



The effect of pollen diet on gut bacterial composition in two bee species

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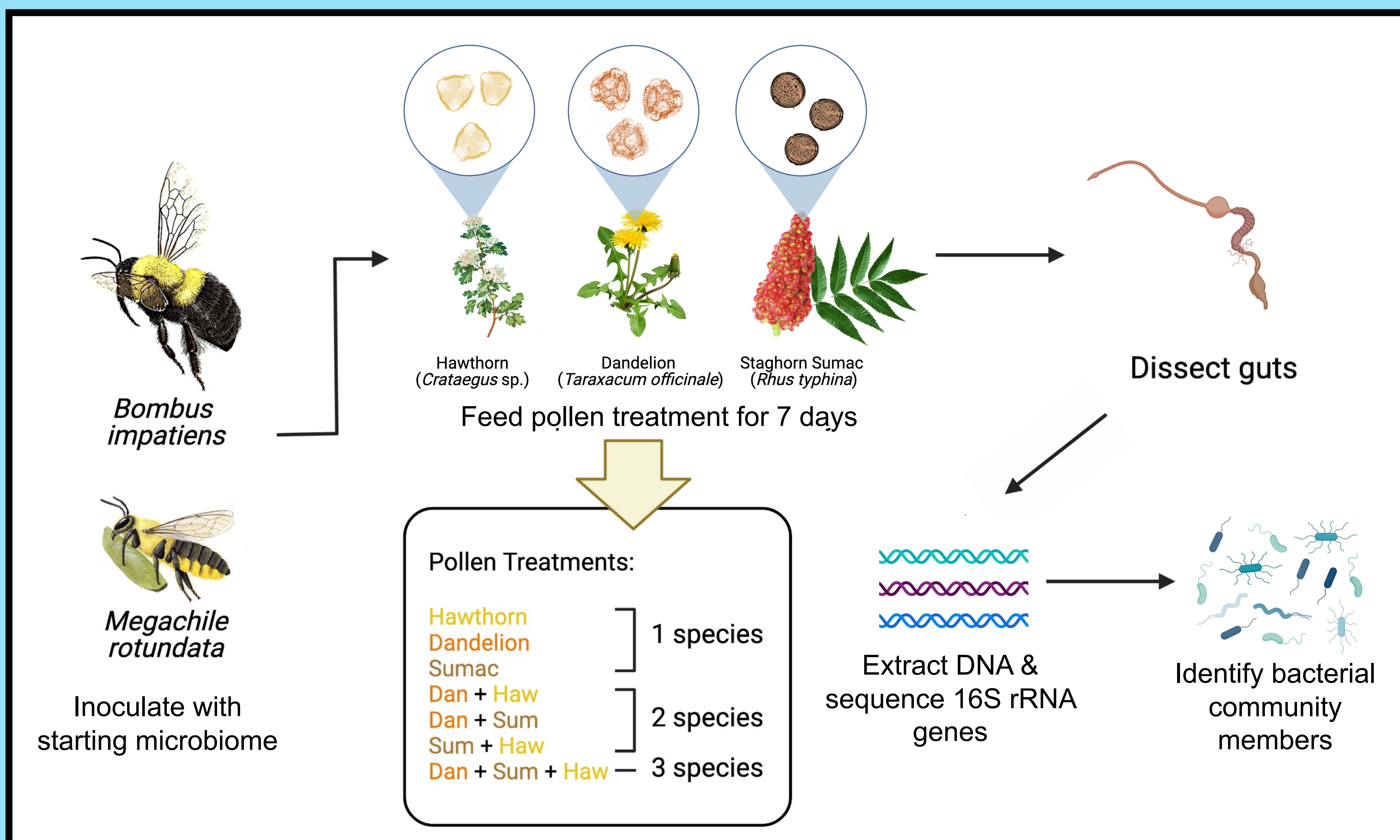
Background

- Reduced floral diversity is one of many stressors implicated in bee declines.
- Diet might influence bee health through changes to the gut microbiome, which can modulate digestion, detoxification, and immunity in social, corbiculate bees (1).
- Solitary bees have more variable gut microbiomes (2), and little is known about how those communities may be affected by diet or impact host health.
- We tested the effect of pollen diet diversity on gut bacterial communities and host performance in two important generalist bee pollinators:
 - The solitary alfalfa leafcutter bee, *Megachile rotundata*
 - The social common eastern bumble bee, *Bombus impatiens*
- Bee species with different life histories may respond differently to changes in diet breadth.

