

# Recreation on the North Shore: Climate challenges and adaptation strategies



Sept. 18, 2019





# Northern Institute of Applied Climate Science

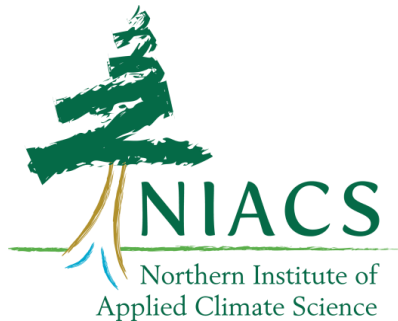


Climate  
Carbon

Practical  
information

Adaptation  
resources

Technical  
assistance



Michigan  
Technological  
University



UNIVERSITY OF MINNESOTA

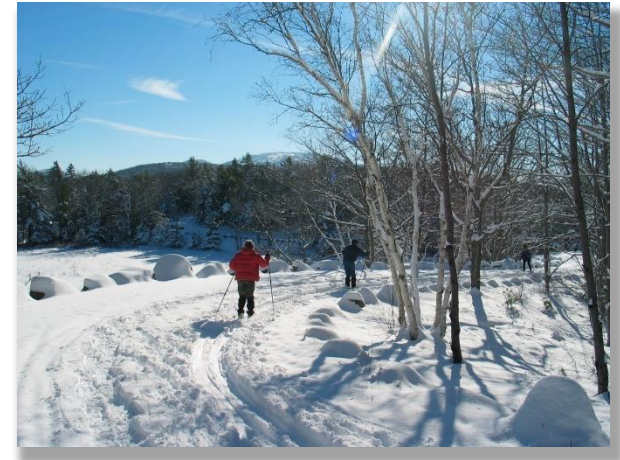


The  
UNIVERSITY  
of VERMONT



# Plan for the Day

1. How might climate change affect my work and/or the resources I manage?
2. What actions could help prepare for those effects?





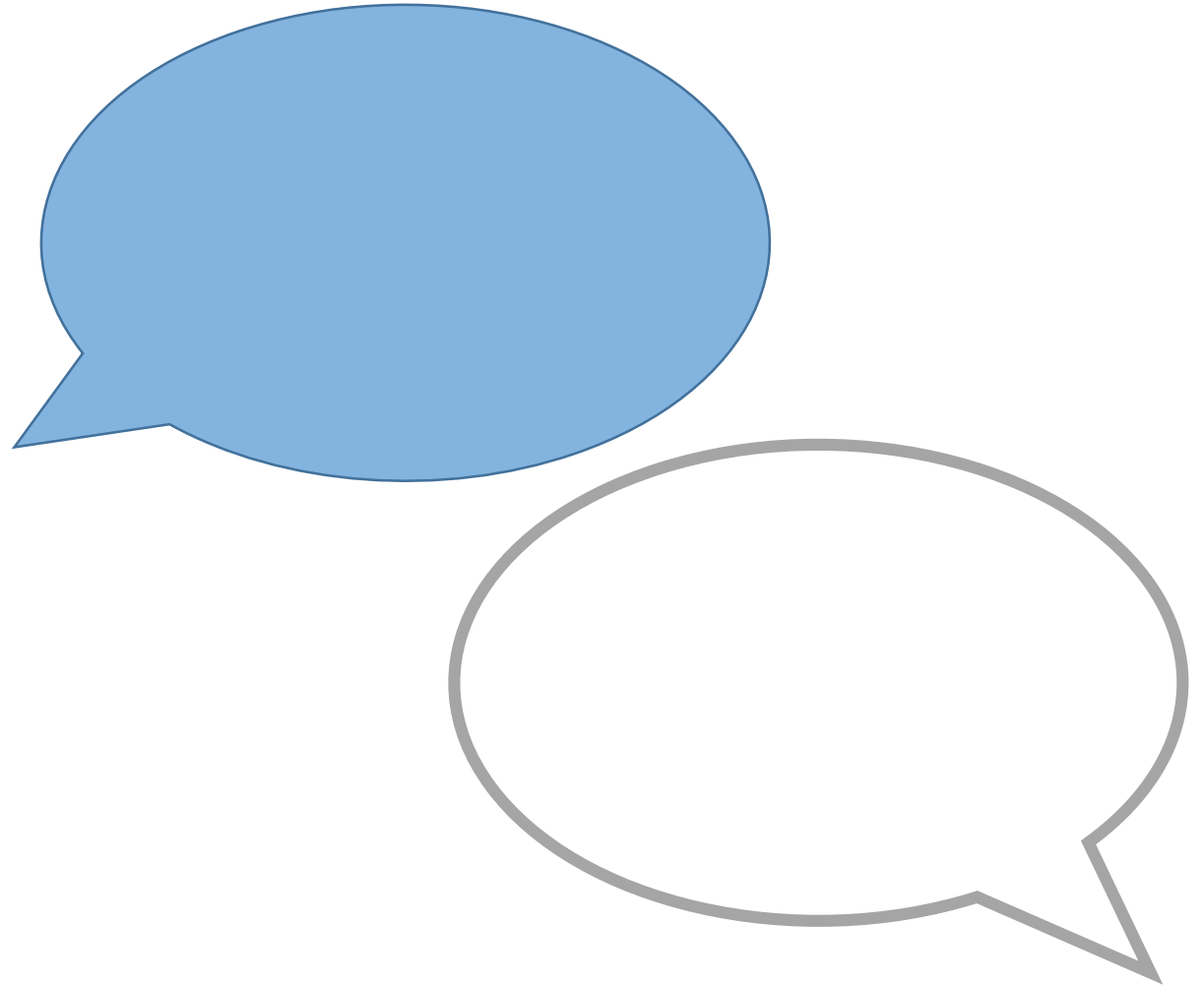
# Using your site-specific expertise

Research and assessments describe broad trends, but local conditions and management make the difference.



