

Socio-cultural dimensions of ocean acidification: a community-based project with the Squaxin Island Tribe



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Northwest Climate Conference
Tacoma, WA October 11, 2017





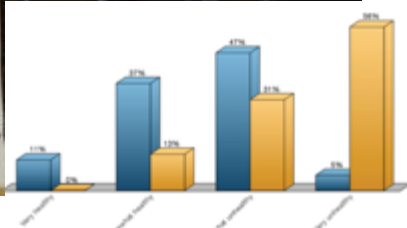
Squaxin Island Tribe

Community Participatory Action Research



Project Goals:

- Better understand the link between marine 'first foods' and well-being
- Define health/well-being from a Squaxin Island community perspective
- Assess the cultural and well-being impacts of ocean changes (e.g. OA)
- Identify actions that strengthen the community in response to changes



Importance of Marine First Foods

“Squaxin Island is known for its clams, which are important for celebrations and feasts, during funerals, and all occasions. The well-being of the shellfish is part of the well-being of people, because the cultural-ecosystem is the same.”



Photo credit: Matika Wilbur

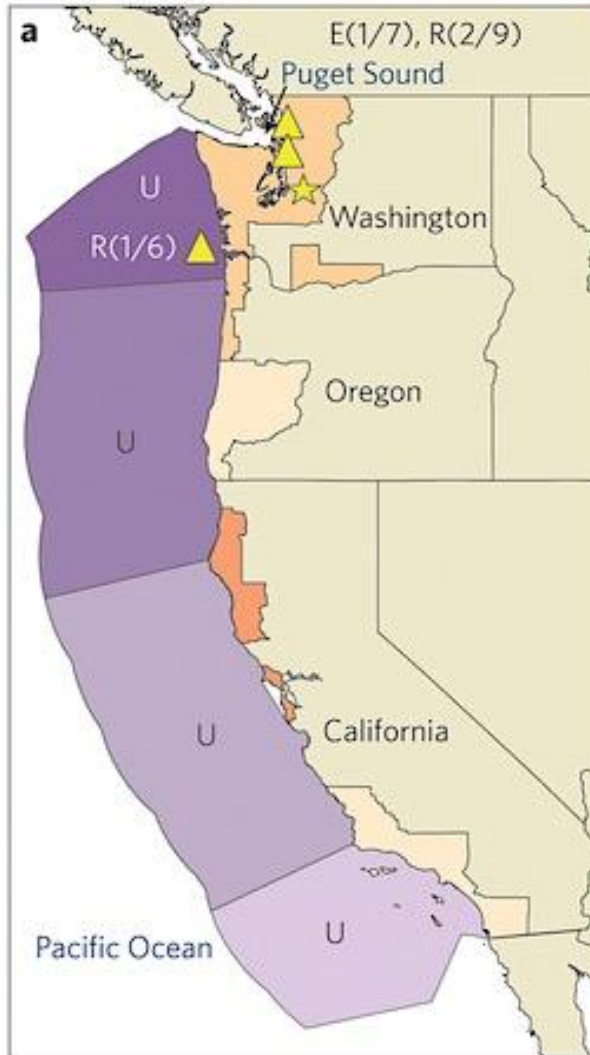


Identity & heritage
Ceremonial & spiritual
Subsistence & economic livelihood
Food & nutrition security
Gifting & sharing
Social connections
Knowledge transfer
Sense of place
Practice Treaty rights
Access
Decision-making

