

ONLINE COURSE

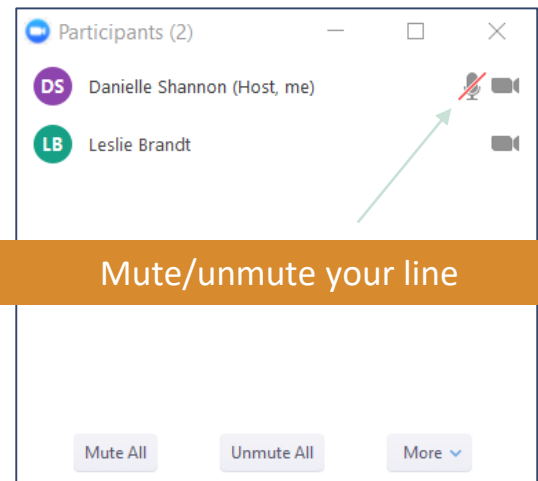
# URBAN FORESTED WATERSHEDS ADAPTATION PLANNING AND PRACTICES

## Session 3: Challenges and Opportunities

Tuesday, November 20, 2018 @ 11 am ET

### Web session etiquette. Please:

- If you are using a phone, turn off your computer speakers to avoid feedback and terrible noises.
- Mute your line unless you are speaking to the group.



# Hello again!

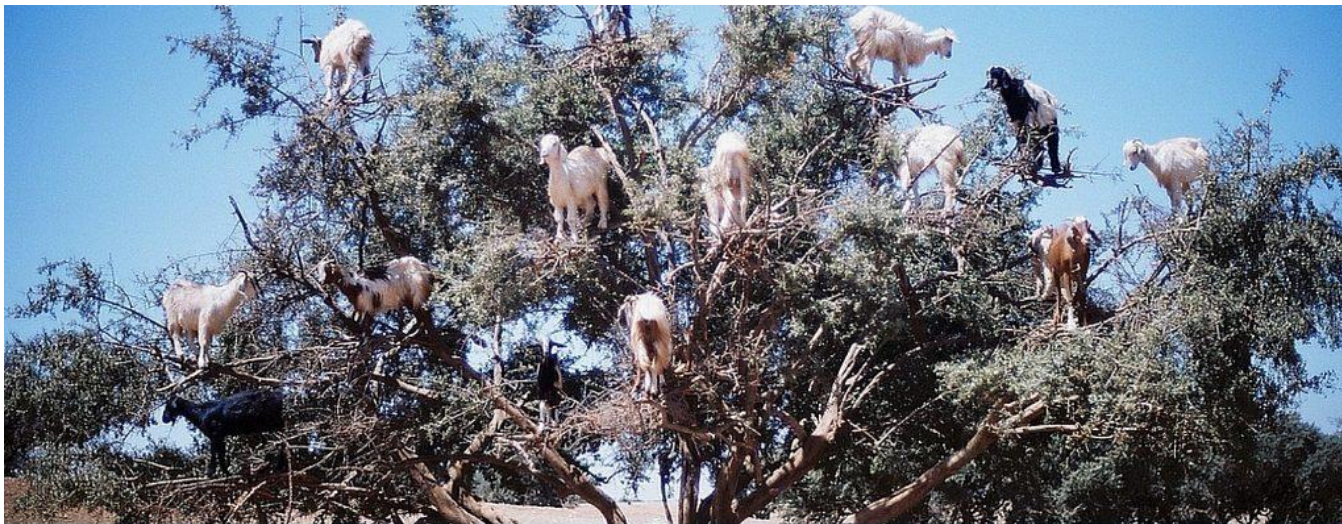
## Today's Agenda

### Discussion:

- Review Step 2
- Impacts activity

### Lecture:

- Step 3 introduction and demonstration
- This week's assignment!

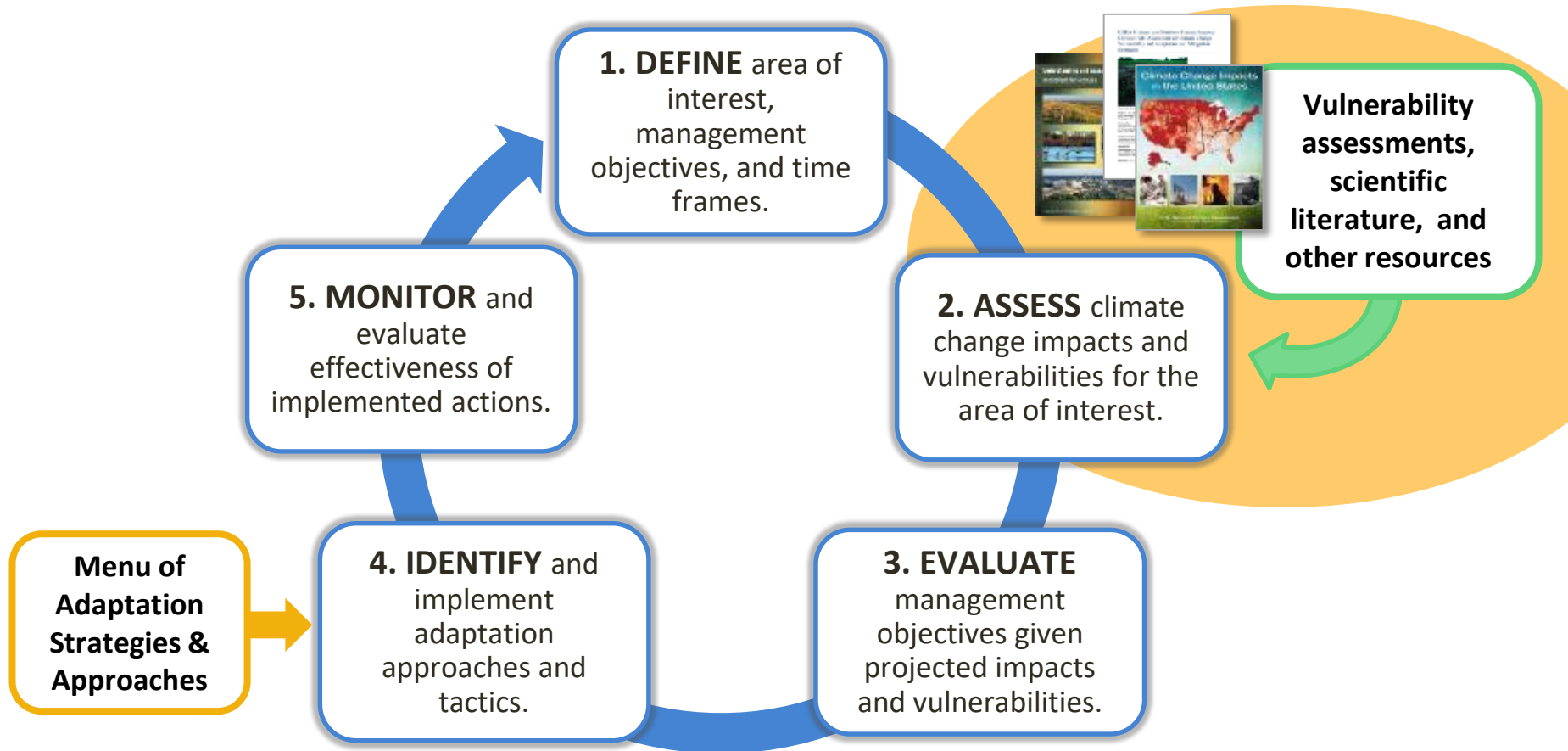


National Absurdity Day

[www.NationalDayCalendar.com](http://www.NationalDayCalendar.com)

November 20

# LAST WEEK – Step 2



## **Step 2: ASSESS site-specific climate change impacts and vulnerabilities.**

### **Key Question:**

- How might the area be uniquely affected by climatic change and subsequent impacts?
- How might regional impacts be different in the project area?

