

Unit 2: Presentation 6

# Adaptive Capacity

# Definitions

- “...the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences.”

» IPCC 2007

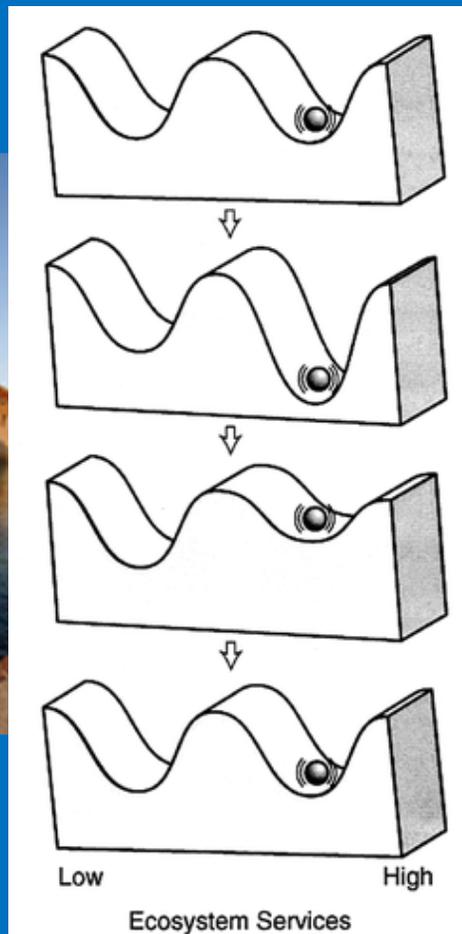
- “Coping range” or “coping capacity”
  - Ability for a system to reconfigure without significant declines in crucial functions

But what kind of “systems” are we talking about????

# Social System Applications

- Rooted in biological/ecological concept of “adaptability”
- Embraced in assessing vulnerability and adaptation of social/human systems
- Key adaptive capacity attributes in social systems include:
  - Health
  - Literacy
  - Governance
  - Economic wealth

