

Supplementary Material

Two new genera of land snail from dry subtropical forests of eastern Australia: *Brigaladra* gen. nov. and *Euryladra* gen. nov. (Eupulmonata: Camaenidae)

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Table S1. Material examined

Species	Voucher	Used for	Locality	Habitat	Date	Collector(s)
<i>Euryladra mattea</i>	MO87243	dissected (1)	Point Vernon, 3 Jay Street, SEQ	suburban garden/cottonwood trees	01-Dec-20	P. Filewood
	MO87138	SEM shell sculpture	Raglan, ~5.8 km NW at Horrigan Ck Rd, MEQ	under logs at base of eucalypt tree	25-Aug-20	J. Stanistic, L. Stanistic
	MO86908	dissected (1)	Isla Gorge NP, W side of Flagstaff Rd, SCQ	under bark of tree	20-Feb-19	G. Monteith, V. Sandoval
	MO86814	shells measured (1)	Mt Perry, NE at Scrub Rd, SEQ	under rocks	27-Feb-19	J. Stanistic, L. Stanistic
	MO86812	shells measured (1)	Dulacca, SE at Bidson Station, SEQ	crawling after rain	01-Apr-19	Piper Johnson
		dissected (1)				
	MO86799	dissected (1)	Targinnie, banks of Targinnie Ck on Forest Rd, SEQ	under rocks	13-Aug-18	J. Stanistic, L. Stanistic
	MO86675	shells measured (3)	Brandt's Road, via Mt Woowoonga NP, SEQ	under logs	13-Mar-18	J Stanistic, L. Stanistic
		dissected (3)				
	MO86647	dissected (1)	Stock route between Banana & Theodore adj. Leichhardt Hwy, ~5.6 km S of Banana, SCQ	under logs. live animal photographed 22/11/17.	24-Apr-03	C. Eddie & W McDonald
	MO86643	shells measured (1)	South Bend, ~68.7 km NNE Injune, Arcadia Valley, SCQ	under rocks/in crevices between rocks.	18-Aug-04	C. Eddie & W McDonald
		dissected (1)		live animal photographed 22/11/17.		
	MO86640	shells measured (1)	Injune, ~62.2 km NNE at Castle Hill Stn at Arcadia Creek, Arcadia Valley, SCQ	inside hollow tree and under logs.	10-Oct-15	A. Bendall
		dissected (1) radula				
	MO86639	dissected (1)	Dukes Plain, ~27 km SSW Theodore, SCQ	active at night on ground/logs after rain.	22-Oct-16	C. Eddie
	MO86636	dissected (1)	Dukes Plain, ~26.5 km SSW Theodore, SCQ	under logs.	05-Apr-01	C. Eddie & B. Cosh
	MO85051	shells measured (10)	Nuga Nuga NP	SEVT, in soil under logs	3-Jul-15	J Stanistic, L. Stanistic
		dissected (1)				
	MO8268	shells measured (6)	Mt Morgan, ~7 km E		11-Jul-80	J Stanistic, A Green
	MO8158	shells measured (32)	Ambrose limestone quarry, Ambrose		10-Jul-80	J Stanistic, A Green
	MO8135	shells measured (1)	~2 km W. of Bracewell		10-Jul-80	J Stanistic, A Green
	MO76050	dissected (1)	Isla Gorge, ~8.4 km SSW of lookout	vine thicket	03-Mar-98	G Monteith
	MO67777	shells measured (2)	Blackwater, N at Curragh Coal Mine	open woodland	Jun-95	J Stanistic, D Potter
	MO6777	shells measured (2)	Mt Morgan			
	MO65146	shells measured (1)	Biloela, ENE at Kellys Ck	dry vine thicket under bark/in litter	06-Oct-98	E Greenhalgh
		dissected (1)				
	MO60851	shells measured (9)	Theodore, S, Dawson R Xing on Isla - Delsion Rd	riparian/Livistona/fig under logs		
	MO60831	shells measured (10)	Taroom, 9 km N, Leichhardt Hwy	under logs	11-Sep-96	G Ingram & A Caneris
	MO5600	shells measured (3)	Rockhampton, W, Alton Downs area at Mt Lion		Jun-72	A Boorman
	MO5128	shells measured (1)	Louisa Ck., Ridgeland		Jun-72	A Boorman
	MO5125	shells measured (7)	Ridgeland, Glenroy Rd.,		Jun-72	A Boorman
	MO49073	shells measured (9)	Theodore, ~49 km SE, Theodore-Cracow Rd	rocky outcrop degraded remnant thicket in logs	20-May-93	J Stanistic, D Potter
	MO49063	shells measured (10)	Theodore, ~39.8 km SE, Theodore-Cracow Rd	SEVT/brigalow in logs	20-May-93	J Stanistic, D Potter
	MO49054	shells measured (10)	Theodore, ~31.9 km SE, Theodore-Cracow Rd	degraded brigalow/black soil under logs	20-May-93	J Stanistic, D Potter
	MO49020	shells measured (7)	Gogango Ra, ~37 km E Duaringa	vine thicket/rocky outcrop on ground	19-May-93	J Stanistic, D Potter
	MO47966	shells measured (10)	Gogango Ra, ~12 km W Wowan	vine thicket riparian in logs, under bark	19-May-93	J Stanistic, D Potter
	MO47963	shells measured (10)	Broadsound Ra, ~4.3 km N Ohio Stn, 34.3 km NW Gogango, Rd to Glenroy	vine thicket riparian under logs	18-May-93	J Stanistic, D Potter

