Supplementary file for: Schneider A., Wetterich S., Schirrmeister L., Herzschuh U., Meyer H. & Pestryakova L.A. 2016. Freshwater ostracods (Crustacea) and environmental variability of polygon tundra in the Indigirka Lowland, north-east Siberia *Polar Research 35*.
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Supplementary Table S1. Vegetation communities in the major Kytalyk study area landscape elements. Descriptions of plant communities follow the classification given by CAVM Team (2003). Common species are marked with asterisks. Except for *Sphagnum* spp., mosses and lichen were not identified. Further vegetation data of the Kytalyk study site is given by de Klerk et al. (2014).

Relief unit	Vegetation composition
Yedoma	Dwarf–shrub tundra
	Betula nana, Carex aquatilis* ssp. *stans, Cassiope tetragona, Empetrum nigrum, Eriophorum angustifolium*, Eriophorum vaginatum*, Ledum palustre*, Luzula* sp., *Pedicularis* cf. *lapponicus, Poaceae, Rubus chamaemorus, Salix* cf. *myrtoloides, Salix* spp., *Sphagnum* spp., *Vaccinium vitis-idaea*, Vaccinium uligunosum*
Floodplain	Sedge, moss, low-shrub wetland
	Caltha palustris, Carex aquatilis ssp. *stans*, Eriophorum angustifolium*, Hippuris vulgaris*, Pedicularis* cf. *lapponicus, Petasites frigidus, Potentilla palustre*, Ranunculus pallasii, Ranunculus* cf. *hyperboreus, Ranunculus triparitus, Ranunculus* sp., *Rumex arcticus, Salix* spp*., *Sparganium hyperboreum*, Sphagnum* spp. **, *Utricularia ochroleuca*, Utricularia vulgaris*, Valeriana capitata*
Alas (polygon rims)	Nontussock sedge, dwarf shrub, moss tundra
	Andromeda polifolia, Betula nana*, Carex aquatilis* ssp. *stans, Empetrum nigrum, Eriophorum angustifolium, Eriophorum vaginatum*, Ledum palustre*, Pedicularis* cf. *lapponicus, Poaceae, Pyrola grandiflora, Rubus chamaemorus*, Salix* cf. *myrtoloides, Salix* spp., *Saxifraga hirculus, Sphagnum* spp.**, *Rumex arcticus, Vaccinium vitis-idaea*, Vaccinium uligunosum*

Alas (polygon centres)	Sedge/grass, moss wetland *Caltha palustris, Carex aquatilis* ssp. *stans*, Carex chordorrhizza*, Carex* spp., *Eriophorum angustifolium*, Lychnis* sp., *Polygonum viviparum, Potentilla palustre, Ranunculus pallasii, Rumex arcticus, Salix* cf. *myrtoloides, Salix* spp., *Sparganium hyperboreum*, Sphagnum* spp., *Utricularia ochroleuca**

Supplementary Table S2. Overview of location and time period during which the various sensors were installed.

Parameter	Location	Device	Measuring period
Water temperature ($T_{w\,5}$)	pond centre, 5 cm water depth	MinidanTemp 0.1, ESYS	20/07/11 – 26/08/11
Electrical conductivity (EC) Water temperature ($T_{w\,15}$)	pond centre, 15 cm water depth	HOBO U24 Conductivity Sensor	20/07/11 – 26/08/11
Water level (WL), Water temperature ($T_{w\,30}$)	pond centre, 30 cm water depth	HOBO Water Level/Temp Sensor (U20-001-04)	20/07/11 – 26/08/11
Air temperature (T_{air})	2 m above ground	MinidanTemp 0.1, ESYS	20/07/11 – 26/08/11

Supplementary Table S3. Hydrochemical data from Arctic freshwaters compiled from different studies. Studies with focus on freshwater ostracods are highlighted with asterisks. All numbers are mean values. From Pienitz et al. (1997a, b) tundra sites are selected. From Duff et al. (1999) medians from sites at the lower reaches of the Lena River are selected. Electrical conductivity (EC) is given in µS cm^{-1}; major ion concentrations are given in mg l^{-1}.

