



**Enhancing Natural Resource Professionals' Capacity with Place-Based Evidence**  
**10 Lessons Learned From a Climate Leadership Workshop(s)**

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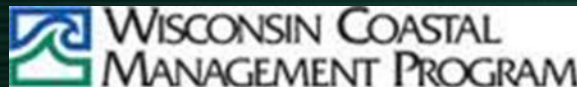




# Project Partners



## Additional support



# Project Location

In the heart of the Lake Superior Chippewa (Ojibwe) Indian Country. This region includes the 11 Ojibwe Tribes living within the “Ceded Territory” of Wisconsin, Minnesota, and Michigan

The climate awareness strategies used are applicable to all cultures & locations.... including yours!







## Our Goal

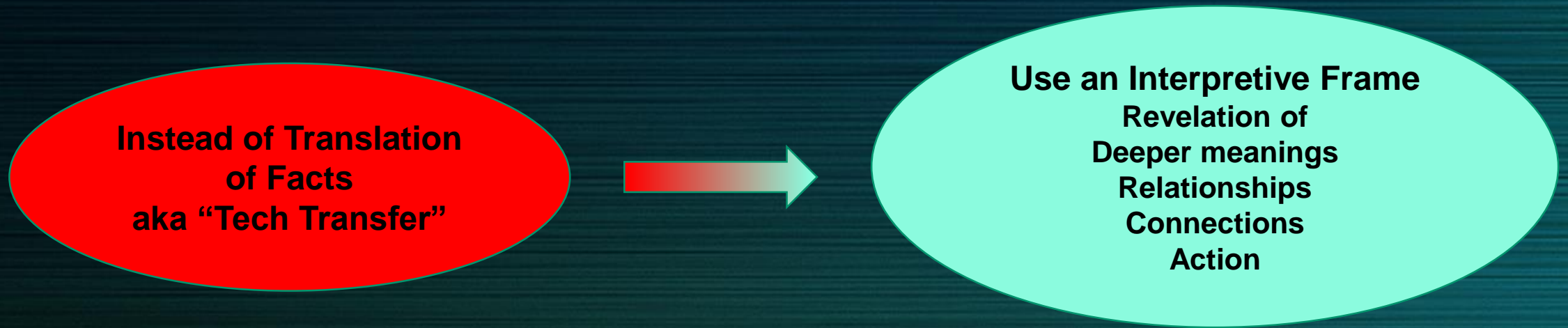
Build climate literacy through qualitative and quantitative evidence and experiences (the set up)....

.... for ACTION by developing confidence and leadership capacity (the spike)



# Lessons Learned

## 1. Use an Interpretative Framework for teaching and communicating about climate change



**Interpretation includes all of these elements:**



# Relate

All content must relate to a person's experiences, values



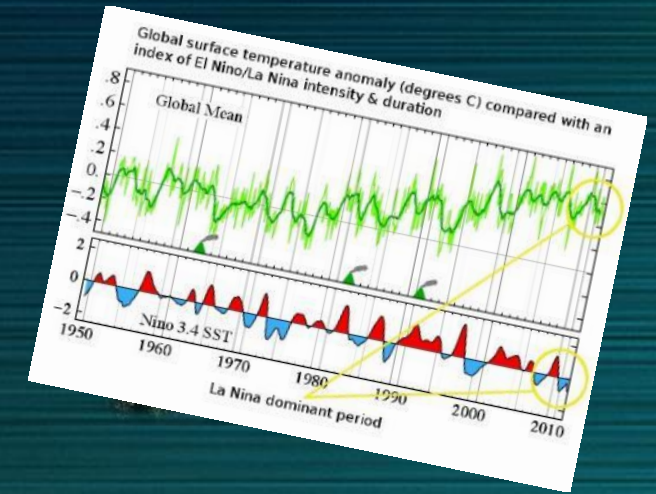
## Provoke

Call for action—The Big So What!



## Tell the "Whole"

Integrating qualitative and quantitative evidence



## Reveal

Revelation of information rather than just "tech transfer"



## 2. Start with Place-based Evidence of change-qualitative evidence we can observe within our culture & community

“...local, place-based evidence of climate change gained through experiential learning is as, or more effective than, simply studying analytical climate change data to increasing climate change literacy.”

