

#	Description	Accession
1	<i>Achnanthydium pyrenaicum</i> voucher TCC832 18S ribosomal RNA gene, partial sequence	KY863466.1
2	<i>Achnanthydium minutissimum</i> voucher TCC696 18S ribosomal RNA gene, partial sequence	KY863464.1
3	<i>Achnanthydium</i> sp. EP-2016a voucher SPITS_M3_15 18S small subunit ribosomal RNA gene, partial sequence	KU565383.1
4	<i>Achnanthydium minutissimum</i> isolate TCC688 18S ribosomal RNA gene, partial sequence	KT072992.1
5	<i>Achnanthydium minutissimum</i> strain CU119193 TCC770 18S ribosomal RNA gene, partial sequence	KR150670.1
6	<i>Achnanthydium minutissimum</i> gene for 18S ribosomal RNA, partial sequence, strain: NIES-407	LC037436.1
7	<i>Achnanthydium minutissimum</i> isolate TCC746 18S ribosomal RNA gene, partial sequence	KF959663.1
8	<i>Achnanthydium minutissimum</i> partial 18S rRNA gene, specimen voucher B40 0040686, strain D05_008	FR873231.1
9	<i>Achnanthes minutissima</i> partial 18S rRNA gene, clone AMIN2	AJ866992.1
10	<i>Achnanthydium minutissimum</i> voucher TCC667 18S ribosomal RNA gene, partial sequence	KY799123.1
11	<i>Achnanthydium pyrenaicum</i> strain CU123491 TCC830 18S ribosomal RNA gene, partial sequence	KR150676.1
12	<i>Achnanthydium minutissimum</i> isolate AM2006 18S ribosomal RNA gene, partial sequence	KJ658401.1
13	<i>Achnanthydium minutissimum</i> isolate AD819 18S ribosomal RNA gene, partial sequence	KJ658400.1
14	<i>Sellaphora seminulum</i> strain CU123495 TCC738 18S ribosomal RNA gene, partial sequence	KR150677.1
15	<i>Sellaphora seminulum</i> isolate HYU-D014 small subunit ribosomal RNA gene, partial sequence	MH997836.1
16	<i>Sellaphora seminulum</i> isolate TCC569 18S ribosomal RNA gene, partial sequence	KT072976.1
17	<i>Sellaphora seminulum</i> strain D06_006 18S ribosomal RNA gene, partial sequence	KM084875.1
18	<i>Nitzschia fonticola</i> partial 18S rRNA gene, clone NFON1	AJ867022.1
19	<i>Nitzschia frustulum</i> isolate TCC551 18S ribosomal RNA gene, partial sequence	KT072974.1
20	<i>Nitzschia</i> cf. <i>fonticola</i> D15_023 partial 18S rRNA gene, specimen voucher B40 0040712, strain D15_023	FR873257.1
21	<i>Nitzschia fonticola</i> isolate Wb1b1 18S ribosomal RNA gene, partial sequence	KF417685.1
23	<i>Sellaphora seminulum</i> clone TCC461 18S ribosomal RNA gene, partial sequence	KC736642.1
24	<i>Achnanthydium minutissimum</i> isolate HYU-D029 small subunit ribosomal RNA gene, partial sequence	MH826401.1
25	<i>Achnanthydium minutissimum</i> voucher TCC748 18S ribosomal RNA gene, partial sequence	KY863465.1
26	<i>Eolimna</i> sp. JZ-2014 strain D06_023 18S ribosomal RNA gene, partial sequence	KM084877.1
