



How do fish and allochthonous subsidies simultaneously control food-webs?

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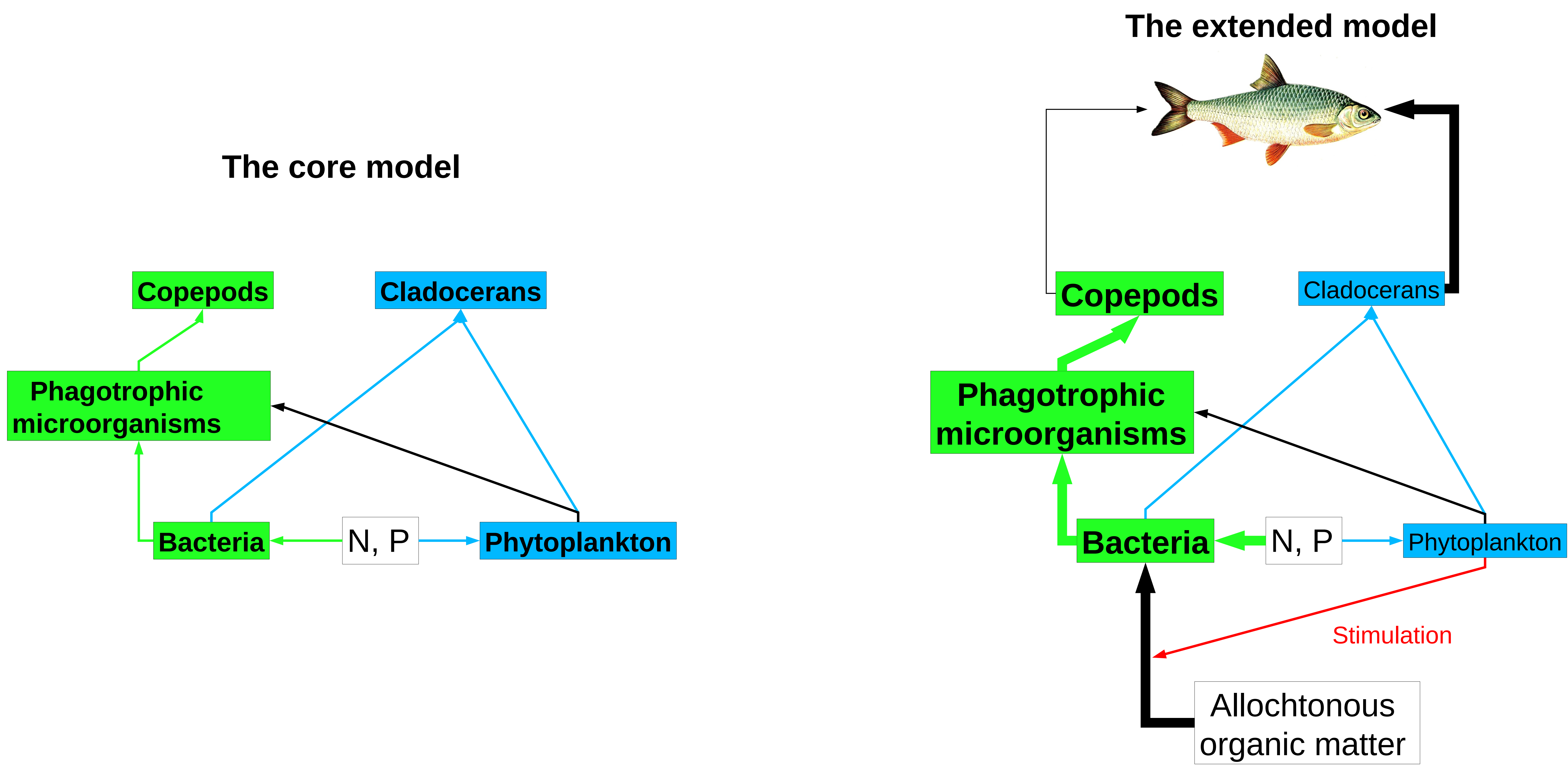
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How do top-down and bottom-up interactions control food-webs? (Eric Edeline and Gerard Lacroix)

1. Autotrophic and heterotrophic pathways for energy transfer in aquatic food webs



GREEN: heterotrophic pathway, bacteria are the main energy mobilizers, energy transfer efficiency to higher levels is low.
BLUE: autotrophic pathway, phytoplankton is the main energy mobilizer, energy transfer efficiency to higher levels is high.

2. Predictions to be tested

- The core model of aquatic food webs responds simultaneously to bottom-up (allochthonous organic matter) and top-down (fish) control.
- Allochthonous organic matter and fish will both favor the heterotrophic pathway (extended model).
- Exudates from the phytoplankton favors organic matter mineralization by bacteria.
- The autotrophic pathway maximizes production of zooplankton and fish.

3. The experimental setup



12 experimental tanks located at the biological station of Foljuif, 4 treatments in triplicate (1: no fish, no allchotonous input; 2: no fish, allchotonous input; 3: fish, no allchotonous input; 4: fish + allochtonous input, extended model) during 1 year.

- Variables to be measured:
- ▶ water physics (temperature, pH) and chemistry (N, P concentrations)
 - ▶ chemical nature of the dissolved and sedimented organic matter
 - ▶ concentrations in bacteria, ciliates, flagellates, phyto- and zooplankton
 - ▶ fish survival, somatic growth and fecundity

4. Collaborations

