

Elevated CO₂ levels may mitigate losses of biodiversity from nitrogen pollution

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Rising levels of carbon dioxide may overheat the planet and cause other environmental problems, but fears that rising CO₂ levels could directly reduce plant biodiversity can be allayed, according to a new study by a University of Minnesota scientist Peter Reich. In fact, rising CO₂ may actually help counteract losses of diversity from another environmental villain: the global rain of nitrogen from fertilizers and exhaust fumes.

The study, published in this week's edition of *Science* magazine, involved a 10-year open-air outdoor experiment in which 48 plots planted with 16 different species of plants were tested using ambient and elevated levels of nitrogen and carbon dioxide. Researchers measured the number of species observed in each plot, the plant biomass both above and below ground, as well as factors related to soil, water and light that might affect plant growth.

Over time, the diversity of plants growing in the research plots changed significantly, depending on the combinations of plants and the way added CO₂ and nitrogen affected the health of different species. One of the study's key findings is that while the combination of ambient [carbon dioxide](#) and nitrogen pollution reduces [species richness](#) by 16 percent, adding more CO₂ to the mix reduces that change by half.

"From a biodiversity perspective, there was no evidence to support the worst-case scenario, in which impacts of rising CO₂ and [nitrogen deposition](#) combine to suppress diversity by 30 percent, 40 percent or even 50 percent or more," Reich said. "Instead, their interaction

ameliorated the diversity loss due to nitrogen enrichment that occurs under ambient CO₂. Given the importance of biodiversity to the effective health and function of our ecosystems this is good news, or perhaps better labeled as "not quite as bad" news".

Reich, a Regents professor in the department of forest resources, notes that "while it is a relief to find out that rising CO₂ and [nitrogen](#) may not directly cause enormous losses of diversity, this finding does not detract from the urgent need for us to curb CO₂ emissions given the other critical CO₂ effects, such as overheating the planet and threatening marine life through ocean acidification."

Source: University of Minnesota ([news](#) : [web](#))

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