

WISSINGER S., WHITEMAN H., DENOËL M., GREIG H. & BUTKAS K. 2006. Effects of long-term population fluctuations of a top predator on invertebrate communities in subalpine ponds in Colorado. Abstract - NABS Annual meeting, Anchorage, Alaska (U.S.A.).

[Home](#) | [Contact Us](#) |



NORTH AMERICAN BENTHOLOGICAL SOCIETY



SEARCH NABS

GO



[Home](#) > [Other Publications](#) > [NABSTRACTS](#) > [NABSTRACTS 2006](#) > 297

Effects of long-term population fluctuations of a top predator on invertebrate communities in subalpine ponds in Colorado

S. Wissinger^{1,2}, H. Whiteman^{1,3}, M. Denoël^{1,4}, H. Greig^{1,5}, and K. Butkas^{1,6}.¹Rocky Mountain Biological Laboratory, Crested Butte, Colorado 81224 USA, ²Biology Department, Allegheny College, Meadville, Pennsylvania 16335 USA, ³Department of Biological Sciences, Murray State University, Murray, Kentucky, 42071 USA, ⁴Behavioural Biology Unit, University of Liege, 4020 Liege, Belgium, ⁵School of Biological Sciences, University of Canterbury, Private Bag 4800, Christchurch, New Zealand, ⁶Center for Limnology, University of Wisconsin, Madison, Wisconsin, 53703 USA

Experimental and comparative data from subalpine ponds with and without tiger salamanders (*Ambystoma tigrinum nebulosum*) suggest that this species is a keystone predator on benthic and planktonic prey communities. At our study site in central Colorado, the population size of salamanders has fluctuated cyclically over the past 20 years from fewer than 100 to over 5000 individuals. Here we present long-term benthic data that reveal taxon- and habitat-specific correlations with fluctuations in salamander populations. In temporary habitats, benthic biomass changed little during fluctuations in salamander abundance. In permanent ponds, we observed order-of-magnitude changes in benthic biomass that were negatively correlated with salamander abundance. Among the large-bodied and potentially most vulnerable taxa (odonates, caddisflies, beetles, water bugs), several species exhibited negatively coupled cycles, but others fluctuated little or out of phase with changes in salamander abundance. The absence of major shifts in benthic community composition in permanent ponds is probably a result of conflicting predation pressures exerted by different year classes of salamanders. Data on ontogenetic shifts in salamander diet help explain why cyclic fluctuations in the abundance of this predator had only minor impacts on benthic community composition despite having major effects on invertebrate biomass.