# **Step 2.1: ASSESS** site-specific climate change impacts and vulnerabilities.

## **Regional Climate Impacts**

Based on regional info

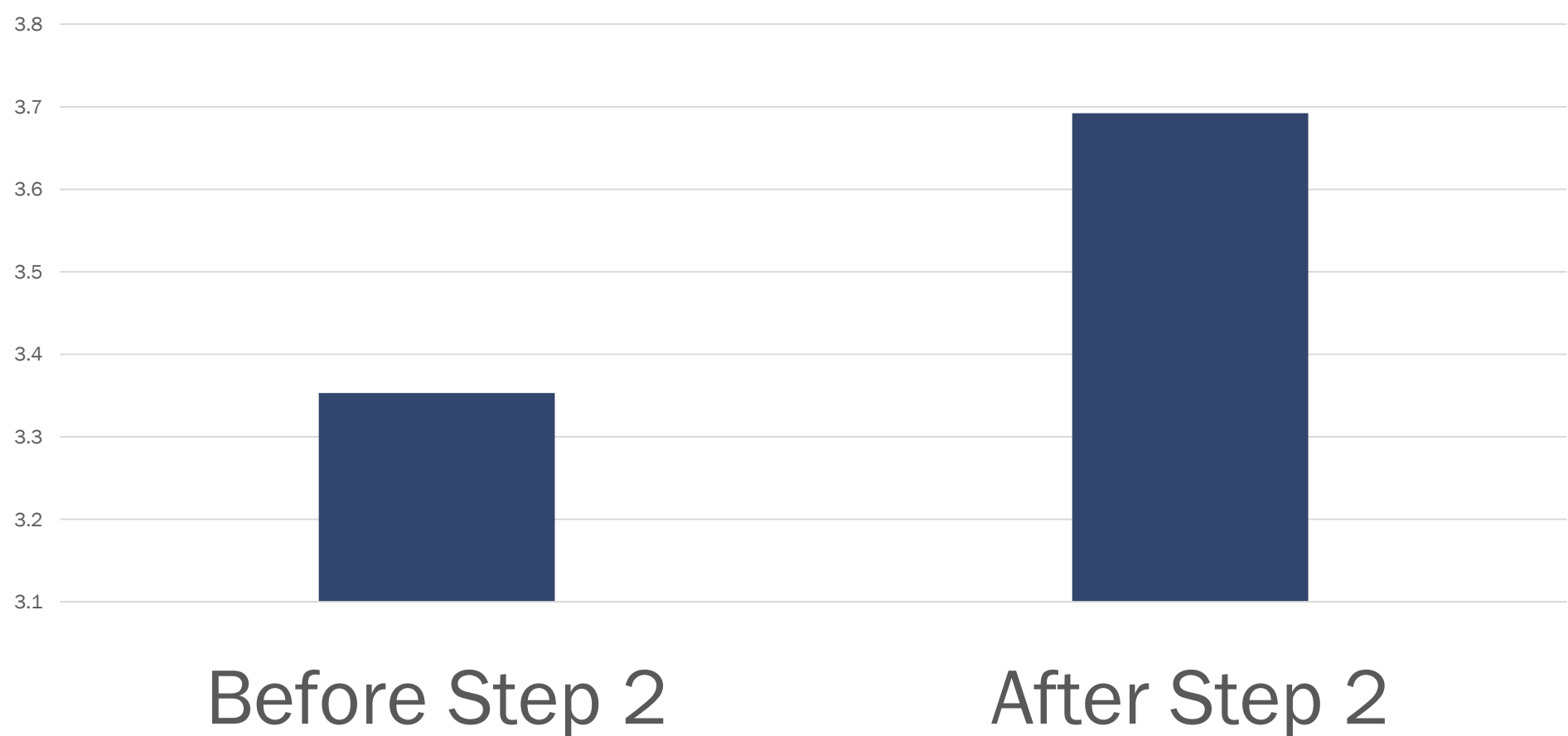


## **Site-specific Impacts**

- Based on your expertise

Climate Change Impacts and Vulnerabilities		
Mgmt. Unit/ Topic	Regional	For the Property or Project Area
	From vulnerability assessments	Based on your knowledge of the site
Upland forest	More extreme precipitation events	Slope and soil on east side of property is vulnerable to flooding/ponding
	Increased potential for summer drought	Hill tops are especially vulnerable to growing season moisture stress

I understand the potential local impacts of climate change on the lands that I manage.

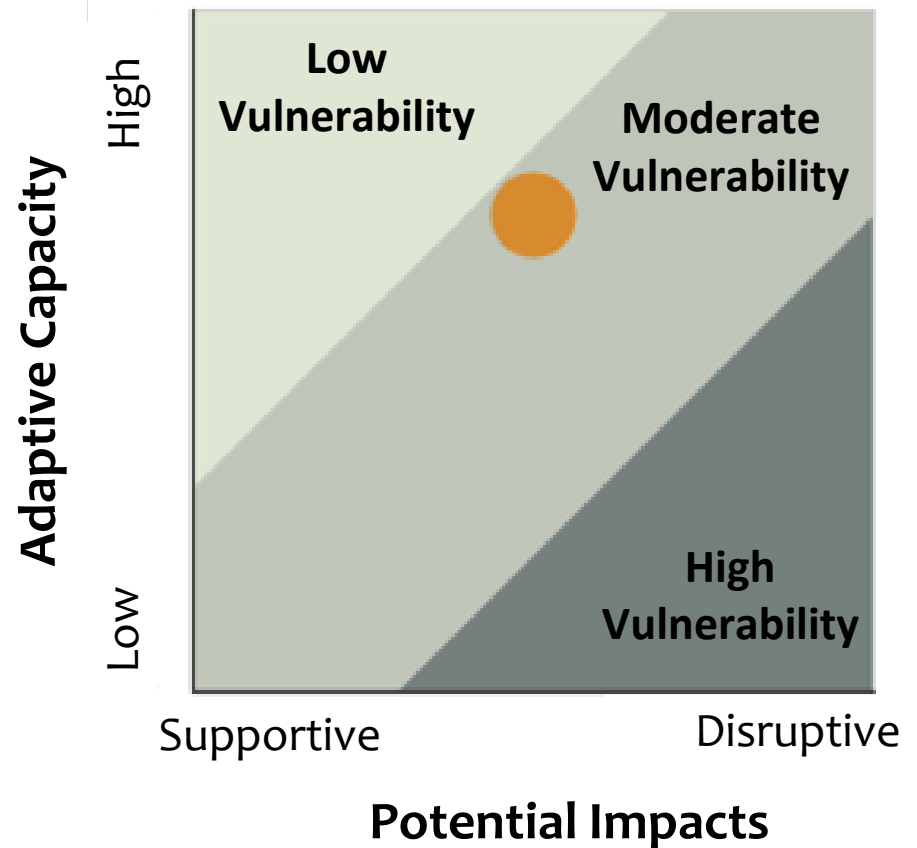


**What additional information would  
have been helpful?**



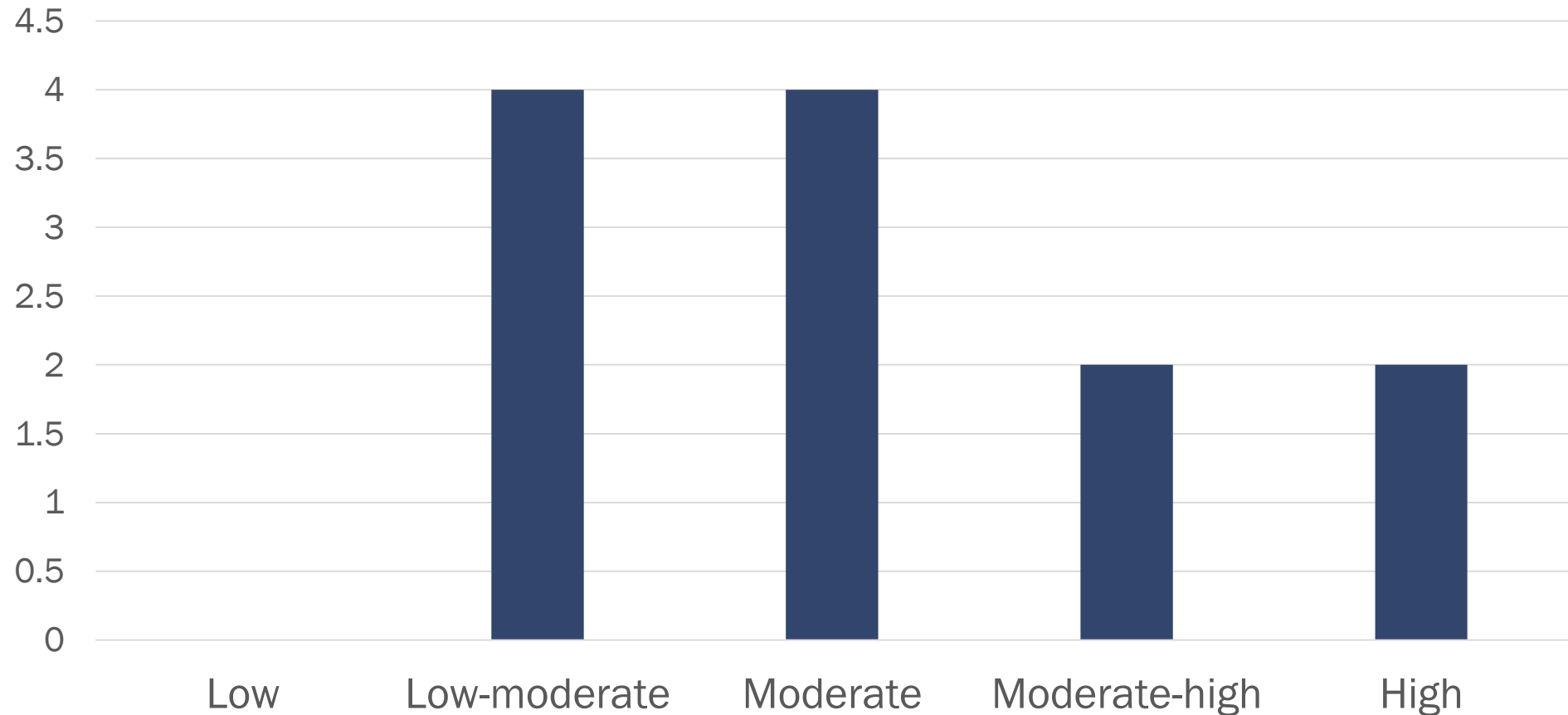
## Step 2.2: Vulnerability determination