*“The Psychology of Climate Change Communication”, Columbia University 2009*

**What changes have you observed?**



More extreme storm events



Decreased ice cover



Phenological changes



Species & habitats change



### 3. Weave in Traditional Ecological Knowledge (TEK)

#### Why?

The Lake Superior Ojibwe have relied on the sustainability of plant and animal species for generations to support subsistence, cultural, and spiritual practices or “lifeways” .....



.....Indigenous knowledge of natural systems, and indigenous languages, provide long term place-based indicators of climate change beyond weather variability.

TEK can provide us with a “baseline” for evaluating place-based evidence we are observing in all communities

### Challenges with Place-Based Evidence

“Survey results confirm that residents perceive regional climate change, it is not clear whether (they) can distinguish (weather) variability from climate change”



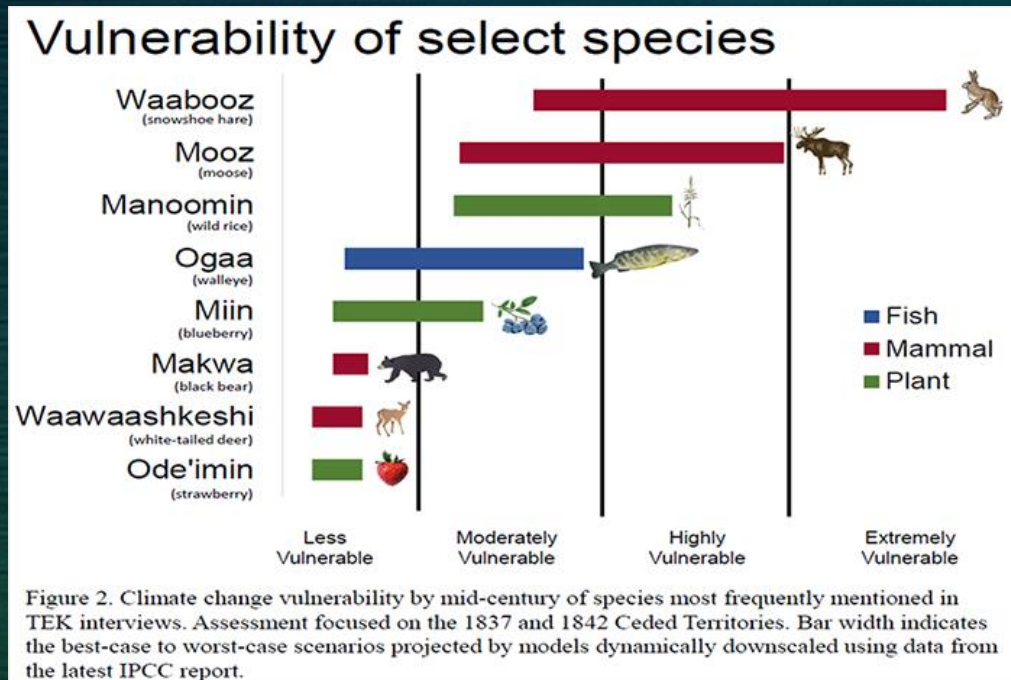
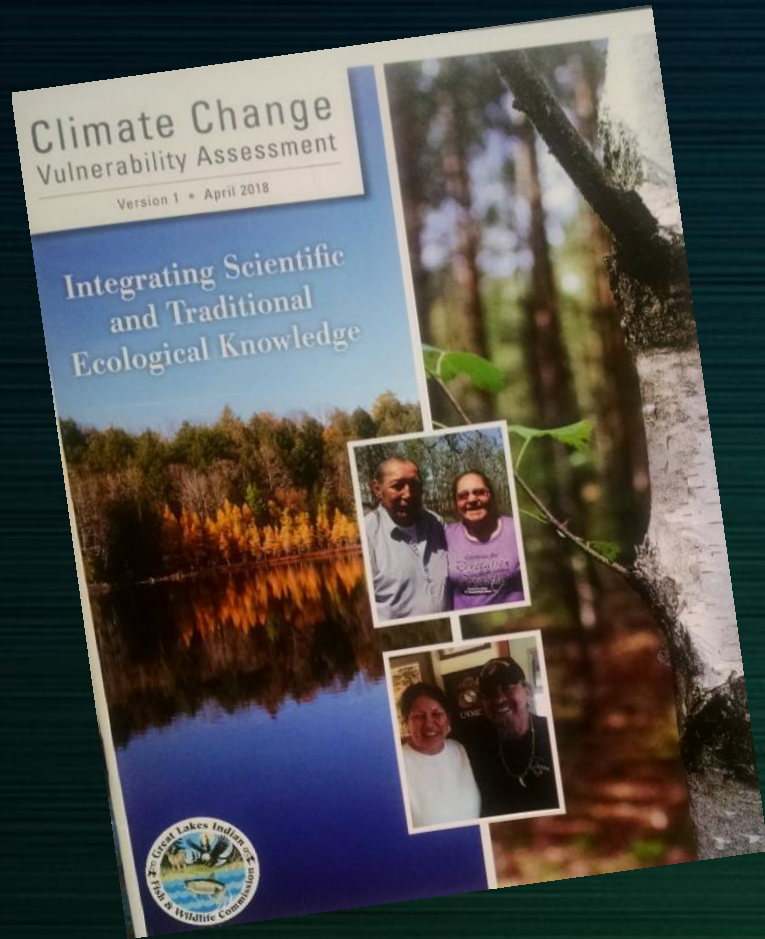
Finnis, J., Sarkar, A., Stoddart, M. 2015. Bridging science and community knowledge? The complicating role of natural variability in perceptions of climate change. *Global Environmental Change* 32: 1-10.





