

# ONLINE TRAINING

# ADAPTATION PLANNING AND PRACTICES for Wildlife Management

Welcome to the course!  
Here's what you need to know...

We're excited that you signed up for the online Adaptation Planning and Practices for Wildlife Management course!

We look forward to helping you integrate climate change considerations into your real-world management project.

Through this course, you will be able to:

- Identify local climate change impacts, challenges, and opportunities
- Develop specific actions to help wildlife adapt to changing conditions
- Use the Adaptation Workbook to create your own "climate-informed" projects
- Better communicate with stakeholders about key climate change impacts, challenges, and opportunities
- Access post-training support from NIACS staff during project planning and implementation



NIACS  
Northern Institute of  
Applied Climate Science

## DETAILS

### DATES & FORMAT

February 28 – April 20, 2022

- Weekly interactive lectures on Mondays at 2pm Eastern, describing resources and Adaptation Workbook steps (1 hour each).
- Four discussion sessions on Tuesdays and Wednesdays, focused on participant projects and questions (1 hour each).
- Independent work time (2-4 hrs per week) between sessions to complete the steps of the Adaptation Workbook.

### COURSE WEBSITE

[www.forestadaptation.org/wildlife-course-2022](http://www.forestadaptation.org/wildlife-course-2022)

### ZOOM LINK (All Sessions)

<https://michigantech.zoom.us/j/83509801414?pwd=NkN2SWtrT3MyTFB4Ujk3dWtzT2NFdz09>

### QUESTIONS?

Stephen Handler ([stephen.handler@usda.gov](mailto:stephen.handler@usda.gov)) or Patricia Leopold ([pleopold@mtu.edu](mailto:pleopold@mtu.edu))

*This training is provided by these partners:*



United States Department of Agriculture  
Climate Hubs



## Syllabus Contents

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# Course Format, Time Commitment, and Schedule

## Course Format

This course follows a five-step process to develop climate change adaptation projects using the online Adaptation Workbook ([www.adaptationworkbook.org](http://www.adaptationworkbook.org)). The course consists of lectures (live or recorded), discussion (live), and homework (on your own). The lectures and discussion sessions provide an introduction and review of each step, and the independent work time is when participants will complete each step of the Adaptation Workbook.

**We will host a weekly lecture (1 hour) that covers each step of the Adaptation Workbook.** We encourage you to attend the live presentation, but sessions will be also recorded and posted online on our [NIACS YouTube page](#). Lectures are on Mondays from 2:00-3:00 Eastern. There will be seven required weekly lectures. The week of March 21 will be a break, with no scheduled lecture. We have tentatively scheduled two optional bonus lectures (described below), which offer an opportunity to take a deeper dive into climate change impacts and wildlife adaptation concepts.

**We will host four discussion sessions (1 hour) for live attendance.** Participants will split up based on schedule preferences and project themes to review your progress and discuss key aspects of developing your adaptation projects. Participation in these four discussions is required. Plan to attend your group session on Tuesday or Wednesday at specified times. We will email your session assignment and send calendar invitations.

- Discussion session 1 (week of February 28) – Introduce project to small group.
- Discussion session 2 (week of March 14) – Discuss project (recapping Step 2 and Step 3).
- Discussion session 3 (week of April 11) – Discuss project (recapping Step 4 and Step 5).
- Discussion session 4 (week of April 18) – Share completed project.

We will also offer two **bonus** lectures to do a deeper dive on two topics. These sessions will be a mix of presentation and discussion.

- **Tuesday March 8, 2022** at 11:00-12:00 Eastern: “Climate change impacts on wildlife.” This webinar will provide an overview of the variety of ways that climate change can affect wildlife, including effects to habitat (food, water, and cover), phenology, reproductive success, human conflict, diseases, and more.
- **Tuesday March 29, 2022** at 11:00-12:00 Eastern: “Climate change adaptation concepts.” This webinar will provide an overview of the Wildlife Adaptation Menu, covering the variety of ways managers can help wildlife cope with climate change.

## Time Commitment

To get the most out of this course, we expect you to fully participate. ***All participants are expected to attend the weekly lectures and four discussion break-out group class sessions, which consists of 1 hour of instruction each week.***

We realize that things come up from time to time, and most folks are experiencing a new routine with COVID-19. If you need to miss a session, please let us know ahead of time. If you anticipate needing to miss more than two sessions, you may want to defer participation for another time. To provide participant flexibility, all lectures will be recorded and posted to YouTube, and presentation slides will be made available after each lecture.

In addition to class time, **there will be 2-4 hours of homework each week**. This is our general estimate of the amount of time needed to thoughtfully develop a climate adaptation plan, this estimate also includes the time needed to complete additional reading assignments. The amount of time you spend on homework depends on the complexity of your project and the level of detail you want to put into your adaptation plan.

## Course Schedule

### Course Preparation — Complete by February 23

1. To make sure you are ready to dive into the course during our first session, we would like you to **set up an account at [www.adaptationworkbook.org](http://www.adaptationworkbook.org) by February 23**. Instructions for creating a project and linking it to the course are located on page 10 in this syllabus.
  - **For group projects**, a single account should be shared among multiple users for group projects because it is not possible for multiple users to share a single project.
2. **Attend the pre-workshop webinar** (or watch the webinar recording). This webinar will describe the Adaptation Workbook and provide recommendations for crafting effective goals and objectives for Step 1 of the process.

