

Supplementary Material

Plio–Pleistocene vicariance across arid Australia in the ‘Spiny Knob-tailed Geckos’ (*Nephrurus asper* group), with the description of a new species from western Queensland

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Supplementary materials

Appendix S1. Samples from the *N. asper* Group included in genetic analyses. Specimen codes are as follows: ABTC –Australian Biological Tissue Collection; CCM – Craig Moritz Collections at Australian National University; NTM – Northern Territory Museum and Art Gallery; PMO – Paul Oliver collections at Australian National University; QMJ – Queensland Museum; SAM – South Australian Museum; and WAM – Western Australian Museum.

Taxon	Specimen #	Locality	latitude	longitude
<i>Nephrurus amyae</i>	ABTC12584	Kings Creek Station	-24.43	131.82
<i>Nephrurus amyae</i>	NTMR18239	9k N Ross River Highway	-23.733	134.5
<i>Nephrurus amyae</i>	NTMR18299	Finke Gorge NP	-24.07	132.719
<i>Nephrurus amyae</i>	AMSR90198	Jay Creek	-23.833	133.483
<i>Nephrurus amyae</i>	NTMR18240	10k N Ross River Highway	-23.54	134.504
<i>Nephrurus amyae</i>	NTMR20684	Finke Gorge NP	-24.082	132.7610
<i>Nephrurus amyae</i>	WAMR166333	Kutjuntari Rockhole	-24.8914	128.7692
<i>Nephrurus amyae</i>	CCM5991	Cleland Hills	-23.7989	130.8426
<i>Nephrurus amyae</i>	CCM5997	Cleland Hills	-23.7989	130.8426
<i>Nephrurus amyae</i>	CCM5982	Finke Gorge National Park, behind old ranger station	-24.0584	132.7615
<i>Nephrurus asper</i> East	SAMAR55649	10k W Isaac River on Suttor Developmental Road	-21.5619	148.2069
<i>Nephrurus asper</i> East	QMJ61590	Gregory Ranges, 350k NW Townsville	-18.2833	142.6667
<i>Nephrurus asper</i> East	QMJ54644	Heathlands Rd, 1km from Main Cape Rd junction	-11.766667	142.666667
<i>Nephrurus asper</i> East	QMJ82982	Wolfgang Peak	-22.548611	147.833333
<i>Nephrurus asper</i> East	QMJ83043	Mt Pollux, Many Peaks Range NP	-22.476944	147.870278

<i>Nephrurus asper</i> East	QMJ88901	Taunton	-23.498889	149.270833
<i>Nephrurus asper</i> East	QMJ93651	Warrawee Stn	-20.406389	146.665278
<i>Nephrurus asper</i> East	QMJ93655	Warrawee Stn	-20.404167	146.663889
<i>Nephrurus asper</i> East	ABTC127822	Redcliffe Tableland, N Nebo	-21.16115	148.09547
<i>Nephrurus asper</i> East	QMJ56088	20k N Capella	-22.983333	147.883333
<i>Nephrurus asper</i> East	QMJ62474	Peak Downs Mine	-22.158889	148.008333
<i>Nephrurus asper</i> East	SAMAR54559	Dawson Development Road 18k E Alpha turnoff	-24.5317	146.5469
<i>Nephrurus asper</i> East	ABTC66226	15k W Charters Towers	-20.0833	146.1167
<i>Nephrurus asper</i> West	SAMAR42600	6k N Diamantina Station	-23.72	141.13
<i>Nephrurus asper</i> West	SAMAR42601	4k N DIAMANTINA Station	-23.72	141.13
<i>Nephrurus asper</i> West	SAMAR55288	The Monument, W side Mt Bruce	-21.7564	139.9219
<i>Nephrurus asper</i> West	SAMAR55289	The Monument, W side Mt Bruce	-21.7564	139.9219
<i>Nephrurus sheai</i>	NTMR18881	West Arnhem Land, Yirrkakak	-12.2039	133.8010
<i>Nephrurus sheai</i>	NTMR25986	Jasper Gorge, Gregory National Park	-16.0586	130.4019
<i>Nephrurus sheai</i>	ABTC112544	Lennard Gorge, King Leopold NP	-17.1736	125.2078
<i>Nephrurus sheai</i>	ANWC R10100	Gogo Station, Limestone Billy Hills	-18.3272	125.7650
<i>Nephrurus sheai</i>	CCM3287	Gogo Station, Pillara Range, North entrance of Menyous Gap	-18.3910	125.8400
<i>Nephrurus sheai</i>	CCM3351	Oscar Range Quarry	-17.9173	125.3029
<i>Nephrurus sheai</i>	PMO142	Oscar Range	-17.9125	125.2827
<i>Nephrurus sheai</i>	PMO70	Matthew Gorge, King Leopold Ranges Conservation Park	-16.7812	124.9206
<i>Nephrurus sheai</i>	WAMR156744	Oscar Range	-17.6378	125.1689