# Sources of Traditional Ecological Knowledge

## Great Lakes Indian Fish and Wildlife Commission's "Climate Change Vulnerability Assessment"

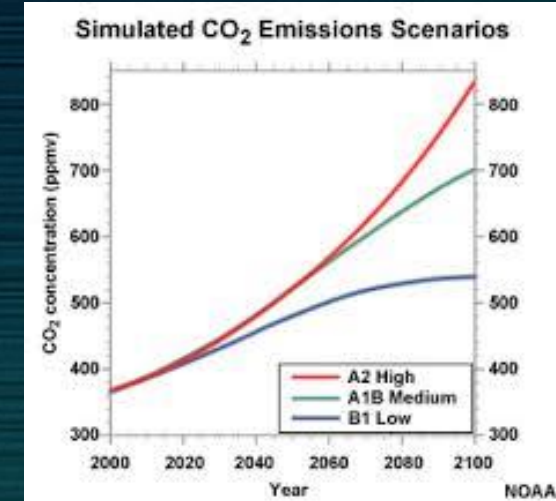
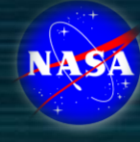
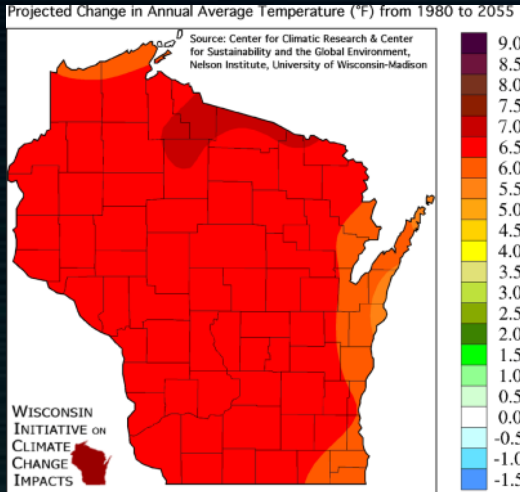