Webinar logistics:

- **Date:** Friday February 18, 2022
- **Time:** 2pm Eastern
- **Zoom link:** <https://michigantech.zoom.us/j/83509801414?pwd=NkN2SWtrT3MyTFB4Ujk3dWtzT2NFdz09>

### Session 1 — week of February 28

#### Lecture Topics:

- Icebreaker and introductions.
- Course objectives, instructors, and agenda.
- Introduction to the Adaptation Workbook online tool.
- Developing an adaptation project: Defining project goals and objectives.
- What you need to know for Step 1.

#### Assignment 1 — Due Monday at 9:00 am before the next lecture.

- Read the course syllabus.

- Create a course project in the adaptation workbook using the instructions in this document (page 10).
- Read the Adaptation Workbook Steps in Brief, which is located at the end of the syllabus.
- Complete Step 1 of the Adaptation Workbook (online at [www.adaptationworkbook.org](http://www.adaptationworkbook.org)).
- Complete the Homework section following Step 1.
- Review the Adaptation Workbook chapter of the [Forest Adaptation Resources, 2nd edition](#) for Step 1 and Step 2 instructions as needed.

### Discussion Session #1 – Introduce project to small group.

## Session 2 — week of March 7

### Lecture Topics:

- Considering climate change impacts and vulnerabilities in your project.
- Resources for understanding climate change impacts to wildlife.
- What you need to know for Step 2.

### Assignment 2 — Due Monday at 9:00 am before the next lecture.

- Set aside 3-4 hours for completion since this is a more involved step.
- Complete Step 2 of the Adaptation Workbook: Assess climate impacts and vulnerabilities.
- Complete Homework 2 at the end of Step 2.
- Review regional climate impacts for your specific geographic area and wildlife focus. Instructors are available to help you identify applicable resources, but here is a helpful list to get you started:
  - NIACS regional ecosystem vulnerability assessments, which focus on natural and urban forests in the Midwest and Northeast US, are [here](#).
  - NIACS has compiled a variety of climate resources for regions such as [California](#), [Pacific Northwest](#), [Inter-mountain West and Colorado](#), and [Canada](#) (eastern provinces).
  - Regional climate change information is available through the [2018 National Climate Assessment](#) (regions such as Southeast, Midwest, Northern Great Plains, etc.).
  - The 2018 National Climate Assessment also includes a high-level chapter on [Ecosystems, Ecosystem Services, and Biodiversity](#).
  - NOAA 2022 State Climate Summaries: <https://statesummaries.ncics.org/>
  - [Frontiers in Ecology and the Environment, Volume 11, Issue 9](#): This 2013 issue contains a series of papers on climate change impacts to biodiversity.
  - National Audubon Society's [Survival by Degrees](#) is a climate change vulnerability assessment covering 389 bird species
  - The [Climate Change Bird Atlas](#) provides projections of suitable habitat for eastern bird species under different climate change scenarios
  - Find even more resources for your state at [www.adaptationworkbook.org/resources](http://www.adaptationworkbook.org/resources).

**Attend the optional webinar on climate change impacts on wildlife** (or watch the webinar recording). This webinar will provide an overview of the variety of ways that climate change can affect wildlife,

including effects to habitat (food, water, and cover), phenology, reproductive success, human conflict, diseases, and more.

Webinar logistics:

- **Date:** Tuesday March 8, 2022
- **Time:** 11am Eastern
- **Zoom link:** <https://michigantech.zoom.us/j/83509801414?pwd=NkN2SWtrT3MyTFB4Ujk3dWtzT2NFdz09>

### Session 3 — week of March 14

**Lecture Topics:**

- Identifying management challenges and opportunities for your project.
- Re-considering and revising management goals/objectives in light of climate challenges.
- What you need to know for Step 3.

**Assignment 3 — Due Monday at 9:00 am before the next lecture.**

- Set aside 2-4 hours for completion, as time will vary based upon your project.
- Complete Step 3 of the Adaptation Workbook: Evaluate objectives considering climate impacts.
- Complete Homework 3 at the end of Step 3.

**Discussion Session #2 – Discuss projects (recapping Step 2 and Step 3)**

### Break (week of March 21) — No session

- Use extra time to catch up on projects and have office hours with instructors.
- Begin reading the Wildlife Menu and other adaptation menus at <https://adaptationworkbook.org/strategies>

### Session 4 — week of March 28

**Lecture Topics:**

- Adaptation concepts: resisting change, enhancing resilience, and facilitating transitions.
- Developing specific actions for climate-change adaptation.
- What you need to know for Step 4.

**Assignment 4 — Due Monday at 9:00 am before the next lecture.**

- Set aside 3-4 hours for completion since this is a more involved step.
- View a presentation describing Adaptation Concepts, [available here \(27 minutes long\)](#). ***\*Required\****

- Review the list of [Adaptation Strategies and Approaches](#) for Wildlife Management and other topics that are relevant to your project
- Optional videos: Overview of [various menus](#)
- Complete Step 4 of the Adaptation Workbook: Identify adaptation approaches and tactics.
- Complete Homework 4 at the end of Step 4.

**Attend the optional webinar on climate change adaptation concepts** (or watch the webinar recording). This webinar will provide an overview of the Wildlife Adaptation Menu, covering the variety of ways managers can help wildlife cope with climate change. We also cover other topics identified throughout the course, such as the Resist-Accept-Direct paradigm.