# Adaptive capacity, resilience, and thresholds

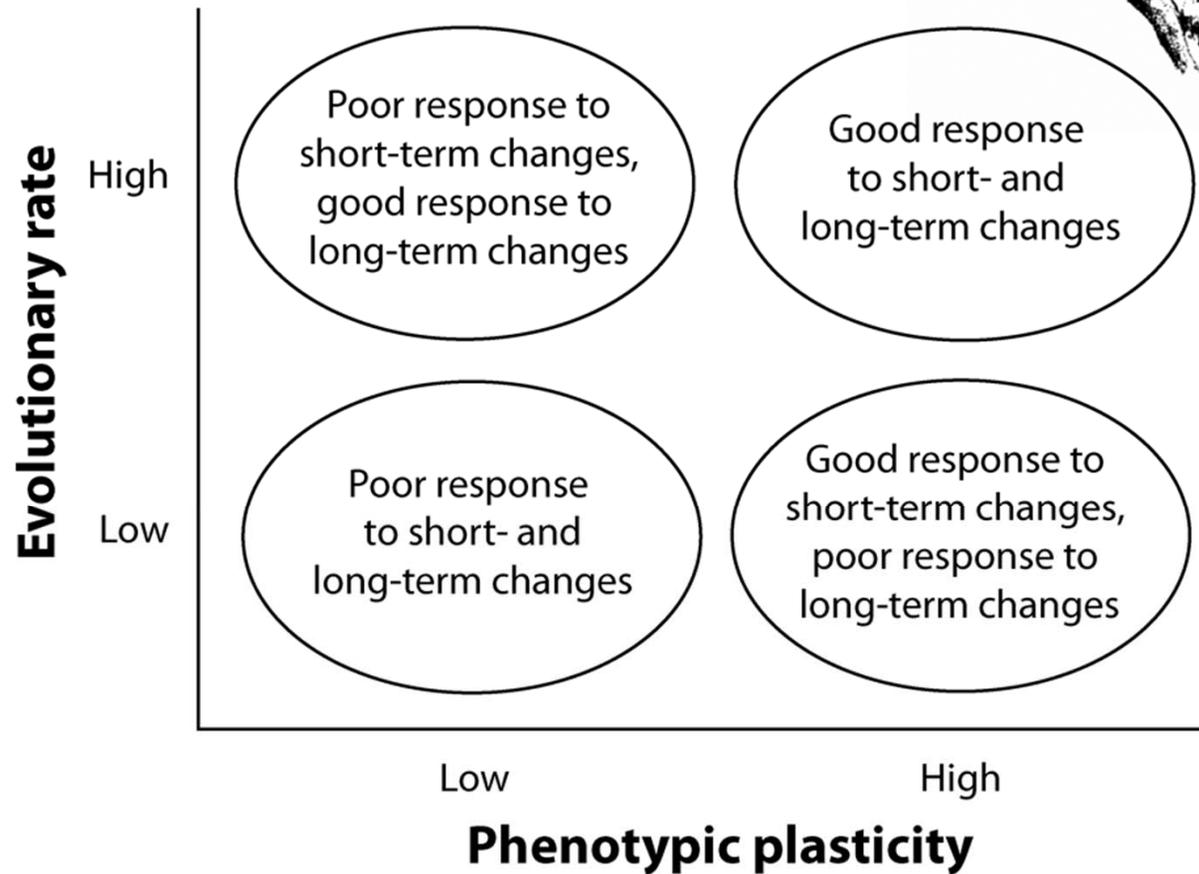


Carpenter & Gunderson 2001

# Factors Affecting Adaptive Capacity

