

Influence of Food Web Structure on Carbon Exchange Between Lakes and the Atmosphere

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Top predators and nutrient loading in lakes were manipulated to assess the influence of food web structure on carbon flux between lakes and the atmosphere. Nutrient enrichment increased primary production, causing lakes to become net sinks for atmospheric carbon (C_{atm}). Changes in top predators caused shifts in grazers. At identical nutrient loading, C_{atm} invasion was greater to a lake with low grazing than to one with high grazing. Carbon stable-isotope distributions corroborated the drawdown of lake carbon dioxide and traced C_{atm} transfer from algae to top predators. Thus, top predators altered ecosystem carbon fixation and linkages to the atmosphere.