<i>Nephrurus sheai</i>	WAMR164759	Halls Creek	-17.9542	127.7944
<i>Nephrurus sheai</i>	WAMR164762	Nyulasy	-16.7452	128.2825
<i>Nephrurus sheai</i>	WAMR172802	Manning Gorge	-17.6575	125.9292
<i>Nephrurus sheai</i>	WAMR172815	Manning Gorge	-16.6575	125.9292
<i>Nephrurus sheai</i>	WAMR172833	Ellenbrae Station	-15.9492	127.0731
<i>Nephrurus sheai</i>	WAMR172839	Ellenbrae Station	-15.9661	127.0703
<i>Nephrurus sheai</i>	PMO143	Oscar Range, quarry west of Leopold Downs Road	-17.9125	125.2827
<i>Nephrurus sheai</i>	PMO146	Napier Range	-17.4825	125.0290
<i>Nephrurus sheai</i>	PMO57	Mt. Piere, Ngumpan Cliff area	-18.7563	126.0647
<i>Nephrurus sheai</i>	WAMR173974	Drysdale, Coucal Gorge	-15.0096	126.8350
<i>Nephrurus sheai</i>	WAMR173975	Drysdale, Coucal Gorge	-15.0057	126.8365
<i>Nephrurus sheai</i>	WAMR174052	Craticus Falls site 6, Coucal Gorge	-14.7814	127.0997
<i>Nephrurus sheai</i>	PMO144	King Leopold Ranges, on Gibb River Road	-17.11638	125.13335
<i>Nephrurus sheai</i>	CCM3280	Gogo Station	-18.391	125.8400

Appendix S2. Details of sequences for outgroup taxa included in phylogenetic analyses.

Taxon	Specimens number	Genbank
<i>Nephrurus deleani</i>	SAMA R47063	JF807388
<i>Nephrurus laevissimus</i>	SAMA R31893	JF807343
<i>Nephrurus levis levis</i>	WAM R137922	JF807392
<i>Nephrurus levis occidentalis</i>	WAM R139548	JF807347
<i>Nephrurus stellatus</i>	WAM R151430	JF807338
<i>Nephrurus vertebralis</i>	WAM R146822	AY369019
<i>Nephrurus cinctus</i>	WAM R146588	JF807384
<i>Nephrurus wheeleri</i>	WAM R97737	JF807360
<i>Underwoodisaurus milii</i>	SAMA R53051	JF807377
<i>Uvidicolus sphyrurus</i>	ABTC80812	JF807333

Appendix S3. Additional material included in morphological analyses.

