MERCOLEDÌ 16 SETTEMBRE 2009, ORE 09:40-10:20, AUDITORIUM, CHAIR: TAPPEINER ULRIKE

Sessione 1, ore 09:40

On the strength of trophic cascades in freshwater detrital food webs

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In aquatic habitats, trophic cascades - indirect control of predators on the basal trophic level – have been widely analyzed in a variety of grazing food webs. No similar efforts have been made for detrital food webs, for which estimations of the strength of predator-driven effects on leaf detritus processing are scant and anecdotal. However, a number of recent freshwater studies have contributed novel information, allowing an in-deep scrutiny of potentially driving factors and mechanisms. Here, I compared the responses of macrodetritivore assemblages and leaf detritus processing rates to predator manipulations in published field experiments performed in 2 lentic and 10 lotic ecosystems taken from the lit. Enclosure-exclosure manipulations represented the bulk of the dataset, whereas non-manipulative experiments were also included. Predator effects on both macrodetritivores and detritus were not related to experimental artifacts i.e., size of the cage, duration of the experiment. In general, stronger cascading effects were observed for invertebrate compared to fish predators, suggesting that the abundance and closeness to the prey, more than body size per se, might determine the strength of the interaction. Additionally, effects on macrodetritivores were generally larger and more variable than on detritus processing, implying that cascades might be attenuated at the detritus-detritivore interface. The significant relationship observed with temperature further indicated that other factors might influence the magnitude and direction of predator effects on detritus. In this context, the pivotal importance of the heterotrophic microflora associated to leaf detritus, almost neglected in the analyzed dataset, is discussed.

Sessione 1, ore 10:00

Long-term changes in the ecological fingerprint of the phytoplankton community in Lake Garda

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Modifications in the species composition and abundance of phytoplankton communities in natural lakes may ultimately be controlled by changes in nutrient availability and climatic fluctuations. From the beginning of the 1990s to 2007 the large subalpine Lake Garda (zmax=350 m, V=49×109 m^3) experienced a continuous increase of total phosphorus in the water column, up to concentrations of 18-20 µg P l^{-1}. The increase of nutrients was documented since the 1970s, when concentrations of TP were below or around 10 µg P l^{-1}. From a taxonomic perspective, the modifications in nutrient availability had significant consequences, with the appearance of new species mainly belonging to cyanobacteria and chlorophytes. From a community perspective, annual phytoplankton cycles were characterised by a slow, unidirectional shift mainly determined by changes in the species more affected by the increase in nutrient concentrations. During the 1990s, principal phytoplankton groups were represented by conjugatophytes (*Mougeotia*) and pennate diatoms (*Fragilaria*), whereas in recent years phytoplankton biomass was increasingly sustained by cyanobacteria (*Planktothrix*). Other important modifications in the development of phytoplankton were superimposed over this dynamic pattern. These modifications were mediated through the impact of winter climatic fluctuations on the deep mixing dynamics and spring surface replenishment of nutrients. More specifically, the degree of nutrient replenishment enhanced the development of the large centric diatoms in spring and the increase of *Planktothrix* in summer and autumn. This work underlines the importance of the complex interactions between nutrient availability and climatic fluctuations in controlling the long term phytoplankton community changes in this peculiar typology of lakes.