	Canadian Arctic Archipelago						North-east Siberia						
Study	Pienitz et al. 1997a	Pienitz et al. 1997b	Hamilton et al. 2001	Michelutti, Douglas, Lean et al. 2002	Michelutti, Douglas, Muir et al. 2002	* Bunbury & Gajewski 2009	Duff et al. 1999	Duff et al. 1999	Duff et al. 1999	* Wetterich, Schirrmeister et al. 2008	* Wetterich, Herzschuh et al. 2008	* this study	Schirrmeister, unpubl. data
Area	Northwest Territories, Canada	Nunavut, Canada	Canadian Arctic Archipelago	Victoria Island, Arctic Canada	Axel Heiberg Island, Arctic Canada	Canadian Arctic Archipelago	Pechora River mouth, W Siberia	Taimyr Peninsula, N Siberia	Lena River, NE Siberia	Lena River Delta, NE Siberia	NE Yakutia/Moma, NE Siberia	Indigirka Lowland, NE Siberia	Rainwater, Kolyma Lowland, NE Siberia
Period	July 1990	July 1991	1979 to 1997	July 1997	July 1998	1992 to 2004	July 1995	July/ Aug. 1993	July/ Aug. 1994	Aug. 2002	July/ Aug. 2005	July/ Aug. 2011	July/ Aug. 2012
n	24	13	204	34	38	43	27	23	31	23	17	27	3
pH	7.8	7.6	7.7	7.7	7.9	8.0	6.8	8.0	7.6	7.4	7.0	6.3	7.0
EC	131	8.8	294.0	96.4	373.0	204.0	92.0	38.0	38.0	94.8	205.5	34.7	22.0
Ca	19.9	0.7	25.4	22.2	25.6	22.8	2.6	6.3	5.3	10.5	20.7	3.6	< 0.1
Mg	–	–	8.6	6.1	13.7	6.6	1.0	1.9	1.6	5.8	10.3	2.0	< 0.1
Na	7.0	0.4	25.4	0.44	52.9	12.4	1.7	0.8	0.8	1.6	13.6	0.9	1.0
K	1.29	0.4	2.39	0.24	4.6	1.2	0.2	0.2	0.4	0.7	5.7	0.6	< 0.2
Cl	12.2	0.6	28.0	1.00	86.1	15.8	2.2	0.4	0.6	2.4	14.8	0.4	1.1
HCO_3	–	–	–	–	–	–	–	–	–	58.3	131.2	11.5	7.5
O_2	12.9	–	–	–	–	–	–	–	–	9.3	5.4	8.7	–

Supplementary Table S4. Major ions in the monitored pond Kyt-01 and in ponds Kyt-02 to -27. All units are in mg l^{-1}.

Sample code	Ca	K	Mg	Na	Chloride	Sulfate	HCO_3
Kyt-01-01	1.07	0.83	0.79	0.91	0.52	< 0.1	3.5
Kyt-01-02	1.12	0.66	0.83	0.89	0.42	< 0.1	2.4
Kyt-01-03	1.96	0.88	1.16	1.19	0.51	< 0.1	6.7
Kyt-01-04	1.76	0.48	1.17	0.69	0.28	< 0.1	4.9
Kyt-01-05	1.72	0.44	1.18	0.72	0.36	< 0.1	4.4
Kyt-01-06	1.81	0.39	1.27	0.58	0.38	< 0.1	6.3
Kyt-01-07	1.71	0.34	1.26	0.53	0.45	< 0.1	3.7
Kyt-01-08	1.66	0.41	1.21	0.63	0.49	< 0.1	5.2
Kyt-01-09	1.90	0.49	1.36	0.62	0.54	< 0.1	5.9
Kyt-01-10	1.92	0.44	1.37	0.62	0.58	< 0.1	5.8
Minimum	1.07	0.34	0.79	0.53	0.28	–	2.44
Maximum	1.96	0.88	1.37	1.19	0.58	–	6.71
Mean	1.66	0.54	1.16	0.74	0.45	–	4.88
Kyt-02	2.55	0.25	1.65	0.71	0.15	< 0.1	8.1
Kyt-03	3.06	0.91	1.82	0.99	0.47	< 0.1	14.2
Kyt-04	2.30	1.29	1.32	1.41	0.26	< 0.1	7.2
Kyt-05	3.01	< 0.2	1.87	0.42	0.17	< 0.1	7.8
Kyt-06	21.2	0.53	8.06	2.79	2.06	< 0.1	89.7
Kyt-07	1.86	0.24	1.93	0.89	0.15	< 0.1	5.5
Kyt-08	2.82	0.31	1.81	0.62	0.20	< 0.1	2.7
Kyt-09	3.73	0.67	2.29	1.26	0.21	< 0.1	7.5
Kyt-10	5.26	0.27	2.83	0.92	0.27	< 0.1	13.0
Kyt-11	5.48	< 0.2	3.20	1.49	0.70	< 0.1	18.0
Kyt-12	2.85	1.73	1.53	1.84	0.57	< 0.1	6.1
Kyt-13	2.26	0.45	1.63	0.78	0.28	< 0.1	8.1
Kyt-14	3.54	< 0.2	2.11	0.49	0.23	< 0.1	8.4
Kyt-15	4.33	< 0.2	2.60	0.57	0.19	< 0.1	11.0
Kyt-16	2.48	< 0.2	1.96	0.50	0.16	< 0.1	3.2
Kyt-17	3.49	0.74	2.03	1.09	0.32	< 0.1	14.0
Kyt-18	3.78	0.38	2.01	0.85	0.47	< 0.1	11.1