***N. asper* north-east Queensland:** NMV DT–D182 (Donald Thomson Collection), Lower Archer R (13 °30' S, 142°00' E); NMV D7527, Mt Cook, Cooktown (15°28' S, 145°15' E); SAMA R14023, 22km NW of Cooktown (15°25' S, 145°04' E); SAMA R12594, Cooktown (15 ° 28' S, 145 ° 15' E); AM R128183, Batavia Downs, Wenlock R (12°40' S, 142°40' E); AM R128796, Cairns (16°55' S, 145°46' E); QM J22179, QM J24921, Bamaga, Cape York Peninsula (10°53' S, 142°24' E); QM J57652, 6.5km E of Heathlands airstrip (11°44.33' S, 142°38.28' E); QM J54644, Heathlands road, 1km from main Cape road junction (11°46' S, 142°40' E); QM J40165, Weipa to Aurukun, mid-way, N Camp Beagle Airstrip (13 ° 05' S, 141 ° 57' E); QM J738, Kingsborough (16 °55' S, 145°02' E); QM J4960, Bullock Ck, via Cairns (16°55' S, 145°46' E).

***N. asper* remainder of eastern Australia:** QM J57993, QM J58850, Elizabeth Ck, nr Bulleringa NP, N of Mt Surprise (18°00'21"S, 145 °59'50E); QM J2125, ? Northern Rivers; QM J44689, New Moon Stn (19 ° 12' S, 145°44' E); QM J3443, Charters Towers, Black Jack (20°08' S, 146°13' E); QM J42015, Hughenden, approx 2km W of Iona-Redcliffe Stn Homestead (20°59' S, 144°33' E); QM J44948, Egera Stn (20 ° 59' S, 146°05' E); J143, Natal Downs (21°05' S, 146 °09' E); QM J15565, 80km SW of Mackay (21°39' S, 148°42' E); QM J11355, QM J3552, Clermont (22 °50' S, 147°38' E); QM J46720, Aramac Range, Winhayen Stn (22°57' S, 145°41' E); QM J56088, Capella, 20km N on Clermont road (22°59' S, 147°53' E); QM J36795, Moongoo (23°10' S, 148°04' E); QM J3767, Rockhampton, Dalma, Waroula (23°20' S, 150°32' E); QM J7983, Mary Vale Stn, Yalleroi via Blackall (23°35' S, 146 °58' E); QM J36794, E of Comet Stn (23 ° 37' S, 148°40' E); QM J34205–06, half way up the Blackdown Tableland escarpment (23 °37' S, 14910' E); QM J8080, Bogantungan (23 °39' S, 147°18' E); QMJ9132, Blackall (24 °26' S, 145 °28' E); QM J43356–7, Moura, 4km S of junction of Theodore & Gibihi Roads (24°38' S, 149°59' E); QM J4540, Dawson Valley, Castle Ck (24°50' S, 150°20' E); QM J6011, Weathersfield?; QM J742, No locality data; AM R31773, Mt Fox nr Ingham (18 ° 19'

S, 145°51' E); AM R113852, approx. 14.51km W of 'Mt Cooper', nr St Paul' S vine scrub (20°31' S, 146°55' E); AM R14183, 210km S of Charters Towers (21 °38' S, 146°55' E); AM R63065, approx. 48km NW of Clermont (22°25' S, 147°23' E); AM R107703 N of Clermont (22°50' S, 147°38' E); AM R15107, Yamala (23°35' S, 148°22' E); AM R55786, Duaringa (23°43' S, 149°40' E); AM R130721– 2, AM R130726, 20km W of Moura on Bauhinia Downs road (24°37' S, 149°47' E); SAMA R15791, Charters Towers (20 °05' S, 146 ° 16' E); SAM R1771, Mt Coolon (21 ° 23' S, 147°20' E); WAM R55475–7, 16km W of Charters Towers (20°08' S, 146°07' E); NTM R1144, Clermont (22°50' S, 147°38' E); NTM R266, Rockhampton (23°22' S, 150° 32' E); NMV D2040, Queensland.

