



## Differences in benthic metabolism, nutrient fluxes, and denitrification in *Caulerpa taxifolia* communities compared to uninvaded bare sediment and seagrass (*Zostera capricorni*) habitats

Bradley D. Eyre, Damien Maher, Joanne M. Oakes, Dirk V. Elerer and Tim M. Glasby

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**ABSTRACT:** Benthic metabolism, nutrient fluxes, and denitrification were measured in *Caulerpa taxifolia* communities that had recently invaded (between 2003 and 2008) bare sediments following the loss of *Zostera capricorni* (prior to 2003), and in adjacent *Z. capricorni* communities and bare sediments, to determine the likely changes in ecosystem function following *C. taxifolia* colonization. Areas colonized by *C. taxifolia* had higher gross primary production (GPP), net primary production (NPP), and dark benthic  $N_2$  effluxes than adjacent bare sediments, but lower dark benthic  $NH_4^{+}$  effluxes. *C. taxifolia* invasion of bare sediments had a beneficial role in removing excess nitrogen from the system through enhanced denitrification. In contrast, areas occupied by *C. taxifolia* had similar GPP and NPP relative to *Z. capricorni* beds and similar benthic  $N_2$  and  $NH_4^{+}$  effluxes. Thus, *C. taxifolia* appears to play a comparable role to *Z. capricorni* in terms of some ecosystem functions, although the degree of similarity is likely to be affected by the relative densities of the two macrophytes. However, replacement of *Z. capricorni* communities by *C. taxifolia* appears to significantly alter the quantity and quality (higher ratio) of benthic dissolved organic carbon and dissolved organic nitrogen fluxes.

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