

Systematics and distribution of spruce species in the North-West of Russia

Supplementary Material

Appendix 1. Geographic locations of investigated specimens. Only mainland populations were studied using morphometric analyses

Location	N	E	m a.s.l.	Habitat	Date	Number of specimens
<i>Picea abies</i> var. <i>abies</i>						
Republic of Karelia, coll. Orlova L.V., Byalt V.V., Potokin A.F., Ivanov S.A.:						
Northern Karelia, Belomorsk District, turn to Belomorsk	64°24'38.7"	34°11'36.9"	123	<i>Vaccinioso-hylocomiosum</i> (N plot 17)	20 VII 2010	71
Middle Karelia, Medvezhiegorsk District	63°5'58.9"	34°20'59.2"	185	<i>Vaccinioso-hylocomiosum</i> (22)	21 VII 2010	s.n.
South Karelia, Olonets District	60°56'08.9"	33°8'07.0"	32	<i>Sphagnosum</i> (30)	23 VII 2010	122
Leningrad Region, coll. Orlova L.V., Egorov A.A., Byalt V.V., Potokin A.F., Ivanov S.A.:						
Gatchina District, vicinity of Druzhnaya Gorka village	59°27'15.3"	30°06'48.4"	90	<i>Oxalidoso-hylocomiosum</i> (1)	30 VI 2010	4
Gatchina District, vicinity of Druzhnaya Gorka village	59°26'54"	30°06'29"	90	<i>Sphagnosum</i> (2)	30 VI 2010	4, 8, 10
Gatchina District, vicinity of Druzhnaya Gorka village	59°15'15"	30°13'18"	90	<i>Vaccinioso-hylocomiosum</i> (3)	30 VI 2010	11
Gatchina District, vicinity of Druzhnaya Gorka village	59°15'15"	30°13'18"	90	<i>Sphagnosum</i> (4)	30 VI 2010	13
Lodeynopolsky District	60°48'16.7"	33°44'23.4"	33	<i>Sphagnosum</i> (31)	23 VII 2010	128
Lodeynopolsky District	60°19'33.2"	32°54'18.7"	32	<i>Hylocomiosum</i> (32)	23 VII 2010	129-132
Leningrad Region, coll. Egorov A.A., Ivanov S.A., Kirillov P.S.:						
Podporozhye District, near the settlement of Voznesenye	61°01'32"	35°30'05"	55	<i>Vaccinioso-polytrichosum</i> (102)	22 VII 2011	205
Podporozhye District, near the settlement of Voznesenye	61°03'23"	35°34'34"	80	<i>Vaccinioso-hylocomiosum</i> (103)	22 VII 2011	208, 209
Podporozhye District, road Voznesenye-Podporozhye	60°54'46.7"	35°16'21.3"	139	<i>Vaccinioso-hylocomiosum</i> (104)	23 VII 2011	214, 217, 218
Podporozhye District, road Voznesenye-Podporozhye	60°54'05.5"	34°59'54.1"	139	<i>Sphagnosum</i> (105)	23 VII 2011	n.s.
Leningrad Region, Petrodvorets District, coll. E.A. Glazkova:						
Vicinity of Lomonosov	59°51'144"	29°44'744"		bilberry-bog moss pine-spruce forest with birch, near a power line	16 VI 2015	39
Leningrad Region, Islands of the Gulf of Finland, coll. E.A. Glazkova:						
Island Dolgiy Kamen', the central part of the island				spruce forest	27 VI 2014	51
Island Kopytin, the central part of the island				selga	5 VII 2013	41
Island Severny Berezy, NE part of the island	60°26.739'	28°28.754'		bilberry-green moss spruce forest	20 VII 2016	12
Leningrad Region, Islands of Vyborg Bay, coll. E.A. Glazkova:						
Island Mayachny, the northern part of the island	60°34.335'	28°25.560'		mix forestwith <i>Tilia</i> , <i>Picea</i> , <i>Pinus</i> , <i>Populus tremula</i> of <i>Convallaria majalis</i> - <i>Vaccinium myrtillus</i> type	20 VI 2013	45
Island Rysiy, the central part of the island, near the isthmus between the two peninsulas	60°32.364'	28°34.714'		spruce forest with birch	15 VI 2013	16
Island Rysiy, in the central part of the island, near the isthmus between the two peninsulas				spruce forest with birch	15 VI 2013	18
Island Rysiy, the western cape of the northern peninsula				selga	14 VI 2013	7
<i>Picea obovata</i>						
Murmansk Region, coll. Orlova L.V., Byalt V.V., Potokin A.F., Ivanov S.A.:						
Apatity District, 3 km from town Apatity	67°34'51.2"	33°18'25.2"	121	<i>Fruticulos-hylocomiosum</i> (6)	17 VI 2010	20-22

