

abstract

Members Seminar

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

Fundamental questions in basic and applied ecology alike involve complex adaptive systems, in which localized interactions among individual agents give rise to emergent patterns that feed back to affect individual behavior. In such systems, a central challenge is to scale from the "microscopic" to the "macroscopic," in order to understand the emergence of collective phenomena, the potential for critical transitions, and the ecological and evolutionary conflicts between levels of organization. This lecture will explore some specific examples, from universality in bacterial pattern formation to collective motion and collective decision-making in animal groups. It also will suggest that studies of emergence, scaling and critical transitions in physical systems can inform the analysis of similar phenomena in ecological systems, while raising new challenges for theory.