Species	Voucher	Used for	Locality	Habitat	Date	Collector(s)
<i>Brigaladra volgiola</i>	MO47962	shells measured (13)	Broadsound Ra, ~4.3 km N Ohio Stn, 34.3 km NW Gogango, Rd to Glenroy	vine thicket under logs	18-May-93	J Stanisic, D Potter
	MO47961	shells measured (4)	Boomer Ra, ~12.7 km N Ohio Stn, 42.7k NW Gogango, road to Glenroy	vine thicket under logs	18-May-93	G Monteith, D Cook
	MO46314	shells measured (16)	Duaringa, ~2.4 km S	vine thicket riparian under rocks	18-May-93	J Stanisic, D Potter
	MO45532	shells measured (1)	Dululu, ~7.4 km NE, ridge opp Piebald Mt	vine thicket/rocky outcrop under rocks	25-Jun-89	J Stanisic, D Potter, J Chaseling
	MO44112	shells measured (4)	Duaringa, ~2.4 km S Duaringa - Rockhampton Rd, Baralaba Rd	eucalypt scrub on red soil in hollow logs and trees	21-Jun-92	J Stanisic, D Potter
	MO44100	shells measured (43) dissected (3)	Comet, ~11.7 km E, Comet - Blackwater Rd, nr Mt Crocker	vine thicket logs/hollow trees/under logs	20-Jun-92	J Stanisic, D Potter
	MO43534	shells measured (46)	Ambrose, Limestone Quarry, ~1 km S Ambrose Railway Stn	remnant thicket under debris	4-Jul-84	J Stanisic, D Potter, K Emberton
	MO4216	shells measured (2)	Rockhampton, nr Fitzroy R, Park Ave	under dead bark		J Stanisic, G Ingram
	MO4158	shells measured (1)	Ulam Ranges, SE of Mt Morgan	gallery forest under debris nr creek	14-Jul-80	A Boorman
	MO4150	shells measured (3)	Raglan			R Kenny
	MO37947	shells measured (6)	Redcliffe, Moreton Bay		1990	A. Norris
	MO36253	shells measured (39)	Rockhampton, Ulam, Limestone Mine	under rocks and logs	23-May-90	J Stanisic, D & N Potter
	MO35818	shells measured (4)	Rockhampton Mt Hay	dry vine forest under rocks	9-Mar-92	V Kessner
	MO23484	shells measured (2)	Dee R Xing, on Dululu - Mt Morgan Rd	remnant vine thicket on rocky outcrop under rocks	25-Jun-89	J Stanisic, D Potter, J Chaseling
	MO23422	shells measured (70)	Duaringa, ~21.6 km E, Capricorn Hwy	remnant MVT under logs/litter	25-Jun-89	J Stanisic, D Potter, J Chaseling
	MO21498	shells measured (4)	Dee Ra, ~5.2 km E Mt Morgan	MVF/semi-evergreen vine thicket litter on rainforest fringe	25-Jun-89	J Stanisic, D Potter, J Chaseling
	MO19869	shells measured (4)	Gavial Ck, Bouldercombe	MVF under rocks	10-May-88	Stanisic, Potter, Simpson
	MO19863	shells measured (1)	Lakes Ck Nth Rockhampton	open woodland under logs and rubble	10-May-88	Stanisic, Potter, Simpson
	MO19770	shells measured (2)	St Marys Falls, ~7 km E Mt Morgan	MVF under logs	10-May-88	Stanisic, Potter, Simpson
	MO19763	shells measured (38)	Lakes Ck Nth Rockhampton	open woodland under logs and rubble	10-May-88	Stanisic, Potter, Simpson
	MO19409	shells measured (5)	Westwood, W of Mt Morgan		12-Nov-86	R Powell
	MO15091	shells measured (1) dissected (1)	Rockhampton Lakes Ck		24-Oct-84	G Annabell
	MO14788	shells measured (6) SEM shell sculpture	Rockhampton Hartley St			A & B Boorman
	MO14176	shells measured (4)	Gladstone, Auckland St		18-Feb-82	N Trevor
	MO13214	shells measured (1)	Gladstone Town Centre in garden of Motel		06-Sep-82	G J Ingram
	MO11635	shells measured (5)	Mt Morgan, ~7 km due E, on road to St Mary Falls		29-Jun-82	A Pollock, W McDonald
	MO11616	shells measured (11)	Dee R Crossing, ~9.5 km S Mt Morgan Mt Morg-Biloela		29-Jun-82	A Pollock, W McDonald
	MO10312	shells measured (7)	Biloela, ~50 km N, Dululu-Biloela Rd	vine thicket/brigalow/rocky outcrop under logs and bark	14-Jul-80	J Stanisic, A Green
	MO87135	shells measured (4)	Langdale Hill, Angelwood Rd, Ogmores, MEQ	SEVT/rocky outcrop under rocks	24-Aug-20	J. Stanisic, L. Stanisic
	MO87129	shells measured (9)	Ropers Ck, Peak Ra ~4 km NE of Mt Demipique, MEQ	under rocks and logs	23-Aug-20	J. Stanisic, L. Stanisic