Location	N	E	m a.s.l.	Habitat	Date	Number of specimens
Apatity District, 26 km west from the town of Apatity	67°40'53.0"	32°50'52.9"	250	<i>Fruticuloslo-hylocomiosum</i> (7), southern slope, on the mountain	17 VI 2010	23, 24
Monchegorsk District, environs of town Olenegorsk	68°10'39.4"	33°19'12.6"	146	<i>Fruticuloslo-hylocomiosum</i> (8)	17 VI 2010	28, 29
Monchegorsk District, environs of the town Monchegorsk	68°10'39.4"	33°19'13.6"	247	<i>Fruticuloslo-hylocomiosum</i> (9)	17 VI 2010	34-36
Kandalaksha District	67°9'50.1"	31°57'35.9"	7	<i>Fruticuloslo-hylocomiosum</i> (11)	18 VII 2010	43, 44
Kandalaksha District	67°9'49.8"	31°57'36"	36	<i>Hylocomiosum</i> (12)	18 VII 2010	48
Leningrad Region, coll. Egorov A.A., Ivanov S.A., Kirillov P.S.:						
Podporozhnye District, near the settlement of Voznesenye	61°03'23"	35°34'34"	80	<i>Vaccinioslo-hylocomiosum</i> (103)	22 VII 2011	211
Podporozhnye District, road Voznesenye-Podporozhnye	60°54'05.5"	34°59'54.1"	139	<i>Sphagnosum</i> (105)	23 VII 2011	s.n.
Leningrad Region, Islands of the Gulf of Finland, coll. E.A. Glazkova:						
Island Gogland, about 200 m to the east of Liivalahtri Bay, at the foot of Haukkavuori Hill	60°04.934'	26°57.569'		small-leaved-spruce forest with nemoral herb species	25 VI 2014	32a
Island Gogland, NE part of the island	60°04.387'	26°58.152'		spruce bilberry-greenmoss forest near the main cart-road through the island	11 VIII 2015	243
Island Gogland, the central part of the island, Mäkinpäälyys Hill	60°04.387'	26°58.152'		spruce forest with birch	12 VIII 2015	275
Severnny Berezovy Island, NE part of the island	60°27.003'	28°28.229'		spruce forest without the cover	2 VII 2015	5
<i>Picea femica</i> , close to <i>P. abies</i>						
Karelia, coll. Orlova L.V., Byalt V.V., Potokin A.F., Ivanov S.A.:						
Middle Karelia, Segezhsy District	63°18'34.0"	34°26'19.1"	113	<i>Sphagnosum</i> (21)	21 VII 2010	85-88
Middle Karelia, Medvezhiegorsk District	63°5'58.9"	34°20'59.2"	185	<i>Vaccinioslo-hylocomiosum</i> (22)	21 VII 2010	89-92
South Karelia, Kondopozhsky District	62°46'37.4"	34°7'35.0"	145	<i>Vaccinioslo-hylocomiosum</i> (25)	22 VII 2010	101
too	62°36'40.8"	33°52'34.5"	93	<i>Vaccinioslo-hylocomiosum</i> (26)	22 VII 2010	106-108
South Karelia, Pryazhinsky District	61°31'08.6"	33°27'43.4"	172	<i>Vaccinioslo-hylocomiosum</i> (29)	22 VII 2010	119, 120
South Karelia, Olonets District	60°56'08.9"	33°8'07.0"	32	<i>Sphagnosum</i> (30)	23 VII 2010	123, 124, 126, 127
Leningrad Region, coll. Orlova L.V., Egorov A.A., Byalt V.V., Potokin A.F., Ivanov S.A.:						
Gatchina District, vicinity of Druzhnaya Gorka village	59°27'15.3"	30°06'48.4"	90	<i>Oxalidoslo-hylocomiosum</i> (1)	30 VI 2010	2, 3, 5
too	59°26'54"	30°06'29"	90	<i>Sphagnosum</i> (2)	30 VI 2010	9
too	59°15'15"	30°13'18"	90	<i>Vaccinioslo-hylocomiosum</i> (3)	30 VI 2010	12
Lodeynopolsky District	60°48'16.7"	33°44'23.4"	33	<i>Sphagnosum</i> (31)	23 VII 2010	126, 127
Leningrad Region, coll. Egorov A.A., Ivanov S.A., Kirillov P.S.:						
Podporozhnye District, near the settlement of Voznesenye	61°01'32"	35°30'05"	55	<i>Vaccinioslo-polytrichosum</i> (102)	22 VII 2011	200...204
too	61°03'23"	35°34'34"	80	<i>Vaccinioslo-hylocomiosum</i> (103)	22 VII 2011	206, 207, 210
Podporozhnye District, road Voznesenye-Podporozhnye	60°54'46.7"	35°16'21.3"	139	<i>Vaccinioslo-hylocomiosum</i> (104)	23 VII 2011	213, 215
Podporozhnye District, road Voznesenye-Podporozhnye	60°54'05.5"	34°59'54.1"	139	<i>Sphagnosum</i> (105)	23 VII 2011	220, 221
Leningrad Region, Petrodvorets District, coll. E.A. Glazkova:						
Vicinity of Lomonosov	59°51'144"	29°44'744"		bilberry-bog moss pine-spruce forest with birch, near a power line	16 VI 2015	39

