Assembly history dictates ecosystem functioning: evidence from wood decomposer communities.

Fukami T, Dickie IA, ..., Buchanan PK, Allen RB

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Evaluations

The most powerful science can often be done using the simplest design. In this paper, Fukami et al. utilize a simple experimental design to test whether the order of colonization by multiple species impacts ecosystem function.

Using a suite of 10 fungal species known as common wood decomposers in forest systems, this paper showed that not only did the order of colonization by the 10 species impact the total species richness throughout the system but it also had a tremendous effect on the rate of decomposition observed in a wooden disk. Differences in decomposition were shown in several ways (total biomass lost, N:C ratio, N content, and respiration rate) to complete a convincing argument that a natural “order of operations” matters in ecological systems. The use of this system was particularly elegant as it may have immediate relevance to actual processes in the field. Wood resources available for decomposition in forest systems are constantly being replenished by way of breaking branches or fallen dead trees. Apparently, which species colonize first may have longer term impacts for the turnover of nutrients and carbon stored in the wood.

The results discussed in this paper are certainly not translatable to all systems. In fact, they may only be relevant to a select few. However, this simple experiment adds plenty of interesting information to the discussions of community structure, importance of dispersal and colonization, and competition in ecology.

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Competing interests: None declared

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