

Diversity and Richness of Macroinvertebrates in Upland and Floodplain Lakes in Northeastern Siberia

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Benthic macroinvertebrates, and more specifically insects, have been identified as bioindicators of ecosystem health. A high diversity of specialized taxa indicates a healthy system, whereas highly adaptive taxa can indicate a disturbed aquatic habitat. Depending on their functional feeding groups (i.e. methods of eating such as shredding organic matter like leaf litter into smaller fine organic matter), macroinvertebrates change the matter available for food at low trophic levels. Unfortunately, there is little published research on freshwater macroinvertebrate communities in the Siberian Arctic, and more specifically in a region that is completely underlain by continuous permafrost like the Kolyma River basin. Thermokarst lakes of these region undergo constant formation and degradation (draining) resulting from frequent disturbance events to the near shore as permafrost slumps into the water from the actively thawing edge. There is substantial evidence that climate change is contributing to increased disturbance by promoting permafrost thaw. Disturbance at the margins of thermokarst lakes may be a control of macroinvertebrate biomass and diversity. Ultimately, the variability of macroinvertebrate dynamics may give insight to the amount of bioavailable carbon in Arctic freshwater systems, which is expected to increase with warming. We sampled the macroinvertebrate community structure in the littoral and pelagic zone of these lakes. This snap shot of several different lakes gives insight to how these communities are correlated to specific lake parameters: including water depths, mean dissolved oxygen, mean temperature, light (transparency & photosynthetic active radiation [PAR]), dissolved organic carbon (DOC), nitrogen, ammonium, and phosphorous. Preliminary analysis shows a high variability of macroinvertebrate distribution between and within thermokarst and floodplain lakes.