Language

Knowledge Keepers

Elders

## 4. Integrate quantitative scientific ecological knowledge (SEK)



Use the A1B climate scenario (middle of the road) for climate projections

Use mid-century climate projections to 2055

Use map formats to visualize historic and projected climate change

Use peer reviewed sources



## 5. Connect climate change to what people value



By revealing how climate change is affecting the sustainability of species and habitats

that support cultural or economic activities people value

by integrating

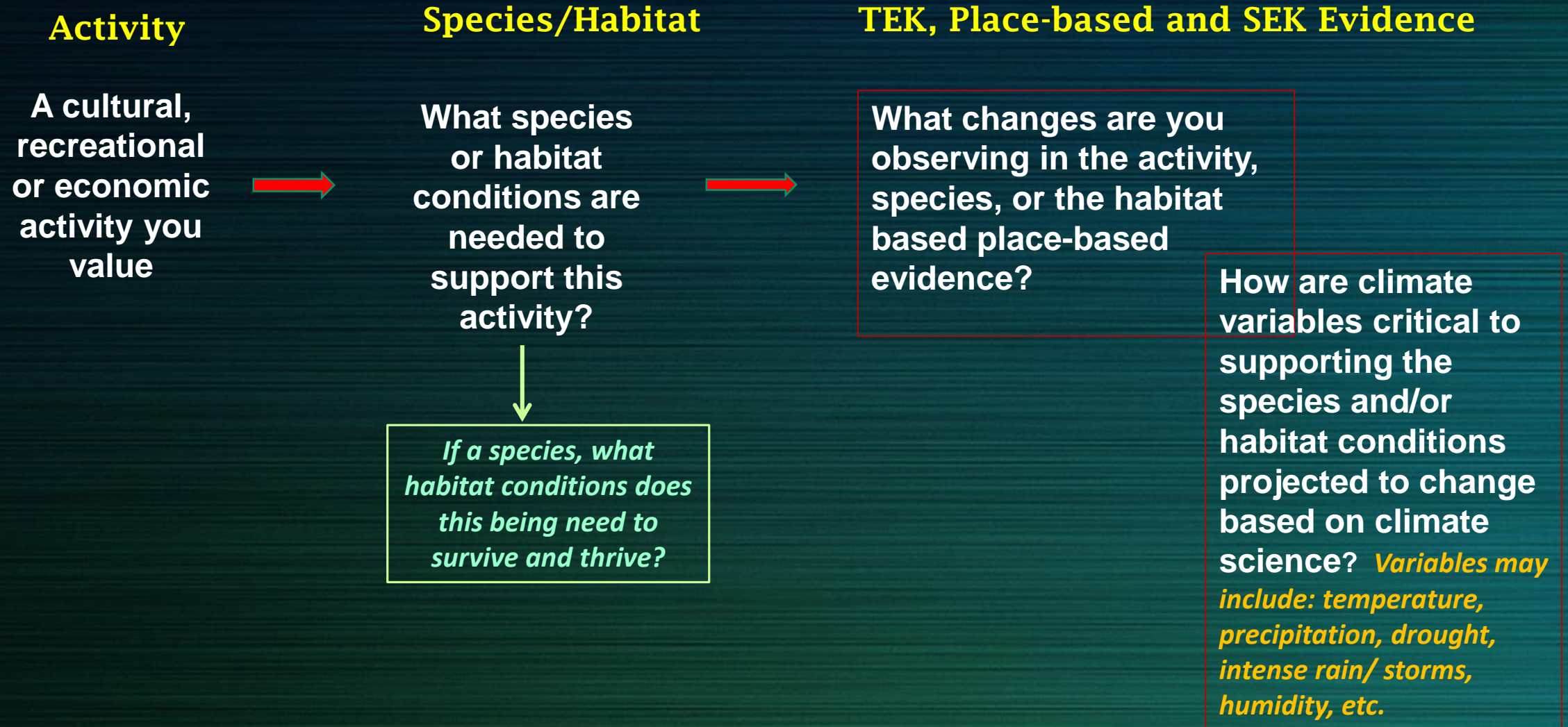
place-based evidence they can observe

with climate science

to provoke action



## 6. Apply a climate literacy model that is applicable to all locations and cultures





# Example: Manoomin (Wild Rice) Harvesting

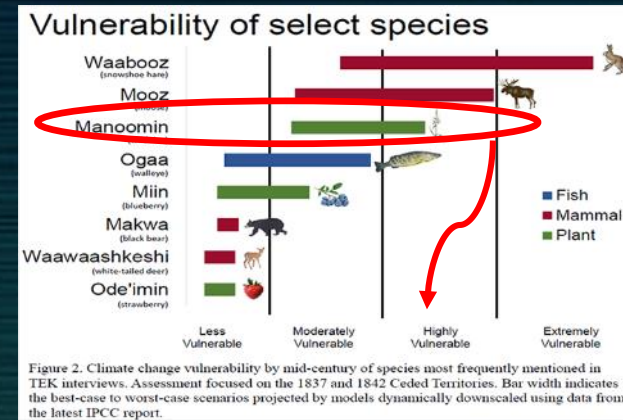
## Activity



## Species

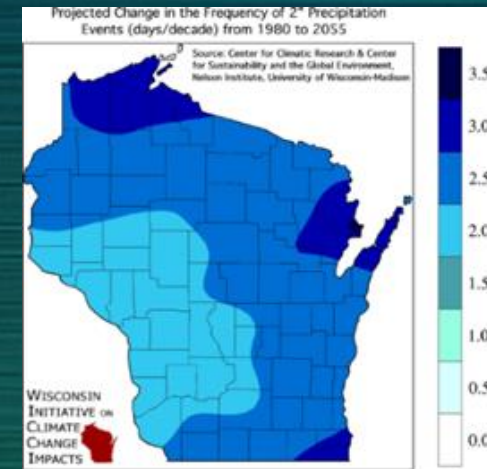


