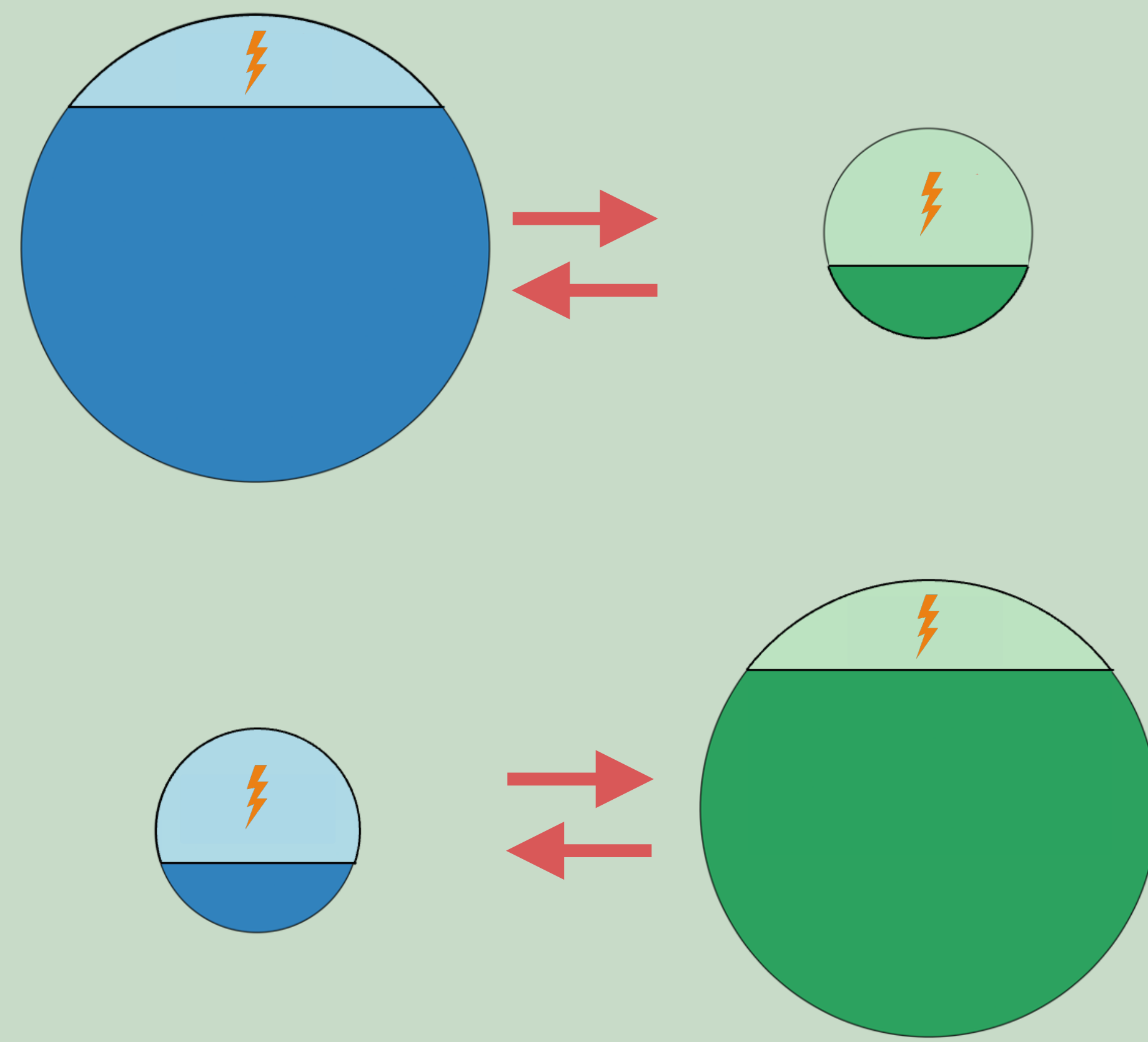


Ecosystem size tunes the effects of the spatial feedback between autotrophic and heterotrophic ecosystems