Location	N	E	m a.s.l.	Habitat	Date	Number of specimens
Vicinity of Lomonosov	59°53.061'	29°48.661'		mixed forest with pine, spruce, birch	9 VI 2015	4
Vicinity of Lomonosov	59°52.838'	29°46.172'		green moss spruce forest	11 VI 2015	26
Vicinity of Lomonosov	59°52.825'	29°44.418'		bilberry-green moss spruce forest	16 VI 2015	34
Leningrad Region, Islands of the Gulf of Finland, coll. E.A. Glazkova:						
Island Gogland, the central part of the island, near the former village of Kiiskinkylä					6 VI 2011	43
Island Gogland, the southern part of the island, on the terrace on the western slope of Lounatkorkia Hill					6 VI 2011	44
Island Gogland, SE part, Gorelaya Bay/Lehtsatama), near Alttarkallioniemi Cape	60°01.280'	27°01.446'		stony seashore	3 VIII 2015	25
Island Gogland, S part, Ankkurlahti Bay	60°00.912'	26°59.309'		selga	5 VIII 2015	75
Island Moschny, east part, about 800 m to east of Zarnitsa Bay, on the way to the isthmus on the Suisaari Peninsula	60°00.234'	27°50.874'		spruce blueberry-green moss	12 VIII 2017	8
Island Moschny, the western part, 200 m to east of Cape Zubets	60°00.263'	27°48.582'		sorrel spruce forest	17 VIII 2017	104
Island Moschny, northwest coast of Okolnaya Bay	60°00.833'	27°51.258'		in village, bilberry-green-moss pine-spruce forest	19 VIII 2017	148
Island Moschny, north-west coast of Okolnaya Bay	60°00.776'	27°51.332'		meadow-bilberry-green-moss spruce forest	19 VIII 2017	149
Island Moschny, southeastern part, area of Cape Laskunemi	59°59.585'	27°51.444'		in village, outskirts of meadow pine forest	20 VIII 2017	172
Island Moschny, southeastern part, area of Zashchitnaya Bay	59°59.868'	27°51.368'		sorrel spruce forest	20 VIII 2017	174
Island Uzoniy, the northern part of the island				selga, birch-pine bilberry forest with spruce	7 VII 2013	104
Island Uzoniy, the northern coast				selga	7 VII 2013	107
Island Uzoniy, the eastern cape				selga	7 VII 2013	112
Island Orliny, the western coast				young birch-pine forest with aspen, one tree	8 VII 2013	133
Island Sokoliny, the western cape				birch-black alder forest with some spruce	8 VII 2013	121
Maly Berezoviy Island, the central part				spruce forest	10 VII 2014	22
Maly Berezoviy Island, the western part of the island				spruce forest with oak	9 VII 2014	8
Island Bolshoy Tuters, the southern part, SE part of the former Finnish village	59°50.250'	27°12.017'		spruce wood sorrel forest near the seashore	31 V 2015	61
Island Bolshoy Tuters, the northern part, between capes Kuokkaniemi and Tiukinniemi	59°51.935'	27°11.542'		spruce wood sorrel forest	1 VI 2015	74a
Severny Berezoviy Island, the north-eastern part	60°27.003'	28°28.229'		spruce forest without the cover	2 VII 2015	6
Zapadny Berezoviy Island, the northern part	60°21.840'	28°28.619'		pine bilberry-greenmoss forest	3 VII 2015	14
Zapadny Berezoviy Island, the northern part	60°21.735'	28°25.649'		spruce forest without the cover	3 VII 2015	16
Zapadny Berezoviy Island, the north-eastern part	60°21.390'	28°29.359'		near the training camp of Admiral Makarov State Maritime Academy	3 VII 2015	18