Kyt-19	8.37	1.42	4.10	0.81	0.65	< 0.1	33.1
Kyt-20	2.88	< 0.2	1.25	0.50	0.25	< 0.1	5.3
Kyt-21	2.94	0.22	1.45	0.65	0.29	< 0.1	6.9
Kyt-22	4.01	0.22	1.67	0.59	0.25	< 0.1	11.4
Kyt-23	4.77	0.30	2.28	0.68	0.35	< 0.1	18.0
Kyt-24	5.34	0.81	2.92	0.84	0.50	< 0.1	20.9
Kyt-25	4.20	0.70	2.36	0.77	0.66	< 0.1	20.0
Kyt-26	3.45	0.40	1.71	0.62	0.66	< 0.1	10.8
Kyt-27	2.00	0.60	1.75	1.05	0.42	< 0.1	3.4
Berelekh River	4.64	0.69	2.05	0.82	0.52	1.53	38.6
Konsor Syane	4.05	0.80	1.93	1.17	0.85	< 0.1	38.9
Minimum	1.86	0.22	1.25	0.42	0.15	–	2.75
Maximum	21.20	1.73	8.06	2.79	2.06	–	89.69
Mean	4.31	0.62	2.31	0.93	0.42	–	14.05

Supplementary Table S5. Hydrochemical data in the monitored pond Kyt-01 and in ponds Kyt-02 to -27. At detection limit is abbreviated to adl. A dash indicates no data.

Sample code	T_{air} °C	T_{water} °C	EC µS cm^{-1}	pH	O_2 mg l^{-1}	Alkalinity mmol l^{-1}	Acidity mmol l^{-1}	Water hardness °dH	NH_4 µmol l^{-1}	NO_3 µmol l^{-1}	PO_4^3 µmol l^{-1}
Kyt-01-01	17.2	19.0	23	6.2	8.4	0.4	0.4	1.5	2.78	19.85	adl
Kyt-01-02	15.4	17.8	17	5.9	8.4	0.4	0.4	1.5	adl	adl	adl
Kyt-01-03	19.2	17.9	21	6.4	6.0	0.4	0.4	2.5	adl	adl	adl
Kyt-01-04	13.2	17.6	21	5.6	8.4	0.4	0.4	0.5	5.57	32.70	adl
Kyt-01-05	18.2	13.5	18	6.3	7.2	0.4	0.4	3.5	adl	28.06	adl
Kyt-01-06	7.0	–	26	7.6	9.8	0.4	0.4	3.5	1.36	32.41	adl
Kyt-01-07	8.5	8.7	18	6.1	9.8	0.4	0.4	4.0	adl	28.63	adl
Kyt-01-08	4.5	8.0	21	6.5	10.0	0.4	0.4	4.0	adl	35.13	adl
Kyt-01-09	5.5	7.3	21	6.2	10.8	0.4	0.4	4.5	1.99	27.34	adl
Kyt-01-10	8.4	7.2	21	6.0	8.0	0.4	0.4	3.5	3.43	28.77	adl
Minimum	4.5	7.2	17.0	5.6	6.0	0.4	0.4	0.5	1.4	19.8	–
Maximum	19.2	19.0	26.0	7.6	10.8	0.4	0.4	4.5	5.6	35.1	–
Mean	11.7	13.0	20.7	6.3	8.7	0.4	0.4	2.9	3.0	29.1	–
Kyt-02	25.0	19.5	53	5.6	7.0	0.8	0.4	1.5	adl	28.70	9.23

