

# Prairies Climate Change Adaptation Workshop 2



Dr. Katherine Moore Powell  
Climate Change Ecologist, The Field Museum

# Prairies Climate Change Adaptation Workshop 2 - Logistics

WIFI – none, sorry  
Location of Restrooms  
Parking?





# Prairies Climate Change Adaptation Workshop 2 Agenda

## Morning

- Overview of project
- Updates – NCA4
- How seeds become prairies
- CW Prairies Climate Impacts Map



# Prairies Climate Change Adaptation Workshop 2 Agenda

## Afternoon

- Human climate considerations
- Midewin Tour





# Loss of Prairies - Chicago Wilderness Region



# Climate Impacts To Prairies in the Midwest

- Increase in temperatures
- Heavier rainfall events
- Shift in seasonal precipitation - more occurring in the spring and winter
- Increase in the concentration of CO<sub>2</sub> favoring cool season grass species?





# Climate Change Models and Research

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Great Lakes Environmental Research Laboratory

## Regional climate change projections for Chicago and the US Great Lakes

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### ABSTRACT

Assessing regional impacts of climate change begins with development of climate projections at relevant temporal and spatial scales. Here, proven statistical downscaling methods are applied to relatively coarse-scale atmosphere–ocean general circulation model (AOGCM) output to improve the simulation and resolution of spatial and temporal variability in temperature and precipitation across the US Great Lakes region. The absolute



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# Climate Change Vulnerability Assessments

