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Effects of sea ice decay and nutrient depletion on taxonomic composition and trophic structure in high-Arctic protist and metazoan communities

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ESM2. Dry weights and trophic groups of under-ice fauna and zooplankton collected during PS80

Taxon	Trophic group	Mean biomass [mg m⁻²]	Mean ind. DW [mg]	Reference
Under-ice fauna				
<i>Clione limacina</i>	Carnivore	0.508	0.570	Mizdalski, 1988
<i>Limacina helicina</i>	Herbivore	0.003	0.272	Mizdalski, 1988
Polychaeta	Carnivore	< 0.001	0.062	Richter, 1994
<i>Boroecia borealis</i>	Carnivore	0.000	0.256	Conchoecia sp. from Mizdalski (1988)
<i>Calanus finmarchicus</i>	Herbivore	1.050	0.462	0.7 * <i>C. glacialis</i> (Ashjian et al., 2003)
<i>Calanus glacialis</i>	Herbivore	0.745	0.660	Ashjian et al., 2003
<i>Calanus hyperboreus</i>	Herbivore	6.142	1.629	Ashjian et al., 2003
<i>Metridia longa</i>	Herbivore	0.167	0.089	Ashjian et al., 2003
<i>Paraeuchaeta glacialis</i>	Carnivore	0.006	6.580	Auel and Hagen, 2005
<i>Pseudocalanus spp.</i>	Herbivore	0.003	0.012	Norrbin et al., 1990
<i>Apherusa glacialis</i>	Herbivore	2.626	4.168	measured
<i>Eusirus holmii</i>	Carnivore	0.176	85.295	measured
<i>Gammarus wilkitzkii</i>	Omnivore	0.168	103.208	measured
<i>Gammaracanthus loricatus</i>	Omnivore	0.003	103.208	measured (as <i>G. Wilkitzkii</i>)
<i>Onisimus glacialis</i>	Omnivore	0.560	46.020	measured (as <i>O. nansenii</i>)
<i>Onisimus nansenii</i>	Omnivore	0.174	46.020	measured
<i>Themisto libellula</i>	Carnivore	1.041	14.178	measured length-weight relationship
<i>Themisto abyssorum</i>	Carnivore	0.101	12.761	0.9 * 1-w rel. from <i>T. libellula</i>
<i>Thysanoessa inermis</i>	Herbivore	0.002	20.000	Falk-Petersen, 1981
Euphausiacea	Herbivore	0.000	5.000	Falk-Petersen, 1981
<i>Eukrohnia spp.</i>	Carnivore	0.064	2.151	Donnelly et al., 1994
<i>Sagitta spp.</i>	Carnivore	0.007	4.500	Ikeda and Skjoldal, 1989
<i>Oikopleura vanhoeffeni</i>	Herbivore	0.103	0.200	Richter, 1994

Taxon	Trophic group	Mean biomass [mg m⁻²]	Mean ind. DW [mg]	Reference
Mesozooplankton				
Polychaeta	Carnivore	0.819	0.062	Richter, 1994
Ostracoda	Carnivore	15.281	0.250	Mizdalski, 1988
Cirripedia	Omnivore	0.005	0.001	as in <i>Calanus nauplii</i> (Richter, 1994)
<i>Calanus hyperboreus</i>	Herbivore	706.997	0.598	Ashjian et al. (2003)
<i>Calanus</i> spp.	Herbivore	507.201	0.462	0.7 * <i>C. glacialis</i> (Ashjian et al., 2003)
<i>Calanus nauplii</i>	Herbivore	2.768	0.001	Richter (1994)
<i>Centropages</i> spp.	Herbivore	0.020	0.017	Ikeda et al. (2001)
<i>Paraeuchaeta</i> spp.	Carnivore	160.439	6.580	Auel and Hagen (2005)
<i>Heterorhabdus</i> spp.	Herbivore	0.756	0.089	as in <i>Metridia</i> spp. (Ashjian et al., 2003)
<i>Metridia</i> spp.	Herbivore	30.348	0.089	Ashjian et al. (2003)
<i>Temora</i> spp.	Herbivore	0.030	0.016	Ikeda et al. (2001)
Clausocalanidae	Herbivore	8.700	0.003	as in <i>Oithona</i> (Richter, 1994)
<i>Oithona</i> spp.	Herbivore	60.405	0.003	Richter (1994)
<i>Oithona nauplii</i>	Herbivore	2.635	0.001	as in <i>Oncaea nauplii</i> (Richter, 1994)
<i>Oncaea</i> spp.	Omnivore	0.236	0.002	Richter (1994)
<i>Corycaeus</i> spp.	Omnivore	118.430	0.030	Ikeda et al. (2001)
<i>Microsetella</i> spp.	Herbivore	0.068	0.003	as in <i>Oithona</i> (Richter, 1994)
<i>Tisbe</i> spp.	Herbivore	0.030	0.002	as in <i>Oncaea</i> (Richter, 1994)
<i>Mormonilla</i> spp.	Herbivore	0.064	0.003	as in <i>Oithona</i> (Richter, 1994)
Amphipoda	Carnivore	300.232	6.000	small <i>T. libellula</i>
Chaetognatha	Carnivore	425.175	2.151	<i>Eukrohnia</i> sp., Donnelly et al. (1994)
Appendicularia	Herbivore	69.605	0.200	Richter (1994)

References:

- Ashjian, C.J., Campbell, R.G., Welch, H.E., Butler, M., and Van Keuren, D. (2003). Annual cycle in abundance, distribution, and size in relation to hydrography of important copepod species in the western Arctic Ocean. *Deep-Sea Research Part I-Oceanographic Research Papers* 50, 1235-1261.
- Auel, H., and Hagen, W. (2005). Body mass and lipid dynamics of Arctic and Antarctic deep-sea copepods (Calanoida, Paraeuchaeta): ontogenetic and seasonal trends. *Deep-Sea Research Part I-Oceanographic Research Papers* 52, 1272-1283.
- Donnelly, J., Torres, J.J., Hopkins, T.L., and Lancraft, T.M. (1994). Chemical composition of Antarctic zooplankton during austral fall and winter. *Polar Biology* 14, 171-183.
- Falk-Petersen, S. (1981). Ecological investigations on the zooplankton community of Balsfjorden, northern Norway: Seasonal changes in body weight and the main biochemical composition of *Thysanoessa inermis* (krøyer), *T. Raschii* (M. Sars), and *Meganycitiphanes norvegica* (M. Sars) in relation to environmental factors. *Journal of Experimental Marine Biology and Ecology* 49, 103-120.
- Ikeda, T., Kanno, Y., Ozaki, K., and Shinada, A. (2001). Metabolic rates of epipelagic marine copepods as a function of body mass and temperature. *Marine Biology* 139, 587-596.
- Ikeda, T., and Skjoldal, H.R. (1989). Metabolism and elemental composition of zooplankton from the Barents Sea during early Arctic summer. *Marine Biology* 100, 173-183.
- Mizdalski, E. (1988). Weight and length data of zooplankton in the Weddell Sea in austral spring 1986 (ANT V/3). *Berichte zur Polarforschung (Reports on Polar Research)* 55.
- Norrbin, M.F., Olsen, R.E., and Tande, K.S. (1990). Seasonal variation in lipid class and fatty-acid composition of 2 small copepods in Balsfjorden, northern Norway. *Marine Biology* 105, 205-211.
- Richter, C. (1994). *Regional and seasonal variability in the vertical distribution of mesozooplankton in the Greenland Sea*. PhD thesis, University of Bremen.