Species	Voucher	Used for	Locality	Habitat	Date	Collector(s)
	MO87096	dissected (2)	'Foleyvale' ~32.1 km NNE of Duaringa MEQ	under/among rocks; inside/base of fig	11-Dec-19	C. Eddie C. Andrew
	MO87095	dissected (1)	'Foleyvale' ~27.8 km NNE of Duaringa MEQ	under logs; base of trees	13-Dec-19	C. Eddie C. Andrew
	MO87092	dissected (1)	Stoney Creek, ~25.5 km NNE of Duaringa MEQ	under/inside logs; base of trees	14-Dec-19	C. Eddie C. Andrew
	MO87091	SEM shell sculpture	'Foleyvale' ~31.8 km NNE of Duaringa MEQ	among rocks; inside/base of fig	11-Dec-19	C. Eddie C. Andrew
	MO78170	shells measured (1) dissected (1)	Peak Range, Mt Donald slopes	vine thicket under rocks	07-Mar-06	J Stanisic
	MO78148	shells measured (2)	Peak Range, flats to Mt Castor	on ground	06-Mar-06	J Stanisic
	MO78145	shells measured (1)	Peak Range, Mt Castor, in high cave	eucalypts	06-Mar-06	
	MO78134	shells measured (10) dissected (1) radula	Peak Range, via Clermont, low peak, NW of Mt Donald	vine thicket under logs and rocks	07-Mar-06	M Shea
	MO78133	shells measured (6) dissected (1)	Peak Range, via Clermont, Mt Pollux	rainforest niche on ground, in litter	06-Mar-06	M Shea
	MO78125	shells measured (10)	Peak Range, Feez Ck Station at base of Scott's Peak	rock scree	09-Mar-06	M Shea
	MO78123	dissected (1)	Peak Range, via Clermont, SE of range along Roper Ck	eucalypt on sandstone	12-Jan-06	M Shea
	MO78118	dissected (1)	Peak Range, via Clermont, SE of range along Roper Ck	eucalypt on sandstone under rocks and timber	11-Jan-06	A Rozenfelds
	MO78113	shells measured (5) dissected (1)	Peak Range, via Clermont, lower slope Wolfgang Peak	remnant vine thicket under rocks	09-Jan-06	G Monteith, D Cook
	MO78082	shells measured (1) dissected (1)	Peak Range, via Clermont, along Feez Creek Rd	under rocks	11-Jan-06	D Potter
	MO78066	shells measured (10) dissected (1)	Peak Range, via Clermont, Mt Castor, Gemini Peaks	remnant vine thicket/rocks under rocks	12-Jan-06	G Monteith, D Cook
	MO47847	shells measured (2)	Broadsound Ra, Langdale Hill	SEVT/rocky outcrop under rocks	14-May-93	J Stanisic, D Potter
	MO46286	shells measured (6)	Boomer Ra, ~12 km N Leura Stn, Apis Ck - Duaringa Rd	vine thicket in rotten logs	16-May-93	QM Party
	MO46283	shells measured (1) dissected (1)	Broadsound Ra, Langdale Hill	gully under rocks and in logs	16-May-93	
	MO46282	shells measured (10) dissected (1) SEM shell sculpture	Broadsound Ra, Old Sarina - Marlborough Rd	gully under rocks and in logs	16-May-93	G Monteith, D Cook
	MO46280	shells measured (9)	Marlborough, ~7.5 km SW	degraded vine thicket/eucalypt under logs	16-May-93	J Stanisic, D Potter
	MO45979	shells measured (5)	Broadsound Ra	open woodland adjacent to remnant thicket under logs	14-May-93	J Stanisic, D Potter
	MO45973	shells measured (9) dissected (1)	Broadsound Ra, ~9.5 km S Angleside, road to Apis Ck	remnant thicket/rocky hillside under rocks	14-May-93	G Monteith, D Cook
	MO45972	shells measured (2)	Broadsound Ra.	remnant thicket/rocky hillside under rocks	14-May-93	J Stanisic, D Potter
	MO45967	shells measured (31) dissected (1)	Broadsound Ra, Langdale Hill	semi-evergreen vine thicket/rocky outcrop under rocks	14-May-93	G Monteith, C Gough
	MO44110	shells measured (4) dissected (3)	Charlevue Ck, Blackdown Tbld Rd	riparian inside logs and trees	20-Jun-92	G Monteith, D Cook
	MO4251	shells measured (4)	Pine Mt, Mackenzie NP, MEQ	Softwood scrub	27-Jul-70	G. Beetson
	MO35821	shells measured (3)	Duaringa, ~22 km E, Capricorn Hwy	vine thicket on trees under bark	8-Mar-92	V Kessner
	MO23495	shells measured (1)	Charlevue Ck, Blackdown Tbld Rd	riparian in and under logs	24-Jun-89	G Monteith, D Cook

