

New species of beetle discovered hitchhiking on ants

Christoph von Beeren
Alexey K. Tishechkin

Video Abstract

Keywords: zoology, ants, beetle, colony, parasite, hitchhiking, rainforest, DNA sequencing, morphology

Posted Date: March 16th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-334380/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Roaming the forest floor, these army ants are doing what army ants do best: hunting insects to bring back to the colony. But they're not alone. The practice of gathering and consolidating enormous amounts of food has piqued the interest of other insects looking for an easy meal. It's a scene that plays out in most army ant communities; rarely are these colonies composed exclusively of ants, but often include numerous 'guest' species. A team of researchers from the US and Germany recently conducted a survey of these 'guests' in the tropical rainforest of Costa Rica. Using their morphological expertise and DNA sequence data, they were able to identify several new species of insects that had integrated themselves into the ant colonies. Among them, a hitch-hiking beetle disguised as an ant's rear-end. Unlike most ants, army ants are nomadic. During their most active periods, the colony will move to a new nest site every day. This presents two difficult tasks for guest insects. One, how do you keep up with such a highly mobile colony? And, two, how do you do it without getting caught? The recently discovered beetle has come up with a unique strategy: it uses its long jaws to latch onto an ant's waist and catch a ride with the traveling colony, hiding in plain sight. To confirm its identity as a new species and determine the beetle's placement among its evolutionary cousins, the researchers took a dual approach. First, they compared regions of the beetle's DNA with those of closely related species. This was coupled with close inspection of genital morphology, allowing the team to identify the new species as a member of the *Nymphister* genus – a group previously containing only three known species. Ant communities are a ubiquitous and important part of many ecosystems. This discovery provides insights into the composition of these communities and sheds light on the complex (and often intimate) interactions between guest insects and their ant hosts. It also raises the question: How many other such species are out there, awaiting discovery?