Webinar logistics:

- **Date:** Tuesday March 29, 2022
- **Time:** 11am Eastern
- **Zoom link:** <https://michigantech.zoom.us/j/83509801414?pwd=NkN2SWtrT3MyTFB4Ujk3dWtzT2NFdz09>

## Session 5 — week of April 4

### Lecture Topics:

- What you need to know for Step 5.
- Tools for measuring effectiveness of implemented adaptation actions.
- Capitalizing on existing data, inventory or monitoring processes/partnerships.

### Assignment 5 – Due Monday at 9:00 am before the next lecture.

- Set aside 2-3 hours for completion. Time will vary based upon your project.
- Complete Step 5 of the Adaptation Workbook: Monitor effectiveness of implemented actions.
- Complete Homework 5 at the end of Step 5.

This week, we are asking project teams to please check-in with instructors to discuss progress on Step 4 adaptation actions.

## Session 6 — week of April 11

### Lecture Topics:

- Completing the Adaptation Workbook.
- Tips for talking about climate change with colleagues, stakeholders, clients, and community members.

## Assignment 6 — Due Monday at 9:00 am before the next lecture.

- Set aside 3-4 hours for completion of this assignment, or potentially more if you have to return to some previous steps.
- Finish up any loose ends in the Adaptation Workbook.
- Complete Homework 6 within the Adaptation Workbook.
- Summarize your project to share with the course participants as well as your colleagues and partners in a PowerPoint presentation (templates will be provided).
- Optional reading on climate change communication:
  - [Moser et al. 2017. Communicating Climate Change Adaptation and Resilience.](#)
  - [Communicating climate change adaptation: A practical guide to values-based communication](#)

## Discussion Session #3 – Discuss projects (recapping Step 4 and Step 5)

### Session 7 — week of April 18\*

\*April 18 is Easter Monday, so this week's lecture will be held on Tuesday April 19.

#### Lecture Topics:

- Participant presentations.
- Next steps for moving toward implementation.
- How we can help you in the future.
- Course evaluations.

#### Join Discussion Session – Share projects and practice communication skills

### What if the scheduled times do not work for me?

Reach out to one of the hosts to discuss other options. This may include a self-paced option, or receiving individual assistance on your project. Contact us!

## Technology Questions

This is a virtual training, so there are some technological requirements. At minimum, you will need high-speed internet access. We like participants to use a webcam and headset that connects directly to their computer audio if this is possible. We have found the sound quality is best if you use your computer audio rather than a phone line. If connecting by phone, a land line will offer better quality than a cell phone. You may need to disable pop-up blockers or firewalls when accessing the online workbook and webinar software. We are available to help troubleshoot potential issues prior to class.

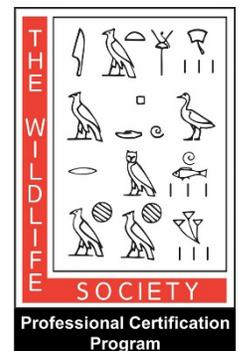
## Connection Details

- **We will use this Zoom link for all lectures:**  
<https://michigantech.zoom.us/j/83509801414?pwd=NkN2SWtrT3MyTFB4Ujk3dWtzT2NFdz09>. Please join the first session a bit early; your computer may need to install a small add-on before entering the room.
- **For audio, please choose “Join with Computer Audio” when prompted.** If it is not possible to use Computer Audio, please mute your speakers and dial the phone number in the prompt.
- **Please turn on your webcam during these sessions!**

If you have accessibility concerns and require certain accommodations to fully participate, please let us know before the beginning of the course. We will work with you to ensure your needs are met.

## Continuing Education Credit

The Wildlife Society will allow **10 Continuing Education Units (CEUs)** in Category 1 of the Certified Wildlife Biologist Renewal and Professional Development Certificate Program for completion of this course.



## Instructors & Contact Information

This training will be led by a team of experienced instructors specializing in climate adaptation:



### **Stephen Handler Northern Institute of Applied Climate Science & US Forest Service**

Stephen Handler is the coordinator for the Northwoods Climate Change Response Framework, serving the states of Minnesota, Wisconsin, and Michigan. Stephen has been working with land managers on issues related to climate change and adaptation since 2011, and he recently co-authored the Wildlife Adaptation Menu.



### **Patricia Leopold, Northern Institute of Applied Climate Science & Michigan Technological University**

Patricia Leopold is the coordinator for the Climate Change Response Framework in the Central Appalachians (OH, WV, MD) and the Mid-Atlantic (PA, NY, NJ, DE, MD). Patricia has been working to develop climate change tools and resources with NIACS since 2009. She has recently co-instructed adaptation trainings for a variety of topics, including wildlife habitat management.



**Chris Hoving, Michigan Department of Natural Resources, Wildlife Division**

Dr. Chris Hoving has led the climate adaptation program for the Michigan Department of Natural Resources’ Wildlife Division since 2012. Chris serves on numerous regional and national climate initiatives including past chair of The Wildlife Society’s Climate Change and Wildlife Working Group and current chair of the Michigan Climate Coalition. Chris recently co-authored the Wildlife Adaptation Menu.



**Marta Lyons, Midwest Climate Adaptation Science Center**

Dr. Marta Lyons is an ecologist with USGS Midwest Climate Adaptation Science Center. In this role, she conducts research and provides counsel to natural resource managers to assess climate impacts on priority wildlife species and habitats.