Species	Voucher	Used for	Locality	Habitat	Date	Collector(s)
<i>Billordia nicoletteae</i>	MO18134	shells measured (1)	Expedition Range, SCQ			
	MO36243	dissected	Lotus Ck, 0.5 km S on old Marlborough-Sarina Rd, MEQ	among rocks, In rocky outcrop	22-May-90	J Stanistic, D Potter, N. Potter
	MO46271	shells measured (9)	Connors Ra, foothills at Lotus Ck, MEQ	riparian/vine thicket under rocks	15-May-93	J Stanistic, D Potter
<i>Billordia bridgettae</i>	MO78854	shells measured (3) dissected (1)	Lotus Ck, 0.5 km S on old Marlborough-Sarina Rd, MEQ	rocky outcrop degraded remnant thicket among rocks	22-May-90	J Stanistic, D Potter
	MO78169	shells measured (4) dissected (2) SEM shell sculpture	Lords Table, western vine scrub, Peak Range, MEQ	vine thicket on scree slope	07-Mar-06	D. Lim, C. Burrwell
	MO78019	shells measured (10)	Lords Table, south-east slope, Peak Range, MEQ	vine thicket under rocks	09-Jan-06	J. Stanistic, T. Carless
	MO78099	shells measured (8)	Lords Table, north-west slope, Peak Range, MEQ	vine thicket under rocks	10-Jan-06	J. Stanistic, T. Carless
	MO78106	dissected (2)	Lords Table, top, Peak Range, MEQ	remnant vine thicket under rocks	10-Jan-06	J. Stanistic, T. Carless
<i>Bentosites etheridgei</i>	MO65977	dissected	Proserpine, MEQ			
<i>Denhamiana laetifica</i>	MO85310	dissected	Hazelwood Gorge, MEQ			J. Stanistic, L. Stanistic
<i>Figuladra incei curtisiana</i>	MO60270	dissected	Boyne I	woodland	01-Jan-95	J Stanistic, D & N Potter
	MO72207	dissected	Gladstone, 10k NE Farmer Pt, Facing I, SEQ	degraded vine thicket under logs in litter	07-Feb-03	J. Stanistic
<i>Figuladra narelleae</i>	MO21496	dissected	Mt Morgan Dee Range, SEQ	microphyll vine forest/semi-evergreen vine thicket litter and in logs	25-Jun-89	J Stanistic, D Potter
<i>Marilynessa yulei</i>	MO35379	dissected	Conway Beach, MEQ			
<i>Monteithosites heliostracum</i>	MO57240	dissected	Bakers Blue Mt, WT			
<i>Steorra mourilyana</i>	MO53195	dissected	Cardwell, WT			

Table S2. PCR Reagents used in a 25- μ L reaction

Reagents	Concentration	25 μ L
<i>COI</i>		
H ₂ O		19.3
Thermopol Buffer	10×	2.5
Primer LCO1490M13F	20 mM	0.3
Primer HCO2198M13R	20 mM	0.3
BSA		0.3
dNTP	10 mM	0.3
NEB Taq polymerase		0.2
MgCl ₂	25 mM	1.5
DNA		0.3
<i>16S</i> reagents		
H ₂ O		10.95
Primer 16SCS1	20 mM	0.625
Primer 16SDB1	20 mM	0.625
Fusion TaQ		12.5
DNA		0.30

Table S3. Intraspecific summary of *p*-distances (%)

Clades from ML and BI trees	<i>16S</i>				<i>COI</i>			
	Number of samples	Min.	Max.	Mean	Number of samples	Min.	Max.	Mean
A. <i>Figuladra</i>								
• MEQ	28	1.3	7.0	4.7	15	2.3	10.1	6.8
• SEQ	16	2.6	5.2	4.1	3	5.4	8.1	7.1
• <i>bayensis/narelleae</i>	3	3.1	6.4	5.3	3	4.4	10.6	8.2
Total	152	1.3	14.9	9.9	74	2.3	19.8	12.9
B. <i>F. volgiola</i>	16	0.2	4.3	2.9	2	7.8	7.8	7.8
C. <i>F. mattea</i>	66	0.1	4.6	2.1	10	0.4	5.4	3.6
<i>Sphaerospira</i>	15	2.9	9.7	8.3				
Whole tree	1176	0.1	32.6	14.4	231	0.4	26.1	17.0

