

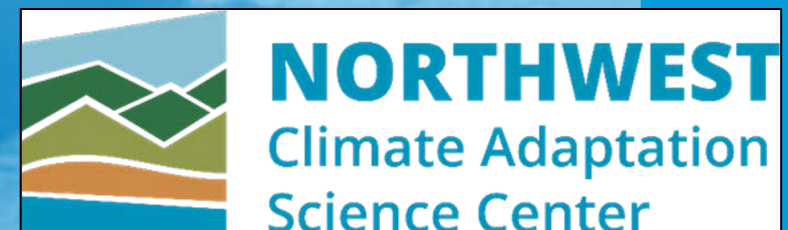
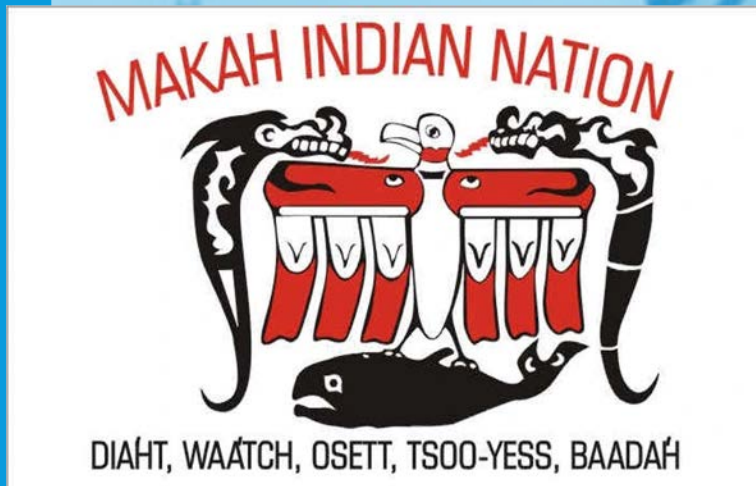
# CLIMATE VULNERABILITY AND FOOD SECURITY OF THE MAKAH TRIBE