Kyt-03	12.6	14.8	23	5.5	10.0	0.3	0.4	2.5	1.71	adl	adl
Kyt-04	11.8	16.1	20	5.6	8.2	0.2	0.4	3.0	3.21	17.49	adl
Kyt-05	7.5	8.6	25	6.4	8.2	0.4	0.4	3.0	3.43	37.34	adl
Kyt-06	18.0	23.5	153	6.4	7.6	1.6	0.4	4.2	2.93	adl	adl
Kyt-07	19.1	21.9	21	6.8	6.6	0.2	0.4	3.0	2.00	52.12	adl
Kyt-08	7.3	8.5	34	6.7	8.4	0.4	0.4	3.5	3.00	36.98	adl
Kyt-09	18.0	8.9	28	6.2	6.4	0.4	0.4	2.5	2.14	56.54	adl
Kyt-10	16.5	11.8	36	6.2	5.4	0.4	0.6	2.5	1.64	55.40	adl
Kyt-11	18.5	13.4	42	6.3	8.6	0.4	0.6	4.0	2.07	40.19	adl
Kyt-12	16.7	13.9	20	6.4	8.8	0.4	0.4	3.0	adl	21.63	adl
Kyt-13	16.2	13.9	23	6.3	6.2	0.4	0.4	3.0	adl	24.34	adl
Kyt-14	6.7	7.2	28	5.8	7.2	0.4	0.4	5.5	adl	44.33	adl
Kyt-15	6.4	9.0	31	5.8	9.6	0.4	0.4	3.0	adl	48.62	adl
Kyt-16	8.2	9.0	22	6.2	8.6	0.6	0.4	5.0	1.36	50.69	adl
Kyt-17	7.8	10.6	31	6.4	10.0	0.4	0.4	5.0	adl	adl	adl
Kyt-18	9.9	8.1	29	6.3	10.0	0.4	0.4	4.5	adl	25.56	adl
Kyt-19	–	10.6	61	6.6	11.6	0.8	0.4	7.5	adl	adl	adl
Kyt-20	11.5	8.1	22	6.2	9.4	0.4	0.4	4.0	adl	36.98	adl
Kyt-21	12.1	10.2	19	6.3	8.6	0.4	0.4	3.5	2.43	30.56	adl
Kyt-22	13.6	10.0	29	6.5	8.8	0.4	0.4	4.0	2.36	adl	adl
Kyt-23	12.4	10.0	35	6.7	9.4	0.4	0.4	4.0	1.64	adl	adl
Kyt-24	7.1	10.6	44	6.6	9.2	0.8	0.4	5.0	adl	adl	adl
Kyt-25	5.2	6.0	37	7.0	11.8	0.6	0.4	6.5	1.93	adl	adl
Kyt-26	5.0	5.5	28	7.1	10.0	1.0	0.4	6.5	1.57	18.85	adl
Kyt-27	5.8	7.8	20	6.3	10.0	0.4	0.4	3.5	1.78	37.41	adl
Berelekh River	–	–	22	–	–	–	–	–	–	–	–
Konsor Syane	–	–	21	–	–	–	–	–	–	–	–
Minimum	5.0	5.5	19.0	5.5	5.4	0.2	0.4	1.5	1.4	17.5	–
Maximum	25.0	23.5	153.0	7.1	11.8	1.6	0.6	7.5	3.4	56.5	–
Mean	12.0	11.4	35.2	6.3	8.7	0.5	0.4	4.0	2.2	36.9	–

Supplementary Table S6. Water stable isotope values for pond, precipitation, river, and ground ice water. Vienna Standard Mean Ocean Water is abbreviated as VSMOW.