Location	N	E	m a.s.l.	Habitat	Date	Number of specimens
Zapadny Berezy Island, central northern part of the island, near the road from the training camp of Admiral Makarov State Maritime Academy to Malye Peski	60°21.292'	28°27.892'		pine bilberry-greenmoss forest	4 VII 2015	19
Bolshoy Berezy Island, the south-eastern part, the village of Krasny Ostrov, Krasnoostrovskaya Bay	60°17.787'	28°40.274'		two old trees along the road near the seashore	8 VII 2015	54
Leningrad Region, Island of Vyborg Bay, coll. E.A. Glazkova:						
Island, the southern part Zaovrazhensky, the place of the former Finnish settlement	60°27.057'	28°41.306'		birch-spruce forest	21 VI 2013	61
Island Rysiy, the central part of the island, near the isthmus between two peninsulas	60°32.313'	28°34.612'		spruce forest with birch	15 VI 2013	17
<i>Picea femita</i> , close to <i>P. obovata</i>						
Murmansk Region, coll. Orlova L.V., Byalt V.V., Potokin A.F., Ivanov S.A.:						
Apatity District, 26 km west from the town of Apatity	67°40'53.0"	32°50'52.9"	250	southern slope on the mountain, <i>Fruticulos-hylocomiosum</i> (7)	17 VI 2010	25
Monchegorsk District, environs of the town Olenegorsk	68°10'39.4"	33°19'12.6"	146	<i>Fruticulos-hylocomiosum</i> (8)	17 VII 2010	26, 27
Monchegorsk District, environs of the town Monchegorsk	68°10'39.4"	33°19'13.6"	247	<i>Fruticulos-hylocomiosum</i> (9)	17 VII 2010	33
Kandalaksha District	67°9'49.8"	31°57'36"	36	<i>Hylocomiosum</i> (12)	18 VII 2010	47
Karelia, coll. Orlova L.V., Byalt V.V., Potokin A.F., Ivanov S.A.:						
North Karelia, Louhi District	67°9'49.8"	31°57'36.0"	152	<i>Fruticulos-hylocomiosum</i> (13)	19 VII 2010	49-52
North Karelia, Kem' District	68°14'39.8"	33°45'34.8"	100	<i>Fruticulos-hylocomiosum</i> (15)	19 VII 2010	58
North Karelia, Kem' District	65°14'39.8"	33°45'34.8"	100	<i>Fruticulos-hylocomiosum</i> (15)	19 VII 2010	61
North Karelia, White Sea District, turn to the White Sea	64°24'38.7"	34°11'36.9"	123	<i>Vaccinios-hylocomiosum</i> (17)	20 VII 2010	69, 70
North Karelia, White Sea District	64°23'03.4"	34°9'11"	131	<i>Vaccinios-hylocomiosum</i> (18)	20 VII 2010	73-76
Middle Karelia, Medvezhiegorsk District, 10 km to the south from the town Medvezhiegorsk	62°51'19.8"	34°19'40.1"	127	<i>Vaccinios-hylocomiosum</i> (23)	21 VII 2010	93
South Karelia, Kondopozhsky District	62°46'37.4"	34°7'35"	145	<i>Vaccinios-hylocomiosum</i> (25)	22 VII 2010	102
Leningrad Region, coll. Egorov A.A., Ivanov S.A., Kirillov P.S.:						
Podporozhye District, road Voznesenye-Podporozhye	60°54'46.7"	35°16'21.3"	139	<i>Vaccinios-hylocomiosum</i> (104)	23 VII 2011	s.n.
Podporozhye District, road Voznesenye-Podporozhye	60°54'05.5"	34°59'54.1"	139	<i>Sphagnosum</i> (105)	23 VII 2011	s.n.
Leningrad Region, Kingiseppsky District, coll. E.A. Glazkova:						
Kurgalsky Peninsula, 1.5 km to the south of Kaibolovsky light-house	59°44.534'	28°01.803'		broad-leaved- spruce forest with nemoral herb species on the slope of Kurgalskoe Plateau	28 VI 2012	s.n.
Kurgalsky Peninsula, about 350 m to the south of Kaibolovsky lighthouse	59°44.244'	28°02.290'		broad-leaved-spruce forest with nemoral herb species on the lower part of the slope of Kurgalskoe Plateau	28 VI 2012	62
Kurgalsky Peninsula, the slope of Kurgalskoe Plateau near Goro-dok Hill	59°42.032'	28°01.531'			01 VII 2012	s.n.