# Introductions

- Name
- Organization
- Favorite fall recreation activity?





## Activity #1:

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*What new challenges and opportunities  
does climate change bring to your work on  
the North Shore?*

# Activity #1:

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- **On your own:** write down at least 3 challenges and 3 opportunities (5 minutes)
- **With a partner:** discuss your challenges and opportunities and find similarities and differences (10 minutes)
- **Write down:** one major challenge (**pink sticky note**) and one major opportunity (**green sticky note**) you discussed with your partner
- Place up on the wall





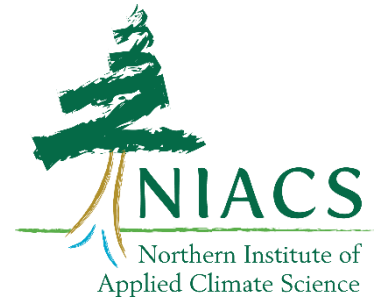


Northern Forests Climate Hub  
U.S. DEPARTMENT OF AGRICULTURE

# Climate Adaptation Concepts



Leslie Brandt, Kristen Schmitt  
Sept. 18, 2019





**Adaptation** is preparing ecosystems for climate change.



Actions may build upon sustainable management, conservation, and restoration techniques.

**BUT** it is necessary to explore potential modification to address climate change

# Climate-driven changes



Desired Future Condition



TIME





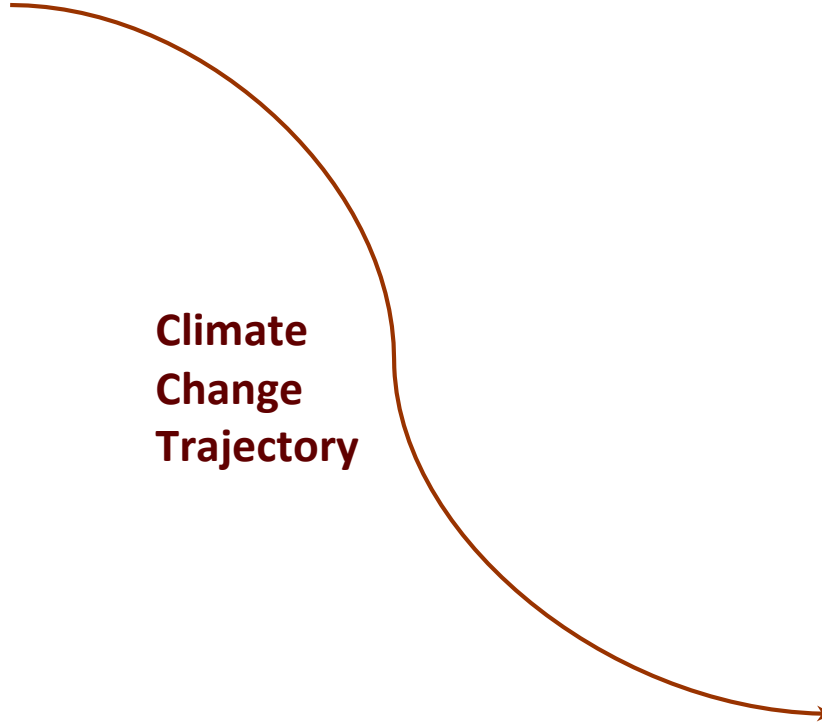
# Climate-driven changes



Desired Future Condition



Climate  
Change  
Trajectory



TIME



# Climate-driven changes



Desired Future Condition

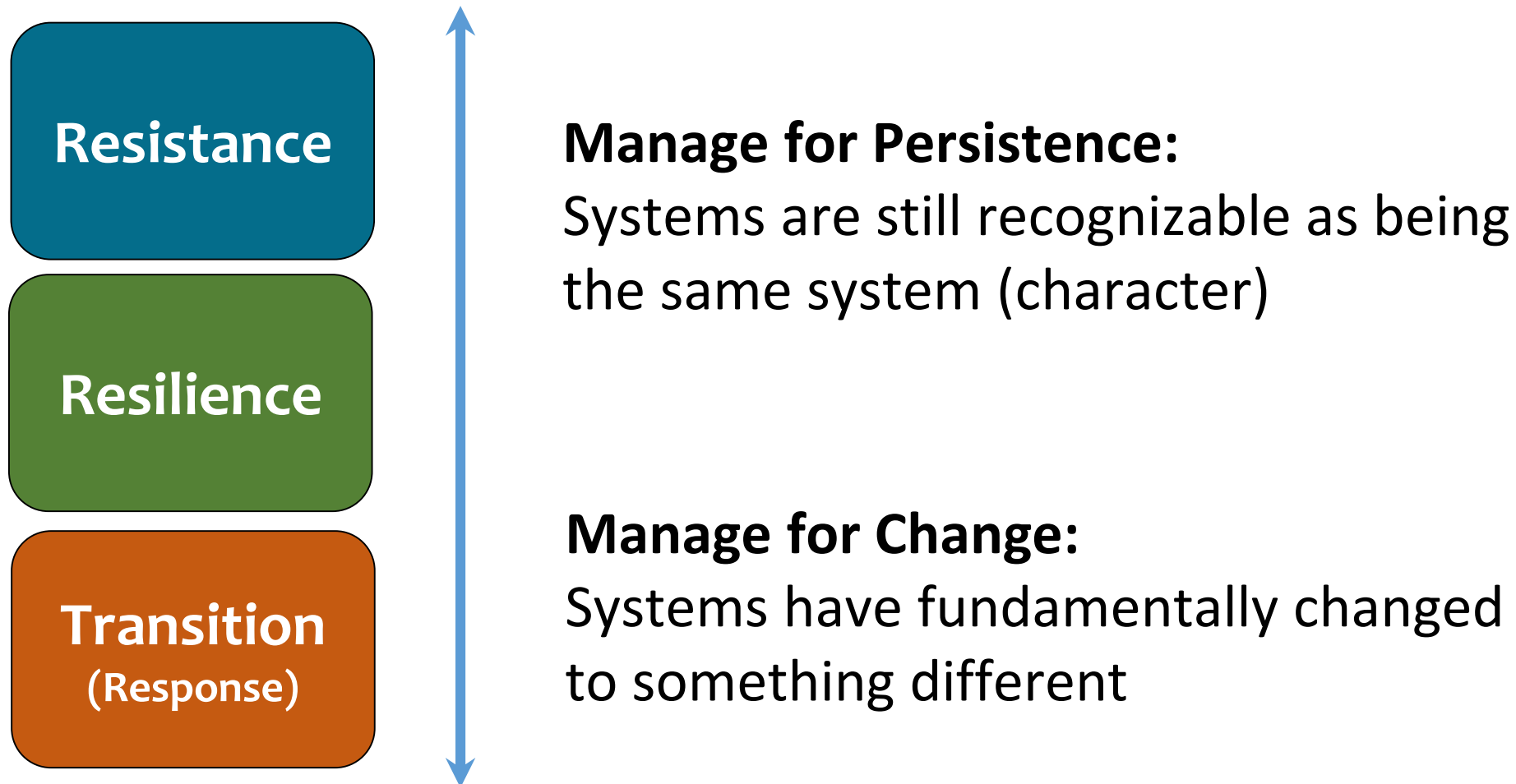


What actions can be taken to  
**enhance the ability of a system to cope with climate  
change**

AND

**meet your goals and objectives?**

# Adaptation Concepts



# Resistance (persistence)

Improve the defenses of the system against anticipated changes or directly defending against disturbance in order to maintain relatively unchanged conditions.

Short-term, High-value



*Winter Recreation (USFS)*



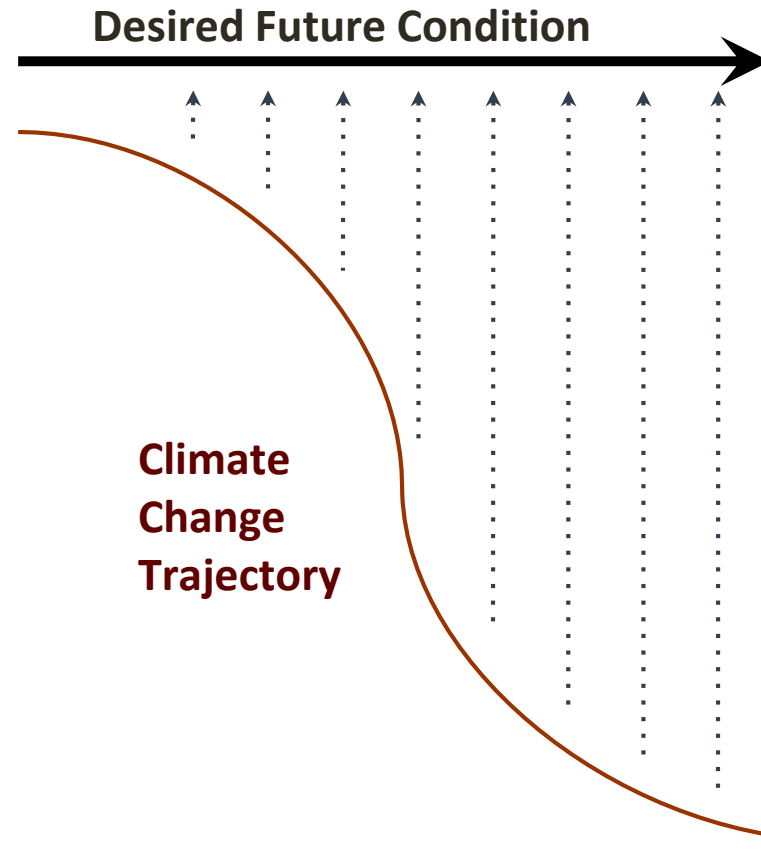
*Threatened Dwarf lake iris (FWS)*



*Invasive species management (USFS)*



# Resistance (persistence)



*Increasing resources  
needed to maintain desired  
conditions, higher risk*



TIME

# Resilience (persistence)

Accommodate some degree of change or disruption, but be able to return to a similar condition after disturbance.



