

# Supplementary Material

Algae 2019, 34(2): 91-97

<https://doi.org/10.4490/algae.2019.34.5.26>

Open Access



**Supplementary Table S1.** Specimen list and collection information for *Callophyllis variegata*

Species	Sample ID	Date	Country	Latitude	Longitude	COI-5P	ITS
<i>Callophyllis variegata</i>	GWS001693	May 23, 2003	Canada	53.417	-132.75	JX034433	-
	GWS009975	May 21, 2008	Canada	49.812	-126.987	HM917180	JX034076
	GWS009977	May 21, 2008	Canada	49.812	-126.987	JX034435	MG700512
	GWS013172	Jun 21, 2009	Canada	52.569	-131.403	HM915534	-
	GWS020114	Jun 13, 2010	Canada	52.45	-131.292	JX034427	MG700484
	GWS020446	Jun 15, 2010	Canada	52.578	-131.438	JX034428	-
	GWS020916	Jun 7, 2010	Canada	53.248	-131.984	JX034429	MG700499 <sup>a</sup>
	GWS028179	Jul 7, 2011	Canada	52.608	-131.448	KM254913	MG700513 <sup>a</sup>
	GWS028196	Jul 7, 2011	Canada	52.608	-131.448	KF280914	MG700462
	GWS030711	Jun 10, 2012	Canada	52.302	-131.179	KM254326	MG700475
	GWS030729	Jun 10, 2012	Canada	52.302	-131.179	KM254729	MG700495
	GWS030869	Jun 12, 2012	Canada	52.224	-131.101	KM254825	MG700506
	GWS030871	Jun 12, 2012	Canada	52.224	-131.101	KM254279	MG700468
	GWS030896	Jun 12, 2012	Canada	52.224	-131.101	MG700458	MG700519
	GWS035604	Aug 13, 2013	Canada	53.017	-131.602	KM254730	MG700496
	GWS021477	May 16, 2010	USA	36.519	-121.953	HQ919275	-
	GWS022107	May 20, 2010	USA	36.567	-121.943	JX034430	MG700476
	GWS022109	May 20, 2010	USA	36.567	-121.943	HQ919293	JX034061
	GWS022138	May 20, 2010	USA	36.567	-121.943	HQ919294	MG700507 <sup>a</sup>
	GWS022156	May 20, 2010	USA	36.567	-121.943	HQ919295	MG700472
	GWS022159	May 20, 2010	USA	36.567	-121.943	HQ919296	MG700498
	GWS022175	May 20, 2010	USA	36.567	-121.943	JX034434	MG700500
	GWS022273	May 22, 2010	USA	36.627	-121.916	HQ919301	MG700518 <sup>a</sup>
	GWS022287	May 22, 2010	USA	36.627	-121.916	JX034432	MG700482
	GWS022326	May 22, 2010	USA	36.627	-121.916	JX034436	MG700520
	GWS022373	May 23, 2010	USA	36.62	-121.899	HQ919302	-
	GWS022374	May 23, 2010	USA	36.62	-121.899	HQ919303	JX034057
	GWS022403	May 23, 2010	USA	36.62	-121.899	HQ919304	JX034055
	03Sp3.3	Jan 29, 2004	Chile	-42.464	-73.808	MG700415	MG700477
	Coch001	Oct 21, 2015	Chile	-36.593	-72.982	MG700452	-
	Coch002	Oct 21, 2015	Chile	-36.593	-72.982	MG700455	-
	Coch003	Oct 21, 2015	Chile	-36.593	-72.982	MG700402	-
	Coch004	Oct 21, 2015	Chile	-36.593	-72.982	MG700444	MG700502
	Coch005	Oct 21, 2015	Chile	-36.593	-72.982	MG700439	MG700494
	Coch006	Oct 21, 2015	Chile	-36.593	-72.982	MG700437	MG700491
	Coch007	Oct 21, 2015	Chile	-36.593	-72.982	MG700421	MG700483
	Coch008	Oct 21, 2015	Chile	-36.593	-72.982	MG700407	MG700466
	Coch009	Oct 21, 2015	Chile	-36.593	-72.982	MG700431	MG700487
	Coch010	Nov 14, 2015	Chile	-36.593	-72.982	MG700416	MG700478
	Coch011	Nov 14, 2015	Chile	-36.593	-72.982	MG700450	MG700508 <sup>a</sup>
	Coch012	Nov 14, 2015	Chile	-36.593	-72.982	MG700448	MG700504
	Coch013	Nov 14, 2015	Chile	-36.593	-72.982	MG700457	MG700517
	Coch014	Nov 14, 2015	Chile	-36.593	-72.982	MG700435	-
	Coch015	Nov 14, 2015	Chile	-36.593	-72.982	MG700459	MG700521
	Coch016	Nov 14, 2015	Chile	-36.593	-72.982	MG700460	MG700522
	Coch017	Nov 14, 2015	Chile	-36.593	-72.982	MG700449	MG700505 <sup>a</sup>
	Coch018	Nov 14, 2015	Chile	-36.593	-72.982	MG700453	MG700511
Coch019	Nov 14, 2015	Chile	-36.593	-72.982	MG700420	-	
Coch020	Nov 14, 2015	Chile	-36.593	-72.982	MG700408	MG700467	
Coch021	Nov 14, 2015	Chile	-36.593	-72.982	MG700434	MG700489	
Coch022	Nov 14, 2015	Chile	-36.593	-72.982	MG700451	MG700509	
Coch023	Nov 14, 2015	Chile	-36.593	-72.982	MG700445	-	