Location	N	E	m a.s.l.	Habitat	Date	Number of specimens
Kurgalsky Peninsula, vicinity of Tiskolovo village				birch-spruce forest near the seashore (only mature cones)	11 IX 2015	6
Leningrad Region, Islands of the Gulf of Finland, coll. E.A. Glazkova:						
Island Gogland, the northern part, between Haukavuori Hill and the bay Liivalahti				small-leaved-spruce forest with nemoral species <i>Sanicula europaea</i> , <i>Daphne mezereum</i> , <i>Ribes alpinum</i> etc.)	9 VII 2012	s.n.
Island Gogland, the southern part	60°01.387'	27°00.230'		spruce bilberry-greenmoss forest with <i>Melampyrum hians</i>	2 VIII 2015	1
Island Gogland, the central part of the island	60°02.667'	26°59.518'		spruce bilberry-greenmoss forest near the SE shore of Lake Ruokolahdenjärvi	6 VIII 2015	97
Island Gogland, the central part of the island, Mäkinpäällys Hill	60°04.425'	26°58.043'		spruce forest with birch	12 VIII 2015	279
Island Moschny eastern part, about 800 m to east of Zarnitsa Bay, on the way to the isthmus on the Suisaari Peninsula	60°00.212'	27°51.068'		spruce forest green moss with pine	12 VIII 2017	9
Island Bolshoy Tyuters, NE part of the island	59°51.683'	27°12.767'		margin of spruce forest with aspen	5 VI 2015	122
Island Bolshoy Tyuters, the southern part of the island, W part of the former Finnish village	59°50.163"	27°11.907'		seashore	29 V 2015	36
Island Bolshoy Tyuters, the southern part of the island, W part of the former Finnish village	59°50.163'	27°11.907'		near the house ruins	29 V 2015	37
Island Bolshoy Tyuters, NW part of the island	59°51.717'	27°10.988'		rocky seacoast	04 VI 2015	107
Island Bolshoy Tyuters, NW part of the island	59°51.840'	27°11.407'		spruce wood sorrel forest	1 06 2015	70
Island Bolshoy Tyuters, W seashore	59°51.283'	27°10.575'		coastal selgas	30 V 2015	59
Regional complex sanctuary «Kurgalsky», a small unnamed island near the island of YanisariW of the Kurgalsky Peninsula), the southern part of the island					15 VIII 2012	27
Maly Berezovy Island, the central part of the island				spruce forest	10 VII 2014	21
Severnny Berezovy Island, NE part of the island	60°26.770'	28°28.596'		sandy bay opposite of the sandbank Svetlana, margin of spruce-pine forest	2 VII 2015	1
Severnny Berezovy Island, about 500 m S of Lake Taynoe	60°26.802'	28°27.954'		spruce bilberry-wood sorrel forest	9 VII 2015	59
Severnny Berezovy Island, NW part of the island, to SW of the Cape Smolyanoy	60°25.917'	28°27.462'		spruce bilberry-green moss forest	9 VII 2015	62
Severnny Berezovy Island, NE part	60°26.823'	28°28.434'		green moss spruce forest	18 VII 2016	6
Severnny Berezovy Island, NE part	60°26.334'	28°29.235'		bilberry-green moss spruce forest near the coast	19 VII 2016	8
Severnny Berezovy, NE part Island	60°26.739'	28°28.754'		bilberry-green moss spruce forest-ly mature cones)	20 VII 2016	13
Island Krutoyar, the northern bay	60°28.737'	27°52.046'		birch-pine forest with spruce	6 VII 2013	73
Regional complex sanctuary «Prigranichny», a small unnamed island between the islands Krutoyar and Dolgiy Kamen				several trees 3–4) near the ruined house base	8 VII 2013	134

