

ing; color ranging from light brown to solid black, color generally progressing from darker to lighter in a distal direction along extremities: legs, antennae, and clypeal region of head.

DIAGNOSIS (WORKER)

Head length of largest workers ≤ 1.38 ; head slightly longer than wide (CI 0.86–0.94), subquadrate to subtriangular (narrowed toward the mandibles); occipital border cordate to varying degree; scapes in repose fall $\frac{1}{2}$ (large workers) to $\frac{3}{4}$ (small workers) the distance between upper margin of eye and occipital border (SI 0.60–0.76); mandibles largely nitid with 8–10 teeth, depending on worker size; mesonotal profile composed of an upwardly sloping pronotum, an arched and protruding mesonotum that is often separated from the pronotum by a distinct anterior declivity, in larger workers a metanotal remnant often protruding between mesonotum and propodeum, and the propodeum with nearly level basal face and a distinct declivitous face of similar length; surface sculpture as in the queen; long-standing setae always present on the dorsum of the pronotum, mesonotum, propodeum, petiole, and gaster; scape and tibial pilosity as in the queen; color highly variable, ranging from concolorous brown, to light brown mesosoma and gaster with dark brown head, to concolorous light brown or yellow.

COMMENTS

Of the several character systems that Emery (1893) used to differentiate *Azteca* species, those I have found most useful are queen head shape and distribution of pilosity on queens and workers. I suspect that both systems are strongly influenced by natural selection, making them good taxonomic characters because of the resulting diversification, but difficult characters for phylogeny reconstruction because of the increased likelihood of convergence.

Most of the species that inhabit carton nests either externally (e.g. *A. barbifex*, *A. chartifex*, *A. traili*) or in hollow tree trunks (e.g. *A. instabilis*, *A. velox*) have abundant standing setae on the scapes and legs. Pilose tibiae are probably of great utility in the manipulation of shredded plant matter used in carton construction. I suspect that tibial pilosity and carton construction are plesiomorphic in the genus. *Liometopum*, a possible outgroup for *Azteca*, exhibits both these characters. The early Miocene *Azteca alpha* Wilson (1985), one of two known fossil *Azteca*, has hairy tibiae and is very similar to any number of modern *Azteca* species (pers. obs.). Several obligate *Cecropia*-inhabiting species—*A. muelleri*, *A. constructor*, *A. xanthochroa*, and *A. coeruleipennis*—have densely pilose tibiae and, I suspect, were derived from carton-nesting species.

In contrast, there are many species that inhabit the narrow stems and branches of live plants, and

these exhibit various degrees of loss of tibial and scape setae (setae on the thoracic dorsum are rarely absent). In narrow galleries, tibial setae may be an impediment, favoring their evolutionary loss. Also accompanying the stem-nesting habit is a great diversity of queen head shapes. In particular, several species exhibit extremely elongate heads with straight sides (e.g. *A. fasciata*, *A. longiceps*). Worker head shapes do not show nearly the elaboration that queen head shapes do. I suspect that queen head shape is under strong natural selection at the time of colony founding, influencing the kinds of stems that can be used and the speed with which they can be entered.

The *Azteca alfari* group is part of this second portion of the genus, among the stem-nesting species with bare scapes and tibiae. Close relatives include *A. emeryi* Forel and *A. foreli* Emery. *Azteca emeryi* is similar to the *A. alfari* group in many respects, the striking difference being the extremely elongate, parallel-sided head of the *A. emeryi* queen. Worker heads are also somewhat elongated. At the time of Kempf (1972), *A. emeryi* was known only from the types. I have examined the types of this species, from a *Cecropia* tree at Cachveira Juruá, Amazonas, Brazil (Ule), and a worker series, tentatively identified as *A. emeryi*, from a *Cecropia* at Cocha Tatora, Departamento Madre de Dios, Peru (Davidson). The latter is the only collection out of dozens of collections of *A. alfari* group colonies in the region. I predict, given the queen head shape, that *A. emeryi* will prove to be an only occasional occupant of *Cecropia* trees and a more specialized inhabitant of some other plant genus with narrower stems. *Azteca emeryi* may best be placed as a derived member of the *A. alfari* group, but I await further knowledge of this poorly known species.

Azteca foreli workers are very similar to *A. alfari* group workers in pilosity, size, and head shape. The primary difference is that the mandibles of *A. foreli* are densely sculptured, with a granular or striate appearance, in contrast to the shiny mandibles of the *A. alfari* group. *Azteca foreli* is very different behaviorally, nesting in hollow live stems of a variety of canopy trees. It has the unique habit of constructing completely closed carton galleries on trunk and branch surfaces, traversing the host tree between hollow stems.

I have not considered males in the definition of the *A. alfari* group. *Azteca* males are frail, similar to workers in size, and very much smaller than queens. A cursory examination of males from a variety of *Azteca* species revealed few sources of morphological variability. The phallus is comprised of the weakly sclerotized, largely membranous aedeagus, flanked by pick-like volsellae, subsequently flanked by the swollen basiparameres, at the tip of which are the small, triangular parameres (terminology after Snodgrass, 1941). A distinct articulation often separates the paramere and basiparamere. Tergites IX and X are absent, and there are no pygostyles. The volsellae have acute tips in some