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Genotypic diversity of *Ulnaria acus* (Kützing) Aboal from Eurasia

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Table S1. Data on the nucleotide sequences of *cox*1 and 18S rRNA genes.

Strain	Species	Country	NCBI Accession for *cox* 1	NCBI Accession for 18S rRNA
(E7)b	Pinnularia borealis	France: Auvergne-Rhones-Alpes, Rhone-Alpes, Ailfroide	MN975247	
AMS16_M023_04	Pinnularia borealis complex sp.	France: French Southern and Antarctic Lands, Ile, Saint-Paul, Inside Cratere	MN975253	
CheP	Nitzschia palea	Russia	MK887243	
Brazil	Nitzschia palea	Brazil: Amazonas River, Manaus	FN557039	
TCC139-1	Nitzschia palea	France: Lake of Geneva, Thonon	KJ542456	
REU12-3-5p	Eunotia sp.	France: Reunion: Plaine des Chicots	MH273072	
DAIM12	Eunotia sp.	United Kingdom: Scotland, Loch an Daim	MH273063	
MELH24	Eunotia sp.	Sweden: Vasterbotten, Mellan Rissjoen	MH273054	
TCC734	Gomphonema parvulum	Portugal: Rib. da Cerca, Moinho do Bispo	JQ354725	
TCC434	Gomphonema parvulum	France: Djalimou (downstream, Mayotte)	JQ354702	
FCH140	Skeletonema dohrnii	Japan: Saga, Ariake Sound, Ariake Sea Water	LC192730	
FOS010	Skeletonema dohrnii	Japan: Hyogo,Ashiayhama,Osaka Bay	AB948157	
NCC 148.78	Haslea ostrearia	France: Marennes-Oléron Bay	HE995416	
NCC 396	Haslea ostrearia	France: Bourgneuf Bay	HE995431	
MER23	Sellaphora capitata	Belgium: Merelbeke	FJ042918	
LEV1	Sellaphora capitata	Loch Leven: United Kingdom:Scotland	FJ042904	
RBGE_SEL793Tm	Sellaphora pupula	United Kingdom: Scotland, Threipmuir Reservoir	HQ317092	
RBGE_SEL212D	Sellaphora pupula	United Kingdom: Scotland, Edinburgh, Dunsapie Loch	HQ317109	
FJK028	Skeletonema costatum	Indonesia: Jakarta	LC192753	
FTY008	Skeletonema costatum	Japan: Toyama Bay	AB706219	