CLIVAR Summit

Dr. Laura K. Nelson

July 31, 2023

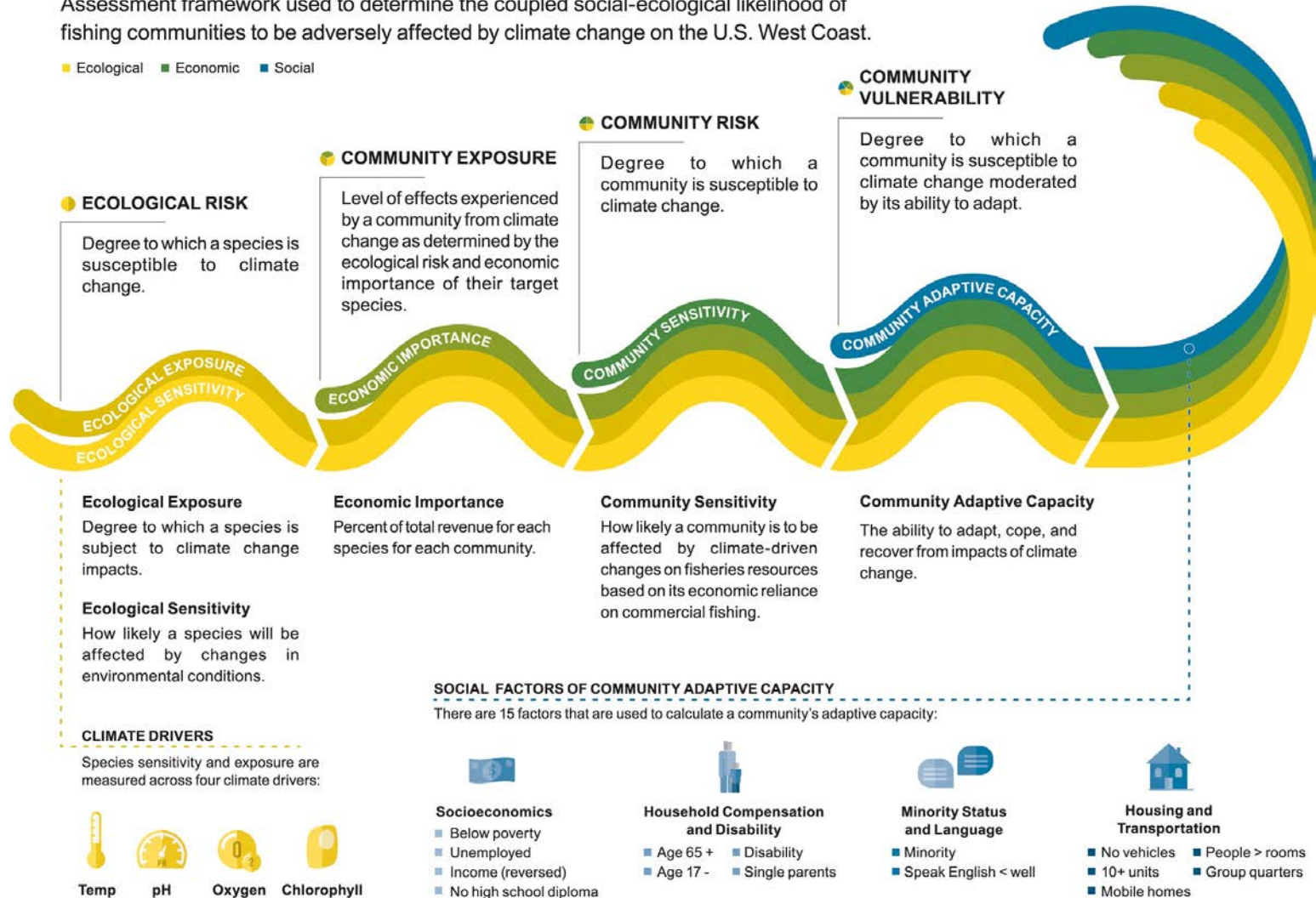
UNIVERSITY *of*  
WASHINGTON



# Socioecological Vulnerability of Climate Change on Fishing Communities

