A Practice Primer:
Community Monitoring of Shoreline Flooding and Erosion

Climate.Gov

☑ Step 1: Identify Goals, Tools, and Partners

Wetlands Watch, VA

☑ Step 2: Education, Engagement, and Outreach

Rhode Island Sea Grant
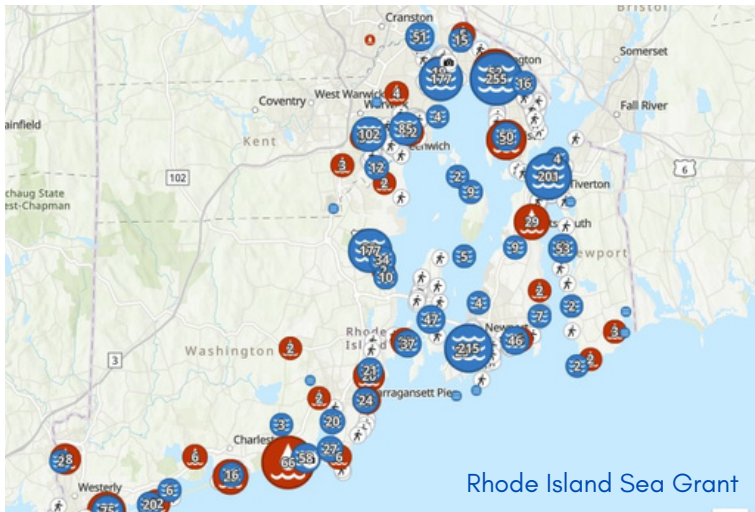
☑ Step 3: Make Use of the Data

MyCoast
Sea Grant
Rhode Island

MyCoast Decision Maker Interviews & Survey
RESULTS | JANUARY 2023

Rhode Island Sea Grant

☑ Step 4: Evaluate and Adjust

To access the full primer
use QR Code, or go to
https://mycoast.org/ri/resources

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Community Monitoring: Public Science for Pressing Problems

Guided by science standards, community monitoring opens research practice to a broad, diverse audience, often to those interested in understanding and improving environments within which they live or work (National Oceanic and Atmospheric Administration (NOAA) National Sea Grant, 2023). Participation can take several forms, including data collection, contribution to public dialogues, and mentorship for new community monitors. While community monitoring is not new—for example, grassroots efforts of the 1970s involved community volunteers in water quality research—today's iterations are increasingly focused on leveraging new resources, such as widely available online tools, to accelerate science-based solutions for pressing public problems.

Benefits to Volunteers

- Increased knowledge and awareness of risks and changing shorelines
- Stewardship of places they value
- Mobilization of resident engagement
- Contribution to community planning and improvement
- Access and connection to decision-makers, practitioners, and scientists

Benefits to Decision-makers, Planners, and Other Audiences

- Access to site-based visual data
- Audiences invested in learning about resilience
- Expanded understanding of impacted sites
- Easy access to localized searchable information
- Validating flood models to support research

Monitoring Shoreline Impacts for Coastal Resilience

Climate change impacts are among the problems being addressed in part by community monitoring. With sea level rise accelerating (U.S. Interagency Report, 2022), coastal communities are increasingly grappling with flooding tied to extreme tides and intense storms, as well as with shoreline erosion. Monitoring increases the opportunity for shoreline impacts to be observed, documented, discussed, and shared. It cultivates public awareness of, and interest in, the need for resilience building, while offering additional data, resources, and perspectives to formal science and government policymaking—a plus, as community costs of adapting to climate impacts are steadily rising.

Implementation at the Local Level and Lessons Learned for the Region

The practices shared here reflect several efforts by the University of Rhode Island Coastal Resources Center and Rhode Island Sea Grant (CRC/Sea Grant) and partners to:

- Test tools to address shoreline change. Building community capacity for the use of visual data collection platforms (MyCoast RI, CoastSnap) is underway; CRC/Sea Grant staff and partners have grown volunteer efforts to collect photographs of shoreline change while simultaneously examining how to ensure the information being collected can advise public decision-making.

- Contribute lessons learned. Results of the local work and other efforts in the region are aimed at informing practitioners in Sea Grant and other partnerships to benefit a wide array of community shoreline monitoring projects and programs.

