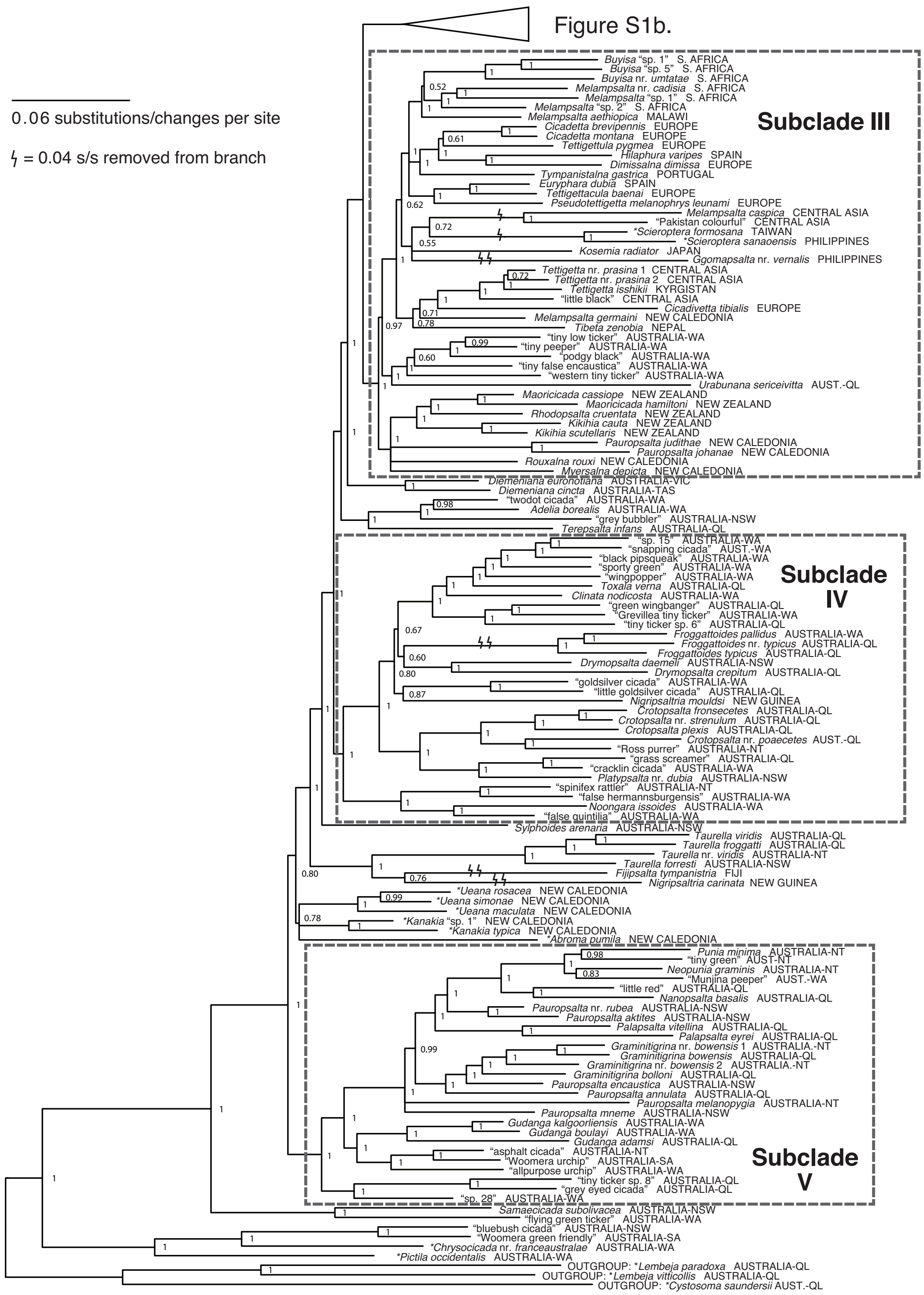
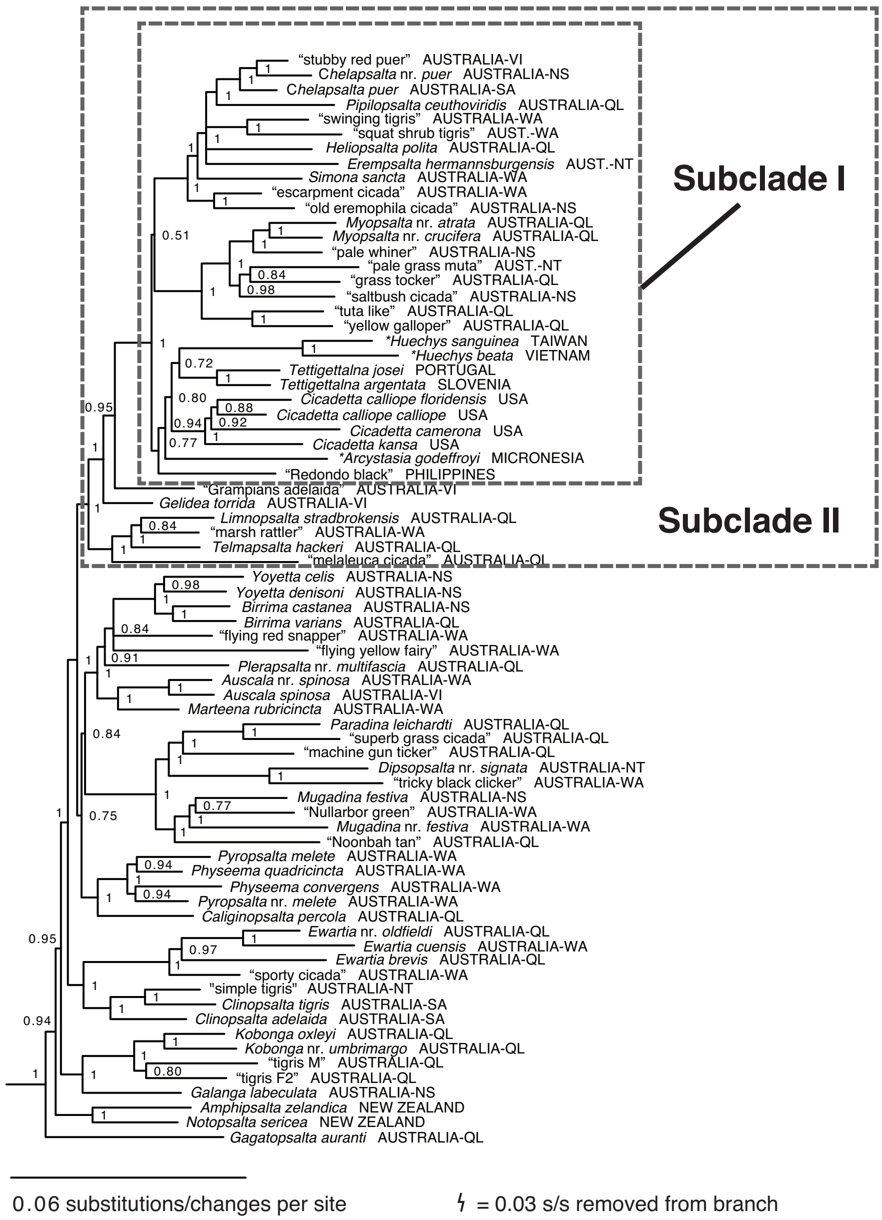
Supplementary Information – Marshall *et al.*, "Inflation of Molecular Clock Rates and Dates: Molecular Phylogenetics, Biogeography, and Diversification of a Global Cicada Radiation from Australasia (Hemiptera: Cicadidae: Cicadettini)", *Systematic Biology* (in press 2015)

Supplementary Figure S1. Subclades specified in the analyses of data subsets exploring effects of subclade age on divergence times, mapped on the tree from Fig. 2. a) Root and lower section of tree. b) Upper section of tree.

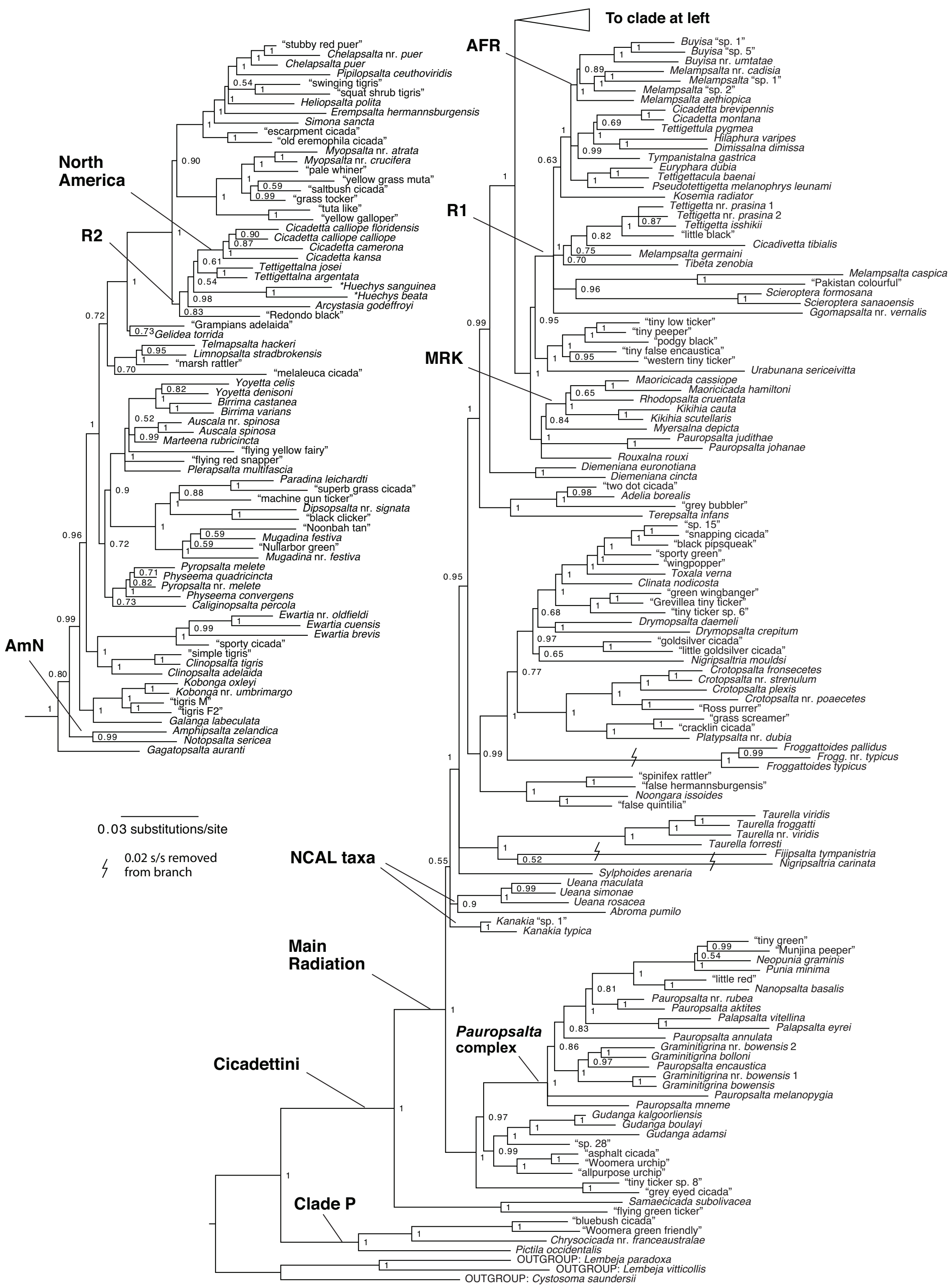
Supplementary Figure S1a



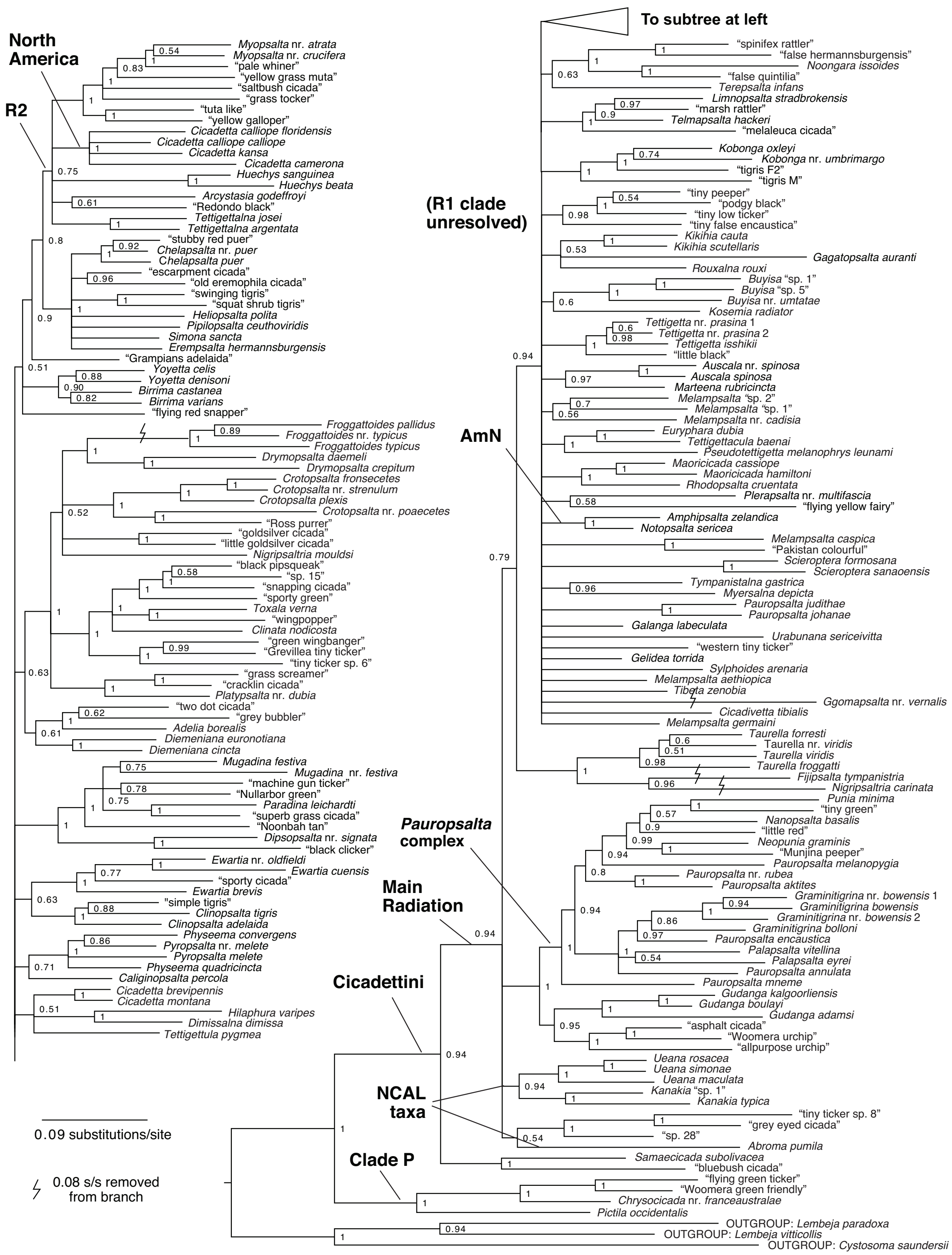
Supplementary Figure S1b



Supplementary Figure S2. Nuclear DNA (EF-1α) MrBayes phylogram for the cicada tribe Cicadettini and close allies (see online Appendix 1), from analysis B. Node supports are Bayesian posterior probabilities. See text for clade abbreviations (in bold).



Supplementary Figure S3. Mitochondrial DNA MrBayes phylogram for the cicada tribe Cicadettini and close allies (see online Appendix 1), from analysis C. Node supports are Bayesian posterior probabilities. See text for clade abbreviations (in bold).



Supplementary Figure S4. Labeled BEAST chronogram from Analysis E, using the combined mtDNA and EF-1α dataset minus indels; for comparison with Fig. 2. For timescale see Fig. 3.

Supplementary Table S1. PCR primers used in this study. Note that EF1-R2855-cicada was identified as "EF1-N-1419" in Sueur et al. (2007).

Gene	Primer	Sequence, 5'-3'	Reference	Anneal Temp.
COI	C1-J-2195	TTGATTTTTTGGTCATCCAGAAGT	Simon et al. (1994)	56˚C
COI	TL2-N-3014	TCCAATGCACTAATCTGCCATATTA	Simon et al. (1994)	
COII	TL2-J-3034	AATATGGCAGATTAGTGCA	Simon et al. (1994)	53˚C
COII	A8-N-3914	TCATATTATTGGTGATATTTGAGG	Simon et al. (1994)	
EF-1α start	EF1-F001-cicada	TCTACAAATGTGGTGGTATC	Arensburger et al. (2004)	53˚C
EF-1α start	EF1-R752-cicada	TCAGTGTTGTCCATTTTGTT	Arensburger et al. (2004)	
EF-1α middle	EF1-F650-cicada	TGCTGCTGGTACTGGTGAAT	Arensburger et al. (2004)	65˚C
EF-1α middle	EF1-R2855-cicada	ACACCAGTTTCAACTCTGCC	Sueur et al. (2007)	
EF-1α end	EF1-F2835-cicada	CAGGAYGTATACAAAATTGGTGG	This study	58˚C
EF-1α end	EF1-R114-cicada	TTGATAGACTTGGGATTTTC	Arensburger et al. (2004)	

Supplementary Table S2. Priors selected for the BEAST v2.1.3 relaxed-clock analyses. Asterisked parameters were changed from the BEAST default settings.