Lab. no.	Sample	$\delta^{18}O$ ‰ vs. SMOW	1 σ	δD ‰ vs. VSMOW	1 σ	d excess
Pond water samples						
9208	Kyt-01-01	-12.93	0.04	-118.9	0.4	-15.5
9210	Kyt-01-02	-13.08	0.02	-116.6	0.4	-11.9
9211	Kyt-01-03	-13.87	0.04	-118.5	0.6	-7.6
9212	Kyt-01-04	-13.61	0.04	-118.8	0.2	-9.9
9214	Kyt-01-05	-14.69	0.04	-122.9	0.4	-5.3
9215	Kyt-01-06	-14.53	0.03	-122.3	0.4	-6.1
9216	Kyt-01-07	-14.39	0.03	-121.6	0.3	-6.5
9218	Kyt-01-08	-14.01	0.01	-119.1	0.3	-7.1
9219	Kyt-01-09	-14.32	0.04	-120.8	0.4	-6.2
9222	Kyt-01-10	-15.08	0.02	-125.2	0.2	-4.6
6966	Kyt-02	-16.21	0.02	-131.5	0.3	-1.8
6967	Kyt-03	-14.01	0.07	-120.0	0.3	-7.9
6968	Kyt-04	-14.14	0.05	-120.0	0.3	-6.8
6970	Kyt-05	-17.20	0.04	-132.5	0.3	5.0
6971	Kyt-06	-16.00	0.07	-128.7	0.2	-0.7
6974	Kyt-07	-17.04	0.05	-133.5	0.1	2.9
6977	Kyt-08	-16.49	0.04	-130.4	0.2	1.5
6978	Kyt-09	-18.47	0.05	-137.6	0.3	10.2
6979	Kyt-10	-18.32	0.03	-137.5	0.3	9.0
6981	Kyt-11	-19.01	0.03	-141.5	0.2	10.6
6982	Kyt-12	-16.60	0.03	-136.5	0.1	-3.7
6983	Kyt-13	-15.12	0.06	-125.9	0.3	-4.9
6985	Kyt-14	-16.57	0.05	-131.6	0.2	1.0
6986	Kyt-15	-17.20	0.06	-133.3	0.2	4.3
6987	Kyt-16	-15.64	0.06	-125.3	0.2	-0.1
6989	Kyt-17	-14.11	0.02	-119.7	0.4	-6.8
6990	Kyt-18	-17.31	0.02	-137.1	0.3	1.3
7086	Kyt-19	-18.31	0.04	-146.0	0.8	0.4
6993	Kyt-20	-17.71	0.03	-140.0	0.3	1.7

6994	Kyt-21	-18.34	0.06	-145.2	0.3	1.5
9199	Kyt-22	-17.71	0.03	-139.0	0.3	2.7
9202	Kyt-23	-16.06	0.04	-129.1	0.4	-0.6
9203	Kyt-24	-18.49	0.04	-145.9	0.4	2.0
9204	Kyt-25	-16.04	0.04	-134.6	0.3	-6.2
9206	Kyt-26	-18.15	0.04	-143.9	0.4	1.3
9207	Kyt-27	-16.23	0.03	-130.0	0.5	-0.1
Rain water samples						
6435	KYT-RAIN-1	-15.19	0.03	-112.6	0.7	9.0
6436	KYT-RAIN-2	-17.77	0.04	-133.8	0.3	8.3
6437	KYT-RAIN-3	-12.35	0.01	-104.2	0.5	-5.5
6439	KYT-RAIN-4	-18.50	0.03	-142.8	0.2	5.2
6440	KYT-RAIN-5	-14.21	0.05	-125.0	0.4	-11.3
6441	KYT-RAIN-6A	-15.14	0.03	-129.3	0.4	-8.2
6443	KYT-RAIN-6B	-15.35	0.02	-118.0	0.5	4.8
6444	KYT-RAIN-7	-16.80	0.02	-127.5	0.3	6.9
6445	KYT-RAIN-8	-19.93	0.02	-150.7	0.3	8.7
6447	KYT-RAIN-9	-11.84	0.03	-100.5	0.4	-5.7
6448	KYT-RAIN-10	-12.91	0.04	-106.1	0.5	-2.8
6449	KYT-RAIN-11	-14.17	0.05	-113.2	0.4	0.1
6451	KYT-RAIN-12	-16.11	0.01	-121.5	0.2	7.3
6452	KYT-RAIN-13	-14.95	0.01	-115.8	0.4	3.8
6951	KYT-RAIN-14	-18.69	0.04	-137.5	0.2	12.0
6954	KYT-RAIN-15	-16.77	0.07	-132.8	0.4	1.3
6955	KYT-RAIN-16	-16.65	0.04	-132.7	0.3	0.5
6956	KYT-RAIN-17	-20.97	0.08	-164.8	0.4	2.9
6958	KYT-RAIN-18	-14.01	0.02	-109.3	0.3	2.8
6959	KYT-RAIN-19	-16.33	0.05	-126.3	0.2	4.3
6960	KYT-RAIN-20	-18.54	0.03	-143.0	0.3	5.4
6962	KYT-RAIN-21	-21.37	0.03	-163.4	0.3	7.5
Ground ice samples						
6513	LHC-11-J1880	-16.21	0.04	-134.7	0.6	-5.0
6514	LHC-11-J14,30-1	-25.82	0.05	-201.7	0.4	4.9
6515	LHC-11-J14,30-2	-23.78	0.01	-189.8	0.5	0.4
6517	LHC-11-J19,00-1	-16.90	0.04	-141.2	0.2	-5.9