- How will potential climate change impacts affect this place?
- How resilient is this place to climate change impacts or disturbance?



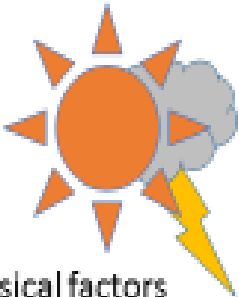
# How Vulnerable Are You?

Number of Projects in Each Category

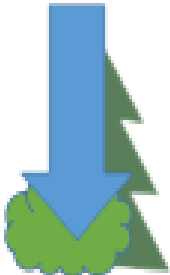


# Vulnerability=Impacts + Adaptive Capacity

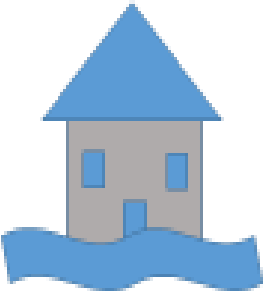
## Impacts



Physical factors



Biological factors



Human Factors

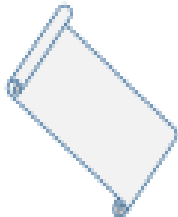
## Adaptive Capacity



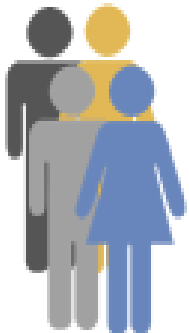
Biological factors



Economic factors



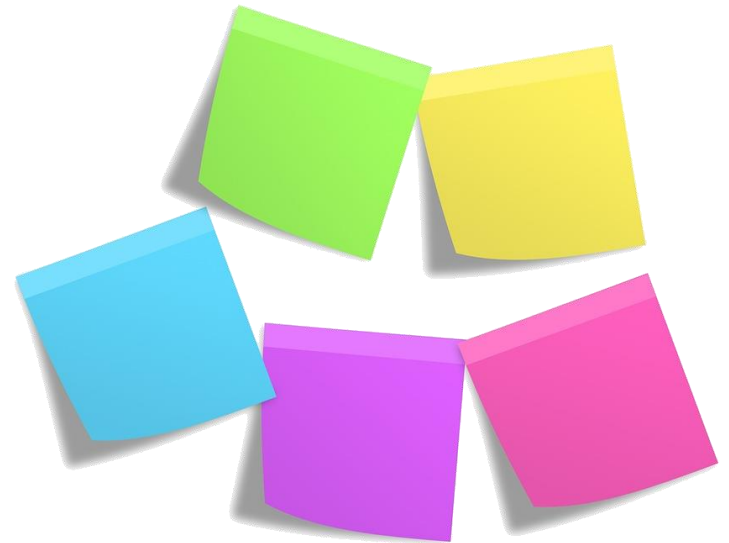
Organizational/technical factors



Social factors

# Impacts Activity

- Time to put on your thinking caps!
- Virtual white board will have post-it notes with the key impacts you mentioned in your homework.
- For each impact, we'll ask you if there were site-level considerations that made those impacts more or less severe



# Post-it Note Activity

<http://note.ly/brandtleslieagmailcom>

## Physical Impacts

Increases in temperature

Lake effect?

Urban heat island

More variable precipitation:  
heavy rain events, droughts

More extreme weather  
events/storms

More severe hurricanes

Sea level rise

More variable snowfall

changes in soil moisture

## Biological Impacts

Changes in species composition

Loss of low-elevation species  
due to flooding

current dominant species  
expected to do poorly

Lack of tree canopy diversity

Loss of nursery stock and  
diversity from 2007/08  
recession

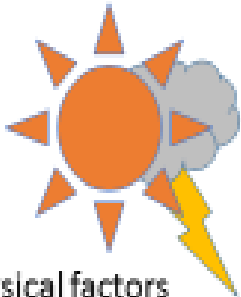
Diverse street tree population

Increased non-native species  
invasion

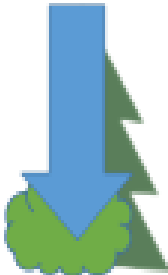
Invasive plant introduction from  
ornamental plantings

# Vulnerability=Impacts + Adaptive Capacity

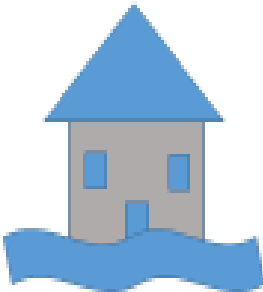
## Impacts



Physical factors



Biological factors



Human Factors

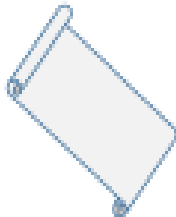
## Adaptive Capacity



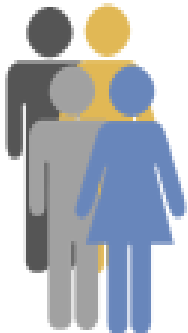
Biological factors



Economic factors



Organizational/technical factors



Social factors

What are some factors you identified that enhanced your adaptive capacity?



Consider: biological, organizational, economic, and social factors!

What are some factors you identified that reduced your adaptive capacity?