Parameter	Distribution	Bounds	Other BEAST settings or comments
*birth rate	1/X	0.01, 10	part of unscaled birth-death treemodel
*relative death rate	Uniform	0, 1	part of unscaled birth-death treemodel
root height	Tree Model	0, ∞	in clock-only analyses
*gamma shape parameter	Uniform	0.01, 10	
invariant sites parameter	Beta	0, 1	a uniform prior
base frequencies	Dirichlet	(1,...,1)	a uniform prior
AC transversion rate	Gamma	0, ∞	alpha 0.05, beta 10, for GTR model
AG transition rate	Gamma	0, ∞	alpha 0.05, beta 20, for GTR model
AG transition rate	Log Normal	0, ∞	M=1.0, S=1.25, for TrN93 model
AT transversion rate	Gamma	0, ∞	alpha 0.05, beta 10, for GTR model
CG transversion rate	Gamma	0, ∞	alpha 0.05, beta 10, for GTR model
CT transition rate	Log Normal	0, ∞	M=1.0, S=1.25, for TrN93 model
GT transversion rate	Gamma	0, ∞	alpha 0.05, beta 10, for GTR model
partition relative rate parameters	Gamma	0, ∞	
*ucld.stdev	Exponential	0, 3	mean=0.333
*ucld.mean	Log Normal	0, ∞	Table S2 contains details of clock settings

Supplementary Table S3. Molecular clock calibrations, by gene/partition, for the tribe-level relaxed-clock dating analyses, and the BEAST settings used to create them (subclade analysis clock settings are in Supplementary Table S4). Rates are given in substitutions per site per Myr per lineage. In the Calibration Type column, "scaled" and "scaled from MRK" refer to parameter values that were derived by scaling the particular gene/partition rate to the empirical COI rate using relative rates from partitioned maximum-likelihood analysis of the tribe Cicadettini dataset or the New Zealand MRK (*Maoricicada-Rhodopsalta-Kikihia*) Cicadettini subclade dataset, respectively. "Relaxed" refers to the use of the scaled prior with a much wider 95% confidence interval, allowing for a weaker prior. BEAST settings shown are for log normal prior distributions, with the "mean in real space" option checked. The scaled log normal rates were necessary for partitions other than COI because setting uniform priors on those rates biased posterior estimates towards younger divergence time estimates.

Gene	Calibration Type	Analyses	Median Rate (s/s/Myr)	95% limits (s/s/Myr)	BEAST settings
COI	Empirical	E,F,G,H1,J,N,P	0.0112	0.007, 0.0181	M=0.01172, S=0.288
COI	Empirical, relaxed	H2	0.0112	0.000419, 0.301	M=0.083, S=2.0
COII	Scaled, relaxed	E,F,G,H2,N,P	0.0108	0.000403, 0.291	M=0.08, S=2.0
EF1α exon	Scaled, relaxed	E,F,G,N,P	0.000260	9.68 x 10^{-6}, 0.00697	M=0.00192, S=2.0
EF1α exon	Scaled from MRK	H2,J	0.000555	0.000345, 0.000891	M=0.000578, S=0.288
EF1α exon	Scaled from MRK, relaxed	H1	0.000555	0.0000207, 0.0149	M=0.00410, S=2.0
EF1α intron	Scaled, relaxed	E,F,G,N,P	0.00122	0.0000454, 0.0327	M=0.009, S=2.0
EF1α intron	Scaled from MRK	H2,J	0.00198	0.00123, 0.00317	M=0.00206, S=0.288
EF1α intron	Scaled from MRK, relaxed	H1	0.00198	0.0000736, 0.0530	M=0.0146, S=2.0

Supplementary Table S4. Molecular clock calibrations, by gene/partition, for the subclade relaxed-clock dating analyses (Analysis K), and the BEAST settings used to create them. Rates are given in substitutions per site per Myr per lineage. All subclade runs also used the empirical COI prior given in Supplementary Table S2. BEAST settings shown are for log normal prior distributions, with the "mean in real space" option checked. The scaled log normal rates were necessary for partitions other than COI because setting uniform priors on those rates biased posterior estimates towards younger divergence time estimates.

Analysis	Gene	Median rate (s/s/Myr)	95% limits (s/s/Myr)	BEAST settings
Subgroup I	COII	0.00970	0.000362, 0.260	M=0.0717, S=2.0
Subgroup I	EF1α exon	0.000232	8.65×10^{-6}, 0.00623	M=0.001965, S=2.0
Subgroup I	EF1α intron	0.00102	0.0000378, 0.0272	M=0.0075, S=2.0
Subgroup II	COII	0.0109	0.000408, 0.294	M=0.0809, S=2.0
Subgroup II	EF1α exon	0.000266	9.91×10^{-6}, 0.00714	M=0.001965, S=2.0
Subgroup II	EF1α intron	0.0011	0.0000409, 0.0294	M=0.0081, S=2.0
Subgroup III	COII	0.0114	0.000424, 0.305	M=0.084, S=2.0
Subgroup III	EF1α exon	0.000246	9.18×10^{-6}, 0.00661	M=0.00182, S=2.0
Subgroup III	EF1α intron	0.00121	0.0000451, 0.0325	M=0.00895, S=2.0
Subgroup IV	COII	0.00985	0.000367, 0.264	M=0.0728, S=2.0
Subgroup IV	EF1α exon	0.000152	5.65×10^{-6}, 0.00407	M=0.00112, S=2.0
Subgroup IV	EF1α intron	0.000601	0.0000224, 0.0161	M=0.00444, S=2.0
Subgroup V	COII	0.00609	0.000227, 0.163	M=0.045, S=2.0
Subgroup V	EF1α exon	7.84×10^{-5}	2.92×10^{-6}, 0.00210	M=0.000579, S=2.0
Subgroup V	EF1α intron	0.000389	0.0000145, 0.0104	M=0.002875, S=2.0
Main radiation 25 taxa	COII	0.0111	0.000414, 0.298	M=0.082, S=2.0
Main radiation 25 taxa	EF1α exon	0.000268	9.99×10^{-6}, 0.00719	M=0.00198, S=2.0
Main radiation 25 taxa	EF1α intron	0.00111	0.0000414, 0.0298	M=0.0082, S=2.0
Main radiation 42 taxa	COII	0.0106	0.000393, 0.283	M=0.078, S=2.0
Main radiation 42 taxa	EF1α exon	0.000204	7.62×10^{-6}, 0.00548	M=0.00151, S=2.0
Main radiation 42 taxa	EF1α intron	0.000912	0.0000340, 0.0245	M=0.00674, S=2.0
Main radiation 70 taxa	COII	0.00871	0.000325, 0.234	M=0.06435, S=2.0
Main radiation 70 taxa	EF1α exon	0.000199	7.41×10^{-6}, 0.00534	M=0.00147, S=2.0
Main radiation 70 taxa	EF1α intron	0.000875	0.0000326, 0.0235	M=0.006465, S=2.0
Main radiation 116 taxa	COII	0.00889	0.000331, 0.239	M=0.0657, S=2.0
Main radiation 116 taxa	EF1α exon	0.000211	7.87×10^{-6}, 0.00567	M=0.00156, S=2.0
Main radiation 116 taxa	EF1α intron	0.000924	0.0000344, 0.0248	M=0.00683, S=2.0
Main radiation 194 taxa	COII	0.0108	0.000403, 0.291	M=0.08, S=2.0
Main radiation 194 taxa	EF1α exon	0.000260	9.68×10^{-6}, 0.00697	M=0.00192, S=2.0
Main radiation 194 taxa	EF1α intron	0.00122	0.0000454, 0.0327	M=0.009, S=2.0

Supplementary Table S5. Effect of number of discrete gamma categories on single-partition maximum-likelihood model parameters and likelihood scores. a) Results for a genus-level COI dataset of three New Zealand Cicadettini genera (*Maoricicada-Rhodopsalta-Kikihia*). b) Results for the tribe-level COI dataset of 203 cicada species (Cicadettini plus outgroups). Highlighted in bold are the results for the commonly used four-category model and the model yielding the best likelihood score. Parameter estimates and likelihood scores were little affected by gamma discretization above four categories for the genus-level dataset, unlike the results at the tribe level. Cat=categories, -lnL=-log-likelihood, TL=tree length (in substitutions/site), α=alpha shape parameter, i=invariant sites parameter, p(A, etc.)=stationary base frequencies, (rAC, etc.)= transition matrix relative rates.

a) Genus level

Cat	-lnL	TL	α	i	pA	pC	pG	pT	rAC	rAG	rAT	rCG	rCT
2	5479.1	2.10	0.23	0.39	0.39	0.08	0.08	0.451	7.3	69.6	1.74	3.55	79
3	5479.1	2.10	0.12	0.08	0.39	0.08	0.08	0.451	7.2	69.2	1.73	3.53	79
4	**5466.2**	**2.13**	**1.60**	**0.62**	**0.39**	**0.08**	**0.09**	**0.446**	**9.8**	**89.6**	**2.53**	**4.19**	**112**
5	5465.3	2.20	1.63	0.62	0.39	0.08	0.09	0.448	10.2	90.5	2.43	4.42	116
6	5484.2	1.80	0.15	0.00	0.37	0.09	0.10	0.442	10.4	91.8	3.19	3.95	121
7	5486.3	1.74	0.16	0.00	0.37	0.09	0.10	0.44	10.8	94.0	3.40	4.05	129
8	5488.9	1.69	0.16	0.00	0.37	0.09	0.10	0.439	11.2	96.5	3.60	4.11	132
9	5491.6	1.65	0.16	0.00	0.37	0.09	0.11	0.437	11.5	98.7	3.78	4.18	139
10	5494.2	1.63	0.16	0.00	0.37	0.09	0.11	0.437	11.9	102	4.00	4.32	146
11	5463.0	2.28	1.70	0.62	0.39	0.08	0.09	0.45	10.4	85.9	2.18	4.47	118
12	5462.9	2.29	1.71	0.62	0.39	0.08	0.09	0.45	10.3	85.3	2.16	4.45	117
13	5462.8	2.29	1.72	0.62	0.39	0.08	0.09	0.45	10.3	85.1	2.15	4.45	117
14	5462.7	2.29	1.73	0.62	0.39	0.08	0.09	0.45	10.3	84.7	2.14	4.44	117
15	5462.7	2.29	1.74	0.62	0.39	0.08	0.09	0.45	10.3	84.7	2.13	4.45	117
16	5462.6	2.29	1.75	0.62	0.39	0.07	0.09	0.45	10.2	84.1	2.11	4.42	116
17	5462.6	2.29	1.76	0.62	0.39	0.07	0.09	0.45	10.2	83.5	2.10	4.39	115
18	5462.5	2.29	1.76	0.62	0.39	0.07	0.09	0.45	10.2	83.9	2.11	4.41	116
19	5462.5	2.29	1.77	0.62	0.39	0.07	0.09	0.45	10.2	83.3	2.09	4.38	111
20	**5462.5**	**2.29**	**1.78**	**0.62**	**0.39**	**0.07**	**0.09**	**0.451**	**10.2**	**83.6**	**2.09**	**4.41**	**116**

b) Tribe level

Cat	lnL	TL	a	i	pA	pC	pG	pT	rAC	rAG	rAT	rCG	rCT
2	40455	23.4	0.30	0.37	0.37	0.05	0.06	0.52	4.06	27.4	0.52	6.40	29
3	39705	60.7	0.26	0.34	0.53	0.04	0.10	0.33	9.03	19.5	0.99	12.7	373
4	**39222**	**93.4**	**0.23**	**0.31**	**0.39**	**0.05**	**0.06**	**0.50**	**1.49**	**49.8**	**0.55**	**5.84**	**49**
5	39100	92.0	0.33	0.37	0.43	0.05	0.08	0.44	3.86	41.1	0.76	8.51	135
6	39078	95.3	0.31	0.35	0.42	0.05	0.07	0.46	1.47	49.2	0.44	6.34	52
7	39047	127.7	0.34	0.38	0.40	0.05	0.07	0.48	1.27	53.4	0.36	6.52	55
8	39034	101.6	0.33	0.36	0.41	0.05	0.07	0.47	1.75	48.2	0.45	6.81	63
9	39035	109.1	0.25	0.30	0.42	0.05	0.07	0.46	1.47	49.5	0.37	6.52	60
10	39012	109.2	0.27	0.31	0.42	0.05	0.07	0.46	2.36	49.8	0.46	7.95	94
11	38988	175.8	0.25	0.32	0.44	0.05	0.07	0.44	2.44	47.6	0.44	8.04	96
12	38983	179.6	0.21	0.28	0.44	0.05	0.07	0.44	2.38	48.1	0.43	8.11	99
13	38983	171.8	0.26	0.32	0.44	0.05	0.07	0.44	2.71	47.5	0.43	8.49	111
14	38978	168.0	0.23	0.30	0.44	0.05	0.07	0.44	2.53	47.0	0.42	8.30	108
15	38978	164.5	0.21	0.27	0.44	0.05	0.07	0.44	2.56	47.6	0.42	8.31	108
16	38975	159.5	0.24	0.30	0.44	0.05	0.07	0.45	2.32	49.2	0.40	8.12	99
17	38966	142.4	0.24	0.30	0.44	0.05	0.07	0.45	2.40	48.4	0.43	8.09	100
18	38974	146.6	0.22	0.27	0.44	0.05	0.07	0.45	2.41	48.3	0.42	8.08	100
19	38971	143.1	0.20	0.24	0.44	0.05	0.07	0.45	2.42	49.1	0.42	8.10	101
20	**38960**	**142.7**	**0.18**	**0.21**	**0.44**	**0.05**	**0.07**	**0.44**	**2.46**	**48.0**	**0.42**	**8.15**	**104**

Supplementary Table S6. Effect of number of discrete gamma categories on three-partition maximum-likelihood model parameters and likelihood scores. a) Results for a genus-level COI dataset of three New Zealand Cicadettini genera (*Maoricicada-Rhodopsalta-Kikihia*). b) Results for the tribe-level COI dataset of 203 cicada species (Cicadettini plus outgroups). Highlighted in bold in each case are the results for the commonly used four-category model and the model yielding the best likelihood score. Parameter estimates and likelihood scores were little affected by gamma discretization above four categories for the genus-level dataset, compared to the results at the tribe level. 1p=1st partition, etc., Cat=categories, -lnL=-log-likelihood, TL=tree length (in substitutions/site), α=alpha shape parameter, i=invariant sites parameter, p(A, etc.)=stationary base frequencies, (rAC, etc.) transition matrix relative rates

a) Genus level (2p model parameters not shown because they did not change)

						1p-GTRIG											3p-TvMG									
Cat	-lnL	TL	r1	r2	r3	α	i	pA	pC	pG	pT	rAC	rAG	rAT	rCG	rCT	α	pA	pC	pG	pT	rAC	rAG	rAT	rCG	rCT
2	5067.3	2.17	0.29	0.01	2.70	0.24	0.66	0.33	0.06	0.25	0.36	104	58.9	12.3	0.001	999	2.35	0.46	0.05	0.04	0.45	3.61	47.2	0.54	0.44	47.2
3	5064.3	2.19	0.28	0.01	2.70	0.13	0.49	0.33	0.06	0.25	0.36	103	58.8	12.4	0.001	999	2.24	0.44	0.05	0.04	0.47	4.00	49.5	0.54	0.42	49.5
4	**5063.0**	**2.21**	**0.28**	**0.01**	**2.71**	**0.09**	**0.32**	**0.33**	**0.06**	**0.25**	**0.36**	**103**	**58.7**	**12.4**	**0.001**	**999**	**2.21**	**0.44**	**0.05**	**0.04**	**0.47**	**4.05**	**49.6**	**0.52**	**0.42**	**49.6**
5	5062.3	2.22	0.28	0.01	2.71	0.07	0.14	0.33	0.06	0.25	0.36	103	58.7	12.3	0.001	999	2.25	0.44	0.05	0.04	0.47	4.02	49.1	0.51	0.41	49.1
6	**5062.0**	**2.22**	**0.28**	**0.01**	**2.71**	**0.05**	**0.00**	**0.33**	**0.06**	**0.25**	**0.36**	**104**	**59.9**	**12.4**	**0.001**	**999**	**2.28**	**0.44**	**0.05**	**0.04**	**0.47**	**4.01**	**48.8**	**0.50**	**0.40**	**48.8**
7	5062.3	2.20	0.25	0.01	2.74	0.05	0.00	0.33	0.07	0.24	0.36	105	67.0	13.0	0.001	999	2.30	0.44	0.05	0.04	0.47	4.02	48.7	0.49	0.40	48.7
8	5063.2	2.18	0.23	0.01	2.76	0.05	0.00	0.33	0.07	0.24	0.36	107	73.8	13.8	0.001	999	2.32	0.44	0.05	0.04	0.47	3.99	48.3	0.49	0.39	48.3
9	5064.2	2.24	0.30	0.01	2.69	1.03	0.76	0.33	0.07	0.25	0.35	102	59.8	11.3	0.001	999	2.32	0.44	0.05	0.04	0.47	3.99	48.3	0.48	0.40	48.3
10	5065.0	2.18	0.22	0.01	2.77	0.07	0.00	0.33	0.07	0.24	0.36	108	85.3	16.5	0.001	999	2.33	0.44	0.05	0.04	0.47	4.00	48.2	0.48	0.39	48.2
11	5063.9	2.25	0.30	0.01	2.69	1.01	0.75	0.33	0.07	0.25	0.36	102	59.0	11.1	0.001	999	2.33	0.44	0.05	0.04	0.47	3.98	48.0	0.48	0.39	48.0
12	5063.8	2.25	0.30	0.01	2.69	1.00	0.75	0.33	0.07	0.25	0.36	102	58.8	11.0	0.001	999	2.33	0.44	0.05	0.04	0.47	4.00	48.3	0.48	0.40	48.3
13	5063.8	2.25	0.30	0.01	2.69	0.98	0.75	0.33	0.07	0.25	0.36	102	58.5	10.9	0.001	999	2.33	0.44	0.05	0.04	0.47	3.98	48.0	0.47	0.39	48.0
14	5063.7	2.25	0.30	0.01	2.69	0.96	0.75	0.33	0.07	0.25	0.36	102	58.3	10.8	0.001	999	2.32	0.44	0.05	0.04	0.47	3.99	48.1	0.47	0.39	48.1
15	5066.4	2.18	0.22	0.01	2.76	0.09	0.00	0.33	0.08	0.24	0.35	106	92.6	19.1	0.001	999	2.33	0.44	0.05	0.04	0.47	3.99	47.8	0.47	0.39	47.8
16	5066.6	2.19	0.22	0.01	2.76	0.10	0.00	0.33	0.08	0.24	0.35	106	92.9	19.3	0.001	999	2.33	0.44	0.05	0.04	0.47	3.99	47.7	0.47	0.39	47.7
17	5066.7	2.19	0.23	0.01	2.76	0.10	0.00	0.33	0.08	0.24	0.35	106	93.0	19.3	0.001	999	2.33	0.44	0.05	0.04	0.47	4.00	47.8	0.47	0.39	47.8
18	5063.5	2.26	0.30	0.01	2.69	0.91	0.75	0.33	0.07	0.25	0.36	102	57.9	10.6	0.001	999	2.31	0.44	0.05	0.04	0.47	4.02	48.3	0.47	0.40	48.3
19	5063.4	2.26	0.30	0.01	2.69	0.90	0.75	0.33	0.07	0.25	0.36	102	58.0	10.6	0.001	999	2.31	0.44	0.05	0.04	0.47	4.02	48.3	0.47	0.40	48.3
20	5063.4	2.26	0.30	0.01	2.69	0.89	0.74	0.33	0.07	0.25	0.36	102	57.8	10.6	0.001	999	2.31	0.44	0.05	0.04	0.47	4.01	48.2	0.47	0.40	48.2

01

b) Tribe level (2p base frequency parameters and rCG not shown because they were nearly unchanged).