27	<i>Sellaphora minima</i> isolate TCC524 18S ribosomal RNA gene, partial sequence	KF959656.1
28	<i>Eolimna minima</i> partial 18S rRNA gene, specimen voucher B40 0040692, strain D03_030	FR873244.1
29	<i>Navicula minima</i> 18S ribosomal RNA, partial sequence	HM449712.1
30	<i>Eolimna minima</i> partial 18S rRNA gene, isolate SNA15	AJ243063.2
31	<i>Eolimna minima</i> 18S rRNA gene, strain AT-70Gel18	AM501962.1

32	<i>Sellaphora cf. minima</i> clone BM42 18S ribosomal RNA gene, partial sequence	EF151966.1
33	<i>Eolimna minima</i> strain HYU-D035 small subunit ribosomal RNA gene, partial sequence	MK567891.1
34	<i>Nitzschia palea</i> strain NGPCS3 18S ribosomal RNA gene, partial sequence	KU341755.1
35	<i>Nitzschia palea</i> voucher TCC854 18S ribosomal RNA gene, partial sequence	KY863476.1
36	<i>Nitzschia palea</i> strain CU119217 TCC1391 18S ribosomal RNA gene, partial sequence	KR150668.1
37	<i>Nitzschia palea</i> gene for 18S ribosomal RNA, partial sequence, strain: NIES-487	LC037443.1
38	<i>Nitzschia palea</i> isolate D1 18S ribosomal RNA gene, partial sequence	KF051059.1
39	<i>Nitzschia acicularis</i> partial 18S rRNA gene, specimen voucher B40 0040707, strain D03_095	FR873256.1
40	<i>Nitzschia palea</i> partial 18S rRNA gene, clone NPAL2	AJ867001.1
41	<i>Nitzschia palea</i> partial 18S rRNA gene, clone NPAL6	AJ867003.1
42	<i>Nitzschia palea</i> voucher TCC908 18S ribosomal RNA gene, partial sequence	KY799130.1
43	<i>Nitzschia palea</i> isolate HYU-D005 small subunit ribosomal RNA gene, partial sequence	MH358461.1
44	<i>Nitzschia palea</i> voucher TCC855 18S ribosomal RNA gene, partial sequence	KY863477.1
45	<i>Nitzschia palea</i> voucher TCC762 18S ribosomal RNA gene, partial sequence	KY799126.1
46	<i>Nitzschia palea</i> strain UQL1_31 18S ribosomal RNA gene, partial sequence	KT893842.1
47	<i>Nitzschia palea</i> clone TCC570 18S ribosomal RNA gene, partial sequence	KC736639.1
48	<i>Nitzschia palea</i> voucher TCC912 18S ribosomal RNA gene, partial sequence	KY799132.1
49	<i>Nitzschia palea</i> voucher TCC907 18S ribosomal RNA gene, partial sequence	KY799129.1
50	<i>Nitzschia palea</i> strain LCR-S-6-4-1 18S ribosomal RNA gene, partial sequence	JQ610161.2
51	<i>Nitzschia palea</i> strain JD-041 18S ribosomal RNA gene, partial sequence	KP016701.1
55	<i>Bolidomonas pacifica</i> strain CCMP1866 18S small subunit ribosomal RNA gene, partial sequence	HQ912557.1
56	<i>Sellaphora cf. seminulum</i> clone TM37 18S ribosomal RNA gene, partial sequence	EF151967.1

Table S1: Description and accession numbers of 18SV4 rRNA sequences downloaded from GenBank for phylogenetic analysis.