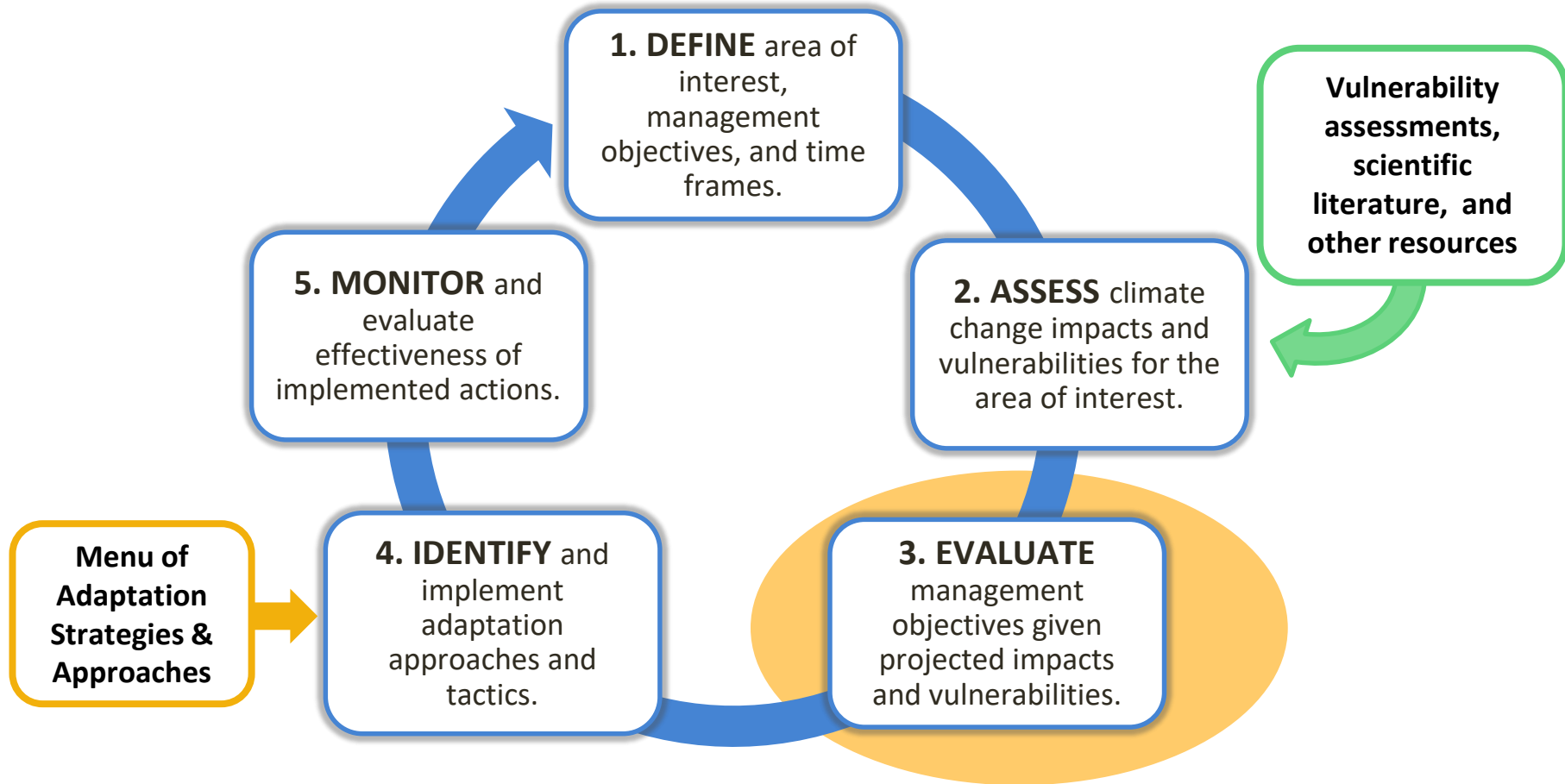


Consider: biological, organizational, economic, and social factors!

# Other Feedback on Step 2?



# Today – Step 3!



## **Step 3: EVALUATE management objectives given projected impacts and vulnerabilities.**

### **Key Question:**

- What management challenges or opportunities might occur?
- Can current management meet management goals?
- Do goals need to change?

# Step 3 Course Materials

- Adaptation Workbook
- My dashboard
- Log out
- Resources ▾
- Chicago project
- Progress Summary
- Step 1
  - Define Management Topics
  - Management Goals and Objectives
  - Homework 1
- Step 2
  - Climate Impacts and Vulnerability
  - Vulnerability Determination
  - Homework 2
- Step 3
  - Evaluate Objectives
  - Homework 3
- Step 4
  - Adaptation Actions
  - Tactic Recommendations
  - Homework 4

## Evaluate Objectives instructions

### Step 3 Course Materials

As you consider how potential climate change impacts will affect your ability to achieve your management goals and objectives, it is possible that some of these may no longer be feasible. Think about the following questions, which will be useful in completing your Homework, and which we will use for our group discussion:

- What are the biggest challenges that you see for meeting your management objectives?
- What are the biggest opportunities?

View Session 3 slides.

If you encounter technical issues with the Workbook or have suggestions for improvements, send us an email using [this link](#).

List different ways climate change impacts and associated vulnerabilities may make it more difficult to achieve your management objective.

Add a Challenge +

#### Opportunities

List different ways climate change benefits or opportunities may make it easier to achieve each management objective.

Add an Opportunity +

#### Feasibility Under Current Management ⓘ

Add useful comments about the feasibility of your objective. For example, explain why the feasibility might be higher in the short-term than the long-term, or higher for one portion of the project than another.

#### Other Considerations ⓘ

List any social, political, financial, or institutional considerations that might be challenges or opportunities for achieving the management objective. You may also note why you would continue pursuing an objective with low feasibility, such as legal requirement or important

« Previous  
Homework 2

Next »  
Homework 3

# Step 3 Explanation

- Adaptation Workbook
- My dashboard
- Log out
- Resources ▾
- Chicago project
- Progress Summary
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- Define Management Topics
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- Step 2
- Climate Impacts and Vulnerability
- Vulnerability Determination
- Homework 2
- Step 3
- Evaluate Objectives >
- Homework 3
- Step 4
- Adaptation Actions
- Tactic Recommendations
- Homework 4

## Step 3: Evaluate management objectives

In this step, you think critically about your management objectives and consider whether climate change might make them harder or easier to achieve. This is a critical step to evaluate whether your management objectives are robust, or whether any might need to be changed.

In this step, you'll identify management challenges and opportunities associated with climate change for each objective you created in Step 1.2. After thinking about the "pros" and "cons" that climate change will present, you will also evaluate the feasibility of meeting your management objectives **under current management**.

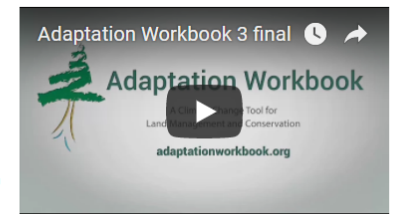
### For example:





Let's say your objective was to plant an additional 10,000 trees per year for the next 10 years. Potential challenges related to climate change might be that some species on your planting list are projected to decline over the next century, and more variable precipitation patterns will increase risk for newly planted saplings. An opportunity might be that milder winters could allow you to add new species to your planting list. You might decide that this objective had moderate feasibility due to reduced sapling survival and lack of sufficient nursery supply of new species and cultivars.

### Thinking ahead...

If you find yourself brainstorming adaptation actions that could address climate-related challenges, jot down those ideas to capture them for the next step. You can also skip ahead to Step 4 momentarily, and your work on this page will be saved.

 Evaluate Objectives Resources



-  A red triangle indicates fields are incomplete
-  An orange triangle indicates fields are partially complete
-  Hover to learn more about a particular item
-  Expand/collapse a section

Feasibility Under Current Management ⓘ

Add useful comments about the feasibility of your objective. For example, explain why the feasibility might be higher in the short-term than the long-term, or higher for one portion of the project than another.

Other Considerations ⓘ

List any social, political, financial, or institutional considerations that might be challenges or opportunities for achieving the management objective. You may also note why you would continue pursuing an objective with low feasibility, such as legal requirement or important

« Previous Homework 2      Next » Homework 3

# Expandable Impacts List

**Adaptation Workbook**

- My dashboard
- Log out
- Resources ▾
- Chicago project
- Progress Summary
- Step 1
  - Define Management Topics
  - Management Goals and Objectives
  - Homework 1
- Step 2
  - Climate Impacts and Vulnerability
  - Vulnerability Determination
  - Homework 2
- Step 3
  - Evaluate Objectives
  - Homework 3
- Step 4
  - Adaptation Actions
  - Tactic Recommendations
  - Homework 4

**Evaluate Objectives instructions**

**Step 3 Course Materials**

Evaluate Objectives ⓘ

- Park Objectives**  
1 of 1 objectives evaluated
- riparian buffer Objectives**  
0 of 0 objectives evaluated

« Previous Homework 2      Next » Homework 3

**Review Potential Regional Climate Impacts ⓘ**

Mean annual temperature in the Chicago area is projected to increase by 2.5 to 4.5 degrees Fahrenheit over the 21st century. Precipitation in the Chicago area is projected to increase in winter and spring over 21st century, but projections for summer are less clear. Heavy precipitation events in the Chicago area have been increasing and are projected to continue to increase further, which could increase runoff and local flooding from stormwater. Extreme and exceptional droughts in the Chicago area may increase in duration, frequency, and spatial extent compared to the end of the 20th century. Increases in temperature may lead to an increase of 1-2 hardiness zones and 2-4 heat zones in the Chicago area. Species distribution modeling for native species suggests that suitable habitat may decrease for 15 primarily northern species and increase or become newly suitable for 47 species in the Chicago area. For species for which no model information is available (rare, nonnative, or cultivars), shifts in heat and hardiness zones could have a positive effect on about 23 percent of species that are either present in the Chicago area or considered for planting. Adaptive capacity of 179 species in the Chicago area was evaluated using scoring systems for planted and natural environments, with invasive species among those with the highest capacity to adapt to a range of stressors. An analysis of vulnerability that combines model projections, shifts in heat and hardiness zones, and adaptive capacity showed that 15 percent of the trees currently present in the Chicago region have either moderate-high or high vulnerability to climate. Many invasive species, insect pests, and pathogens will increase or become more damaging in the Chicago area by the end of the century. The urban heat island effect can exacerbate the effects of increasing temperatures. Impervious cover can exacerbate the effects of increased heavy precipitation events in urban areas.