**Olivia LeDee, Midwest Climate Adaptation Science Center**

Dr. Olivia LeDee is the Acting Director of the Midwest Climate Adaptation Science Center. She has previously worked for the University of Wisconsin-Madison, the Minnesota Department of Natural Resources, and the USGS Northeast Climate Science Center. Olivia recently co-authored the Wildlife Adaptation Menu.



**Ben Zuckerberg, University of Wisconsin-Madison**

Dr. Ben Zuckerberg is an Associate Professor in the Department of Forest and Wildlife Ecology. Ben has built a research lab focusing on how modern climate change impacts birds and mammals, studying grassland birds, subnivium habitats, masting events, climate dipoles, and more. Ben recently co-authored the Wildlife Adaptation Menu.



**Steve Harriss, US Forest Service**

Steve is the District Wildlife Biologist for the Hoosier National Forest in Bedford, Indiana. He also serves as the Forest’s Cave and Karst Coordinator. Steve has been with the Hoosier for over 20 years focusing on habitat enhancement for endangered, sensitive and game species. Steve is on a short-term assignment with NIACS to help expand our work with wildlife professionals.

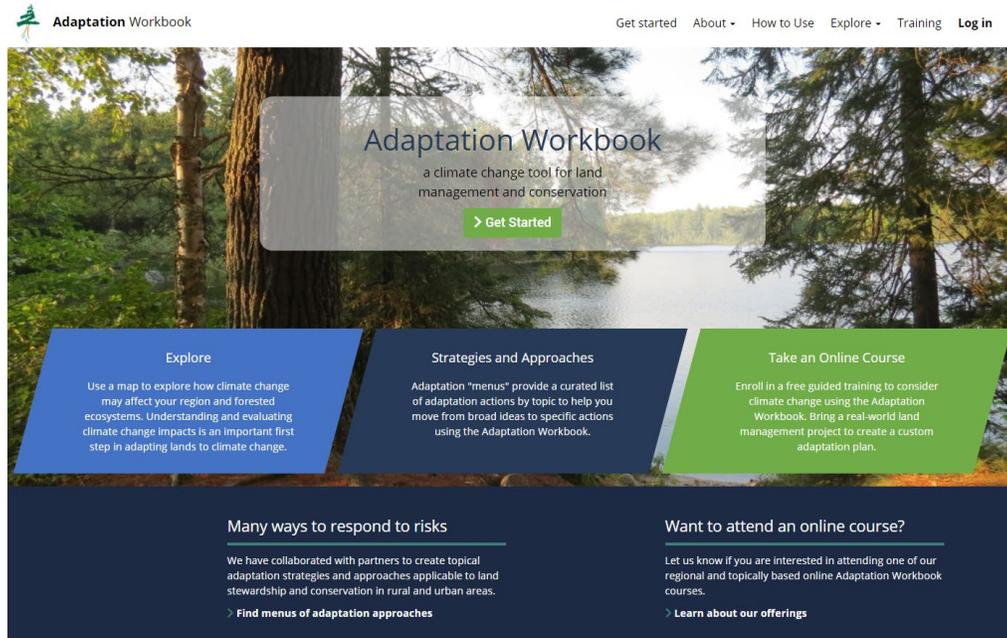
**Getting Started with the Adaptation Workbook**

Please set up your Adaptation Workbook account (If you have not already done so) the week before the course begins so that we can make the course features available to you before you start.

- **If you’re working alone:** Create an account using the email that you registered for the course with.
- **If you’re working with a small team:** Choose to use one person’s email address to create an account that you can share among the group. You can then take turns working on the course project and decide how to tackle course assignments among your team.
- **If you used a different email address** to create your Adaptation Workbook account than the one that you used to register for the course, please send the correct email address to Patricia Leopold ([pleopold@mtu.edu](mailto:pleopold@mtu.edu)) so that your email/account can be associated with the course.

# Creating an Account

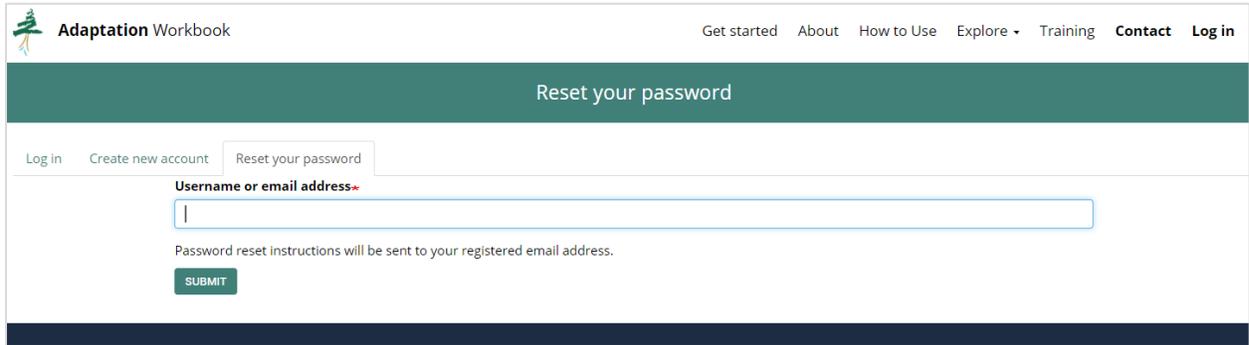
1. Navigate to [www.adaptationworkbook.org](http://www.adaptationworkbook.org). Click on “Get Started” to create an account



2. Create a new account by entering a username, email address, and other information. Be sure to check the terms and conditions/privacy policy check box, as well as the check box allowing us to help you as you go through the workbook. When you have entered in all the information, click “Create new account.”