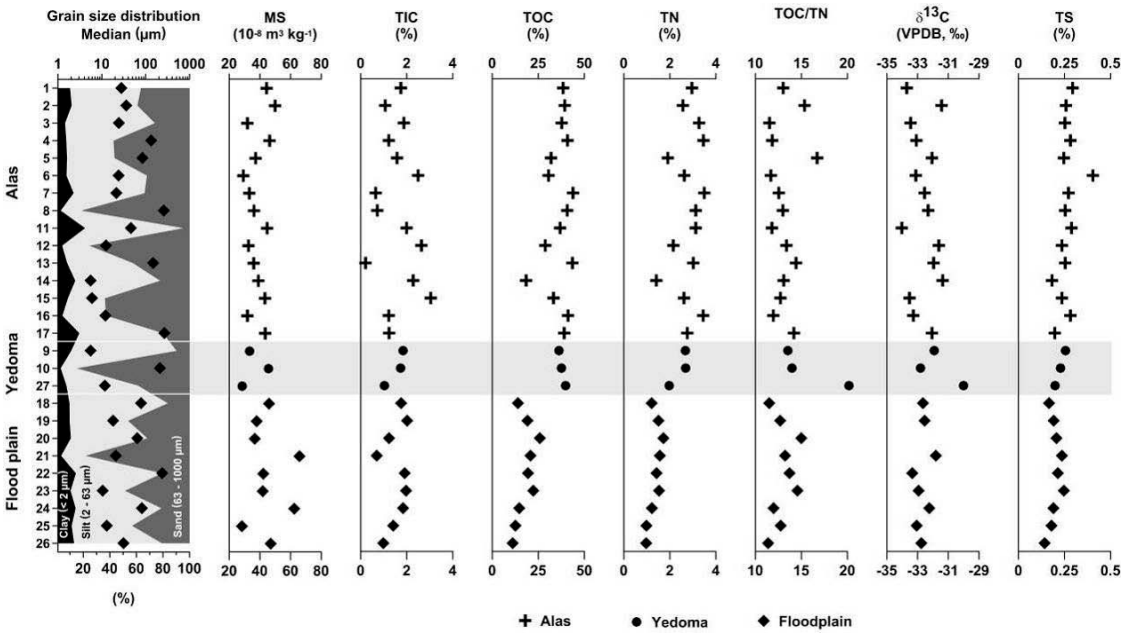
6510	KYT-1-IC-1	-25.40	0.03	-193.3	0.4	9.9
6511	KYT-1-IC-2	-19.75	0.04	-148.5	0.5	9.4
9241	Palsa	-16.88	0.04	-139.8	0.4	-4.7
River water samples						
6963	Konsor Syane	-16.24	0.05	-131.8	0.2	-1.9
6964	Berelekh River 1	-18.50	0.10	-147.4	0.1	0.6
7084	Berelekh River 2	-18.48	0.09	-148.0	0.6	-0.1

Supplementary Table S7. Substrate parameters in ponds Kyt-01 to -27. Vienna Pee Dee Belemnite is abbreviated as VPDB.