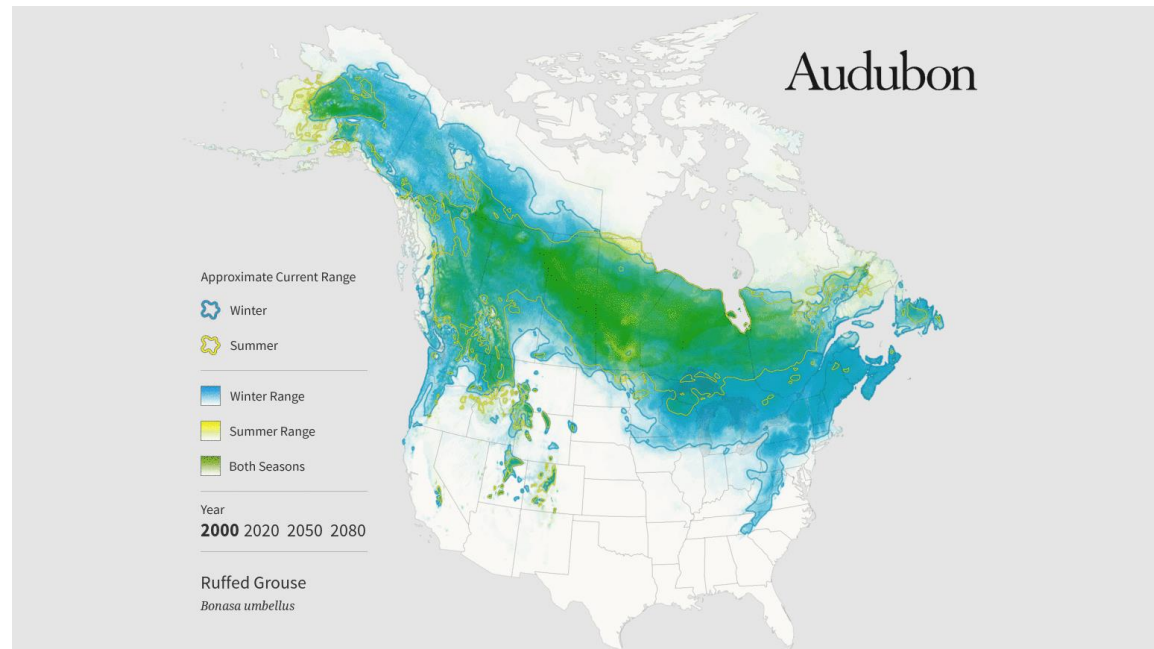


NatureServe



## BIODIVERSITY RECOVERY PLAN

Climate Change Update



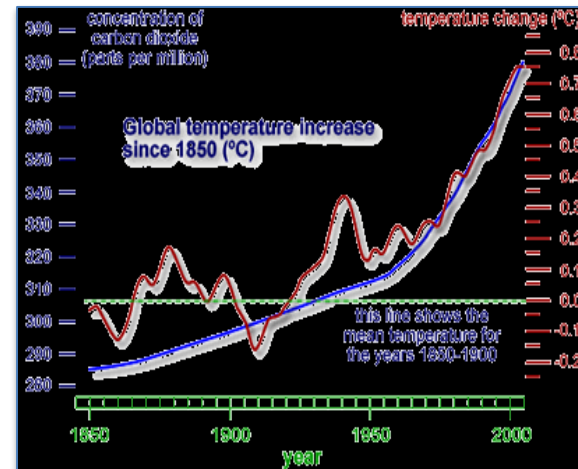


# History of Prairie and Grassland Conservation in the Chicago Wilderness Region





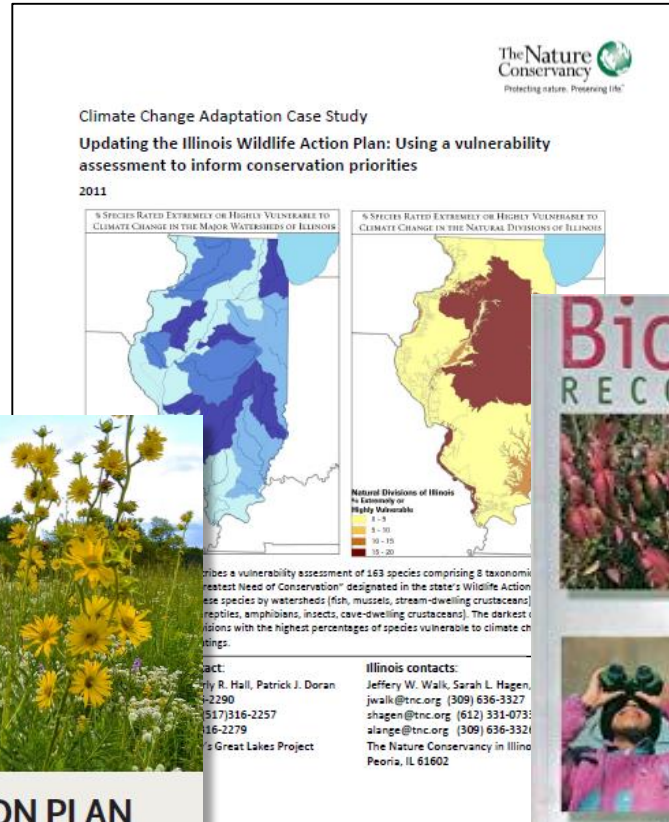
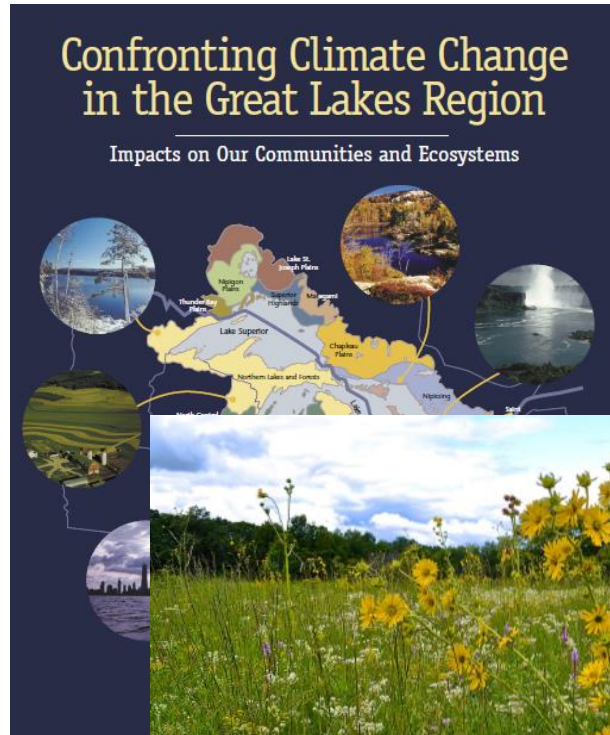
# Intersection of Knowledge and Experience