Location	N	E	m a.s.l.	Habitat	Date	Number of specimens
Island Dolgiy Greben', the south-eastern coast				selga	6 VII 2013	92
Island Krasny				one tree on the selga	7 VII 2013	118
Island Kozliny, the northern part of the island				spruce bilberry forest	22 VIII 2011	s.n.
Leningrad Region, Islands of Vyborg Bay:						
Island Zaovrazhensky, the southern part of the island, the place of the former Finnish settlement	60°27.057'	28°41.306'		birch-spruce forest	21 VI 2013	61
Island Zaovrazhensky, the southern part of the island, the place of the former Finnish settlement				birch-spruce forest	21 06 2013	62
<i>Picea fenicia</i> , intermediate form						
Murmansk Region, coll. Orlova L.V., Byalt V.V., Potokin A.F., Ivanov S.A.:						
Kandalaksha District	67°9'50.1"	31°57'35.9"	7	<i>Fruticuloslo-hylocomiosum</i> (11)		41, 42
Karelia, coll. Orlova L.V., Byalt V.V., Potokin A.F., Ivanov S.A.:						
Kandalaksha District	67°9'49.8"	31°57'36.0"	36	<i>Hylocomiosum</i> (12)	18 VII 2010	45, 46
North Karelia, Louhi District	67°9'49.8"	31°57'36.0"	152	<i>Fruticuloslo-hylocomiosum</i> (13)	19 VII 2010	s.n.
North Karelia, Kem' District	68°14'39.8"	33°45'34.8"	100	<i>Fruticuloslo-hylocomiosum</i> (15)	19 VII 2010	59, 60
North Karelia, Kem' District	65°14'39.8"	33°45'34.8"	100	<i>Fruticuloslo-hylocomiosum</i> (15)	19 VII 2010	61-64
North Karelia, White Sea District	64°24'38.7"	34°11'36.9"	131	<i>Vaccinioslo-hylocomiosum</i> (17)	20 VII 2010	72
North Karelia, White Sea District	64°23'3.4"	34°9'11.0"	131	<i>Vaccinioslo-hylocomiosum</i> (18)	20 VII 2010	73
Middle Karelia Medvezhiyegorsk District, 10 km south of Medvezhigorsk	62°51'19.8"	34°19'40.1"	127	<i>Vaccinioslo-hylocomiosum</i> (23)		94-96
South Karelia Kondopozhsky District	62°46'37.4"	34°7'35.0"	145	<i>Vaccinioslo-hylocomiosum</i> (25)		103, 104
South Karelia, Kondopozhsky District	62°36'40.8"	33°52'34.5"	93	<i>Vaccinioslo-hylocomiosum</i> (26)		105
South Karelia, Pryazhinsky District	61°36'51.1"	33°37'09.0"	163	<i>Sphagnosum</i> (28)		113-116
South Karelia, Pryazhinsky District	61°31'08.6"	33°27'43.4"	172	<i>Vaccinioslo-hylocomiosum</i> (29)		117, 118
Leningrad Region, coll. Orlova L.V., Byalt V.V., Potokin A.F., Ivanov S.A.:						
Gatchina District, vicinity of Druzhnaya Gorka village	59°27'15.3"	30°06'48.4"	90	<i>Oxalidoslo-hylocomiosum</i> (1)	30 VI 2010	1
Gatchina District, vicinity of Druzhnaya Gorka village	59°26'54"	30°06'29"	90	<i>Sphagnosum</i> (2)	30 VI 2010	7
Gatchina District, sq. 19, vicinity of Druzhnaya Gorka village	59°15'15"	30°13'18"	95	<i>Sphagnosum</i> (4)	30 VI 2010	16
Lodeynopolsky District	60°48'16.7"	33°44'23.4"	33	<i>Sphagnosum</i> (31)	23 VII 2010	125
Leningrad Region, coll. Egorov A.A., Ivanov S.A., Kirillov P.S.:						
Podporozhye District, road Voznesenye-Podporozhye	60°54'46.7"	35°16'21.3"	139	<i>Vaccinioslo-hylocomiosum</i> (104)	23 VII 2011	216
Podporozhye District, road Voznesenye-Podporozhye	60°54'05.5"	34°59'54.1"	139	<i>Sphagnosum</i> (105)	23 VII 2011	219
Leningrad Region, Petrodvorets District, coll. E.A. Glazkova:						
Vicinity of Lomonosov	59°52.825'	29°44.418'		bilberry-green moss spruce forest	16 VI 2015	35
Vicinity of Lomonosov	59°52.844'	29°44.744'		green moss spruce forest with pine and birch	16 VI 2015	37
Vicinity of Lomonosov	59°52.850'	29°44.943'		bog moss spruce forest with pine and birch	16 VI 2015	38
Vicinity of Lomonosov	59°55.141'	29°42.715'		birch-spruce forest of Oxalis-type	20 VI 2015	48