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Strain	Species	Country	NCBI Accession for *cox* 1	NCBI Accession for 18S rRNA
PnTb10	Pseudo-nitzschia lundholmiae	Malaysia: Teluk Batik	KX572937	
PnTb38	Pseudo-nitzschia lundholmiae	Malaysia: Teluk Batik	KX572940	
CCMP2507	Skeletonema marinoi	China: Hong Kong	AB706240.2	
CCMP2497	Skeletonema marinoi	Italy: North Adriatic Sea	AB706239	
FLM001	Skeletonema tropicum	Indonesia: Lampung Bay	LC192754	
CCMP2070	Skeletonema tropicum	Panama:beach, Las Perlas Islands, Gulf of Panama	AB706250	
PnTb31	Pseudo-nitzschia fukuyoi	Malaysia: Teluk Batik	KX572933	
PnBi12	Pseudo-nitzschia fukuyoi	Malaysia: Bintulu	KX572929	
DM33-16	Eunotia bilunaris	Belgium: Limburg, De Maten, pond nr. 33	MH273071	
DM33-5	Eunotia bilunaris	Belgium: Limburg, De Maten, pond nr. 33	MH273048	
DM08090730	Skeletonema menzellii	Japan:Fukuoka, Kitakyushu, Dokai Bay	AB948164	
CCMP787	Skeletonema menzellii	Atlantic Ocean:North Atlantic, Sargasso Sea	AB706241	
VEGA L37C bis1	Pinnularia catenaborealis	Antarctica: Antarctic Peninsula, Vega Island	MN975254	
MIC7_2	Pinnularia acidicola voucher	South Africa: Prince Edward Islands, Marion Island	MH681076	
P-11	Pseudo-nitzschia pseudodelicatissima	Portugal: Gafahna	KX572941	
PnPd35	Pseudo-nitzschia brasiliana	Malaysia: Port Dickson	KX572921	
PnMi44	Pseudo-nitzschia batesiana	Malaysia: Miri	KX572915	
TCC507	Gomphonema clevei	Mayotte	JQ354718	
SCCAP K-1289	Haslea sp.	SCCAP:K-1289	HF563532	
Sel28/6	Sellaphora marvanii	Czech Republic	AB617704	
27JZ05-7	Cymbella bengalensis	Germany	KU052349	
CCMP:1273	Fragilariopsis cylindrus	Atlantic Ocean: Southwestern Atlantic Ocean	HQ317082	
CCMP2562	Navicula sp.	USA: Oklahoma, Great Salt Plains, inland	HQ317077	
SCCAP K-1343	Haslea provincialis		KT257733	
19-2B	Frustulia crassinervia/saxonica	Denmark	HF562255	
TCC481	Nitzschia inconspicua	France: Mayotte	KC736649	
ECT3616	Berkeleya rutilans			HQ912637
TA424	Berkeleya fennica			KY320346
AT-212Gel11	Cocconeis placentula	Germany		AM502013
AT-212.07	Cocconeis pediculus	Germany		AM502010
p800	Cocconeis cf. molesta	Panama		AJ535148
16vi091B	Encyonema muelleri	USA: Iowa		KJ011642
AT-214Gel03	Encyonema caespitosum	Germany		AM502035
AT-137.13	Encyonema minutum	Germany		AM501961

Strain	Species	Country	NCBI Accession for *cox* 1	NCBI Accession for 18S rRNA
L1370	Epithemia parallela			KX120673
ET Lake Yunoko	Epithemia turgida	ET Lake Yunoko		AB546736
	Epithemia sorex	Japan:Ibaraki, Tsukuba, University of Tsukuba		AB546734
FD288	Gomphonema dichotomum	USA: Minnesota		KJ011655
FD98	Gomphonema subclavatum	USA: Iowa		KJ011665
CH053	Gomphoneis minuta	USA: Colorado		KJ011648
24S2	Halamphora holsatica	China		KY054963
HYGC-1005-D3	Halamphora veneta			KC222328
	Navicula arenaria	Belgium		KJ961668
AT-202.01	Navicula tripunctata	Germany		AM502028
AT-117Gel20b	Navicula veneta			AM501975
AT-117Gel05	Navicula gregaria	Germany	AM501974	
p750	Navicula diserta	Germany	AJ535159	
FDCC L602	Nitzschia amphibia	USA:Iowa, Osceola Co., Rush Lake	AJ867277	
TCC510	Nitzschia hantzschiana	France: Ile de Mayotte riviere de Longoni site aval	KT072967	
FDCC L408	Nitzschia communis		AJ867278	
p345	Nitzschia frustulum	Antarctica	AJ535164	
	Nitzschia palea		DQ288289	
BA101	Nitzschia microcephala	Poland: Baltic Sea, Gulf of Gdansk	HM805042	
Pin 706 F	Pinnularia neglectiformis	United Kingdom	JN418596	
AT-70.10	Pinnularia viridiformis	Germany	AM501985	
Pin 889 MG	Pinnularia grunowii	United Kingdom	JN418588	
UTEX FD484	Pinnularia termitina		HQ912601	
AT-100.01	Pinnularia subcapitata	Germany	AM501979	
AT-161.02	Pinnularia viridis	Germany	AM502023	
FD363	Placoneis abiskoensis	USA: Minnesota	KJ011667	
FD416	Placoneis elginensis		HQ912607	
AT-160Gel09	Placoneis hambergii	Germany	AM502030	
D101_022	Planothidium caputium	Mexico: Stream Calvillo	KY650788	
TCC615	Planothidium frequentissimum	France: riviere Le Lourdan a Lentigny	KT072986	
Ko0408	Planothidium suncheonmanense	South Korea: ChollaNamdo SunCheonMan	KY650802	
D26_002	Planothidium taeansa	South Korea: ChollaNamdo Creek at TaeAnSa	KY650796	
	Pseudo-nitzschia seriata		GU373969	
	Pseudo-nitzschia multiseries		GU373964	
RBG1	Sellaphora pupula		EF151962	