Questions

1. Does diet diversity or composition affect gut bacterial community diversity or composition in either bee species?
2. Do the two host species' gut microbiomes differ in their responses to diet?

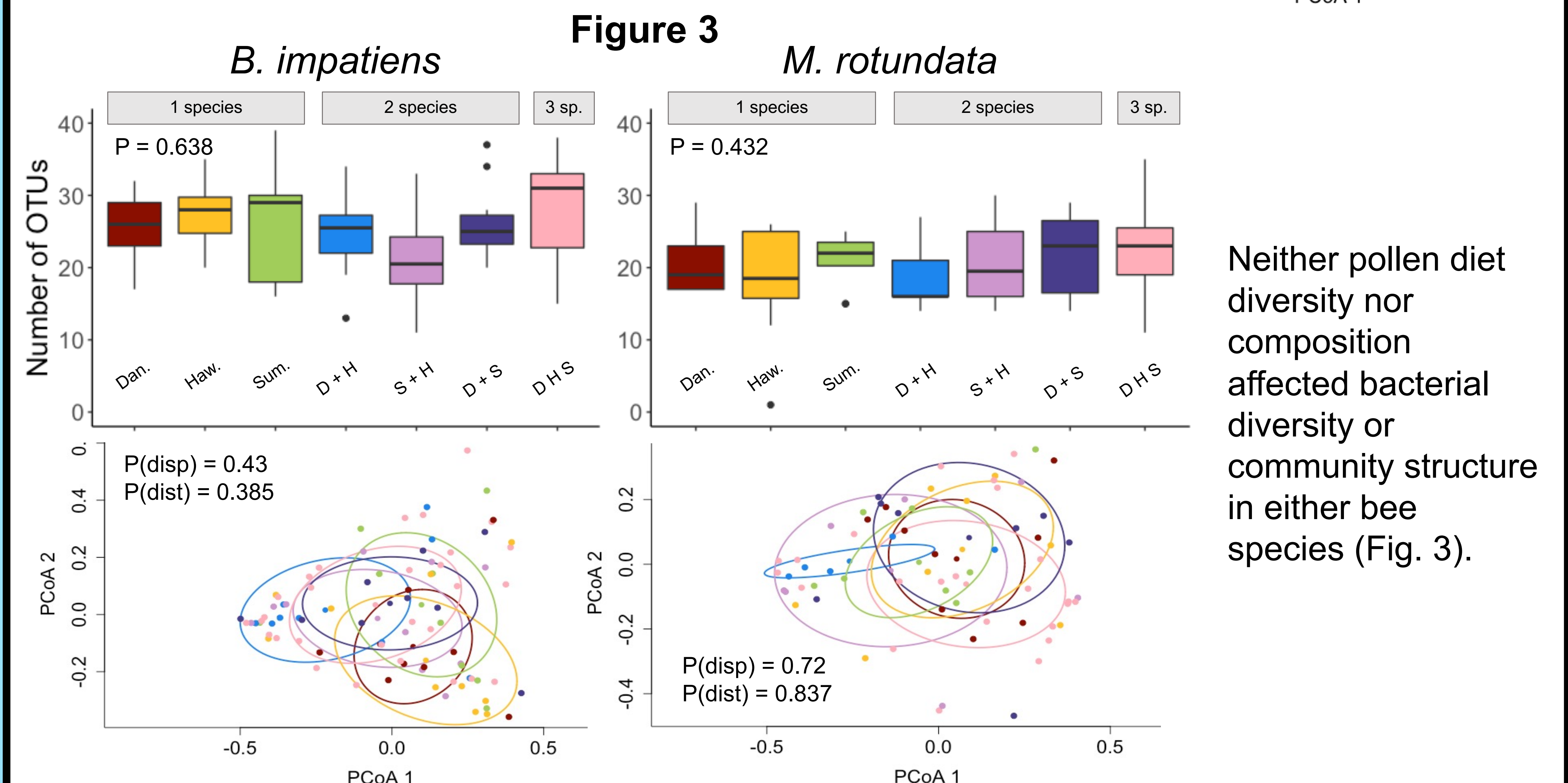
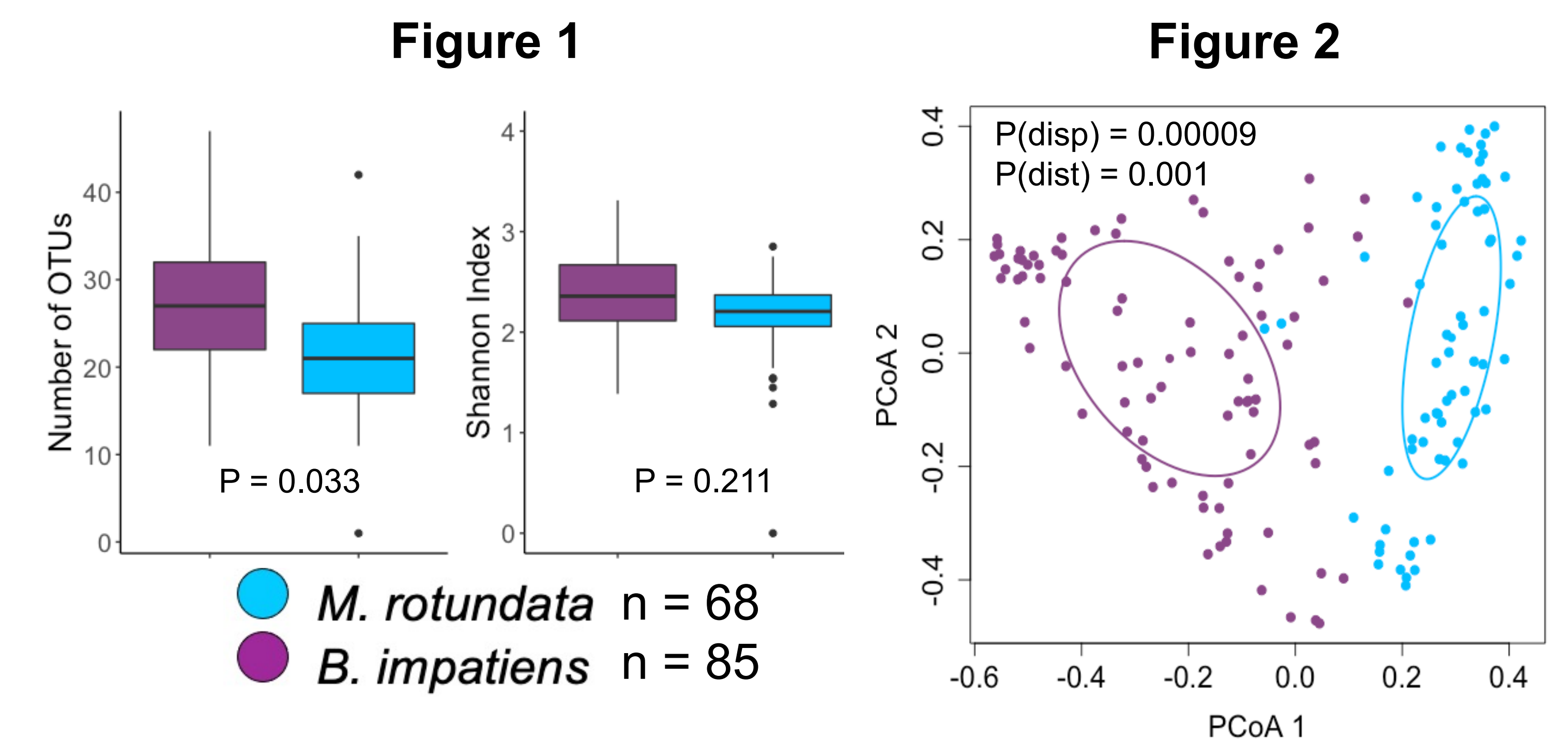
Methods



Results

Bombus impatiens had higher OTU richness than *Megachile rotundata*, but the Shannon diversity index was similar between the two hosts (Fig. 1).

B. impatiens had wider variation and different communities than *M. rotundata* (Fig. 2).



Conclusions

- Pollen diet diversity did not affect bacterial community structure in either bee species.
- Based on the high survival rates (~95%), hosts suffered no obvious negative effects from any diet.
- Despite their contrasting life histories and being colonized by different communities, *M. rotundata* and *B. impatiens* had similar responses to changes in diet breadth.

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