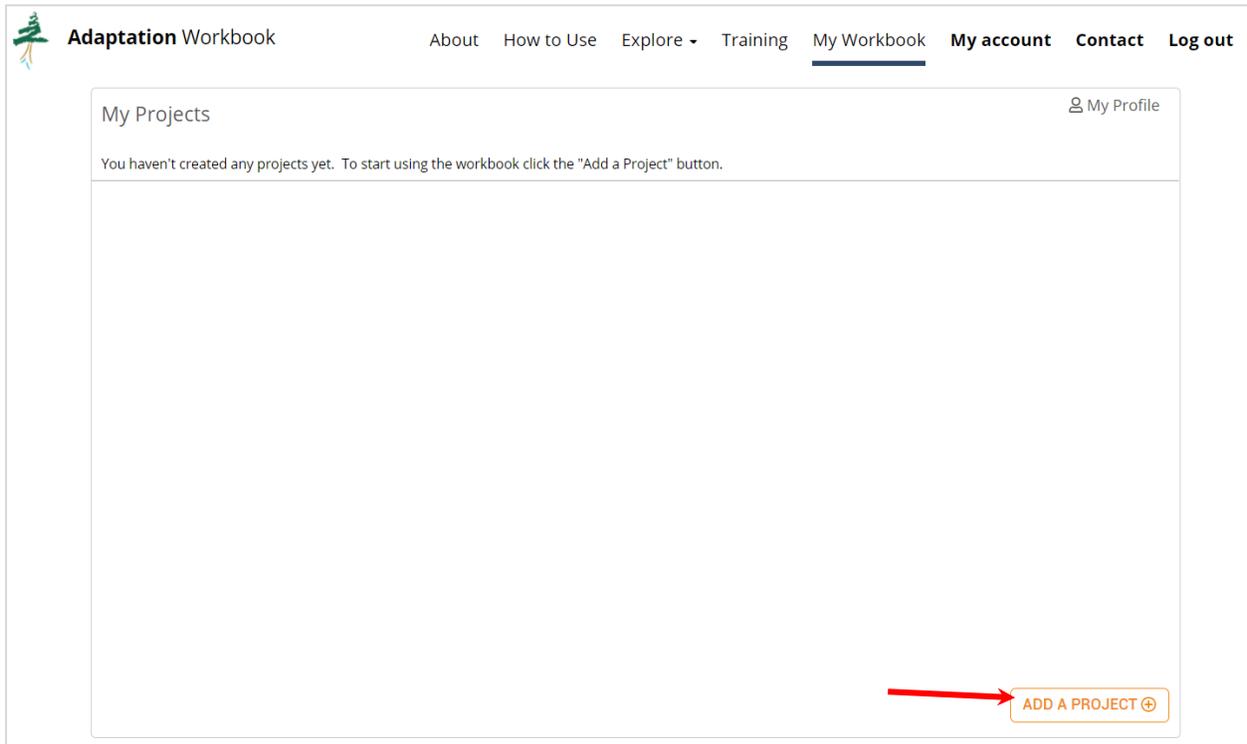
The image shows the "Create new account" form on the Adaptation Workbook website. At the top left is the logo and name "Adaptation Workbook". To the right is a navigation menu with links: "Get started", "About", "How to Use", "Explore", "Training", "Contact", and "Log in". The main heading is "Create new account". Below this are three tabs: "Log in", "Create new account" (which is active), and "Reset your password". The form contains several input fields: "Email address", "Username", "Your full name", and "Organization". Below these are two checkboxes: "I have read and agree to the Adaptation Workbook terms and conditions and privacy policy." (with links to "Terms and conditions" and "Privacy policy") and "It is OK to contact me about my Adaptation Workbook experience or to offer me assistance in my planning process". Below the checkboxes is a CAPTCHA section with the text "CAPTCHA" and "This question is for testing whether or not you are a human visitor and to prevent automated spam submissions." followed by a "Math question"  $5 + 5 =$  and an input field for the answer. At the bottom of the form is a "CREATE NEW ACCOUNT" button.

3. The following screen will direct you to confirm your new account. You will need to check the email of the account that you have linked to the Adaptation Workbook, find a confirmation email (from [info@adaptationworkbook.org](mailto:info@adaptationworkbook.org)), and click the confirmation link. Your confirmation email should arrive within a few hours. Check your spam folder if you do not see it in your inbox! The link will take you to a one-time login screen that will require you to create a site password. Click “Log in” and create a password on the following screen.



The screenshot shows the 'Reset your password' page. At the top, there is a navigation bar with the Adaptation Workbook logo and links for 'Get started', 'About', 'How to Use', 'Explore', 'Training', 'Contact', and 'Log in'. Below the navigation bar is a dark green header with the text 'Reset your password'. Underneath, there are three tabs: 'Log in', 'Create new account', and 'Reset your password'. A text input field is labeled 'Username or email address\*'. Below the input field, it says 'Password reset instructions will be sent to your registered email address.' and there is a green 'SUBMIT' button.

