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A simple method of modelling animal behaviour and an application

Evolutionary biologists are interested in understanding the adaptive significance of cooperation. I will briefly introduce a perturbation approach that can be used to model the evolution of social behaviours like cooperation. The approach, itself, is mathematically straightforward and is amenable to interpretation in terms of concepts familiar to biologists. I will apply the approach to study a particular question about competition and cooperative breeding in animals that has been of concern to biologists. I will demonstrate that competition within breeding groups may not be a hindrance to the emergence of cooperation, as previously thought. I will also show that, in a sense, competition within groups may actually correspond to a boon for cooperative breeding.