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Bacterial Preferential Remineralization of Nitrogen or Phosphorus in P or N Deficient Organic Matter

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Bacterial Preferential Remineralization of Nitrogen or Phosphorus in P or N Deficient Organic Matter

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Bacterial remineralization of organic matter into inorganic nutrients is an old story, but little is known about effects of organic N: P ratios on bacterial remineralization of nutrients. We hypothesize that bacteria preferentially remineralize N and retain P when using higher N:P organics. On the other hand, when organics has lower N:P, bacteria preferentially remineralize P and retain N. We tested the hypothesis using 3 different organic N:P ratios (7:1, 13:1, 24:1) of cultured marine diatom *Thalassiosira werssflogii* feeding single heterotrophic bacterial strain *Vibrio pelagius*. The results show that when phytoplankton N:P was 7:1 (N deficient), bacteria retained N but released more P during the initial few days incubation. In contrast, when phytoplankton N:P was 24:1 (N abundant), bacteria retained P, but released more N. The findings indicate that bacteria are able to regulate the stochiometry of organic and inorganic nutrients in oceans and has implications for explaining the stoichiometry balance of nutrients in the oceans.