

# Introduction to Adaptation Strategy Development

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**EcoAdapt**<sup>TM</sup>  
*Meeting the challenges of climate change*

# Plan

- Some context
- Adaptation from different strategic angles
- Strategies, Approaches & Actions
- Examples



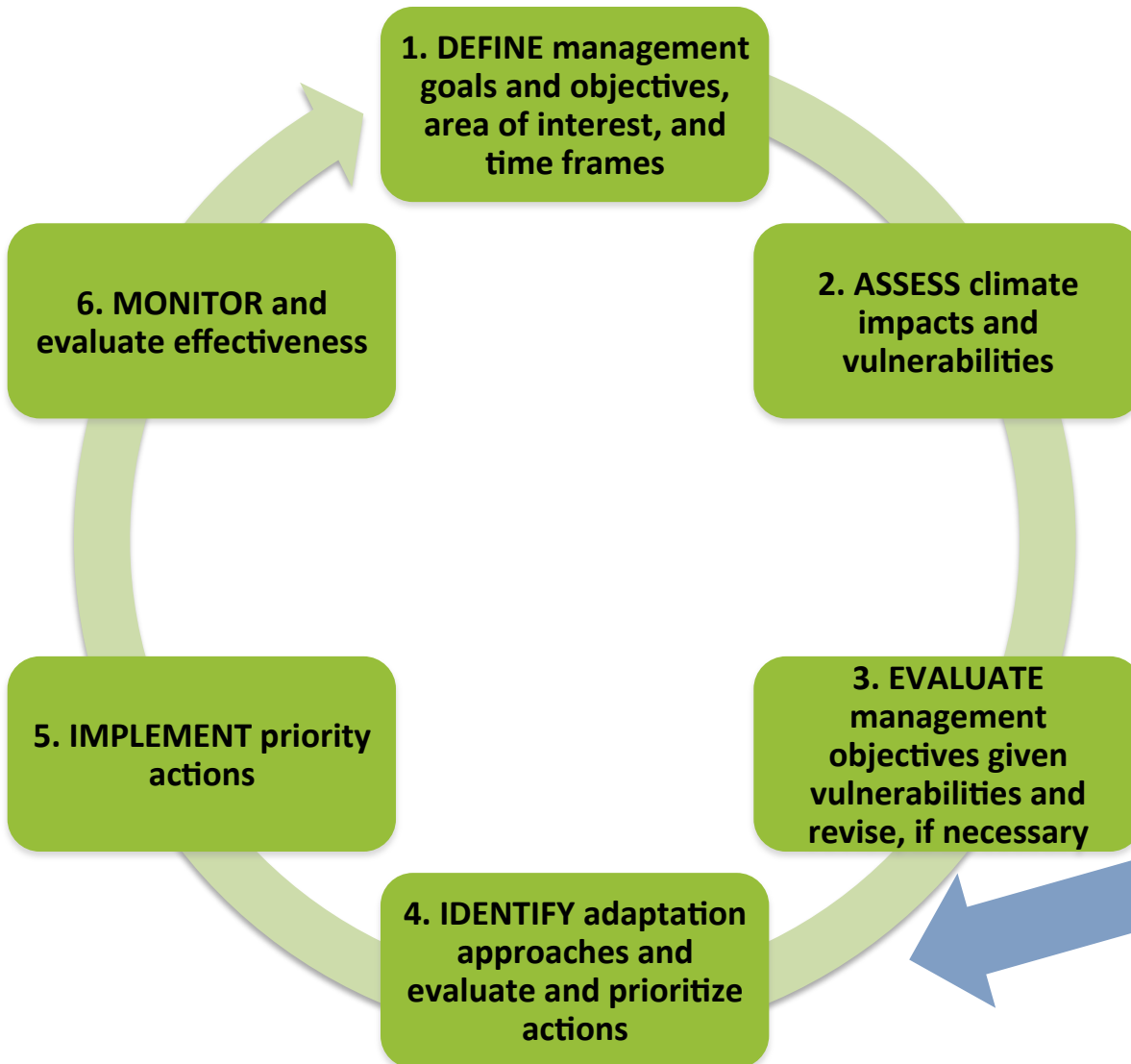
# Workshop Goal

To Develop a Portfolio of Adaptation Options for Focal Resources and the Region

- Prioritize actions
- Identify who could implement and when, and what resources are needed
- Where to implement



