The hard science of understanding the ecological effects of low calcium on softwater lakes

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Declines in environmental calcium (Ca) and phosphorus (P) concentrations have occurred over the past 30 years across lakes across the Canadian Shield in southern Ontario. These Ca reductions have been connected to declining abundance of *Daphnia* relative to other zooplankton species. I will discuss the origins of declining Ca concentrations and its effects on zooplankton communities in Canadian Shield lakes relative to other aspects of these lake environments. While most recent work examining shifts in zooplankton communities in this region of Canada has mainly focused on the effects of Ca-limitation, it appears that Ca concentrations alone are insufficient to explain these community shifts especially at concentrations now commonly found on the Canadian Shield. As our work indicates a possible role of poor food quality (low food P content) in controlling *Daphnia* growth and reproduction at environmentally relevant Ca concentrations, there is a need to more fully examine how multi-elemental limitation (e.g., Ca, N, P) affects consumer physiology and life-history. Such work will be necessary to more fully explain changes in the community structure of lake zooplankton in this region of Canada.