## TEK, Place-based & SEK Evidence



*Requires shallow water,  
moderate water level changes,  
cool growing season*

Figure 2. Climate change vulnerability by mid-century of species most frequently mentioned in TEK interviews. Assessment focused on the 1837 and 1842 Ceded Territories. Bar width indicates the best-case to worst-case scenarios projected by models dynamically downscaled using data from the Intest IPCC report.



Do culture and science agree that climate change impacts the sustainability wild rice?  
What does this mean for cultural practices that rely on manoomin?

*Projected frequency of 2"+  
rain events,  
1980-2055*



# This model can be applied to non-species dependent practices

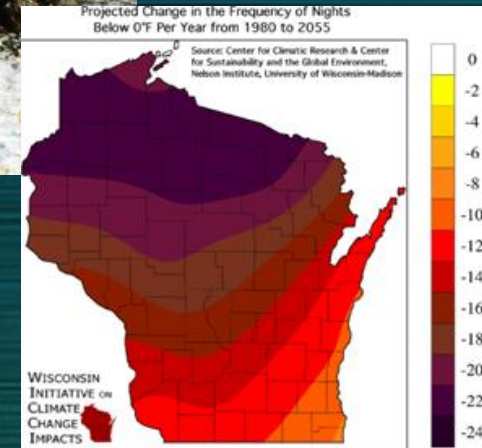
## Activity



## Species/Habitat



## Place-based & SEK Evidence



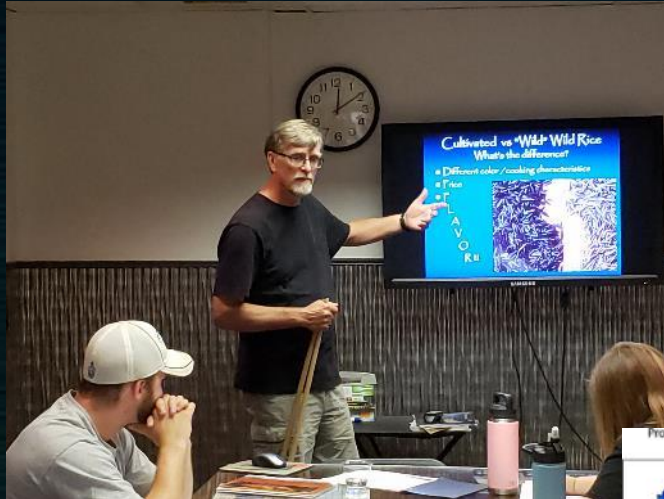
Fewer cold nights = less frozen ground =  
affecting harvest, transport of logs to market, \$\$\$

