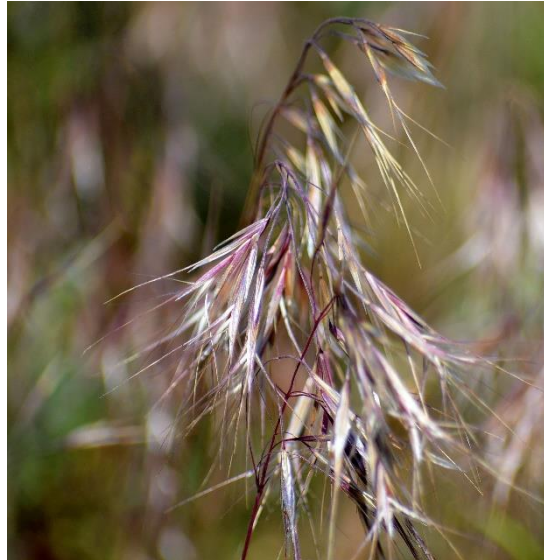




# The U.S. Fish and Wildlife Service's Climate Change Action Program

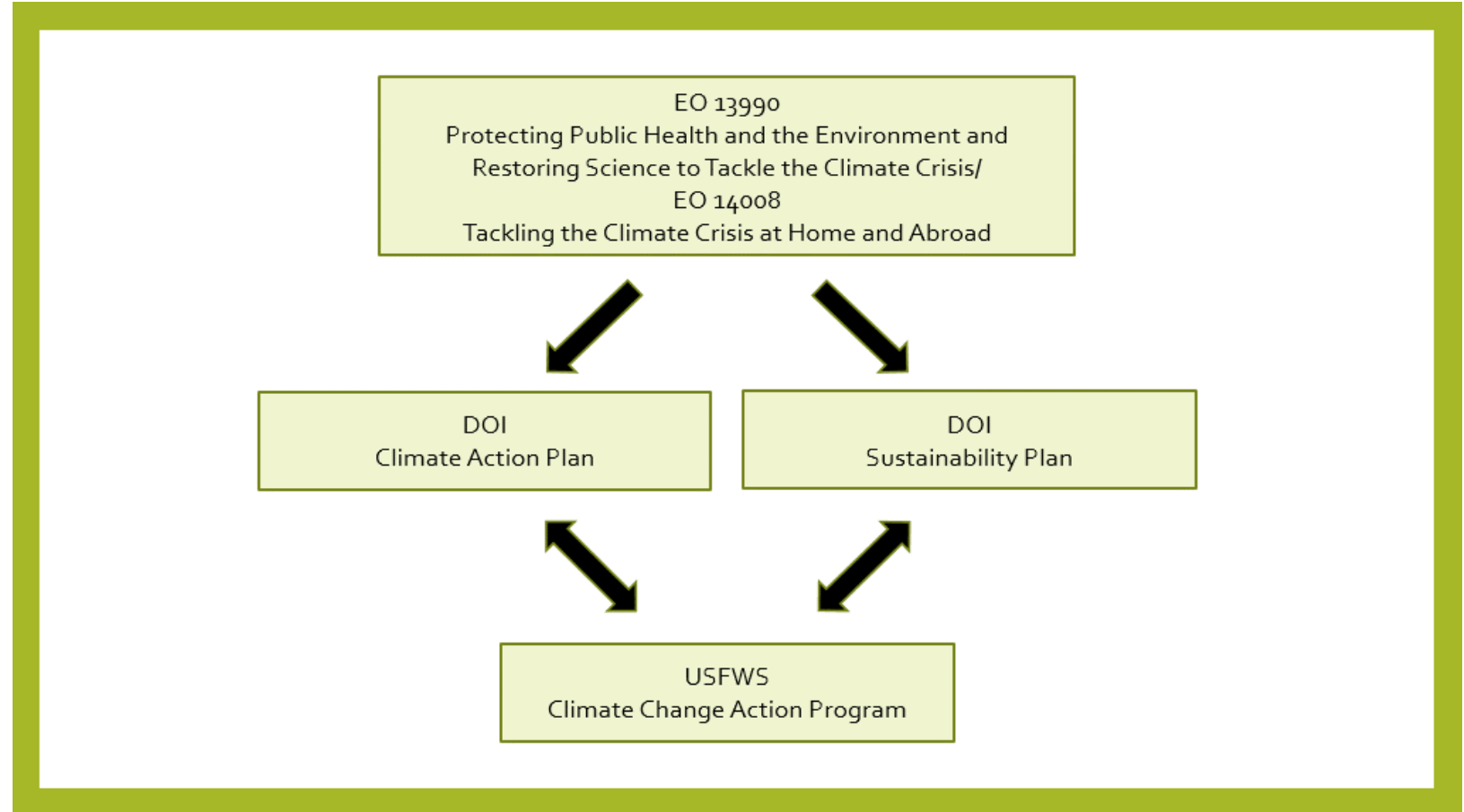
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*Jason Goldberg*