						1p-TIMIG										2p-GTRIG						3p-TrNIG						
Cat	lnL	TL	r1	r2	r3	α	i	pA	pC	pG	pT	rAG	rAT	rCG	rCT	α	i	rAC	rAG	rAT	rCT	α	pA	pC	pG	pT	rAG	rCT
2	38922	71	0.13	0.03	2.85	0.59	0.53	0.32	0.08	0.22	0.38	9.71	2.35	2.35	41.0	0.78	0.68	1.91	29.7	2.83	6.30	0.42	0.56	0.03	0.10	0.31	11	427
3	38607	86	0.30	0.02	2.68	0.53	0.54	0.30	0.13	0.21	0.37	12.7	2.78	2.78	27.7	0.60	0.63	2.13	32.1	3.08	6.64	0.31	0.36	0.05	0.06	0.53	98	91
4	**38376**	**154**	**0.16**	**0.01**	**2.83**	**0.49**	**0.52**	**0.34**	**0.07**	**0.19**	**0.41**	**9.90**	**1.72**	**1.72**	**42.8**	**0.48**	**0.59**	**2.09**	**30.6**	**2.92**	**6.84**	**0.37**	**0.41**	**0.05**	**0.07**	**0.48**	**163**	**202**
5	38342	147	0.16	0.01	2.83	0.45	0.50	0.37	0.08	0.15	0.40	9.15	1.19	1.19	31.5	0.39	0.54	2.07	29.9	2.91	6.94	0.40	0.44	0.04	0.08	0.44	74	350
6	38340	120	0.18	0.01	2.81	0.45	0.49	0.37	0.07	0.17	0.39	8.51	1.38	1.38	40.6	0.33	0.49	2.08	29.3	2.88	7.03	0.39	0.41	0.05	0.07	0.48	136	159
7	38333	126	0.17	0.01	2.82	0.33	0.43	0.37	0.07	0.17	0.39	8.55	1.39	1.39	39.6	0.29	0.44	2.05	28.9	2.87	7.09	0.40	0.42	0.05	0.07	0.46	96	228
8	39294	152	0.15	0.01	2.84	0.26	0.38	0.38	0.07	0.18	0.37	8.16	1.42	1.42	39.8	0.25	0.39	2.06	28.8	2.88	7.16	0.43	0.41	0.05	0.07	0.47	119	254
9	38248	332	0.07	0.01	2.92	0.26	0.38	0.40	0.06	0.18	0.36	6.35	1.26	1.26	54.1	0.22	0.33	2.06	28.6	2.86	7.20	0.33	0.45	0.04	0.08	0.43	133	507
10	38243	276	0.09	0.01	2.91	0.22	0.33	0.40	0.06	0.18	0.35	6.31	1.27	1.27	54.7	0.20	0.28	2.06	28.4	2.85	7.22	0.40	0.45	0.04	0.08	0.44	133	407
11	38232	318	0.07	0.01	2.92	0.20	0.29	0.40	0.06	0.18	0.36	6.43	1.26	1.26	52.7	0.18	0.22	2.07	28.4	2.86	7.26	0.41	0.44	0.04	0.08	0.44	170	470
12	38219	363	0.05	0.00	2.94	0.25	0.35	0.39	0.06	0.19	0.36	6.64	1.36	1.36	54.2	0.18	0.20	2.06	28.0	2.86	7.50	0.39	0.46	0.04	0.08	0.43	130	707
13	38220	357	0.05	0.00	2.95	0.23	0.33	0.40	0.06	0.19	0.35	6.62	1.37	1.37	54.8	0.15	0.11	2.07	28.2	2.87	7.33	0.46	0.44	0.04	0.08	0.44	217	487
14	38219	365	0.04	0.00	2.95	0.29	0.38	0.39	0.06	0.19	0.36	6.96	1.36	1.36	53.2	0.14	0.04	2.09	28.2	2.87	7.30	0.47	0.44	0.04	0.08	0.44	215	542
15	38216	363	0.04	0.00	2.95	0.27	0.36	0.39	0.06	0.19	0.36	6.91	1.36	1.36	52.8	0.13	0.00	2.06	28.1	2.85	7.31	0.38	0.44	0.04	0.08	0.45	231	554
16	38217	351	0.04	0.00	2.96	0.31	0.39	0.39	0.06	0.19	0.36	6.80	1.36	1.36	54.2	0.13	0.00	2.07	27.9	2.86	7.38	0.41	0.43	0.04	0.08	0.45	235	555
17	38217	398	0.04	0.00	2.96	0.32	0.39	0.40	0.06	0.19	0.36	6.38	1.29	1.29	56.9	0.13	0.00	2.05	27.6	2.84	7.38	0.41	0.44	0.04	0.08	0.44	247	600
18	**38212**	**375**	**0.04**	**0.00**	**2.96**	**0.30**	**0.38**	**0.40**	**0.06**	**0.18**	**0.36**	**6.43**	**1.28**	**1.28**	**56.0**	**0.13**	**0.00**	**2.07**	**27.4**	**2.85**	**7.43**	**0.42**	**0.44**	**0.04**	**0.08**	**0.44**	**194**	**674**
19	28216	407	0.04	0.00	2.96	0.31	0.38	0.40	0.06	0.18	0.36	6.48	1.28	1.28	55.1	0.13	0.00	2.05	27.3	2.85	7.46	0.43	0.44	0.04	0.08	0.44	206	705
20	38217	358	0.04	0.00	2.96	0.30	0.38	0.40	0.06	0.18	0.36	6.42	1.27	1.27	55.9	0.13	0.00	2.06	27.0	2.84	7.45	0.51	0.43	0.04	0.08	0.45	252	454

Supplementary Results Text

Phylogenetic Analyses of the Cicadettini

***Detailed examination of cicada relationships*.**— The MrBayes consensus tree is shown in Fig. 2; it is midpoint-rooted along the branch to the designated outgroups from the tribes Chlorocystini and Prasiini. Following is a description of the major relationships in this tree; note that taxonomic authorities are listed in online Appendix 1.

The first ingroup split, in Fig. 2a, separates a large clade containing all of the described Cicadettini species and many undescribed taxa from a small central-western Australian clade (here called Clade P) containing *Chrysocicada*, *Pictila*, and two undescribed species. *Chrysocicada* and *Pictila* are currently included in the tribe Taphurini (Sanborn 2013). The Clade P species lack pseudoparameres, a defining trait for Cicadettini, and, although the theca appears to meet the S-shaped criterion used to define cicadas of the tribe Chlorocystini (Boer 1995), they do not appear to form a monophyletic group with the remaining members of that tribe. These taxonomic issues will be addressed in future deeper-level studies. In addition, *Nelcyndana tener* (Taphurini) and *Pagiphora aschei* (currently in Cicadettini) did not cluster within the ingroup, and their phylogenetic position will be discussed in later papers.

Following a long stem branch, the large ingroup clade splits asymmetrically again, forming a very small group of two Australian species, *Samaecicada subolivacea* from the Great Dividing Range near Sydney and an undescribed species from southwestern WA. No other species were found for this clade. *S. subolivacea* possesses the forewing M-

CuA fusion and well-developed genitalic claspers of most Cicadettini, but it lacks the pseudoparameres that otherwise characterize the tribe (Popple and Emery 2010, Moulds 2012), consistent with its intermediate phylogenetic position.

After one more long stem, the tree forms a complex radiation with much shorter internal branches. The first clades to branch off from the main group are (1) a large, diverse, and trans-Australian clade containing *Pauropsalta*, *Gudanga*, *Graminitigrina*, *Punia*, *Neopunia*, *Nanopsalta* and multiple clades consisting of undescribed taxa and (2) a weakly-supported clade of endemic New Caledonian genera (*Ueana*, *Abroma*, and *Kanakia*) here referred to as the NCAL clade. The weak support for this clade appears to be due to its short supporting branch rather than data conflict since these taxa always associated closely across analyses with varying methods, data subsets, and taxon samples. Bayesian analysis weakly placed the *Pauropsalta* clade as the first split, but this was not confirmed by the maximum-likelihood analysis.

Two well-supported splits next appear, a clade containing the genus *Taurella* from monsoonal Australia, *Fijipsalta tympanistria* from Fiji, and *Nigripsaltria carinata* (Boer 1999) from Papua New Guinea, all with long branches, followed by a branch to *Sylphoides arenaria*, an eastern Australian beach-grass species.

The next splits in the Cicadettini tree, all moderately well-supported, first involve a large trans-Australian and predominantly arid-zone clade including *Noongara*, the nocturnal genus *Froggattoides*, *Platypsalta*, *Crotopsalta*, *Drymopsalta*, *Clinata*, and *Toxala*, plus *Nigripsaltria mouldsi* from Papua New Guinea. Males of many of these genera combine percussive wing-generated sounds with their timbal song. Next is a trans-Australian clade including Australian *Adelia* (southwestern WA) and *Terepsalta* (eastern interior), and then one with the subalpine-adapted genus *Diemeniana* of southeastern Australia and Tasmania.

Near the midpoint of the tree, the first clade including New Zealand taxa splits off (MRK), together with additional New Caledonian taxa. This is followed by another trans-Australian clade containing the eastern-mesic *Urabunana sericeivitta* and many undescribed species, then by the largest of the non-Australasian clades (the R1 radiation). This latter group includes many Asian, European, and African (AFR) genera, as well as another New Caledonia lineage (*Melampsalta germaini*). Partial EF-1α and mtDNA sequence placed both *Pinheya* and *Stellenboschia* within the AFR group of the R1 radiation (result not figured).

In Fig. 2b, a well-supported branch next supports the sister-relationship of *Gagatopsalta* to the remainder of the tree, followed by less well-supported branches leading to the smaller of the two New Zealand radiations (AmN clade) and the large trans-Australian arid-zone genus *Kobonga*. Clades of Australian taxa, mainly from described genera, continue to diverge with moderate support for most of the rest of the tree, including an eastern clade containing *Ewartia* and *Clinopsalta*, a trans-Australian clade of largely grass-inhabiting species from *Mugadina*, *Dipsopsalta*, and *Paradina*, a southern and trans-Australian clade containing *Marteena*, *Auscala*, *Plerapsalta*, and *Yoyetta*, a clade containing eastern Australian *Caliginopsalta* and the acoustically similar western *Physeema* "tick-tock" cicadas (see Gwynne 1987 for behavior), a trans-Australian clade containing *Limnopsalta* and *Telmapsalta*, and a few splits leading to single genera (*Gelidea* and then an undescribed taxon).

The remaining large clade is well-supported with a comparatively long supporting stem. It is composed of three subgroups. One (here called the R2 radiation) contains the remainder of the non-Australian genera, including species from Asia, Europe (e.g., the type species *Cicadetta montana*), and North America (the NA clade). A second group contains the Australian monsoonal genus *Myopsalta* and a third, trans-Australian arid-zone clade containing *Simona*, *Erempsalta*, *Heliopsalta*, *Pipilopsalta*, and *Chelapsalta*, as well as potential undescribed genera.

Comparison of EF-1α- and mtDNA-only phylogenies.—Bayesian trees constructed from the EF-1α and mtDNA datasets separately are shown in Supplementary Figs. S2 and S3, respectively. The EF-1α phylogram (Fig. S2) is broadly similar to the combined-data tree, with identical and well-supported deep-level splits and good support for many splits of intermediate depth. Both out-of-Australasia clades (R1, R2) were well-supported in phylogenetic positions that were essentially the same as in the combined data analysis, although taxa from the older New Caledonia clade (NCAL) formed a partially paraphyletic assemblage with the first splits of the main radiation.

Support in the mtDNA tree (Fig. S3) was generally strong (and congruent with the EF-1α tree) for the deepest splits, strong for small tip clades of closely related taxa, and very poor for intermediate-depth splits, which showed little resolution or similarity to those of the EF-1α or combined-data trees. One exception was the sister-relationship of *Dipsopsalta* (plus an undescribed taxon) to another clade of grass-inhabiting cicadas including *Paradina* and *Mugadina*, and another involved the position of the deep undescribed lineage “sp. 28”.

The R2 clade in the mtDNA analysis formed a paraphyletic assemblage with its sister-clade from the combined-data analysis, and the taxa from the R1 clade formed an entirely unresolved, largely paraphyletic assemblage with a large number of other species from intermediate depths in the tree. The NCAL clade, minus *Abroma*, was recovered in a similar position to that observed in the combined-data tree.

Taxonomic and Phylogenetic Implications. —Note that historical confusion regarding the type species and usage of the competing tribal names Cicadettini and Melampsaltini were reviewed by Moulds (1988) and Boulard (1988, 1998) and resolved in favor of Cicadettini, with the type species *Cicadetta montana* (Scopoli).

Recent taxonomic revisions based on morphological cladistics (Moulds 2005, Moulds 2012) have excluded all Australasian Cicadettini from the European genera to which they were originally assigned, and many new genera have been erected. A new morphological definition of the tribe has been published, along with a new morphological cladistic analysis. Our phylogenetic results confirm these taxonomic changes, including the transfer of *Gudanga* and *Diemeniana* to Cicadettini from Taphurini, and the transfer of *Marteena* from Parnisini to Cicadettini. Moulds' decision to move *Terepsalta infans* from the African genus *Quintilia* (tribe Parnisini) to Cicadettini is also confirmed, as is the reassignment of *Adelia borealis* from Taphurini to Cicadettini. Our results suggest that *Kanakia* and *Ueana* (both from New Caledonia), currently placed in the Taphurini, will need to be moved to Cicadettini, but formal morphological analysis will be necessary to accomplish this and any other suggested taxonomic reassignments arising from this study. In addition, our tree confirms that the Australian "*Notopsalta*" are unrelated to the type species *N. sericea* from New Zealand, and Moulds (2012) has moved these species to a new genus *Myopsalta*.

The genus *Nelcyndana* (Duffels 2010) from the Philippines, which was moved to Cicadettini by Lee (2010), did not cluster within our ingroup (unpublished data) and its position will be treated in a forthcoming paper. In contrast, *Arcystasia godeffroyi* from Micronesia grouped within the R2 Cicadettini subradiation though it is currently classified in the tribe Parnisini.

Most cicadettine genera (other than *Cicadetta* and *Melampsalta*) that were represented by more than one species were found to be monophyletic. *Pauropsalta* is also undergoing morphological revisions that will break the genus into mostly endemic-Australian components as well as an extensive phylogenetic analysis with expanded taxon sampling (Popple 2013, Owen et al. 2015). The described *Mugadina* species included in our analysis grouped with several undescribed taxa, with deep genetic divergences suggesting that additional genera are needed. In addition, the new genera *Dipsopsalta* and *Paradina* grouped within the larger "*Mugadina*" clade. Additional examination using more complete taxon sampling and additional genes would be desirable for *Mugadina* and for *Telmapsalta*, which also formed a paraphyletic grouping in our tree.

References

Boer A.J. de. 1995. The phylogeny and taxonomic status of the Chloroystini (sensu stricto) (Homoptera, Tibicinidae). Bijdr. Dierk. 65:201-231.

Boer A.J.d. 1999. Taxonomy and biogeography of the New Guinean Cicadettini (Hemiptera, Tibicinidae). Dtsch. Entomol. Z. 45:115-147.

Boulard M. 1988. Taxonomie et nomenclature supérieures des Cicadoidea. Histoire problèmes et solutions. Ecole pratique des hautes Etudes, travaux du Laboratoire Biol. Evol. Ins. Hémip. 1:1-89.

Boulard M. 1998. Nomenclature et taxonomie supérieures des Cicadoidea ou vraies cigales: histoire, problèmes et solutions (Rhynchota Homoptera Cicadomorpha). Ecole pratique des hautes Etudes, Biol. Evol. Ins. 10:79-129.

Duffels J.P. 2010. The genus *Nelcyndana* Stal (Hemiptera, Cicadidae, Taphurini) with description of three new species from Borneo. Zookeys 61:11-31.

Gwynne D.T. 1987. Sex-biased predation and the risky mate-locating behavior of male tick-tock cicadas (Homoptera: Cicadidae). Anim. Behav. 35:571-576.