*Installing bottomless arch culverts to accommodate variable precipitation.*



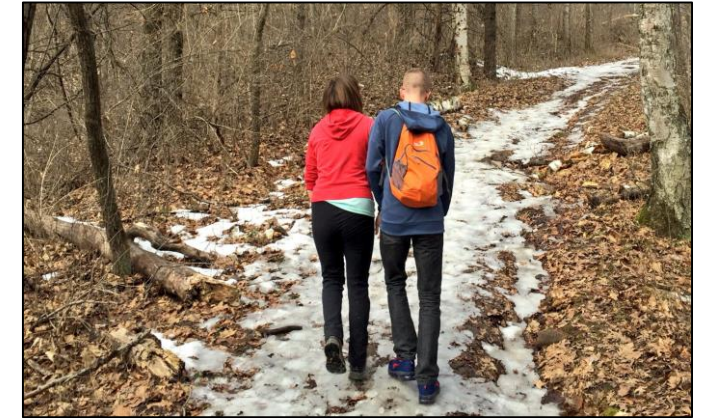
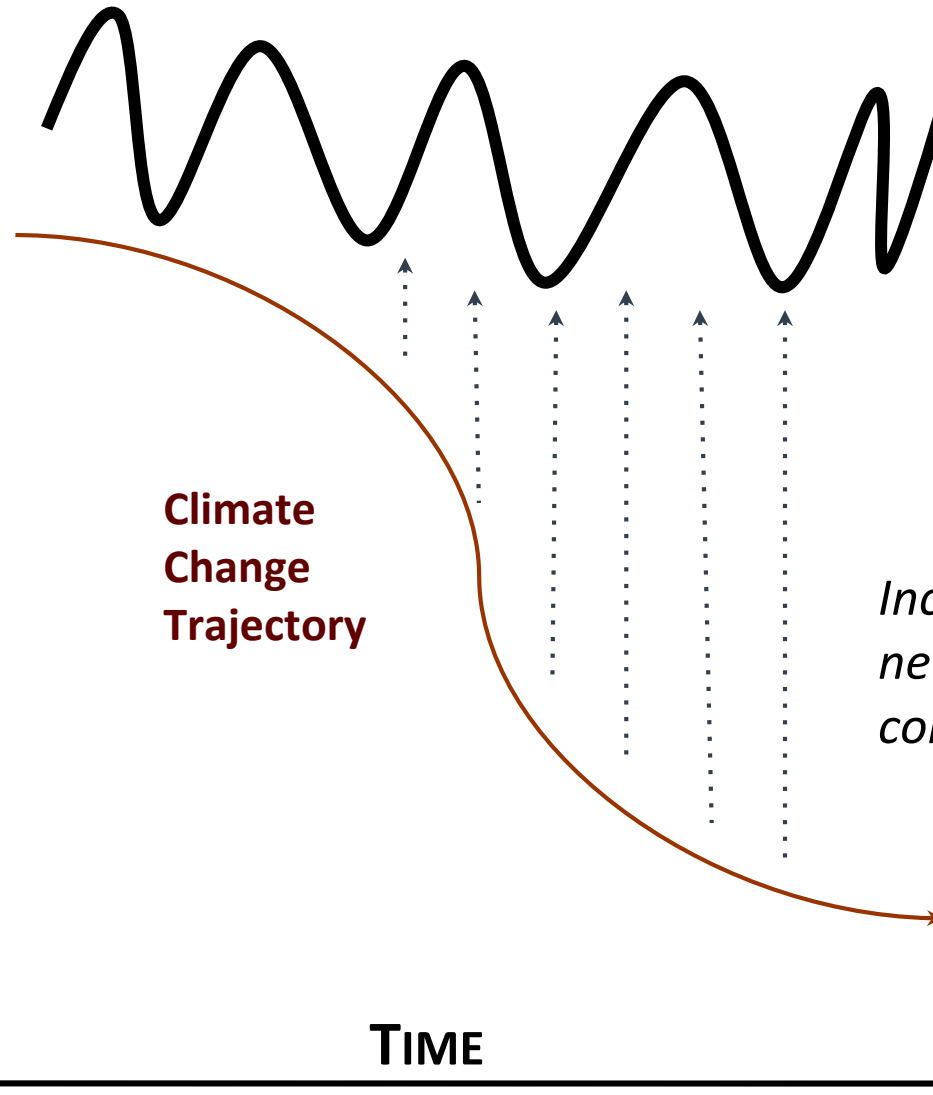
*Reducing overstocked stands*



*Increasing setbacks to allow for fluctuating water levels.*



# Resilience (persistence)



*Increasing resources  
needed to maintain desired  
conditions, higher risk*



# Transition (change)

Intentionally encourage change, help ecosystems respond in a targeted fashion.

- Foster well-adapted native species
- Relocate visitor and recreation infrastructure
- Accommodate new & altered hydrologic processes



*Favoring native species that are expected to be adapted to future conditions.*



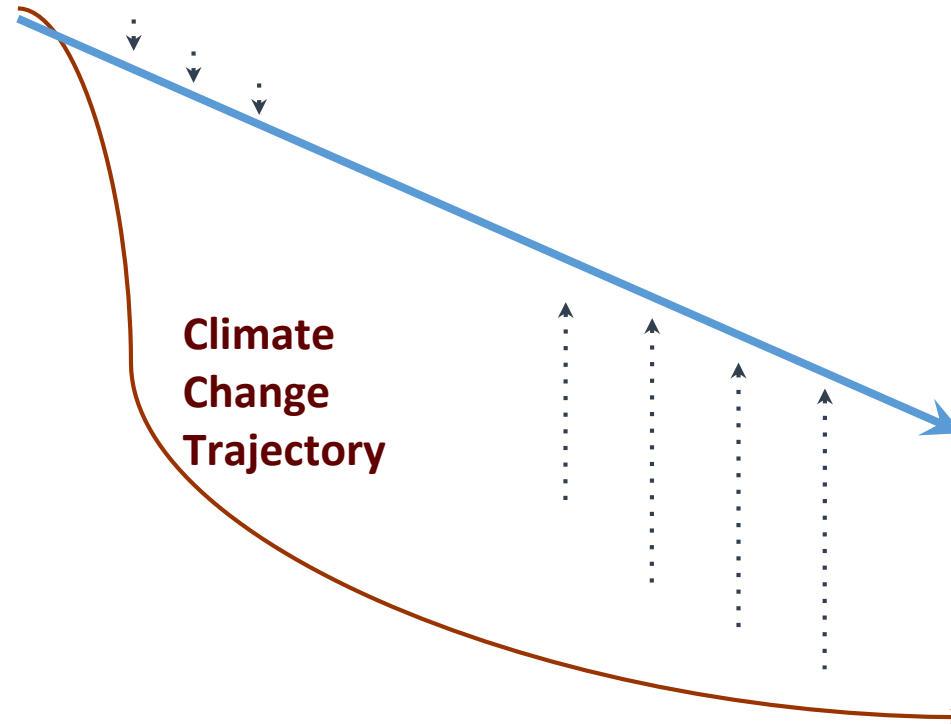
*Relocate existing infrastructure (P:Tom Hilton)*



