

ABSTRACT

Bacterial endosymbionts are widespread across many ant species. Recent studies suggest that bacterial gut symbionts may play an important role in the evolution of herbivorous ants. To describe the evolution of the symbioses between bacteria and their ant hosts, we reconstructed phylogenetic histories of herbivorous *Polyrhachis* ants and their associated bacteria. Using specific primers (*rpsB* gene), we screened for the intracellular endosymbionts of the genus *Blochmannia*. In addition, we used 454 pyrosequencing targeting the 16S rRNA region of bacteria. We reconstructed phylogenies of the hosts and bacterial endosymbionts to test for coevolution. We found congruent evolutionary histories of ants and bacteria in all datasets analyzed at the ant subgenus level. Our findings indicate that the *Polyrhachis*–*Blochmannia* symbiosis has been stable evolutionarily leading to the hypothesis that the bacteria play a key role in their hosts' ecology.