



EAERE FEEM VIU

VENICE, JULY 6<sup>TH</sup> - 12<sup>TH</sup>, 2008

European  
Summer  
School



*in Resource and Environmental Economics*

**SPACE IN UNIFIED MODELS OF ECONOMY AND ECOLOGY**

## Lecture's Outlines – Prof. Simon LEVIN

### LECTURE 1 AND LECTURE 2: SPATIAL MODELS IN ECOLOGY

1. Classical theory of interacting species
  - Species packing
2. Spread of invading species
3. Critical patch size and species persistence
  - Reserve design
4. Space and coexistence
  - Species-area relations
  - Neutral theory and tradeoffs
5. Diffusion-reaction models
  - Multiple stable states and resilience
  - Diffusive instabilities
6. Metapopulation models:
  - Intertidal communities
  - Epidemiology
7. Spatial stochastic models
  - Forest growth
  - Animal aggregation
8. Continuum limits
  - Lattice models and moment closure
  - Mobile populations and aggregation
9. Foraging theory and leadership
10. Space, evolution and the emergence of biodiversity
  - Neutral theory
  - Hierarchical models
  - Tradeoff models
  - Seed dispersal
  - Collective motion