Table S4. Measurements of penial length, vaginal length (cm) and the penial–vaginal ratio (P/V)

Species	Voucher number	Location	Penial length	Vagina	P/V
Clade A					
BL45	QMMO87124	Wadallah Ck 43 km S Stanage Bay	1.552	0.768	2.021
	QMMO34401	Wadallah Ck 43 km S Stanage Bay	1.518	0.385	3.943
	QMMO34401 [2]	Wadallah Ck 43 km S Stanage Bay	1.610	0.509	3.163
		MEAN	1.560	0.554	3.042
BL47	QMMO54312	Dipperu NP, Pine Mt	1.292	0.459	2.815
	QMMO59241	Nebo	1.120	0.527	2.125
	QMMO87133	Oxford-Sarina Rd	1.737	0.821	2.116
	QMMO87097	Nebo	1.807	0.803	2.250
	QMMO35794	Upper Endeavour Ck, MEQ	1.617	0.955	1.693
	QMMO85407	Cherry Tree Ck, MEQ	1.220	0.497	2.455
	QMMO11862 [2]	Sarina	1.522	0.904	1.684
	QMMO34522	Clairview	2.701	1.306	2.068
	QMMO34865	Hay Point, S Mackay	1.249	0.470	2.657
	QMMO60246	Cut Ck	1.823	0.616	2.959
	QMMO66973	Mt Ossa, MEQ	2.100	0.987	2.128
	QMMO12864	Seaforth	2.046	0.863	2.371
	QMMO24371	St Helens Beach	2.013	0.795	2.532
	QMMO35782	2 km NW Seaforth MEQ	1.834	0.890	2.061
		MEAN	1.720	0.778	2.280
SQ15	QMMO72289	Calliope 55 km SSE Blac kmans ck	2.679	1.278	2.096
	QMMO72164	Colosseum Ck	2.924	1.219	2.399
	QMMO72319	Colosseum Ck	2.864	0.967	2.962
	QMMO86822	Granite Ck	3.433	1.533	2.239
	QMMO86822 [2]	Granite Ck	3.420	1.062	3.220
	QMMO34975	Middle Ck, Eurimbula NP	2.970	1.504	1.975
	QMMO34975 [2]	Middle Ck, Eurimbula NP	2.689	1.353	1.987
	QMMO34978	Bustard Beach, Eurimbula	2.799		
	QMMO34971	1770	1.852	0.828	2.237
	QMMO54571	Eurimbula NP, MFV	2.957	0.933	3.169
	QMMO54587	Kolan Xing	2.243	0.905	2.478
	QMMO67834	Rosedale near Lowmead	3.043	1.258	2.419
	QMMO72209	Eurimbula	2.744	1.177	2.331
	QMMO72210	Turkey Beach	2.696	1.182	2.281
	QMMO86795	Turkey Beach	3.190	1.098	2.905
	QMMO72317	Miriam Vale, Pine Ck	3.013	1.617	1.863
	QMMO72163	Mercy Hill, 24 km SSE Calliope	3.469	1.571	2.208
	QMMO72329	Monduran Ck, 30 km NW Gladstone	3.030	1.142	2.653
	QMMO72313	Rodds Peninsula	2.993	1.239	2.416
	QMMO87149	Rodds Peninsula	2.322	1.041	2.231
	QMMO72282	Calliope, ~10 km SSE Taragoola Rd	3.396	1.469	2.312
	QMMO86888	Round Head (near 1770)	2.834	1.463	1.937
		MEAN	2.889	1.230	2.396
SQ16	QMMO16523	Tinnanbar, N Tin Can Bay	2.498		
	QMMO39247	Urangan, Hervey Bay	2.804	1.218	2.302

