

## Media Advisory

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## New Study: Nitrogen Pollution Affecting Health of Colorado's Remote Mountain Lakes

A new study on how air pollution is changing the health of Rocky Mountain National Park's alpine lakes will be published in Friday's edition of the journal *Science*.

We hear a lot about "Dead Zones" that appear each summer in the Gulf of Mexico and hundreds of other places around the country. The phenomenon is largely caused by excess nitrogen – mostly from chemical fertilizer and manure runoff, as well as fossil fuel emissions—sparking algae blooms that consume available oxygen and create oxygen-starved "dead" zones where aquatic life cannot survive.

That same phenomenon is now affecting the remote, crystal-clear alpine and subalpine lakes found in Rocky Mountain National Park that are located far from urban and agricultural activities. The new study confirms that increasing loads of airborne nitrogen are traveling long distances and harming the ecology of once-pristine lakes. The impact on the Park's lakes isn't yet as dramatic as the Gulf Dead Zone, but it points to the same problem: human activities have more than doubled the amount of nitrogen released into the global environment.

The natural state of these lakes is to be nitrogen-deficient. The study found that when nitrogen pollution is added, it causes phytoplankton to become deficient in phosphorus, another element that's essential to plant growth. As a result, there may be more plant plankton in the lake, but it's probably less nutritious for the animals that feed on it. "It's junk food for fish," says James Elser, Life Sciences Professor at Arizona State University and lead author of the study, "like expecting a teenager to grow by just eating marshmallows."

Many lakes in the northern hemisphere have already been affected by nitrogen pollution. "What we're seeing is the last set of undisturbed lakes being altered," says study co-author Jill Baron, Ecosystem Ecologist with the US Geological Survey and Colorado State University. The study also included alpine lakes in Norway and Sweden, where similar findings show that the problem is not isolated to the Southern Rockies.

Earlier studies have shown that much of the nitrogen pollution originates within the state. "Fortunately, in Colorado, we're in control of our own emissions," says Baron.

Two years ago, the state prioritized reducing the harmful effects of nitrogen pollution and signed a nitrogen reduction emissions plan between the National Park Service, Environmental Protection Agency and the state. This study further cements the need for reductions in nitrogen pollution, whether through voluntary reduction efforts or the setting of standards.

For an advanced copy of the report, call the AAAS Office of Public Programs in Washington, D.C., at (202) 326-6440 or email [scipak@aaas.org](mailto:scipak@aaas.org)

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