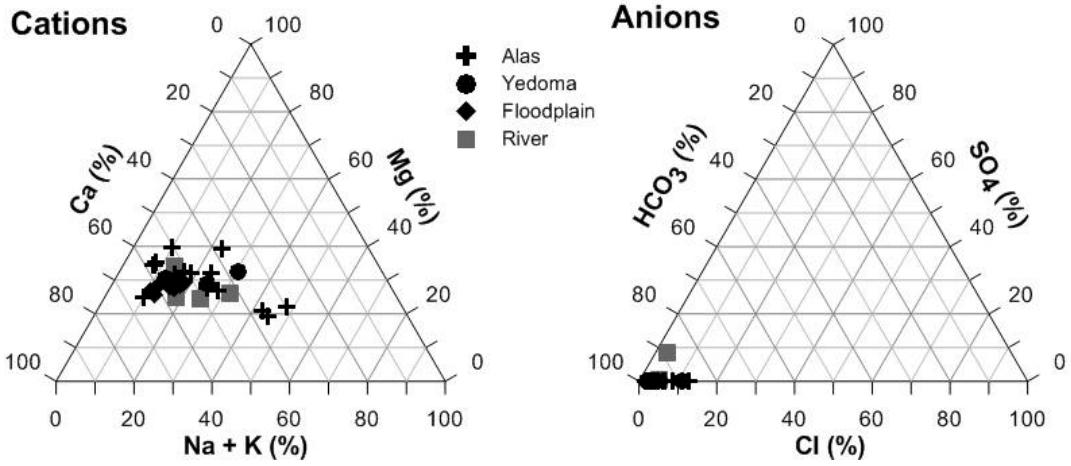
Sample code	TIC %	TOC %	TN %	C/N	$\delta^{13}C$ ‰ vs. VPDB	S %	MS 10^{-8} m^3kg^{-1}	Median grain size µm
Kyt-01	1.75	38.46	2.95	13.02	-33.71	0.29	44.39	27.84
Kyt-02	1.06	39.32	2.57	15.33	-31.43	0.26	49.84	36.24
Kyt-03	1.87	37.72	3.27	11.53	-33.45	0.25	44.69	84.44
Kyt-04	1.22	40.92	3.46	11.84	-33.07	0.28	32.64	24.13
Kyt-05	1.58	31.99	1.92	16.70	-32.06	0.25	31.91	260.6
Kyt-06	2.49	30.60	2.62	11.67	-33.13	0.40	46.35	46.18
Kyt-07	0.65	43.83	3.50	12.54	-32.55	0.27	35.94	12.51
Kyt-08	0.72	40.66	3.13	12.99	-32.31	0.25	37.24	149.0
Kyt-09	1.84	36.18	2.67	13.53	-31.92	0.26	31.79	5.541
Kyt-10	1.73	37.56	2.69	13.98	-32.81	0.23	43.54	5.972
Kyt-11	2.00	36.79	3.12	11.80	-34.03	0.29	29.24	24.47
Kyt-12	2.64	28.79	2.15	13.38	-31.61	0.24	33.08	133.7
Kyt-13	0.20	43.56	3.02	14.41	-31.95	0.25	36.16	21.46
Kyt-14	2.28	18.42	1.41	13.07	-31.37	0.18	33.37	12.05
Kyt-15	3.04	33.22	2.61	12.72	-33.53	0.24	45.55	266.4
Kyt-16	1.21	41.18	3.45	11.94	-33.28	0.28	38.95	5.541
Kyt-17	1.23	39.06	2.75	14.18	-32.07	0.20	43.23	212.3
Kyt-18	1.75	13.85	1.20	11.50	-32.65	0.17	37.97	11.72
Kyt-19	2.02	19.16	1.51	12.71	-32.55	0.19	36.75	78.09
Kyt-20	1.23	25.77	1.72	14.98	–	0.21	65.75	18.18

Kyt-21	0.70	20.73	1.57	13.24	-31.81	0.24	42.27	63.89
Kyt-22	1.92	19.44	1.42	13.71	-33.35	0.21	41.85	21.0
Kyt-23	1.97	22.27	1.53	14.56	-32.94	0.25	62.35	238.6
Kyt-24	1.84	14.59	1.22	11.97	-32.25	0.19	28.26	10.42
Kyt-25	1.41	12.55	0.98	12.75	-33.05	0.18	47.04	82.08
Kyt-26	0.98	10.99	0.97	11.38	-32.77	0.14	28.47	12.92
Kyt-27	1.02	39.81	1.97	20.17	-30.01	0.20	46.01	31.46
Minimum	0.20	10.99	0.97	11.38	-34.03	0.14	28.26	5.541
Maximum	3.04	43.83	3.50	20.17	-30.01	0.40	65.75	260.6
Mean	1.57	30.27	2.27	13.39	-32.53	0.24	40.54	70.25