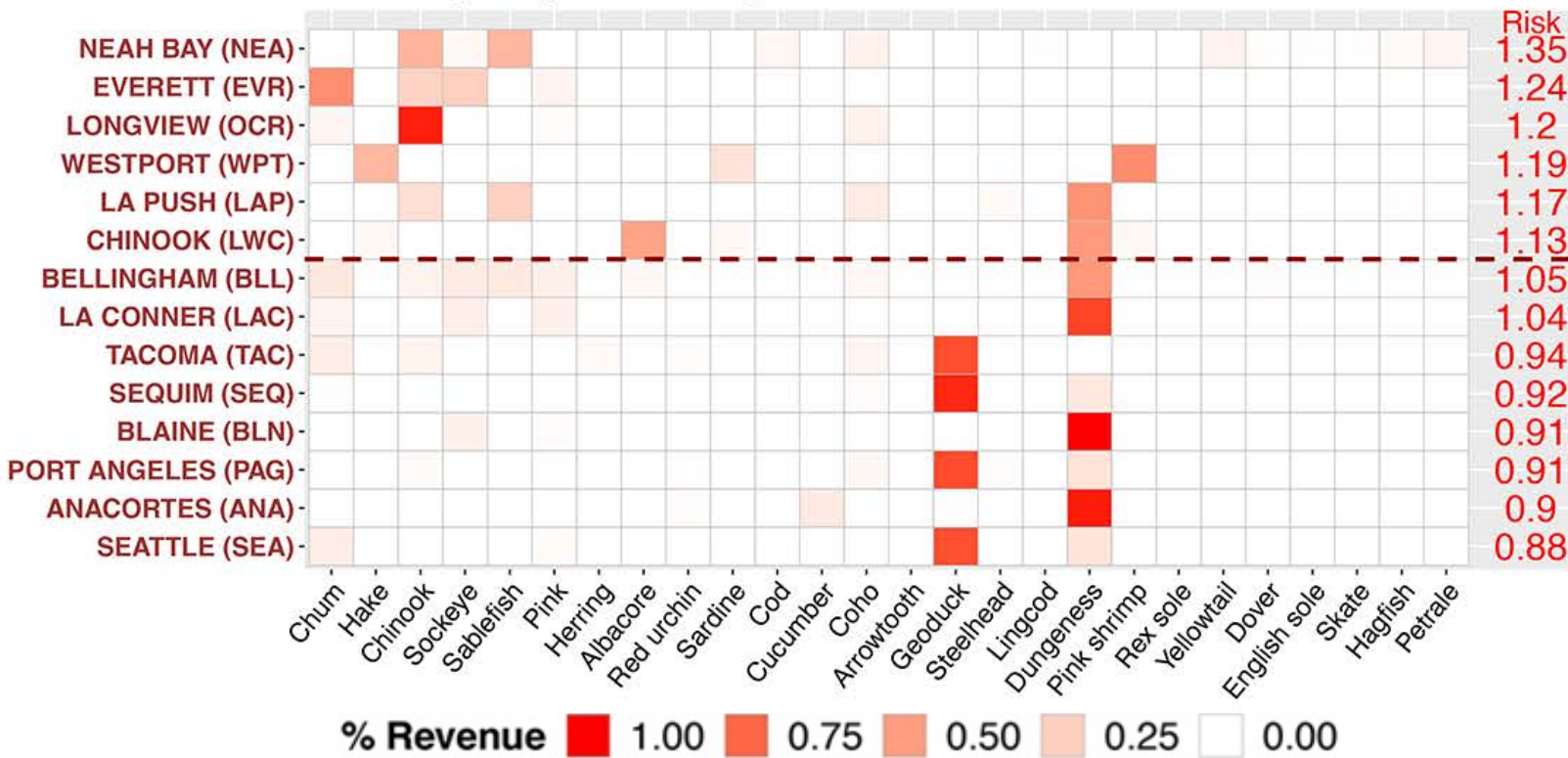
Assessment framework used to determine the coupled social-ecological likelihood of fishing communities to be adversely affected by climate change on the U.S. West Coast.

