# Deleted

* *Additional reasons why patch size might impact the difference in autotrophic-heterotrophic ratios*.
  + This has been found in experimental settings. Larger experimental kelp patches had a higher ratio of kelp to epifauna (Shelamoff2020).
  + Differences in trophy have been found across sizes in nature. For example, in estuaries, ecosystem size influences their trophy because how long the nutrients stay inside the estuary does not grow linearly with estuary size (Nidziekoa2018).
* Furthermore, patch size can also change ecosystem function (LeCraw et al., 2017; Yang et al., 2021). For example, larger patches can be more productive because they have species richness which allows them to use resources more efficiently (complementarity effects) (Delong & Gibert, 2019).
* We used the isolated controls to create virtual meta-ecosystems (that is, pairing two patches to calculate the diversity levels, yet without having these patches connected by flows of resources). We constructed these virtual control meta-ecosystems by bootstrapping (without replacement) all possible pairs of isolated patches to compare to SLLS and MMMM.
* The size of ecosystems and the movement of non-living resources among them, such as leaf litter and inorganic nutrients, are essential factors that affect both biodiversity and ecosystem function. However, there has been a lack of attention given to whether and how ecosystem size and flows of non-living resources interact with each other, affecting ecosystems. This lack of attention is likely due to the fact that controlling for ecosystem size and resource flow in natural settings is challenging. Ignoring this interaction could mean ignoring a ubiquitous mechanism that drives biodiversity and ecosystem function, as natural ecosystems come in different sizes and are connected to other ecosystems through the movement of non-living resources (Gounand et al., 2018, *Nat. Commun.*).

Conclusion

While we demonstrated that ecosystem size mediates the effects of resource flow on the biodiversity and function of ecosystems of the same type, resources often also flow among ecosystems of different types, which could even aggravate the effect demonstrated. This connection among ecosystems of different types is often overlooked in studies examining the effects of ecosystem size variations on biodiversity, as they focus on the effects of the fragmentation of a single ecosystem type (mainly forests) on biodiversity.

# Low disturbance significance

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| --- | --- | --- | --- |
| **Response variable** | **Comparison** | **Full model  p (low disturbance)** | **Reduced model p (low disturbance)** |
| Mean **α-**diversity  (meta-ecosystem) | SLLS vs SL | **.002** |  |
| MMMM vs MM |  |  |
| β-diversity  (meta-ecosystem) | SLLS vs SL | **.007** |  |
| MMMM vs MM |  |  |
| γ-diversity  (meta-ecosystem) | SLLS vs SL |  |  |
| MMMM vs MM |  |  |
| Total biomass  (meta-ecosystem) | SLLS vs SL |  |  |
| MMMM vs MM |  | **0.026** |

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| --- | --- | --- | --- |
| **Response variable** | **Comparison** | **Full model  p (low disturbance)** | **Reduced model p (low disturbance)** |
| Biomass  (ecosystem) | SL vs S |  | **.004** |
| SL vs SS |  | **< .001** |
| Ss vs S |  |  |
| MM vs M |  | **.003** |
| LS vs L | **.064** |  |
| LS vs LL |  |  |
| LL vs L | **.071** |  |
| Shannon Index  (ecosystem) | SL vs S | **.001** |  |
| SL vs SS | **< .001** |  |
| Ss vs S |  |  |
| MM vs M |  |  |
| LS vs L | **.048** |  |
| LS vs LL |  |  |
| LL vs L | **.064** |  |