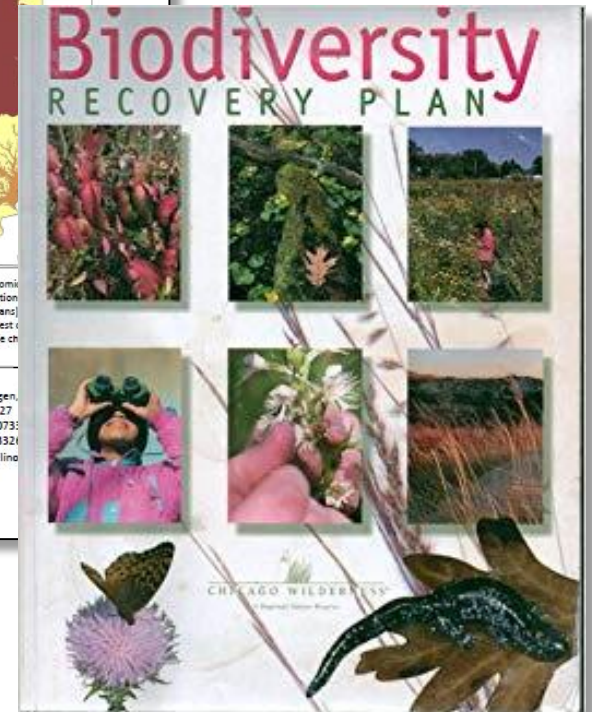


# Prairie Adaptation Plan Objectives - 1

Review climate projections, vulnerability assessments, climate impacts, and adaptation options for prairies

