



Project Location

United States

Project Duration

September 2018 to April 2020

Project Lead

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Project Type

Catalyst – Targeted investment for advancing collaborative science

Products

- [Resilience metrics toolkit](#)
- [Case examples](#)
- [Facilitation guides and job aids](#)

Project Partners

- Jacques Cousteau National Estuarine Research Reserve
- Kachemak Bay National Estuarine Research Reserve
- Tijuana River National Estuarine Research Reserve
- Wells National Estuarine Research Reserve

Project Webpage

nerrsciencecollaborative.org/project/Boudreau18

Tools, Techniques, and Tactics for Advancing Successful Climate Adaptation

Overview

As coastal communities work to move toward a climate-resilient future, the lessons learned from existing adaptation efforts are a valuable resource to assess what is working, and why. In recognition of the widespread need for tools to track and evaluate adaptation progress and success, five National Estuarine Research Reserves—Tijuana River, Kachemak Bay, Jacques Cousteau, Hudson, and Wells—came together in 2015 through the *Successful Adaptation Indicators and Metrics* project to explore and collaboratively develop tools to assess adaptation progress. To share lessons learned with other reserves and coastal decision-makers in their own conversations about successful adaptation, this follow-on catalyst project refined, compiled, and leveraged the wealth of knowledge and tools generated by those initial reserve participants.

This catalyst project created a web-based toolkit, called Resilience Metrics, designed to complement other climate adaptation planning tools. The toolkit provides a rationale for how monitoring and evaluation support climate adaptation, as well as guidance for how to envision adaptation success and then identify, prioritize, and track appropriate indicators and metrics.

Project Approach

The project built on the foundation of prior work across the participating reserves and strengthened existing networks to compile, refine, and share a broadly applicable resilience metrics toolkit. The project team first pulled together lessons learned from the National Estuarine Research Reserves that had facilitated workshops on tracking climate adaptation success in prior years. These reserves contributed facilitation tools, job aids, and supporting resources they had developed for their reserve-specific workshop. Several additional tools were created to capture specific tactics suited to address particular locations, circumstances, or indicator-related challenges. Together, these tools and resources comprise the core of the Resilience Metrics toolkit. Additional guidance and examples from the literature were compiled to assist others across and beyond the reserve system to apply coastal resilience metrics in their adaptation efforts.

A user-driven orientation informed all aspects of the project's design. The project team planned multiple points of engagement to get input from the reserve community and other coastal decision-makers involved in adaptation. For example, the project team hosted a series of workshops as part of national and regional conferences to discuss design ideas and conduct end-user testing of the resilience metrics toolkit. The project team incorporated end user feedback to improve the toolkit's content, functionality, and accessibility.

Results

The Resilience Metrics toolkit represents the culmination of 10 years of work on adaptation progress and success, six years of which involved the National Estuarine Research Reserve System. It features facilitation tools and case studies with concrete examples of different approaches to adaptation planning that reflect diverse perspectives from multiple regions and varied stakeholders. These resources will continue to support the reserve system as it facilitates local, regional, and national conversations around successful climate adaptation.

Over the course of the project, the team learned crucial lessons about how to identify, select, track, and use indicators in light of common resource, time, and capacity constraints that many local communities and reserves face. A few lessons learned are highlighted below:

- The toolkit offers a step-by-step process to develop suitable indicators and metrics of adaptation success. It mirrors, and is closely tied to, common steps in adaptation planning, which enables easy integration and synergies among planning tools.

<i>Six Steps to Develop Resilience Metrics</i>	
	<i>Bounding and Assessing Context</i>
	<i>Visioning Success</i>
	<i>Exploring & Identifying Indicators</i>
	<i>Selecting Indicators & Identifying Metrics</i>
	<i>Tracking Indicators & Metrics</i>
	<i>Using Indicators & Metrics</i>

- Identifying metrics and monitoring adaptation progress is challenging and not widely done. However, the process to zero in on specific adaptation goals and identify indicators and metrics can improve climate adaptation efforts by enriching communication and engagement, informing planning, making an economic case for adaptation, helping with transparent accountability and good governance, and promoting ongoing learning and adaptive management.
- User needs fall along a spectrum from those wanting standardized, pre-tested indicators to others interested in flexible frameworks that allow them to develop a custom set of indicators for specific projects. The toolkit was designed to accommodate users across this spectrum, although work remains to develop standardized indicators and metrics for specific users

Benefits

- This project increased capacity and tools for reserve staff to lead and engage in local adaptation dialogs. In particular, Coastal Training Program staff strengthened partnerships with local and regional partners, became more adept at facilitating adaptation processes, and received training on how to apply the toolkit to resilience planning.
- Showcasing and testing the toolkit within the reserve system has resulted in several additional reserves being interested in engaging in conversations on adaptation success. The toolkit is perceived as a ready-made resource to support those local coastal stakeholder conversations.
- National, state, and local decision-makers are able to draw on this toolkit to enhance their adaptation efforts. For example, several municipal and state adaptation professionals have already contacted the project team requesting additional training on this topic.
- The project increased engagement and collaboration within the National Estuarine Research Reserve community around coastal adaptation, an important and rapidly evolving priority for this community.

What's Next

- The project team will share the resilience metrics toolkit more broadly, using partners' distribution networks as well as other contacts within and beyond the coastal zone.
- Dr. Susi Moser will work with interested regional teams through NOAA's Regional Integrated Sciences and Assessment program to further test and apply resilience metrics tools to other regions of the country and other aspects of climate adaptation.
- The team will continue to engage with new users of the toolkit, learning from users' experiences to deepen their understanding of adaptation metrics.

About the Science Collaborative

The National Estuarine Research Reserve System's Science Collaborative supports collaborative research that addresses coastal management problems important to the reserves. The Science Collaborative is managed by the University of Michigan's Water Center through a cooperative agreement with the National Oceanic and Atmospheric Administration (NOAA). Funding for the research reserves and this program comes from NOAA. Learn more at nerssciencecollaborative.org or coast.noaa.gov/nerres.