

Table S1. List of taxa used in molecular analyses. GenBank accession numbers under each marker; if marker not sequenced indicated by “–”. Sequences generated in present study are in bold.

Species	<i>psbA</i>	<i>rbcL</i>
Collection site, date, isolate or herbarium code		
<i>Callolithophytum parcum</i> ; USA	KP142740	KP142781
<i>Clathromorphum circumscriptum</i> ; Canada	KP142731	KP142775
<i>Clathromorphum nereostratum</i> ; USA		KP142798
<i>Clathromorphum compactum</i> ; Canada		KP142774
<i>Crustaphytum atlanticum</i> ; Brazil	MK524382	MN201585
<i>Clathromorphum</i> sp.		
LMS00001072; Doumer Island, adjacent to the Peltier Channel, Antarctic Peninsula; 21. Feb. 2019; Martha S. Calderon, Andres Mansilla, Danilo E. Bustamante; MSC094 (no bleached)	OQ471937	OQ471944
LMS00001073; Doumer Island, adjacent to the Peltier Channel, Antarctic Peninsula; 21. Feb. 2019; Martha S. Calderon, Andres Mansilla, Danilo E. Bustamante; MSC101 (bleached)	OQ471942	OQ471948
LMS00001074; Doumer Island, adjacent to the Peltier Channel, Antarctic Peninsula; 21. Feb. 2019; Martha S. Calderon, Andres Mansilla, Danilo E. Bustamante; MSC104 (bleached)	–	OQ471945
LMS00001075; Doumer Island, adjacent to the Peltier Channel, Antarctic Peninsula; 21. Feb. 2019; Martha S. Calderon, Andres Mansilla, Danilo E. Bustamante; MSC105A (bleached)	OQ471938	OQ471947
LMS00001076; Doumer Island, adjacent to the Peltier Channel, Antarctic Peninsula; 21. Feb. 2019; Martha S. Calderon, Andres Mansilla, Danilo E. Bustamante; MSC105B (bleached)	OQ471939	OQ471946
LMS00001077; Doumer Island, adjacent to the Peltier Channel, Antarctic Peninsula; 21. Feb. 2019; Martha S. Calderon, Andres Mansilla, Danilo E. Bustamante; MSC113 (bleached)	OQ471941	OQ471949
LMS00001078; Doumer Island, adjacent to the Peltier Channel, Antarctic Peninsula; 21. Feb. 2019; Martha S. Calderon, Andres Mansilla, Danilo E. Bustamante; MSC116 (bleached)	OQ471940	OQ471943
<i>Mesophyllum vancouveriense</i> ; Canada	–	KC134326
Hapalidiales spA; New Zealand	MK413491	–
Hapalidiales sp.; New Zealand	–	MK674241
Hapalidiales spX; New Zealand	MK413592	MK674197
Hapalidiales spY; New Zealand	MK413514	–
Hapalidiales spZN; New Zealand	–	MK674224
Hapalidiales spZE; New Zealand	MK413360	MK674221
Hapalidiales spZF; New Zealand	–	MK674212
Hapalidiales spZG; New Zealand	–	MK674216
Hapalidiales spW; New Zealand	DQ167990	MK674191
Hapalidiales spZ; New Zealand	DQ168000	KM369132
Hapalidiales spZA; New Zealand	–	MK674214
Hapalidiales spZB New Zealand	–	MK674227
Hapalidiales spZL; New Zealand	MK413377	–
Hapalidiales spZM; New Zealand	MK702011	–
Hapalidiales spZT; New Zealand	–	KM369133
Hapalidiales spZS; New Zealand	–	MK674189
<i>Heydrichia woelkerlingii</i> ; South Africa	JQ917415	KJ591679
<i>Leptophytum laeve</i> ; Canada	KP142754	KP142779

<i>Lithothamnion crispatum</i> ; New Zealand	NZC2411	MK674234
<i>Lithothamnion lemoineae</i> ; Canada	KP142725	KP142769
<i>Mastophoropsis canaliculata</i> ; Australia	–	KC134335
<i>Mesophyllum lichenoides</i> ; UK	MF034552	KY994129
<i>Mesophyllum vancouveriense</i> ; Canada	KP224289	–
<i>Neopolyporolithon reclinatum</i> ; Canada	KP142762	KC134324
<i>Neopolyporolithon articum</i> ; USA	–	KP142784
<i>Phymatolithon laevigatum</i> ; Germany	MH252313	MH274815
<i>Phymatolithon lusitanicum</i> ; Spain	MH252248	MH274807
<i>Sporolithon durum</i> ; Australia	DQ168023	KM369121
<i>Sporolithon ptychoides</i> ; Egypt	MF034541	KY994117
<i>Synarthrophyton chejuense</i> ; Korea	MH281626	MH281626
<i>Synarthrophyton schielianum</i> ; New Zealand	DQ168016	–
<i>Synarthrophyton patena</i> ; Australia	–	MK674240
<i>Synarthrophyton patena</i> ; New Zealand	MK413327	MK674242
<i>Roseolithon purii</i>	ON365774	MW316628
<i>Roseolithon potiguarae</i>	–	MW316627
<i>Roseolithon</i> sp.	–	ON394006
<i>Roseolithon tupii</i>	–	MW316626
<i>Tectolithon fluminense</i> ; Brazil	MH123887	–
<i>Thalassolithon adeliense</i>	MZ927752	–
<i>Thalassolithon adeliense</i>	MZ927754	–
<i>Thalassolithon adeliense</i>	MZ927753	–
<i>Thalassolithon</i> sp.	–	MZ927756
<i>Thalassolithon</i> sp.	–	MZ927755