

cus, *Geococcus*, and *Pseudorhizoecus*. Whereas four of these pseudococcid species have been found living independently, *Pseudorhizoecus proximus* Green and three other species have only been found living with *Acropyga*, evidence supporting their obligatory relationship. *Acropyga* (*R.*) *decedens* in Brazil was reported tending *Geococcus* and *Rhizoecus* mealybugs (Delabie et al., 1991). Table 2 lists all the mealybugs species known to associate with Neotropical *Acropyga*.

Although three of the four subgenera are known to have alate gynés that tote coccoids during nuptial flights, observations are relatively rare and little is known about the age of this behavior. Here we report a new record of *Acropyga* gynés carrying mealybugs from French Guiana and the discovery of several pieces of Dominican amber from the Miocene that contain *Acropyga* gynés with mealybugs, an indication that ants have had some type of symbiotic association with mealybugs for at least 15–20 m.y. The mealybugs in each of the three amber pieces represent three new species of a new genus and are described (see appendix 1). A piece of Dominican amber containing workers of *Azteca alpha* Wilson and 23 scale insects is also presented and the significance of finding scale insects together with ants in amber is discussed.

NEW RECORD OF EXTANT *ACROPYGA* TOTING MEALYBUGS

Observations and samples were taken by C. Johnson in central French Guiana (3°38'N, 53°13'W, approx. 300 m elevation) on December 26, 1996, near the town of Saül, approximately 6 weeks into the rainy season. A small swarm of male and female *Acropyga* was found during the early afternoon of a sunny day marked by only brief periods of light morning rain in a clearing of several acres that had several cabins and small plantations of fruits and vegetables. The surrounding area was intact, mature lowland Amazonian rainforest, which received an average annual rainfall of 240 cm/yr. Specimens from the swarm were collected and placed into small petri dishes (fig. 2). Several gynés were in copula and, after decoupling, promptly removed their wings without releasing the mealybug. None

of the specimens survived in the dishes more than three hours. The swarm was approximately 2.5 m high, making it difficult to determine conclusively whether all the gynés were carrying mealybugs. Nonetheless, each gyne collected was holding a mealybug, suggesting that all had taken flight with mealybugs. That each gyne appeared to be carrying a mealybug is similar to observations made by Eberhard (1978) of swarming *Acropyga* in Colombia. No males were observed toting mealybugs and have never been reported doing so. Table 3 lists all the records of alate female *Acropyga* carrying pseudococcids; a representative alate female *Acropyga* from South Africa carrying a mealybug is illustrated in figure 3.

Some of the alate and dealate gynés carrying coccoids were preserved in ethanol. Several were critical point dried and examined with a scanning electron microscope. The habitus of the female mealybug is typically oval, and mandibles of the *Acropyga* gyne are distinctly scapulate, perhaps related to fossorial life but probably also for gentle transport of the tender coccids (fig. 4a, b). The species of *Acropyga* was not determined since the genus is in need of revision, despite the treatment by Weber (1944). It is quite possible that this ant is one of the two species of *Acropyga* reported by Bünzli (1935) from nearby Surinam.

Whether the mealybugs carried by the gynés had mated was not determined. Reportedly, many coccoids taken on nuptial flights are mated females; however, others may be unmated females or even immature males that resemble females (Bünzli, 1935). In either case, this is unlikely to be problematic (1) since females of many mealybug species are parthenogenetic and thus could produce offspring in the new nest, and (2) if *Acropyga* is largely pleometrotic, as is *Acropyga paramaribensis* (Bünzli, 1935), and some foundresses transport female coccoids in addition to others transporting male coccoids to the new nest site.

AMBER FOSSILS OF *ACROPYGA*

Three pieces of Dominican amber, each containing an *Acropyga* gyne with a pseudococcid, were recovered from approximate-