

There might indeed be some merit to this argument. However, existing studies suggest that native prey largely fail to recognize introduced foxes as lethal predators [3,4], hence the attempts to train such prey to recognize the lethality of these predators [5]. It thus seems likely that prey naiveté is a major driving force behind the strong effects of introduced predators in Australia, and one that might indeed interact with other factors, such as habitat alteration.

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Letters

Neutral theory and $1/f$ noise make similar predictions of assemblage dynamics

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In a recent article in *TREE*, Alonso *et al.* [1] reviewed the fundamental aspects of the neutral theory of biodiversity, offering a constructive synthesis of the controversial assumption of neutrality and important properties of the theory, such as parsimony, mathematical background, predictive capabilities and falsifiability. In discussing the role of the theory as a null model in current empirical tests of patterns of biodiversity, they draw attention to non-neutral mechanisms that can generate neutral patterns. I agree with the principle that pattern does not uniquely imply process, but I stress an alternative explanation to neutrality that would concur with this principle and that has been omitted from previous considerations.

The neutral theory of biodiversity makes predictions about spatial and temporal turnover of species assuming ecological drift as the underlying mechanism. Ecological drift results from neutral dynamics and limited dispersal and produces autocorrelated patterns of species abundance in space and time. Autocorrelation, however, is what one would expect in $1/f^\gamma$ noise environments (where f is the frequency of the signal), for $\gamma = 2$ [2]. There is strong empirical evidence indicating that many natural processes are autocorrelated in space and time, and that patterns of species abundance and distribution reflect autocorrelation in environmental forcing variables [3,4]. Thus, smooth decay in the similarity between assemblages at increasing distance in space and time, as reported in empirical tests of the neutral theory [5], might result from autocorrelation in environmental processes instead of from neutral dynamics.

Neutrality and $1/f$ noise are non-mutually exclusive explanations of assemblage dynamics. These models can be compared experimentally, by manipulating the variance (autocorrelation) of environmental processes (e.g. disturbance) over explicit spatial or temporal scales [6]. If ecological drift prevails over environmental fluctuations, any change in the temporal autocorrelation of a forcing variable would have no effect on species turnover, provided that the overall intensity of the process is maintained constant across levels of autocorrelation. Conversely, if non-neutral dynamics prevail, one would expect greater similarity in assemblages with increasing autocorrelation in environmental variables. Assessing the relative contribution of these models would foster the integration of neutral and non-neutral theories [7], improving our ability to predict the consequences of increasing environmental fluctuations [8] on patterns of biodiversity.

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