4. Once you are logged in, you will see your Workbook dashboard. This is where you will add a project. Please note, we will create projects during the first week of the online course, **so please do not add your project until after the first lecture and discussion.**



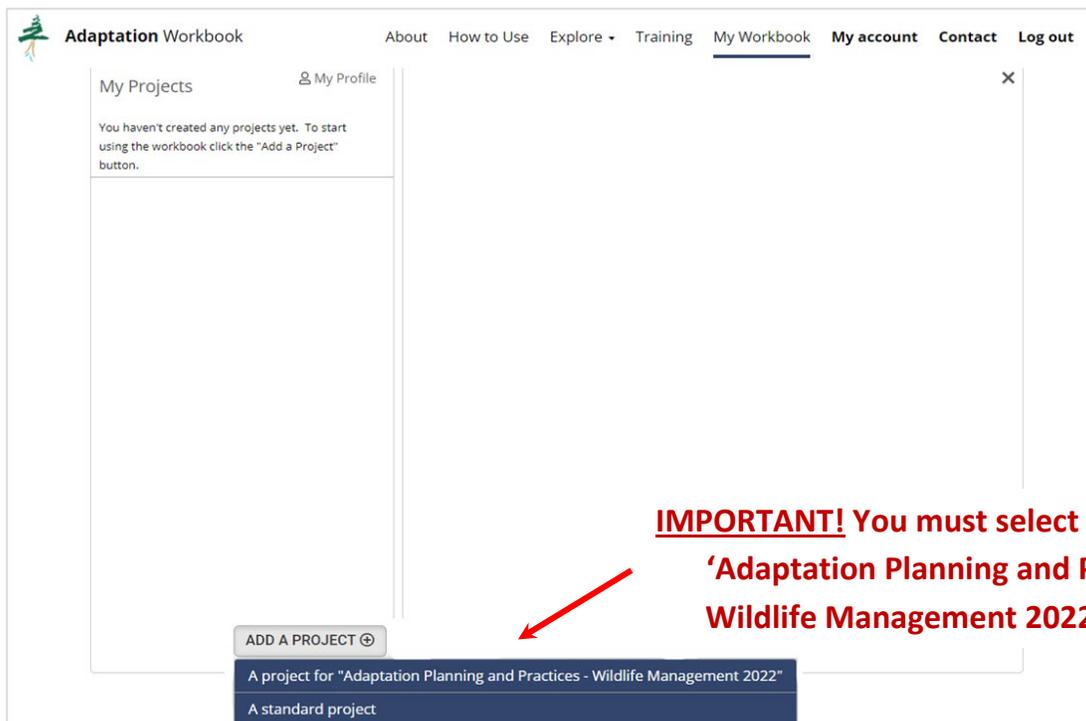
The screenshot shows the 'My Projects' dashboard. At the top, there is a navigation bar with the Adaptation Workbook logo and links for 'About', 'How to Use', 'Explore', 'Training', 'My Workbook', 'My account', 'Contact', and 'Log out'. Below the navigation bar, there is a header for 'My Projects' and a 'My Profile' link. The main content area says 'You haven't created any projects yet. To start using the workbook click the "Add a Project" button.' At the bottom right, there is a red arrow pointing to an orange button labeled 'ADD A PROJECT' with a plus icon.

\*\*\*\*\* **IMPORTANT!** \*\*\*\*\*

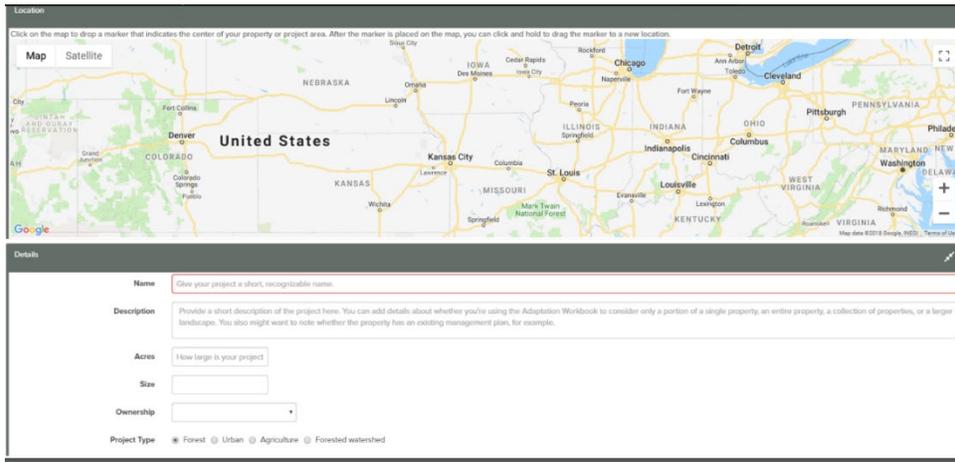
Although you can use the Adaptation Workbook at any time, **you will need to create a course project** to use during the Planning and Practices course to access **specific course content** and additional materials. **Please wait until after Lecture 1 to create a project for this course.**