Strain	Species	Country	NCBI Accession for *cox* 1	NCBI Accession for 18S rRNA
THR1	Sellaphora laevissima		EF151979	
BLA10	Sellaphora capitata		EF151971	
UTKSA0047	Staurotropis khiyamii	Saudi Arabia: Duba	KX981853	
16vi08-1E	Staurotropis seychellensis	USA: University of Guam Marine Lab, Mangilao, Guam	KX981856	
Coz4 cfUnd-5	Staurotropis americana	Mexico: Cozumel	KX981854	
TCC461	Sellaphora seminulum	France: Mayotte	KC736642	
	Asterionella glacialis		AY485447	
AT-67-2b	Asterionella formosa	Germany	AM712617	
D-44	Asterionella ralfsii		EF465465	
s0383	Diatoma moniliforme		AB430597	
L1251	Diatoma tenue	USA	AJ535143	
ROS D99	Fragilaria barbararum	Norway:Kongsfjorden, Spitsbergen	AJ971376	
At170.4	Fragilaria bidens	Germany	AM497732	
D-149	Fragilaria capucina		EF465483	
AT-185Gel3	Fragilaria crotonensis	Germany	AM712616	
TCC752	Fragilaria perminuta	France: Lac Leman, parc de Rovoree	KF959664	
At114 gel5	Fragilaria rumpens	Germany	AM497722	
ROS D125	Fragilaria cf. striatula	Norway:Kongsfjorden, Spitsbergen	AJ971377	
Coz3Gramma	Grammatophora undulata	Mexico: Cozumel	JX401240	
CCMP410	Grammatophora oceanica		HQ912634	
WK43	Grammatophora marina		AY216906	
SZCZCH1348	Pseudostaurosira elliptica		KU851878	
D-48	Pseudostaurosira zeilleri var. elliptica		EF465473	
s0351	Rhabdonema minutum		AB430603	
Coz3Rhabdo	Rhabdonema adriaticum	Mexico: Cozumel	JX401243	
D-121	Staurosira construens		EF465467	
AT117gel24	Staurosira subsalina	Germany	AM497742	
	Staurosira cf. mutabilis	Hungary:Danube Rive	AM497720	
D-91	Staurosirella pinnata		EF465472	
AT116gel1	Synedra acus	Germany	AM497723	
At182gel3	Synedra acus	Germany	AM497726	
CCMP1423	Synedra hyperborea		HQ912621	
L32	Synedra ulna	USA	AJ535139	
D-32	Synedra ulna		EF465476	

