

## Searching for the signal of competition in plant-mediated interactions among coexisting gall insects on broad-leaved paperbark

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The central prediction of competition theory is that a reciprocal struggle for resources should manifest itself among coexisting species under conditions of increasing functional similarity (e.g. similar feeding niche), density and spatio-temporal overlap. We investigated whether such a struggle was evident in a community of phytophagous gall insects on *Melaleuca quinquenervia* meeting these conditions. Specifically, we examined plant-mediated interactions among three species galling vegetative tips with varying degrees of temporal overlap. The abundance of early gallers (*Sphaerococcus ferrugineus* and *Fergusonina turneri*) did not influence resource availability for the late galler (*Lophodiplosis indentata*), suggesting the absence of temporally separated exploitative competition. However the abundance of *S. ferrugineus* was positively correlated with the abundance of *L. indentata*, which suggests facilitation. Examination of the reciprocal impacts of the late galler on early gallers paradoxically revealed that though galling by *L. indentata* may be reducing the resource availability for early gallers, the abundance of *L. indentata* was positively influenced by the abundance of early gallers (an effect that is stronger for *S. ferrugineus* than for *F. turneri*) suggesting facilitation. The strong influence of site on the interactions among the different cecidogenic species indicated that any role for competition/facilitation may be spatially constrained. We discuss the implications of our findings within the broader context of competition theory, and the in terms of the implications for the use of these species as biological control agents for *M. quinquenervia*.