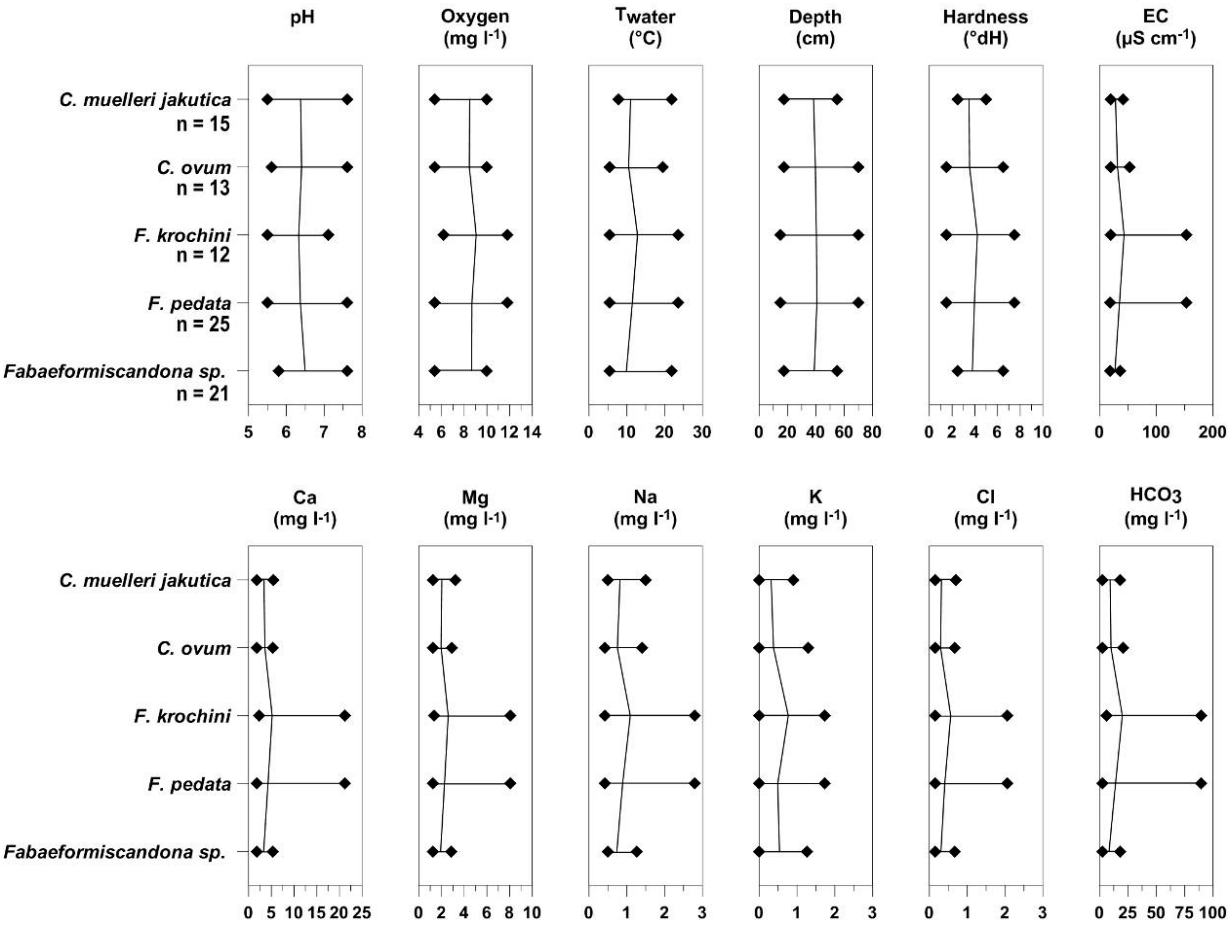
Supplementary Fig. S1. Different types of polygon water bodies and variations in morphology. Left column: Kyt-04 and Kyt-16 are typical intrapolygon water bodies. KYT-5 is an example of a thaw lake while Kyt-13 is connected to a rivulet. Right column: Kyt-14, Kyt-18 and Kyt-22 are typical interpolygon water bodies; circular Kyt-19 is an oxbow lake located in the Berelekh River floodplain.



Supplementary Fig. S2. Substrate properties from the 27 studied water bodies near Kytalyk field station. Grain size distribution and biogeochemical properties of the substrate with respect to landscape units are shown. Note varying scales.



Supplementary Fig S3. Major ion composition of the 27 water bodies studied near the Kytalyk field station as a percentage with respect to landscape units.



Supplementary Fig. S4. Ecological tolerance ranges of the most common ostracod species and selected environmental variables. Filled diamonds represent minimum and maximum values, vertical lines the mean value, and horizontal lines the range. The number of ponds in which the ostracod species were found is indicated by n. Note varying scales.

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