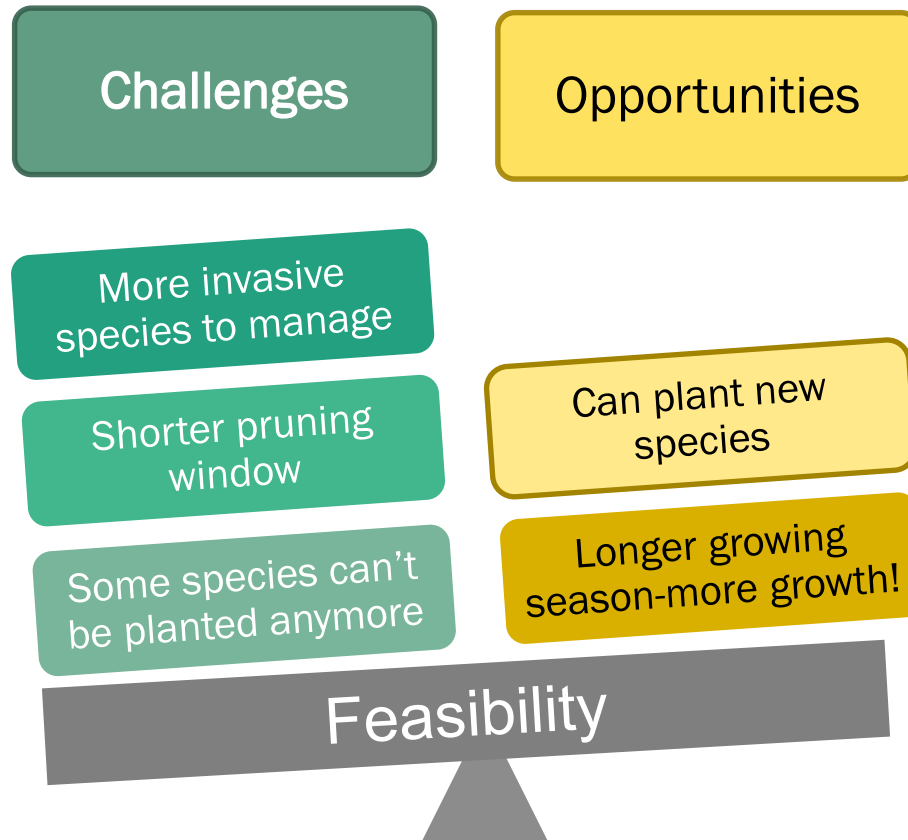
**Goal #1: Increase species diversity**  
**Objective: Have no more than 20 percent of a family, 10 percent of a genus and 5 percent of a species**

Some evaluation details supplied

**Challenges**

- Some more northern species may no longer be able to survive, reducing possible species for planting.
- Diseases such as oak wilt and bur oak blight may become more severe, leading to more mortality of existing species.

# Step 3



## **Step 3: EVALUATE management objectives given projected impacts and vulnerabilities.**

### **Challenges to Meeting Management Objective with Climate Change**

– Things that will make it harder to achieve the management objective due to climate change.

\*\*Focus on challenges within control of your management (not global markets, policies, etc.)

# Examples of challenges

Objective	Challenge from Climate Change
Restore hydrology through grading and installation of berm	Extreme events may inundate beyond project specifications and erode water control features
Plant 1000 trees per year	Reduced survival of planted trees from summer drought
Reduce invasive species cover by 20%	New invasive species may be arriving with milder winters
Promptly remove hazard trees	Increased storm events may increase the number of trees needed to be removed

# Challenges

Adaptation Workbook

- My dashboard
- Log out
- Resources ▾
- Chicago project
- Progress Summary
- Step 1
- Define Management Topics
- Management Goals and Objectives
- Homework 1
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- Step 4
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- Tactic Recommendations
- Homework 4

Evaluate Objectives instructions

Step 3 Course Materials

Evaluate Objectives

- Park Objectives  
1 of 1 objectives evaluated
- riparian buffer Objectives  
0 of 0 objectives evaluated

Review Potential Regional Climate Impacts

Goal #1: Increase species diversity  
Objective: Have no more than 20 percent of a family, 10 percent of a genus and 5 percent of a species

Some evaluation details supplied

Challenges

- Some more northern species may no longer be able to survive, reducing possible species for planting.
- Diseases such as oak wilt and bur oak blight may become more severe, leading to more mortality of existing species.
- List different ways climate change impacts and associated vulnerabilities may make it more difficult to achieve your management objective.

Opportunities

- List different ways climate change benefits or opportunities may help achieve your management objective.

Feasibility Under Current Management

Add useful comments about the feasibility of your objective. For example, explain why the feasibility might be higher in the short-term than the long-term, or higher for one portion of the project than another.

« Previous  
Homework 2

Next »  
Homework 3

Add a Challenge

Add an Opportunity

List different ways climate impacts may make it more difficult to achieve your management goals and objectives

Add another challenge

## **Step 3: EVALUATE management objectives given projected impacts and vulnerabilities.**

### **Opportunities to Meeting Management Objective with Climate Change**

– Things that will make it easier to achieve the management objective due to climate change.

\*\*Focus on opportunities within control of your management (not global markets, policies, etc.)

# Examples of Opportunities

Objective	Challenge from Climate Change	Opportunity from Climate Change
Restore hydrology through grading and installation of berm	Extreme events may inundate beyond project specifications and erode water control features	Soil rehabilitation will increase infiltration & storage, reducing the risks of runoff and erosion during severe rain or snowmelt
Plant 1000 trees per year	Reduced survival of planted trees from summer drought	Longer planting window.
Reduce invasive species cover by 20%	New invasive species may be arriving with milder winters	Some invasive plants may be negatively affected by climate change
Promptly remove hazard trees	Increased summer storm events may increase the number of trees needed to be removed	Fewer ice storm events are projected to occur in the area, reducing damage in winter.

# Opportunities

The screenshot shows a web application interface for 'Adaptation Workbook'. On the left is a dark sidebar with navigation options: 'My dashboard', 'Log out', 'Resources', 'Chicago project', 'Progress Summary', 'Step 1', 'Define Management Topics', 'Management Goals and Objectives', 'Homework 1', 'Step 2', 'Climate Impacts and Vulnerability', 'Vulnerability Determination', 'Homework 2', 'Step 3', 'Evaluate Objectives' (highlighted with an orange arrow), 'Homework 3', 'Step 4', 'Adaptation Actions', 'Tactic Recommendations', and 'Homework 4'. The main content area is titled 'Step 3 Course Materials' and 'Evaluate Objectives'. It features a table of objectives: 'Park Objectives' (1 of 2 evaluated) and 'riparian buffer Objectives' (0 of 0 evaluated). A large orange arrow points from the 'riparian buffer Objectives' row to the 'Opportunities' section. The 'Opportunities' section contains a text input field with the text 'New species could potentially be planted.' and an 'Add an Opportunity' button. Below this is a 'Feasibility Under Current Management' section with a dropdown menu and a text area containing the instruction 'Add useful comments... For example, explain why the feasibility might be higher in the short-term than the long-term, or higher for one portion of the project than another.' Another orange arrow points from a box labeled 'Add another opportunity' to the 'Add an Opportunity' button. Below that is an 'Other Considerations' section with a text area. The 'Goal #2: Increase species diversity' section shows the objective 'Increase the percent of species that are native.' and a warning 'No evaluation details supplied'. The 'Challenges' section has a text area with the instruction 'List different ways climate change impacts and associated vulnerabilities may make it more difficult to achieve your management objective.' and an 'Add a Challenge' button. At the bottom, there are 'Previous' and 'Next' navigation buttons.

Adaptation Workbook

Step 3 Course Materials

Evaluate Objectives

Park Objectives  
1 of 2 objectives evaluated

riparian buffer Objectives  
0 of 0 objectives evaluated

Opportunities

New species could potentially be planted.

Feasibility Under Current Management

Other Considerations

Goal #2: Increase species diversity  
Objective: Increase the percent of species that are native.

