Dr. Kathryn L. Cottingham

Editor-in-Chief, *Ecology*

DATE

Dr. Cottingham,

We are writing to submit the manuscript “Maintenance of community function through compensation breaks down over time in a desert rodent community”, by Renata M. Diaz and S. K. Morgan Ernest, as a Report in *Ecology*.

Understanding how community function responds to species loss, particularly as systems change over time, is a core question in community ecology. Using a 30-year manipulative experiment on desert rodents, we show how changes in functional redundancy and niche complementarity, driven by both metacommunity dynamics and changes in habitat conditions, have affected the impact of species loss on community function over time. Strong compensation, driven by the dispersal of functionally redundant species from a regional species pool, temporarily buffered community function against species loss. However, over time, decreasing functional overlap between these same species has caused this compensatory effect to break down. Simultaneously, changes in community composition due to niche complementarity have partially decoupled changes in functional redundancy from the overall impact of species loss on community function. These results provide a unique long-term, experimental perspective linking core ecological concepts to the pressing practical question of how ecological systems will respond to the combined effects of species loss and rapidly changing habitat conditions in the Anthropocene. Therefore, we hope this work will be of great interest to *Ecology*’s broad ecological readership.

Thank you very much for your consideration of this manuscript,

Renata M. Diaz and S. K. Morgan Ernest