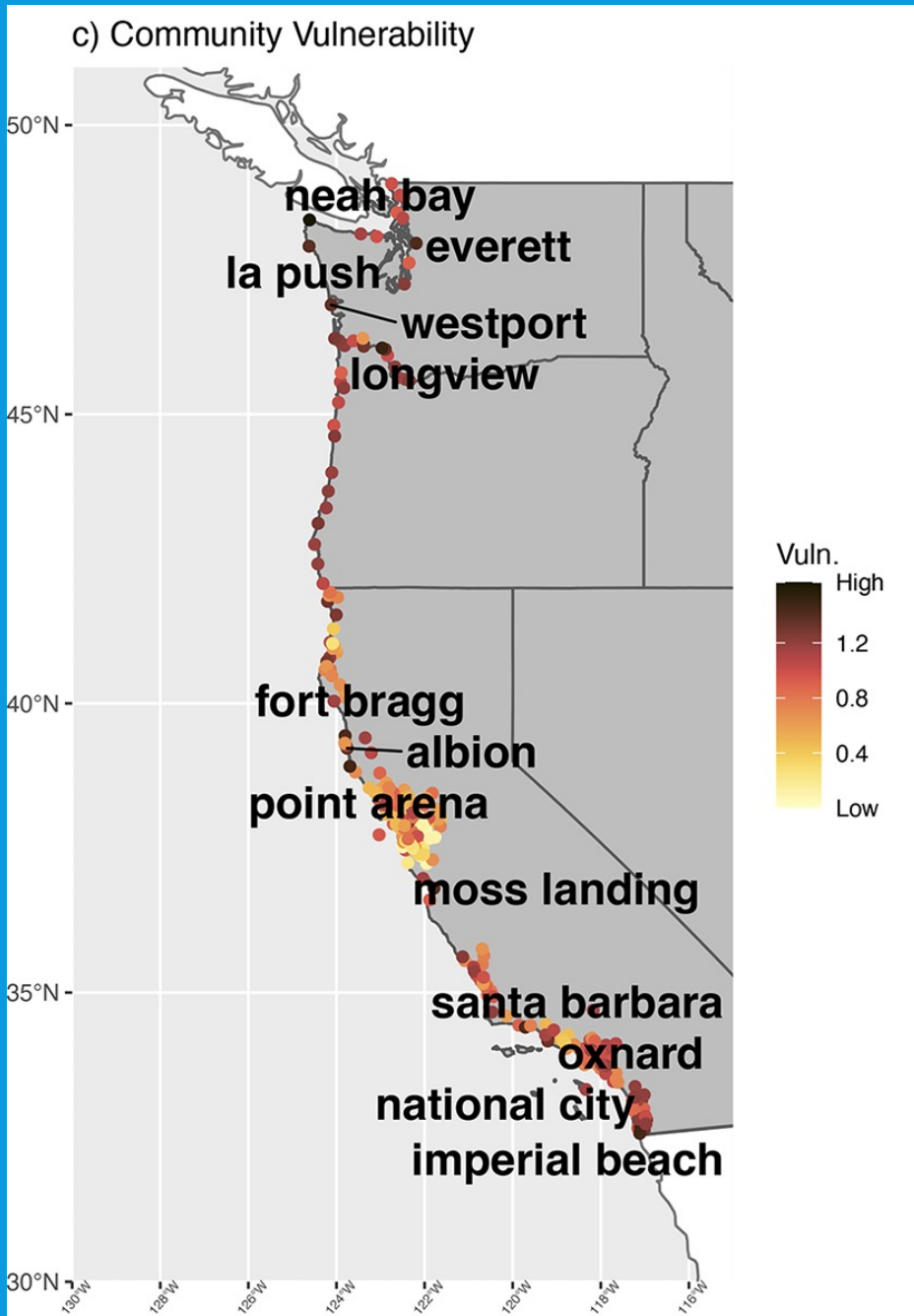
Ecological Economic Social



# What is the vulnerability of fishing communities along the US Pacific Coast to climate change?

## Landings by Washington Communities





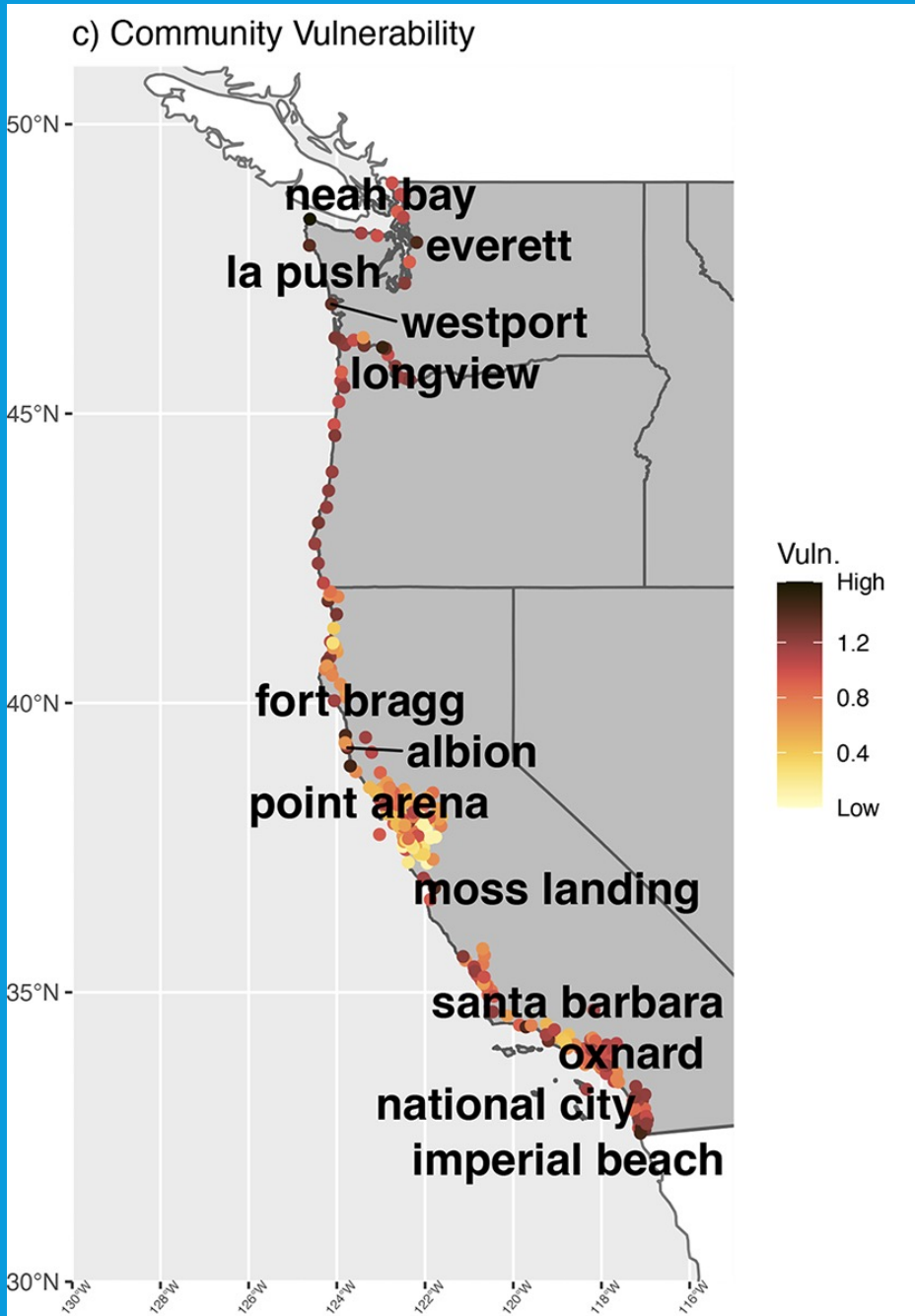
Koehn et al. 2022

## Climate vulnerability assessments

- Often scalable and repeatable methods