Species	Voucher number	Location	Penial length	Vagina	P/V
	QMMO39860	St Mary SF, SW Maryborough	3.475	1.535	2.264
	QMMO43408	St Mary SF, SW Maryborough	3.209	1.860	1.725
	QMMO5152	Fraser I	2.981	1.289	2.313
	QMMO59985	North White Cliffs, Fraser I	1.866	0.836	2.232
	QMMO59986	Central Station, Fraser I	2.117	1.010	2.096
	QMMO61777	Orchid Beach, Fraser I	2.123	1.082	1.962
	QMMO61777 [2]	Orchid Beach, Fraser I	2.247	0.959	2.343
	QMMO65334	Moon Point, Fraser I	2.761	1.269	2.176
	QMMO71562	Orchid Beach, Fraser I	1.052	0.323	3.257
	QMMO86761	Poona Conservation Park	2.386	1.005	2.374
	QMMO86887	Dundowran Beach	3.229	1.499	2.154
	QMMO87063	Pialba Esplanade	2.726	1.477	1.846
	QMMO87064	St Aramara SF	2.767	1.059	2.613
	QMMO87243	Point Vernon	1.858	0.736	2.524
	QMMO87243	Point Vernon	2.143		
	QMMO87243 [2]	Point Vernon	2.035	1.047	1.944
		MEAN	2.460	1.138	2.258
SQ17	QMMO24245	Salford Scrub, Burrum Heads	2.837	1.114	2.547
	QMMO34237	Norval Park	2.188	0.856	2.556
	QMMO86665	Mt Woowoonga	2.269	0.950	2.388
	QMMO38959	Bulburin SF	3.798	1.574	2.413
	QMMO71571	Tellebang Mt	2.733	1.178	2.320
	QMMO39795	The Hummock	1.989	0.706	2.817
	QMMO66599	Watalgan (Bundaberg)	2.191	1.437	1.525
	QMMO86663	The Hummock	2.306	0.914	2.523
	QMMO86663 [2]	The Hummock	2.675	1.338	1.999
	QMMO86759	Woodgate	2.767	1.040	2.661
	QMMO87062	Watalgan	3.098	1.271	2.437
	QMMO87075	Coonar	2.855	1.410	2.025
	QMMO87076	Mon Repos	2.248	0.904	2.468
	QMMO87078	Woodgate NP	3.189	1.272	2.507
	QMMO87079	Bargara	2.607	1.111	2.347
		MEAN	2.650	1.078	2.362
<i>F. incei curtisiana</i>	QMMO72310	36 km ESE Miriam Vale	3.309	1.028	3.219
	QMMO86791	Bororen	2.812	1.053	2.670
	QMMO60270	Boyne I	3.044	1.710	1.780
	QMMO72207	Gladstone Farmers Point	2.291	1.115	2.055
	QMMO72207 (2)	Gladstone Farmers Point	2.248	1.146	1.962
	QMMO72292	Maurice Hill 8.5 km S Gladstone	3.349	1.762	1.901
	QMMO77154	Kroombit Tops	2.520	0.939	2.684
	QMMO86689	Kroombit Tops	2.476	1.178	2.102
	QMMO86689	Kroombit Tops	2.920	1.239	2.357
	QMMO23563	Bracewell	3.734	2.066	1.807
	QMMO23563	Bracewell	2.724	1.427	1.909
	QMMO43535	Ambrose limestone quarry	2.887	1.169	2.470
	QMMO72177	Mt Larcom, 11 km W at Clay Ck	3.022	0.977	3.093

Species	Voucher number	Location	Penial length	Vagina	P/V
	QMMO72198	Mt Larcom	3.142	1.423	2.208
	QMMO72211	Mt Larcom Bottle Tree Hill	3.083	1.551	1.988
	QMMO72281	Calliope, ~29 km SSE Bloomfield Ck	3.412	0.568	6.007
	QMMO79918	Targinnie (Swan Hill Rd)	3.452	1.072	3.220
	QMMO86803	Heniches Rd off Ambrose Bracewell Rd	2.607	1.055	2.471
	QMMO86807	Targinnie Rd past Forest Rd	2.962	1.181	2.508
	QMMO86813	Mt Larcom, walking track to summit	3.415	1.414	2.415
		MEAN	2.970	1.254	2.541
<i>F. appendiculata</i>	QMMO11663	Berserker Ra	2.393	0.720	3.324
	QMMO4173	Mt Dick, Berserker Ra	3.080	1.805	1.706
	QMMO7283	Foot of Mt Archer	3.146	1.929	1.631
	QMMO5004	North Keppel I	1.679	1.202	1.397
	QMMO87120	Great Keppel I	2.010	0.877	2.292
	QMMO9975	Great Keppel I	1.634	0.669	2.442
	QMMO19564	Cuvarral, Rockhampton	2.520	1.408	1.790
	QMMO4620	Mulambin Beach, Yeppoon	2.766	1.665	1.661
	QMMO64098	Yeppoon	2.513	1.024	2.454
	QMMO64098 [2]	Yeppoon	2.027	0.909	2.230
		MEAN	2.377	1.221	2.093
<i>F. aureedensis</i>	QMMO21586	Johannsen's Caves	2.155	0.721	2.989
	QMMO21601	Johannsen's Caves	2.307	1.066	2.164
	QMMO34259	Olsens Caves	2.001	0.979	2.044
	QMMO34259	Olsens Caves	2.028	0.814	2.491
	QMMO43382	Johannsen's Caves	2.263	1.153	1.963
	QMMO43382	Johannsen's Caves	2.042	0.996	2.050
	QMMO43382	Johannsen's Caves	2.716	1.099	2.471
	QMMO86835 [2]	Johannsen's Caves	3.068	1.426	2.151
	QMMO86835 [3]	Johannsen's Caves	3.676	1.881	1.954
	QMMO86835	Johannsen's Caves	3.164	1.735	1.824
		MEAN	2.542	1.187	2.210
<i>F. barneyae</i>	QMMO34422	21 km W St Lawrence	2.596	1.207	2.151
	QMMO36237	Beautrel Ck, Old Sarina-Marlborough Rd	2.046	0.812	2.520
	QMMO54325	Connors Ra, on Barmount Ra	2.333	0.878	2.657
	QMMO72131	Shoalwater Bay, Normanby Ra	1.527	0.722	2.115
	QMMO34539	Greenhill, SE Sarina	2.210	0.860	2.570
	QMMO70436	Connors Ra	2.531	1.121	2.258
	QMMO76990	Sarina, Connors Ra, Grinwood Stn	2.670	0.924	2.890
		MEAN	2.273	0.932	2.451
<i>F. bayensis</i>	QMMO76046	Gayndah	2.459	1.128	2.180
	QMMO86654	Mt Mudlo	2.771	1.422	1.949
	QMMO86659	Mt Biggenden	2.604	1.310	1.988
	QMMO86659 (2)	Mt Biggenden	2.719	1.168	2.328
		MEAN	2.638	1.257	2.111
<i>F. challisi</i>	QMMO70382	Keswick I	1.476	0.777	1.900
	QMMO86828	Keswick I	1.680	0.621	2.705
	QMMO86829	St Bees I	2.545	1.339	1.901