## U.S. Department of the Interior 2022 Sustainability Plan



# CCAP Goals

Adoption of the CCAP as the guiding framework for climate action across ALL of the Service

Ensure that the entire Service is elevating climate change into everything we do in a coordinated, transparent approach



U.S. Fish & Wildlife Service

# Climate Change Action Program

October 2021



NATIONAL *fish, wildlife & plants*  
CLIMATE ADAPTATION STRATEGY



A photograph of two people in a black inflatable raft navigating white-water rapids on a river. The raft is moving from left to right. The person in the front is wearing a blue life vest and a green hat, while the person in the back is wearing a blue life vest and a blue hat. The river is surrounded by green trees and a rocky bank. The sky is clear and blue.

# CCAP Elements

1. Adaptation and Resilience

2. Climate Science

3. Adaptation Strategy

4. Partnerships

5. Climate Mitigation

6. Policy

7. Capacity

# FY 23 Themes

1. Increase Our Capacity to Implement Adaptation

2. Infuse Climate Change Throughout FWS Planning & Decision-making Processes

3. Create New Policy to Support Climate Change Action

4. Continue to Develop Key Partnerships for Implementing Climate Action

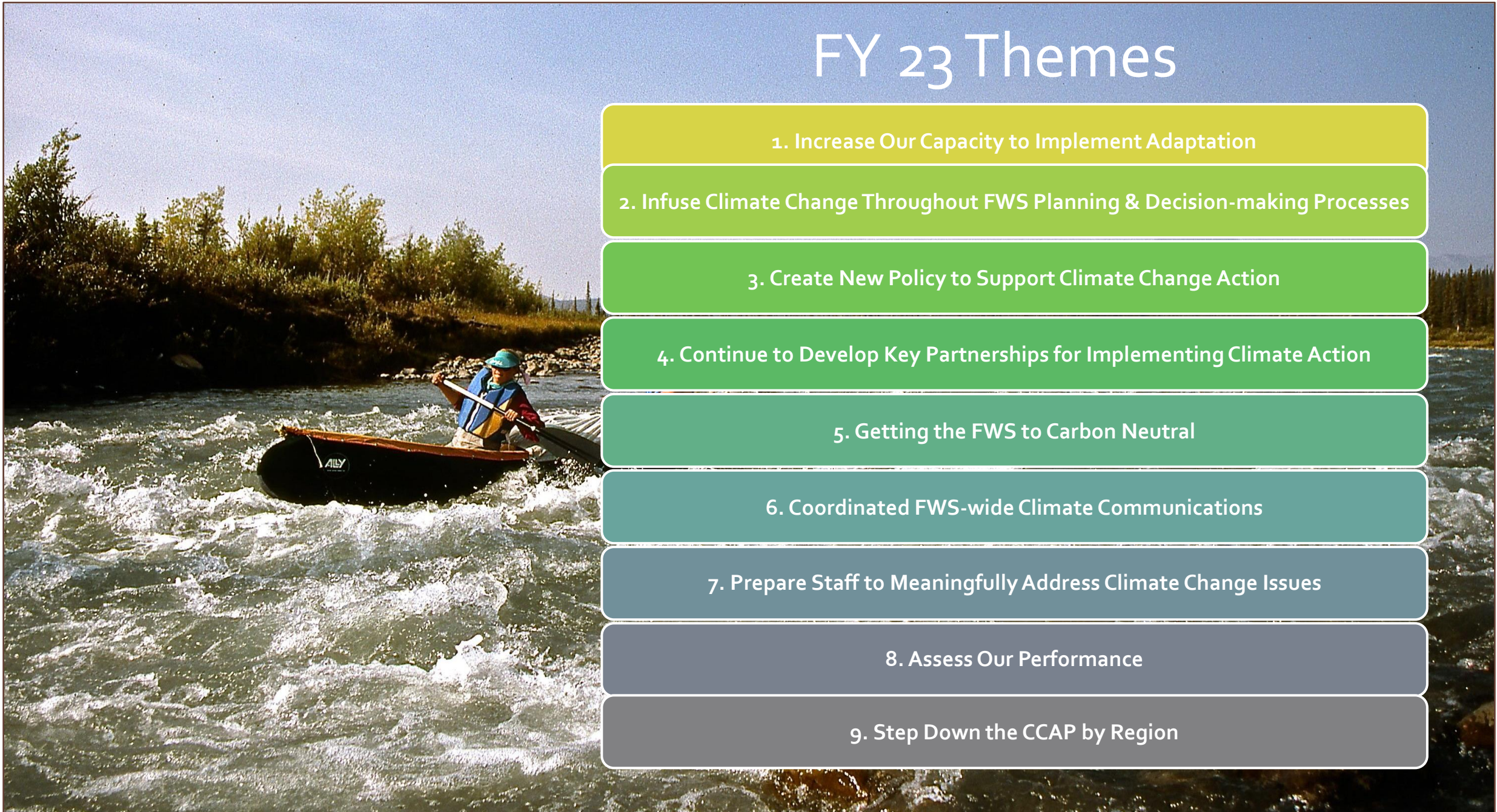
5. Getting the FWS to Carbon Neutral

6. Coordinated FWS-wide Climate Communications

7. Prepare Staff to Meaningfully Address Climate Change Issues

8. Assess Our Performance

9. Step Down the CCAP by Region



# FAC Step-Down

Provide future climate match information in ERSS to inform prevention and control efforts

Continue to promote habitat resilience

Continue to reduce the carbon footprint at our facilities

Develop tools to share climate-related data





# Resist-Accept-Direct framework

Provides fluid decision support to manage plants and animals in rapid habitat transformation.

## Resist (Suppress)

- Management actions attempt to restore the system based on historical conditions.

## Accept (Maintain)

- Management allows change in features of the lands and waters without intervention.


## Direct (Reduce)

- Management actions attempt to influence the changing lands and waters to conditions that support wildlife and benefit people.

U.S. Fish & Wildlife Service

## Resist-Accept-Direct Framework:

*A Tool to Address Ecological Transformation*



During the past few decades, extended droughts, massive floods, intense hurricanes, and catastrophic wildfires are happening with increasing intensity and frequency. The impacts from rapid climate change are challenging traditional wildlife management strategies that were based on a stable, stationary baseline condition.


Habitats are changing in dramatic ways. They are shifting in multiple ecological characteristics, resulting in a high degree of turnover in species composition, rather than just loss or decline of a single species. Ecological Transformation is change that re-arranges historical species composition and the ecological function of habitats. For example, overall warmer temperatures - particularly warmer winters - are allowing the colonization of Florida mangroves north of their historical range, converting salt marshes into mangrove forests.