*River & riparian restoration in ag fields (P:Joann Kline)*

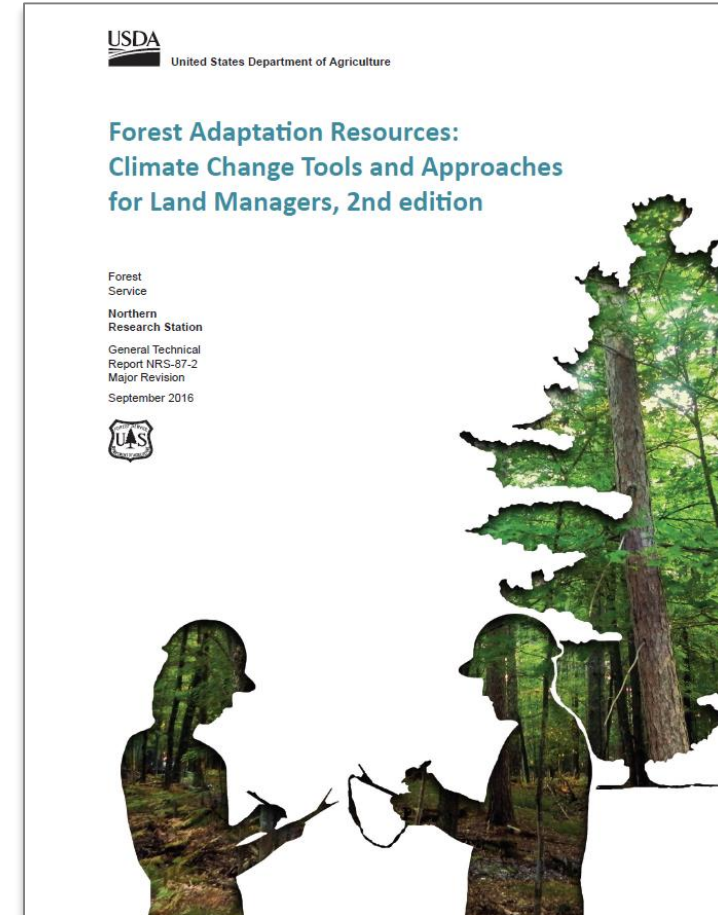


# Transition (change)



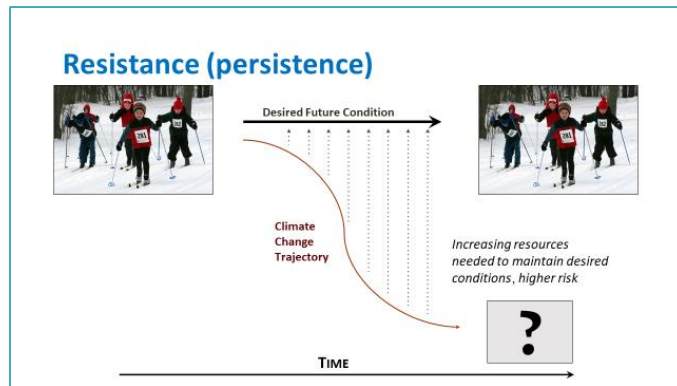
# There isn't a single answer

- Process to intentionally consider climate & customize adaptation actions
- Designed to be flexible
  - Diverse goals and values
- Works at the project level
- Does not make recommendations

