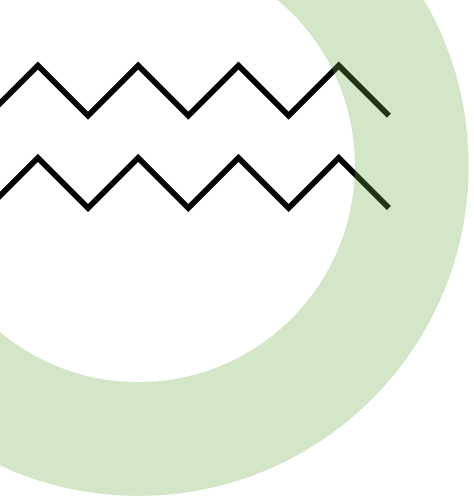




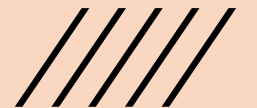
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ESG and Climate Resilience Through Culturally Relevant Nuggets

- Dr. Sheila Lakshmi Steinberg
- Director of UMass Global Institute for Geospatial Education & Professor of GIS, Social & Environmental Sciences

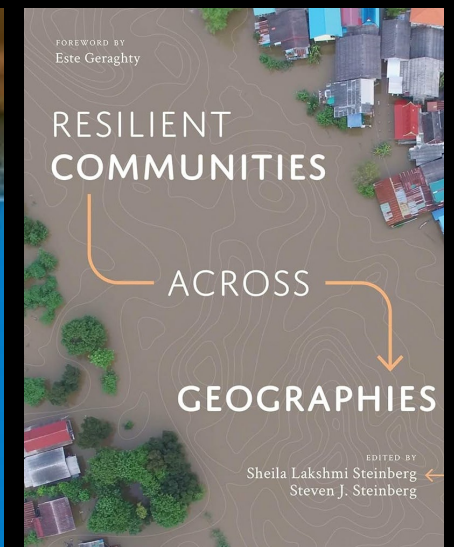
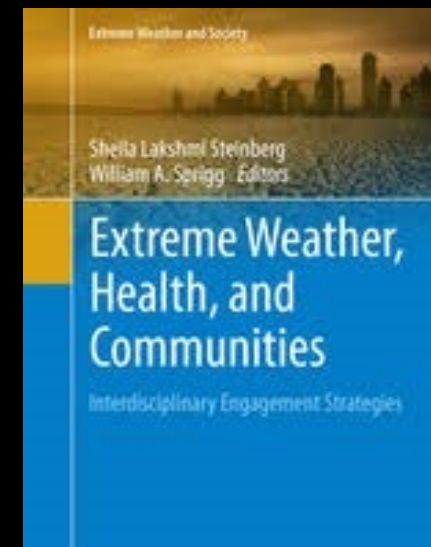
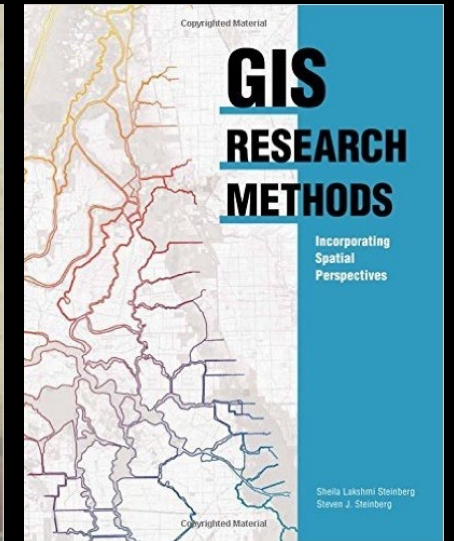
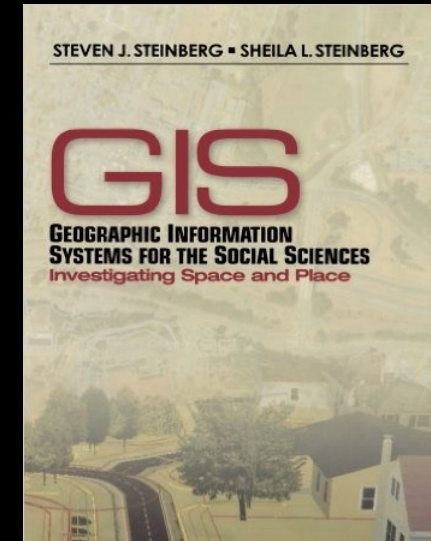
- *Presentation at Geospatial World Forum, Rotterdam, Netherlands*
- *ESG and Climate Resilience Summit*
- 15 May 2024