Lee Y.J. 2010. Cicadas (Insecta: Hemiptera: Cicadidae) of Mindanao, Philippines, with the description of a new genus and a new species. Zootaxa 2351:14-28.

Moulds M.S. 1988. The status of *Cicadetta* and *Melampsalta* (Homoptera: Cicadidae) in Australia with the description of two new species. Gen. Appl. Entomol. 20:39-48.

Moulds M.S. 2005. An appraisal of the higher classification of cicadas (Hemiptera: Cicadoidea) with special reference to the Australian fauna. Rec. Aust. Mus. 57:375-446.

Moulds M.S. 2012. A review of the genera of Australian cicadas (Hemiptera: Cicadoidea). Zootaxa 3287:1-262.

Owen C.L., Marshall D.C., Hill K.B.R., Simon C. 2015. The phylogenetic utility of acetyltransferase (ARD1) and glutaminyl tRNA synthetase (QtRNA) for reconstructing Cenozoic relationships as exemplified by the large Australian cicada *Pauropsalta* generic complex. Mol. Phylogenet. Evol. 83:258-277.

Popple L.W. 2013. A revision of the *Pauropsalta annulata* Goding & Froggatt species group (Hemiptera: Cicadidae) based on morphology, calling songs and ecology, with investigations into calling song structure, molecular phylogenetic relationships and a case of hybridisation between two subspecies. Zootaxa 3730:1-102.

Popple L.W., Emery D.L. 2010. A new cicada genus and a redescription of *Pauropsalta subolivacea* Ashton (Hemiptera: Cicadidae) from eastern Australia. Aust. Entomol. 30:107-114.

Sanborn A.F. 2013. Catalogue of the Cicadoidea (Hemiptera: Auchenorrhyncha). With contributions to the bibliography by Martin H. Villet. San Diego, Elsevier. Inc., Academic Press.

Online Appendix. Taxonomic, locality, and GenBank accession information for cicada specimens (Insecta: Auchenorrhyncha: Cicadidae) used in the phylogenetic analyses of this study. Specimens similar in phenotype to a described species are indicated with a "nr." notation. Undescribed taxa are identified by field nicknames because species description and generic assignments will appear in later papers. All described ingroup specimens are included in tribe Cicadettini unless stated as unknown or annotated as follows: H-Huechysini, P-Parnisini, PR-Prasiini, T-Taphurini. Additional specimens, including data for other Australian groups shown in Fig. 1, can be searched in the online Simon lab "Cicada Central" database at http://hydrodictyon.eeb.uconn.edu/projects/cicada/databases/databases.php. The eleven Cicadettini genera not sampled in this study are *Aestuansella* Boulard (Europe), *Auta* Distant (PNG), *Curvicicada* Chou and Lu (China), *Euboeana* Gogala et al. (Europe – described in 2011, phylogenetic relationships depicted in Wade et al. 2015), *Linguacicada* Chou and Lu (China), *Mouia* Distant (N. Cal.), *Poviliana* Boulard (N. Cal.), *Saticula* Stal (Europe), *Scolopita* Chou and Lei (China), *Toxopusella* Schmidt (PNG), and *Xossarella* Boulard (Algeria).

Genus	Species / Nickname	Species Authority	Specimen Code	Date (M/D/Y)	Country	Location	Lat.	Lon.	COI GenBank	COII GenBank	EF-1α GenBank
Abroma (T)	*pumila*	(Distant, 1892)	07.NC.SU.SRF.08	2/6/07	New Caledonia	La Foa	-21.737	165.898	KT602091	KT602291	KT713532
Adelia	*borealis*	(G. & F., 1904)	02.AU.WA.YAR.01	12/31/02	Australia	Yarloop	-32.952	115.914	KT601979	KT602180	KT713420
Amphipsalta	*zelandica*	(Boisduval, 1835)	06.NZ.ND.HEF.02	2/7/06	New Zealand	ESE of Kaitaia	-35.163	173.270	KT602109	–	KT713551
Arcystasia (P)	*godeffroyi*	Distant, 1882	09.FM.PO.SAL.01	7/30/09	Micronesia	Salapwuk	6.867	158.183	KT602143	KT602342	KT713585
Auscala	nr. *spinosa*	(G. & F., 1904)	03.AU.WA.BOX.06	1/9/03	Australia	E of Albany	-34.406	118.727	KT601982	KT602183	KT713423
Auscala	*spinosa*	(G. & F., 1904)	04.AU.VI.PYC.01	2/4/04	Australia	SE of Kerang	-35.794	144.073	KT602021	KT602221	KT713462
Birrima	*castanea*	(G. & F., 1904)	02.AU.NS.NPF.01	1/6/02	Australia	W of Kew	-31.680	152.653	KT601959	KT602160	KT713400
Birrima	*varians*	(Germar, 1834)	02.AU.QL.DAI.03	1/7/02	Australia	Daisy Hill, Brisbane	-27.641	153.162	KT601966	KT602167	KT713407
Buyisa	nr. *umtatae*	Distant, 1907	MHV133	12/30/01	South Africa	NE of Grahamstown	-33.262	26.463	KT602103	KT602303	KT713545
Buyisa	sp. 1	N/A	MHV157	12/20/02	South Africa	Kariega R	-33.635	26.6463	KT602104	KT602304	KT713546
Buyisa	sp. 5	N/A	MHV118	11/28/02	South Africa	Sundays R Bridge	-33.714	25.788	KT602105	KT602305	KT713547
Caliginopsalta	*percola*	Ewart, 2005	02.AU.QL.LBW.06	1/10/02	Australia	Lake Broadwater	-27.314	151.099	KT601970	KT602171	KT713411
Chelapsalta	nr. *puer*	(Walker, 1850)	97.AU.NS.MKP.96	2/12/97	Australia	Mt Kaputar	-30.250	150.117	KT602098	KT602297	KT713539
Chelapsalta	*puer*	(Walker, 1850)	09.AU.SA.AGC.01	1/8/09	Australia	Alligator Gorge NP	-32.747	138.076	KT602073	KT602273	KT713514
Chrysocicada(T)	nr. *franceaustralae*	Boulard, 1989	06.AU.WA.MDE.01	2/7/06	Australia	NE of Derby	-17.418	124.097	–	KT602300	KT713542
Cicadetta	*brevipennis*	Fieber, 1872	02-005	5/18/00	Slovenia	Dragomer, Lukovica	–	–	KT602128	KT602327	KT713570
Cicadetta	*calliope calliope*	(Walker, 1850)	04.US.KS.ATT.03	6/26/04	United States	E of Attica, KS	37.239	-98.053	KT602148	KT602347	KT713590
Cicadetta	*calliope floridensis*	(Davis, 1920)	02-031	6/12/02	United States	Citrus County	–	–	KT602147	KT602346	KT713589
Cicadetta	*camerona*	(Davis, 1920)	04.US.TX.LAG.01	5/11/04	United States	Cameron Co, TX	26.205	-97.352	KT602150	KT602349	KT713592
Cicadetta	*kansa*	(Davis, 1919)	07.US.KS.GYP.01	6/18/07	United States	W of Medicine Lodge	37.277	-98.735	KT602149	KT602348	KT713591
Cicadetta	*montana*	(Scopoli, 1772)	02-034	5/29/02	Slovenia	Idrija	–	–	KT602129	KT602328	KT713571
Cicadivetta	*tibialis*	(Panzer, 1798)	02-003	7/22/01	Slovenia	Hrastovlje	–	–	KT602122	KT602321	KT713564
Clinata	*nodicosta*	(G. & F., 1904)	03.AU.WA.LKD.08	1/17/03	Australia	SW of Kalgoorlie	-30.839	121.386	KT601992	KT602192	KT713433
Clinopsalta	*adelaida*	(Ashton, 1914)	11.AU.SA.WIR.01	1/7/11	Australia	Wirrabarra	-33.027	138.266	KT602079	KT602279	KT713520
Clinopsalta	*tigris*	(Ashton, 1914)	07.AU.SA.SEP.02	1/27/07	Australia	SE of Pimba	-31.793	137.300	KT602065	KT602265	KT713506
Crotopsalta	*fronsecetes*	Ewart, 2005	02.AU.QL.MLP.02	1/8/02	Australia	Brisbane	-27.496	153.119	KT601971	KT602172	KT713412
Crotopsalta	nr. *poaecetes*	N/A	04.AU.QL.SRA.10	1/17/04	Australia	NW of Mt Isa	-20.381	139.306	KT602019	KT602219	KT713460
Crotopsalta	nr. *strenulum*	Ewart, 2005	02.AU.QL.NSR.04	1/12/02	Australia	N of Springsure	-24.086	148.099	KT601973	KT602174	KT713414

Crotopsalta	*plexis*	Ewart, 2005	09.AU.QL.MOF.01	1/2/09	Australia	E of Moonie	-27.567	150.576	KT602072	KT602272	KT713513
Cystosoma	*saundersii*	Westwood, 1842	02.AU.QL.BBR.26	1/9/02	Australia	W of Moore	-26.888	152.214	KT602157	KT602356	KT713599
Diemeniana	*cincta*	(Fabricius, 1803)	98-02	1/26/98	Australia	Near Queenstown	–	–	KT602086	KT602286	KT713527
Diemeniana	*euronotiana*	(Kirkaldy, 1909)	98.AU.VI.BRI.06	1/20/98	Australia	Bright	-36.767	146.967	KT602085	KT602285	KT713526
Dimissalna	*dimissa*	(Hagen, 1856)	03.SI.JP.STR.18	2003	Slovenia	Strunjan	–	–	KT602127	KT602326	KT713569
Dipsopsalta	nr. *signata*	(Distant, 1914)	07.AU.NT.TAN.10	1/31/07	Australia	S of Tilmouth Well	-23.245	132.882	KT602062	KT602262	KT713503
Drymopsalta	*crepitum*	Ewart, 2005	07.AU.QL.TOZ.01	1/9/07	Australia	Iron Range	-12.737	143.2133	KT602064	KT602264	KT713505
Drymopsalta	*daemeli*	(Distant 1905)	03.AU.NS.XXX.01	2003	Australia	Sydney	–	–	KT601980	KT602181	KT713421
Erempsalta	*hermannsburgensis*	(Distant, 1907)	10.AU.NT.HMW.01	1/29/10	Australia	Hermannsburg	-23.949	132.781	KT602075	KT602275	KT713516
Euryphara	*dubia*	(Rambur, 1840)	03.ES.ZG.CDV.01	5/31/03	Spain	Castejon de Valdejara	–	–	KT602124	KT602323	KT713566
Ewartia	*brevis*	(Ashton, 1912)	04.AU.QL.MIW.01	1/12/04	Australia	Bald Hills Stn	-15.251	144.997	KT602016	KT602216	KT713457
Ewartia	*cuensis*	(Distant, 1913)	06.AU.WA.TUS.07	2/15/06	Australia	NE of Cue	-27.177	118.036	KT602057	KT602257	KT713498
Ewartia	nr. *oldfieldi*	(Distant, 1883)	04.AU.QL.BUN.10	1/3/04	Australia	Fitzroy Dev. Rd	-24.972	149.514	KT602012	KT602212	KT713453
Fijipsalta	*tympanistria*	(Kirkaldy, 1907)	03.FJ.WE.NAL.01	1/29/03	Fiji	S of Vatukacevaceva	-17.442	178.088	KT602087	KT602287	KT713528
Froggattoides	nr. *typicus*	Distant, 1910	08.AU.QL.MVN.10	2/8/08	Australia	NNW of Morven	-26.344	147.009	KT602070	KT602270	KT713511
Froggattoides	*pallidus*	(Ashton, 1912)	06.AU.WA.LLC.05	2/17/06	Australia	N of Leonora	-28.581	121.199	KT602050	KT602250	KT713491
Froggattoides	*typicus*	Distant, 1910	02.AU.QL.ANT.06	1/13/02	Australia	Noonbah Station	-24.087	143.145	KT601961	KT602162	KT713402
Gagatopsalta	*auranti*	Ewart, 2005	07.AU.QL.BRY.01	12/16/07	Australia	Bringalily SF	-28.243	151.119	KT602063	KT602263	KT713504
Galanga	*labeculata*	(Distant, 1892)	02.AU.NS.MAX.01	1/5/02	Australia	Waitara, Sydney	-33.711	151.106	KT601958	–	KT713399
Gelidea	*torrida*	(Erichson, 1842)	06.AU.VI.MAR.01	11/23/06	Australia	SE of Orbost	-37.799	148.528	KT602045	KT602245	KT713486
Ggomapsalta	nr. *vernalis*	(Distant, 1916)	10.PH.MN.COE.01	7/12/10	Philippines	E of Compostela	7.672	126.151	KT602120	KT602319	KT713562
Graminitigrina	*bolloni*	Ewart & Marq., 2008	08.AU.QL.TTX.01	3/1/08	Australia	W of Alpha	-23.624	146.271	KT602071	KT602271	KT713512
Graminitigrina	*bowensis*	Ewart & Marq., 2008	08.AU.QL.EMK.01	2/15/08	Australia	E of Mt Isa	-20.762	139.838	KT602068	KT602268	KT713509
Graminitigrina	nr. *bowensis* 1	Ewart & Marq., 2008	04.AU.NT.TEN.01	1/27/04	Australia	Tennant Creek	-19.630	134.191	KT602009	KT602209	KT713450
Graminitigrina	nr. *bowensis* 2	Ewart & Marq., 2008	06.AU.NT.AIR.01	2/2/06	Australia	N of Larrimah	-15.493	133.190	KT602039	KT602239	KT713480
Gudanga	*adamsi*	Moulds, 1996	05.AU.QL.CWB.04	1/23/05	Australia	N of Tambo	-24.669	146.370	KT602031	KT602231	KT713472
Gudanga	*boulayi*	Distant, 1905	03.AU.WA.LKD.10	1/16/03	Australia	SW of Kalgoorlie	-30.839	121.386	KT601993	KT602193	KT713434
Gudanga	*kalgoorliensis*	Moulds, 1996	03.AU.WA.LKD.05	1/17/03	Australia	SW of Kalgoorlie	-30.839	121.386	KT601991	KT602191	KT713432
Heliopsalta	*polita*	(Popple, 2003)	04.AU.QL.SMI.03	1/2/04	Australia	S of Miles	-26.862	150.151	KT602017	KT602217	KT713458
Hilaphura	*varipes*	(Waltl, 1837)	03.ES.ZG.GRA.01	6/7/03	Spain	Prarnce de Granada	–	–	KT602125	KT602324	KT713567
Huechys (H)	*beata*	Distant, 1892	11.VN.VP.MLI.07	2011	Vietnam	–	–	–	KT602145	KT602344	KT713587
Huechys (H)	*sanguinea*	(de Geer, 1773)	0544	2005	Taiwan	–	–	–	KT602142	KT602341	KT713584
Kanakia (T)	sp. 1	N/A	07.NC.SU.MDO.01	2/8/07	New Caledonia	Mt Do	-21.767	166.000	KT602090	KT602290	KT713531
Kanakia (T)	*typica*	Distant, 1892	98-17	2/2/98	New Caledonia	col d'Amieu	–	–	KT602093	KT602293	KT713534
Kikihia	*cauta*	(Myers, 1921)	94.NZ.WN.RIM.76	2/23/94	New Zealand	W of Featherston	-41.115	175.232	KT602132	KT602331	KT713574
Kikihia	*scutellaris*	(Walker, 1850)	94.NZ.WN.QEP.93	2/13/94	New Zealand	Paekakariki	-40.975	174.958	KT602133	KT602332	KT713575
Kobonga	nr. *umbrimargo*	(Walker, 1858)	05.AU.QL.ALP.03	1/7/05	Australia	Alpha	-23.651	146.633	KT602026	KT602226	KT713467
Kobonga	*oxleyi*	(Distant, 1882)	02.AU.QL.SRI.01	1/10/02	Australia	Station Creek	-27.227	151.693	KT601975	KT602176	KT713416
Kosemia	*radiator*	(Uhler, 1896)	03.JP.CB.TOG.01	9/23/03	Japan	Togi	–	–	KT602117	KT602316	KT713559
Lembeja (PR)	*paradoxa*	(Karsch, 1890)	07.AU.QL.LEM.01	1/9/07	Australia	Iron Range	-12.717	143.308	KT602158	KT602357	KT713600
Lembeja (PR)	*vitticollis*	(Ashton, 1912)	10.AU.QL.MAK.01	2/20/10	Australia	Kuranda	-16.815	145.643	KT602159	KT602358	KT713601
Limnopsalta	*stradbrokensis*	(Distant, 1915)	02.AU.QL.JCT.01	1/8/02	Australia	Brisbane	-27.553	153.178	KT601969	KT602170	KT713410
Maoricicada	*cassiope*	(Hudson, 1891)	97.NZ.TO.BRR.01	1/26/97	New Zealand	Mt Ruapehu	-39.234	175.545	KT602134	KT602333	KT713576
Maoricicada	*hamiltoni*	(Myers, 1926)	98-56	1/4/98	New Zealand	Featherston	–	–	KT602135	KT602334	KT713577
Marteena	*rubricincta*	(G. & F., 1904)	03.AU.WA.RAT.02	1/10/03	Australia	Ravensthorpe	-33.581	120.061	KT601999	KT602199	KT713440
Melampsalta	*aethiopica*	Distant, 1905	04.MW.XX.MUL.01	10/1/04	Malawi	Mt Mulanji	-15.925	35.6381	KT602107	KT602307	KT713549