#	Description	Accession
1	Achnanthidium cf. lineare NA-2016 strain B397 ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit gene, partial cds; chloroplast	KR709273.1
2	Achnanthidium minutissimum strain B443 ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit gene, partial cds; chloroplast	KR709272.1
3	Achnanthidium minutissimum voucher TCC667 ribulose-1,5-carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KY863482.1
4	Achnanthidium sp. voucher MIC10_53 ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KU687476.1
5	Bolidomonas pacifica strain CCMF 1866 ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit gene, partial cds; chloroplast gene for chloroplast product	AF372696
6	Eolimna minima strain D03_030 ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KM084930.1
7	Eolimna sp. JZ-2014 strain D06_023 ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KM084939.1
8	Eolimna sp. Styx 1 strain LCR-S-14-1-1 ribulose-1,5-bisphosphate carboxylase/oxygenase, large subunit (rbcL) gene, partial cds; chloroplast	JQ610175.1
9	Nitzschia cf. fonticola LRT-2013 partial rbcL gene for RuBisCO, large subunit, strain cf. fonticola 2	HF675065.1
10	Nitzschia fonticola isolate TCC533 ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KT072921.1
11	Nitzschia fonticola partial rbcL gene for RuBisCO, large subunit, strain A-RT24	HF675066.1
12	Nitzschia fonticola partial rbcL gene for RuBisCO, large subunit, strain B-RT25	HF675067.1
13	Nitzschia fonticola partial rbcL gene for RuBisCO, large subunit, strain C-RT26	HF675068.1
14	Nitzschia palea partial rbcL gene for RuBisCO, large subunit, strain SriLanka1	HF675121.1
15	Nitzschia palea ribulose-1,5-carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KJ542503.1
16	Nitzschia palea isolate R12 ribulose-1,5-carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KJ542502.1
17	Nitzschia palea isolate TCC 652 ribulose-1,5-carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KJ542479.1
18	Nitzschia palea isolate TCC 563 ribulose-1,5-carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KJ542460.1
19	Nitzschia palea chloroplast, complete genome	MH113811.1
20	Nitzschia palea NIES-2729 chloroplast DNA complet genome	AP018511.1
21	Nitzschia palea voucher TCC854 ribulose-1,5-carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KY863492.1
22	Nitzschia palea voucher TCC906 ribulose-1,5-carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KY799141.1
23	Nitzschia palea isolate BR022 ribulose-1,5-carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KT026123.1
24	Nitzschia palea partial rbcL gene for RuBisCO, large subunit, strain Spain A2	HF675124.1
25	Nitzschia palea isolate TCC 139-3 ribulose-1,5-carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KJ542520.1
26	Nitzschia palea isolate BB2b ribulose-1,5-carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KJ542517.1
27	Nitzschia palea strain LCR-S-6-4-1 ribulose-1,5-bisphosphate carboxylase/oxygenase, large subunit (rbcL) gene, partial cds; chloroplast	JQ610171.1
28	Nitzschia palea plastid partial rbcL gene for ribulose-1,5-carboxylase/oxygenase large subunit, strain Belgium4	FN557029.1
29	Nitzschia palea voucher TCC909 ribulose-1,5-carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KY799144.1
30	Nitzschia palea voucher TCC766 ribulose-1,5-carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KY863491.1
31	Nitzschia palea voucher TCC852 ribulose-1,5-carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KY799139.1
32	Nitzschia palea partial rbcL gene for RuBisCO, large subunit, strain New Spain2	HF675127.1
33	Nitzschia palea isolate Japan F ribulose-1,5-carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KJ542507.1
34	Sellaphora cf. seminulum clone TM37 ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	EF143280.1
35	Sellaphora seminulum clone TCC461 ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KC736613.1
36	Sellaphora seminulum isolate TCC738 ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KT072950.1
37	Sellaphora seminulum strain D06_006 ribulose-1,5-bisphosphate carboxylase/oxygenase large subunit (rbcL) gene, partial cds; chloroplast	KM084937.1
38	Sellaphora sp. Styx 1 strain LCR-S-19-1-1 ribulose-1,5-bisphosphate carboxylase/oxygenase, large subunit (rbcL) gene, partial cds; chloroplast	JQ610174.1

KM  
KM  
EF1  
AM  
JQ6

Table S2. Description and accession numbers of rbcL gene sequences downloaded from GenBank for phylogenetic analysis.