Dr. Sheila Lakshmi Steinberg

About me:

- Teacher and Mentor
- Interdisciplinary Leader
- Team Builder
- Bi-Cultural (Indian and U.S.A.)
- Champion for Diversity, Equity and Inclusion
- Author
- United States Peace Corps (Guatemala)





 **SUSTAINABLE DEVELOPMENT GOALS**





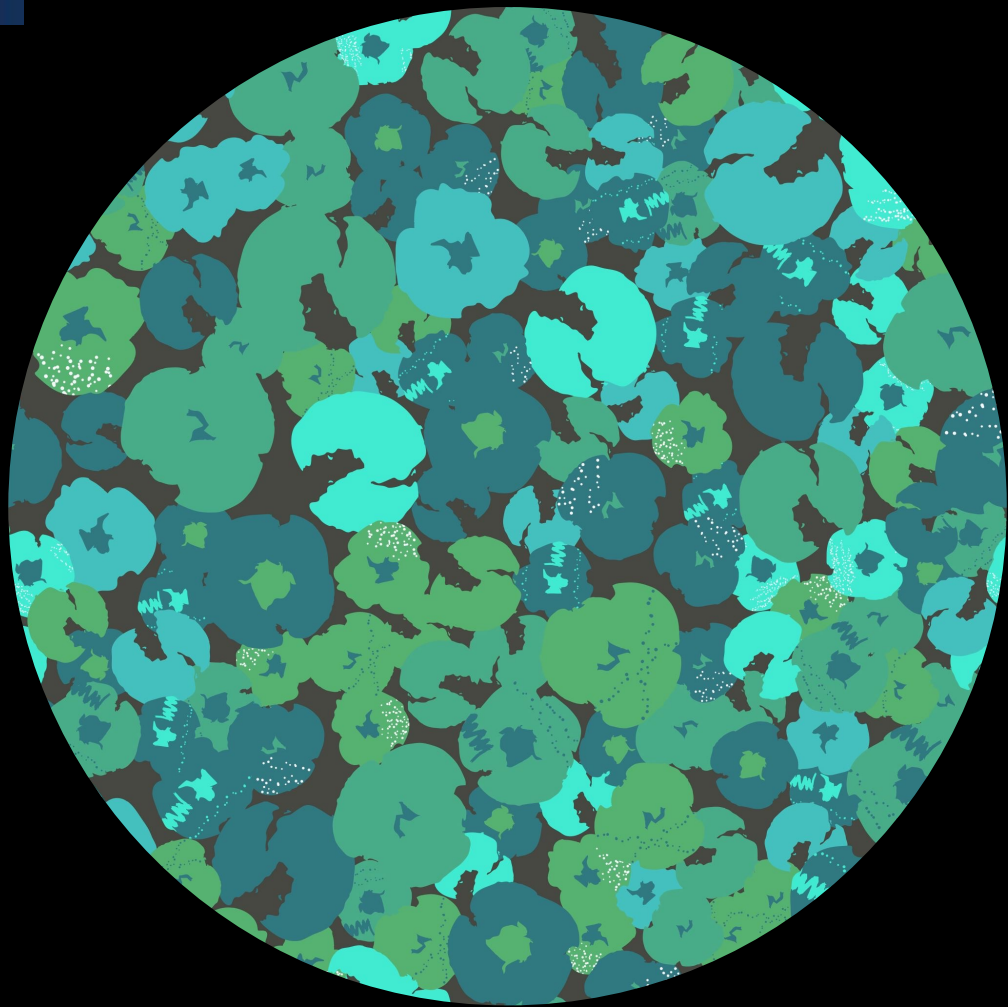
Themes running
throughout my own
research:

Environmental and
Food Justice

Resilience &
Climate Change

Local Knowledge
and Culture

Community
Engagement







Local ecological knowledge (LEK) is a key to resilience

- When using GIS with the Indigenous Martu people of Australia's Western Desert, the technology had to be implemented in a way that complemented the community's cultural conceptions of space and place. Map drawn by Martu man.
- (Photo courtesy of Sue Davenport featured in Steinberg & Steinberg Resilient Communities Across Geographies, Esri Press 2021.)
- **LEK is a jumping off point for understanding, measurement, action and resilience**





Culture & Environment

- Culture is a lens through which people observe, discover and act
- Teaching about ESG involves knowing the people and the place understanding different cultural patterns
- Local people possess best on the ground knowledge of regional environments & resources



Documenting Resilience Through....

Community Engagement



Local communities are resilient



Find a way to include diverse local groups/networks in with the big data



As change policies and decision-making occur-
incorporate local knowledge



Build Trust



Be authentic



Use diverse sources of data





Traditional American Indian life is threatened by the contamination of the resources



Traditional tribal lifestyles are inextricably linked with natural environment – contamination degrades the lifestyle and human health



Water is central to daily American Indian Life



Subsistence/Access limited on the Klamath river threatened by climate change and water policy



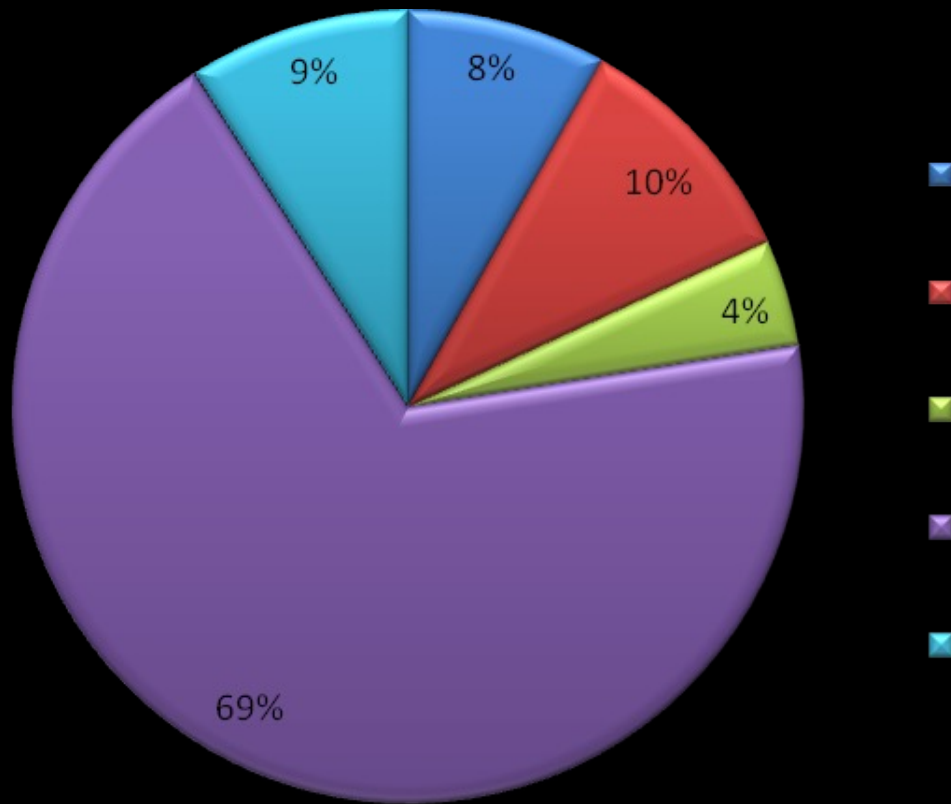
Engaging with the community to gather data and local knowledge



Observed Changes in Klamath River Resources

Have you observed changes in cultural beneficial uses over the years that you have utilized the river and its tributaries?