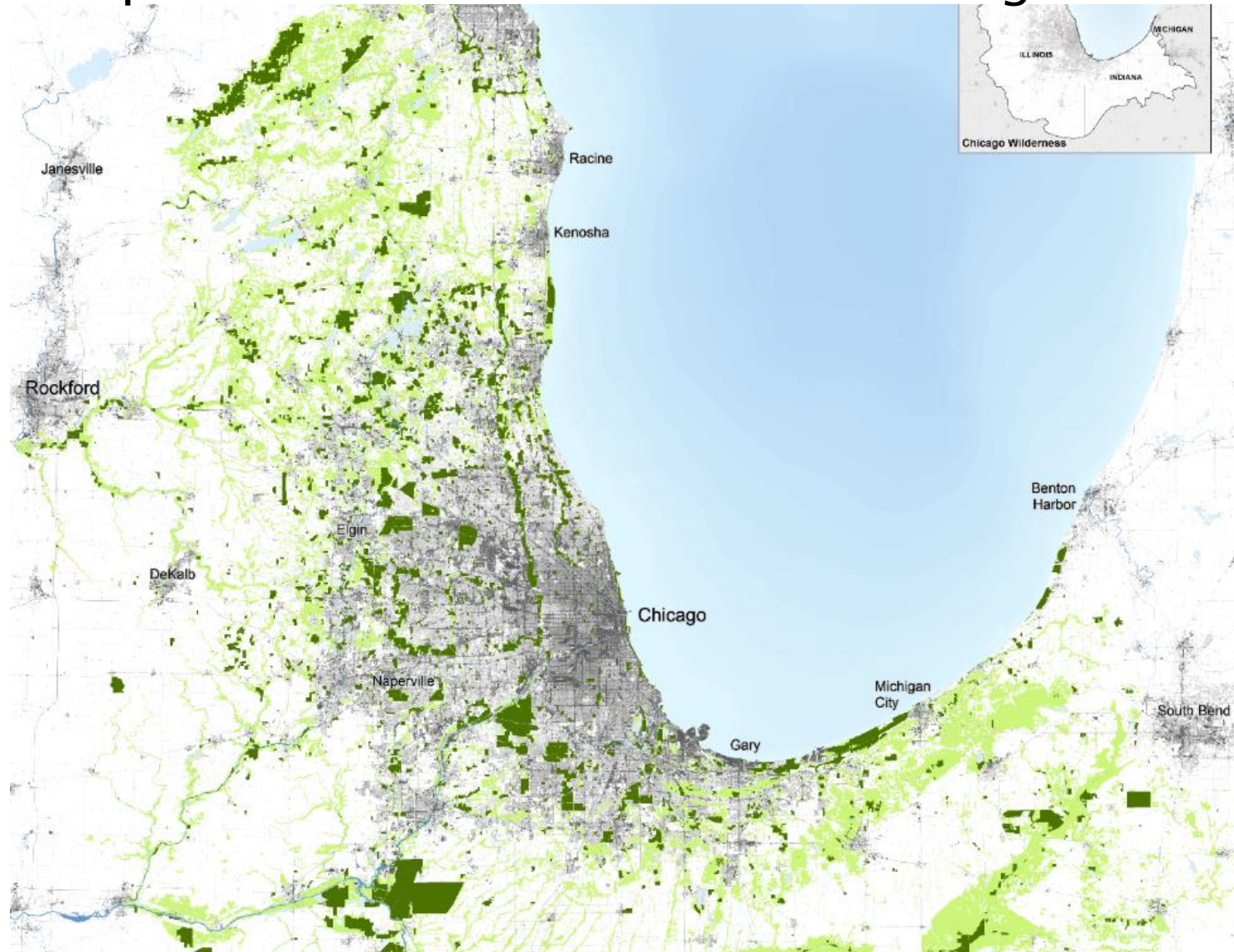


## NEXT CENTURY CONSERVATION PLAN for the Forest Preserves of Cook County



# Prairie Adaptation Plan Objectives - 2

Develop strategies to improve connectivity across landscapes that enhance the climate change resilience





# Prairie Adaptation Plan Objectives - 3



Assess the perspective people have of the role prairies play in their communities (e.g., recreation, health, stormwater mitigation, wildlife habitat, other)



# Prairie Adaptation Plan Objectives - 4

Compose, publish, and distribute a climate change adaptation plan for the range of CW prairie grasslands

Indiana Dunes Climate Change Adaptation Plan

## Current Climate Threats to the Indiana Dunes Region

### Recent Climate Trends

The National Park Service Climate Change Response Program evaluated the climate trends and vulnerabilities at the Indiana Dunes National Lakeshore (Gonzalez 2014) and conducted an analysis of recent (past 10, 20, and 30 year windows) temperature, precipitation, and indications of the onset of spring relative to historic values (1901-2012) to describe the park's exposure (Monahan et al. 2016; Fisichelli et al. 2015; Monahan and Fisichelli 2014b). Climate change exposure was defined as "extreme" when climate values for recent decades exceeded 95% of the historical values. The panel on the right summarizes the findings from those studies (see Appendix B: NPS Climate Change Assessments), and relevant climate impacts for specific habitats within the Indiana Dunes region are included in each chapter under the TERRESTRIAL COMMUNITIES section.


### Phenological Mismatch

Phenological mismatch is a term that describes out of sync life cycle associations between organisms (e.g., predator-prey, migration, breeding) that occurs when changes in individual phenology shift at different rates (Hurlbert and Liang 2012). This mismatch is currently occurring in the Indiana Dunes region because the triggers for life cycle events in many plants and animals are differentially affected by climate change. For example, most birds track photoperiods (day length) to trigger

increase or decrease, the amount of beach area will grow or shrink, impacting the establishment