Melampsalta	*caspica*	(Kolenati, 1857)	Pakistan10-01	–	Pakistan	–	–	–	KT602116	KT602315	KT713558
Melampsalta	*germaini*	Distant, 1906	07.NC.SU.SRF.10	1/2/07	New Caledonia	La Foa	-21.737	165.893	KT602138	KT602337	KT713580
Melampsalta	nr. *cadisia*	(Walker, 1850)	MHV131	12/20/01	South Africa	N of Bathurst	-33.411	26.734	KT602102	KT602302	KT713544
Melampsalta	sp. *1*	N/A	MHV009	12/30/98	South Africa	Nieuwoudville	-31.383	19.083	KT602108	KT602308	KT713550
Melampsalta	sp. *2*	N/A	MHV149	1/2/03	South Africa	Nature's Valley	-33.961	32.541	KT602106	KT602306	KT713548
Mugadina	*festiva*	(Distant, 1907)	03.AU.NS.URA.01	10/16/03	Australia	W of Urana	-35.280	146.061	KT601981	KT602182	KT713422
Mugadina	nr. *festiva*	(Distant, 1907)	97.AU.WA.WRB.15	1/29/97	Australia	Warburton	-26.117	126.567	KT602084	KT602284	KT713525
Myersalna	*depicta*	(Distant, 1920)	98-33	2/6/98	New Caledonia	Rivière Bleue NP	–	–	KT602140	KT602339	KT713582
Myopsalta	nr. *atrata*	(G. & F., 1904)	02.AU.QL.BBR.02	1/9/02	Australia	W of Moore	-26.888	152.214	KT601962	KT602163	KT713403
Myopsalta	nr. *crucifera*	(Ashton, 1912)	02.AU.QL.BBR.14	1/9/02	Australia	W of Moore	-26.888	152.214	KT601963	KT602164	KT713404
Nanopsalta	*basalis*	(G. & F., 1904)	05.AU.QL.NRC.01	1/15/05	Australia	Normanby R	-15.291	144.845	KT602034	KT602234	KT713475
Nelcyndana (T)	*tener*	(Stål, 1870)	Mindanao1	2009	Philippines	Mindanao	–	–	–	–	–
Neopunia	*graminis*	(G. & F., 1904)	06.AU.NT.STC.02	1/31/06	Australia	S of Tennant Creek	-20.182	134.219	KT602041	KT602241	KT713482
Nigripsaltria	*carinata*	Boer, 1999	09.ID.XX.BES.XX	2009	Indonesia	–	–	–	KT602097	–	KT713538
Nigripsaltria	*mouldsi*	de Boer, 1999	00.PG.MR.TEK.01	4/5/00	Papua N. Guinea	Tekadu	–	–	KT602096	KT602296	KT713537
Noongara	*issoides*	(Distant, 1905)	XX.AU.WA.XXX.01	–	Australia	–	–	–	KT602155	KT602354	KT713597
Notopsalta	*sericea*	(Walker, 1850)	93-202	2/4/93	New Zealand	S of Warkworth	-36.500	174.700	KT602110	KT602309	KT713552
Pagiphora	*aschei*	Kartal, 1978	03.GR.XX.RET.22	8/21/2003	Greece	Platanias, Crete	–	–	–	–	–
Palapsalta	*eyrei*	(Distant, 1882)	02.AU.QL.TTX.04	1/12/02	Australia	W of Alpha	-23.624	146.271	KT602154	KT602353	KT713596
Palapsalta	*vitellina*	(Ewart, 1989)	02.AU.QL.LBW.11	1/10/02	Australia	Lake Broadwater	-27.314	151.099	KT602088	KT602288	KT713529
Paradina	*leichardti*	(Distant, 1882)	05.AU.QL.NCP.02	1/8/05	Australia	N of Capella	-22.932	148.072	KT602033	KT602233	KT713474
Pauropsalta	*aktites*	Ewart, 1989	97.AU.NS.SEV.23	1/20/97	Australia	Seven Mile Beach	-34.750	150.750	KT602082	KT602282	KT713523
Pauropsalta	*annulata*	G. & F., 1904	02.AU.QL.DAI.26	1/6/02	Australia	Daisy Hill, Brisbane	-27.641	153.162	KT601968	KT602169	KT713409
Pauropsalta	*encaustica*	(Germar, 1834)	05.AU.NS.AQP.08	12/9/05	Australia	Asquith, Sydney	-33.681	151.102	KT602022	KT602222	KT713463
Pauropsalta	*johanae*	Boulard, 1993	98-13	2/1/98	New Caledonia	Mt Koghi	–	–	KT602141	KT602340	KT713583
Pauropsalta	*judithae*	Boulard, 1997	98-500	1998	New Caledonia	Col de Amieu	–	–	KT602139	KT602338	KT713581
Pauropsalta	*melanopygia*	(Germar, 1834)	04.AU.NT.TNU.01	1/20/04	Australia	W of Cape Crawford	-16.555	134.726	KT602010	KT602210	KT713451
Pauropsalta	*mneme*	(Walker, 1850)	97.AU.NS.CRO.01	2/10/97	Australia	W of Orange	-33.333	149.167	KT602080	KT602280	KT713521
Pauropsalta	nr. *rubea*	(G. & F., 1904)	05.AU.NS.MAX.01	12/5/05	Australia	Waitara, Sydney	-33.711	151.106	KT602024	KT602224	KT713465
Physeema	*convergens*	(Walker, 1850)	03.AU.WA.FTZ.08	1/10/03	Australia	E of Jerramungup	-33.829	119.265	KT601986	KT602187	KT713427
Physeema	*quadricincta*	(Walker, 1850)	03.AU.WA.MGR.01	1/2/03	Australia	Margaret River	-33.951	115.073	KT601995	KT602195	KT713436
Pictila (T)	*occidentalis*	(G. & F., 1904)	03.AU.WA.VIC.05	1/17/03	Australia	SW of Coolgardie	-31.289	120.930	KT602100	KT602299	KT713541
Pinheya	*violacea*	(Linnaeus, 1758)	09.ZA.WC.KOG.05	12/14/09	South Africa	NE of Kleinmond	-34.288	19.109	–	–	–
Pipilopsalta	*ceuthoviridis*	Ewart, 2005	05.AU.QL.BOL.02	1/3/05	Australia	Bollon	-28.033	147.485	KT602028	KT602228	KT713469
Platypsalta	nr. *dubia*	(G. & F., 1904)	05.AU.NS.TRA.02	1/26/05	Australia	Trangie	-32.033	147.991	KT602025	KT602225	KT713466
Plerapsalta	nr. *multifascia*	(Walker, 1850)	04.AU.QL.TTX.01	1/3/04	Australia	W of Alpha	-23.624	146.271	KT602020	KT602220	KT713461
Pseudotettigetta	*melanophrys leunami*	(Boulard 2000)	Malaga-1	6/23/04	Spain	Prov De Malaga	–	–	KT602131	KT602330	KT713573
Punia	*minima*	(G. & F., 1904)	04.AU.NT.KWW.01	1/24/04	Australia	W of Katherine	-14.680	132.086	KT602007	KT602207	KT713448
Pyropsalta	*melete*	(Walker, 1850)	03.AU.WA.BUN.02	1/1/03	Australia	Bunbury	-33.335	115.647	KT601983	KT602184	KT713424
Pyropsalta	nr. *melete*	(Walker, 1850)	02.AU.WA.PJC.02	12/31/02	Australia	Pinjarra	-32.640	115.869	KT601978	KT602179	KT713419
Rhodopsalta	*cruentata*	(Fabricius, 1775)	97-37	1/29/97	New Zealand	Maitai Valley, Nelson	–	–	KT602136	KT602335	KT713578
Rouxalna	*rouxi*	(Distant, 1914)	02.NC.NC.KWN.01	11/19/03	New Caledonia	–	–	–	KT602137	KT602336	KT713579
Samaecicada	*subolivacea*	(Ashton, 1912)	08.AU.NS.RED.01	12/30/08	Australia	Beacon Hill, Sydney	-33.744	151.257	KT602152	KT602351	KT713594
Scieroptera (H)	*formosana*	Schmidt, 1918	0555	2005	Taiwan	–	–	–	KT602118	KT602317	KT713560
Scieroptera (H)	*sanaoensis*	Schmidt, 1924	10.PH.MN.SCI.03	7/9/10	Philippines	N Cotabato Prov.	7.017	125.233	KT602121	KT602320	KT713563

Simona	*sancta*	(Distant, 1913)	06.AU.WA.EMM.03	2/16/06	Australia	E of Mt Magnet	-28.189	118.284	KT602049	KT602249	KT713490
Stellenboschia	*rotundata*	(Distant, 1892)	09.ZA.WC.BAI.01	12/13/09	South Africa	E of Wellington	-33.640	19.078	–	–	–
Sylphoides	*arenaria*	(Distant, 1907)	97.AU.NS.SEV.24	1/2/97	Australia	Seven Mile Beach	-34.750	150.750	KT602083	KT602283	KT713524
Taurella	*forresti*	(Distant, 1882)	02.AU.NS.NPF.14	1/7/02	Australia	W of Kew	-31.680	152.653	KT601960	KT602161	KT713401
Taurella	*froggatti*	(Distant, 1907)	05.AU.QL.KBR.01	1/12/05	Australia	Kamerunga	-16.876	145.682	KT602032	KT602232	KT713473
Taurella	nr. *viridis*	(Ashton, 1912)	04.AU.NT.DAN.10	1/20/04	Australia	N of Daly Waters	-16.197	133.425	KT602005	KT602205	KT713446
Taurella	*viridis*	(Ashton, 1912)	05.AU.QL.ARC.02	1/15/05	Australia	S of Cooktown	-15.603	145.323	KT602027	KT602227	KT713468
Telmapsalta	*hackeri*	(Distant, 1915)	02.AU.QL.DAI.08	1/8/02	Australia	Daisy Hill, Brisbane	-27.641	153.162	KT601967	KT602168	KT713408
Terepsalta	*infans*	(Walker, 1850)	02.AU.QL.VER.12	1/14/02	Australia	Noonbah Station	-24.089	143.146	KT601976	KT602177	KT713417
Tettigetta	*isshikii*	(Kato, 1926)	06.KR.GW.JAS.01	2006	South Korea	–	–	–	KT602119	KT602318	KT713561
Tettigetta	nr. *prasina 1*	(Pallas, 1773)	99-18dgen-1	1999	Kyrgyzstan	–	–	–	KT602111	KT602310	KT713553
Tettigetta	nr. *prasina 2*	(Pallas, 1773)	99-last-1	1999	Kyrgyzstan	–	–	–	KT602112	KT602311	KT713554
Tettigettacula	*baenai*	(Boulard, 2000)	Malaga-2	6/14/04	Spain	Prov de Malaga	–	–	KT602130	KT602329	KT713572
Tettigettalna	*argentata*	(Olivier, 1790)	02-001	7/26/01	Slovenia	Brje	–	–	KT602151	KT602350	KT713593
Tettigettalna	*josei*	(Boulard, 1982)	02-028	7/24/01	Portugal	Algarve, Vilamoura	–	–	KT602146	KT602345	KT713588
Tettigettula	*pygmea*	(Olivier, 1790)	02-002	7/22/01	Slovenia	Hrastovlje, Podpec	–	–	KT602123	KT602322	KT713565
Tibeta	*zenobia*	(Distant, 1912)	99.NP.XX.DKK.01	8/25/99	Nepal	Dhude Kosi Khola tr.	–	–	KT602113	KT602312	KT713555
Toxala	*verna*	(Distant, 1912)	02.AU.QL.BBR.18	1/9/02	Australia	W of Moore	-26.888	152.214	KT601965	KT602166	KT713406
Tympanistalna	*gastrica*	(Stål, 1854)	06.PT.CO.COI.01	6/20/06	Portugal	Surround. of Coimbra	40.212	-8.428	KT602126	KT602325	KT713568
Ueana (T)	*maculata*	Distant, 1906	98-16	2/2/98	New Caledonia	col d'Amieu	–	–	KT602092	KT602292	KT713533
Ueana (T)	*rosacea*	(Distant, 1892)	98-18A	2/2/98	New Caledonia	col d'Amieu	–	–	KT602094	KT602294	KT713535
Ueana (T)	*simonae*	Bld. & Moulds, 2001	98-25	2/3/98	New Caledonia	N of Bourail	–	–	KT602095	KT602295	KT713536
Urabunana	*sericeivitta*	(Walker, 1862)	02.AU.QL.BBR.19	1/9/02	Australia	W of Moore	-26.888	152.214	KT601964	KT602165	KT713405
Yoyetta	*celis*	(Moulds, 1988)	97.AU.NS.PPK.19	1/21/97	Australia	Prospect Park, Sydney	–	–	KT602156	KT602355	KT713598
Yoyetta	*denisoni*	(Distant, 1893)	97.AU.NS.MAX.54	2/8/97	Australia	Waitara, Sydney	-33.711	151.106	KT602081	KT602281	KT713522
Unassigned	"allpurpose urchip"	N/A	06.AU.WA.ALL.01	2/18/06	Australia	E of Leonora	-28.884	121.682	KT602046	KT602246	KT713487
Unassigned	"asphalt cicada"	N/A	04.AU.NT.CAP.01	1/29/04	Australia	Stuart Hwy at tropic	-23.443	133.832	KT602004	KT602204	KT713445
Unassigned	"black clicker"	N/A	09.AU.WA.TOQ.08	2/15/09	Australia	Rd to Munjina	-22.353	117.913	KT602074	KT602274	KT713515
Unassigned	"black pipsqueak"	N/A	03.AU.WA.GOG.01	1/7/03	Australia	Stirling Range NP	-34.422	117.933	KT601989	KT602189	KT713430
Unassigned	"bluebush cicada"	N/A	02.AU.NS.KAY.01	1/19/02	Australia	Kayrunnera Creek	-30.611	142.507	KT602099	KT602298	KT713540
Unassigned	"cracklin cicada"	N/A	03.AU.WA.FTZ.01	1/9/03	Australia	E of Jerramungup	-33.830	119.265	KT601984	KT602185	KT713425
Unassigned	"escarpment cicada"	N/A	03.AU.WA.NIS.05	1/12/03	Australia	N of Israelite Bay	-33.676	123.711	KT601996	KT602196	KT713437
Unassigned	"false hermannsburgensis"	N/A	06.AU.WA.ROE.01	2/8/06	Australia	E of Broome	-17.851	122.501	KT602056	KT602256	KT713497
Unassigned	"false quintilia"	N/A	06.AU.WA.BAL.01	2/20/06	Australia	Balladonia Rdhse	-32.355	123.618	KT602048	KT602248	KT713489
Unassigned	"flying green ticker"	N/A	10.AU.WA.MOA.04	1/13/10	Australia	NW of Wongan Hills	-30.842	116.639	KT602153	KT602352	KT713595
Unassigned	"flying red snapper"	N/A	03.AU.WA.LKA.03	1/15/03	Australia	SW of Kalgoorlie	-30.844	121.385	KT601990	KT602190	KT713431
Unassigned	"flying yellow fairy"	N/A	10.AU.WA.LEN.02	1/20/10	Australia	Lennard R at Gibb Rd	-17.392	124.756	KT602077	KT602277	KT713518
Unassigned	"goldsilver cicada"	N/A	06.AU.WA.WSS.01	2/16/06	Australia	W of Sandstone	-28.012	118.999	KT602058	KT602258	KT713499
Unassigned	"Grampians adelaida"	N/A	06.AU.VI.GRC.01	12/1/06	Australia	N of Dunkeld	-37.399	142.494	KT602044	KT602244	KT713485
Unassigned	"grass screamer"	N/A	02.AU.QL.SCK.07	1/10/02	Australia	Station Creek, nr Oakey	-27.227	151.693	KT601974	KT602175	KT713415
Unassigned	"grass tocker"	N/A	08.AU.QL.MVA.05	2/8/08	Australia	NW of Morven	-26.114	146.867	KT602069	KT602269	KT713510
Unassigned	"green wingbanger"	N/A	05.AU.QL.CWB.01	1/22/05	Australia	N of Tambo	-24.670	146.370	KT602030	KT602230	KT713471
Unassigned	"Grevillea tiny ticker"	N/A	06.AU.WA.WSS.04	2/16/06	Australia	W of Sandstone	-28.012	118.999	KT602059	KT602259	KT713500
Unassigned	"grey bubbler"	N/A	07.AU.NS.BHS.04	2/4/07	Australia	S of Broken Hill	-32.241	141.426	KT602061	KT602261	KT713502
Unassigned	"grey eyed cicada"	N/A	04.AU.QL.SMI.08	1/2/04	Australia	S of Miles	-26.862	150.151	KT602018	KT602218	KT713459