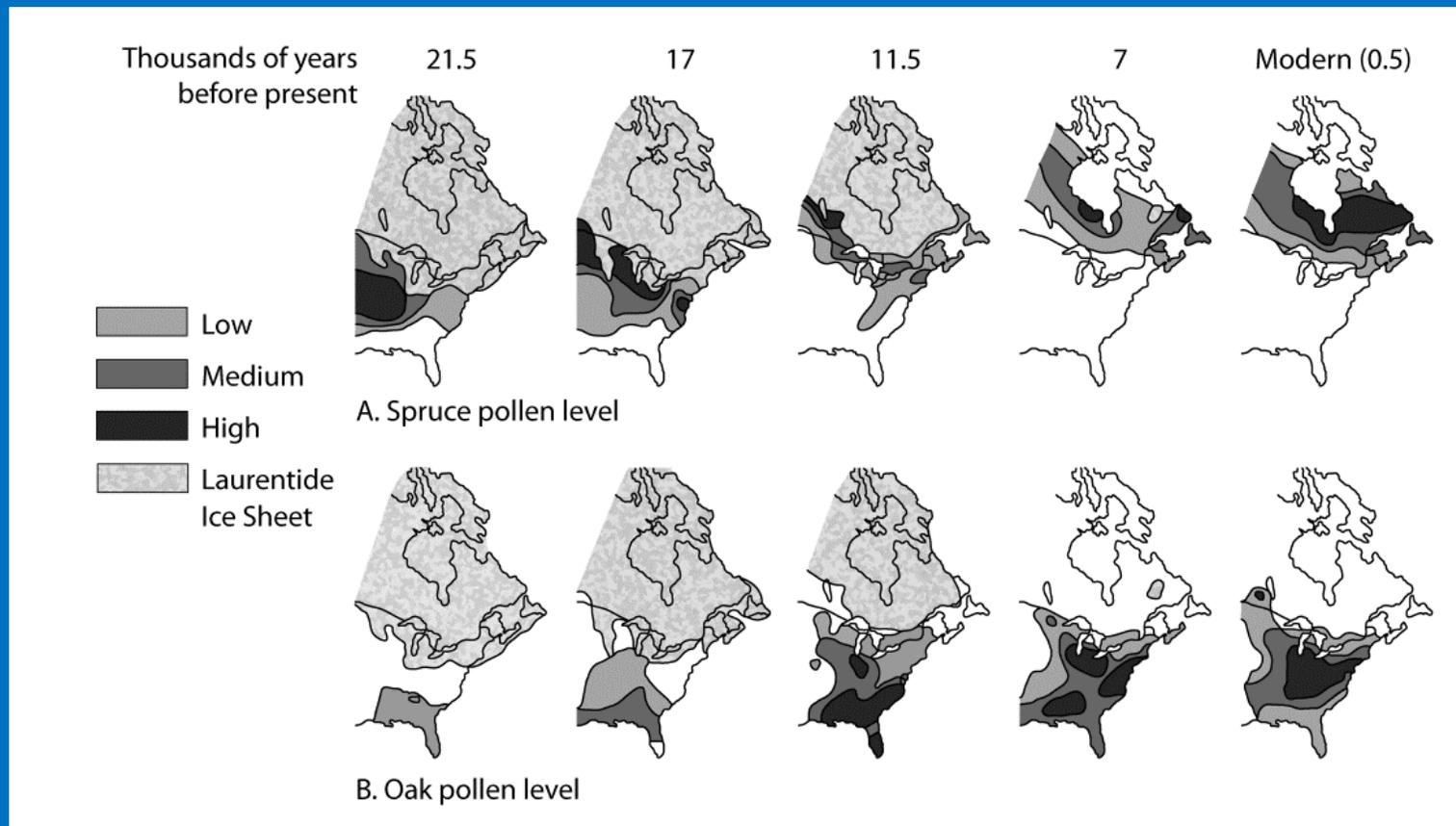
- Genetic diversity
- Phenotypic plasticity
- Behavioral plasticity
- Dispersal ability
- Landscape permeability
- Management potential