A Checklist: Putting Practice into Action for Community Shoreline Monitoring Efforts

Step 1. Getting Started: Identifying Goals, Tools, and Partners

Initial work for starting a program focuses on identifying and understanding overall goals related to shoreline change impacts for a target project area while bringing a slate of partners with public, private sector, academic, and advocacy and community interests to the table. Activities for this stage include securing advisors with topical or community science expertise, ascertaining the extent to which partners intend involvement, and defining issues so the project is manageable, effective, and appealing to the users—both volunteers and those who apply the information. Get more insight into platforms and programs at *Communities Tracking Coastal Change*.

Action 1.1. Define and clarify program goals

- Build community awareness of, and stewardship for, changing conditions.
- Identify "hot spot" areas for flooding and erosion.
- Observe King Tides today to help visualize future sea level.
- Track shoreline changes over time.
- Utilize information to inform decision-making.

Action 1.2. Select impacts to be monitored

- High water: coastal (extreme high tide, storm surge), riverine, Great Lakes, or precipitation based.
- Storm impacts or storm damage.
- Shoreline or bluff erosion.
- Shoreline adaptations or restoration sites.

Due to sea level rise, the frequency of high-tide nuisance floods is rapidly increasing along U.S. coasts. (Climate.gov)

Action 1.3. Identify a diverse spectrum of advisors and/or partners representing community interests

- Invite those tackling similar issues to leverage participation and impact.

- Ascertain skills, networks, funding, and/or team support they can dedicate.

- Ensure that the leadership circle includes those with local-level knowledge and experience.

- Work with advisors to co-design and implement the project and ensure that collective goals are met.

Action 1.4. Identify a platform for collecting information

- **Fit:** Many data gathering and sharing tools answer basic storage and sharing needs of monitoring efforts, but they can vary in terms of topics, data (e.g., tide height, weather), and interface complexity.

- **Cost:** All platforms, whether managed "in-house" or contracted, bear costs in terms of program and staff resources; sites must be managed and updated, and some contracted platforms carry annual fees that can be expensive for grassroots-level programming.

- **Submission Options:** Data may be gathered and shared via smartphone apps, QR codes, email, and/or websites.

Step 2. Education, Engagement, and Outreach: Supporting Monitors and Engaging the Public

The core of community monitoring is the volunteer monitors themselves; basic education or training increases their potential to achieve competence and confidence, so they can contribute effectively to data collection, dialogue, and community decision-making on resilience issues. Beyond strengthening the connection between monitors, and scientists and shoreline practitioners, education builds stewardship for increased quality of life and resilience and can create opportunity for diversity and inclusion.

Action 2.1. Recruit active, invested, and diverse monitors

- Diversify your reach through social media, newsletters, and networks of partners as well as the news media.

- Coordinate with leaders in frontline communities and neighborhood associations.

*"Catch the King's" annual tide mapping, coordinated by **Wetlands Watch**, gathers volunteers of all ages including the Colonial Coast Girl Scouts to lead mapping teams up and down the Virginia coast. The project received a **Guinness World Record** in 2017 for collecting nearly 60,000 data points! (Wetlands Watch)*

- Consider several angles of appeal:
  - Engage monitors who either live or work near areas of concern.
  - Build youth awareness through educators or aquariums.
  - Find monitors interested in specific issues (e.g., public access).
  - Make contact with organizations working on those causes.

- Listen to the concerns and issues of the monitors, including underrepresented audiences, and clearly indicate how their data collection and participation in community dialogue supports local resilience building.

Action 2.2. Focus on communications to increase and maintain a volunteer base

- Develop a clear and meaningful overall program message—the "why" the work matters to the community, and how the effort connects to related topics like public access.

- Make use of simple, varied, and accessible communication vehicles and tools to reach out to a broad audience. Targeting organizations that can share program information with their membership can expand the reach. Options include factsheets, webpages, FAQs, social media posts, e-newsletters, progress reports, media coverage, public lectures and events, tutorial videos, and photo contests.

- Provide basic knowledge on weather or shoreline activity (e.g., Flooding on a Sunny Day?, Know your Tides) as well as photography tips and tutorials for capturing them.

- Engage program leaders and community monitors in applying simple communication techniques and tools, such as tagging social media posts, and in sharing messaging via their own networks and circles.

- Use social media to maintain continuity in communications. For example, send social media or text alerts early enough to prepare monitors to take photos of a King Tide or storm, and issue thank-you posts after events to build rapport with volunteers.

Action 2.3. Mobilize the monitors

- Refer to NOAA's extensive toolbox, including the High Tide Bulletin and Inundation Dashboard, as well as alert systems (university, state, or National Weather Service) to help determine when to mobilize monitors.

