

ABSTRACT

TEMPERATURE EFFECTS OF DAMS ON COLDWATER FISH AND MACROINVERTEBRATE COMMUNITIES IN MICHIGAN

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In Michigan streams, the impact of small dams on downstream thermal regimes is a major habitat concern. The objective of this study was to examine the effects of temperature increases due to impoundment on downstream fish and macroinvertebrate communities. We sampled fish, macroinvertebrates and habitat upstream and downstream of dams on ten rivers in Michigan during the summers of 1998 and 1999. Fish were collected from block netted sites with an electroshocking unit. A modified Hess sampler was used to collect macroinvertebrate samples. Habitat was assessed using several water quality and habitat parameters. Our results show that small dams can increase downstream temperatures by more than 5 C. Increasing temperatures below impoundments resulted in lower densities of coldwater fish species, specifically brown trout, brook trout, and slimy sculpin, while fish species richness generally increased downstream. Brown trout growth was not related to temperature in these streams. Macroinvertebrates responded to warming with shifts in community composition below dams that significantly increase summer temperature. This study will provide information useful for determining the extent of impact of dams on Michigan's streams, and potentially suggesting modifications in management practices to benefit these resources.