Species	Voucher number	Location	Penial length	Vagina	P/V
		MEAN	1.900	0.912	2.169
<i>F. incei incei</i>	QMMO33665	Shoalwater Bay	1.653	0.737	2.243
	QMMO34272	Stanage Bay	1.116	0.551	2.025
	QMMO34272 [2]	Stanage Bay	1.548	0.682	2.270
	QMMO4271	105 km N Rockhampton	1.645		
	QMMO87122	Stanage Bay	1.622	0.732	2.216
	QMMO8911	Alligator Bay	1.257		
	QMMO39430	Middle Percy I: banded	2.343	1.265	1.852
	QMMO39430	Middle Percy I: dark from	2.468	1.001	2.466
	QMMO64867	South Percy I	2.343	0.453	5.172
	QMMO87084	Middle Percy I	3.169	0.976	3.247
	QMMO87084 (2)	Middle Percy I	2.641	1.202	2.197
	QMMO87084 (3)	Middle Percy I	2.513	1.143	2.199
		MEAN	2.027	0.874	2.589
<i>F. muirorum</i>	QMMO54426	E St Lawrence	1.441	0.664	2.170
	QMMO76503	Boomer Ra	1.764	0.774	2.279
	QMMO76990	Sarina, Connors Ra, Grinwood Stn	2.168	0.788	2.751
	QMMO78092	Eden Bann Rd, Kunwarara	1.673	0.756	2.213
	QMMO77392	Boomer Ra. Python Scrub	1.895	0.737	2.571
		MEAN	1.788	0.744	2.397
<i>F. narelleae</i>	QMMO21496	5.2 km E Mt Morgan N end Dee Ra	4.420	1.197	3.693
	QMMO23330	Dan Dan Scrub	2.887	0.903	3.197
	QMMO31294	Gavial Ck, Bouldercombe	3.993	1.378	2.898
	QMMO64057	Hourigan Ck 2 miles from junction with Raglan Ck	2.910	1.447	2.011
	QMMO65165	Biloela	3.791	1.258	3.014
	QMMO72184	Calliope, Norton Ck	3.072	0.854	3.597
	QMMO72193	Boyne Range	3.579	1.167	3.067
	QMMO72205	Bouldercombe Gorge	5.056	1.691	2.990
	QMMO72205	Bouldercombe Gorge	4.384	1.192	3.678
	QMMO7296	Raglan	3.170	1.641	1.932
		MEAN	3.726	1.273	3.008
<i>F. pallida</i>	QMMO19681	Parnassus Ra, Nob Ck	2.444	0.867	2.819
	QMMO24247	Shoalwater Bay	2.511	0.714	3.517
	QMMO24248	Parnassus Ra	1.196	0.610	1.961
	QMMO25944	Polka Ck, Byfield	3.098	0.847	3.658
	QMMO71220	Byfield NP, Parnassus Ra	2.291	1.178	1.945
		MEAN	2.308	0.843	2.780
<i>F. reducta</i>	QMMO7966	Gayndah-Gin Gin Rd	1.880	0.882	2.132
	QMMO85417	Goodnight Scrub	3.009	1.059	2.841
	QMMO86669	Goodnight Scrub	2.284	0.969	2.357
	QMMO65136	Monto at Mulgildie Plateau	2.932	1.418	2.068
	QMMO86815	Mt Perry	2.563	1.152	2.225
	QMMO86815 [2]	Mt Perry	2.690	1.052	2.557
	QMMO38976	Yarra Scrub	3.123	1.536	2.033
		MEAN	2.640	1.153	2.316

