

FUNCTIONALWEBS

The functional diversity of food webs:
linking ecology, physiology and biogeography

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Trait-based ecology recasts community ecology's central question about species coexistence as: **which processes determine the functional trait composition of ecological communities?** Spatial scale is implicit in this question, as different processes are expected to act at different scales.

Community ecology has struggled to provide predictive models that link environmental drivers with the structure of biological communities. Greater progress could be made by focussing on the functional traits of species (their physiological, biological and ecological attributes), rather than on their identities. We are specifically missing analyses of trait diversity at large spatial scales where dispersal between sites is rare, so that we cannot determine if functional diversity in general is constrained local resources or limited by dispersal, evolution, or biogeography.

FunctionalWebs focal system (the invertebrates inhabiting water-filled bromeliad leaves) has been sampled from 22 neotropical locations, and the dataset (850 taxa; 1750 bromeliads; 12 traits; environmental variables) has been collated in an SQL database. The working group's fundamental question was: which processes determine functional community structure at different spatial scales?

FunctionalWebs asked 3 sub-questions:

- Are invertebrate communities in a single bromeliad non-randomly assembled in terms of functional traits?
- Within a site, does the **distribution of functional traits** change predictably over environmental gradients?
- Is there **convergence in the functional structure of communities** over a broad biogeographic range ; alternatively, does functional community structure primarily depend on biogeographic regions?

CESAB

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