Unassigned	"little black"	N/A	PAK-1	6/12/08	Pakistan	Kalam, Swat	–	–	KT602115	KT602314	KT713557
Unassigned	"little goldsilver cicada"	N/A	08.AU.QL.BDE.02	12/25/08	Australia	Blackdown Table NP	-23.770	149.034	KT602067	KT602267	KT713508
Unassigned	"little red"	N/A	04.AU.QL.DED.01	1/7/04	Australia	S of Mt Garnet	-17.743	145.028	KT602013	KT602213	KT713454
Unassigned	"machine gun ticker"	N/A	05.AU.QL.CAM.01	1/22/05	Australia	SW of Clermont	-23.051	146.970	KT602029	KT602229	KT713470
Unassigned	"marsh rattler"	N/A	03.AU.WA.OFR.02	1/11/03	Australia	SH1 and Oldfield R	-33.672	120.672	KT601998	KT602198	KT713439
Unassigned	"melaleuca cicada"	N/A	05.AU.QL.VEN.17	1/19/05	Australia	W of Georgetown	-18.223	142.812	KT602038	KT602238	KT713479
Unassigned	"Munjina peeper"	N/A	06.AU.WA.MUN.01	2/11/06	Australia	Munjina Roadhouse	-22.381	118.691	KT602051	KT602251	KT713492
Unassigned	"Noonbah tan"	N/A	02.AU.QL.WJH.01	1/15/02	Australia	W of Jundah	-24.832	143.049	KT601977	KT602178	KT713418
Unassigned	"Nullarbor green"	N/A	06.AU.WA.NUL.01	2/21/06	Australia	E of Cocklebiddy	-32.014	126.229	KT602054	KT602254	KT713495
Unassigned	"old eremophila cicada"	N/A	11.AU.NS.BHN.03	1/10/11	Australia	N of Broken Hill	-31.298	141.623	KT602078	KT602278	KT713519
Unassigned	"Pakistan colourful"	N/A	PAK-2	5/14/09	Pakistan	Torri Phatak, Sindh	–	–	KT602114	KT602313	KT713556
Unassigned	"pale whiner"	N/A	05.AU.NS.LRN.01	1/25/05	Australia	Coocoran Lake	-29.412	147.866	KT602023	KT602223	KT713464
Unassigned	"podgy black"	N/A	03.AU.WA.VIC.06	1/17/03	Australia	SW of Coolgardie	-31.289	120.930	KT602003	KT602203	KT713444
Unassigned	"Redondo black"	N/A	10.PH.DI.RED.01	7/2/10	Philippines	Mt Kanbinlio	10.377	125.635	KT602144	KT602343	KT713586
Unassigned	"Ross purrer"	N/A	10.AU.NT.RSD.01	1/29/10	Australia	E of Alice Springs	-23.558	134.452	KT602076	KT602276	KT713517
Unassigned	"saltbush cicada"	N/A	07.AU.NS.BHS.01	2/4/07	Australia	S of Broken Hill	-32.241	141.426	KT602060	KT602260	KT713501
Unassigned	"simple tigris"	N/A	04.AU.NT.ERI.01	1/31/04	Australia	S of Erldunda	-25.572	133.208	KT602006	KT602206	KT713447
Unassigned	"snapping cicada"	N/A	06.AU.WA.AMS.03	2/17/06	Australia	W of Sandstone	-28.006	119.227	KT602047	KT602247	KT713488
Unassigned	"sp. 15"	N/A	03.AU.WA.NMR.01	1/13/03	Australia	N of Mt Ragged	-33.376	123.398	KT601997	KT602197	KT713438
Unassigned	"sp. 28"	N/A	03.AU.WA.SWK.01	1/17/03	Australia	SW of Coolgardie	-31.518	120.799	KT602001	KT602201	KT713442
Unassigned	"spinifex rattler"	N/A	04.AU.NT.PCK.11	1/26/04	Australia	S of Elliot	-17.821	133.675	KT602008	KT602208	KT713449
Unassigned	"sporty cicada"	N/A	06.AU.WA.NSF.01	2/9/06	Australia	NE of Sandfire Rdhse	-19.771	121.144	KT602053	KT602253	KT713494
Unassigned	"sporty green"	N/A	03.AU.WA.TOR.01	1/22/03	Australia	Koondoola, Perth	-31.859	115.862	KT602002	KT602202	KT713443
Unassigned	"squat shrub tigris"	N/A	06.AU.WA.MUW.01	2/13/06	Australia	S of Capricorn Rdhse	-23.895	119.752	KT602052	KT602252	KT713493
Unassigned	"stubby red puer"	N/A	06.AU.VI.BNE.01	11/23/06	Australia	W of Nowa Nowa	-37.724	147.872	KT602043	KT602243	KT713484
Unassigned	"superb grass cicada"	N/A	02.AU.QL.BAR.03	1/13/02	Australia	W of Barcaldine	-23.554	145.278	KT602089	KT602289	KT713530
Unassigned	"swinging tigris"	N/A	06.AU.NT.WMR.01	1/31/06	Australia	NW of Tennant Creek	-19.510	134.067	KT602042	KT602242	KT713483
Unassigned	"tigris F2"	N/A	05.AU.QL.TWW.04	1/2/05	Australia	W of Goondiwindi	-28.442	149.818	KT602037	KT602237	KT713478
Unassigned	"tigris M"	N/A	05.AU.QL.STA.02	1/23/05	Australia	S of Tambo	-25.264	146.558	KT602036	KT602236	KT713477
Unassigned	"tiny false encaustica"	N/A	03.AU.WA.MDB.03	1/5/03	Australia	SW of Arthur River	-33.598	116.814	KT601994	KT602194	KT713435
Unassigned	"tiny green"	N/A	04.AU.NT.TSE.01	1/25/04	Australia	E of Top Springs	-16.592	131.862	KT602011	KT602211	KT713452
Unassigned	"tiny low ticker"	N/A	03.AU.WA.FTZ.09	1/10/03	Australia	E of Jerramungup	-33.829	119.265	KT601987	–	KT713428
Unassigned	"tiny peeper"	N/A	03.AU.WA.FTZ.11	1/10/03	Australia	E of Jerramungup	-33.829	119.265	KT601988	KT602188	KT713429
Unassigned	"tiny ticker sp. 6"	N/A	04.AU.QL.HMT.30	1/9/04	Australia	W of Herberton	-17.386	145.378	KT602015	KT602215	KT713456
Unassigned	"tiny ticker sp. 8"	N/A	04.AU.QL.GFM.08	1/17/04	Australia	S of G. Fisher Mine	-20.570	139.485	KT602014	KT602214	KT713455
Unassigned	"tuta like"	N/A	02.AU.QL.NSR.01	1/12/02	Australia	N of Springsure	-24.086	148.099	KT601972	KT602173	KT713413
Unassigned	"two dot cicada"	N/A	03.AU.WA.FTZ.03	1/9/03	Australia	E of Jerramungup	-33.829	119.265	KT601985	KT602186	KT713426
Unassigned	"western tiny ticker"	N/A	03.AU.WA.SKJ.02	1/6/03	Australia	S of Kojonup	-33.972	117.214	KT602000	KT602200	KT713441
Unassigned	"wingpopper"	N/A	06.AU.WA.NUL.07	2/21/06	Australia	E of Cocklebiddy	-32.014	126.229	KT602055	KT602255	KT713496
Unassigned	"Woomera green friendly"	N/A	07.AU.SA.WOB.01	2/2/07	Australia	S of Coober Pedy	-29.173	134.936	KT602101	KT602301	KT713543
Unassigned	"Woomera urchip"	N/A	07.AU.SA.WPB.01	1/28/07	Australia	S of Coober Pedy	-29.758	135.117	KT602066	KT602266	KT713507
Unassigned	"yellow grass muta"	N/A	06.AU.NT.DWS.03	2/1/06	Australia	Daly Waters	-16.283	133.390	KT602040	KT602240	KT713481
Unassigned	“yellow galloper”	N/A	05.AU.QL.RAW.03	1/18/05	Australia	W of Ravenshoe	-17.642	145.384	KT602035	KT602235	KT713476

Lagrange: likelihood analysis of geographic range evolution
Version: 20130526
Author: Richard Ree <rree@fieldmuseum.org>
https://github.com/rhr/lagrange-python

Newick tree with interior nodes labeled:
((02.AU.QL.BBR.26:1.30637943761,(07.AU.QL.LEM.01:0.865760949487,10.AU.QL.MAK.01:0.865760949487)N3:0.440618488119)N4:0.401697577819,((03.AU.WA.VIC.05:0.836
275089933,(06.AU.WA.MDE.01:0.530210236358,(02.AU.NS.KAY.01:0.251942585066,07.AU.SA.WOB.01:0.251942585066)N9:0.278267651293)N10:0.306064853574)N11:0.477020
419864,((08.AU.NS.RED.01:0.596084356273,10.AU.WA.MOA.04:0.596084356273)N14:0.361944969215,(((03.AU.WA.SWK.01:0.555610457417,(04.AU.QL.GFM.08:0.26655424643
3,04.AU.QL.SMI.08:0.266554246433)N18:0.289056210985)N19:0.144995733549,(((05.AU.QL.CWB.04:0.383803431861,(03.AU.WA.LKD.05:0.13342712537,03.AU.WA.LKD.10:0.
13342712537)N23:0.250376306492)N24:0.168269576927,(06.AU.WA.ALL.01_n_gen_P_sp_3_allpurpose_urchip:0.362182943825,(04.AU.NT.CAP.01_n_gen_P_sp_2_asphalt_cic
ada:0.197395982303,07.AU.SA.WPB.01:0.197395982303)N28:0.164786961523)N29:0.189890064963)N30:0.0763552591786,((04.AU.NT.TNU.01:0.50900190601,97.AU.NS.CRO.0
1:0.50900190601)N33:0.0389179853328,((02.AU.QL.DAI.26:0.395731071407,(05.AU.NS.AQP.08:0.333981741928,(08.AU.QL.TTX.01:0.293875654528,(06.AU.NT.AIR.01:0.21
3053607263,(04.AU.NT.TEN.01:0.131121884552,08.AU.QL.EMK.01:0.131121884552)N40:0.0819317227113)N41:0.0808220472644)N42:0.0401060874006)N43:0.0617493294798)
N44:0.123053663559,((02.AU.QL.LBW.11:0.290468257732,02.AU.QL.TTX.04:0.290468257732)N47:0.204236649931,((05.AU.NS.MAX.01:0.234764376964,97.AU.NS.SEV.23:0.2
34764376964)N50:0.230751500253,((04.AU.QL.DED.01:0.298423216303,05.AU.QL.NRC.01:0.298423216303)N53:0.0749192701878,((04.AU.NT.KWW.01:0.23844285043,04.AU.N
T.TSE.01:0.23844285043)N56:0.0482185968354,(06.AU.NT.STC.02:0.245653178888,06.AU.WA.MUN.01:0.245653178888)N59:0.0410082683775)N60:0.0866810392255)N61:0.09
2173390726)N62:0.029189030445)N63:0.0240798273052)N64:0.029135156376)N65:0.0805083766244)N66:0.0721779229986)N67:0.0966488131068,(((07.NC.SU.MDO.01:0.2937
63475951,98.17:0.293763475951)N70:0.435023260316,(07.NC.SU.SRF.08:0.704995958655,(98.16:0.308888579937,(98.18A:0.185354200094,Ueana_simonae_J:0.1853542000
94)N75:0.123534379843)N76:0.396107378718)N77:0.023790777612)N78:0.049027958533,(((03.FJ.WE.NAL.01:0.577854647148,09.ID.XX.BES.XX:0.577854647148)N81:0.0673
232028582,(02.AU.NS.NPF.14:0.341822878967,(04.AU.NT.DAN.10:0.268427328318,(05.AU.QL.ARC.02:0.229329025429,05.AU.QL.KBR.01:0.229329025429)N86:0.03909830288
85)N87:0.0733955506485)N88:0.303354971041)N89:0.111096815469,(97.AU.NS.SEV.24:0.729475276746,((((XX.AU.WA.XXX.01:0.341568623543,06.AU.WA.BAL.01:0.34156862
3543)N93:0.17161930104,(04.AU.NT.PCK.11:0.280902399204,06.AU.WA.ROE.01:0.280902399204)N96:0.232285525379)N97:0.171301631759,((02.AU.QL.ANT.06:0.2577979833
19,(06.AU.WA.LLC.05:0.194735807181,08.AU.QL.MVN.10:0.194735807181)N101:0.0630621761383)N102:0.377965071343,(((05.AU.NS.TRA.02:0.335295301091,(02.AU.QL.SCK
.07:0.16382093412,03.AU.WA.FTZ.01:0.16382093412)N106:0.171474366972)N107:0.20847577,((04.AU.QL.SRA.10:0.294660998964,10.AU.NT.RSD.01:0.294660998964)N110:0
.109716697347,(09.AU.QL.MOF.01:0.227699395574,(02.AU.QL.MLP.02:0.123638890694,02.AU.QL.NSR.04:0.123638890694)N114:0.10406050488)N115:0.176678300737)N116:0
.13939337478)N117:0.0702936204077,((00.PG.MR.TEK.01:0.561360654741,(06.AU.WA.WSS.01:0.253029725728,08.AU.QL.BDE.02:0.253029725728)N121:0.308330929014)N122
:0.028370105488,((00.AU.NS.XXX.01:0.394287693134,07.AU.QL.TOZ.01:0.394287693134)N125:0.17905755125,((04.AU.QL.HMT.30:0.346267957231,(05.AU.QL.CWB.01:0.276
318349238,06.AU.WA.WSS.04:0.276318349238)N129:0.069949607993)N130:0.142874983145,(03.AU.WA.LKD.08:0.439998322939,(02.AU.QL.BBR.18:0.374862961444,(06.AU.WA
.NUL.07:0.334494192432,(03.AU.WA.TOR.01:0.286771160571,(03.AU.WA.GOG.01:0.20934421402,(03.AU.WA.NMR.01:0.183303035095,06.AU.WA.AMS.03:0.183303035095)N138:
0.0260411789242)N139:0.0774269465511)N140:0.0477230318614)N141:0.0403687690121)N142:0.0651353614948)N143:0.0491446174369)N144:0.0842023040082)N145:0.01638
55158455)N146:0.0243339312687)N147:0.021698363164)N148:0.0487265016787)N149:0.0215412826708,((02.AU.QL.VER.12:0.615460569631,(07.AU.NS.BHS.04:0.3845444270
35,(03.AU.WA.FTZ.03:0.359389419461,03.AU.WA.YAR.01:0.359389419461)N154:0.0251550075734)N155:0.230916142596)N156:0.0805791106097,((98.AU.VI.BRI.06:0.324891
184506,Diemeniana_cincta:0.324891184506)N159:0.35723403835,(((((02.NC.XX.KWN.01:0.522067932469,Myersalna_depicta:0.522067932469)N162:0.0273455297817,(98_5
00:0.215121431026,Pauropsalta_johanae:0.215121431026)N165:0.334292031225)N166:0.00962387713647,((Kikihia_cauta:0.204221799069,Kikihia_scutellaris:0.204221
799069)N169:0.217301168523,(Rhodopsalta_cruentata:0.34852912002,(Maoricicada_cassiope:0.196318742126,Maoricicada_hamiltoni:0.196318742126)N173:0.152210377
893)N174:0.0729938475722)N175:0.137514371796)N176:0.0458238142961,((02.AU.QL.BBR.19or20:0.557251511236,(03.AU.WA.SKJ.02:0.478684575901,(03.AU.WA.MDB.03:0.
441295149585,(03.AU.WA.VIC.06:0.276561002654,(03.AU.WA.FTZ.09:0.240488624665,03.AU.WA.FTZ.11:0.240488624665)N183:0.0360723779883)N184:0.164734146932)N185:
0.0373894263164)N186:0.078566935335)N187:0.0361332209234,(((99.NP.XX.DKK.01:0.473016269223,07.NC.SU.SRF.10:0.473016269223)N190:0.0176607331316,(02_003:0.4
40201884197,(Tettigetta:0.21935413875,(06.KR.GW.JAS.01:0.138012770395,(99.18dgen.1:0.122526464241,99.last.1:0.122526464241)N196:0.0154863061544)N197:0.081
3413683545)N198:0.220847745448)N199:0.0504751181569)N200:0.0733689037068,(((03.JP.CB.TOG.01_Kosemia_radiator:0.513830763228,10.PH.MN.COE.01:0.513830763228
)N203:0.0341947909488,((10_01:0.259636212355,Melampsalta_cf_musiva:0.259636212355)N206:0.258290682527,(0555:0.169699640425,10.PH.MN.SCI.03:0.169699640425)
N209:0.348227254456)N210:0.0300986592961)N211:0.00741048834792,(((Pseudotettigetta_melanophrys_leunami:0.410049585413,(03.ES.XX.CDV.01:0.253234946987,Tett
igettacula_baenai:0.253234946987)N215:0.156814638426)N216:0.100910148192,(06.PT.CO.COI.01:0.476135901653,((03.ES.XX.GRA.01:0.283676199498,18a:0.2836761994
98)N220:0.127618884467,(02002EF:0.392361922586,(02_005:0.120010960648,02_034:0.120010960648)N224:0.272350961939)N225:0.018933161379)N226:0.0648408176885)N
227:0.0348238319516)N228:0.0117169435241,((04.MW.XX.MUL.01:0.478092992872,(01.ZA.EC.GFK.01:0.316837568032,(02.ZA.EC.KAR.01:0.215922369848,02.ZA.EC.SUN.01:
0.215922369848)N233:0.100915198184)N234:0.161255424841)N235:0.0122092919068,(03.ZA.WC.NVY.01:0.416081289145,(01.ZA.EC.GLE.01:0.367149995112,98.ZA.NC.NIE.0
1:0.367149995112)N239:0.0489312940328)N240:0.0742209956334)N241:0.0323743923506)N242:0.0327593653953)N243:0.0086098635364)N244:0.0293388260987)N245:0.0114
764215237)N246:0.0580790315175,(07.AU.QL.BRY.01:0.609644513856,((06.NZ.ND.HEF.02:0.356774344786,Notopsalta_sericea:0.356774344786)N250:0.233599793298,((02
.AU.NS.MAX.01:0.487555605536,((02.AU.QL.SRI.01:0.244919922312,05.AU.QL.ALP.03:0.244919922312)N254:0.09406378599,(05.AU.QL.STA.02:0.297832311139,05.AU.QL.T

