

Evolution of eusociality

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Eusociality is an advanced form of social organization, where some individuals reduce their reproductive potential to raise the offspring of others. Eusociality is rare but hugely successful: only about 2% of insect species are eusocial, but they represent 50% of insect biomass. I will present a theory for the origin of eusociality. In the solitary life style all offspring leave to reproduce. In the eusocial life style some offspring stay and help raise further offspring. A standard natural selection analysis determines which of those two reproductive strategies wins for a given ecology. The model makes simple and testable predictions. I will also discuss the limitations of inclusive fitness theory showing that it is a particular accounting method that can be used in special cases, but not in general. Inclusive fitness is to a large extent a conceptual mistake that arises from the unsuccessful attempt to find a universal maximization principle in evolution.

Further reading:

Nowak MA, CE Tarnita, EO Wilson (2010). The evolution of eusociality. *Nature* 466: 1057-1062.

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