

**Table S1.** Lithological and geochemical properties of meromictic water bodies sediments separated from the White Sea.

Station	Positions	Sediment description	Depth, m	Sand, %	Silt, %	Pelite, %	Moisture, %	TOC, %	TIC, %	S <sub>tot</sub> , %
Lake Kislo-Sladkoe										
KS-1	N66.54903333 E33.13398333	Green-brown pelitic mud	0.4	4.6	8.0	87.4	86.0	7.4	4.1	0.57
KS-2	N66.54823333 E33.13720000	Dark green-brown silty pelitic mud with admixture of coarse sand	0.3	10.1	2.4	85.3	56.4	3.2	5.2	0.58
KS-3	N66.54775000 E33.13548333	Gray-bluish silty sand	0.2	59.2	27.3	13.3	37.9	0.7	0.7	0.12
KS-4	N66.54850000 E33.13461667	Dark green-brown silty pelitic mud with admixture of coarse sand	2	11.0	22.3	64.4	65.9	3.6	1.2	0.31
KS-5	N66.54850000 E33.13486667	Green-biege silty-pelitic mud	2.5	n.d. <sup>1</sup>	n.d.	n.d.	n.d.	3.3	1.6	0.30
KS-6	N66.54840000 E33.13530000	Black pelitic mud with thin dark brown inter layer, H <sub>2</sub> S smell	3.7	n.d.	n.d.	n.d.	n.d.	9.8	8.1	1.17
Lagoon on Cape Zeleny										
ZC-1	N66.53161667 E33.09598333	Dark gray poorly sorted sand, silty, with upper thin beige-green layer	0.3	31.8	6.6	60.2	34.7	1.0	1.0	0
ZC-2	N66.52971667 E33.09370000	Gray poorly sorted silty sand	0.2	27.5	10.1	61.6	42.5	0.7	0.9	0
ZC-3	N66.52968333 E33.09591667	Poorly sorted silty sand	0.3	38	31.9	29.4	69.0	1.4	1.2	0.13
ZC-4	N66.53060000 E33.95166667	Silty pelitic mud with beige green fine sand of light tint	3.0	27.2	15.0	56.9	62.6	3.8	2.0	0.38
ZC-5	N66.53022000 E33.09466667	Light black pelitic mud, H <sub>2</sub> S smell	6.2	2.9	3.9	93.2	91.2	8.6	4.0	1.06

Biofilters Bay										
BB	N66.54066667 E33.16496667	Sand	0.3	61.0	7.8	17.5	10.1	0.02	0.3	0
Bol'shie Khruslomeny Lake										
BK-1	N66.71798333 E32.85085000	Silty-pelitic mud with admixture of beige-green fine sand with black spots and H <sub>2</sub> S smell	0.9	9.1	11.1	79.8	64.3	6.1	2.8	0.53
BK -2	N66.71771667 E32.85240000	Willow green pelitic mud, with black spots and H <sub>2</sub> S smell	3.2	2.4	0.9	96.6	86.3	23.3	0	1.48
BK-3	N66.71683333 E32.85701667	Pelitic jellylike mud with dark-willow green inclusions, with strong H <sub>2</sub> S smell	12.54	0.7	1.0	98.3	93.8	14.6	3.8	1.91
Lobanikha Bay										
BL-1	N66.55615000 E33.23388333	Green-beige coarse- and medium-grained silty sediment with shell debris and H <sub>2</sub> S smell	0.1	57.5	25.1	16.5	21.4	0.2	0.2	0
BL-3	N66.55477000 E33.24561667	Silty-pelitic mud with an admixture of sand, light beige color	2.5	24.3	33.3	42.4	48.8	1.8	0.7	0.09
BL-4	N66.55663333 E33.23578333	Silty-pelitic mud with an admixture of fine sand, beige-brown in color with inclusions of black lenses and H <sub>2</sub> S smell	9.5	9.0	13.8	77.2	65.7	4.6	2.1	0.37
Trekhtzvetnoe Lake										
T-1	N66.59325000 E32.97688333	Light beige pelite mud with inclusions of dark green and black interlayers with macrophyte filaments	1.3	1.3	5.8	92.9	86.0	8.5	2.50	0.55
T-2	N66.59275000 E32.97800000	Watered black pelitic mud with black spots, strong H <sub>2</sub> S smell	3.5	0.00	1.4	98.6	83.2	8.7	0.90	1.11
T-3	N66.59242000 E32.97807000	Watered black pelitic mud with light black spots. Strong H <sub>2</sub> S smell	6.0	0.00	1.1	98.9	83.1	10.6	3.20	1.65
Kislaya Bay										

KB-1	N66.53661666 E33.09300000	Fine-grained sand with admixture of silty-pelitic fraction, black inclusions of organic detritus and shell debris	0.2	69.4	19.3	10.7	21.0	0.2	0.1	0
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<sup>1</sup> n.d. – not data