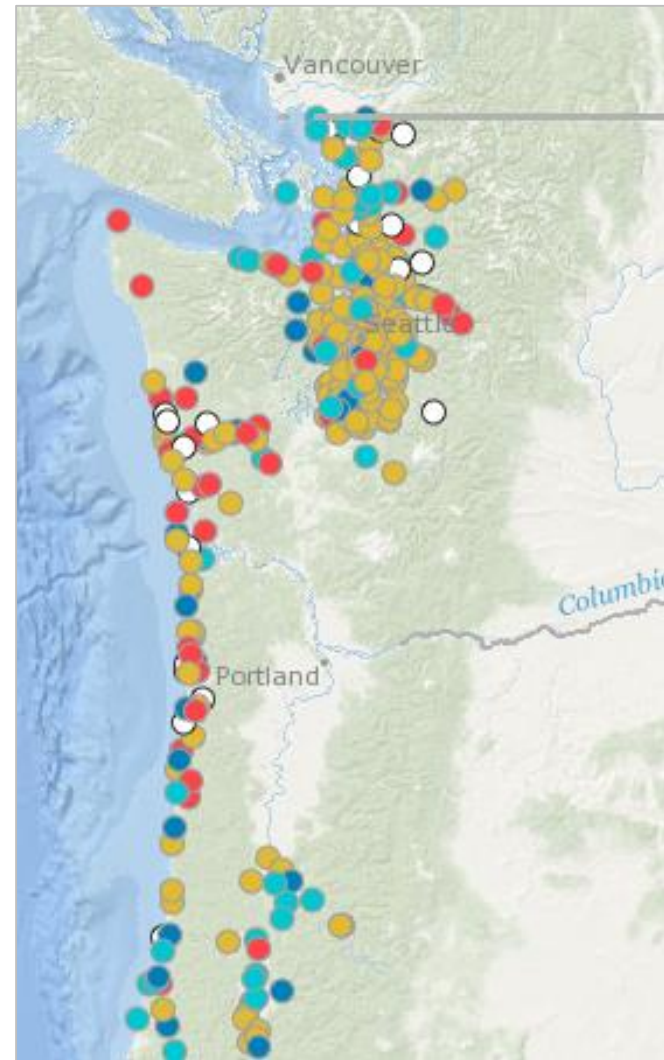


More info: Poe, M; Donatuto, J.; Satterfield, T. (2016) “Sense of Place:” Human Well-being Considerations for Ecological Restoration in Puget Sound, *Coastal Management*, 44(5)1-18.