*Projected change in frequency  
of nights below 0 °F, 1980-2055*

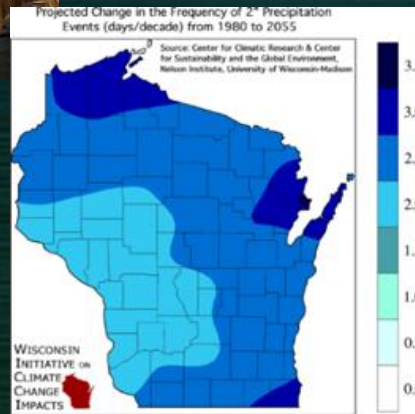
*"38 days of frozen ground lost since 1949... we've lost five weeks, almost six weeks.  
What does that mean for forest operations?"  
-Eau Claire, WI Logger*



## 7. Demonstrate how to integrate place-based, TEK, and SEK in evaluating climate change



Peter David- GLIFWC Wild Rice Specialist discussing historic and projected impacts of climate change on wild rice based on SEK



Examining place-based and TEK-based evidence of extreme flooding impacts on wild rice in the Kakagon Sloughs



## 5. Demonstrate & encourage diverse ways to take climate action



**Local food production**



**Games and demos**



**Art**



**Building community  
infrastructure resiliency**



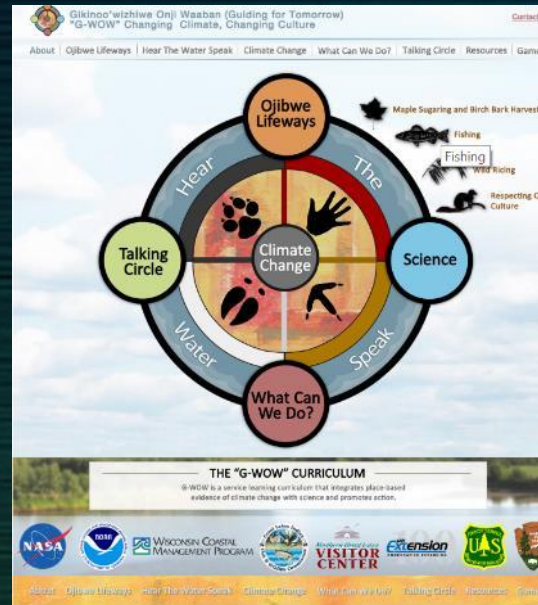




# 8. Provide follow-up resources and support



“Resource Café” of support from project partners



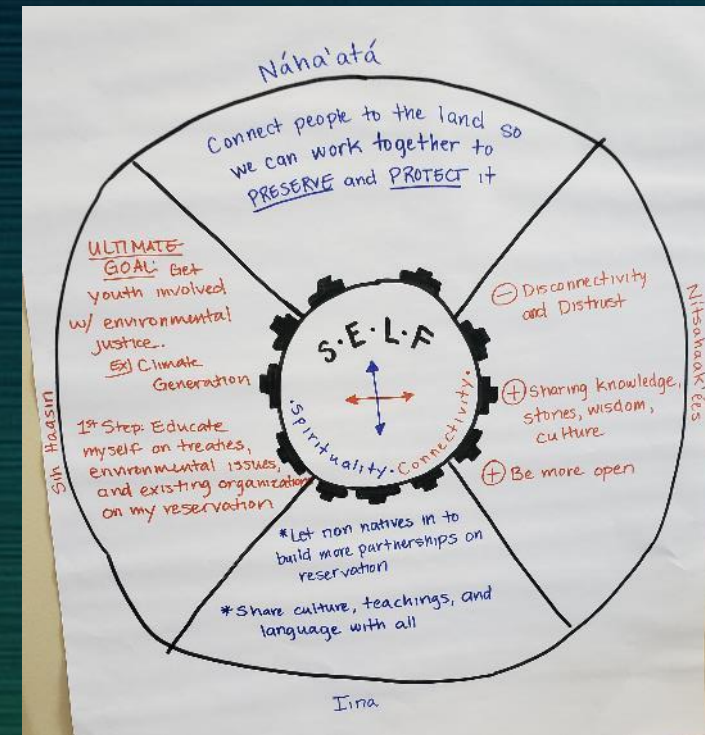
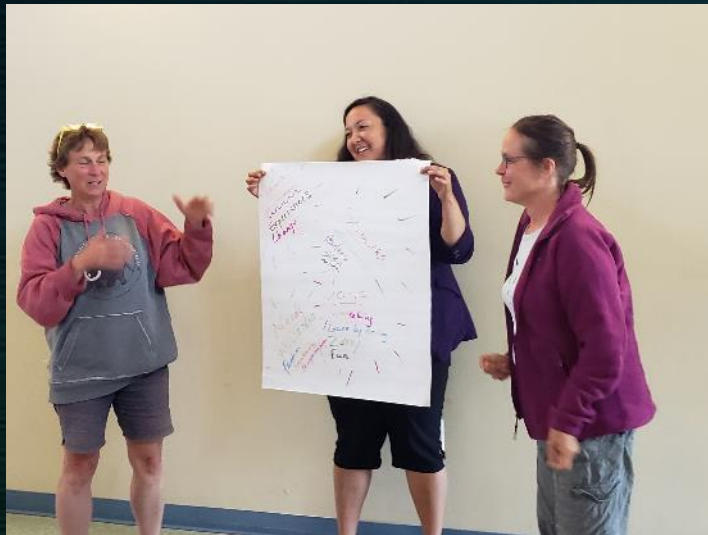
Online resources and service learning



