Environment: Directions and Issues

Examples:

- decision support in natural resource management (efficient forestry, mining, wildfires, etc)

- decision support in conservation (wildlife corridors, reserve planning)

- computational theory to aid ecological sciences (large data sets on species presence/absence, clustering/classification)
Environment: Directions and Issues

- Working with scientific data:
  how to gather it, how to optimize with it
Environment: Directions and Issues

- **Working with scientific data:**
  how to gather it, how to optimize with it

- What data has already been collected? ← use it first!

- High costs of acquiring new data?
  (simulation, field experiments)

- Sample/sample paths with spatial structure?

- Leverage knowledge about biological/ecological structure to
  specialize processes like adaptive sampling, optimal
  variance-reduction sampling, etc

- Conservation: generalize concepts of high-cost sampling
  (options expire while we plan)
Environment: Directions and Issues

- Evaluating and Engineering Robustness/Sensitivity:
  - of solutions
  - of methods
  - with respect to data
  - with respect to model assumptions (evolving science)
  - planning: climate change
Environment: Directions and Issues

- Evaluating and Engineering Robustness/Sensitivity:
  of solutions
  of methods
  with respect to data
  with respect to model assumptions (evolving science)
  planning: climate change

- Problem formulation:
  Understanding space of politically-viable policies
  Working within provence of receptive management agencies

- Understanding incentives:
  private/public partnerships
  feedback with peer-benchmarks
  lotteries to encourage good behavior
  public education and engagement