Mapping Social Vulnerability



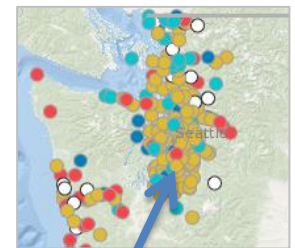
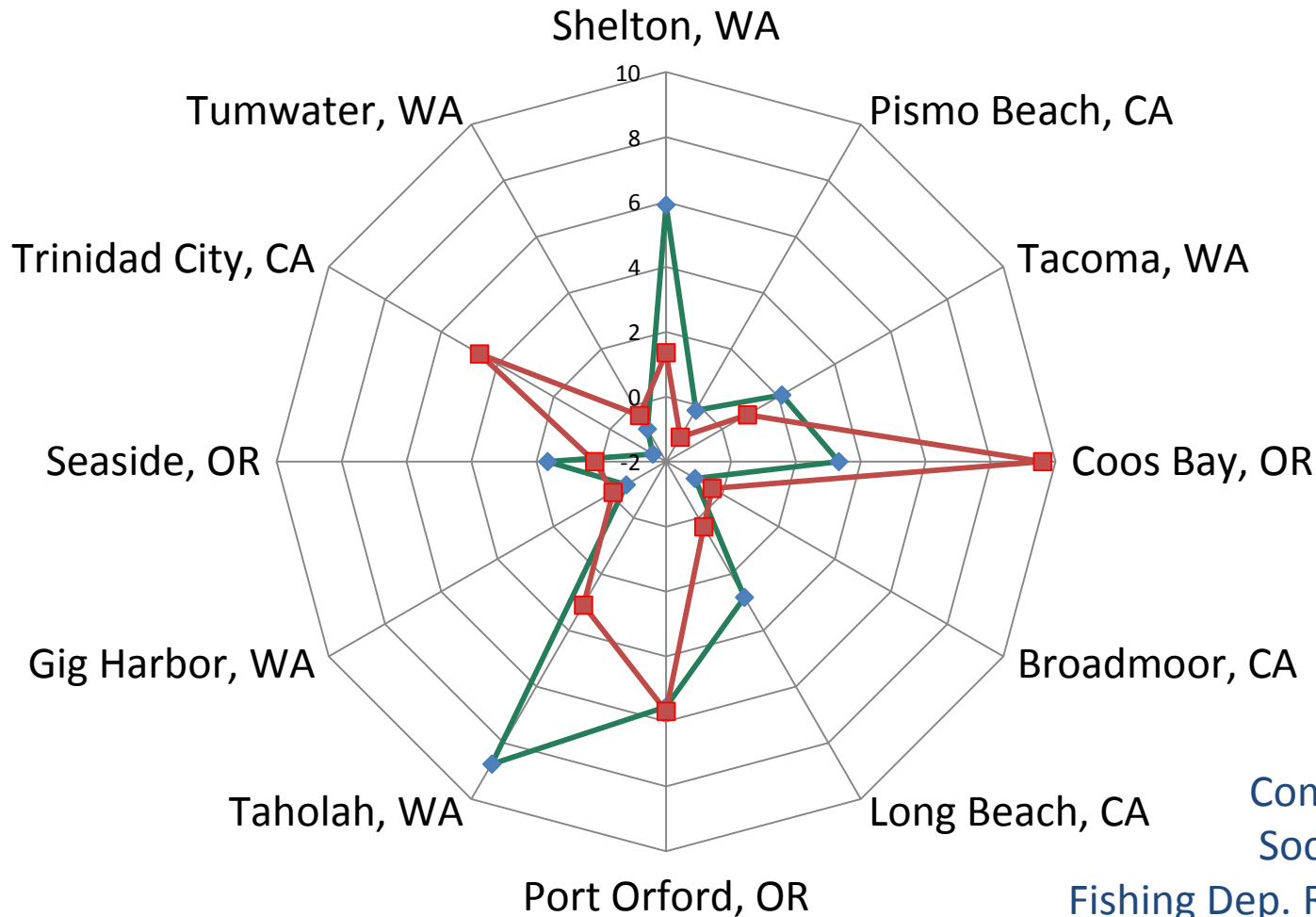
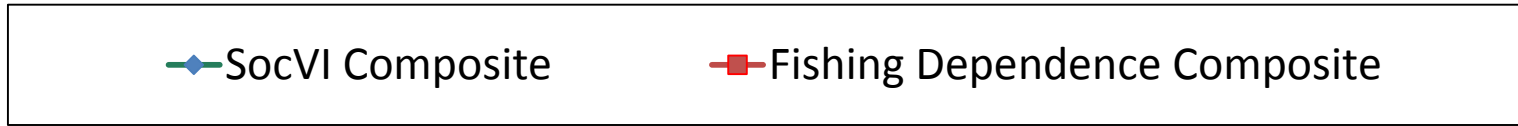
Ekstrom, et al. "Vulnerability and adaptation of US shellfisheries to ocean acidification." *Nature Climate Change* 5.3 (2015): 207-214.



NOAA Community Social Vulnerability
<http://www.st.nmfs.noaa.gov/humandimensions/social-indicators/map>

Community Social Vulnerability Index for Shelton, WA, 2010

(source: Karma Norman, et al, NOAA NWFSC)



Shelton:

Composite score **5.91**

SocVI Rank: **64** of 880

Fishing Dep. Rank: **2** (moderate)

What are the community defined well-being & health risks from ocean acidification?



Health here in the tribal community? I think it's spiritual health, mental health, physical health. I think health here is being connected our culture [...] everybody here is really involved in our culture. We're canoe families. People of the water. We're very connected with the Puget Sound [...] A big part of our health has to do with being connected with that water.