Figure S11. Maximum likelihood IQ tree for all data

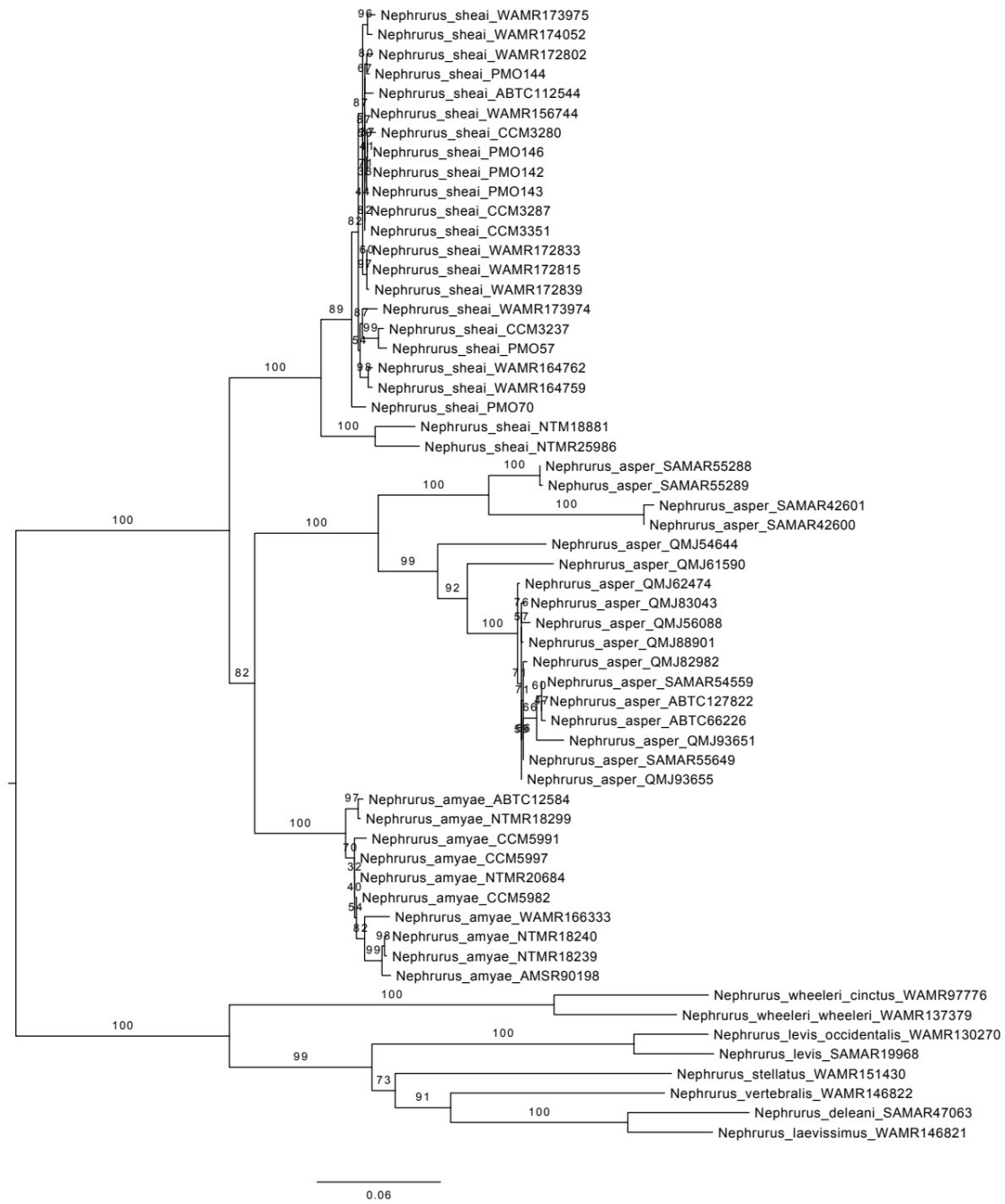


Figure S12. Dorsal image of the holotype of *Nephrurus asper* sp. nov. Photograph courtesy of Paul Doughty.



Figure S13. Dorsal and Ventral image of the holotype of *Nephrurus eromanga* sp. nov.

