

Meeting: 1003, Atlanta, Georgia, SS 18A, AMS-SIAM Special Session on Recent Advances in Mathematical Ecology, I

1003-92-1574 **Timothy P Killingback*** (tpkill@wm.edu), Department of Mathematics, The College of William and Mary, Williamsburg, VA 23187-8795. *Collective Actions and the Evolutionary Origin of Cooperators and Defectors.*

Coexistence of cooperators and defectors is common in nature, yet the evolutionary origin of such diversification is unclear. Many models have been studied based on the assumption that benefits of cooperative acts accrue to others. Here I analyse a situation in which cooperative investments are costly, but yield benefits to others as well as to the cooperator. Adaptive dynamics of investment levels often results in evolutionary diversification from initially uniform populations into a stable state in which cooperators making large investments coexist with defectors who invest very little. Thus, when individuals benefit from their own actions, large asymmetries in cooperative investments can evolve. (Received October 05, 2004)