— ʔəshig^wəd tə adʔiišəd —

COMMUNITY CONNECTION

Work • Sharing • Relations

— q^wiq'cut —

RESILIENCE

Self-Esteem • Identity • Sustainability

— ǰəčusadad —

EDUCATION

The Teachings • Elders • Youth

— talǰcut —

SELF-DETERMINATION

Healing & Restoration •
Development • Trust

— yayusbid —

CULTURAL USE

Respect & Stewardship • Sense of
Place • Practice

— sʔutiǰdx^w ti swatix^wtəd —

NATURAL RESOURCE SECURITY

Quality • Access • Safety



Indigenous Health and Well-being Indicators

Physical Health: the strength and state of the body, nutrition, and being free from illness and pollution.

Community Connections: active in community functions, helping each other, harvesting with family and caring for elders.

Natural Resources Security: local natural resources are abundant, healthy and safe. The community has access to these natural resources at the right seasons to support culture and economy, including through sharing.

Cultural Use and Practice: The community is able to carry forth their cultural practices to show respect and honor traditions by harvesting and using local First Foods and natural resources.

Education: Knowledge, values and beliefs are actively passed on from elders to youth through story-telling, traditional foods practices, language.

Self-Determination: exercise Treaty reserved rights to harvest, and enact self-government in healing, education, development and restoration programs.

Resilience/Balance: balance of holistic health and well-being, confident that one's health and the health of the next 7 generations are not at risk due to environmental changes or relationships with others.



Squaxin Island Tribe

OA Risk to Health & Well-being

Health & Well-being Indicator	Means		% Change
	Current Status	Future Status	
Physical Health	2.46	3.56	42
Cultural Use and Practice	2.21	3.14	42
Community Connections	2.07	2.71	30
Balance/Resilience	2.83	3.25	21
Natural Resources Security	2.64	3.14	19
Education	2.42	2.67	8
Self-Determination	2.54	2.77	7

Results are not representative of the entire community; results can be used for discussion purposes



1. very healthy 2. somewhat healthy 3. somewhat unhealthy 4. very unhealthy

Adaptation Actions

- Community Garden and First Foods Restoration Programs
- Climate Change Adaptation Vision with Health & Well-being
- Engaging Youth in Climate Science and Restoration
- Culturally-appropriate, local actions



Summary

- Ocean Acidification and other ocean changes put **culturally-important marine resources at risk**
- We can **identify specific cultural and health indicators** using participatory methods
- Some cultural and health indicators appear to be **more sensitive** to ocean changes than others
 - **More sensitive:** cultural use and physical health followed by community connections
 - **Less sensitive:** self-determination and education
- Some communities **more vulnerable** than others owing not simply to exposure, but socioeconomic conditions AND **non-substitutable** cultural ties to impacted species

Ongoing Work

Olympic Coast Social-Ecological Vulnerability Assessment

(Sept 2017-2019; NOAA OA Program Funded)

- Lead PIs: Jan Newton (UW Applied Physics Lab) & Melissa Poe (Washington Sea Grant/NOAA's NWFSC)
 - Melissa Watkinson – Social Science Associate (WSG co-pi)
- Partners:
 - Makah Tribe, Hoh Tribe, Quileute Tribe, and Quinault Indian Nation
 - Olympic Coast National Marine Sanctuary
 - Olympic National Park
 - NOAA Pacific Marine Environmental Lab
 - Joint Institute for the Study of the Atmosphere and Ocean

“Shellfish is part of us, it is who we are, eating it fills our souls. It’s part of everything that we are. If we weren’t able to harvest, if we weren’t able to go out on the beaches and the tides with my family, I wouldn’t even have that social time to share and remember and to just be together and have a moment of – ‘this is what our people have done for thousands of years and we are still continuing to do that.’” -Tribal Participant

Acknowledgements

Squaxin Island Tribe

Community Participants

Charlene Krise (Squaxin Island Advisor)

Aleta Poste and Casey Brown (Tribal Liaisons)

Candace Penn (Collaborator)

Cook, harvesters and helpers

Larry Campbell (Collaborator and Advisor)

Gregory (Decision Research)

Terre Satterfield (UBC)

Matika Wilbur (Photographer)

Funders and Sponsors (NIH, NOAA, Sea Grant, Puget
Sound Institute)

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