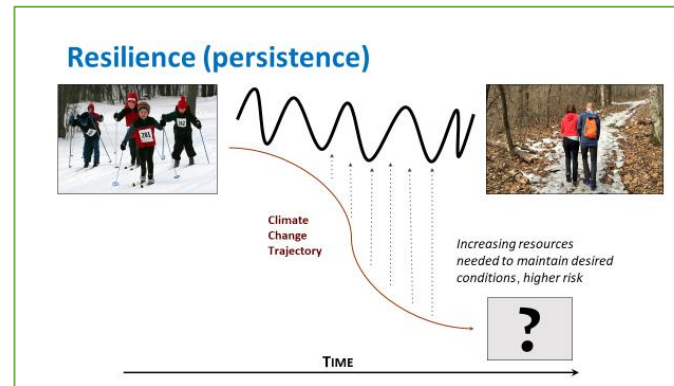


# Manage Risk

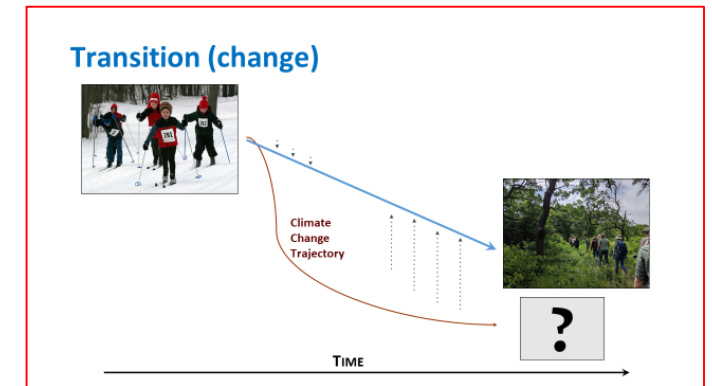
## RESISTANCE



## RESILIENCE

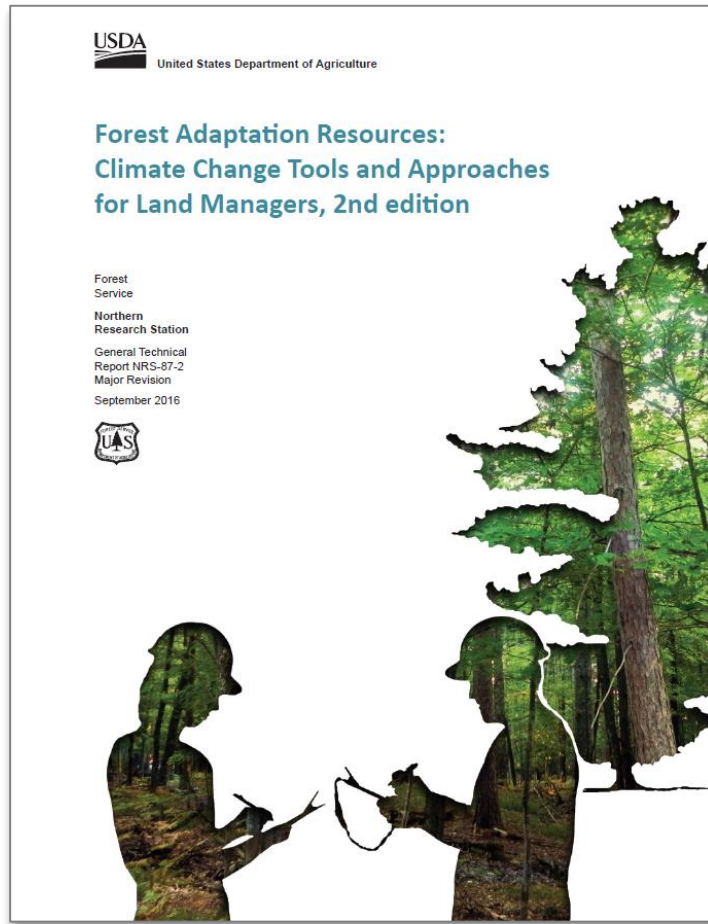


## TRANSITION

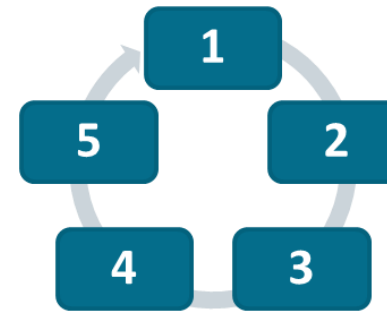


Design actions that are robust across a range of potential future conditions

# Forest Adaptation Resources



## Adaptation Workbook

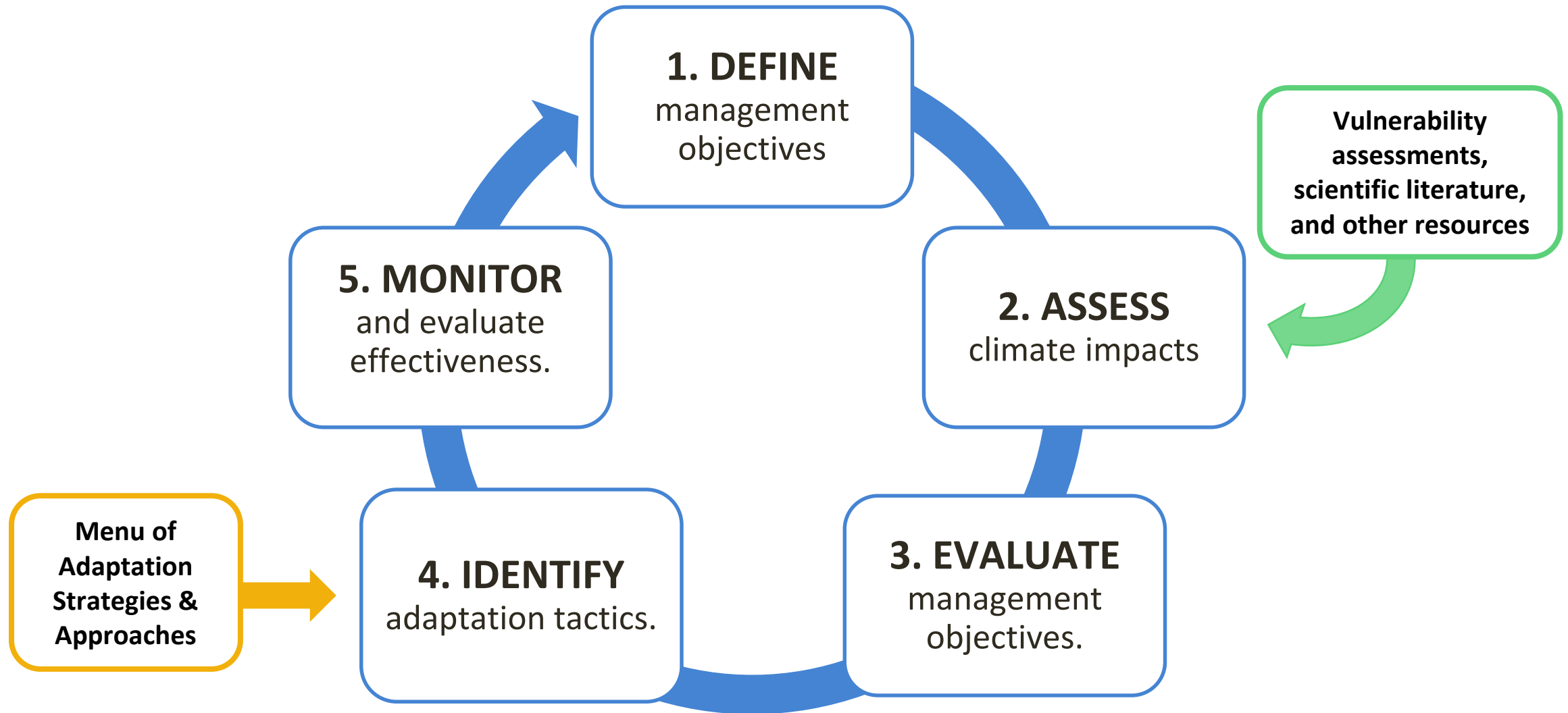


## Strategies & Approaches

Menu of adaptation actions



# Adaptation Workbook



# Adaptation Menu

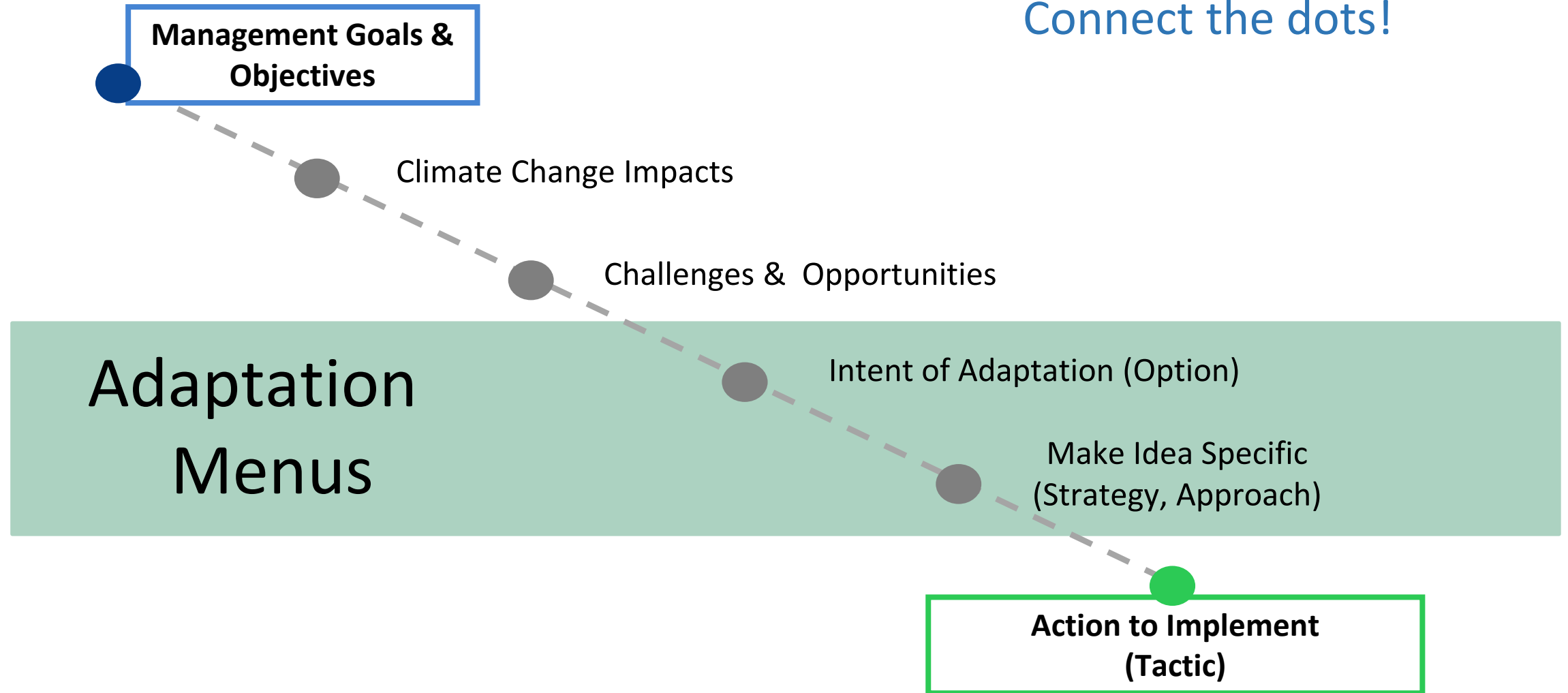


The **Menu** helps create **clear rationale** for your actions by connecting them to **broader adaptation ideas**.

- Intentionality
- Success

# Menu + Workbook

Connect the dots!





# Menu Development

Expanded focus areas

2012

- Forestry

2016

- Forestry 2.0
- Urban forestry
- Agriculture

2019/2020

## **Published**

- Forested watersheds
- Tribal perspectives

## **Anticipated**

- Carbon Management
- California ecosystems
- Open wetlands
- Wildlife
- Recreation
- Coastal ecosystems



# Menu of Adaptation Strategies for Recreation

- **Strategy 1:** Protect and sustain key infrastructure
- **Strategy 2:** Enhance measures to prevent ecological damage from variable precipitation
- **Strategy 3:** Manage impacts from shifting visitation and use trends
- **Strategy 4:** Account for and communicate risks to health and safety
- **Strategy 5:** Manage recreational opportunities to address impacts of expected conditions
- **Strategy 6:** Alter recreational opportunities to accommodate expected conditions

## RESISTANCE

Buffer or protect from change.

## RESILIENCE

Promote the return to normal conditions after a disturbance.

## TRANSITION

Actively facilitate or accommodate change.

# Adaptation Strategies and Approaches



**Option: Resistance**  
(forestall change)



# Adaptation Strategies and Approaches



Recreation Menu



Protect and sustain key  
infrastructure

# Adaptation Strategies and Approaches



Employ protective  
measures to minimize  
damage from  
disturbance events

# Adaptation Strategies and Approaches



Install diversion structures upstream from site and facilities at risk of damage from erosion.



# Adaptation Strategies and Approaches



**Recreation Menu**

Re-route winter trails  
out of open areas  
prone to snowmelt  
and onto shaded  
north or east-facing  
side slopes



# Adaptation Strategies and Approaches



Relocate existing infrastructure and opportunities to areas with less risk of climate-induced damage.