- Can identify areas disproportionately affected and priorities for resource allocation

But...

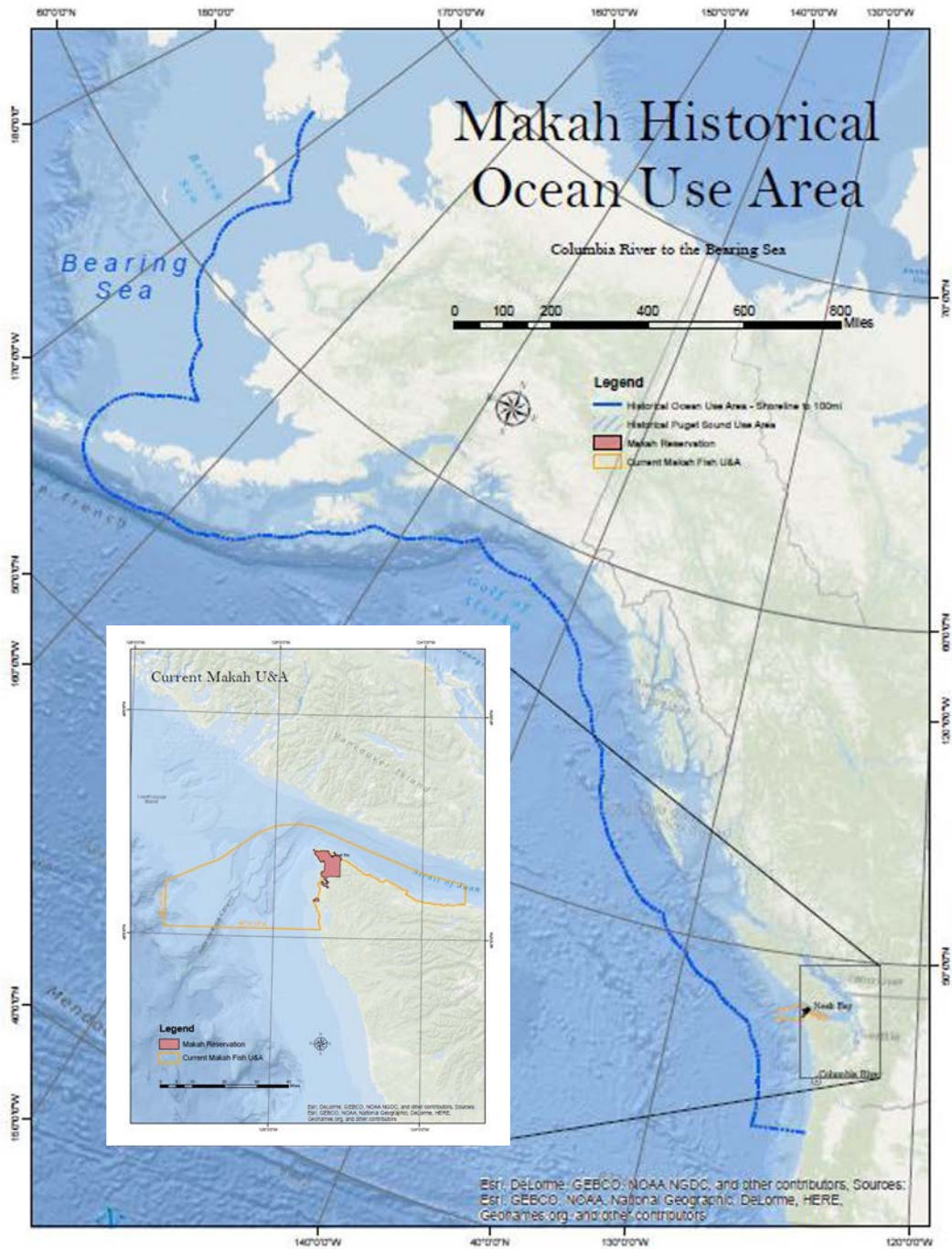
- Can fail to capture nuances of vulnerability and resilience
- Challenging to capture vulnerability of things difficult to quantitatively measure