WW.04:0.297832311139)N257:0.0411513971625)N258:0.148571897235)N259:0.0932504566529,(((11.AU.SA.WIR.01:0.320650024757,(04.AU.NT.ERI.01:0.216028647233,07.AU.SA.SEP.02:0.216028647233)N263:0.104621377523)N264:0.201825496448,(06.AU.WA.NSF.01:0.371786788183,(04.AU.QL.MIW.01:0.33671941732,(04.AU.QL.BUN.10:0.199452783196,06.AU.WA.TUS.07:0.199452783196)N269:0.137266634124)N270:0.0350673708636)N271:0.150688733021)N272:0.044044483157,((((02.AU.QL.WJH.01:0.385486080304,(97.AU.WA.WRB.15:0.340445458064,(03.AU.NS.URA.01:0.29663021627,06.AU.WA.NUL.01:0.29663021627)N277:0.0438152417938)N278:0.0450406222411)N279:0.0458835617282,((07.AU.NT.TAN.10:0.232719440077,09.AU.WA.TOQ.08:0.232719440077)N282:0.16804629737,(05.AU.QL.CAM.01:0.353170635621,(05.AU.QL.NCP.02:0.22327757022,Mugadina:0.22327757022)N286:0.129893065401)N287:0.0475951018255)N288:0.0306039045861)N289:0.110525971324,((03.AU.WA.RAT.02:0.384215988233,(03.AU.WA.BOX.06:0.156477012114,04.AU.VI.PYC.01:0.156477012114)N293:0.227738976121)N294:0.11152883368,(04.AU.QL.TTX.01:0.474255356747,(03.AU.WA.LKA.03:0.440159800833,(10.AU.WA.LEN.02:0.425145180896,((Yoyetta_celis:0.228397287422,97.AU.NS.MAX.54:0.228397287422)N300:0.0434623794155,(02.AU.NS.NPF.01:0.210052892868,02.AU.QL.DAI.03:0.210052892868)N303:0.0618067739696)N304:0.15328551406)N305:0.0150146199373)N306:0.0340955559133)N307:0.0214894651667)N308:0.046150791443)N309:0.00977989205713,((02.AU.QL.LBW.06:0.449197623471,((03.AU.WA.BUN.02:0.259776047897,03.AU.WA.MGR.01:0.259776047897)N313:0.04116428813,(03.AU.WA.FTZ.08:0.260752785686,03.AU.WA.PJC.02:0.260752785686)N316:0.0401875503414)N317:0.148257287445)N318:0.0770344437098,((05.AU.QL.VEN.17:0.401564048523,(02.AU.QL.DAI.08:0.316478338931,(02.AU.QL.JCT.01:0.270613660165,03.AU.WA.OFR.02:0.270613660165)N323:0.045864678766)N324:0.0850857095925)N325:0.110414452419,(06.AU.VI.MAR.01:0.498844593784,(06.AU.VI.GRC.01:0.477046249966,((10.PH.DI.RED.01:0.420988285343,((09.FM.PO.SAL.01_:0.38501949361,(0543:0.164252985648,Huechys_beata:0.164252985648)N332:0.220766507963)N333:0.018342809112,((02_028:0.20807795394,02_001:0.20807795394)N336:0.171872428505,(07.US.KS.GYP.01:0.284783204986,(04.US.TX.LAG.01:0.261510178971,(02.031:0.225353472016,04.US.KS.ATT.03:0.225353472016)N341:0.0361567069547)N342:0.0232730260159)N343:0.0951671774586)N344:0.02341192027)N345:0.0176259826205)N346:0.0134943795448,(((02.AU.QL.NSR.01:0.211102692703,05.AU.QL.RAW.03:0.211102692703)N349:0.136861934558,((05.AU.NS.LRN.01:0.221018924713,(02.AU.QL.BBR.02:0.189253156277,02.AU.QL.BBR.14:0.189253156277)N353:0.031765768436)N354:0.0743465563776,(07.AU.NS.BHS.01:0.276145482785,(06.AU.NT.DWS.03:0.258320542915,08.AU.QL.MVA.05:0.258320542915)N358:0.0178249398702)N359:0.0192199983054)N360:0.0525991461701)N361:0.0809409475076,((03.AU.WA.NIS.05:0.252992892642,11.AU.NS.BHN.03:0.252992892642)N364:0.0907230523629,(06.AU.WA.EMM.03:0.325417859015,(((04.AU.QL.SMI.03:0.285639209609,10.AU.NT.HMW.01:0.285639209609)N368:0.0156585649372,(06.AU.NT.WMR.01:0.192568904507,06.AU.WA.MUW.01:0.192568904507)N371:0.108728870039)N372:0.00847590910354,(05.AU.QL.BOL.02:0.271785586261,(09.AU.SA.AGC.01:0.168783514145,(06.AU.VI.BNE.01:0.136391105775,Chelapsalta_nr_puer:0.136391105775)N377:0.0323924083699)N378:0.103002072116)N379:0.0379880973885)N380:0.015644175366)N381:0.018298085989)N382:0.0851896297638)N383:0.00557709012)N384:0.0425635850784)N385:0.0217983438184)N386:0.0131339071568)N387:0.0142535662398)N388:0.0254434382326)N389:0.0148444989473)N390:0.0142860578278)N391:0.00956807589524)N392:0.0192703757724)N393:0.0532956713445)N394:0.0191850376548)N395:0.0139144573852)N396:0.00999115877078)N397:0.0234444377346)N398:0.0267993887285)N399:0.0215400293255)N400:0.0194403092725)N401:0.160774321416)N402:0.355266184308)N403:0.394781505628)N404:0.0;

