



Fungi inhabiting the chambers of an epiphytic ant-plant are transported by resident ant workers.

Melinda J Greenfield (James Cook University); Lori Lach (James Cook University); Brad C Congdon (James Cook University); Joe Holtum (James Cook University); Peter Yeeles (James Cook University,); Yoko Ishida (James Cook University); Pauline Lenancker (James Cook University); Leho Tedersoo (Natural History Museum, University of Tartu, Estonia); Sten Anslan (Institute of Ecology and Earth Sciences, University of Tartu, Estonia); Sandra E Abell (James Cook University).

The ant-plant *Myrmecodia beccarii* grows chambers that serve different functions including ant-waste depositories, brood housing (nurseries), and airflow (ventilation). Fungal communities vary with chamber type, suggesting fungi play different roles, but how fungi become established in the chambers was unknown. We conducted an ant-exclusion experiment to test whether ant workers transport fungi between ant-plants. We placed mature ant-plants (with ant colonies) in cages with young ant-plantlets (grown ant-free). Plantlets were either accessible to or excluded from ant workers. At experiment end, we sequenced fungal DNA from the different chambers of the plants, and from exoskeletons, heads, and abdomens of ant workers. Abundances of fungal operational taxonomic units (OTUs) were 2.6 x higher in waste chambers and 1.9 times higher in nursery chambers of ant-accessible plantlets compared to ant-excluded plantlets. Mature ant-plants shared 60 OTUs with ant-accessible plantlets but only 6 OTUs with ant-excluded plantlets. Seven dominant OTUs in the waste chambers of ant-accessible plantlets and mature ant-plants were found on/in ant worker samples but were absent/occurred rarely in ant-excluded plantlets. To our knowledge, this is the first demonstration of ant worker dispersal of fungi in an ant-plant system, a vital step in better understanding how fungi are involved in this mutualism.

Melinda Greenfield: melinda.greenfield@my.jcu.edu.au