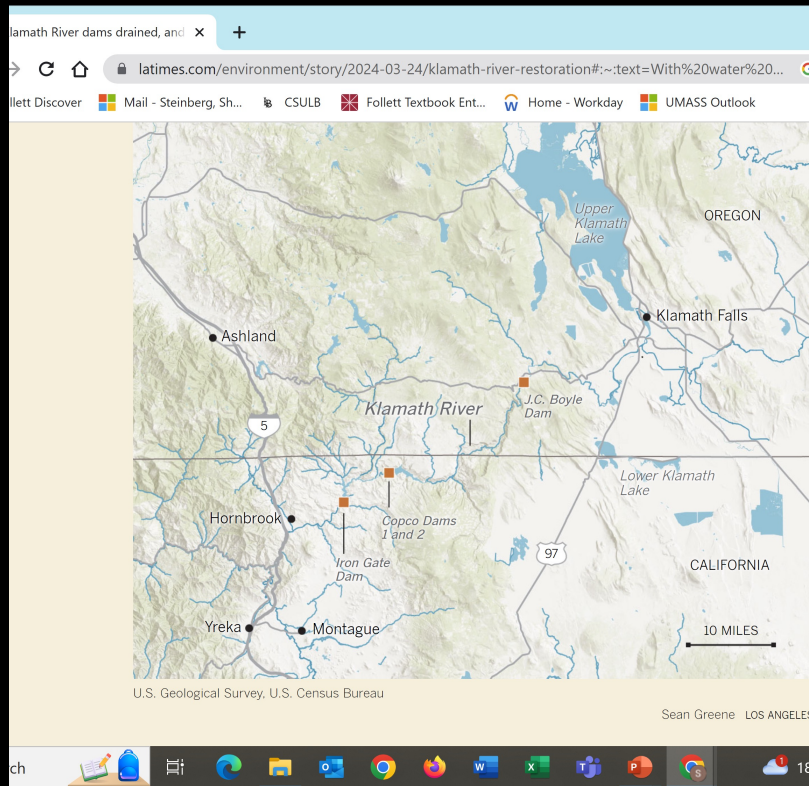
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Primary changes to resource use noted by Yurok Tribal Members

Changes in Resource Themes	Coded Description of Themes
Dams	Diversions and Dams
Quantity of Water	Low flow, water flow, low water flow, decrease in water, water decrease, decrease in water quantity, less water
Degraded Water Quality	Decreased water quality, degraded water, poor water conditions, bat water, rise in water temperature, warmer waters, water hotter
Blue Green Algae	Blue algae, toxic algae, toxic blue green algae, <u>microcystits</u> , moss
Pollution	Changing climate, contamination, run-off, debris, oil spills, garbage, trash, dumping, toxic chemicals, chemical seepage, global warming, less rainfall
Misuse of Natural Resources	Logging, logging practices, past logging practices, poor logging practices, over logging, <u>over fishing</u> , over harvesting, over use of resources
Agricultural	Farming, agricultural practices
Pesticides	Herbicides, spraying, spraying from logging
People	Man, rich white people, tourists, non-Native Americans, commercial fisherman, youth, white man, non - Yurok
Other	Greed, ignorance, no regard for Indians



Dam Removals

- Klamath River
 - For first time in over 100 years
- Hillman said that the dams had exacted a terrible cost on Native people’s livelihoods and cultures, and that their removal promises to revive the ecosystem and salmon populations, and help tribes revitalize their fishing traditions and their connection to the river.



Governance- Dam Removal

- The [largest dam removal project in history](#), it's being overseen by the nonprofit Klamath River Renewal Corp., with a \$500-million budget including funds from California and from surcharges paid by PacifiCorp customers.

- The utility, based in Portland, Ore., agreed to remove the aging dams — which were used for power generation, not water storage — after determining it would be less expensive than trying to bring them up to current environmental standards.



Local people weigh in on dam removal...

-
- “I love seeing that sediment being pushed down, because that’s a river acting like a river,” Karuk Tribe activist Leaf Hillman
- said as demolition work on the Iron Gate Dam drained the reservoir behind him.



Dam removal

- <https://lostcoastoutpost.com/2024/jan/24/video-boom-copco-dam-blast-sends-klamath-river-flo/>
- Largest dam removal project in the United States
- Dams had impacted salmon fish populations
- Indigenous lifestyles and health of communities
- Water quality



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Thank you!

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