What are the risks to the Makah Tribe's traditional seafood system from climate change?



- Q<sup>w</sup>idicca?a'tx - “People of the Cape”
- Southernmost Nuu-chah-nulth Tribe and only member of the Wakashan-speaking peoples within the United States.
- U & A ~ 1550 nm<sup>2</sup>



## Treaty of Neah Bay, 1855 ARTICLE 4.

The right of taking fish and of whaling or sealing at usual and accustomed grounds and stations is further secured to said Indians in common with all citizens of the United States, and of erecting temporary houses for the purpose of curing, together with the privilege of hunting and gathering roots and berries on open and unclaimed lands: Provided, however, that they shall not take shellfish from any beds staked or cultivated by citizens.

# “THE SEA IS MY COUNTRY”



Economy



Food



Culture





## Objectives

1. What types and amounts of fish and shellfish are currently being consumed by Makah Tribal members?
2. How do Tribal members define food security?
3. What are some of the climate-driven risks to food security?

Worked with the Makah Cultural and Research Center to develop structured interviews focused on:

- Seafood consumption
- Observations of environmental change
- Health benefits of seafood
- Food security



From the collections at Makah Cultural and Research Center

Worked with the Makah Cultural and Research Center to develop structured interviews focused on:

- Seafood consumption
- Observations of environmental change
- Mix of descriptive statistics, comparison with historical data, and qualitative coding



From the collections at Makah Cultural and Research Center

Worked with the Makah Cultural and Research Center to develop structured interviews focused on:

- Health benefits of seafood
- Nutrient density analysis and qualitative coding



From the collections at Makah Cultural and Research Center

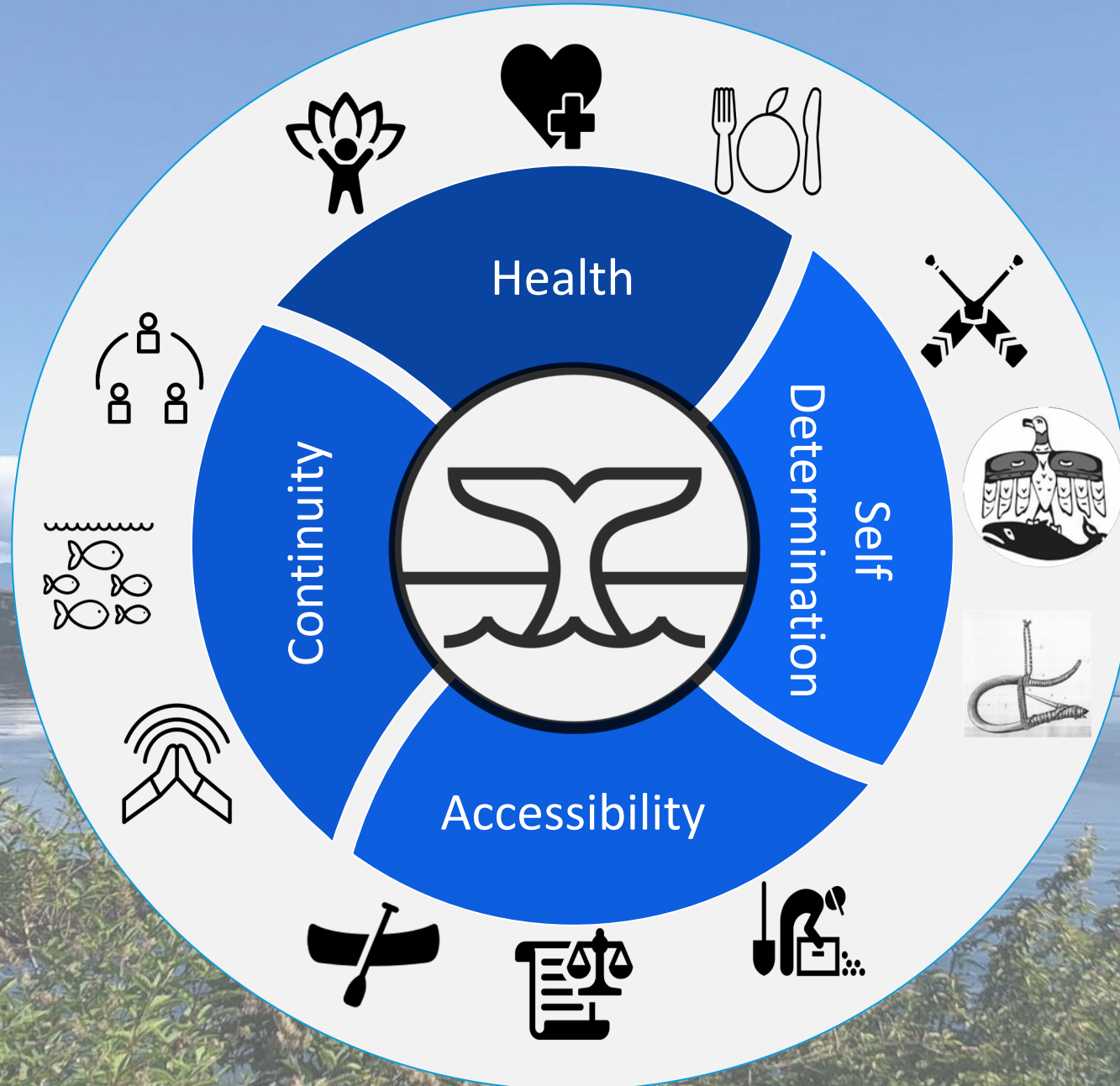
Worked with the Makah Cultural and Research Center to develop structured interviews focused on:

- Food security
- Iterative coding - first pass inductive coding, initial conceptual framework developed and reviewed, responses recoded deductively using finalized framework