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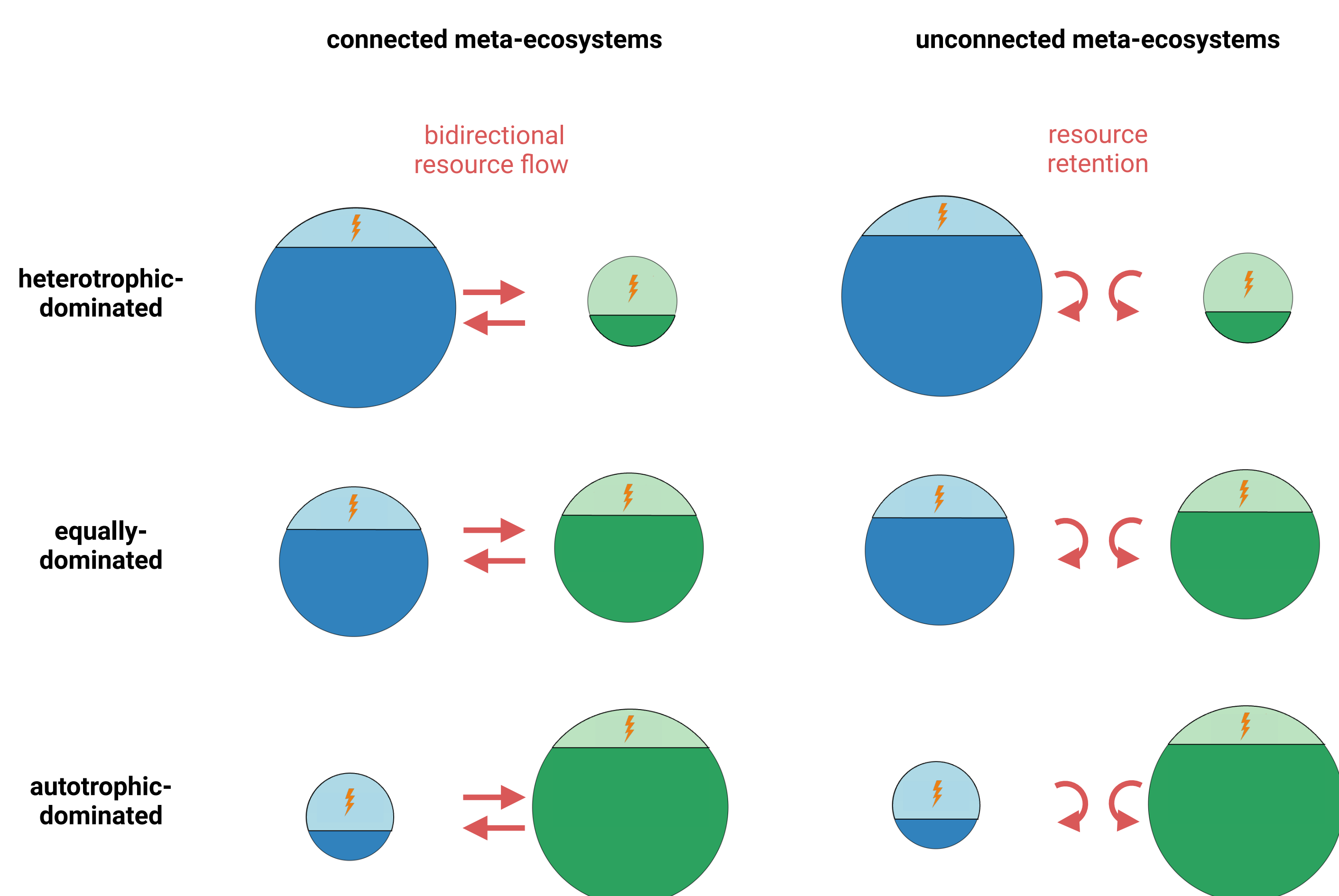
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INTRODUCTION

- Ecosystem size and resource flow are key ecological factors influencing ecosystem function.
- A recent microcosm experiment showed that they can interact to influence ecosystem function.
- However, the role of ecosystem type of the large and small connected ecosystems remains unknown.

