COLLABORATIVE SCIENCE FOR ESTUARIES

WEBINAR SERIES

Catherine de Rivera Portland State University Melissa Haeffner Portland State University Julie Gonzalez University of California, Davis Vanessa Robertson-Rojas Portland State University Sabra Comet South Slough NERR

Restoration Success: Linking Social and Ecological Metrics



National Estuarine Research Reserve System Science Collaborative Date: Wednesday, May 25, 2022 Time: 2:00-3:00 PM ET



NATIONAL ESTUARINE RESEARCH RESERVES

The National Estuarine Research Reserve System (NERRS)

- NOAA Program
- Place-based collaboration with a local partner, e.g.:
 - State Agency
 - University
 - Nonprofit
- Reserve programs:
 - Stewardship
 - Research and scientific monitoring
 - Training
 - Education

The NERRS Science Collaborative

supports science for estuarine and coastal decision-makers.



Great Lakes

- 1. Lake Superior, Wisconsin
- 2. Old Woman Creek, Ohio

Northeast

- 3. Wells, Maine
- 4. Great Bay, New Hampshire
- 5. Waquoit Bay, Massachusetts
- 6. Narragansett Bay, Rhode Island
- 7. Connecticut

Mid-Atlantic

- 8. Hudson River, New York
- 9. Jacques Cousteau, New Jersey
- 10. Delaware
- 11. Chesapeake Bay, Maryland
- 12. Chesapeake Bay, Virginia

Southeast

- 13. North Carolina
- 14. North Inlet-Winyah Bay, South Carolina
- 15. ACE Basin, South Carolina
- 16. Sapelo Island, Georgia
- 17. Guana Tolomato Matanzas, Florida

Gulf of Mexico

- 18. Rookery Bay, Florida
- 19. Apalachicola, Florida
- 20. Weeks Bay, Alabama 21. Grand Bay, Mississippi
- 22. Mission-Aransas, Texas

West

- 23. Tijuana River, California
- 24. Elkhorn Slough, California
- 25. San Francisco Bay, California
- 26. South Slough, Oregon
- 27. Padilla Bay, Washington
- 28. Kachemak Bay, Alaska
- Pacific
- 29. He'eia, Hawai'i

Caribbean

30. Jobos Bay, Puerto Rico

PROPOSED

Bay of Green Bay, Wisconsin Louisiana

Have a question? Use the "Questions" function to pose questions throughout the webinar.

	File View Help -	X
	▼ Audio	2
	Sound	Check =≣₫ ?
(Computer audio O Phone call	
	🖉 MUTED	
3	Transmit (2- Plantronics Sa	vi 7xx) 🗸 🗸
	Speakers (2- Plantronics Sa	vi 7xx) 🗸
	✓ Questions	<u>ย</u>
	[Enter a question for staff]	
		Send
	Webinar Now	
	Webinar ID: 200-167-	467
	🛞 GoToWebir	ar

National Estuarine Research Reserve System Science Collaborative

COLLABORATIVE SCIENCE FOR ESTUARIES

WEBINAR SERIES

Catherine de Rivera Portland State University Melissa Haeffner Portland State University Julie Gonzalez University of California, Davis Vanessa Robertson-Rojas Portland State University Sabra Comet South Slough NERR

Restoration Success: Linking Social and Ecological Metrics

National Estuarine Research Reserve System Science Collaborative Date: Wednesday, May 25, 2022 Time: 2:00-3:00 PM ET

Outline

Overview

Social Science - Recruitment, Methods and Key Findings Ecological Methods and Key Findings Eco-Social Integration Deliverables, from the SSNERR perspective

Salt marshes provide valuable benefits

- Critical nursery and feeding habitat for fishes, crabs, birds
- Improved water quality
- Storing carbon from the atmosphere
- Buffering storms/wave action

(Minello et al. 2003, Weller 1994, Callaway et al. 2012, Costanza et al. 2014

85% of vegetated tidal wetlands have been lost from west coast estuaries (Brophy et al. 2019)

Habitat restoration is key to improving ecosystem health and function

Successful habitat restoration may look different to different user groups

Community is essential for habitat restoration

Community concerns

- Views ruined?
- Loss of agricultural land
- Threaten bulkheads; lead to flooding
- Pricey best use of funds?
- Past, less successful projects

Project questions

- How do area residents perceive saltmarsh restoration and value estuarine function?
- What metrics are important for determining which restoration actions lead to intended ecological and social outcomes?
- What are the perceptions of education and outreach across different levels of educational capacity?

