CHANGES IN THE DISTRIBUTION OF THE NESTS OF *FORMICA RUF A* L. (HYMENOPTERA : FORMICIDAE) AT BLEAN WOODS NATIONAL NATURE RESERVE, KENT, DURING THE DECADE FOLLOWING COPPIEING

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SUMMARY

The distribution of *Formica rufa* L. nests in 1.6 ha of neglected coppiced woodland in South-East England was mapped immediately after coppicing in 1965.

The fate of the original 29 nests was followed throughout the next 10 years. The stability of *F. rufa* nests in Britain is questioned.

The foundation of new daughter nests and the consequent development of polycaly is described and discussed.

The initial nest density was higher than that recorded from other localities. In the first two years after coppicing a rapid increase in the density of occupied nests was observed. This was followed by a steady decline until the density was 30 % lower than in 1965.

ZUSAMMENFASSUNG


Die Verbreitung der Nester von *Formica rufa* L. in einem 1,6 ha grossen vernachlässigen Niederywald So-Englands wurde unmittelbar nach dem Abtrieb im Jahre 1965 kartiert.

Während der nächsten 10 Jahre wurde das Schicksal der ursprünglich 29 Nester verfolgt. Die Beständigkeit von *F. rufa* — Nestern in Grossbritannien wird in Frage gestellt.

Die Gründung von neuen Tochterkolonien und die nachfolgende Entwicklung von Polycalie wird beschrieben ud diskutiert.

INTRODUCTION

Although there is a wealth of literature on the species of wood ants comprising the *Formica rufa* group (Gotti, 1963) many aspects of their biology are still poorly known, in particular the method of nest formation and the prevalence of polygyny and polycaly in the various species. A population of *F. rufa* L. was studied in Blean Woods National Nature Reserve, Kent over a period of ten years with a view to gaining a better understanding of polycaly.

Yarrow (1955), in discussing the distribution and biology of *F. rufa* comments, "The fascinating problem of colony founding in these ants is still very imperfectly understood and speculation based on very doubtful evidence has done little to assist." "In what way and by what means new nests are begun, their number in any locality must be infinitesimal compared with the number of virgin females available as potential nest starters." "The presence of large numbers of dealate females (100 or more is nothing unusual) together in isolated nests implies that some mated females must either return to the parent nest or never leave it, but it is very improbable that those which fly away ever find their way back." He further adds "The peculiarly restricted distribution of nests in one small part of an apparently homogeneous area has brought forth the very plausible theory that some of these nests must be offshoots or branch nests of others and are populated by females and workers which have moved out from the parent nest, ....... but that these branch nests arise in the way just described is not I think proven."

However, Elton (1932) had already witnessed the splitting of a *F. rufa* nest into two subsidiary nests near Ringwood, Hants in April 1927. By September 1928 these had been abandoned in favour of the original nest site but in March 1929 the split was repeated and this time appeared permanent. This, and two other cases of nest splitting, was the direct result of some human interference, although Joseph (1958) describes two instances of a series of three small poorly formed nests adjacent to large established nests of *F. aquilonia* Yarrow in a birchwood in Strathspey, Inverness-shire. These, he concluded, had been formed by colonization from the larger nests. Büttner (1971) observed the production of daughter nests in a colony of *F. polyctena* (Foerst.) in deciduous woodland in Germany and noted that this activity was greatly increased when the nest mounds were provided with a protective covering. Hughes (1975) concluded that in North Wales *F. lugubris* Zett. was able to radiate into suitable habitats by budding, and had a capacity for quick and widespread colonization not shared by *F. rufa*, which appeared to be dependent on alate queens as a method of dispersion. Klmetzek (1970, 1972 and 1973), referring to five species of the *F. rufa* group in the south west Black Forest (of which *F. rufa* comprised between 48 % and 64 %) states that the location of nests was often changed by the abandonment of old nests and the construction of new ones. He observed