Location	N	E	m a.s.l.	Habitat	Date	Number of specimens
Leningrad Region, Islands of the Gulf of Finland, coll. E.A. Glazkova:						
Island Seskar, the northern part of the island				pine-spruce forest	3 VII 2011	38
Island Seskar, the northern part of the island				pine-spruce forest	11 VII 2012	
Island Dolgiy Greben', the south-west coast	60°28.241'	27°49.894'		one tree on selga	6 VII 2013	96
Island Gogland, the southern part of the island, Paharakallio	60°00.891'	27°00.939'		rocks	3 VIII 2015	20
Island Gogland, the northern part of the island, Pohjoiskorkia Hill, near the stairs to the Northern Gogland lighthouse	60°05.605'	26°56.995'		spruce forest at the foot of the hill	10 VIII 2015	216
Island Gogland, the northern part of the island Mustakallio	60°05.593'	26°56.728'		rocks to the west of Pohjoiskorkia Hill	10 VIII 2015	231
Island Moschny, southwestern part, 200 m to east of Cape Zubets	60°00.263'	27°48.582'		sorrel spruce forest	17 VIII 2017	105
Island Moschny, southwestern part, to east of Cape Zubets	60°00.153'	27°48.432'		sorrel spruce forest	17 VIII 2017	108
Island Moschny, southwestern part, 200 m west of the northern tip of the lake Bolshoie	59°59.812'	27°49.113'		blueberry-green moss spruce forest	17 VIII 2017	109
Island Moschny, southwestern part, base of Uglovoy Caper	59°59.699'	27°47.725'		margin of meadow-lichen-green-moss pine forest on the sandy coast	20 VIII 2017	153
Island Bolshoy Tyuters, SW part of the island	59°50.509'	27°11.468'		spruce-pine bilberry forest	28 V 2015	20
Island Bolshoy Tyuters, the northern part of the island, E coast of Cape Tiukinniemi	59°51.930'	27°11.424'		margin of pine forest, among boulders	1 06 2015	71
Island Bolshoy Tyuters, NW part of the island	59°51.397'	27°10.606'		coastal rocks	30 V 2015	44
Island Bolshoy Tyuters, NW part of the island, just west of Cape Rompiniemi	59°51.498'	27°10.645'		coastal rocks	30 V 2015	49
Island Bolshoy Tyuters, NW part of the island	59°51.476'	27°10.624'		coastal rocks	30 V 2015	46
Island Bolshoy Tyuters, the northern part of the island	59°51.923'	27°11.875'		stony seacoast, pine-spruce forest	1 VI 2015	76
Island Bolshoy Tyuters, NW part of the island	59°51.840'	27°11.407'		spruce wood sorrel forest	1 VI 2015	78
Island Bolshoy Tyuters, NW part of the island, Cape Rompiniemi	59°51.621'	27°10.696'		pine bilberry-greenmoss forest with spruce on selgas	30 V 2015	55
Island Bolshoy Tyuters, the northern part of the island, Katso-mavuori Hill	59°51.304'	27°11.261'		rocks near the lighthouse, spruce-pine forest	28 V 2015	6
Island Bolshoy Tyuters, SW part of the island	59°50.509'	27°11.468'		spruce-pine bilberry forest	28 V 2015	20

Appendix 2. Summary of the Univariate analysis of Variance. Multiple comparison results of the *post hoc* Tukey HSD test reveal homogeneous subsets of taxa having similar vs significantly different mean values. Means for groups in homogenous subsets are displayed. Abbreviations of character names correspond to those given in Table 2.

