

as the normal queens. Elmes (1976) pointed out that the smaller microgynes of *M. rubra* tended towards intercastes and were frequently unfertilized; *M. hirsuta* could likewise show trophic variation and the smaller queens are likely to be incapable of fertilization. Preliminary laboratory experiments have shown that the smallest *M. hirsuta* have no effect upon *M. sabuleti* workers whereas the larger *M. hirsuta* queens have a queen affect that is akin to that of *M. sabuleti* queens. This suggests that there is some difference between large and small *M. hirsuta* queens, not of genetic origin, and that the bimodal size distribution is not an artifact.

Acknowledgments

I am grateful to Mr R. G. Snazell for permitting me to extract ants from the contents of his pitfall traps, and to Mr R. Clarke for help with the canonical analysis.

References

- Bernard, F. (1968) *Faune de l'Europe et du Bassin Méditerranéen*. 3. *Les Fourmis (Hymenoptera, Formicidae)*. Masson et Cie, Paris.
- Bolton, B. & Collingwood, C.A. (1975) *Handbooks for the Identification of British Insects*. VI. 3c. *Hymenoptera: Formicidae*. Royal Entomological Society, London.
- Boven, J.K.A. van (1970) *Myrmica faniensis* une nouvelle espece parasite. (Hymenoptera, Formicidae). *Bulletin et Annales de la Société Royale Entomologique de Belgique*, **106**, 127–133.
- Brian, M.V. & Brian, A.D. (1955) On the two forms macrogyne and microgyna of the ant *Myrmica rubra* L. *Evolution, Lancaster, Pa*, **9**, 280–290.
- Buschinger, A. von (1970) Neue Vorstellungen zur Evolution des Sozialparasitismus und der Dulosis bei Ameisen (Hym. Formicidae). *Biologisches Zentralblatt*, **88**, 273–299.
- Cagniant, H. (1970) Une nouvelle fourmi parasite d'Algerie *Sifolinia kabylica* (nov.sp.). *Insectes Sociaux*, **17** (1), 39–48.
- Collingwood, C.A. (1958) Ants of the genus *Myrmica* in Britain. *Proceedings of the Royal Entomological Society of London (A)*, **33**, 65–75.
- Elmes, G.W. (1973) Observation on the density of queens in natural colonies of *Myrmica rubra* L. (Hymenoptera, Formicidae). *Journal of Animal Ecology*, **42**, 761–771.
- Elmes, G.W. (1974) The effect of colony population on caste size in three species of *Myrmica* (Hymenoptera, Formicidae). *Insectes Sociaux*, **21** (2), 213–230.
- Elmes, G.W. (1976) Some observations on the microgyne form of *Myrmica rubra* L. (Hymenoptera, Formicidae). *Insectes Sociaux*, **23** (1), 3–22.
- Forel, A. (1874) *Les fourmis de la Suisse Nouveaux Memoires de la Société Helvetique Scientifique*. Natural Zurich 26.
- Francoeur, A. (1968) Une nouvelle espece du Genre *Myrmica* au Quebec, H.F. *Naturaliste Canadien*, **95**, 727–730.
- Kutter, H. (1973) Über die morphologischen Beziehungen der Gattung *Myrmica* zu ihren Satellitengenera *Sifolinia* Em, *Symbiomyrma* Arnoldi und *Sommimyra* Menozzi (Hymenoptera, Formicidae). *Bulletin de la Société Entomologique Suisse*, **46**, 253–268.

Received 20 May 1977; revised 15 September 1977