# Adaptation Planning Workshop



**Developing  
Adaptation  
Strategies**



# Adaptation 101: Strategies

- **Adaptation:** Efforts to reduce the negative effects of or respond to climate change



# Adaptation (I)

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$$\text{Vulnerability} = \text{exposure} + \text{sensitivity} - \text{adaptive capacity}$$

↓ *Reduce exposure*

↓ *Sensitivity*

↑ *Increase adaptive capacity*



# Vulnerability



# Adaptation (II)

## Adaptation Options



**Resistance**

**Resilience**

**Response**

For more on this, see the 3 Little Pigs Advice Column on [www.cakex.org](http://www.cakex.org)

## Resistance strategies

**Improve** a forest's **defenses** against anticipated changes or directly defend the forest against disturbance in order to maintain relatively unchanged conditions.

## Resilience strategies

**Accommodate some change**, but encourage a return to prior conditions after a disturbance, either naturally or through management

## Response strategies

**Intentionally accommodate change** and enable ecosystems to adaptively respond to changing and new conditions



# Adaptation (III)

Strategies

## EcoAdapt's Five ~~Tenets~~ of Climate Savviness

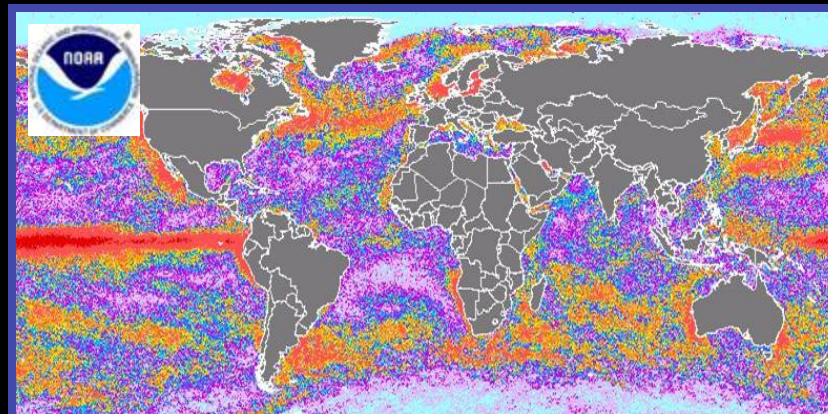
(Take 'em or leave 'em.  
They're just here to help)



# 1) Protect adequately and appropriately for a changing world

Plan spatially, think temporally!

- Refugia
- Gradients (Latitudinal/Elevational)
- Heterogeneity
- Gene flow/Connectivity
- Inclusion of other changes in the watershed/landscape/seascape