Description	Accession
Nitzschia palea partial rbcL gene for RuBisCO, large subunit, strain SriLanka1	HF675121.1
Nitzschia palea ribulose-1,5-carboxylase/oxygenase large subunit (rbcL) gene, p	KJ542503.1
Nitzschia palea isolate R12 ribulose-1,5-carboxylase/oxygenase large subunit (r	KJ542502.1
Nitzschia palea isolate TCC 652 ribulose-1,5-carboxylase/oxygenase large subur	KJ542479.1
Nitzschia palea isolate TCC 563 ribulose-1,5-carboxylase/oxygenase large subur	KJ542460.1
Nitzschia palea chloroplast, complete genome	MH113811.1
Nitzschia palea NIES-2729 chloroplast DNA complet genome	AP018511.1
Nitzschia palea voucher TCC854 ribulose-1,5-carboxylase/oxygenase large subu	KY863492.1
Nitzschia palea voucher TCC906 ribulose-1,5-carboxylase/oxygenase large subu	KY799141.1
Nitzschia palea isolate BR022 ribulose-1,5-carboxylase/oxygenase large subunit	KT026123.1
Nitzschia palea partial rbcL gene for RuBisCO, large subunit, strain Spain A2	HF675124.1
Nitzschia palea isolate TCC 139-3 ribulose-1,5-carboxylase/oxygenase large sub	KJ542520.1
Nitzschia palea isolate BB2b ribulose-1,5-carboxylase/oxygenase large subunit	KJ542517.1
Nitzschia palea strain LCR-S-6-4-1 ribulose-1,5-bisphosphate carboxylase/oxyge	JQ610171.1
Nitzschia palea plastid partial rbcL gene for ribulose-1,5-carboxylase/oxygenase	FN557029.1
Nitzschia palea voucher TCC909 ribulose-1,5-carboxylase/oxygenase large subu	KY799144.1
Nitzschia palea voucher TCC766 ribulose-1,5-carboxylase/oxygenase large subu	KY863491.1
Nitzschia palea voucher TCC852 ribulose-1,5-carboxylase/oxygenase large subu	KY799139.1
Nitzschia palea partial rbcL gene for RuBisCO, large subunit, strain New Spain2	HF675127.1
Nitzschia palea isolate Japan F ribulose-1,5-carboxylase/oxygenase large subun	KJ542507.1
Nitzschia palea isolate SriLanka1 ribulose-1,5-carboxylase/oxygenase large subu	KJ542515.1
Uncultured organism clone D_SG_2_B06_HC ribulose-1,5-bisphosphate carbox	HM538675.1
Nitzschia palea partial rbcL gene for RuBisCO, large subunit, strain SriLanka2	HF675122.1
Nitzschia palea partial rbcL gene for RuBisCO, large subunit, strain Japan D2	HF675125.1
Nitzschia palea partial rbcL gene for RuBisCO, large subunit, strain Iaia46	HF675107.1
Nitzschia palea isolate TCC 139-1 ribulose-1,5-carboxylase/oxygenase large sub	KJ542519.1
Nitzschia palea isolate Spain A2 ribulose-1,5-carboxylase/oxygenase large subu	KJ542513.1
Nitzschia palea isolate Japan B2 ribulose-1,5-carboxylase/oxygenase large subu	KJ542505.1
Nitzschia palea isolate TCC 600 ribulose-1,5-carboxylase/oxygenase large subur	KJ542496.1
Nitzschia palea isolate TCC 620 ribulose-1,5-carboxylase/oxygenase large subur	KJ542493.1
Nitzschia palea isolate DM1011 ribulose-1,5-carboxylase/oxygenase large subu	KJ542490.1
Nitzschia palea isolate TCC 456 ribulose-1,5-carboxylase/oxygenase large subur	KJ542485.1
Nitzschia palea isolate TCC 468 ribulose-1,5-carboxylase/oxygenase large subur	KJ542484.1
Nitzschia palea isolate TCC 641 ribulose-1,5-carboxylase/oxygenase large subur	KJ542469.1