Challenges

Opportunities

« Previous  
Homework 2

Next »  
Homework 3

Add another opportunity

Add a Challenge

Add an Opportunity

Add a Challenge

## Step 3: EVALUATE management objectives given projected impacts and vulnerabilities.

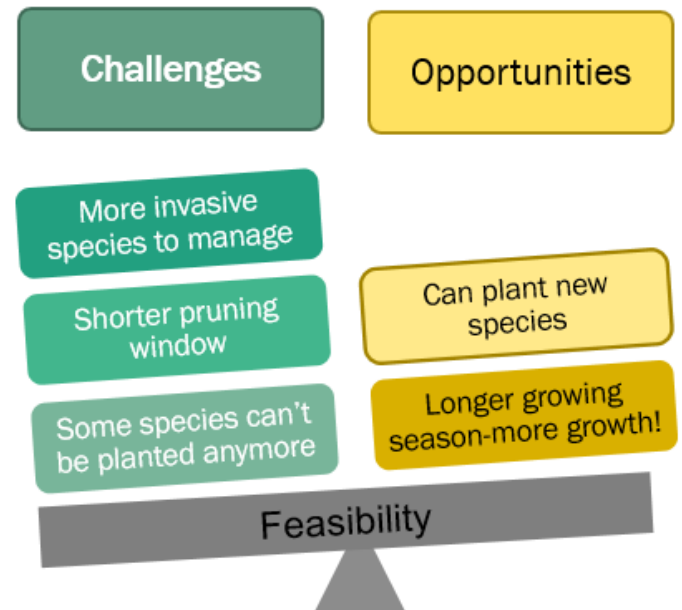
**Feasibility** – Can you meet your management objectives using current (business-as-usual) management actions?

**High:** We can do it!

Opportunities > Challenges

**Low:** We'll need more resources or effort.

Challenges > Opportunities



# Feasibility

- Adaptation Workbook
  - My dashboard
  - Log out
  - Resources
    - Chicago project
  - Progress Summary
    - Step 1
      - Define Management Topics
      - Management Goals and Objectives
      - Homework 1
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      - Vulnerability Determination
      - Homework 2
    - Step 3
      - Evaluate Objectives
      - Homework 3
    - Step 4
      - Adaptation Actions
      - Tactic Recommendations
      - Homework 4

Evaluate Objectives instructions

Step 3 Course Materials

### Evaluate Objectives

**Park Objectives**  
1 of 2 objectives evaluated

**riparian buffer Objectives**  
0 of 0 objectives evaluated

**Rank:**  
Low  
Medium  
High

Opportunities

New species could potentially be planted.

Add a Challenge

Add an Opportunity

Feasibility Under Current Management

Low  
Medium  
High

Add useful comments about the feasibility of your objective. For example, explain why the feasibility might be higher in the short-term than the long-term, or higher for one portion of the project than another.

List any social, political, financial, or institutional considerations that might be challenges or opportunities for achieving the management objective. You may also note why you would continue pursuing an objective with low feasibility, such as legal requirement or important

Goal #2: Increase species diversity  
Objective: Increase the percent of species that are native.

No evaluation details supplied

Challenges

List different ways climate change impacts and associated vulnerabilities may make it more difficult to achieve your management objective.

Add a Challenge

Opportunities

« Previous  
Homework 2

Next »  
Homework 3

**Step 3: EVALUATE management objectives given projected impacts and vulnerabilities.**

## **Other Considerations**

– Social, financial, or other factors that also affect your ability to meet objectives.

# Other considerations

Objective	Challenge from Climate Change	Opportunity from Climate Change	Feasibility	Other considerations
Restore hydrology through grading and installation of berm	Extreme events may inundate beyond project specifications and erode water control features	Soil rehabilitation will increase infiltration & storage, reducing the risks of runoff and erosion during severe rain or snowmelt	Medium	Archaeological features present.
Plant 1000 trees per year	Reduced survival of planted trees from summer drought	Longer planting window.	Medium	Have a grant to do this work.
Reduce invasive species cover by 20%	New invasive species may be arriving with milder winters	Some invasive plants may be negatively affected by climate change	Low	Nursery trade still sells invasive plants
Promptly remove hazard trees	Increased summer storm events may increase the number of trees needed to be removed	Fewer ice storm events are projected to occur in the area, reducing damage in winter.	Medium	Legally required to do this.

# Other Considerations

The screenshot shows a web application interface for evaluating objectives. On the left is a dark sidebar with navigation options: Adaptation Workbook, My dashboard, Log out, Resources, Chicago project, Progress Summary, Step 1 (Define Management Topics, Management Goals and Objectives, Homework 1), Step 2 (Climate Impacts and Vulnerability, Vulnerability Determination, Homework 2), Step 3 (Evaluate Objectives - highlighted with an orange arrow), Homework 3, Step 4 (Adaptation Actions, Tactic Recommendations), and Homework 4. The main content area is titled 'Evaluate Objectives instructions' and 'Step 3 Course Materials'. It features a table of objectives:

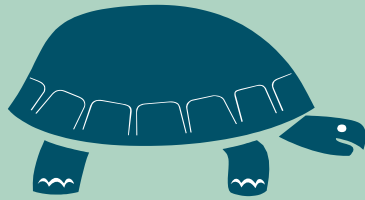
Objective Category	Progress	Status
Park Objectives	1 of 2 objectives evaluated	Warning (yellow triangle)
riparian buffer Objectives	0 of 0 objectives evaluated	Error (red triangle)

Below the table, the 'Evaluate Objectives' section is divided into several input areas:

- Challenges:** Two text boxes containing text about northern species survival and diseases like oak wilt. Each has a close button (X) and a copy icon.
- Opportunities:** One text box containing 'New species could potentially be planted.' with a close button and a copy icon.
- Feasibility Under Current Management:** A dropdown menu set to 'Medium' and a text box with text about short-term species loss and long-term potential.
- Other Considerations:** A text box containing 'Current policies limit the planting of more than two species on a city block. Budgets limit the number of trees that can be planted.'
- Goal #2: Increase species diversity**  
Objective: Increase the percent of species that are native.
- A warning message: 'No evaluation details supplied'.

At the bottom, there are navigation links: '« Previous Homework 2' and 'Next Homework 3 »'. A callout box with the text 'Add Other Considerations' and two large orange arrows points to the 'Other Considerations' text box.

**Step 3: EVALUATE** management objectives given projected impacts and vulnerabilities.



**Slow down!**

*Are you going to continue  
with these management  
objectives?*

# Reconsider objectives



## Slow Down to Consider...

### Are you going to continue with the management objectives you have identified?

If you have [high feasibility](#) of meeting your management objectives and these objectives seem like they'll hold up under projected climate change impacts, proceed to Step 4.

If some or all of your management objectives have [low feasibility](#), or if they no longer seem sensible under climate change (e.g., managing a species that is very likely to experience a severe decline), you may want to reconsider your management objectives or your broader goals.

- If you'd like to create new goals or objectives, use the information you've gathered up to this point to create goals and objectives that are more likely to succeed across a range of climate change scenarios.
- If you're still going to continue with objectives that have low feasibility, you might want to provide a short explanation of your decision.
- [You can make all these notes in the "Feasibility" section of Step 3.](#)

Don't show this again.