## ALREADY HAPPENING...

### EARLIER SPRINGS




First leaf and first bloom happening much earlier

### GETTING WARMER



Temperature is increasing about 0.5° F per century

### GETTING WETTER



## Threats

reduces overall biodiversity (Nowacki and Abrams 2008). Fire-adapted ecosystems depend on disturbance of natural fire regimes to

habitat fragmentation and modern fire-containment capability (see box below,

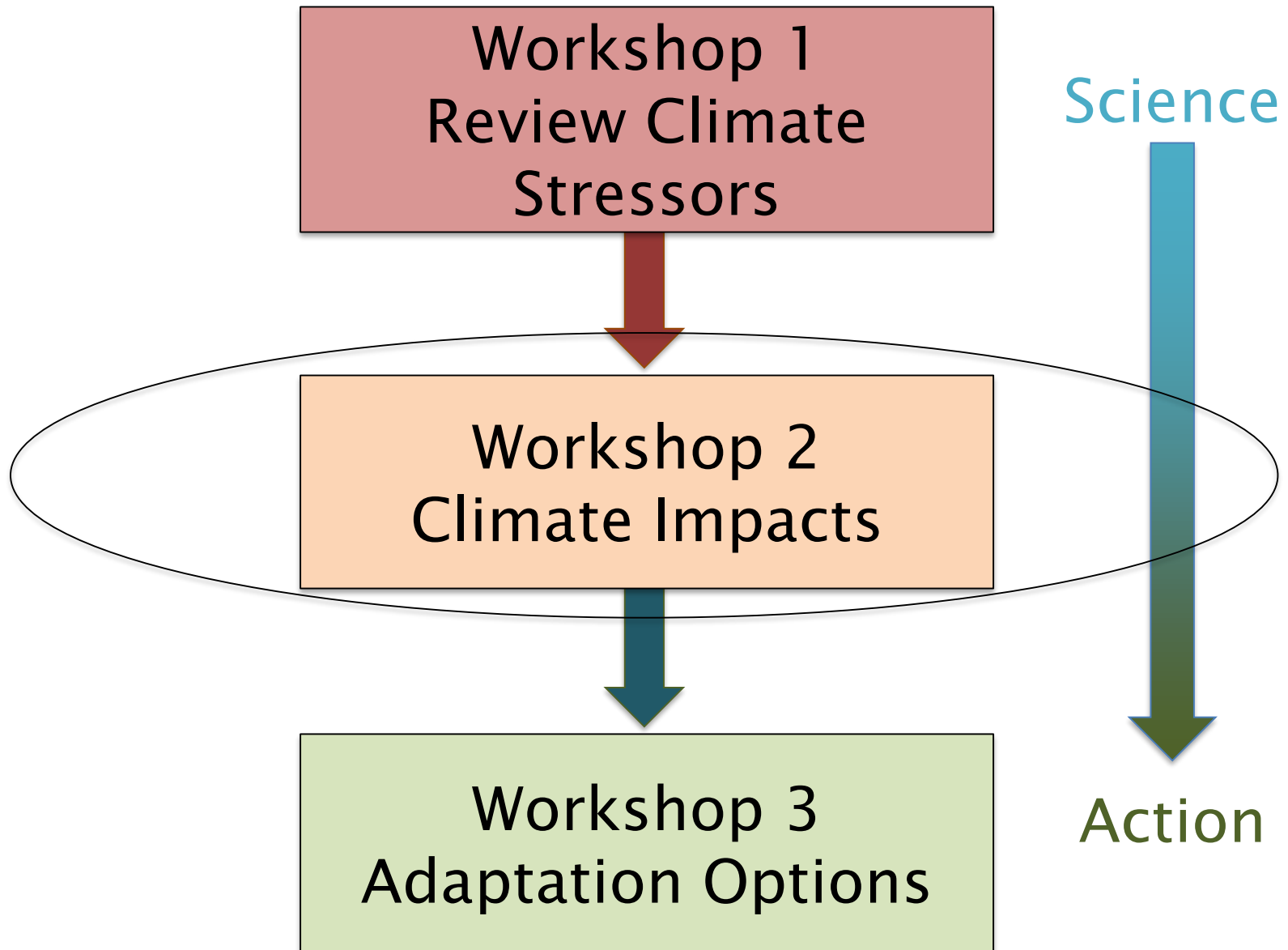
## Vulnerabilities

adequate plants and the main layer erosion periods of are more lead to res can The burn or must be burning and will lifting ating ally, it's watches impact on the oak at ease es will by