Action planning tools using the Medicine Wheel



# 9. Stress climate resiliency, adaptation, and our ability to make a difference..... not just Doom!



**2019 Climate Strong! Institute, July 8-12**  
**Base Camp @ Northern Great Lakes Visitor Center (NGLVC), Ashland WI**

Monday, 7/8/19	Tuesday, 7/9/19	Wednesday, 7/10/19	Thursday, 7/11/19	Friday, 7/12/19
<p><i>Integrating TEK and SEK for building climate change understanding</i></p>	<p><i>Cultural impacts of climate change &amp; resilience</i></p>	<p><i>Place-based evidence of climate change, climate justice, and resilience</i></p>	<p><i>Tools for Building Climate Leadership Capacity</i></p>	<p><i>Taking Action: sharing ideas, resources, next steps</i></p>
<p><b>8:00 am: Institute Registration @ NGLVC</b></p>	<p><b>8:15 am Depart NGLVC</b> for Bad River Tribal Community</p>	<p><b>8:15 am Depart NGLVC</b> for Bayfield &amp; Red Cliff Tribal Community</p>	<p><b>8:15 am Depart NGLVC</b> for Bad River Tribal Community Center</p>	<p><b>9:00 am Start @ NGLVC</b></p>
<p><b>8:30 am Opening Ceremony</b>                  Welcome- Mike Wiggins, Chair-Bad River Band of the Lake Superior Ojibwa</p>	<p><b>Climate, TEK, &amp; Treaty Rights:</b> Paula Maday &amp; Dylan Jennings-GLIFWC. Demo of Kahoots Game as a teaching tool</p>	<p><b>8:45 – 9:45 Climate and Language-</b>Damon Panek, Ranger, Apostle Islands National Lakeshore</p>	<p><b>Developing Youth Climate Leadership- Strategies from Youth Convening MN-</b>Kristin Poppleton-Will Steger Climate Generation</p>	<p><b>Climate Action Through Hands On Art:</b> Janet Moore-Artist</p>
<p><b>Introductions &amp; Institute Overview</b></p>	<p><b>Climate change impacts on fish, wildlife, and culture -</b> GLIFWC Biological Services Team presentation</p>	<p><i>Discovering place-based impacts of climate change in the Apostle Islands National Lakeshore- session being planned</i></p>	<p><b>Building Leadership Capacity-</b> Brian Gauthier, Dr. Annie Jones, CAT, UW-Extension</p>	<p><b>Sharing action planning ideas</b></p>
<p><b>Intro to G-WOW framework</b>                  Cat Techtmann, UW Extension</p>	<p><b>PM Lunch Pizza Mixer @</b> GLIFWC</p>	<p><b>PM Lunch:</b> Legendary Waters Resort, Red Cliff</p>	<p><b>Treat Everyone Like a Leader Activity</b></p>	<p><b>Resource Café:</b></p>
<p><b>Ways of Knowing Climate Change:</b></p> <ul style="list-style-type: none"> <li>- Scientific Ecological Knowledge</li> <li>- Traditional Ecological Knowledge: GLIFWC</li> </ul>	<p><b>Tribal Adaptation Menu: Climate Impacts on Northern Forests and Ojibwe Culture.</b> Melonee Montano, Hannah Panci-Montano, Hannah Panci-GLIFWC Climate Team, Marne Kaeske-1854 Treaty Authority, Kristen Schmitt-NIACS</p>	<p><b>Climate Justice and Culture-</b> Noah Saperstein-Red Cliff Environmental Services Dept.</p>	<p><b>Discovering Your Personal Leadership Style</b></p>	<ul style="list-style-type: none"> <li>- Grants</li> <li>- Climate Camps</li> <li>- Community events</li> <li>- Educator network</li> </ul>
