# Data from: The cryptic regulation of diversity by functionally complementary large tropical forest herbivores

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## Abstract

1. Tropical forests hold some of the world's most diverse communities of plants. Many populations of large-bodied herbivores are threatened in these systems, yet their ecological functions and contribution towards the maintenance of high levels of plant diversity are poorly known. The impact of these herbivores on plant communities through antagonistic seed and seedling predation has received much attention, whilst their relevance as seed dispersal agents

has been largely overlooked in experimental studies. 2. Here we tested how two key and functionally distinct large generalist mammalian herbivore species (the tapir Tapirus terrestris- a solitary browser and generalist seed disperser, and the white-lipped peccary Tayassu pecari- a group-living generalist seed/seedling predator) affect spatiotemporal patterns of diversity of seedling communities in tropical forests. We conducted a long-term multi-region landscape-scale exclusion experiment across four regions of the Atlantic forest of Brazil, representing a functional gradient of defaunation where these species were either present and absent in isolation and in combination. 3. Our results indicate that mammalian herbivores have a substantial role in regulating beta diversity in space and time. Seedling recruitment was strongly limited by the presence of the seed/seedling predator species (the peccary), but the presence of the browser and seed disperser (the tapir) had null net effects. Alpha diversity of seedlings at the community level did not respond to large herbivore exclusion at any region, whereas beta diversity decreased only where both herbivores were simultaneously excluded. Surprisingly, the synergic positive effect of both herbivore types on beta diversity was linked to increased evenness amongst dominant plant species, and a simultaneous decrease in alpha diversity of rare species. 4. Synthesis: Together, these results challenge the common perception that large tropical forest herbivores maintain tropical forest diversity through antagonistic interactions, suggesting instead a synergistic effect of antagonistic predation and mutualistic seed dispersal on regional compositional diversity and local community assembly. We suggest that the defaunation of large-bodied herbivores with complementary functions strongly affects the structure and dynamics of plant communities through cryptic mechanisms that remain largely unexplored.

## Usage Notes

### Villar_et_al_JoEco2019_data

Datasets used to estimate the effects of defaunation from functionally distinct large herbivores on the spatiotemporal structure of seedling communities in the Atlantic Forest of Brazil

## References

This dataset is supplement to https://doi.org/10.1111/1365-2745.13257

## Location

Sao Paulo State

São Miguel Arcanjo

Cananéia

Brazil

Atlantic Forest

Ubatuba

São Luiz do Paraitinga

## Keywords

beta diversity, alpha diversity, defaunation, Determinants of plant community diversity and structure, Atlantic Forest, exclosure experiment, Seed dispersal, Herbivory, plant–herbivore interactions, trophic cascades

## Files

2 files for this dataset

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| README_for_Villar...Eco2019_data.pdf | 602.08 kB | application/pdf |
| Villar_et_al_JoEco2019_data.zip | 60.50 kB | application/zip |

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