What does successful habitat restoration look like to different user groups?

We systematically searched for advisory group members to ensure participation by a diversity of institutions

	Tribal	Nonprofit	Local Government	State	Federal	Private Business	Academic
Coos	Tribal Liaison	Watershed Association	Port Managers	Manager - State Agency	National Wildlife Refuge	Fishing Association	SSNERR Researcher
Yaquina	Tribal Liaison	Watershed Council	City Managers	NRCS	Tribal Liaison	Oyster Growers	Environ- mental Consultant
Alsea	Tribe Biologist	Nonprofit conservation group	City Managers	ODFW	Tribal Liaison	Private Recreation Company	

Participants self-selected their level of participation across the Spectrum of Community Engagement

Empower: Stakeholders were involved in creating and writing grants, papers, other end-products.

Collaborate: SSNERR, TWC, and some advisory group members helped with decision-making to make sure the process and products served mgmt needs

Involve: stakeholders provided feedback was reflected in the Q-sort, focus group questions, and research design; we shared how their feedback was considered

Consult - they inform us: entities shared community-specific factors such as concerns about harmful algal blooms in a lake

Inform - we inform them: Newspaper article, providing results to end users

Adapted from IAP2

Social Data Methods

Social Data

- 1. Thematically code focus group transcripts
- 2. Summarize focus group participants' demographic data
- 3. Use factor analysis on Q-sort data, weight and rank Q-sort statements
- 4. Combine Q-sort + focus group to create personas
- 5. Total scores of image sorting data as ranked by participants

44 Total Participants: 40% response rate

Oregon Salt Marsh Personas

42% explained variance

Idealist

Quote

"My priority is restoring nature as much as we possibly can because we've just done so much damage for so long and it's the very thing that's supporting us to be here."

Top Values

- Increasing habitat for fish and wildlife
- Enhancing water quality

Messages for the Total Conservationist

- Use the words "habitat," "fish," "wildlife," and "water quality."
- Demonstrate trustworthiness.
- Show how your organization helps the environment.

Less Urgent Values

- What the majority of my community votes for
- Reducing waterlogging of crops

Higher Ranked Statements Than Other Groups

none

Lower Ranked Statements Than Other Groups

Reducing coastal erosion

Two Types of Messaging Strategies

Choose one persona to focus on.

Develop targeted messages for that perspective.

For example, the "Total Conservationist" resonated the most with our group. Focus on the overlap to capture more perspectives.

Develop messages that will appeal to a wide range of perspectives.

For example, three of our groups appreciate detailed information and being able to compare solutions to understand the benefits.

- 1. Compiled early or pre-restoration data from reports under broad metric categories Vegetation
 - non-native plant species
 - plant diversity (Simpsons)
 - dominant salt marsh plant species
 Hydrology (channel sinuosity ratios)
 Fish use (presence/absence)
 Mammal use (presence/absence)
- 2. Gathered 2021 data for vegetation and channel sinuosity
- 3. Calculated performance scores for each metric within **Vegetation** and **Hydrology**
 - a. Normalized & put on 1-10 scale
- 4. Averaged project scores to produce estuary-wide scores
- 5. Assess # of mentions of each metric in project reports (manager priority & reality)

Ecologic Data Methods

7/9 projects resulted in fewer non-native plant species and/or % cover

8/9 projects resulted in more sinuous channels on average

Comparing Ecological and Social Data

- Scale discrepancy
 - We chose to scale up eco data to social data scale BAY SCALE
- Combined data into broad metric categories
 - Vegetation, Hydrology, Fish Use, Mammal Use, Bird Use, Human Factors
- Social data mostly qualitative, eco data quantitative
 - Gathered quantitative social data and more nuanced qualitative data
 - Qsort
 - Photo ranking

