Project acronym: PondFat

Project title: Assessing essential lipid transfer of emerging insects from Arctic ponds

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Discipline: Earth Sciences & Environment: Ecosystems & Biodiversity

Station(s): NIBIO Svanhovd Research Station (Norway), Kilpisjärvi Biological Station (Finland)

The objective of this field study PONDFAT was to investigate; a) the quantity (biomass) and taxonomic composition (biodiversity) of emerging insects from selected subarctic and Arctic ponds during a predefined timeframe during the Arctic summer; b) the total content of energy-rich total lipids (in kg) and fatty acids of emerging insects from selected ponds, and; c) the difference between insect biomass and their lipids/fatty acids contents of aquatic (ponds) and terrestrial (adjacent bogs, fens) ecosystems.
We managed to sample all ponds across the subarctic (Kilpisjärvi) and Arctic (Svanhovd) study systems. With the great help of the staff at the biologinen asema in Kilpisjärvi and NIBIO in Svanhovd we could access a total of 10 ponds, deploy our sampling devices (emergent insect traps that were shipped from our labs in Austria and Germany) and collected insects, mostly chironomids, from these ponds. We had excellent access to the lab facilities at both research stations, which allowed us to identify the taxonomic groups of these sampled insects on the spot. All samples were then frozen at -80C until being freeze-dried using a freeze-drier at the Biological Station in Kilpisjärvi. In addition, we also sampled physico-chemical parameters of each of these ponds and collected samples for subsequent dissolved organic carbon and lipids, fatty acids, and compound-specific fatty acids analysis of lake plankton (potential food of insects) and emergent insects in Austria and Germany. We could, after having freeze-dried all the collected samples from these study ponds, take the first batch of samples with us back to our respective labs.
We are currently analyzing the samples that we could transport with us to the labs and expect the first results later this year. Importantly, we would like to emphasize the excellent support at both research stations. The staff at the Biologinen Asema in Kilpisjärvi and at NIBIO in

Svanhovd was most excellent and supported us more than we could wish for.
Further plans:
1. Complete analytical research in our labs in Austria and Germany
2. Analyze data: taxonomy of insects (Germany), biomass of emergent insects (Germany), biochemical analysis (lipids and fatty acids as well as stable isotopes of fatty acids; Austria).
3. Prepare data for publications in peer-reviewed journals.