From the collections at Makah Cultural and Research Center

# Makah Food Security



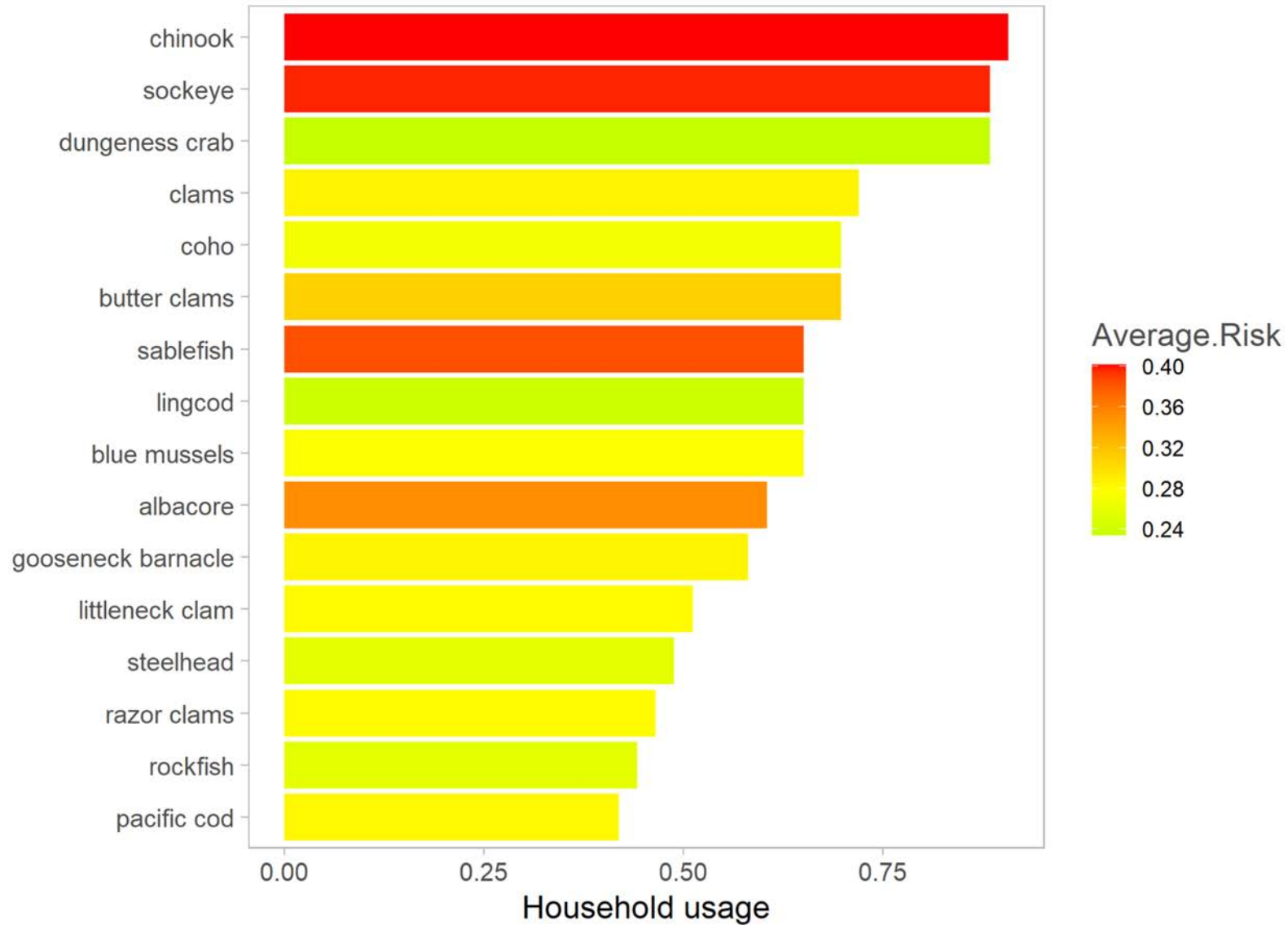
**Health** - Foods are sufficiently abundant to provide physical and spiritual health benefits

**Continuity** - foods are available and abundant, today and for perpetuity

**Accessibility** - no political and regulatory barriers prevent people from accessing the foods they desire

**Self-determination** - the contribution of food to Makah identity met

# Climate change and food security





## Project and partnership planning

- What is the objective and outcomes of the collaboration?
  - Communication - early and often, and do more listening than talking
- Are the methods culturally appropriate and will they provide relevant and credible data?
  - Develop and plan questions, methods, data sharing, and outputs together





# Project and partnership planning

- How will partnerships be built and maintained?
  - Give back and ensure the work is not extractive
  - Partnerships are as (or more!) important as the research



## Thank you and acknowledgements



Polly DeBari  
Janine Ledford  
Greig Arnold  
Chad Bowechop  
Carol Reamer  
Chairman TJ Greene  
Haley Kennard  
Mike Chang

