

# Wood ant queen has no egg-laying monopoly

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The reproductive monopoly of the ant queen is not as strong as is often thought. Dr. Heikki Helanterä and Prof. Lotta Sundström, biologists working at the University of Helsinki, Finland, investigated worker ovary development and egg laying in nine Northern European wood ant species of the genus *Formica*, and revealed wide spread reproductive endeavours by workers.

For example, in species such as *Formica cinerea*, *Formica pratensis*, and *Formica truncorum* approximately one in five workers is fully equipped to lay eggs. Furthermore, genetic analysis of egg parentage showed that these workers are really laying eggs on a large scale. For example in the species with the most worker reproduction, *Formica truncorum*, as many as one in four of eggs are indeed laid by the workers.

The ability of workers to lay unfertilized male eggs even if they cannot mate is widespread in social insects, such as bees, wasps, and ants. However, worker reproduction as frequent as observed in *Formica* is exceptional, especially in colonies this large. Wood ant colonies range in size from several hundred to hundreds of thousands of workers, and usually species whose colonies are this big, such as honey bees and leaf cutter ants, have very little worker reproduction. This is because the majority of the workers favor the queen as the egg layer, and prevent reproduction by egg laying workers.

When the worker control is effective, egg laying workers do not gain any reproductive benefits, and over the course of evolution may give up trying to reproduce almost completely. “It is obvious that such surrender

has not taken place in wood ants,” says Heikki Helanterä, currently at University of Sheffield, UK, “the big questions are then why are the workers so persistently trying, and how does this ongoing conflict over reproduction affect colony functioning as a whole.”

Source: University of Chicago

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