Strain	Species	Country	NCBI Accession for *cox* 1	NCBI Accession for 18S rRNA
CCMP846	Tabularia cf. tabulata		HQ912615	
CCMP846	Tabularia tabulata		AY216907	
s0021	Tabularia laevis		AB430610	
HYU-D045	Ulnaria acus	Korea	MN197876	
HYU-D046	Ulnaria acus	Korea	MN197880	
HYU-D047	Ulnaria acus	Korea	MN197881	
AT185Gel3	Fragilaria crotonensis	Germany	AM712616	
AT185gel3	Fragilaria crotonensis	Germany	AM497736	
BK489	Ulnaria acus	Russia, Lake Baikal, near the settlement of Bolshie Koty	OP617173	OP604086
BK494	Ulnaria acus	Russia,, Lake Baikal, near the settlement of Bolshie Koty	OP617168	OP604087
BK495	Ulnaria acus	Russia, Lake Baikal, near the settlement of Bolshie Koty	OP617192	OP604088
BK496	Ulnaria acus	Russia, Lake Baikal, near the settlement of Bolshie Koty	OP617169	OP604089
BK498	Ulnaria acus	Russia, Lake Baikal, near the settlement of Bolshie Koty	OP617171	OP604090
MM117	Ulnaria acus	Russia, Lake Baikal, Cape Khoboy	OP617185	OP604091
L7125	Ulnaria acus	Russia, Lake Baikal, 7 km from Listvyanka	OP617177	OP604092
L7130	Ulnaria acus	Russia, Lake Baikal, 7 km from Listvyanka	OP617179	OP604093
PS177	Ulnaria acus	Russia, Lake Baikal, Port Baikal	OP617187	OP604094
L183	Ulnaria acus	Russia, Lake Baikal, Listvennichneyi Bay	OP617176	OP604095
L-T198	Ulnaria acus	Russia, Lake Baikal, Listvyanka-Tankhoi-center	OP617180	OP604096
L-T200	Ulnaria acus	Russia, Lake Baikal, Listvyanka-Tankhoi-center	OP617181	OP604097
L-T203	Ulnaria acus	Russia, Lake Baikal, Listvyanka-Tankhoi-center	OP617182	OP604098
L-T304	Ulnaria acus	Russia, Lake Baikal, Listvyanka-Tankhoi-center	OP617183	OP604099
3B355	Ulnaria acus	Russia, Lake Baikal, 3 km from Baikalskoe	OP617160	OP604100
3B357	Ulnaria acus	Russia, Lake Baikal, 3 km from Baikalskoe	OP629718	OP604101
Ax280	Ulnaria acus	Russia, Lake Baikal, near the settlement of Bolshie Koty	OP617193	OP604102
Chz309	Ulnaria acus	Russia, Lake Baikal, Chivirkuysky Bay	OP617175	OP604103
3B327	Ulnaria acus	Russia, Lake Baikal, 3 km from Baikalskoe	OP617159	OP604104
3D337	Ulnaria acus	Russia, Lake Baikal, 3 km from Dawsha	OP617161	OP604105
3D338	Ulnaria acus	Russia, Lake Baikal, 3 km from Dawsha	OP617162	OP604106
3T347	Ulnaria acus	Russia, Lake Baikal, 3 km from Tonkiy	OP617163	OP604107
15K292	Ulnaria acus	Russia, Lake Baikal, 15 km from Kultuk	OP617164	OP604108
Ans269	Ulnaria acus	Russia, Lake Baikal, Anga-Sukhaya	OP617194	OP604109
BA383	Ulnaria acus	Russia, Lake Baikal, Aya Bay	OP617165	OP604110
Bg299	Ulnaria acus	Russia, Lake Baikal, Buguldeyka	OP617166	OP604111
Bg300	Ulnaria acus	Russia, Lake Baikal, Buguldeyka	OP617167	OP604112

Strain	Species	Country	NCBI Accession for *cox* 1	NCBI Accession for 18S rRNA
Bp399	Ulnaria acus	Russia, Lake Baikal, Peschanaya Bay	OP617172	OP604113
Chz356	Ulnaria acus	Russia, Lake Baikal, Chivirkuysky Bay	OP617174	OP604114
MM353	Ulnaria acus	Russia, Lake Baikal, Khuzhirskiy Bay	OP617186	OP604115
0.0224-OD	Ulnaria acus	France, Nantes, r. Erdre	OP617195	OP604116
0.0218-OB	Ulnaria acus	France, Nantes, r. Erdre	OP629719	OP604117
0.0304-YE	Ulnaria acus	France, Nantes, r. Erdre	OP617197	OP604118
0.0305-OB	Ulnaria acus	France, Le Mans, r. Sarthe	OP617196	OP604119
5.0227-E	Ulnaria acus	Indonesia, Lake Matano	OP617189	OP604122
5.0227-F	Ulnaria acus	Indonesia, Lake Matano	OP617188	OP604123
5.0903_A	Ulnaria acus	Mongolia, Lake Khuvsgul		OP604124
5.0903-F	Ulnaria acus	Mongolia, Lake Khuvsgul		OP604125
5.1015-B	Ulnaria acus	Abkhazia, Lake Riza	OP617190	OP604126
5.1015-C	Ulnaria acus	Abkhazia, Lake Riza	OP629721	OP604127
L7126	Ulnaria acus	Russia, Lake Baikal, Listvennichneyi Bay	OP617178	OP646309
MM98	Ulnaria acus	Russia, Lake Baikal, Strait Olkhon Gate	OP617184	