Key Findings

Highest Ranked Values and Photo Ranking Results

Top 5 Values from Qsort

I value salt marsh restoration for:

- Increasing habitat for fish & wildlife
- Increasing ecological function in general
- Enhancing water quality
- Reducing the amount of pollution in water bodies
- Minimizing the impacts of sea-level rise

1) Social data

 Average of photo ranking and Qsort data on a 1-10 scale

2) Ecological data

 Vegetation, Hydrology, Fish & Mammal

Key takeaways

 Mismatches between social/ management perspectives and monitoring data

Management Recommendations

• Bird & Mammal Use

Key takeaways

 Mismatches between social/ management perspectives and monitoring data

Management Recommendations

- Bird & Mammal Use
- Fish use

Key takeaways

 Mismatches between social/ management perspectives and monitoring data

Management Recommendations

- Bird & Mammal Use
- Fish use
- Vegetation & Hydrology

Key takeaways

 Mismatches between social/ management perspectives and monitoring data

Management Recommendations

- Bird & Mammal Use
- Fish use
- Vegetation & Hydrology
- Human Factors

Dissemination

- Linking Matrix
- Summary of personas
- Brochure

How deliverables are useful to NERRS

Products

Acknowledgements

Many thanks to our Advisory Group and Oregon's Midcoast Watershed Council Technical Team and our 44 focus group participants!

Project partners:

Sabra Comet & Shon Schooler, South Slough NERRS; Paul Engelmeyer, The Wetlands Conservancy; Julie Gonzalez & Ted Grosholz, UC Davis; Melissa Haeffner, Vanessa Robertson-Rojas, & Cat de Rivera, Portland State University

Funding: This work was sponsored by the National Estuarine Research Reserve System Science Collaborative, which supports collaborative research that addresses coastal management problems important to the reserves. The Science Collaborative is funded by the National Oceanic and Atmospheric Administration and managed by the University of Michigan Water Center (NA19NOS4190058)

Questions?

Cat de Rivera derivera@pdx.edu Melissa Haeffner melh32@pdx.edu Julie Gonzalez gonzalez@ucdavis.edu

Sabra Comet sabra.comet@dsl.state.or.us

Project Website

Q&A

Q: The persona results are really interesting. Were any of the personas not supportive of restoration or don't value salt marshes? If not, do you think those personas exist and just weren't captured?

• **A**: The participants who came to the focus groups wanted us to know they supported restoration in theory, but they differed in how that should be implemented and to what extent stakeholders should be involved.

During the focus groups, there were instances where people brought up opposing viewpoints from the perspective of other people; e.g., "my neighbor doesn't support restoration for X reason."

There is definitely some bias in terms of who was able to come to in-person focus groups during COVID. There were strict guidelines requiring people to wear a mask and have their temperature checked before attending, so there were people who were filtered out because of those restrictions.

Q: What challenges did you encounter when talking to partners / respondents? How did you handle differing opinions between community members and ecologists?

• A: We were mostly in listening mode when we were talking with community members. Not that many different opinions came up, but there were times during the focus groups where people started to disagree, and at that point it's helpful to have a good facilitator who can keep conversations focused and civil.

When reaching out to advisory group folks, we also tried to set an expectation that even though we would listen to everyone's comments, not every piece of feedback would be implemented.

National Estuarine Research Reserve System Science Collaborative

Q: How did you determine what terms are jargon for the different product levels?

• **A**: We asked people in our families, and we asked each other. Our team includes end users from very different perspectives. Across all the meetings we ran, we started to identify them.

A fun suggestion: bring red cards to meetings - when someone uses a term you think is jargon, hold up the red card!

Q: Based on your experience with this project, do you have any general advice for other researchers looking to integrate biological and social science data to study other environmental issues?

• A: One of the things that made this project unique was the willingness of the team members to be part of the social science data collection. Everyone was willing to learn techniques in different fields, and to learn from each other.