## Starting a Course Project – Session 1 Homework

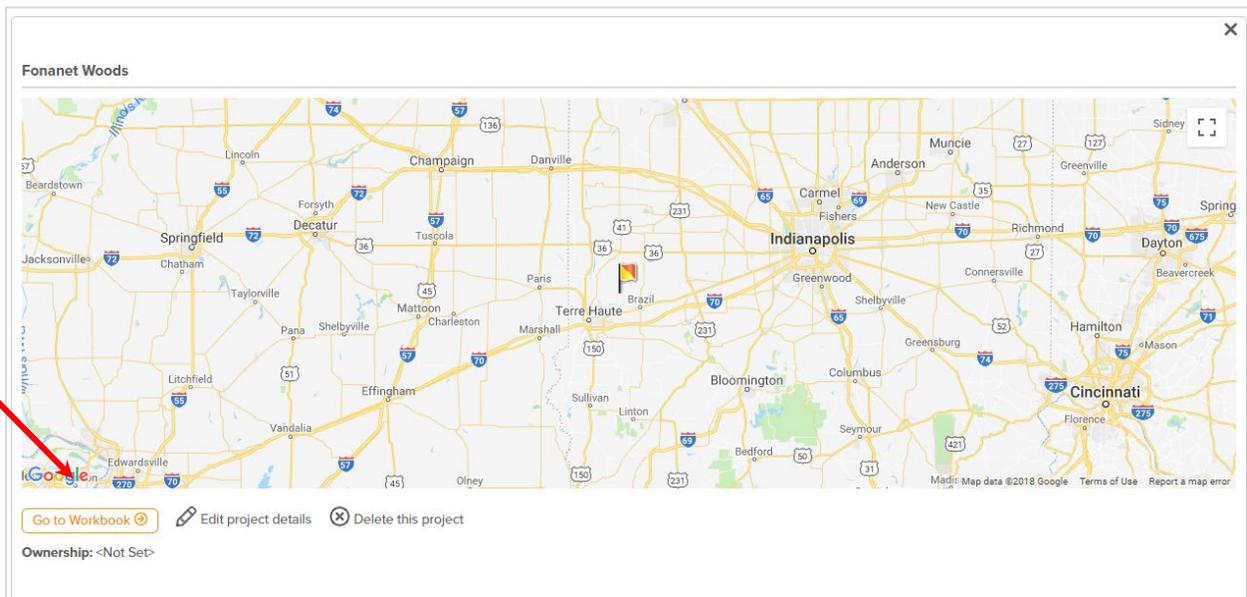
1. Log into the Adaptation Workbook. You will see a screen called the project dashboard.
2. Click on the orange “Add a Project” button and then select “A Project for **Adaptation Planning and Practices - Wildlife 2022 (Current)**”



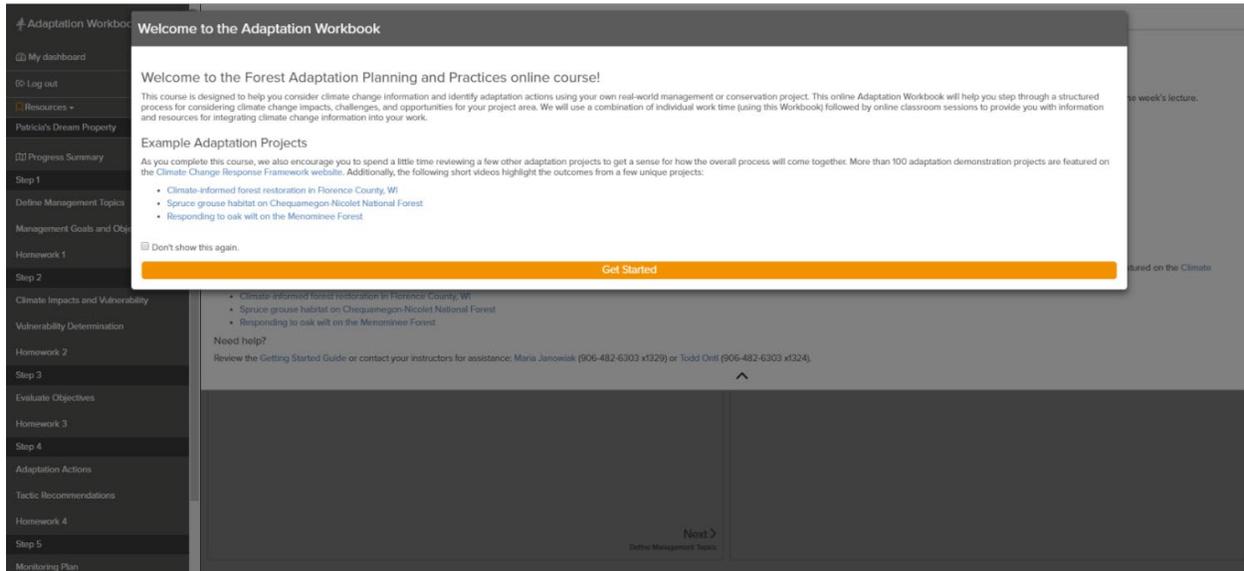
3. Start describing your project. Using the map, place a marker at the approximate location of the project. Note that if you want to maintain privacy, you can select a nearby intersection or town. Some tips for placing the marker are:
  - Use the (+) and (-) buttons to zoom in and out.
  - Click and hold the map to pan the view.
  - A single click will place the marker on the map.
  - To move the marker, click and drag it to the desired location.