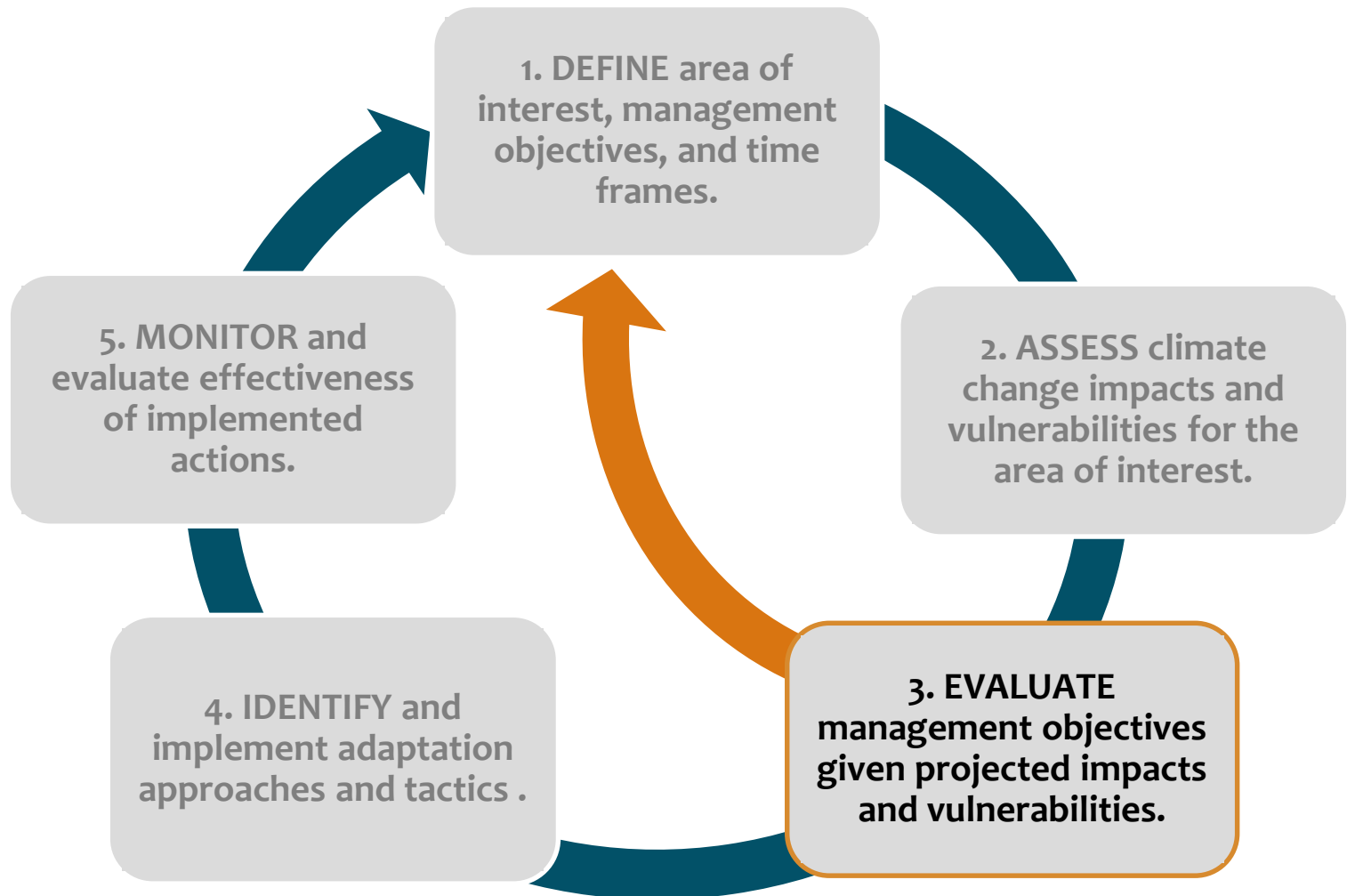
Continue working on this step

Move on!

« Previous  
Homework 2

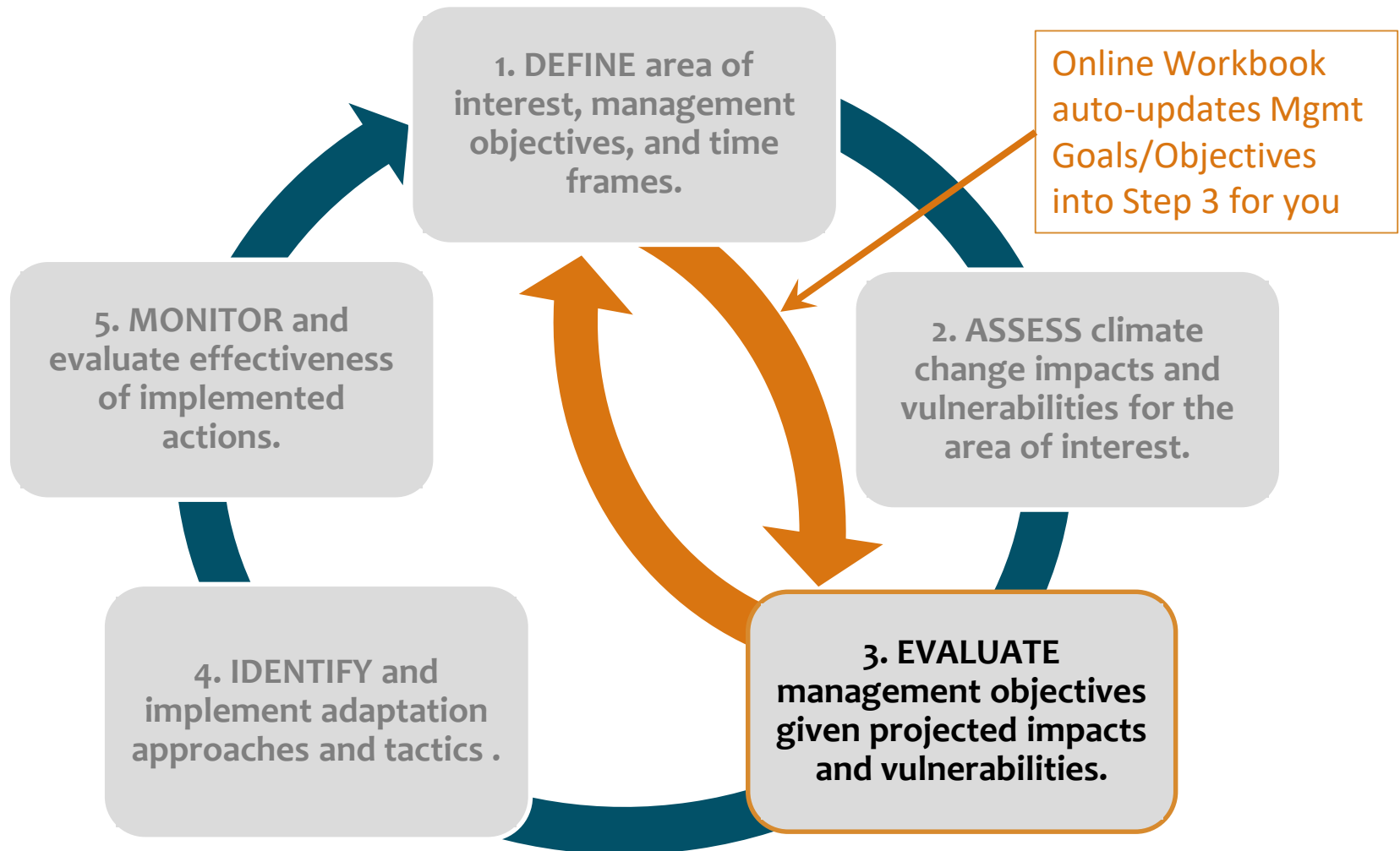
Next »  
Homework 3

# Workbook Cycle: Step 3



*... or, RE-EVALUATE*

# Workbook Cycle: Step 3



# Original Objective in Step 1

The screenshot displays a web-based interface for an 'Adaptation Workbook'. On the left is a dark sidebar with navigation options: 'My dashboard', 'Log out', 'Resources', 'Chicago project', 'Progress Summary', 'Step 1', 'Define Management Topics', 'Management Goals and Objectives', 'Homework 1', 'Step 2', 'Climate Impacts and Vulnerability', 'Vulnerability Determination', 'Homework 2', 'Step 3', 'Evaluate Objectives', 'Homework 3', 'Step 4', 'Adaptation Actions', 'Tactic Recommendations', and 'Homework 4'. The main content area is titled 'Management Goals and Objectives instructions' and 'Step 1 Course Materials'. It features a tree view on the left with categories: 'General Goals for the entire property or project area' (2 Goals), 'Park Goals and Objectives' (2 Goals | 2 Objectives), and 'riparian buffer Goals and Objectives' (2 Goals | 0 Objectives). The right pane shows 'Goal #1' with the objective 'Increase species diversity'. Below this, a text box contains the objective: 'Have no more than 20 percent of a family, 10 percent of a genus and 5 percent of a species', with a dropdown menu set to '15 years'. At the bottom left of the interface, there are navigation buttons: '<< Previous' and 'Define Management Topics'. The Windows taskbar is visible at the bottom of the screen.