Nitzschia palea isolate TCC 476 ribulose-1,5-carboxylase/oxygenase large subur	KJ542468.1
Nitzschia palea isolate TCC 583 ribulose-1,5-carboxylase/oxygenase large subur	KJ542464.1
Nitzschia palea isolate TCC 573 ribulose-1,5-carboxylase/oxygenase large subur	KJ542463.1
Nitzschia palea isolate TCC 568 ribulose-1,5-carboxylase/oxygenase large subur	KJ542461.1
Nitzschia palea isolate TCC 528 ribulose-1,5-carboxylase/oxygenase large subur	KJ542459.1
Nitzschia palea isolate TCC 531 ribulose-1,5-carboxylase/oxygenase large subur	KJ542457.1
Nitzschia palea isolate TCC139-2 ribulose-1,5-bisphosphate carboxylase/oxyger	KF959639.1
Nitzschia palea clone TCC583 ribulose-1,5-bisphosphate carboxylase/oxygenase	KC736611.1
Nitzschia palea clone TCC570 ribulose-1,5-bisphosphate carboxylase/oxygenase	KC736610.1
Nitzschia palea clone TCC435 ribulose-1,5-bisphosphate carboxylase/oxygenase	KC736609.1
Nitzschia palea strain LCR-S-29-2 ribulose-1,5-bisphosphate carboxylase/oxyge	JQ610170.1
Nitzschia palea strain LCR-S-12-1-2 ribulose-1,5-bisphosphate carboxylase/oxyg	JQ610169.1
Uncultured organism clone D_SG_2_H08_HC ribulose-1,5-bisphosphate carbox	HM538731.1
Uncultured organism clone D_SG_2_G08_HC ribulose-1,5-bisphosphate carbox	HM538722.1
Uncultured organism clone D_SG_2_G05_HC ribulose-1,5-bisphosphate carbox	HM538720.1
Uncultured organism clone D_SG_2_F05_HC ribulose-1,5-bisphosphate carbox	HM538711.1

Uncultured organism clone D_SG_2_F03_HC ribulose-1,5-bisphosphate carboxylase	HM538710.1
Uncultured organism clone D_SG_2_E06_HC ribulose-1,5-bisphosphate carboxylase	HM538704.1
Uncultured organism clone D_SG_2_E03_HC ribulose-1,5-bisphosphate carboxylase	HM538701.1
Uncultured organism clone D_SG_2_E02_HC ribulose-1,5-bisphosphate carboxylase	HM538700.1
Uncultured organism clone D_SG_2_A02_HC ribulose-1,5-bisphosphate carboxylase	HM538662.1
Uncultured organism clone D_SG_2_C07_HC ribulose-1,5-bisphosphate carboxylase	HM538683.1
Uncultured organism clone D_SG_2_A03_HC ribulose-1,5-bisphosphate carboxylase	HM538663.1
Uncultured organism clone D_SG_2_C04_HC ribulose-1,5-bisphosphate carboxylase	HM538680.1
Uncultured organism clone D_SG_2_C03_HC ribulose-1,5-bisphosphate carboxylase	HM538679.1
Uncultured organism clone D_SG_2_A06_HC ribulose-1,5-bisphosphate carboxylase	HM538666.1
Uncultured organism clone D_SG_2_F02_NS ribulose-1,5-bisphosphate carboxylase	HM538604.1
Uncultured organism clone D_SG_2_B02_HC ribulose-1,5-bisphosphate carboxylase	HM538671.1
Uncultured organism clone D_SG_2_B01_HC ribulose-1,5-bisphosphate carboxylase	HM538670.1
Uncultured organism clone D_SG_2_A05_HC ribulose-1,5-bisphosphate carboxylase	HM538665.1
Uncultured organism clone D_SG_2_A07_HC ribulose-1,5-bisphosphate carboxylase	HM538667.1
Uncultured organism clone D_SG_2_A04_HC ribulose-1,5-bisphosphate carboxylase	HM538664.1
Uncultured organism clone D_SG_2_A01_HC ribulose-1,5-bisphosphate carboxylase	HM538661.1
