100 trees under all rates different model for the G tree. D, diurnal; N, nocturnal.

Phylogeny	ACR scenario	average changes between states	changes between states		mean proportion of total time spent in each state	
			D to N	N to D	D	N
S	1	7.87	6.04	1.83	0.7440719	0.2559281
S	2	8.25	7.54	0.71	0.7890565	0.2109435
G	1	31.06	14.70	16.36	0.3329046	0.6670954
G	2	33.00	18.23	14.77	0.3440002	0.6559998

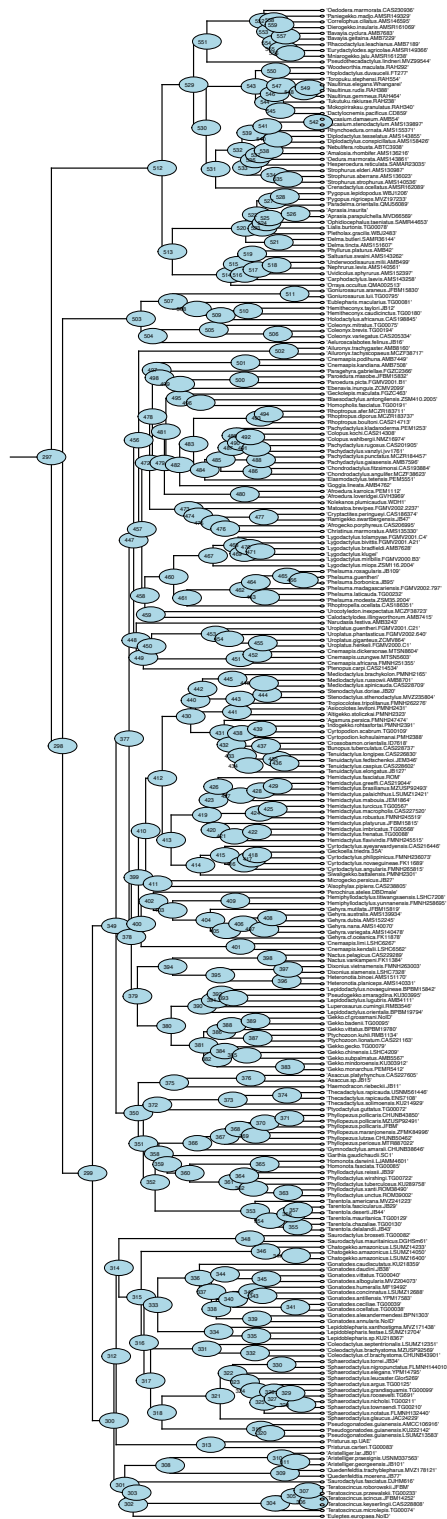


**Supplemental Material 5.** Phylogeny of Gamble et al. (2015), pruned to only include sphaerodactylid taxa. Node identifiers provided in blue circles.

**Supplemental Material 6.** Probabilities of diurnal or nocturnal character states in the nodes two ancestral character reconstruction (ASR) scenarios with phylogeny of Gamble et al. (2015) pruned to only include sphaerodactylid taxa: 1) *Aristelliger* coded as nocturnal (i.e. character states of Gamble et al. 2015) and 2) *Aristelliger* coded as nocturnal, with most recent common ancestor of *Aristelliger* and *Quedenfeldtia* coded as diurnal. Stochastic character mapping simulated with 100 trees under equal rates model. MRCA of *Aristelliger* and *Quedenfeldtia*, MRCA of *Aristelliger*, *Quedenfeldtia*, *Euleptes*, *Saurodactylus fasciatus* clade, and *Teratoscincus*, and MRCA of all sphaerodactylids correspond to nodes 96, 89, and 51, respectively (highlighted red). Node numbers correspond to labels in **supplemental material 3**.

node	<u>scenario 1</u>		<u>scenario 2</u>	
	diurnal	nocturnal	diurnal	nocturnal
51	0.67	0.33	0.97	0.03
52	0.7	0.3	0.97	0.03
53	0.7	0.3	0.97	0.03
54	1	0	1	0
55	1	0	1	0
56	1	0	1	0
57	1	0	1	0
58	1	0	1	0
59	1	0	1	0
60	1	0	1	0
61	1	0	1	0
62	1	0	1	0
63	1	0	1	0
64	1	0	1	0
65	1	0	1	0
66	0.99	0.01	1	0
67	1	0	1	0
68	1	0	1	0
69	1	0	1	0
70	1	0	1	0
71	1	0	1	0
72	1	0	1	0
73	1	0	1	0
74	1	0	1	0
75	1	0	1	0
76	1	0	1	0
77	1	0	0.98	0.02
78	0.98	0.02	0.96	0.04
79	1	0	1	0

