Relating trophic resources to community structure: a predictive index of food availability

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The abundance and the distribution of trophic resources available for consumers influence the productivity and the diversity of natural communities. Nevertheless, assessment of the actual abundance of food items available for individual trophic groups has been constrained by differences in methods and metrics used by various authors. Here we develop an index of food abundance, the framework of which can be adapted for different ecosystems. The relative available food index (RAFI) is computed by considering standard resource conditions of a habitat and the influence of various generalized anthropogenic and natural factors. RAFI was developed using published literature on food abundance and validated by comparison of predictions versus observed trophic resources across various marine sites. RAFI tables here proposed can be applied to a range of marine ecosystems for predictions of the potential abundance of food available for each trophic group, hence permitting exploration of ecological theories by focusing on the deviation from the observed to the expected.

1. Introduction

1.1. The importance of trophic resources

Nutrient supply and productivity gradients can strongly influence the diversity of natural communities through trophic linkages...