Example:

**Objective: Increase the % cover of native species**

**Step 3 discovered:**

**Low feasibility given the number of species expected to decline**

**It's time to rethink objectives to enhance feasibility given climate change –**

**\*Do this before moving on to adaptation actions\***

# Modified Objective

**NOTE: Modifying objectives is different from adaptation strategies!**

Adaptation Workbook

My dashboard

Log out

Resources

Chicago project

Progress Summary

Step 1

Define Management Topics

Management Goals and Objectives

Homework 1

Step 2

Climate Impacts and Vulnerability

Vulnerability Determination

Homework 2

Step 3

Evaluate Objectives

Homework 3

Step 4

Adaptation Actions

Tactic Recommendations

Homework 4

Management Goals and Objectives instructions

Step 1 Course Materials

Management Goals and Objectives

General Goals for the entire property or project area  
2 Goals

Park Goals and Objectives  
2 Goals | 2 Objectives

riparian buffer Goals and Objectives  
2 Goals | 0 Objectives

Goal #1

Increase species diversity

Objective

Have no more than 20 percent of a family, 10 percent of a genus and 5 percent of a species

15 years

Objective

Increase the percent of species that are native or expected to gain habitat in the area

Time Frame

Add Objective for this Goal

Goal #2

Increase canopy diversity

Add Objective for this Goal

Add Another Goal/Objective Set

« Previous  
Define Management Topics

**Go back to Step 1**

**Edit objective**

Example:  
*Edit Objective: Increase the % cover of native species*  
**New Objective: Increase the % of species that are native or expected to gain habitat in the area**  
^ This obj. has a higher feasibility of meeting goals given climate change

# Automatically updates Step 3

The screenshot displays a software interface for an adaptation workbook. On the left is a dark sidebar with a navigation menu. The main content area is titled 'Evaluate Objectives instructions' and 'Step 3 Course Materials'. It contains a form for 'Evaluate Objectives' with sections for 'Park Objectives', 'Goal #2: Increase species diversity', 'Challenges', 'Opportunities', 'Feasibility Under Current Management', and 'Other Considerations'. The 'Feasibility Under Current Management' section has a dropdown menu set to 'Medium' and a text input field containing 'grd'. The 'Other Considerations' section has a text input field containing 'grf'. At the bottom of the main area are 'Previous' and 'Next' navigation buttons. Two orange callout boxes with arrows highlight specific features: one points to the 'Evaluate Objectives' menu item in the sidebar, and the other points to the 'Next' button.

Adaptation Workbook

- My dashboard
- Log out
- Resources ▾
- Chicago project
- Progress Summary
- Step 1
- Define Management Topics
- Management Goals and Objectives
- Homework 1
- Step 2
- Climate Impacts and Vulnerability
- Vulnerability Determination
- Homework 2
- Step 3**
- Evaluate Objectives
- Homework 3
- Step 4
- Adaptation Actions
- Tactic Recommendations
- Homework 4

Evaluate Objectives instructions

Step 3 Course Materials

Evaluate Objectives

Park Objectives

Goal #2: Increase species diversity

Objective: Increase the percent of species that are native or expected to gain habitat in the area.

All evaluation details supplied

Challenges

et

Add a Challenge

Opportunities

gr

Add an Opportunity

Feasibility Under Current Management

Medium

grd

Other Considerations

grf

« Previous  
Homework 2

Next »  
Homework 3

**Updates to Step 3:  
New Objectives**

**back in Step 3**

# Key Points on Step 3

- **Challenges and Opportunities** should relate to CLIMATE CHANGE.
- **Other considerations section** is for things not related to climate change (policy, budget, public engagement)
- May seem redundant with Step 2 at times
  - Step 2 focuses on the impacts to the SITE and Step 3 focuses on impacts to OBJECTIVES and overall feasibility given changing conditions
- You may be tempted to list adaptation strategies in this step. **Save your ideas for the next step!**

# Homework

- Adaptation Workbook
- My dashboard
- Log out
- Resources ▾
- Chicago project
- Progress Summary
- Step 1
  - Define Management Topics
  - Management Goals and Objectives
  - Homework 1
- Step 2
  - Climate Impacts and Vulnerability
  - Vulnerability Determination
- Homework 2
- Step 3
  - Evaluate Objectives
- Homework 3 >
- Step 4
  - Adaptation Actions
  - Tactic Recommendations
- Homework 4

## Homework 3

**What are the most challenging climate impacts/vulnerabilities that could affect your management goals and objectives for your forest or project area?**

What are the most challenging climate impacts/vulnerabilities that could affect your management goals and objectives for your forest or project area?

**Are there any climate impacts that present opportunities for meeting your management goals and objectives?**

Are there any climate impacts that present opportunities for meeting your management goals and objectives?

**Weighing Feasibility: rate how strongly you agree/disagree with the following self-assessments.**

	Disagree				Agree
I can explain how climate change may affect my ability to meet management goals and objectives.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've determined that my project goals and objectives as articulated in Week 1 of the course are still feasible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel comfortable articulating management challenges and opportunities related to climate change to my peers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Were there any components of your management goals and objectives that were deemed unfeasible under projected climate changes and impacts? Did you return to Step 1 to refine or alter them? Why?**

Were there any components of your management goals and objectives that were deemed unfeasible under projected climate changes and impacts? Did you return to Step 1 to refine or alter them? Why?

[« Previous](#)  
Evaluate Objectives

[Next »](#)  
Adaptation Actions

# To-do list:

- **Finish any hanging items from Step 2**
- **Complete Step 3**: Evaluate management objectives
- **Complete the Homework** section following Step 3
- **Come to Session 4** (November 27) ready to talk about your management challenges and opportunities

# Recommended Reading

General trends/benefits of urban forests (by David Nowak)

- [https://www.fs.fed.us/nrs/pubs/gtr/gtr\\_nrs151-chapters/gtr-nrs-151-chapter-10.pdf](https://www.fs.fed.us/nrs/pubs/gtr/gtr_nrs151-chapters/gtr-nrs-151-chapter-10.pdf)
- [https://www.fs.fed.us/nrs/pubs/jrnl/2016/nrs\\_2016\\_nowak\\_002.pdf](https://www.fs.fed.us/nrs/pubs/jrnl/2016/nrs_2016_nowak_002.pdf)

Role of urban forests in carbon sequestration

- Nowak et al. 2013 : <https://www.fs.usda.gov/treesearch/pubs/46254>

Webinar and resources on urban trees and stormwater

- <https://www.fs.fed.us/research/urban-webinars/integrating-trees>

# Connecting with Your Classmates on SLACK

**urbanwaterfapp.slack.com**

The screenshot shows a Slack interface for a channel named "Urban Forested ...". The channel is "#general" and is described as "Company-wide announcements and work-ba". The channel has 10 members and 0 bots. The interface shows a list of channels on the left, including "#general" and "#random", and a list of direct messages. The main content area shows a message from Leslie Brandt (course instructor) at 10:36 AM: "Welcome to slack! We are looking forward to class tomorrow. We will have two break out groups to introduce your projects to the rest of the group. This is meant to be very informal! Let us know if you have any last minute questions." This is followed by a message from David Lein at 1:13 PM: "joined #general along with 3 others." The interface also shows a date separator for "Monday, November 12th" and "Tuesday, November 13th". On Tuesday, November 13th, Leslie Brandt (course instructor) at 12:43 PM says: "Thanks for joining class today. If anyone needs specific help on assessing vulnerability of their project area, please let us know. Tree-related questions can go to Leslie and water-related questions to Danielle." Leslie Brandt (course instructor) at 1:55 PM says: "If you are interested in exploring more of the social vulnerability of your area, you can use this tool: <https://svi.cdc.gov/map.html> If you zoom in to your county, you can zoom further to specific census tracts. These are only assessing vulnerability based on census data, so they don't really look specifically at your urban forest, but if you are in an area with lower adaptive capacity overall, then you typically also have lower adaptive capacity of your urban forest and vice versa." The interface also shows a search bar, a "Jump to..." dropdown, and a "new messages" indicator.

# Looking Ahead

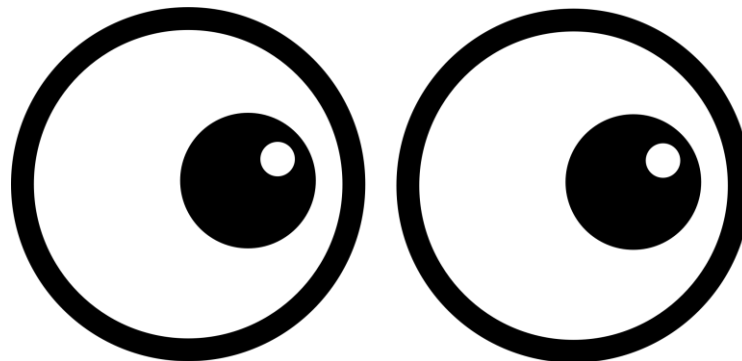
**Session 4** (November 27) will cover Adaptation Strategies!

**If you want to read ahead:**

Millar et al. 2007:

[https://www.fs.fed.us/psw/publications/millar/psw\\_2007\\_millar029.pdf](https://www.fs.fed.us/psw/publications/millar/psw_2007_millar029.pdf)

Urban Forestry Adaptation Strategies and Approaches (Chapter 4) in *Forest Adaptation Resources*



# Questions?