Transformation of an ecosystem can also occur because of changes in land use, expansion of invasive species and habitat fragmentation. Although any of these impacts may transform a system, anthropogenic climate change is an extremely powerful driver that can increase the rates and intensity of transformation dramatically and multiplies other driver impacts.

Climate change presents a complex management problem because it combines a persistent, yet variable, change across landscapes and is very difficult to predict or mitigate locally. Although climate change leads to undesirable conditions for many ecosystems, a new trajectory can result in novel conditions that may be favorable for some species, habitats, or human communities. The Resist-Accept-Direct (RAD) framework provides a way to respond to ecological transformation, especially to new unexperienced conditions (Figure 1). Management often incorporates two or three RAD elements rather than just one discrete use. For example, we may resist a change in the short-term (10-20 years) to provide habitat until we can direct habitat into a desired type. We may also need to accept change in some locations due to environmental, economic, or social constraints, but then use the resist and direct option in other locations. RAD is a portfolio of options applied across the landscape to respond to ecological transformation for the purpose of fish and wildlife management.

Blackwater National Wildlife Refuge (BNWR) provides excellent examples of how each RAD element is applied discretely and in conjunction with each other based on a strategic portfolio approach. BNWR was established in 1933 as a migratory bird refuges and consists of over 30,000 acres of rich tidal marsh, flats, mixed hardwood and loblolly pine forests, managed freshwater wetlands and croplands. The Blackwater River spans the single largest area of brackish marsh within the Chesapeake Bay watershed and is of regional significance for its wetlands and supported wildlife. The refuge is recognized as a "Wetland of International Importance" and an "Internationally Important Bird Area". These wetlands also provide storm protection to lower Dorchester County.

Staff at the BNWR use all three RAD strategies. Shorter's Wharf provides a good example of successful use of the Resist strategy. Because marsh elevation loss is occurring across the refuge, staff piloted a project in conjunction with local NGOs to increase marsh habitat, important to many species, but particularly for sensitive species - the Eastern Black Rail and the Salt Marsh Sparrow. Shorter's Wharf location was selected because it provided important historic habitat for these species, plus was adjacent to the sediment source used to build marsh elevation (Figure 2). When using the Resist strategy, managers must keep in mind it may be a temporary solution. For example, if sea level rise outpaces the ability of the marsh to keep up, the project may only last a decade or two, or require continual intervention. It is important to consider long-term goals when deciding to use this strategy.



**Resist**  
Work to restore or maintain ecosystem processes, function, structure or composition based upon historical or acceptable current conditions.