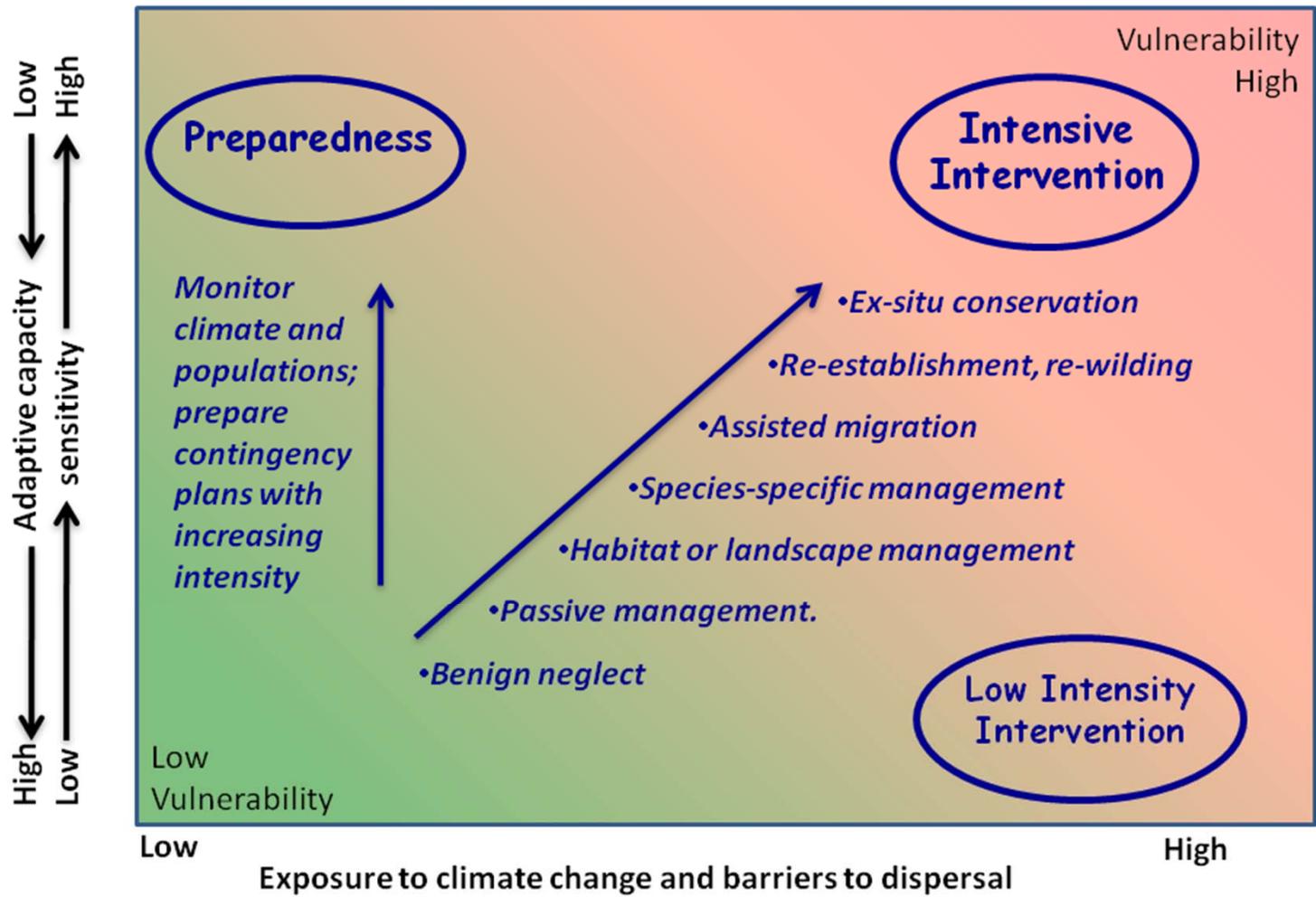


After Berteaux et al 2004

# Lessons from the past and present: species respond idiosyncratically

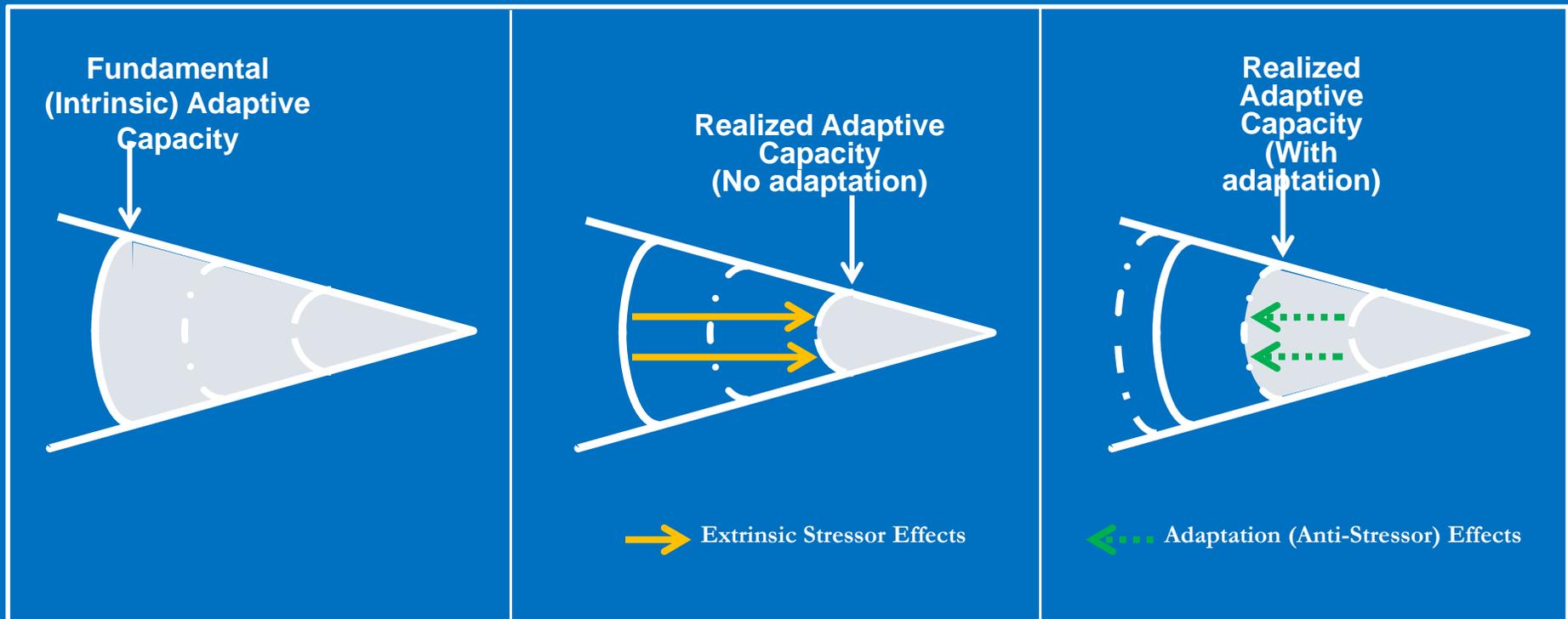


Putting all this theory to use



Source: Dawson et al. 2011

# Fundamental vs. Realized Adaptive Capacity



Courtesy Jordan West & Susan Julius

# Sea turtle nesting beaches

*(or eelgrass beds, oyster beds, you name it!)*



Measure:

