

Multiple Hybridisierung von Arten der Ameisen-Gattung *Epimyrma* (Hymenoptera: Formicidae), und Beobachtungen zur Ausbeutung der Wirtsarten durch die Parasiten

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Abstract

Multiple hybridization of ant species of the genus *Epimyrma* (Hymenoptera: Formicidae), and observations on host exploitation by the parasite species. - Various species of the parasitic ant genus *Epimyrma* were experimentally hybridized. Because in a number of species the sexuals mate inside the nest it is possible to replace the male pupae of one species by male pupae of another species. After the heterospecific sexuals had mated, young queens were placed singly into artificial nests, together with a few host workers from the mother colony and some host species larvae and worker pupae, for colony foundation. After hibernation, host worker pupae were added until the young colony comprised about 40-50 host workers. Young (hybrid) females and workers developed from the eggs of the cross-mated queens in this first year, or after a second hibernation. Hybrid females in the same way could be cross-mated with males of a third species, and so on. One of the experiments resulted in the production of female hybrids composed of two populations of *Epimyrma krausseii* (from Morocco and Crete), *E. birgittae* (from Teneriffa), *E. bernardi* (from Spain) and an undescribed *Epimyrma* species close to *E. stumperi* (from Greece). Other hybridizations were possible with *E. birgittae* x *E. bernardi*, and with *E. krausseii* x *E. algeriana*, always with production of numerous hybrid gynes and variable numbers of workers. However, hybrid females practically never had hybrid male offspring. Whereas it was possible to cross-mate females of *E. ravouxi* with *E. krausseii* and with *E. adlerzi*, only one hybrid female each was reared in the two experiments. Four crossmatings of *E. (= Myrmoxenus) gordiagini* with males of *E. krausseii* did not yield any progeny although two of the *E. gordiagini* females survived for four years, laying numerous eggs every year, and still having living sperm in their spermathecae. Both *E. ravouxi* and *E. gordiagini* are swarming species. Successful mating within their nests thus was initiated by the males of *E. adlerzi* and *E. krausseii*, respectively, both species being characterized by intranidal mating. It appears that the "degenerate slavemakers" with intranidal mating are very closely related among each other, so that their reproductive isolation is mainly due to host specificity, intranidal mating, and a very low male production, whereas a more or less strong genetic isolation exists between this group on the one hand, and *E. ravouxi* and *E. gordiagini* on the other hand, with species of both groups conducting mating flights. The results of the hybridization experiments thus confirm earlier conclusions on the relationships within the genus *Epimyrma* queens slowly throttle their host queens to death during colony foundation, they often sting some host species workers, and they eliminate host male pupae in parasitized nests. These observations are discussed as an optimized strategy of host colony exploitation.

Key words: Myrmicinae, *Epimyrma*, *Myrmoxenus*, social parasitism, multiple hybridization, colony foundation, strategy of host colony exploitation, polytypic species.

Einleitung

Natürliche Hybride von Ameisenarten wurden bereits wiederholt beschrieben (SEIFERT 1999 und Zitate hierin). Auch einige experimentelle Arbeiten liegen vor (z.B. BUSCHINGER 1972, GÜSTEN & BUSCHINGER 1997, PLATEAUX 1976, 1981). Besonders zahlreiche Kreuzungsversuche wurden mit Arten der Gattung *Epimyrma* durchgeführt (BUSCHINGER et al. 1986, JESSEN & KLINCKICHT 1990). Die Gattung umfasst zur Zeit 10 – 12 Arten (Tab. 1), von denen einige als aktive Sklavenhalter

leben. Bei den übrigen Spezies ist die Anzahl eigener Arbeiterinnen reduziert, oder sie fehlen ganz. Anscheinend parallel zu diesem evolutiven Übergang von der Dulosis zu einem abgeleiteten permanenten Parasitismus wurde auch der Hochzeitsflug reduziert, so dass in den monogynen Völkern etwa von *E. adlerzi*, *E. corsica* und *E. krausseii* ausschließlich Geschwisterbegattung erfolgt (Tab. 1).

Ausgangspunkt der hier beschriebenen Experimente war die Frage nach der taxonomischen Stellung der ehemals