- Use tools such as notification pushes to suggest places for volunteers to monitor by referring them to priority locations, including sites that are new or in need of regular monitoring or could benefit from comparison "good weather" photos.

- Meet people where they are—head out to the shoreline for hands-on education.

- Remind monitors to be safe as they document shoreline impacts.

KING TIDES CAN BE DANGEROUS

Tips to stay safe when observing the king tides.

1 Check the tide information and weather conditions for the location you are visiting.

2 Observe storms, waves, and high tides from a safe distance. Obey safety messages.

3 Be aware of the water at all times. Sneaker waves can happen any time and knock adults off their feet.

4 Stay off logs. They can easily roll and are extremely heavy from water absorption.

Find more safety tips here.

Sharing tips on social media supports safe and effective monitoring. (Oregon King Tide Project)
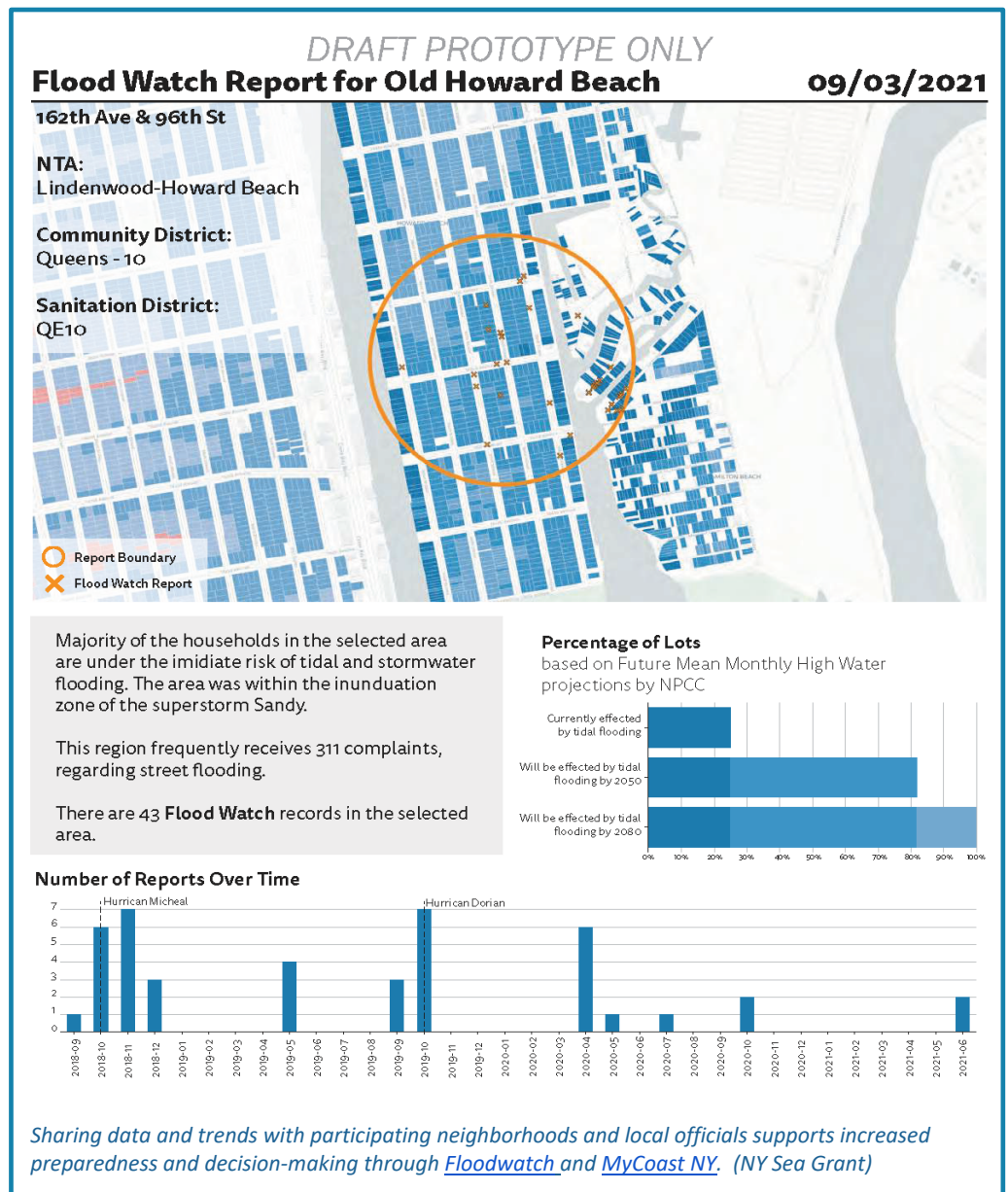
Step 3. Making Use of the Data

Plan all phases of data management work—from organizing and storing information, to analyzing and synthesizing it, to sharing it—to ensure program goals are appropriately met.