METHODS

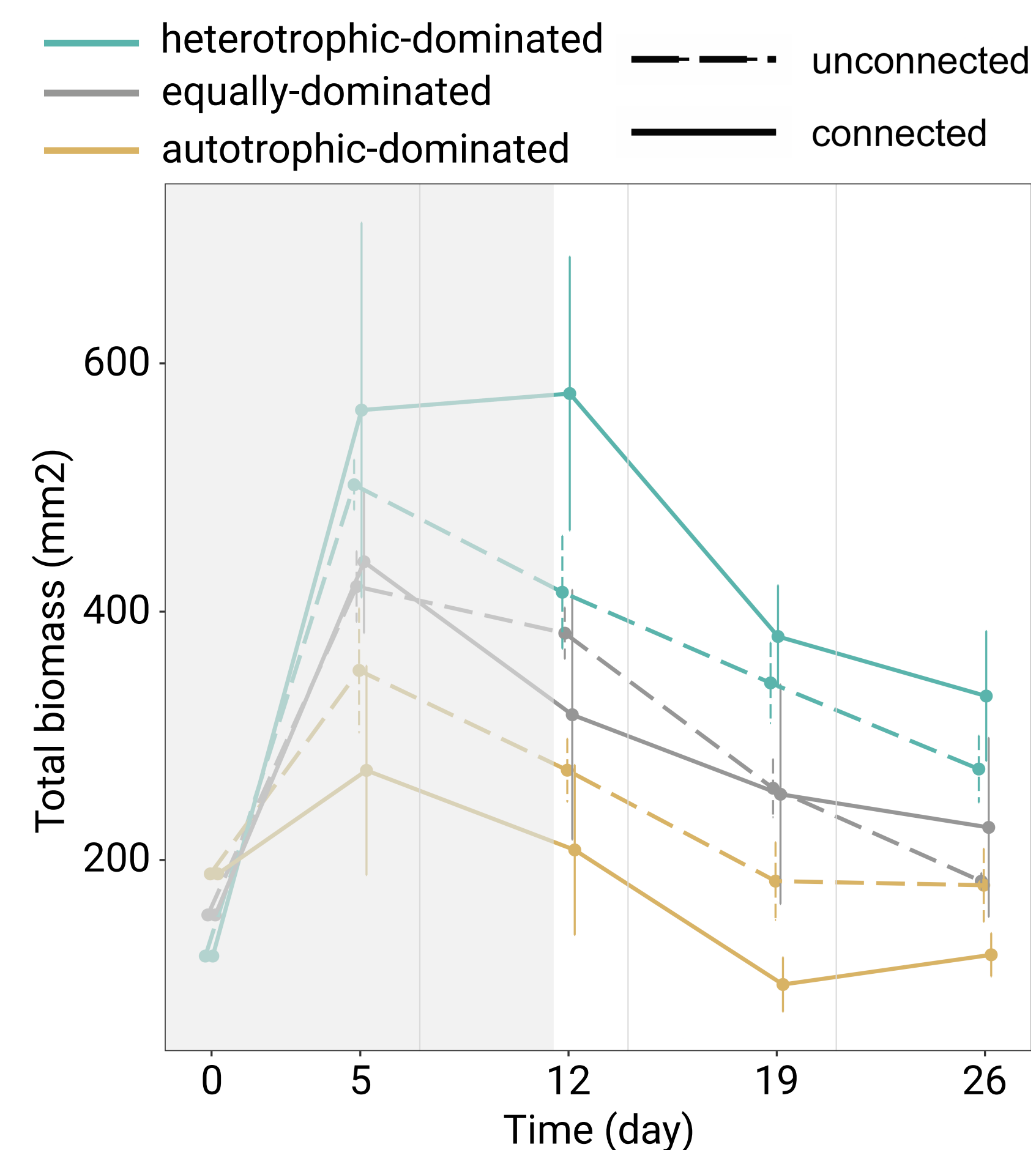
- Compared function of meta-ecosystems with a heterotrophic and autotrophic patches with three configurations: heterotrophic-dominated (larger heterotrophic patch), equally-dominated (patches of equal size), and autotrophic-dominated (larger autotrophic patch).
- Meta-ecosystem: a protist mixed cultures (heterotrophic) connected to a phototrophic protist monoculture (autotrophic) through resource flow.
- Resources generated through disturbance.