<p><b>Climate Impacts on Manoomin:</b> Peter David-Wildlife Biologist-GLIFWC</p>	<p><b>Return to NGLVC</b></p>	<p><b>Travel to Raspberry Bay Tribal Park and Language Camp</b></p>	<p><b>PM: Lunch-catered</b></p>	<p><b>Additional Resources</b></p> <ul style="list-style-type: none"> <li>- GLIFWC</li> <li>- G-WOW</li> <li>- 1854 Treaty Authority</li> <li>- Tribes</li> <li>- NIACS</li> <li>- UW Extension</li> </ul>
<p><b>PM: Lunch-catered</b></p>	<p><b>“Forests on the Move” Forestry climate activity demo:</b> Kristen Schmitt, NIACS and CAT Techtmann</p>	<p><b>Climate impacts on Ojibwe culture and adaptation strategies.-</b> Marvin DeFoe-Red Cliff Tribal Historic Preservation Officer</p>	<p><b>Using the Medicine Wheel for climate leadership &amp; action-</b> Dr. Annie Jones-UW Extension</p>	<p><b>Where Do We Go From Here?</b></p>
<p><b>Wild Rice Tour- Kakagon Sloughs-</b> Edith Leoso, Naomi Tillison- Bad River Historic Preservation and Natural Resource Depts.</p>	<p><b>Reflections</b></p>	<p><b>Reflections</b></p>	<p><b>Discussion of FDLTTC climate camp leadership experiences, outcomes-</b> Courtney Koalczak-FDLTTC</p>	<p><b>Talking Circle- Entire Group</b></p>
<p><b>Climate Change and Food: Bad River Tribal Food Sovereignty Project-</b> Loretta Livingston and Joy Scheble</p>			<p><b>Using the G-WOW Model for climate action planning-</b> CAT</p>	<p><b>Closing Ceremony</b></p>
<p><b>Reflections – Return to NGLVC</b></p>			<p><b>Reflections</b></p>	<p><b>Grab &amp; Go Box Lunch</b></p>
			<p><b>Return to NGLVC</b></p>	<p><i>Miigwech and Safe Travels</i></p>





## 10. It works!!

### Evaluation of 2015 climate institute participants agree or strongly agree:

- An increase in **personal climate literacy** and teaching skills
- Being more **model is transferable confident in teaching** about climate change using the model
- The to their students **use the model** in different populations despite location
- All respondents in some form

*Source: Patty Carpenter, 2016 UMD Master Degree Thesis:*

*“G-WOW Changing Climate, Changing Culture Professional Development's Influence on Classroom Teachers”*

### Evaluation of 2019 Climate Strong! Institute participants

100% very likely to extremely likely to **incorporate place-based evidence** in their climate outreach

92% **increased their confidence** in teaching about climate change

100% were likely or extremely like to use this training to help others **adapt climate resiliency** behaviors

The Ojibwe believe that we must think seven generations ahead when making decisions today. All cultures share responsibility for protecting their home, the Earth. We cannot eliminate all the risks that climate change presents, but we can make a difference in slowing its impacts. The culture and lifeways of future generations will be affected by the choices we make. *Joe Rose, Bad River Tribal Elder*

**We invite you to use this model and our lessons learned to increase climate change awareness & action based on the unique lifeways of your culture**



*Müigwech !*  
*(Thank you)*



For more information, please contact  
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<http://fyi.uwex.edu/nglvc/>