Clade B

Species	Voucher number	Location	Penial length	Vagina	P/V
<i>F. mattea</i>	QMMO15091	Lake St Rockhampton	2.299	1.505	1.528
	QMMO65146	Biloela	1.937	1.498	1.293
	QMMO85015	Nuga Nuga NP	2.430	1.241	1.958
	QMMO86639	Dukes Plain SSW Theodore	2.016	1.290	1.563
	QMMO86640	Arcadia Valley, 62 km NNE Injune	2.202	1.358	1.622
	QMMO86642	Arcadia Valley, NNE Injune	2.171	1.393	1.559
	QMMO86643	South Bend, 68.7 km NNE Injune	2.327	1.454	1.600
	QMMO86647	Stock route between Banana and Theodore	2.145	1.302	1.647
	QMMO86675	Brandts Rd, Mt Woowoonga NP	2.016	1.233	1.635
	QMMO86675 [2]	Brandts Rd, Mt Woowoonga NP	1.912	1.273	1.502
	QMMO86675 [3]	Brandts Rd, Mt Woowoonga NP	1.974	1.207	1.635
	QMMO86799	Targinnie, bank of Targinnie Ck	2.293	1.387	1.653
	QMMO86812	Drillham	2.535	1.448	1.751
	QMMO86814	Mt Perry	2.216	1.195	1.854
	QMMO86908	Isla Gorge	1.671	1.157	1.444
		MEAN	2.143	1.329	1.616
Clade C					
<i>F. volgiola</i>	QMMO44110	Charlevue Ck	2.067	1.466	1.410
	QMMO44110	Charlevue Ck	2.555	1.431	1.785
	QMMO45967	Broadsound Ra	1.878	1.182	1.589
	QMMO45973	Broadsound Ra	2.182	1.250	1.746
	QMMO46282	Broadsound Ra	2.525	2.400	1.052
	QMMO46286	Boomer Range	2.770	1.466	1.889
	QMMO46283	Boomer Range	2.427	1.396	1.739
	QMMO78118	Peak Range, Ropers Creek	2.516	1.612	1.561
	QMMO78123	Peak Range, Gemini Peaks	2.521	1.229	2.051
	QMMO78123	Peak Range	1.250	0.744	1.680
	QMMO78134	Peak Range	3.104	1.688	1.839
	QMMO78170	Peak Range	3.199	1.562	2.048
	QMMO87092	Duaringa 'Foleyvale'	2.004	1.342	1.493
	QMMO87096	Duaringa 'Foleyvale'	2.096	1.025	2.045
		MEAN	2.364	1.414	1.709
Clade 1 species					
<i>Billordia brigidetteae</i>	QMMO78169	Lord's Table	2.001	1.653	1.211
<i>Billordia nicolletteae</i>	QMMO36243	Lotus Ck	0.408	0.322	1.267
<i>Marilynessa yulei</i>	QMMO35379	Conway Beach	0.755	0.232	3.254
<i>Monteithosites heliostracum</i>	QMMO57240	Bakers Blue Mt	0.654	0.312	2.096
<i>Steorra mourilyana</i>	QMMO53195	Cardwell	0.714	0.513	1.392

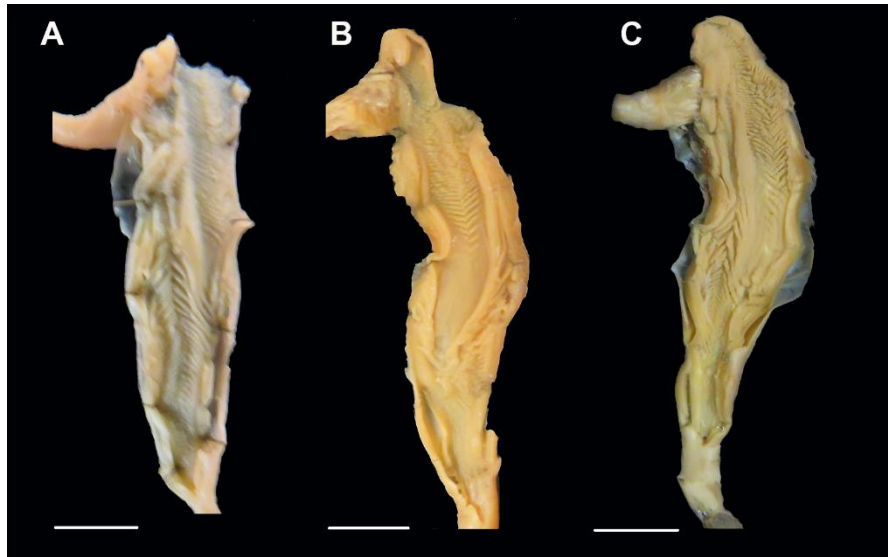


Figure S1. Penial architecture of *Brigaladra volgiola* from A, Duaringa, SCQ, QMMO87096. B, Mt McDonald, Peak Range, SCQ, QMMO78170. C, Boomer Ra, SCQ, QMMO46386. Scale bars: 5 mm.



Figure S2. Penial architecture of *Euryladra mattea* from A, Nuga Nuga NP, SCQ, QMMO85051. B, Arcadia Valley, SCQ, QMMO86640. C, Dulacca, SCQ, QMMO86812. D, Targinnie, SEQ, QMMO86799. Scale bars: 5 mm.