**Supplementary Table S1.** Continued

Species	Sample ID	Date	Country	Latitude	Longitude	COI-5P	ITS
<i>Callophyllis variegata</i>	GWS000515	Dec 15, 1998	Chile	-44	-74	JX034431	JX034032
	GWS038120	Apr 13, 2014	Chile	-39.72	-73.406	MG700417	MG700479
	GWS038156	Apr 18, 2014	Chile	-41.927	-74.012	MG700422	MG700485
	GWS038161	Apr 19, 2014	Chile	-41.945	-74.03	MG700454	-
	Pto.Ald1	Sep 23, 2015	Chile	-30.294	-71.620	MG700411	MG700471
	Pto.Ald2	Sep 23, 2015	Chile	-30.294	-71.620	MG700414	MG700474
	Pto.Ald3	Sep 23, 2015	Chile	-30.294	-71.620	MG700419	MG700480
	Pto.Ald4	Sep 23, 2015	Chile	-30.294	-71.620	MG700401	MG700463
	Pto.Ald5	Sep 23, 2015	Chile	-30.294	-71.620	MG700413	MG700473
	Pto.Ald6	Sep 23, 2015	Chile	-30.294	-71.620	MG700442	MG700501
	Pto.Ald7	Sep 23, 2015	Chile	-30.294	-71.620	MG700405	MG700465
	Pto.Ald8	Sep 23, 2015	Chile	-30.294	-71.620	MG700440	MG700497
	Pto.Ald9	Sep 23, 2015	Chile	-30.294	-71.620	MG700410	MG700470
Pto.Ald10	Sep 23, 2015	Chile	-30.294	-71.620	MG700427	-	
Pto.Ald11	Sep 23, 2015	Chile	-30.294	-71.620	MG700438	MG700492	
Pto.Ald12	Sep 23, 2015	Chile	-30.294	-71.620	MG700447	MG700503	

<sup>a</sup>An internal transcribed spacer (ITS) sequence with signatures from multiple population (e.g., ambiguities) that were removed from IMA2 analyses and haplotype networks.

**Supplementary Table S2.** Log-likelihood ratio tests for simplified IMA2 models

Model	log(P)	df	2LLR	p-value
FULL	-4.041	-	-	-
$m0 > 1 = m1 > 0$	-4.323	1	0.5637	0.452773
$m0 > 1 = 0$	-4.041	1	0	1
$m1 > 0 = 0$	-4.199	1	0.3172	0.573295
$m = 0$	-4.59	2	1.099	0.577238
$q0 = q1$	-4.097	1	0.1134	0.736306
$q0 = q1, m0 > 1 = m1 > 0$	-4.339	2	0.5963	0.74219
$q0 = q1, m0 > 1 = 0$	-4.097	2	0.1134	0.944877
$q0 = q1, m1 > 0 = 0$	-4.209	2	0.3357	0.845481
$q0 = q1, m = 0$	-4.679	3	1.276	0.73484
$q0 = q2$	-4.676	1	1.271	0.259579
$q0 = q2, m1 > 0 = m0 > 1$	-4.963	2	1.844	0.397723
$q0 = q2, m0 > 1 = 0$	-4.834	2	1.586	0.452485
$q0 = q2, m1 > 0 = 0$	-4.676	2	1.271	0.529671
$q0 = q2, m = 0$	-5.676	3	3.27	0.35184
$q1 = q2$	-4.782	1	1.482	0.223462
$q1 = q2, m0 > 1 = m1 > 0$	-4.975	2	1.868	0.392979
$q1 = q2, m0 > 1 = 0$	-4.805	2	1.528	0.465799
$q1 = q2, m1 > 0 = 0$	-4.782	2	1.482	0.476637
$q1 = q2, m = 0$	-5.646	3	3.21	0.360367
$q0 = q1 = q2$	-4.82	2	1.558	0.458865
$q0 = q1 = q2, m0 > 1 = m1 > 0$	-4.979	3	1.876	0.598538
$q0 = q1 = q2, m0 > 1 = 0$	-4.834	3	1.586	0.662568
$q0 = q1 = q2, m1 > 0 = 0$	-4.82	3	1.558	0.66895
$q0 = q1 = q2, m = 0$	-5.678	4	3.275	0.512903

LLR, log-likelihood ratio; p-value, the probability that the full model can be rejected in favour of a given simpler model; q, effective population size; m, migration; 0, South Pacific; 1, North Pacific; 2, ancestral population;  $m0 > 1$ , migration going backwards in time from the South to North Pacific;  $m1 > 0$ , migration going backward in time from the North to the South Pacific.