# Adaptation Strategies and Approaches



Alter recreational  
opportunities to  
accommodate expected  
conditions



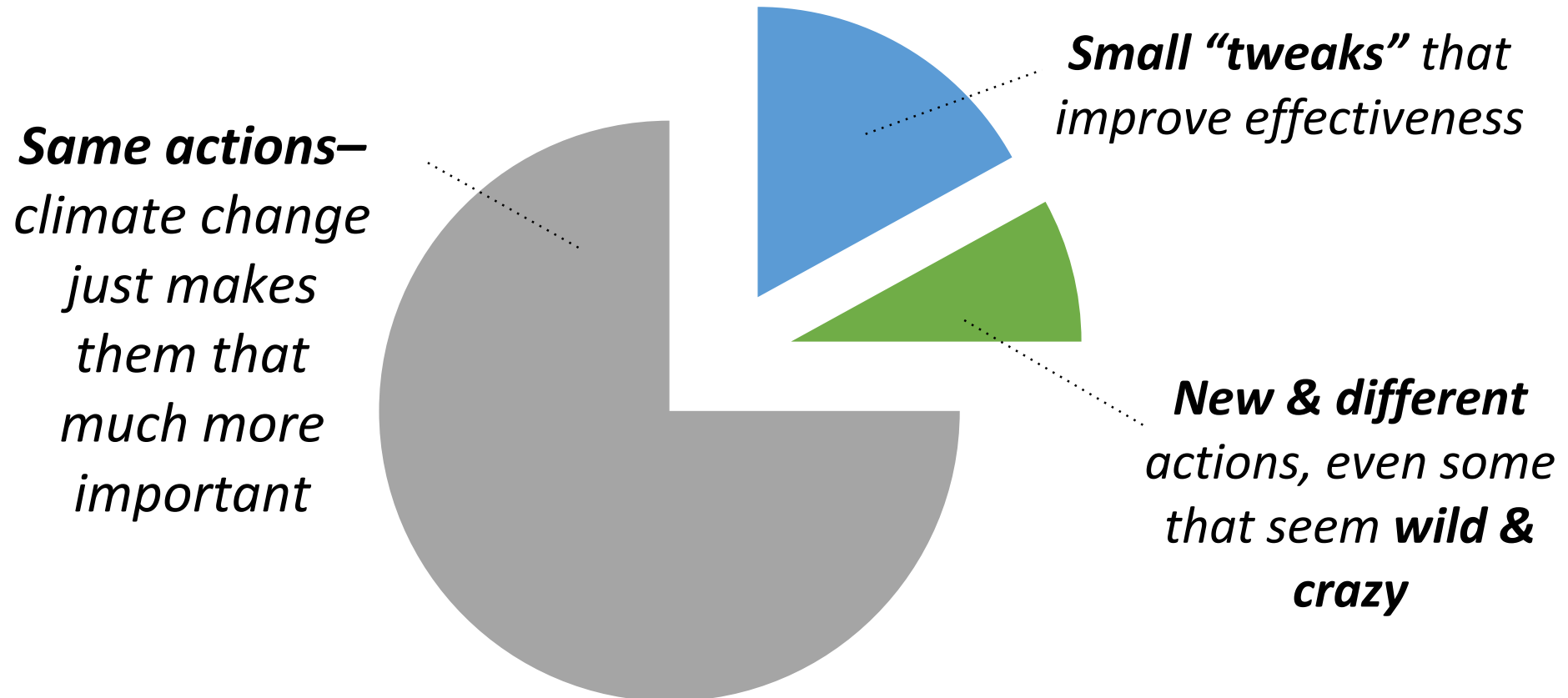
# Adaptation Strategies and Approaches



**Option: Transition**  
(facilitate change)

# Adaptation

- Adaptation actions may not look that different from current management actions, especially in the near term.



## Activity #2:

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In this activity you will use your knowledge and expertise to identify adaptation approaches and tactics for a specific scenario.



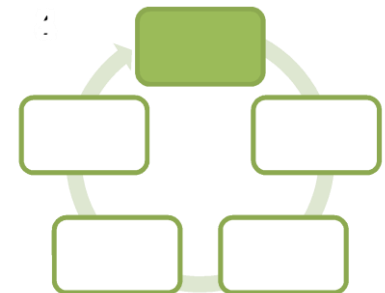
# Activity #2:

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As a group, select a place or system you work in or resource area you manage (e.g., trails, campgrounds).

1) Create and describe a hypothetical (or real!) management situation

- **Conditions:** Location, site conditions, species composition, etc.
- **Typical management:** Management goals and objectives, common practices





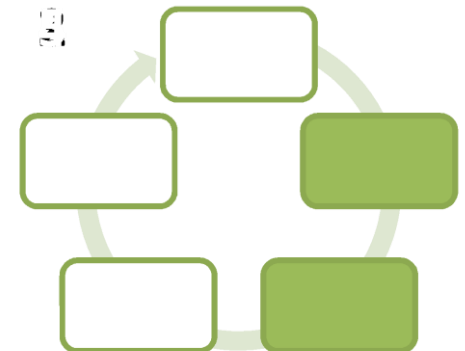
# Activity #2:

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**As a group, select a place or system you work in or resource area you manage (e.g., trails, campgrounds).**

**2) Identify important climate change considerations for this place:**

What challenges or opportunities does climate change pose for meeting your management goals?



# Activity #2:

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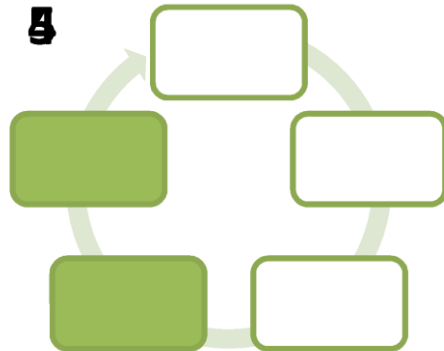
To help think about climate change in your region, consider:

- Precipitation changes
- Temperature changes
- Winter trends
- Hydrology
- Human health
- Wildlife
- Fire
- ????

## Activity #2:

---

What actions can be taken to help your system adapt to anticipated changes AND meet management goals?



### Available: Recreation Menu

- *Forestry*
- *Forested watersheds*

# Activity #2:

---

What actions can be taken to help your system adapt to anticipated changes AND meet management goals?

**Place:**

**Location and conditions:**

**Management goals:**

**Climate change challenges and opportunities:**

**Adaptation Tactics:**

1)

2)

3)

...



# Activity #2:

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<b>Topic 1</b>	Trails
<b>Topic 2</b>	Winter recreation
<b>Topic 3</b>	Water-based recreation
<b>Topic 4</b>	Visitor health and safety
<b>Topic 5</b>	Developed campgrounds
<b>Topic 6</b>	Highway 61 viewscape
<b>Topic 7</b>	Make your own!

# Wrap-up

- What to expect tomorrow (Sept. 19<sup>th</sup>) - Bonnie
- Moving forward on climate adaptation
- Evaluations



## Questions ?

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