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# GREAT LAKES NEWS

## Connecting the Great Lakes to their Headwaters

By Andrew McCammon · August 31, 2009

When people think about the Great Lakes, they tend to think at a large scale: 6 quadrillion gallons of water, left over from the last ice age, that could submerge the continental United States under 9.5 feet of freshwater. They think of one-fifth of the world's fresh surface water, and home to the largest lake in the world by surface area.

The lands that drain into the Great Lakes are also immense. At over 200,000 square miles (520,000 square kilometres), they are home to over 40 million people and their social and industrial activity. This has led to colossal challenges that include water and air pollution, climate change, disputes over water allocation, and invasive species.

The region, however, contains a third massive reality: headwaters. Gentle rain that pools in depressions and gathers into tiny streams that babble through forests and meadows are infinitesimal compared to the Great Lakes. Yet these waters nurse the biological diversity of our wetland complexes, filter into and out of aquifers, and provide the sources of our streams, groundwater, rivers, and of course the Lakes. In fact, headwaters form both an intricate and delicate web of life and the foundation of everything downstream.

Every drop of water that flows into the Great Lakes begins in the region's headwaters.

Consider depictions of the potential impacts of climate change on the Great Lakes. Headlines tend to focus on impacts such as lower water levels, reduced cargo capacity in freighters, stranded docks, the dredging of marinas, and the cost of moving municipal intake pipes. Additional impacts occur across the region. We tend to put these in human terms, from less or more water availability for human consumption, to impacts on agriculture, forests, and winter recreation.

While these challenges are serious, we must not separate the lakes and their basin from the web of headwater ecology.

Damaged forests, whether from fire or pests, would alter infiltration rates, stream flow, and water chemistry. Disappearing wetlands would eliminate valuable habitat. Reduced ice cover or changes in spring run-off would disrupt fish breading and hatchling requirements. Temperature change might shift cold-water fisheries into warm water

fisheries, but the timing of temperature change might also mean that bugs or seeds won't be available when birds need them most.

Consider the impact of these potential outcomes on Lake Superior. Lake Superior has a refresh rate of 1 per cent per year. If the recharge rate suddenly dropped by 10 per cent, the impact on the Lake would be visible in a relatively short period of time. Upstream headwater impacts, however, would have already taken place, and likely not in as uniform a manner as can be demonstrated by a fallen water level. What might we have lost? Regional forests? Wetlands? Streams? Groundwater? Species? By the time the drop in Lake Superior levels had been noticed, the damage to the lake's headwaters could be dramatic and irreversible.

The health of the Great Lakes must be protected. To do so, we must consider all of the components of the regional ecosystem: the lakes themselves, the basin, and the headwaters. To ignore, drain, or pollute our headwaters is to set in motion consequences that will ripple throughout the entire region. We must cherish and protect them as much as we do the Great Lakes themselves.