80	1	0	1	0
81	1	0	1	0
82	1	0	1	0
83	0.99	0.01	1	0
84	1	0	1	0
85	1	0	1	0
86	1	0	1	0
87	0.04	0.96	0.04	0.96
88	0.96	0.04	0.99	0.01
89	0.45	0.55	0.91	0.09
90	0.27	0.73	0.56	0.44
91	0.25	0.75	0.5	0.5
92	0.01	0.99	0	1
93	0	1	0	1
94	0	1	0	1
95	0	1	0	1
96	0.45	0.55	1	0
97	0	1	0.01	0.99
98	0	1	0	1
99	1	0	1	0



**Supplemental Material 7.** Phylogeny of Gamble et al. (2015). Node identifiers provided in blue ovals.

**Supplemental Material 8.** Probabilities of diurnal or nocturnal character states in the nodes two ancestral character reconstruction (ACR) scenarios with phylogeny of Gamble et al. (2015): 1) *Aristelliger* coded as nocturnal (i.e. character states of Gamble et al. 2015) and 2) *Aristelliger* coded as nocturnal, with most recent common ancestor of *Aristelliger* and *Quedenfeldtia* coded as diurnal. Stochastic character mapping simulated with 100 trees under all rates different model. MRCA of *Aristelliger* and *Quedenfeldtia*, MRCA of *Aristelliger*, *Quedenfeldtia*, *Euleptes*, *Saurodactylus fasciatus* clade, and *Teratoscincus*, and MRCA of all sphaerodactylids correspond to nodes 308, 301, and 300, respectively (highlighted red). Node numbers correspond to labels in **supplemental material 5**.

node	<u>scenario 1</u>		<u>scenario 2</u>	
	diurnal	nocturnal	diurnal	nocturnal
297	0.05	0.95	0.2	0.8
298	0.02	0.98	0.2	0.8
299	0.02	0.98	0.23	0.77
300	0.07	0.93	0.73	0.27
301	0.03	0.97	0.73	0.27
302	0.02	0.98	0.46	0.54
303	0.02	0.98	0.37	0.63
304	0	1	0.01	0.99
305	0	1	0	1
306	0	1	0	1
307	0	1	0	1
308	0.09	0.91	1	0
309	0.98	0.02	1	0
310	0	1	0	1
311	0	1	0	1
312	0.25	0.75	0.79	0.21
313	0.93	0.07	0.97	0.03
314	0.26	0.74	0.79	0.21
315	1	0	0.99	0.01
316	1	0	1	0
317	1	0	1	0
318	1	0	1	0
319	1	0	1	0
320	1	0	1	0
321	1	0	1	0
322	1	0	1	0
323	1	0	1	0
324	1	0	1	0
325	1	0	1	0

326	1	0	1	0
327	1	0	1	0
328	1	0	1	0
329	1	0	1	0
330	1	0	1	0
331	1	0	1	0
332	1	0	1	0
333	1	0	1	0
334	1	0	1	0
335	1	0	1	0
336	1	0	1	0
337	1	0	1	0
338	1	0	1	0
339	1	0	1	0
340	1	0	1	0
341	1	0	1	0
342	1	0	0.99	0.01
343	0.99	0.01	0.99	0.01
344	1	0	1	0
345	1	0	1	0
346	1	0	1	0
347	1	0	1	0
348	0	1	0.05	0.95
349	0	1	0	1
350	0	1	0	1
351	0	1	0	1
352	0	1	0	1
353	0	1	0	1
354	0	1	0	1
355	0	1	0	1
356	0	1	0	1
357	0	1	0	1
358	0	1	0	1
359	0	1	0	1
360	0	1	0	1
361	0	1	0	1
362	0	1	0	1
363	0	1	0	1
364	0	1	0	1
365	0	1	0	1

