

Snail communities improve submerged macrophytes growth by graze epiphytic algae and phytoplankton in a mesocosm experiment

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Abstract

The relationship between producers (e.g., macrophyte, phytoplankton and epiphytic algae) and snails plays an important role in maintaining the function and stability of the shallow ecosystems. A complex relationship exists among macrophytes, epiphytic algae, phytoplankton and snails. An outdoor mesocosm experiment with two-way factorials was carried out, three species submerged macrophytes (*Hydrilla verticillate*, *Vallisneria natans* or one exotic submerged plant *Elodea nuttallii*) and two grazing treatments (4 snail species present or absent) to elucidate those relationships. The results showed that the snail communities reducing the biomass of phytoplankton and epiphytic algae indirect then enhanced the growth of the submerged macrophytes. The macrophyte with complex architecture supported more snail and epiphytic algae, and snails preferred to feed on native plants. Competition drove snails change the grazing preferences to achieve coexistence, so that led to the assembling of snail communities towards the direction of highest resource utilization.

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