Uncultured organism clone D_SG_1_F01_NS ribulose-1,5-bisphosphate carboxylase	HM538632.1
Nitzschia palea plastid partial rbcL gene for ribulose-1,5-carboxylase/oxygenase	FN557028.1
Nitzschia palea plastid partial rbcL gene for ribulose-1,5-carboxylase/oxygenase	FN557027.1
Nitzschia palea plastid partial rbcL gene for ribulose-1,5-carboxylase/oxygenase	FN557026.1
Nitzschia palea plastid partial rbcL gene for ribulose-1,5-carboxylase/oxygenase	FN557024.1
Nitzschia palea plastid partial rbcL gene for ribulose-1,5-carboxylase/oxygenase	FN557022.1
Nitzschia palea plastid partial rbcL gene for ribulose-1,5-carboxylase/oxygenase	FN557020.1
Nitzschia palea plastid partial rbcL gene for ribulose-1,5-carboxylase/oxygenase	FN557019.1
Nitzschia palea voucher TCC912 ribulose-1,5-carboxylase/oxygenase large subunit	KY799145.1
Nitzschia palea voucher TCC908 ribulose-1,5-carboxylase/oxygenase large subunit	KY799143.1
Nitzschia palea voucher TCC764 ribulose-1,5-carboxylase/oxygenase large subunit	KY863490.1
Nitzschia palea voucher TCC762 ribulose-1,5-carboxylase/oxygenase large subunit	KY863489.1
Nitzschia palea voucher TCC907 ribulose-1,5-carboxylase/oxygenase large subunit	KY799142.1
Nitzschia palea partial rbcL gene for RuBisCO, large subunit, strain New Scot2	HF675128.1
Nitzschia palea partial rbcL gene for RuBisCO, large subunit, strain New Scot1	HF675126.1
Nitzschia palea partial rbcL gene for RuBisCO, large subunit, strain Spain A1	HF675120.1
Nitzschia palea partial rbcL gene for RuBisCO, large subunit, strain L19	HF675106.1
Nitzschia palea partial rbcL gene for RuBisCO, large subunit, strain L17	HF675105.1
Nitzschia palea partial rbcL gene for RuBisCO, large subunit, strain L15	HF675104.1
Nitzschia palea isolate NewSpain2 ribulose-1,5-carboxylase/oxygenase large subunit	KJ542511.1
Nitzschia palea isolate NewScot2 ribulose-1,5-carboxylase/oxygenase large subunit	KJ542509.1
Nitzschia palea isolate Japan A2 ribulose-1,5-carboxylase/oxygenase large subunit	KJ542504.1
Nitzschia palea isolate DM1010 ribulose-1,5-carboxylase/oxygenase large subunit	KJ542489.1
Nitzschia palea isolate TCC 703 ribulose-1,5-carboxylase/oxygenase large subunit	KJ542483.1
Nitzschia palea isolate TCC 708 ribulose-1,5-carboxylase/oxygenase large subunit	KJ542470.1
Nitzschia palea isolate TCC 493 ribulose-1,5-carboxylase/oxygenase large subunit	KJ542466.1
Nitzschia palea isolate TCC 480 ribulose-1,5-carboxylase/oxygenase large subunit	KJ542465.1
Nitzschia palea isolate TCC 523 ribulose-1,5-carboxylase/oxygenase large subunit	KJ542458.1
Uncultured organism clone D_SG_2_H04_HC ribulose-1,5-bisphosphate carboxylase	HM538728.1
Uncultured organism clone D_SG_2_H01_HC ribulose-1,5-bisphosphate carboxylase	HM538726.1
Uncultured organism clone D_SG_2_G06_HC ribulose-1,5-bisphosphate carboxylase	HM538721.1
Uncultured organism clone D_SG_2_G01_HC ribulose-1,5-bisphosphate carboxylase	HM538718.1
Uncultured organism clone D_SG_2_F08_HC ribulose-1,5-bisphosphate carboxylase	HM538716.1