

## **The effect of intraspecific trait variation on the detecting of community assembly across successional stages**

The trait-based approach is widely used in the study of different processes (dispersal limitation, habitat filtering, and limitation similarity) underlying community assembly. However, most researches are based on trait mean value, which only considers interspecific trait variation. Due to the genetic and environmental difference, a functional trait can also exhibit significant intraspecific trait variation (ITV). Thus, we disentangle whether and how will the detection of the relative importance of ecological process be influenced by the inclusion of ITV is of significant meaning for our understanding of community assembly. Here, we collected community composition data and 8 functional traits in a young (24 ha) and an old (25 ha) growth forest plot. We analyzed the relative importance of different processes based on a recently developed modeling technique (STEP-CAM). Moreover, we detect the effect of ITV on the relative importance with and without ITV. We found that dispersal limitation is most important at 20m scale in two forest plots, followed by habitat filtering, and limiting similarity had a minor effect. When taking ITV into consideration, the proportion of deterministic process (habitat filtering and limiting similarity) improved at the early successional stage, while such effect was not found at a late successional stage. Moreover, based on a single trait, we found the deterministic process only improved for the nutrition absorb related trait when we consider of ITV at a late successional stage, which implies the importance of soil condition on community assembly at this scale. In conclusion, our study highlights the importance of ITV for the detection of a trait-based ecological process in this temperate forest across successional stages.

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