



Sponges and ascidians control removal of particulate organic nitrogen from coral reef water

Ribes, Marta, Rafel Coma, Marlin J. Atkinson, Robert A. Kinzie III

Limnol. Oceanogr., 50(5), 2005, 1480-1489 | DOI: 10.4319/lo.2005.50.5.1480

ABSTRACT: We studied removal rates of plankton and total particulate organic nitrogen (PON) by benthic reef communities from the overlying water in a large experimental flume. The flume was filled with mixtures of coral and coral rubble, and biomass of plankton was measured as water was recirculated over the experimental benthic community. All planktonic particle types, picoplankton, nanoplankton, microplankton, and total PON, decreased in concentration at rates proportional to their biomass. The mean first-order rate constant for the decrease in particle concentration was $96 \pm 61 \times 10^{-6} \text{ m s}^{-1}$, corresponding to PON uptake of $10 \text{ mmol N m}^{-2} \text{ d}^{-1}$. *Synechococcus* sp. and heterotrophic bacteria were the major sources of PON. Particulate organic nitrogen removed by rubble and live coral assemblages was directly related to sponge and ascidian biomass (number and area) on the coral and coral rubble. Uptake of PON was about the same as the previously measured uptake of dissolved inorganic nitrogen into these coral reef communities, making it an important flux of nitrogen into the reef.

Article Links

[Download Full-text PDF](#)

[Return to Table of Contents](#)

Please Note

Articles in L&O appear in PDF format. Open access articles may be freely downloaded by anyone. Other articles are available for download to subscribers only, or may be purchased for \$10 per article. All L&O articles are moved into Open Access after three years.