ARE TOXIC DIATOMS A PROBLEM IN THE ARCTIC? – FOCUSING ON *CALANUS* SPP. AS POTENTIAL VECTORS FOR DOMOIC ACID

Anna Tammilehto[1], Torkel Gissel Nielsen[2], Bernd Krock[3] & Nina Lundholm[1]

[1]The Natural History Museum of Denmark

[2]National Institute of Aquatic Resources, DTU Aqua, Section for Oceanecology and Climate, Technical University of Denmark

[3]Alfred-Wegener-Institut für Polar- und Meeresforschung, Ökologische Chemie

The first record of a domoic acid-producing organism, a diatom *Pseudo-nitzschia seriata*, from the Arctic waters was recently done from the western Greenlandic waters. Knowing that domoic acid can be transferred to higher trophic levels in marine food webs, as it has been found e.g. in whales, sharks and marine birds, we wanted to study if domoic acid-producing *P. seriata* was grazed by zooplankton and whether the grazers could accumulate the toxin also in the Arctic. This is of special interest in Greenland where marine products form the basis for everyday food and are also the most important export products. The experiments were run in Disko Bay, Western Greenland. Three *Calanus* species, *C. glacialis*, *C. finmarchicus* and *C. hyperboreus*, which are the most important zooplankton herbivores in the area, were fed with unialgal cultures of toxic *P. seriata* and non-toxic *P. delicatissima*. All three copepod species fed on toxic *P. seriata* and also retained domoic acid after the grazing and there were no differences in ingestion rates between toxic and non-toxic *Pseudo-nitzschia* species in any of the copepods. *Calanus finmarchicus* and *C. hyperboreus* grazed on toxic *P. seriata* during the first six hours of the experiment but seemed to stop grazing during the last six hours of the experiment suggesting that the copepods may have suffered some kind of physical incapacitation due to ingestion of domoic acid. *Calanus glacialis* grazed on toxic *P. seriata* continuously during the whole experiment probably due to the lower concentration of domoic acid in *P. seriata* cells during the experiment run on *C. glacialis* than the other two copepod species. The results from our experiments show that the three *Calanus* species are potential vectors for domoic acid to higher trophic levels in the Arctic.