366	0	1	0	1
367	0	1	0	1
368	0	1	0	1
369	0	1	0	1
370	0	1	0	1
371	0	1	0	1
372	0.02	0.98	0	1
373	0	1	0	1
374	0	1	0	1
375	0	1	0	1
376	0	1	0	1
377	0	1	0	1
378	0	1	0	1
379	0	1	0	1
380	0	1	0	1
381	0	1	0	1
382	0	1	0	1
383	0	1	0	1
384	0	1	0	1
385	0	1	0	1
386	0	1	0	1
387	0	1	0	1
388	0	1	0	1
389	0	1	0	1
390	0	1	0	1
391	0	1	0	1
392	0	1	0	1
393	0	1	0.01	0.99
394	0	1	0	1
395	0	1	0	1
396	0	1	0	1
397	0	1	0	1
398	0	1	0	1
399	0	1	0	1
400	0	1	0	1
401	0.96	0.04	0.96	0.04
402	0	1	0	1
403	0	1	0	1
404	0	1	0	1
405	0	1	0	1

406	0	1	0	1
407	0	1	0	1
408	0	1	0	1
409	0	1	0	1
410	0	1	0	1
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412	0	1	0	1
413	0	1	0	1
414	0	1	0	1
415	0	1	0	1
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420	0	1	0	1
421	0	1	0	1
422	0	1	0	1
423	0	1	0	1
424	0	1	0	1
425	0	1	0	1
426	0	1	0	1
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428	0	1	0	1
429	0	1	0	1
430	0	1	0	1
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440	0	1	0	1
441	0	1	0	1
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443	0	1	0	1
444	0	1	0	1
445	0	1	0	1

446	0	1	0	1
447	0	1	0	1
448	0	1	0.02	0.98
449	0	1	0.02	0.98
450	0	1	0.03	0.97
451	0.99	0.01	0.98	0.02
452	1	0	0.99	0.01
453	0	1	0	1
454	0	1	0	1
455	0	1	0	1
456	0	1	0	1
457	0	1	0.01	0.99
458	0.23	0.77	0.16	0.84
459	0.23	0.77	0.16	0.84
460	0.99	0.01	0.98	0.02
461	1	0	0.98	0.02
462	1	0	1	0
463	1	0	0.99	0.01
464	1	0	1	0
465	1	0	1	0
466	0.99	0.01	0.99	0.01
467	1	0	1	0
468	1	0	1	0
469	1	0	1	0
470	1	0	1	0
471	1	0	1	0
472	0	1	0	1
473	0	1	0	1
474	0	1	0	1
475	0	1	0	1
476	0	1	0	1
477	0	1	0	1
478	0	1	0	1
479	0	1	0	1
480	0	1	0	1
481	0	1	0	1
482	0	1	0	1
483	0.01	0.99	0	1
484	0.01	0.99	0	1
485	0	1	0	1

486	0	1	0	1
487	0	1	0	1
488	0	1	0	1
489	0	1	0	1
490	0	1	0	1
491	0	1	0	1
492	0	1	0	1
493	1	0	1	0
494	1	0	1	0
495	0	1	0	1
496	0	1	0	1
497	0	1	0	1
498	0	1	0	1
499	0	1	0	1
500	0	1	0	1
501	0.99	0.01	0.96	0.04
502	0	1	0	1
503	0	1	0.01	0.99
504	0	1	0	1
505	0.01	0.99	0	1
506	0	1	0	1
507	0	1	0	1
508	0	1	0	1
509	0	1	0	1
510	0	1	0	1
511	0	1	0	1
512	0.02	0.98	0.07	0.93
513	0.02	0.98	0.09	0.91
514	0	1	0	1
515	0	1	0	1
516	0	1	0	1
517	0	1	0	1
518	0	1	0	1
519	0	1	0	1
520	0.87	0.13	0.95	0.05
521	1	0	1	0
522	0.87	0.13	0.93	0.07
523	0.97	0.03	0.98	0.02
524	0.97	0.03	0.98	0.02
525	0.99	0.01	0.98	0.02

526	1	0	0.99	0.01
527	0.08	0.92	0.09	0.91
528	0.01	0.99	0.03	0.97
529	0	1	0	1
530	0	1	0	1
531	0	1	0	1
532	0	1	0	1
533	0	1	0	1
534	0	1	0	1
535	0	1	0	1
536	0	1	0	1
537	0	1	0	1
538	0	1	0	1
539	0	1	0	1
540	0	1	0	1
541	0	1	0	1
542	0	1	0	1
543	0	1	0	1
544	0	1	0	1
545	0	1	0	1
546	0	1	0	1
547	0.02	0.98	0.05	0.95
548	0.98	0.02	1	0
549	1	0	1	0
550	0	1	0	1
551	0	1	0	1
552	0	1	0	1
553	0	1	0	1
554	0	1	0	1
555	0	1	0	1
556	0.02	0.98	0.01	0.99
557	0	1	0	1
558	0	1	0	1
559	0	1	0	1