A Note on *Formica Rufa* (wood ant)

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THE purpose of this note is to record the transfer of part of a *Formica Rufa* colony from Bansha Forest and its establishment in Lacken Wood, Enniskerry State Forest. (Nat. Grid. ref. O-19.15). Since it may be considered worthwhile to say something about the life and habits of this interesting woodland ant, I have compiled the following, mainly from Donisthorpe's " British Ants " (1).

FORMICA RUFA is found in North and Central Europe but is confined to the mountains in South Europe. It ranges eastwards to the Caucasus and is found in Siberia. Widely distributed in England it is of local occurance in Ireland. O'Rourke (2) (1950) records its distribution as Kerry, Tipperary, South Galway, Waterford, Wexford, Armagh and Wicklow. He states that the Wicklow colony is now extinct and that Johnson (1896) suggested that the Armagh Colony may not be native but could have been introduced about 1840 during planting operations. The latest Wexford report was 1896. In the same paper O'Rourke refers to the " gradual extinction of this native species " as being rather peculiar and suggests that it is due to the cutting of woods. Purcell (3) (1967) reports *F. rufa* as being very well established in Bansha Forest. Our forests are now expanding so the future of *F. rufa* may not be quite so bleak.

Donisthorpe states that this ant is a " hardy, fierce and courageous species, being very strong and able to lift very heavy weights in proportion to its size, and living chiefly an open air life . . . . . In warfare they attack in serried masses, not exhibiting the strategy of *F. sanguinea,* nor sending out small troops to execute flank movements. They do not persistently pursue a flying foe, but endeavour to kill as many enemies as possible at once, and do not hesitate to sacrifice themselves for the common good in defence of their nests ".

They are indefatigable workers and will continue from sunrise to after sunset. Donisthorpe has noticed them at midnight and I have seen a captive nest active at 2 a.m. though the majority seemed to squat on the surface. They will play with one another and indulge in mock fights and are very partial to basking in the sun. Individually they often appear quite stupid, one ant hindering the activity of another but despite such setbacks the individual ant usually achieves it's particular aim.

F. rufa avoids the neighbourhood of human habitations and normally nests in woods and other shady places. They seem to have a preference for pine but have been recorded under most conifers and in oak woods. A single large community will have a number of nests in the one area and individual nests can be two to three feet high. The nests are built of pine needles, twigs, leaves, dried grass, pebbles and any other debris found on the forest floor.

These ants secrete a large amount of formic acid (HCOOH) and eject it into the air in defence of the nest when alarmed or enraged. The workers stand up on the tips of their feet, with the gaster bent between their legs and the acid is ejected to a considerable distance, 6" - 12", from the anal aperture. They also use this acid to partially paralyze their prey as they will spray the acid into a wound made by their mandibles.

Briscoe (4) of the Imperial College of Science, London concludes that each ant on an average contains about .002 gr. (2 milligrams) of Formic acid.

F. rufa is an omnivorous feeder and lives mainly on insects, carrion, honey, excreta of aphids, caterpillars, etc., The workers bring both living and dead insects back to the nests and since they climb every tree and bush in their neighbourhood, in search of prey, they are a most useful forest insect. A nest can contain between fifty and a hundred thousand ants and since each ant may kill one insect per day the daily kill in a rufa territory is extremely large.
These ants propagate readily, the winged male and female appear between April and August—the fertilized females being looked after by the workers in the nest.

Portion of a rufa nest was taken from Bansha Forest on 13th April 1967 and transferred to Dublin where the ants were kept in a display case and exhibited at the R.D.S. Spring Show. During this period they built a nest in their cage and seemed to be unaffected by the artifical conditions, massing under an electric light in the same manner as they would in natural conditions under strong sunlight. They were fed on honey and watered regularly. This nest was taken to Lacken Wood on the 8th May and the case of ants emptied under pole stage Scots pine on a southerly slope. This area was next visited on the 13th June and the ants had established themselves where they had been originally placed, but appeared to be moving their nest. By the 27th June this nest had been abandoned and after searching the area the ants were found eighty yards down the slope in a Douglas Fir stand beside a forest road. Here they appeared to be establishing themselves in both a rotten tree stump and beside the butt of a Douglas Fir a yard away. Both nests were small but quite active and facing south.

When in this wood on the 18th August I found both these nests abandoned and the colony had moved a further sixty yards along the forest road to an open site beside a turning point. They were still under Douglas Fir and had built a nest about a foot high and of the same diameter. They were quite active and, assuming they have finished their wanderings, it is possible that they may establish a viable colony in this wood. I would suggest that the main reason for both their migrations was the light factor. They appear to be quite attracted to sunlight (within woodland environs) and the last nest situation on the roundabout is open to both east and south allowing them longest possible hours of sunshine.

Biological control of forest insect pests may well be worth consideration especially when one considers the rapid increase of the forest estate in the country during the past decade. *F. rufa* has many merits in the forest and it is possible that research into its role of a predator could provide some useful information. Being quite an adaptable insect it should not be difficult to establish it on a broad scale in many of our forests and, given some further research on the subject, this exercise could well be worthwhile.

References :

1. Donisthorpe, H. St. J. K. *British Ants,* 2nd Ed. 1927. London.
2. O'Rourke, Fergus J. *"The distributions and general ecology of the Irish Formicide"* Proc. R.I.A. 1950. Vol. 52. Sec. B. No. 9.
3. Purcell, T. J. 1967 Personal communication.
4. Briscoe, A. V. P. 294. *British Ants.*