## 2) Reduce non-climate stresses

Invasive & Pest Species



Unsustainable Harvest

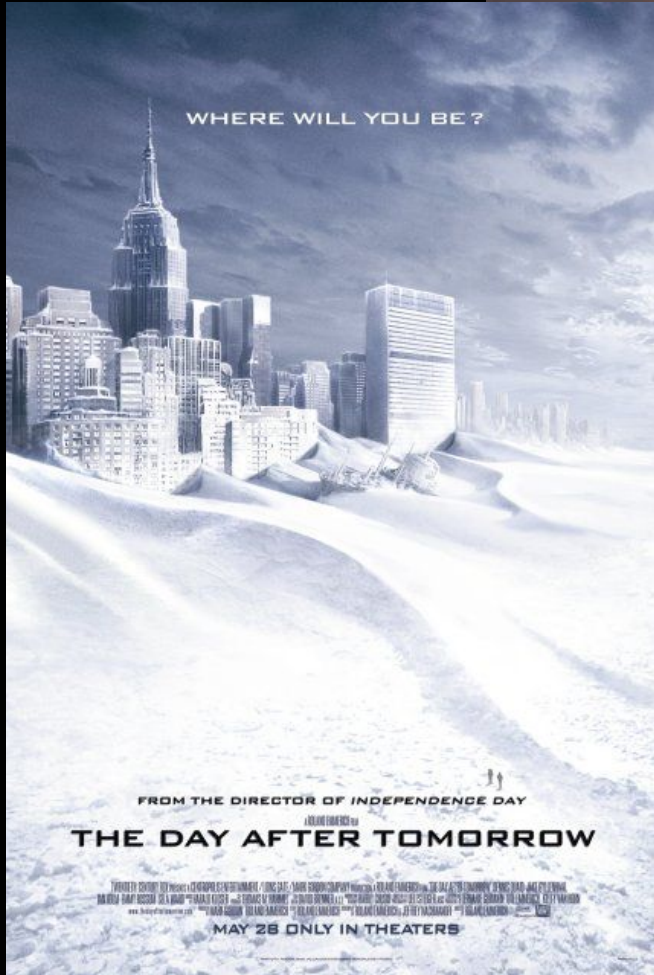


Agriculture & Habitat Fragmentation



Pollution & Habitat Degradation

# 3) Manage for Uncertainty



# 4) Reduce local and regional climate change



## 5) Reduce Greenhouse Gas Emissions



Resilience options have limits, some systems are very limited

Polar habitat, high elevation habitat, oceans...

# Types of Adaptation Strategies

- Capacity Building
- Policy
- Natural Resource & Management  
Conservation
- Infrastructure, Planning, & Development

# Adaptation Approaches & Actions

**Strategies** – Reducing vulnerability; resistance, resilience, response; 5 tenets; Types

**Approaches** – Adaptation response for a single ecosystem or forest type

“Alter forest structure or composition to reduce risk or severity of fire.”

**Actions** – A prescriptive tactic for individual site conditions or management objective.

“Plant fire-resistant species, such as hardwoods, between more flammable conifers to reduce vulnerability to wildfires.”





# Northern Wisconsin Forests

## Identifying Adaptation Approaches and Actions

Focal Resource: **Paper Birch Forest**

Management Objective:

Regenerate the existing mature paper birch to retain it on the landscape when desirable

Adaptation Approach	Action	Implementation Difficulty				Priority (High, Medium, Low)
		●	■	◆	◆◆	
<b>Maintain or improve the ability of forests to resist pests and pathogens</b>  <b>(Resistance Strategy)</b>	<b>Treat selected over-mature paper birch stands with a <u>shelterwood</u> harvest followed by prescribed burning or mechanical site preparation. Prioritize the stands to be treated using a field check of site conditions.</b>			◆		Medium/Low
	<b>Adjust rotation age lengths to achieve age class distribution goals in the Land and Resource Management Plan</b>	●				High

# Northern Wisconsin Forests

## Identifying Adaptation Approaches and Actions

Focal Resource: **Spruce Grouse**

Management Objective:

Create new habitat for spruce grouse as opportunities arise

Adaptation Approach	Action	Implementation Difficulty				Priority (High, Medium, Low)
		●	■	◆	◆◆	
<p><b>Maintain and create habitat corridors through reforestation or restoration</b></p> <p><b>(Response Strategy)</b></p> <p><b>(Protect adequately and appropriately)</b></p>	<p><b>Across all forest types: As part of the proposed Spruce Grouse Habitat Assessment, evaluate current level of connectivity between suitable spruce grouse habitat complexes. Map or identify current or potential corridors</b></p>			◆	◆◆	High

After Swanston et al. 2012

# Considerations

- Are your management objectives feasible?
- Consider many adaptation approaches
- Is an action effective and feasible?
  - Likelihood of success, Tradeoffs, Urgency, Cost, Effort, Flexibility
- Prioritization
- Maladaptation
- Synergies / commonalities
- Monitor, evaluate, and “adapt”





CAN MAKE  
ADAPTATION HAPPEN

