Lance Gunderson
Department of Environmental Studies
Emory University, Atlanta, GA

Adaptive Management: A bridge between science and policy?

Presented at
The Aspen Global Change Institute
June 5 - 10, 2003 Summer Science Session I

“Learning from Regions: A Comparative Appraisal of Climate, Water, and Human Interactions in the Colorado and Columbia River Systems”
Adaptive Management: A bridge between science and policy?

Lance Gunderson
Department of Environmental Studies
Emory University
Atlanta, GA
Presentation

- Scales of Issues in the Everglades
- AEA in the Glades
- AM in the Canyon
- Managing Uncertainty
Landscape Scale Issues

Biotic changes due to:

- Nutrient Enrichment
- Altered Hydrology
- Altered Disturbance Regime
Subsystem Scale Issues

- Wading Bird Foraging
- Endangered Species (Wood Stork, Panther)
- Changes due to water management
- 1/2 Wetlands Lost

- Water Allocation among land uses of agriculture, urban and conservation
Regional Scale Issues

- Changes in Wading Bird Nesting Patterns
- Changes in Rainfall Patterns
Adaptive Environmental Assessment and Management

- **Assessment Workshops**
  - 3 years, 8 workshops (1989-1992)
  - 60-80 persons involved
  - Transformation of Understanding
  - Led to Restudy Process

- Avoiding Management Trials
AEA Workshops

- Sufficient water resources for experimentation
- Resilience identified in key ecosystem components
- Flexibility among stakeholders?
- Room for political negotiations?
Parallel Planning

- **Technical**
  - Adaptive Management Design Workshops
  - COE Restudy
  - Piecemeal Studies

- **Social/Political**
  - Colloquy- 1992
  - Governors Commission
  - Federal Task Force

Restoration Act 2000
Everglades AEAM

- Successful Adaptive Assessment
- **NO** Adaptive Management
  - In spite of statements to the contrary
Issues in the Grand Canyon

- Dam Construction
  - Loss of sediment input
  - Lower flows
  - Temperature changes
  - Trophy fishery

- Endangered species
  - Exotics
AM in the Canyon

- Experimental flow regimes
  - 3 tests mid 90’s
  - beach habitat building flows
- Temperature Control Device
  - Planning/evaluation
- Experimental Harvest
  - Predation on HB chub
GC- Institutions

GC Research & Monitoring Center

Adaptive Management Work Group

Science Board
Keys to Adaptive Management

✧ Resilience in Ecosystems
  – Ability to absorb disturbances

✧ Social Capital
  – Ingenuity and Creativity
  – Trust among citizens, interests and government

✧ Flexibility in Institutions
  – Focus on Learning
  – Facilitating Interactions
Managing Uncertainty:
Where is the uncertainty?

- Problem Domain
  - science
  - organizational
  - community
  - political

- adequate theory
- multiple hypotheses & congruent management actions.
- tractability (complexity)
- confronting models w/data
- independence/ rigor
- novelty
Managing Uncertainty:

Where is it?

- Problem Domain
  - science
  - organizational
  - community
  - political
  - expressions of power
    - multiple equilibria
      - paths not taken
    - NONE are scale invariant
    - stability of institutions
      - novelty of approaches
    - role of epistemic groups
    - multiple discourses
    - juggling domains