- clade 1 - clade 2 - clade 3

Table S2. Mating compatibility of *Ulnaria acus* clones, derived from different populations on Eurasia continent

Population	Clone name	Origin	Sex	0.0224-OE	0.0224-OD	0.0224-OJ	0.0304-YC	0.0304-YD	0.0316-YE	5.1015-B	5.1015-C	5.1015-D	5.0903-A	5.0903-D	5.0903-F	3.0213-B	3.0213-C	3.0213-D	3.0213-E	5.0227-C	5.0227-E	5.0227-F	5.0227-G	5.0227-I
				F	F	F	F	F	M	F	M	F	F	F	M	F	F	F	M	M	M	F	F	F
r. Erdre, France	0.0224-OE	w	F																					
r. Erdre, France	0.0224-OD	w	F	0																				
r. Erdre, France	0.0224-OJ	w	F	0	0																			
r. Erdre, France	0.0304-YC	w	F	0	0	0																		
r. Erdre, France	0.0304-YD	w	F	0	0	0	0																	
r. Erdre, France	0.0316-YE	w	M	3	3	3	3	3																
Lake Riza, Abkhazia	5.1015-B	w	F	0	0	·	0	0	3															
Lake Riza, Abkhazia	5.1015-C	w	M	2	3	2	2	2	0	3														
Lake Riza, Abkhazia	5.1015-D	w	F	0	0	·	0	0	2	0	2													
Lake Khuvsgul, Mongolia	5.0903-A	w	F	0	0	0	0	0	3	0	2	0												
Lake Khuvsgul, Mongolia	5.0903-D	w	F	·	·	·	·	·	·	·	·	·	0											
Lake Khuvsgul, Mongolia	5.0903-F	w	M	·	3	·	3	3	0	3	0	3	2	2										
Lake Baikal, Russia	3.0213-B	*F1*	F	·	0	0	0	0	3	·	0	·	0	0	·									
Lake Baikal, Russia	3.0213-C	*F1*	F	·	0	0	0	0	2	1	0	2	0	0	2	0								
Lake Baikal, Russia	3.0213-D	*F1*	F	·	·	·	·	·	·	3	0	2	0	0	·	0	0							
Lake Baikal, Russia	3.0213-E	*F1*	M	·	·	·	3	3	0	0	2	0	·	·	0	3	3	1						
Lake Matano, Indonesia	5.0227-C	w	M	·	·	·	·	·	·	0	3	0	·	2	0	·	·	·	0					
Lake Matano, Indonesia	5.0227-E	w	M	2	2	·	3	3	0	·	·	·	·	2	0	·	1	·	0	0				
Lake Matano, Indonesia	5.0227-F	w	F	·	·	·	·	·	3	0	2	0	0	0	2	0	0	0	·	3	3			
Lake Matano, Indonesia	5.0227-G	w	F	·	·	·	·	·	·	0	2	0	0	0	·	0	0	0	2	2	3	·		
Lake Matano, Indonesia	5.0227-I	w	F	·	·	·	·	·	3	·	·	·	·	·	3	0	0	0	2	2	·	·	·	

Notes. F and M, female and male clones accordingly (sex of clones can be determined in this species due to sexual dimorphism at the stage of gametogenesis); w, derived from natural population (wild); F1, descendants of the first generation resulted from mating of clones obtained in the north part of the Lake Baikal; the numbers indicate a score of the auxospore abundance (0 – the absence of auxosporulation, 1 – several auxospores per examined Petri dish, 2 – several tens of auxospores per Petri dish, 3 – mass auxosporulation); ·, no data were obtained.