Action 3.1. Review the data submissions

- Identify and fix major discrepancies (e.g., the photo location is clearly incorrect, image is rotated).

- Ensure that photos are appropriate for public posting.

- Maintain and update a master spreadsheet of submissions so that it can be used for analysis.

Action 3.2. Compile and synthesize the data

- Summarize information by interpreting photos and data to tell the story of what is being seen. Capturing trends and sharing images through time can highlight ongoing issues observed.

- Products to offer may include online maps or photo packages to assist organizations with decision-making or communication activities; program highlights can be shared in public talks, annual reports, e-newsletters, and social media posts.

- Create monthly recaps, annual collections, or short presentations to highlight images and results with concise explanations of how tides and weather conditions affect the shoreline.

- Engage with community members to interpret what is being seen and validate their observations.

DRAFT PROTOTYPE ONLY

Flood Watch Report for Old Howard Beach   09/03/2021

162th Ave & 96th St

NTA:
Lindenwood-Howard Beach

Community District:
Queens - 10

Sanitation District:
QE10

○ Report Boundary
✕ Flood Watch Report

Majority of the households in the selected area are under the imidiate risk of tidal and stormwater flooding. The area was within the inunduation zone of the superstorm Sandy.

This region frequently receives 311 complaints, regarding street flooding.

There are 43 **Flood Watch** records in the selected area.

Percentage of Lots
based on Future Mean Monthly High Water projections by NPCC

Number of Reports Over Time

Sharing data and trends with participating neighborhoods and local officials supports increased preparedness and decision-making through Floodwatch and MyCoast NY. (NY Sea Grant)

Action 3.3. Share information with key groups that resonates with them

- Identify opportunities for advisors and scientists to interact with the monitors and the public to add value through learning exchange. Field trips during high tides or after storms are good opportunities to discuss what is happening and to capture some photos.

- Community organizations may benefit from a prepared presentation, while practitioners or other audiences may find interactive mapping tools and GIS "StoryMaps" an engaging means of relating to the project (The King Tides Project, MyCoastRI).

- Celebrate success - An appreciation event ([virtual](#) or [in-person](#)) or annual report can highlight milestones or summarize results while honoring the collaborative successes and gearing up for the next year.

Step 4. Evaluate and Adjust

It is important to understand how the program is received by the monitors and to hear if and how key audiences, including public decision-makers and planning or public safety staff, envision using visual data collections to assist their work. Assessment also provides information for tailoring or improving the program, especially if opportunity exists to assist other coastal places in replicating the effort.

Action 4.1. Reflect on successes and opportunities for project expansion or replication by continuing to weigh resources and aids

- Review goals and objectives, successes, and challenges to determine what adjustments can be made to the program. Engaging partners and advisors in this internal assessment can help identify where

Feedback from information users, including local and state decision-makers, provides valuable insight on how to enhance the program. (MyCoast RI)

MyCoast RI photos help me clearly communicate the present and future impacts of coastal flooding in my municipality and in my work to request funding for adaptation and resilience projects to address these at-risk areas.

- Teresa Crean, AICP, Director of Planning, Building, and Resiliency, Barrington, Rhode Island

adjustments can be made to enhance program effectiveness.

- Consider how community monitoring—with its cadre of monitors and database of on-the-ground information—can be leveraged to support community/statewide resilience programs such as site identification, design, and monitoring of shoreline green infrastructure projects.

- Expand or realign partner circles to bring in related topics, such as an advocacy group effort to improve or expand public access, encourage diverse participation and inclusivity, and foster fresh perspectives.

Action 4.2. Assess program effectiveness and data needs

- Seek feedback from monitors to learn their [stories](#) and feedback on a variety of program aspects, from the ease of using the platform to the best methods for communicating upcoming monitoring events or program activities.

- Solicit [input from information users](#) to understand how they are using or would like to use the program and its data. Surveys, interviews, and/or focus groups can provide valuable feedback that can be used to improve the program.

We welcome your feedback concerning this primer and practices for community shoreline monitoring; contact Pam Rubinoff, Rhode Island Sea Grant, rubinoff@uri.edu. Download this primer with the QR code or visit https://mycoast.org/ri/resources