**Accept**  
To allow ecosystem processes, function, structure or composition to change without intervening to alter their trajectory.

**Direct**  
Actively shape ecosystem processes, function, structure or composition toward new preferred conditions.

Figure 1. The Resist-Accept-Direct framework outlines three management responses. Management strategies may be a combination of all three responses. Definitions from Schuurman et al. 2021; design adapted from Thompson et al. 2020.



# RISCC

**FWS has helped  
established and  
support**

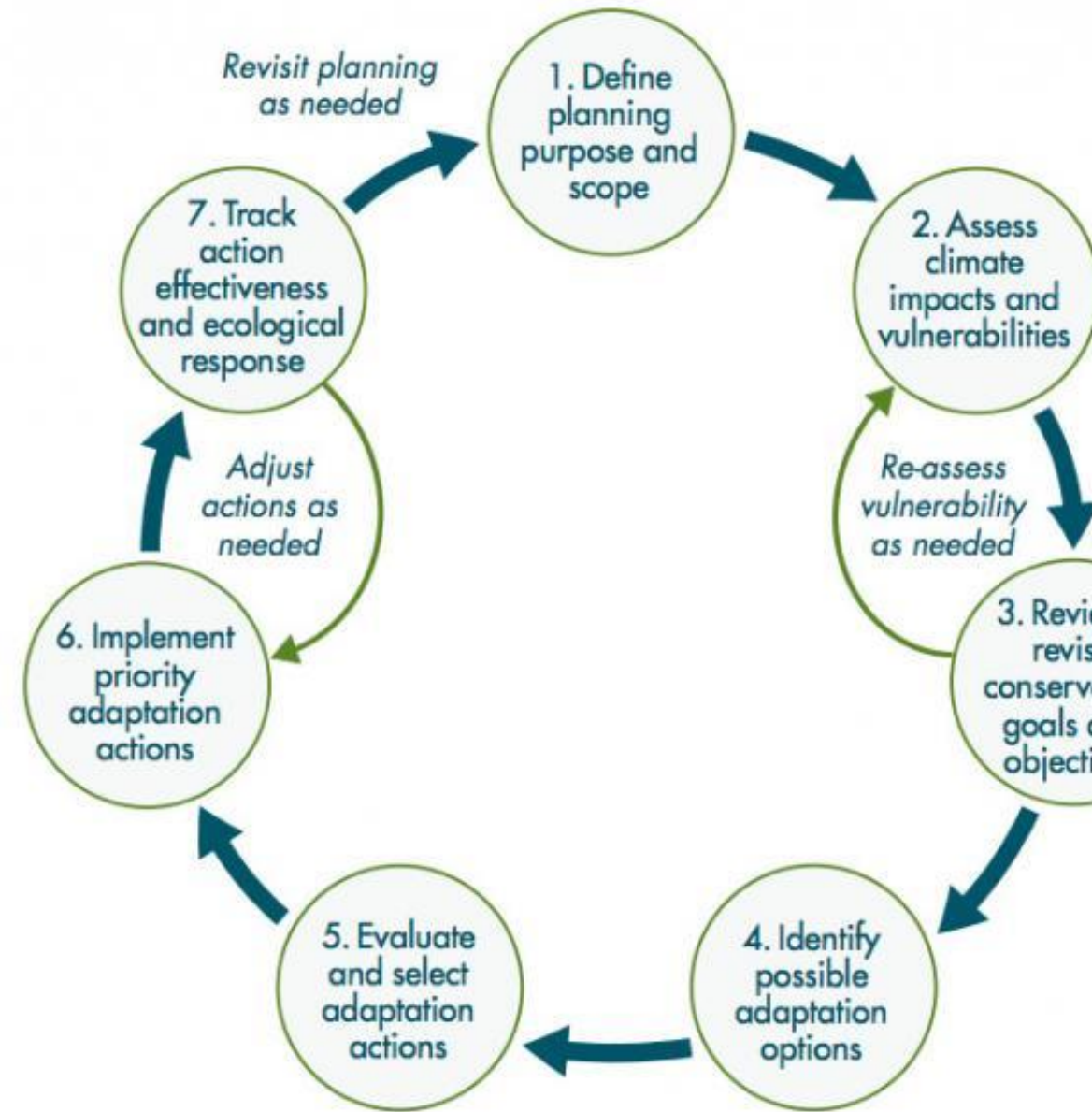
**Largely focused on  
information sharing**



*PHOTO: USFWS/Keenan Adams  
PELICAN ISLAND NATIONAL WILDLIFE REFUGE, FL*

# Next Steps

- Share information
- Research Updates



# Opportunities

- Share information
- Research Updates



# Questions?

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