Abstract:

The evolution of cooperation is frequently investigated using public goods games. A classic example is the $n$-player snowdrift game, in which each player incurs a cost from contributing to a common good but benefits from the pooled contributions of all group members. Such games arise in many biological contexts, from bacterial communities to human societies. With a continuum of contribution strategies (e.g., time devoted to a task benefiting the community), analyses to date have typically assumed—for mathematical convenience—that groups are drawn from an infinite population. I will present some of my recent work that shows that evolutionary outcomes in finite populations can be very different from those predicted by models that assume an infinite population. I will also suggest a general framework for analyzing evolutionary stability (ES) in finite populations, and discuss when this notion is unaffected by the particulars of the underlying selection process.