P113

Delimiting species: Phylogeny and taxonomy of the fungus-growing ant genus Sericomyrmex

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All fungus-growing ants actively cultivate and eat fungus gardens grown on a substrate of organic material brought into their nests. *Sericomyrmex* is a poorly known genus of fungus-growing ants that is closely related to the leaf-cutting genera *Atta* and *Acromyrmex*, the dominant herbivores in Neotropical ecosystems. *Sericomyrmex* includes 22 described species and subspecies and is distributed throughout most of South and Central America, and belongs to 'higher attine' agriculture. In most cases, when poorly known taxa are subjected to increased scrutiny, particularly at the genetic level, cryptic diversity is revealed. In the case of genus *Sericomyrmex*, however, extensive field work across its entire range in Central and South America, morphological study of worker variation, and genetic data from 8 genes and three transcriptomes, all indicate that there may be far less species than the 22 described by previous authors. If this hypothesis is correct, it suggests that *Sericomyrmex* has achieved a wide geographic and biotic distribution (in savannahs, cerrados, and rain forests from Argentina to Mexico) with only a small degree of accompanying speciation, in contrast to most other ant species, including those in its similarly distributed sister taxon *Trachymyrmex*. Is the current geographic distribution of *Sericomyrmex* the product of a recent, rapid geographic radiation with minimal accompanying diversification? I describe my current efforts to delimit *Sericomyrmex* species by integrating multiple sources of information, including reconstructing a phylogeny based on >500 Ultraconserved Element (UCE) loci. I am also exploring ecological and behavioral data as sources of information about *Sericomyrmex* species boundaries, particularly nest architecture. Understanding the biology of *Sericomyrmex* species is important for reconstructing the origin and evolution of higher attine agriculture and for explaining the remarkable ecological success of the leaf-cutting genera *Atta* and *Acromyrmex*.