4. Enter a project name, description, acreage, and ownership. The level of detail that you provide is up to you—this information will be included in the project summary report of your adaptation plan. This information can be edited after the project is created. **Select “Wildlife Management” for the project type.**
  
5. This project will now appear in your dashboard. To begin your project, click “Go to Workbook.”

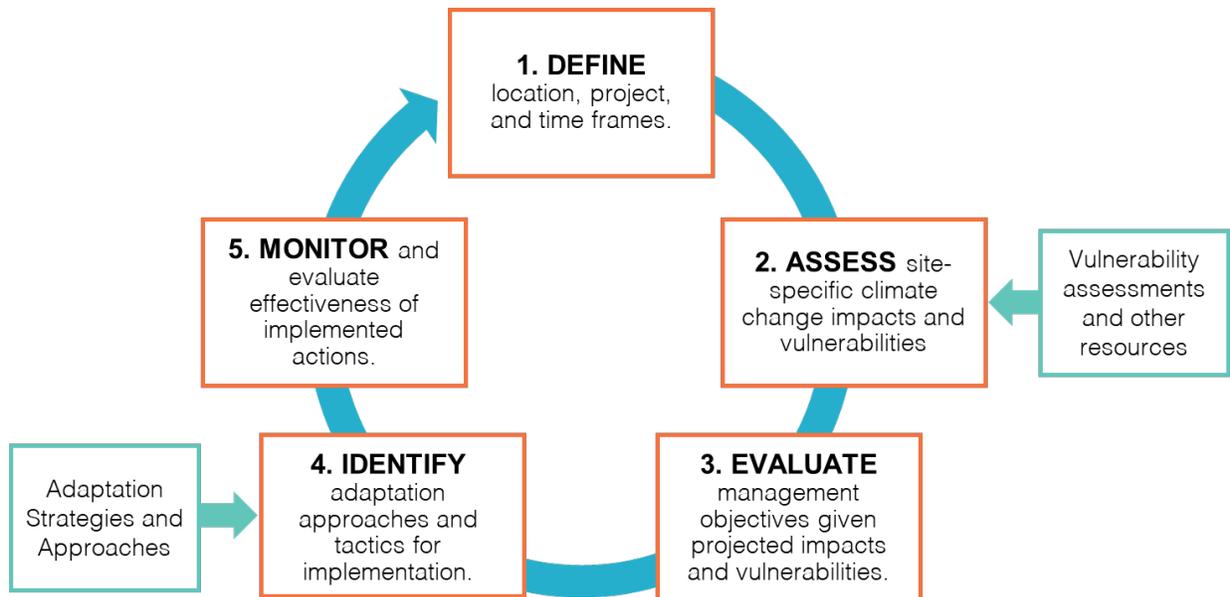


6. Once you are in the Adaptation Workbook, a short dialog will appear with more information about the course. Read the information and click “Get Started.” Look at the screen and focus on the gray menu on the left side of the Adaptation Workbook. If you do not see “homework” listed in this column, please go back to the start of this tutorial and create a project that is associated to the online course.



## Adaptation Workbook Steps in Brief

This is a brief outline of the Adaptation Workbook process. Find the full process in the *Forest Adaptation Resources: Climate change tools and approaches for land managers, 2<sup>nd</sup> edition* (Swanston et al. 2016) and as an online tool at [www.adaptationworkbook.org](http://www.adaptationworkbook.org).



### Step 1: DEFINE location, project, and time frames.

The first step is to describe the project area and your management objectives before considering the potential effects of climate change. This may include identifying:

- Any ecosystem types, stands, or other distinct areas that you want to consider individually
- Any short- or long-term milestones that can be used to evaluate progress

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

**“What climate change impacts and vulnerabilities are most important to this particular site?”**

Climate change will have a wide variety of effects on the landscape, and not all places will respond similarly. List site-specific factors that may increase or reduce the effects of climate change in your project area, such as:

- Site conditions, such as topographic position, soils, or hydrology
- Past and current management
- Forest composition and structure
- Susceptibility to pests, diseases, or other stressors that may increase

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

**“What management challenges and opportunities may occur as a result of climate change?”**

This step explores management challenges and opportunities that may arise under changing conditions. For each of your management objectives, consider:

- Management challenges and opportunities given the climate impacts you identified previously
- The feasibility of meeting each management objective under current management
- Other considerations (e.g., administrative, legal, or social considerations) beyond climate change that may affect your ability to meet your management objectives

## **Step 4: IDENTIFY adaptation approaches and tactics for implementation.**

**“What actions can enhance the ability of the ecosystem to adapt to anticipated changes and meet management goals?”**

Generate a list of adaptation tactics —prescriptive actions specifically designed for your project area or property and your unique management objectives. Use the [menus of Adaptation Strategies and Approaches](#) as a starting point for identifying specific management tactics (e.g., what, how, when) that you can implement. As you develop tactics, consider the:

- Benefits, drawbacks, and barriers associated with each tactic
- Effectiveness and feasibility of each tactic

## **Step 5: MONITOR and evaluate effectiveness of implemented actions.**

**“What information can be used to evaluate whether the selected actions were effective and inform future management?”**

Monitoring metrics can help you determine whether you are making progress on your management goals and evaluate the effectiveness of those actions. When identifying monitoring items, work to identify monitoring items that:

- Can tell you whether achieved your management goals and objectives
- Can tell you whether the adaptation tactics had the intended effect
- Are realistic to implement