names occurring in the early part of this century was largely based on geographic variation with no critical evaluation of character variation within or between regions. Current studies frequently split within regions and lump across regions, the opposite of past practice. Recent discoveries in ant taxonomy have, in part, been due to an increased abundance and availability of museum material. But a more important factor has been the thorough examination of local ant communities. Knowledge of sympatric ant communities gives the first clue to the presence of sibling species, because subtle species differences within a site are not masked by geographic variation.

In this paper, ecological evidence of microsympatric discrete morphologies has been used to justify the delineation of two species. The differences between the two species can be very subtle, and I might not consider them an adequate basis for species distinction were it not for the ecological evidence. The primary differences at any one site are degrees of pilosity, but the details of seta abundance and distribution are highly variable geographically.

Many taxonomists have a biological species concept in mind when describing species. Members of a species are presumed to be united by potential or actual gene flow. When lineage concepts are added, members of a species are presumed to share ancestry unique to them. Thus, a first hypothesis in this study is that *A. alfari* and *A. ovaticeps* satisfy these conditions, being two reproductively isolated lineages, each with its own unique ancestor and each reproductively continuous throughout its range. However, the two "species" as defined here are in reality two phenetic clouds of correlated characters of museum specimens and should not automatically be assumed to be two monophyletic lineages. The following alternatives could complicate the story and should be evaluated in future studies of the *A. alfari* group.

Either or both species could be composed of numerous sibling species, their distributions being allopatric, parapatric, or largely parapatric with narrow zones of sympatry. The geographic variation observed could thus be due to species differences. Within *A. alfari,* there are morphological gaps among material from Mexico (*e.g. A. fumaticeps*), Central America (*e.g. A. alfari* sensu stricto), northern South America and Amazonia (*e.g. A. virens, A. cecropiae*), and southern South America (*e.g. A. mixta*). Within *A. ovaticeps,* there are fairly striking differences among material from Costa Rica, Venezuela, Amazonia, Peru, and Bolivia. These geographic gaps in morphology are accompanied by gaps in material examined, however; and the nature of character change in those gaps remains unknown.

The possibility of multiple sibling species raises an additional hypothesis: that one of the "species" defined here is paraphyletic with respect to the other. For example, one sibling species of the *A. alfari* lineage could have split, giving rise to a contemporary sibling species within *A. alfari* and the lineage that became *A. ovaticeps.* An even more intriguing possibility, although distressing to a taxonomist, is that one of the species is polyphyletic. For example, there could be selection favoring increased pilosity in some habitats, where *A. alfari* group queens are in frequent contact with competing species of *Azteca* (*A. muelleri, A. constructor,* and *A. xanthochroa*). There could be conditions scattered throughout the range of the widespread *A. alfari* lineage that favor the existence of a genetically isolated *A. ovaticeps*-like form. *Azteca ovaticeps* as defined here could have arisen numerous times independently, as distinct lineages descended from ancestral *A. alfari*-like populations.

With this much uncertainty regarding the status of the *A. alfari* group species, is this taxonomic treatment of the group justified? I think there are several reasons for the approach taken here. First, this study alerts investigators to the presence of sympatric species within the *A. alfari* group. Second, when two species are present, names are available for use in ecological and evolutionary studies. An investigator in Manaus, on reading an ecological study on *A. ovaticeps* and *A. alfari* in Costa Rica, will be able to make direct comparisons with the cognate species pair found locally. If new studies reveal multiple species within the current species boundaries, identities of the former *A. alfari* and *A. ovaticeps* can be established region by region, and a continuity can be maintained among literature using old and new nomenclature. Retaining the original nomenclature (prior to this study) has obvious drawbacks. Using the single name *A. alfari* for all *A. alfari* group members obscures the presence of sympatric species; using the multitude of infraspecific names not only obscures the presence of sympatric species but hinders comparability from region to region.

Hillis (1988) recognized three phases in the development of a taxonomic species concept, using the anuran *Rana pipiens* complex as an example. He termed these phases the "thesis of typological species, the reaction to typology or antithesis of polytypic species, and the synthesis of evolutionary species." For many groups of neotropical ants, taxonomy has stalled in phase one. A phase two approach has been taken in this report. I suspect that as additional material is obtained and molecular techniques provide additional characters, zones of sympatry will be found and a number of evolutionary species will emerge from each of my polytypic species.

Further understanding of the *A. alfari* group will require additional collections from mature colonies. I hope this study stimulates further collection throughout the range of the *A. alfari* group and encourages the collection of voucher material in ecological studies of the *Azteca–Cecropia* association.