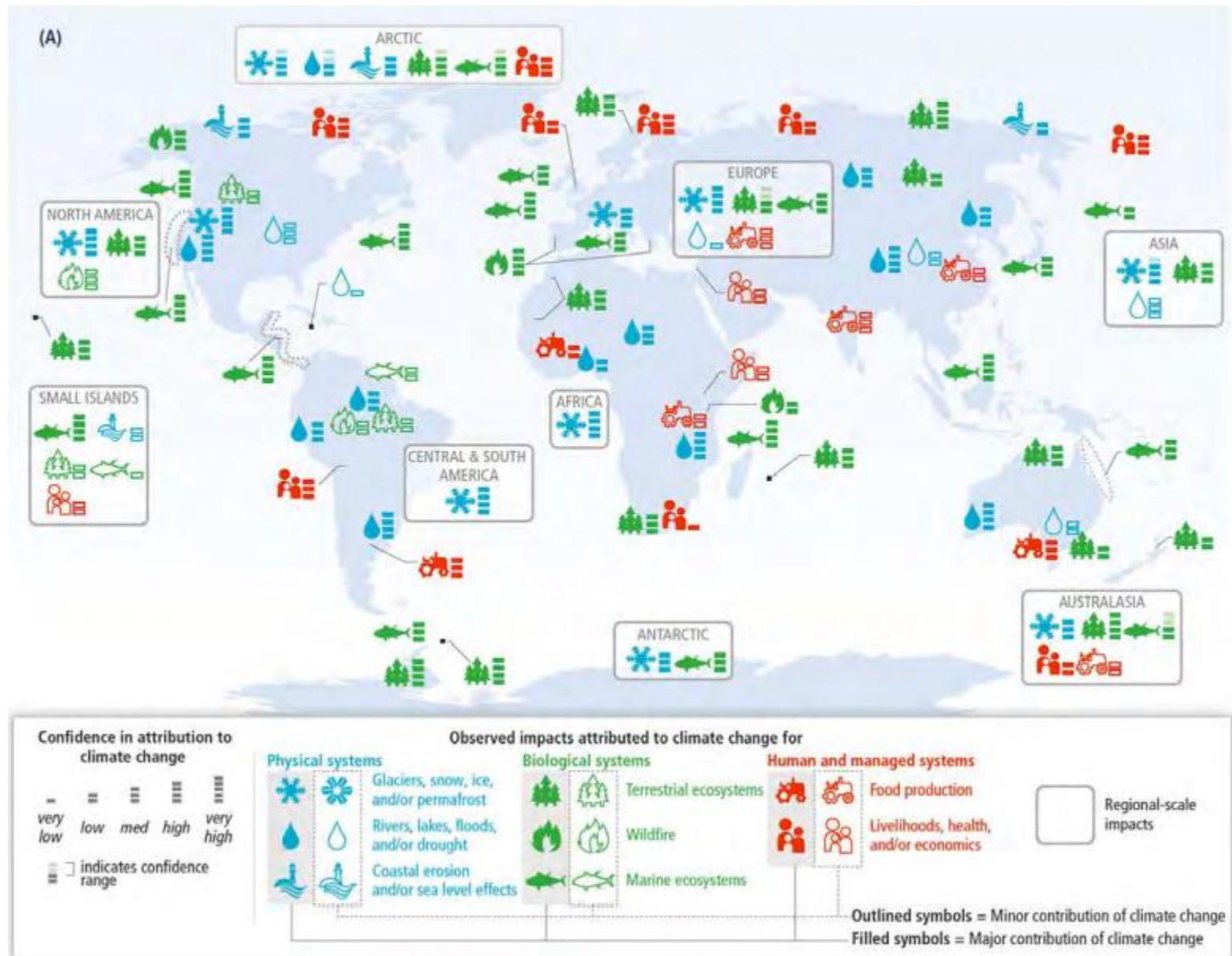
## Adaptations



# CW Prairies Climate Change Adaptation



# Create a CW Prairies Climate Impacts Map!





# Announcements!?



# How do seeds become prairies?



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# Prairies Climate Change Adaptation Conclusion, Next Steps!

Workshop 3 – Monday Dec 10

Check out the website!

*[cwprairies.org](http://cwprairies.org)*