- Slope
- Land use behind beach
- Habitat type behind beach

# Critical Habitat Rules

**Future habitat**



**Quino butterfly Critical Habitat Ruling includes current, future, and transitional habitat !**

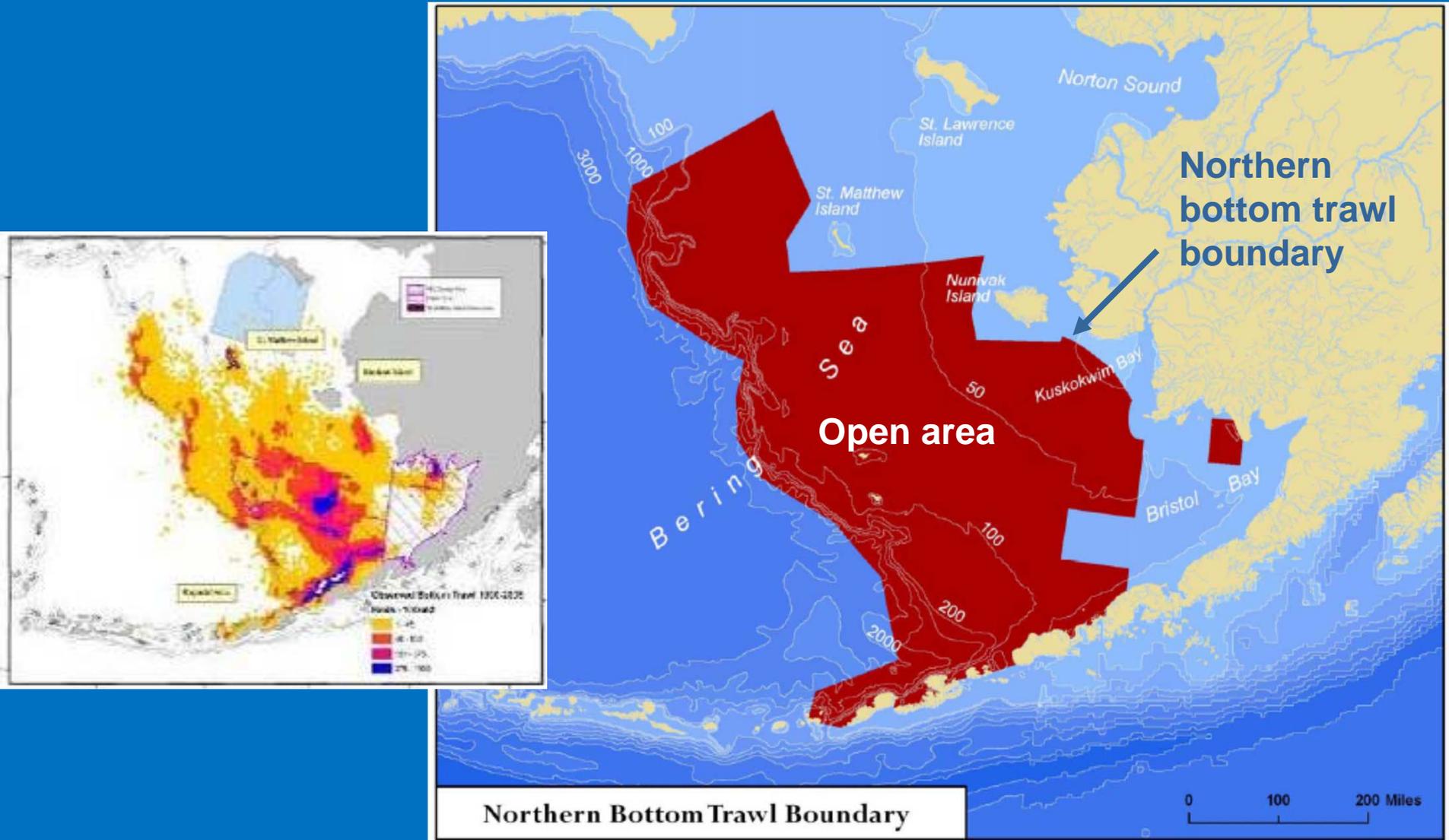
**Current habitat**



**Solid evidence for range change, novel host plant use**

# Northern Bottom Trawl Boundary:

If you don't know, don't go





Tue Aug 12 13:43:43 2003



Fri Oct 28 13:25:44 2005

# Institutional Aspects of Adaptive Capacity

What is the ability of our institutions to adjust to and respond to change?



*“the capacity for self-renewal”*  
-- Aldo Leopold