Cladogram (branch lengths not to scale):

```
                                --------------------------------------------------------+ [AS] CHLOROCYSTINI_02.AU.QL.BBR.26
    --------------------------N4+
    :                           :                           ----------------------------+ [AS] PRASIINI_07.AU.QL.LEM.01
    :                           --------------------------N3+
    :                                                       ----------------------------+ [AS] CHLOROCYSTINI_10.AU.QL.MAK.01
    :
    :                      -------------------------------------------------------------+ [A] CLADE_P_03.AU.WA.VIC.05
    :  -----------------N11+
    :  :                   :                   -----------------------------------------+ [A] CLADE_P _06.AU.WA.MDE.01
    :  :                   -----------------N10+
    :  :                                       :                   ---------------------+ [A] CLADE_P _02.AU.NS.KAY.01
N404+  :                                       ------------------N9+
    :  :                                                           ---------------------+ [A] CLADE_P _07.AU.SA.WOB.01
    :  :
    :  :                                         ---------------------------------------+ [A] SAM_08.AU.NS.RED.01
    :  :  ------------------------------------N14+
    :  :  :                                      ---------------------------------------+ [A] SAM_10.AU.WA.MOA.04
    :  :  :
    :  :  :                               ----------------------------------------------+ [A] AUS_03.AU.WA.SWK.01
    :  :  :         -------------------N19+
    :  :  :         :                     :                      -----------------------+ [A] AUS_04.AU.QL.GFM.08
   N403+  :         :                     --------------------N18+
       :  :         :                                            -----------------------+ [A] AUS_04.AU.QL.SMI.08
```

```
  :  :         :
  :  :         :                                    -------------------------------+ [A] AUS_05.AU.QL.CWB.04
  :  :         :                     ------------N24+
  :  :         :                     :              :              ----------------+ [A] AUS_03.AU.WA.LKD.05
  :  :  ----N67+                     :              ------------N23+
  :  :  :      :      ------------N30+                             ----------------+ [A] AUS_03.AU.WA.LKD.10
  :  :  :      :      :              :
  :  :  :      :      :              :              -------------------------------+ [A] AUS_06.AU.WA.ALL.01
  :  :  :      :      :              ------------N29+
  :  :  :      :      :                             :              ----------------+ [A] AUS_04.AU.NT.CAP.01
  :  :  :      :      :                             ------------N28+
  :  :  :      :      :                                            ----------------+ [A] AUS_07.AU.SA.WPB.01
  :  :  :      ----N66+
 N402+  :             :                                 ---------------------------+ [A] AUS_04.AU.NT.TNU.01
     :  :             :      ------------------------N33+
     :  :             :      :                          ---------------------------+ [A] AUS_97.AU.NS.CRO.01
     :  :             :      :
     :  :             :      :             ----------------------------------------+ [A] AUS_02.AU.QL.DAI.26
     :  :             :      :      ----N44+
     :  :             ----N65+      :      :       --------------------------------+ [A] AUS_05.AU.NS.AQP.08
     :  :                    :      :      -----N43+
     :  :                    :      :              :       ------------------------+ [A] AUS_08.AU.QL.TTX.01
     :  :                    :      :              -----N42+
     :  :                    :      :                      :       ----------------+ [A] AUS_06.AU.NT.AIR.01
     :  :                    :      :                      -----N41+
     :  :                    ----N64+                              :       --------+ [A] AUS_04.AU.NT.TEN.01
     :  :                           :                              -----N40+
     :  :                           :                                      --------+ [A] AUS_08.AU.QL.EMK.01
     :  :                           :
     :  :                           :                          --------------------+ [A] AUS_02.AU.QL.LBW.11
     :  :                           :      -----------------N47+
     :  :                           :      :                   --------------------+ [A] AUS_02.AU.QL.TTX.04
     :  :                           :      :
     :  :                           ----N63+                       ----------------+ [A] AUS_05.AU.NS.MAX.01
     :  :                                  :       -------------N50+
    N401+                                  :       :               ----------------+ [A] AUS_97.AU.NS.SEV.23
        :                                  :       :
        :                                  -----N62+                   ------------+ [A] AUS_04.AU.QL.DED.01
        :                                          :       ---------N53+
        :                                          :       :           ------------+ [A] AUS_05.AU.QL.NRC.01
        :                                          :       :
        :                                          -----N61+               --------+ [A] AUS_04.AU.NT.KWW.01
        :                                                  :       -----N56+
        :                                                  :       :       --------+ [A] AUS_04.AU.NT.TSE.01
        :                                                  -----N60+
        :                                                          :       --------+ [A] AUS_06.AU.NT.STC.02
        :                                                          -----N59+
        :                                                                  --------+ [A] AUS_06.AU.WA.MUN.01
        :
        :                                             -----------------------------+ [A] NCAL_07.NC.SU.MDO.01
```

```
 :                --------------------------N70+
 :                :                            -----------------------------+ [A] NCAL_98.17
 :  -----------N78+
 :  :             :             --------------------------------------------+ [A] NCAL_07.NC.SU.SRF.08
 :  :             -----------N77+
 :  :                           :             ------------------------------+ [A] NCAL_98.16
 :  :                           -----------N76+
 :  :                                         :              ---------------+ [A] NCAL_98.18A
 :  :                                         ------------N75+
 :  :                                                        ---------------+ [A] NCAL_Ueana_simonae_J
 :  :
 :  :                                           ----------------------------+ [A] FIJI_03.FJ.WE.NAL.01
 :  :               -------------------------N81+
 :  :               :                           ----------------------------+ [A] NEWGUINEA_09.ID.XX.BES.XX
 :  :  ----------N89+
 :  :  :            :             ------------------------------------------+ [A] AUS_02.AU.NS.NPF.14
N400+  :            -----------N88+
    :  :                          :             ----------------------------+ [A] AUS_04.AU.NT.DAN.10
    :  :                          -----------N87+
    :  :                                        :             --------------+ [A] AUS_05.AU.QL.ARC.02
    :  :                                        -----------N86+
    :  :                                                      --------------+ [A] AUS_05.AU.QL.KBR.01
    :  :
    :  :  ------------------------------------------------------------------+ [A] AUS_97.AU.NS.SEV.24
    :  :  :
    :  :  :                                             --------------------+ [A] AUS_XX.AU.WA.XXX.01
    :  :  :                         -----------------N93+
    :  :  :                         :                   --------------------+ [A] AUS_06.AU.WA.BAL.01
    :  :  :      ----------------N97+
    :  :  :      :                  :                   --------------------+ [A] AUS_04.AU.NT.PCK.11
   N399+  :      :                  -----------------N96+
       :  :      :                                      --------------------+ [A] AUS_06.AU.WA.ROE.01
       :  :      :
       :  :      :                     -------------------------------------+ [A] AUS_02.AU.QL.ANT.06
       :  :      :   --------------N102+
       :  :  N149+   :                 :                 -------------------+ [A] AUS_06.AU.WA.LLC.05
       :  :  :   :   :                 --------------N101+
       :  :  :   :   :                                   -------------------+ [A] AUS_08.AU.QL.MVN.10
       :  :  :   :   :
       :  :  :   :   :                           ---------------------------+ [A] AUS_05.AU.NS.TRA.02
       :  :  :   :   :              ---------N107+
       :  :  :   :   :              :            :            --------------+ [A] AUS_02.AU.QL.SCK.07
       :  :  :   :   :              :            ---------N106+
       :  :  :   N148+              :                         --------------+ [A] AUS_03.AU.WA.FTZ.01
       :  :  :       :    ------N117+
       :  :  :       :    :         :                        ---------------+ [A] AUS_04.AU.QL.SRA.10
      N398+  :       :    :         :         -----------N110+
          :  :       :    :         :         :              ---------------+ [A] AUS_10.AU.NT.RSD.01
          :  :       :    :         ------N116+
          :  :       :    :                   :         --------------------+ [A] AUS_09.AU.QL.MOF.01
```

```
 :  :       :    :                   ------N115+
 :  :       :    :                             :         ----------+ [A] AUS_02.AU.QL.MLP.02
 :  :       -N147+                             ------N114+
 :  :            :                                       ----------+ [A] AUS_02.AU.QL.NSR.04
 :  :            :
 :  :            :                   ------------------------------+ [A] NEWGUINEA_00.PG.MR.TEK.01
 :  :            :    -----------N122+
 :  :            :    :              :              ---------------+ [A] AUS_06.AU.WA.WSS.01
 :  :            :    :              -----------N121+
 :  :            :    :                             ---------------+ [A] AUS_08.AU.QL.BDE.02
 :  :            -N146+
 :  :                 :                        --------------------+ [A] AUS_00.AU.NS.XXX.01
 :  :                 :    ----------------N125+
 :  :                 :    :                   --------------------+ [A] AUS_07.AU.QL.TOZ.01
 :  :                 :    :
 :  :                 -N145+               ------------------------+ [A] AUS_04.AU.QL.HMT.30
 :  :                      :    -------N130+
 :  :                      :    :          :           ------------+ [A] AUS_05.AU.QL.CWB.01
 :  :                      :    :          --------N129+
N397+                      -N144+                      ------------+ [A] AUS_06.AU.WA.WSS.04
    :                           :
    :                           :    ------------------------------+ [A] AUS_03.AU.WA.LKD.08
    :                           -N143+
    :                                :    -------------------------+ [A] AUS_02.AU.QL.BBR.18
    :                                -N142+
    :                                     :    --------------------+ [A] AUS_06.AU.WA.NUL.07
    :                                     -N141+
    :                                          :    ---------------+ [A] AUS_03.AU.WA.TOR.01
    :                                          -N140+
    :                                               :    ----------+ [A] AUS_03.AU.WA.GOG.01
    :                                               -N139+
    :                                                    :    -----+ [A] AUS_03.AU.WA.NMR.01
    :                                                    -N138+
    :                                                         -----+ [A] AUS_06.AU.WA.AMS.03
    :
    :                 ---------------------------------------------+ [A] AUS_02.AU.QL.VER.12
    :  -----------N156+
    :  :              :              ------------------------------+ [A] AUS_07.AU.NS.BHS.04
    :  :              -----------N155+
    :  :                             :              ---------------+ [A] AUS_03.AU.WA.FTZ.03
    :  :                             -----------N154+
    :  :                                            ---------------+ [A] AUS_03.AU.WA.YAR.01
    :  :
    :  :                              -----------------------------+ [A] AUS_98.AU.VI.BRI.06
    :  :  ------------------------N159+
    :  :  :                           -----------------------------+ [A] AUS_Diemeniana_cincta
    :  :  :
    :  :  :                                          --------------+ [A] NCAL_02.NC.XX.KWN.01
    :  :  :                             ---------N162+
    :  :  :                             :            --------------+ [A] NCAL_Myersalna_depicta
```

```
 :  :  :                ---------N166+
 :  :  :                :            :            --------------+ [A] NCAL_98_500
 :  :  :                :            ---------N165+
 :  :  :                :                         --------------+ [A] NCAL_Pauropsalta_johanae
N396+  :      ------N176+
    :  :      :         :                        ---------------+ [A] NZ_MRK_Kikihia_cauta
    :  :      :         :         -----------N169+
    :  :      :         :         :              ---------------+ [A] NZ_MRK_Kikihia_scutellaris
    :  :      :         ------N175+
    :  :      :                   :         --------------------+ [A] NZ_MRK_Rhodopsalta_cruentata
    :  :      :                   ------N174+
    :  :      :                             :         ----------+ [A] NZ_MRK_Maoricicada_cassiope
    :  :      :                             ------N173+
    :  :      :                                       ----------+ [A] NZ_MRK_Maoricicada_hamiltoni
    :  :      :
    :  :      :           --------------------------------------+ [A] AUS_02.AU.QL.BBR.19
    :  :  N246+    ---N187+
    :  :  :   :    :      :      -------------------------------+ [A] AUS_03.AU.WA.SKJ.02
    :  :  :   :    :      ---N186+
    :  :  :   :    :             :      ------------------------+ [A] AUS_03.AU.WA.MDB.03
    :  :  :   :    :             ---N185+
    :  :  :   :    :                    :       ----------------+ [A] AUS_03.AU.WA.VIC.06
    :  :  :   :    :                    ----N184+
   N395+  :   :    :                            :       --------+ [A] AUS_03.AU.WA.FTZ.09
       :  :   :    :                            ----N183+
       :  :   :    :                                    --------+ [A] AUS_03.AU.WA.FTZ.11
       :  :   :    :
       :  :   :    :                           -----------------+ [S] R1_CASIA_99.NP.XX.DKK.01
       :  :   :    :          -------------N190+
       :  :   -N245+          :                -----------------+ [A] R1_NCAL_07.NC.SU.SRF.10
       :  :        :    --N200+
       :  :        :    :     :     ----------------------------+ [E] R1_EUR_02_003
       :  :        :    :     --N199+
       :  :        :    :           :      ---------------------+ [S] R1_CASIA_Tettigetta
       :  :        :    :           ---N198+
       :  :        :    :                  :      --------------+ [S] R1_EASIA_06.KR.GW.JAS.01
       :  :        :    :                  ---N197+
       :  :        :    :                         :      -------+ [S] R1_CASIA_99.18dgen.1
       :  :        :    :                         ---N196+
       :  :        :    :                                -------+ [S] R1_CASIA_99.last.1
       :  :        :    :
       :  :        :    :                         --------------+ [S] R1_EASIA_03.JP.CB.TOG.01
       :  :        -N244+            ---------N203+
       :  :             :            :            --------------+ [S] R1_EASIA_10.PH.MN.COE.01
       :  :             :            :
       :  :             :    ----N211+                 ---------+ [S] R1_CASIA_10_01
       :  :             :    :       :        -----N206+
       :  :             :    :       :        :        ---------+ [S] R1_CASIA_Melampsalta_cf_musiva
       :  :             :    :       -----N210+
       :  :             :    :                :        ---------+ [S] R1_EASIA_0555
```

```
 :  :             :    :                -----N209+
 :  :             :    :                         ---------+ [S] R1_EASIA_10.PH.MN.SCI.03
 :  :             :    :
N394+             :    :                 -----------------+ [E] R1_EUR_Pseudotettigetta_melanophrys_leunami
    :             :    :         ----N216+
    :             -N243+         :       :       ---------+ [E] R1_EUR_03.ES.XX.CDV.01
    :                  :         :       ----N215+
    :                  :    -N228+               ---------+ [E] R1_EUR_Tettigettacula_baenai
    :                  :    :    :
    :                  :    :    :    --------------------+ [E] R1_EUR_06.PT.CO.COI.01
    :                  :    :    :    :
    :                  :    :    -N227+           --------+ [E] R1_EUR_03.ES.XX.GRA.01
    :                  :    :         :    ---N220+
    :                  :    :         :    :      --------+ [E] R1_EUR_18a
    :                  :    :         -N226+
    :                  :    :              :    ----------+ [E] R1_EUR_02002EF
    :                  -N242+              -N225+
    :                       :                   :    -----+ [E] R1_EUR_02_005
    :                       :                   -N224+
    :                       :                        -----+ [E] R1_EUR_02_034
    :                       :
    :                       :           ------------------+ [F] R1_AFR_04.MW.XX.MUL.01
    :                       :     --N235+
    :                       :     :     :     ------------+ [F] R1_AFR_01.ZA.EC.GFK.01
    :                       :     :     --N234+
    :                       :     :           :     ------+ [F] R1_AFR_02.ZA.EC.KAR.01
    :                       --N241+           --N233+
    :                             :                 ------+ [F] R1_AFR_02.ZA.EC.SUN.01
    :                             :
    :                             :       ----------------+ [F] R1_AFR_03.ZA.WC.NVY.01
    :                             ----N240+
    :                                     :       --------+ [F] R1_AFR_01.ZA.EC.GLE.01
    :                                     ----N239+
    :                                             --------+ [F] R1_AFR_98.ZA.NC.NIE.01
    :
    :  ---------------------------------------------------+ [A] AUS_07.AU.QL.BRY.01
    :  :
    :  :                          ------------------------+ [A] NZ_AMN_06.NZ.ND.HEF.02
    :  :  --------------------N250+
    :  :  :                       ------------------------+ [A] NZ_AMN_Notopsalta_sericea
    :  :  :
   N393+  :             ----------------------------------+ [A] AUS_02.AU.NS.MAX.01
       :  :             :
       :  :  -------N259+                     ------------+ [A] AUS_02.AU.QL.SRI.01
       :  :  :          :          -------N254+
       :  :  :          :          :          ------------+ [A] AUS_05.AU.QL.ALP.03
       :  :  :          -------N258+
       :  :  :                     :          ------------+ [A] AUS_05.AU.QL.STA.02
      N392+  :                     -------N257+
          :  :                                ------------+ [A] AUS_05.AU.QL.TWW.04
```

```
 :  :
 :  :                     -----------------------+ [A] AUS_11.AU.SA.WIR.01
 :  :          -------N264+
 :  :          :          :          ------------+ [A] AUS_04.AU.NT.ERI.01
 :  :          :          -------N263+
 :  :  ----N272+                     ------------+ [A] AUS_07.AU.SA.SEP.02
 :  :  :       :
 :  :  :       :       --------------------------+ [A] AUS_06.AU.WA.NSF.01
 :  :  :       ----N271+
N391+  :               :       ------------------+ [A] AUS_04.AU.QL.MIW.01
    :  :               ----N270+
    :  :                       :        ---------+ [A] AUS_04.AU.QL.BUN.10
    :  :                       -----N269+
    :  :                                ---------+ [A] AUS_06.AU.WA.TUS.07
    :  :
    :  :                    ---------------------+ [A] AUS_02.AU.QL.WJH.01
    :  :             ---N279+
    :  :             :      :      --------------+ [A] AUS_97.AU.WA.WRB.15
    :  :             :      ---N278+
    :  :             :             :      -------+ [A] AUS_03.AU.NS.URA.01
    :  :             :             ---N277+
    :  :      ---N289+                    -------+ [A] AUS_06.AU.WA.NUL.01
    :  :      :      :
    :  :      :      :                -----------+ [A] AUS_07.AU.NT.TAN.10
    :  :      :      :      ------N282+
   N390+      :      :      :         -----------+ [A] AUS_09.AU.WA.TOQ.08
       :      :      ---N288+
       :      :             :      --------------+ [A] AUS_05.AU.QL.CAM.01
       :      :             ---N287+
       :  N309+                    :      -------+ [A] AUS_05.AU.QL.NCP.02
       :  :   :                    ---N286+
       :  :   :                           -------+ [A] AUS_Mugadina_sp_1
       :  :   :
       :  :   :              --------------------+ [A] AUS_03.AU.WA.RAT.02
       :  :   :    ------N294+
       :  :   :    :         :         ----------+ [A] AUS_03.AU.WA.BOX.06
       :  :   :    :         ------N293+
       :  :   -N308+                   ----------+ [A] AUS_04.AU.VI.PYC.01
       :  :        :
       :  :        :    -------------------------+ [A] AUS_04.AU.QL.TTX.01
       :  :        :    :
       :  :        -N307+    --------------------+ [A] AUS_03.AU.WA.LKA.03
       :  :             :    :
       :  :             -N306+    ---------------+ [A] AUS_10.AU.WA.LEN.02
       :  :                  :    :
      N389+                  -N305+         -----+ [A] AUS_Yoyetta_celis
          :                       :    -N300+
          :                       :    :    -----+ [A] AUS_97.AU.NS.MAX.54
          :                       -N304+
          :                            :    -----+ [A] AUS_02.AU.NS.NPF.01
```

```
 :                             -N303+
 :                                  -----+ [A] AUS_02.AU.QL.DAI.03
 :
 :           ---------------------------+ [A] AUS_02.AU.QL.LBW.06
 :           :
 :  -----N318+                 ---------+ [A] AUS_03.AU.WA.BUN.02
 :  :        :        -----N313+
 :  :        :        :        ---------+ [A] AUS_03.AU.WA.MGR.01
 :  :        -----N317+
 :  :                 :        ---------+ [A] AUS_03.AU.WA.FTZ.08
 :  :                 -----N316+
 :  :                          ---------+ [A] AUS_03.AU.WA.PJC.02
N388+
    :          -------------------------+ [A] AUS_05.AU.QL.VEN.17
    :  ----N325+
    :  :       :       -----------------+ [A] AUS_02.AU.QL.DAI.08
    :  :       ----N324+
    :  :               :       ---------+ [A] AUS_02.AU.QL.JCT.01
    :  :               ----N323+
    :  :                       ---------+ [A] AUS_03.AU.WA.OFR.02
   N387+
       :  ------------------------------+ [A] AUS_06.AU.VI.MAR.01
       :  :
       :  :  ---------------------------+ [A] AUS_06.AU.VI.GRC.01
       :  :  :
       :  :  :     ---------------------+ [S] R2_EASIA_10.PH.DI.RED.01
      N386+  :     :
          :  :     :        ------------+ [S] R2_EASIA_09.FM.PO.SAL.01
          :  : N346+  --N333+
          :  :  :  :  :     :     ------+ [S] R2_EASIA_0543
          :  :  :  :  :     --N332+
          :  :  :  :  :           ------+ [S] R2_EASIA_Huechys_beata
         N385+  : N345+
             :  :     :         --------+ [E] R2_EUR_02_028
             :  :     :  ---N336+
             :  :     :  :      --------+ [S] R2_WASIA_02_001
             :  :    N344+
             :  :        :  ------------+ [N] R2_USA_07.US.KS.GYP.01
             :  :       N343+
             :  :           :   --------+ [N] R2_USA_USA_04.US.TX.LAG.01
             :  :          N342+
             :  :               :   ----+ [N] R2_USA_02.031
            N384+              N341+
                :                   ----+ [N] R2_USA_04.US.KS.ATT.03
                :
                :              ---------+ [A] AUS_02.AU.QL.NSR.01
                :      ----N349+
                :      :       ---------+ [A] AUS_05.AU.QL.RAW.03
                :      :
                :  N361+       ---------+ [A] AUS_05.AU.NS.LRN.01
```

```
  :  :   :   N354+
  :  :   :   :   :   -----+ [A] AUS_02.AU.QL.BBR.02
  :  :   :   :   N353+
  :  :   N360+       -----+ [A] AUS_02.AU.QL.BBR.14
  :  :       :
  :  :       :   ---------+ [A] AUS_07.AU.NS.BHS.01
  :  :       N359+
 N383+           :   -----+ [A] AUS_06.AU.NT.DWS.03
     :           N358+
     :               -----+ [A] AUS_08.AU.QL.MVA.05
     :
     :           ---------+ [A] AUS_03.AU.WA.NIS.05
     :  -----N364+
     :  :        ---------+ [A] AUS_11.AU.NS.BHN.03
     :  :
    N382+  ---------------+ [A] AUS_06.AU.WA.EMM.03
        :  :
        :  :          ----+ [A] AUS_04.AU.QL.SMI.03
        :  :      N368+
       N381+      :   ----+ [A] AUS_10.AU.NT.HMW.01
           :  N372+
           :  :   :   ----+ [A] AUS_06.AU.NT.WMR.01
           :  :   N371+
          N380+       ----+ [A] AUS_06.AU.WA.MUW.01
              :
              :  ---------+ [A] AUS_05.AU.QL.BOL.02
             N379+
                 :  ------+ [A] AUS_09.AU.SA.AGC.01
                N378+
                    :  ---+ [A] AUS_06.AU.VI.BNE.01
                   N377+
                       ---+ [A] AUS_Chelapsalta_nr_puer
```

```
Global ML at root node:
  -lnL = 71.04
  dispersal = 0.09043
  extinction = 4.285e-09

Ancestral range subdivision/inheritance scenarios ('splits') at
internal nodes.

* Split format: [left|right], where 'left' and 'right' are the ranges
  inherited by each descendant branch (on the printed tree, 'left' is
  the upper branch, and 'right' the lower branch).

* Only splits within 2 log-likelihood units of the maximum for each
  node are shown.  'Rel.Prob' is the relative probability (fraction of
  the global likelihood) of a split.
```

```
At node N404:
   split   lnL     Rel.Prob
   [A|A]   -71.65  0.546
   [AS|A]  -71.97  0.3959
   [S|A]   -73.88  0.05815

At node N4:
   split   lnL     Rel.Prob
   [A|A]   -71.81  0.4612
   [AS|A]  -72.95  0.1488
   [AS|S]  -73.21  0.1143
   [A|AS]  -73.24  0.1106
   [S|AS]  -73.41  0.09349
   [S|S]   -74.15  0.04476

At node N3:
   split   lnL     Rel.Prob
   [A|A]   -71.81  0.4613
   [S|S]   -73.19  0.1169
   [AS|A]  -73.27  0.1076
   [A|AS]  -73.27  0.1076
   [AS|S]  -73.38  0.09605
   [S|AS]  -73.38  0.09605

At node N403:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N11:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N10:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N9:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N402:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N14:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N401:
```

```
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N67:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N19:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N18:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N66:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N30:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N24:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N23:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N29:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N28:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N65:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N33:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N64:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1
```

```
At node N44:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N43:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N42:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N41:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N40:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N63:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N47:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N62:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N50:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N61:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N53:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N60:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N56:
```

```
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N59:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N400:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N78:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N70:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N77:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N76:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N75:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N399:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N89:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N81:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N88:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N87:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1
```

```
At node N86:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N398:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N397:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N149:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N97:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N93:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N96:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N148:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N102:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N101:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N147:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N117:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N107:
```

```
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N106:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N116:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N110:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N115:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N114:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N146:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N122:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N121:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N145:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N125:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N144:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N130:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1
```

```
At node N129:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N143:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N142:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N141:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N140:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N139:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N138:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N396:
   split  lnL     Rel.Prob
   [A|A]  -71.04  0.9999

At node N156:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N155:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N154:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N395:
   split  lnL     Rel.Prob
   [A|A]  -71.04  0.9995

At node N159:
```

```
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N394:
   split  lnL     Rel.Prob
   [A|A]  -71.04  0.9964

At node N246:
   split   lnL     Rel.Prob
   [A|A]   -71.1   0.9396
   [A|AS]  -73.85  0.06032

At node N176:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N166:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N162:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N165:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N175:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N169:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N174:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N173:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N245:
   split   lnL     Rel.Prob
   [A|A]   -71.18  0.8726
   [A|AS]  -73.26  0.1083

At node N187:
```

```
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N186:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N185:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N184:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N183:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N244:
   split   lnL     Rel.Prob
   [AS|S]  -71.07  0.9748

At node N200:
   split   lnL     Rel.Prob
   [AS|S]  -71.05  0.9862

At node N190:
   split  lnL     Rel.Prob
   [S|A]  -71.04  1

At node N199:
   split  lnL     Rel.Prob
   [E|S]  -71.04  1

At node N198:
   split  lnL     Rel.Prob
   [S|S]  -71.04  1

At node N197:
   split  lnL     Rel.Prob
   [S|S]  -71.04  1

At node N196:
   split  lnL     Rel.Prob
   [S|S]  -71.04  1

At node N243:
   split  lnL     Rel.Prob
   [S|E]  -71.73  0.5002
```

```
   [S|F]  -71.73  0.4998

At node N211:
   split  lnL     Rel.Prob
   [S|S]  -71.04  1

At node N203:
   split  lnL     Rel.Prob
   [S|S]  -71.04  1

At node N210:
   split  lnL     Rel.Prob
   [S|S]  -71.04  1

At node N206:
   split  lnL     Rel.Prob
   [S|S]  -71.04  1

At node N209:
   split  lnL     Rel.Prob
   [S|S]  -71.04  1

At node N242:
   split  lnL     Rel.Prob
   [E|F]  -71.04  1

At node N228:
   split  lnL     Rel.Prob
   [E|E]  -71.04  1

At node N216:
   split  lnL     Rel.Prob
   [E|E]  -71.04  1

At node N215:
   split  lnL     Rel.Prob
   [E|E]  -71.04  1

At node N227:
   split  lnL     Rel.Prob
   [E|E]  -71.04  1

At node N226:
   split  lnL     Rel.Prob
   [E|E]  -71.04  1

At node N220:
   split  lnL     Rel.Prob
   [E|E]  -71.04  1
```

```
At node N225:
   split  lnL     Rel.Prob
   [E|E]  -71.04  1

At node N224:
   split  lnL     Rel.Prob
   [E|E]  -71.04  1

At node N241:
   split  lnL     Rel.Prob
   [F|F]  -71.04  1

At node N235:
   split  lnL     Rel.Prob
   [F|F]  -71.04  1

At node N234:
   split  lnL     Rel.Prob
   [F|F]  -71.04  1

At node N233:
   split  lnL     Rel.Prob
   [F|F]  -71.04  1

At node N240:
   split  lnL     Rel.Prob
   [F|F]  -71.04  1

At node N239:
   split  lnL     Rel.Prob
   [F|F]  -71.04  1

At node N393:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N392:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N250:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N391:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N259:
   split  lnL     Rel.Prob
```

```
   [A|A]  -71.04  1

At node N258:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N254:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N257:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N390:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N272:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N264:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N263:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N271:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N270:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N269:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N389:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N309:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1
```

```
At node N289:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N279:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N278:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N277:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N288:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N282:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N287:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N286:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N308:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N294:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N293:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N307:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N306:
   split  lnL     Rel.Prob
```

```
   [A|A]  -71.04  1

At node N305:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N304:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N300:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N303:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N388:
   split  lnL     Rel.Prob
   [A|A]  -71.04  0.9995

At node N318:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N317:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N313:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N316:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N387:
   split  lnL     Rel.Prob
   [A|A]  -71.04  0.9981

At node N325:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N324:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1
```

```
At node N323:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N386:
   split  lnL     Rel.Prob
   [A|A]  -71.05  0.9902

At node N385:
   split   lnL     Rel.Prob
   [A|A]   -71.13  0.9118
   [A|AS]  -73.47  0.08783

At node N384:
   split  lnL     Rel.Prob
   [S|A]  -71.04  1

At node N346:
   split  lnL     Rel.Prob
   [S|S]  -71.05  0.9858

At node N345:
   split   lnL     Rel.Prob
   [S|S]   -71.17  0.8749
   [S|NS]  -73.12  0.1248

At node N333:
   split  lnL     Rel.Prob
   [S|S]  -71.04  1

At node N332:
   split  lnL     Rel.Prob
   [S|S]  -71.04  1

At node N344:
   split  lnL     Rel.Prob
   [S|N]  -71.04  1

At node N336:
   split  lnL     Rel.Prob
   [E|S]  -71.04  1

At node N343:
   split  lnL     Rel.Prob
   [N|N]  -71.04  1

At node N342:
   split  lnL     Rel.Prob
   [N|N]  -71.04  1
```

```
At node N341:
   split  lnL     Rel.Prob
   [N|N]  -71.04  1

At node N383:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N361:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N349:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N360:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N354:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N353:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N359:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N358:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N382:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N364:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N381:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N380:
   split  lnL     Rel.Prob
```

```
   [A|A]  -71.04  1

At node N372:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N368:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N371:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N379:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N378:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1

At node N377:
   split  lnL     Rel.Prob
   [A|A]  -71.04  1
```