

Fertility signalling games: should males obey the signal?

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Abstract

Game theory has made researchers realizing that two sexes may have conflicting interests. Males may benefit from a higher mating rate than females do. A temporal component of this conflict has been rarely modelled: females' interest in mating may depend on when females become fertile. This sets conditions for male-female coevolution, where females may develop fertility signals, and males might benefit discriminating them, i.e., obeying the signal targeting signalling females only. Modelling this temporal aspect to sexual conflict yields two equilibria: (i) a trivial equilibrium without signals and males targeting all females, and (ii) a signalling equilibrium where all females signal before ovulation, and where either some, or all, males obey the signal. The 'all males obey the signal' equilibrium is more likely if we assume that discriminating males have an advantage in postcopulatory sperm competition. While in the absence of this benefit, we find the 'some males obey the signal' equilibrium. Also, equilibria can be stated to have one sex as a 'winner' and the opposite sex as a 'loser'. From early models emphasizing 'battle of the sexes' style terminology, we recommend moving on to describe the situation as non-signalling equilibria having stronger unresolved sexual conflict than signalling equilibria.