Macroinvertebrate abundance in two lakes with contrasting fish communities

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With 7 figures and 4 tables in the text

Abstract: The objective of this study was to determine whether fish abundance could influence benthic macroinvertebrate numbers, biomasses and species composition in Canadian Shield lakes. The study draws comparisons between the benthic invertebrate populations in two lakes with similar physical and chemical characteristics, but contrasting fish communities. Ranger Lake was dominated by piscivorous bass (largemouth and smallmouth) and had very low populations of small-bodied planktivore-benthivores (yellow perch, golden shiners, creek chub, pumpkinseeds). Mouse Lake had no obligate piscivores and very large populations of small-bodied planktivore-benthivores. The two lakes had similar populations of large-bodied, benthivorous white suckers. Comparisons of depth-stratified samples of benthic macroinvertebrates collected monthly (June, July, August – 1992) suggested that in the shallow water zone (<1 m depth) Ranger Lake supported significantly higher benthic densities, biomasses, and taxon richness. In these shallow water zones, consumption of benthic invertebrates by fish (based on fish bioenergetics analysis), revealed that the small-bodied planktivore-benthivores in Mouse Lake exerted more than twice as much predation pressure on the benthos as they did in Ranger Lake. In deeper waters (>1 m depth) there were no between-lake differences in the macroinvertebrate communities. Prey consumption by white suckers, which were generally distributed in deeper waters (>1 m depth), was similar in the two lakes. We conclude that high rates of prey

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