

Table 3. Brood production and sex ratio of *Epimyrma adlerzi* sp. n. colonies.

	No. of: ♀ ♀	(mean)	♂ ♂	(mean)	♀ ♀	Sex ratio ♂/♀	No. of colonies
Coll. in the field							
1st season	116	(23.2)	27	(5.4)	1	0.233	5
2nd season	39	(9.8)	13	(3.3)	–	0.333	4
Founded in the lab.							
1st season	464	(24.4)	86	(4.5)	–	0.185	19
2nd season	125	(17.9)	16	(2.3)	–	0.128	7

sexuals when collected in October 1985. The number of colonies from which we obtained a second brood was lower than that of the first season, because some colonies or their queens died before or during the first hibernation. The sex ratio (142 ♂♂: 744 ♀♀) is 0.191 and thus strongly female biased, as is usual in inbreeding species, and similar to sex ratios that we found in other nest-mating *Epimyrma* species (*E. krausseii*: 0.3, Winter & Buschinger 1983; *E. corsica*: 0.083, Buschinger & Winter 1985).

Most of the sexual production in *E. adlerzi* is due to "rapid brood" developing from the egg to the adult instar within one summer (and fall) season, as may be seen from the laboratory-founded colonies in Table 3. We also observed that during hibernation only very few eggs and larvae were present in the nests (Table 2). Thus, the second brood should also consist mainly of specimens having developed from eggs laid in the second season.

The few sexuals present in the field colonies when we collected them (Table 2) are in contrast to the high numbers produced in the laboratory cultures. Presumably, in the field colonies some females had already left the nests and some males had died before the collecting. Nevertheless, we assume that in the laboratory, with constant food supply and apparently adequate temperature and humidity conditions, we attained a higher sexual production than is usually achieved in the field. The bigger size of laboratory-reared as compared to field specimens may be another evidence for "too good" laboratory conditions.

E. adlerzi queens often died already in the year of their colony foundation. Others did not survive the second year, and a third brood production was only exceptionally possible, also because the host workers rarely survive such long. The life

expectancy of *E. adlerzi*, thus, is certainly not much more than two years, as in *E. corsica* and *E. krausseii*. On the contrary, we estimated a life expectancy of up to 10 years for the worker-producing and slave-raiding *E. ravouxi* (Buschinger & Winter 1983).

DISCUSSION

Epimyrma apparently represents a monophyletic group of species (perhaps including also *Myrmoxenus gordiagini* (Buschinger et al. 1983)). Within this group an evolutionary progression is evident, beginning with truly dulotic species (*E. ravouxi*, *E. stumperi*, *Myrmoxenus gordiagini*), the sexuals of which also make mating flights. In *E. algeriana* and *E. bernardi*, both still having numerous workers and conducting slave raids (Jessen 1987), a tendency towards mating inside the mother nest has evolved. *E. krausseii* (Buschinger et al. 1986) has reduced the worker numbers and does not or only exceptionally conduct slave raids. Finally, *E. corsica* has proved to be completely workerless (Buschinger & Winter 1985). *E. krausseii* and *E. corsica*, as *E. adlerzi*, also exhibit the feature of sib-mating within the mother nests. All the *Epimyrma* species and *M. gordiagini* have a common, and apparently homologous karyotype of $n = 10$ chromosomes. And all these species share the particular colony foundation behavior of the queens which eliminate the host colony queens by protracted throttling.

E. adlerzi, thus, apparently represents a final stage in the evolutionary sequence within the genus, and in its biology it is remarkably similar to *E. corsica*, the other workerless species of this group. They share the same host species, *L. exilis*, and host specificity is usually high in the "dege-