Seabird ammonia emissions contribute to atmospheric acidity

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Ammonia emissions from seabirds have been shown to be a significant source of nitrogen in remote coastal ecosystems, contributing to nutrient enrichment (eutrophication) and acidification in ecosystems. While most ammonia emissions originate from domesticated animals such as poultry and pigs, seabirds are the most significant emitters of ammonia to the atmosphere in remote regions.

A recent study, "Temporal variation in atmospheric ammonia concentrations above seabird colonies", published in *Atmospheric Environment*, has shown how emissions may vary between seabird species, with a higher proportion of ammonia volatilized from bare ground nesting birds compared to burrow nesters. Seabird populations are fluctuating, with some species increasing as others undergo dramatic declines. This has a significant effect on seabird-mediated marine to terrestrial nutrient flow—and atmospheric acidification.

Lead author, Dr.Trevor Blackall believes that the "results presented in this paper will help scientists to predict the likely changing contributions of seabirds to atmospheric emissions of ammonia." According to Dr Blackall, "the findings will help further understanding of the effects of biodiversity loss and climate change on ecosystem function."

According to Chief Editor Peter Brimblecombe, this study is "fascinating in the context that birds excrete uric acid unlike mammals, where excreted urea is readily converted to ammonia. Ammonia is the only major alkaline gas in the atmosphere and has a major effect on

atmospheric acidity. This work uncovers a potentially large biological source of ammonia."

"The results should be of interest not only to scientists, but to the wider public, in particular people with ornithological interests," emphasized Elsevier publisher Friso Veenstra, "And climate change is of concern to us all."

Source: Elsevier

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