Lc					
Tukey HSD ^{a,b,c}					
Taxon	N	Subset			
		1	2	3	4
obovata	60	5,517			
fennica_ob	96	5,706			
fennica	115		6,769		
fennica_ab	99			7,877	
abies_ab	45				12,160
Sig.		,926	1,000	1,000	1,000
D					
Tukey HSD ^{a,b,c}					
Taxon	N	Subset			
		1	2	3	4
fennica_ob	96	2,840			
obovata	60	2,952			
fennica	115		3,388		
fennica_ab	99			3,731	
abies_ab	45				4,149
Sig.		,786	1,000	1,000	1,000
LcD					
Tukey HSD ^{a,b,c}					
Taxon	N	Subset			
		1	2	3	4
obovata	96	1,882			
fennica	60	2,00	2,004		
fennica_ob	115		2,020		
fennica_ab	99		2,123		
abies_ab	45			2,950	
Sig.		,107	,125	1,000	
NuPa					
Tukey HSD ^{a,b,c}					
Taxon	N	Subset			
		1	2	3	4
obovata	60	6,52			
fennica_ob	96	6,76			
fennica	114		7,86		
fennica_ab	99			9,44	
abies_ab	45				12,20
Sig.		,915	1,000	1,000	1,000
DevAx					
Tukey HSD ^{a,b,c}					
Taxon	N	Subset			
		1	2	3	4
abies_ab	45	40,42			
fennica_ab	98	44,64			
fennica	113		52,57		
fennica_ob	96			61,06	
obovata	58				77,91
Sig.		,335	1,000	1,000	1,000

H						
Tukey HSD ^{a,b,c}						
Taxon	N	Subset				
		1	2	3	4	5
obovata	58	13,855				
fennica_ob	96		15,571			
fennica	113			17,487		
fennica_ab	98				19,873	
abies_ab	45					22,047
Sig.		1,000	1,000	1,000	1,000	1,000
W						
Tukey HSD ^{a,b,c}						
Taxon	N	Subset				
		1	2	3	4	
obovata	58	10,478				
fennica_ob	96	10,983	10,983			
fennica	113		11,615	13,110		
fennica_ab	98				14,191	
abies_ab	45			1,000	1,000	
Sig.		,570	,340			
HW						
Tukey HSD ^{a,b,c}						
Taxon	N	Subset				
		1	2	3	4	
obovata	58	1,330				
fennica_ob	96	1,407				
fennica	113		1,505			
fennica_ab	98		1,539			
abies_ab	45		1,565			
Sig.		,090	,304			
I_A						
Tukey HSD ^{a,b,c}						
Taxon	N	Subset				
		1	2	3	4	
fennica_ob	96	4,080				
obovata	58	4,100				
fennica	113		4,744			
fennica_ab	98			5,883		
abies_ab	45				7,080	
Sig.		1,000	1,000	1,000	1,000	
L						
Tukey HSD ^{a,b,c}						
Taxon	N	Subset				
		1	2	3	4	
obovata	58	1,286				
fennica_ob	96	1,654	1,654			
fennica	113		2,069			
fennica_ab	98			2,750		
abies_ab	45				4,380	
Sig.		,319	,203	1,000	1,000	

k					
Tukey HSD ^{a,b,c}					
Taxon	N	Subset			
		1	2	3	4
obovata	58	4,793			
fennica_ob	96	5,024			
fennica	113		5,559		
fennica_ab	98			6,077	
abies_ab	45				6,680
Sig.		,652	1,000	1,000	1,000
c					
Tukey HSD ^{a,b,c}					
Taxon	N	Subset			
		1	2	3	4
fennica_ob	96		2,054		
fennica	113		2,062		
abies_ab	45		2,093		
fennica_ab	98		2,116		
obovata	58		2,164		
Sig.			,557		
kH					
Tukey HSD ^{a,b,c}					
Taxon	N	Subset			
		1	2	3	4
abies_ab	45	,301			
fennica_ab	98	,313			
fennica	113	,322	,322		
fennica_ob	96	,327	,327		
obovata	58		,351		
Sig.		,111	,064		

a. Means for groups in homogeneous subsets are displayed.

b. The group sizes are unequal. The harmonic mean of the group sizes = 73,419 is used.

c. Alpha = ,05.