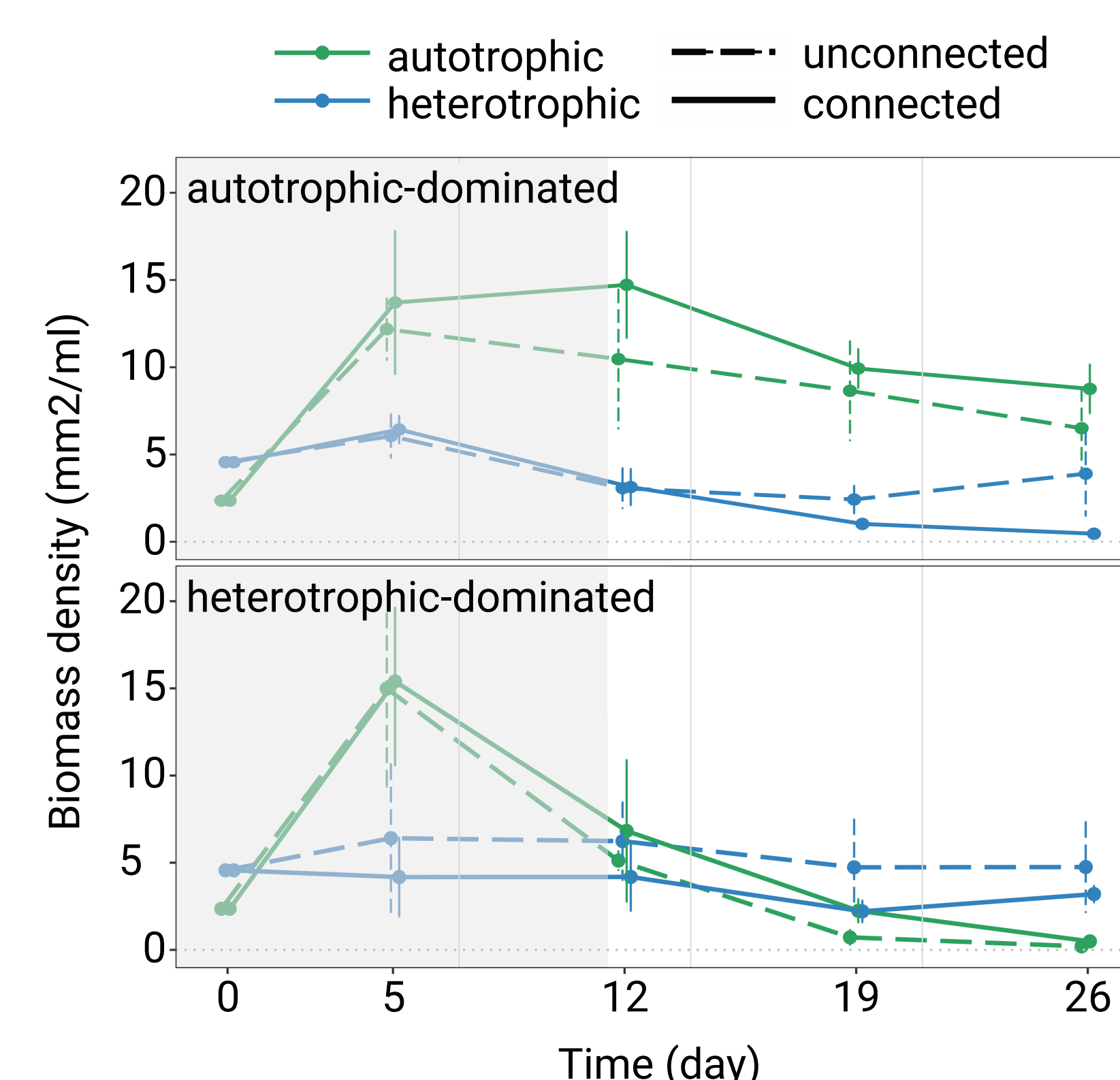
CONCLUSIONS

- Resource flows between ecosystems of different types can increase their total biomass, decrease it or have no effects depending on whether they have the same size and which ecosystem is larger.
- Understanding the effects of resource flows between ecosystems of different types requires understanding the effects of ecosystem size on resource flows.

RESULTS



- Connected **heterotrophic-dominated meta-ecosystems** had higher total biomass than their unconnected counterpart.
- Connected **equally-dominated meta-ecosystems** had same total biomass than their unconnected counterpart.
- Connected **heterotrophic-dominated meta-ecosystems** had lower total biomass than their unconnected counterpart.



- In heterotrophic-dominated and autotrophic-dominated meta-ecosystems:
 - connected heterotrophic ecosystems maintained lower biomass density compared to their unconnected part.
 - connected autotrophic ecosystems maintained higher biomass density compared to their unconnected part.