NOAA holds a facilitation seminar as well, and the team all participated in that training before running the focus groups - that was really helpful in getting everyone up to speed and all other facilitation work.

Q&A

Q: How long do you intend to sustain the dialogue with the broader participant group?

• A: At least as the meetings allow for some remote participation, we would like to sustain the dialogue with end users for years to come, though at a lower level and fewer of us participating. As academics, we're finding it very helpful to talk with practitioners and often hear their concerns, insights, etc. and to see where research can help address some of the issues.

Q: Will you be modifying any of your project goals to incorporate social concerns that may not have a strong ecological driver?

• **A**: Yes, we have proposed determining social indicators of the intrinsic value of a fully functioning estuary post restoration.

Q: Do you think that what you covered could also be applied in fish invasive restoration?

• A: Focus groups or the equivalent - if the question involves fish removal, I'd think that having the broader community on board would be essential given that some see invasive fishes as a huge ecological problem causing extinctions and habitat change while others want to fish for some of these species and might even consider fishing for them as part of their culture and even survival. It would be controversial but facilitating group discussions (with ground rules) about community member values that start with common values about the place should put everyone in a listening and respectful mode. One of the focus group participants commented afterwards about how the discussion was essential.

Personas - Yes. These were generated from the Q-sort exercise which we did as part of the focus groups but could be done independently of a focus group. They would be helpful for messaging, especially if they were followed up by a survey testing the messages but even without that extra step.

Metrics - We tested **10 social metrics** that are common indicators measured in marine social science: **aesthetics, sense of place, intrinsic value, health, social relations, biodiversity, resource, safety, trust, and governance**. These would likely be similar to the social metrics you will find in fish invasive restoration perception literature. You could also look at the ecosystem service literature for variables to test in relation to historical and cultural services.

As for something like the *matrix* we created, the metrics would be somewhat different but the process could work well here too. I think it'd be important (as it is with the work we're doing) to have iterative processes in which there's listening, development, sharing and listening, changes, and maybe sharing with a different group.

National Estuarine Research Reserve System Science Collaborative

Q&A

Q: I love to hear how fully you all were invested in this project - how did you build willingness for all team members to be fully involved in both sides, including beyond their expertise? Also, in terms of timing, were both the social and ecological parts of data collection happening simultaneously? If not, in what order?

• A: I think this willingness to venture out from our silos came from the combination of a number of factors. The project aimed to bridge social and ecological metrics, which required us to all discuss how we could link them and understand each other's methods for getting us there. In addition, we had several team members with expertise in ecology but fewer for social science and we just needed more people to help make the focus groups work. Once we ecologists helped with the workshops, we gained a lot of trust in the methods and insights as well. Although it was done out of necessity, I think none of the participating ecologists would want it any other way now that we've had the experience. The NOAA training on facilitation we received (which also is helping us on other work fronts), along with leadership and training from our social science lead and the participating SSNERR Coastal Training Program Coordinator helped us gain skills and confidence to succeed in the task.

Q: If there is a report that describes the methodology used for this project in greater detail, I'd love to see it!

• **A**: Thanks for your interest in this - the methods should be available on the <u>project page</u> by mid June.

Q: What advice do you have for connecting with other researchers to work on a collaborative study? Also, I want to understand to what degree this can be applied to other areas and other types of restoration projects. How much would you want to replicate this process for another community or type of restoration project?

• A: Talk to others at meetings and think about ways your work could connect to theirs; look for opportunities to build relationships and trust; be patient; get out into the habitat and into the community. But mostly we have a lot to learn from other collaborations.

Q: Based on what was covered on people's perceptions on salt marsh restoration, do you think this concept could be similarly applied to restoration of freshwater ecosystems that may be damaged from Rotenone application? Get peoples opinions on removing invasive smallmouth bass that have been present in a lake for +20 years via rotenone that could damage other aquatic organisms as an example.

A: I think your question here is similar to the question above (1st one) about replicating the project for fish, so please check out that answer and reach out if you would like a more tailored answer. Having the broader community on board would be essential to avoid anyone intentionally restocking.

National Estuarine Research Reserve System Science Collaborative