



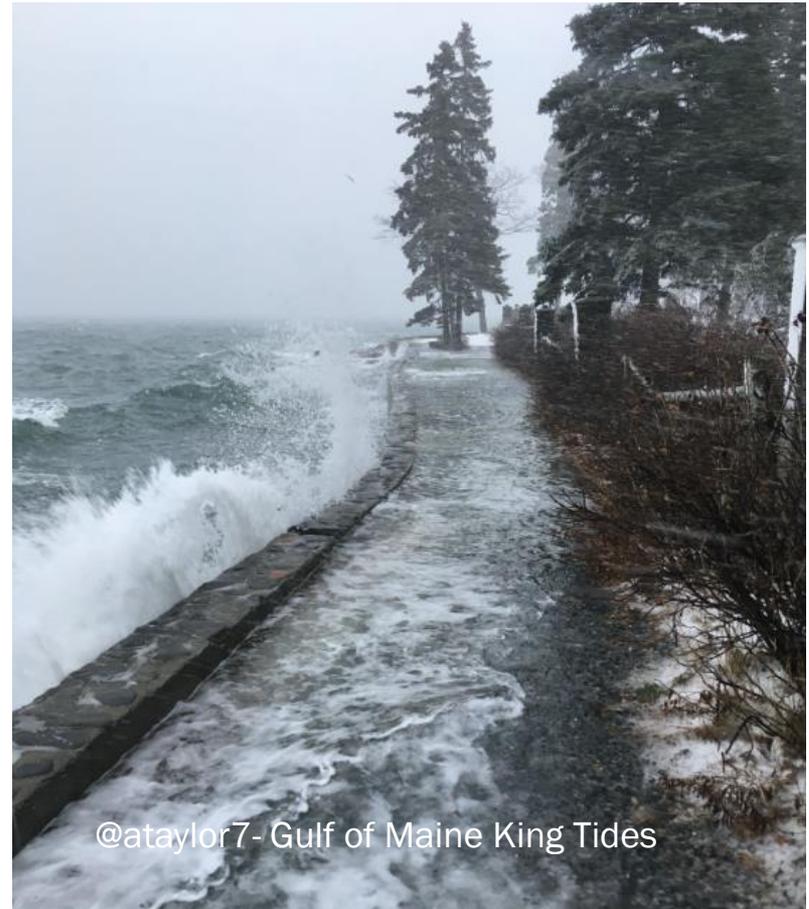
Data to Civic Action (D2CA): Building Online Tools for Citizen Science and Coastal Resilience

¹Jane Disney, ¹Ashley Taylor, ¹Anna Farrell, ¹Duncan Bailey,
^{2,3}Karen Bieluch & ³Bridie McGreavy

¹MDI Biological Laboratory · ²Dartmouth College · ³University of Maine
Citizen Science Association Conference, March 13, 2019

Presentation Overview

- Introduction
- King Tide and Sea Level Rise Citizen Science Program Research
- Initial Findings
 - Project leaders and key participant interviews
 - Survey results
- Model Projects: Data to Action
- Recommendations
- What's next?



The Community Lab



AneCDATA.org

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AneCDATA

Collecting observations of our changing world

[Join the community](#)

Added by  @CharlestonWa... to [Litter-free Digital Jour...](#)

 102 projects

 3,010 users

 6,257 photos

 17,099 observations

Citizen science just got easier.



It's free and versatile

Anyone and any organization can create a project. Collect bird surveys, pick up beach trash, monitor water quality, or track trees- it's up to you!



We're here for you

AneCDATA offers free 1:1 support for project administrators.



It's social

Like and comment on observations and share them on other social networks.



There's an app!

Use the free app on iOS or Android to share observations from the field!

[Get started!](#)

How it works

Start projects

Design datasheets, decide who can participate, and invite your community to participate!

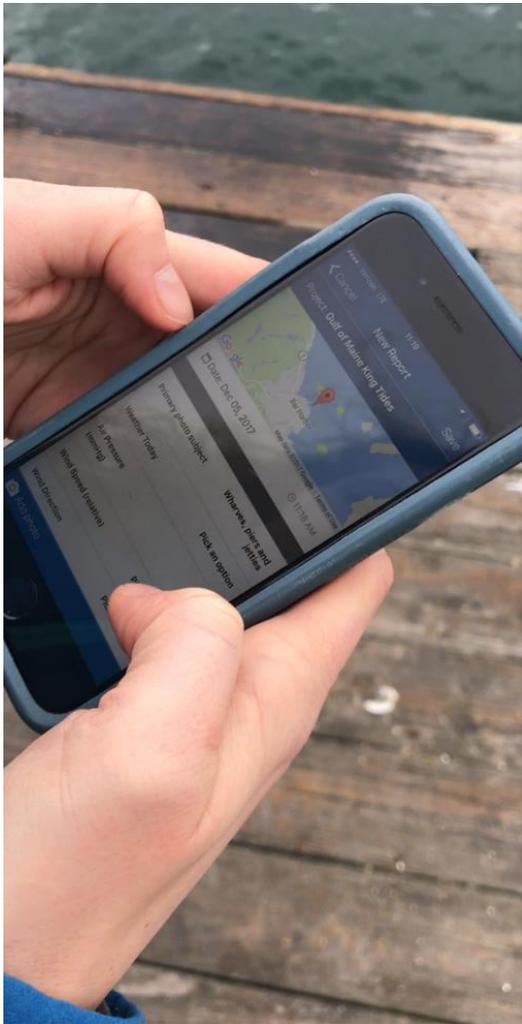
Collect observations

Participants share observations via the web or their mobile device.

Download and share

Browse, comment on and favorite observations, share them online, run analyses, or download datasets!

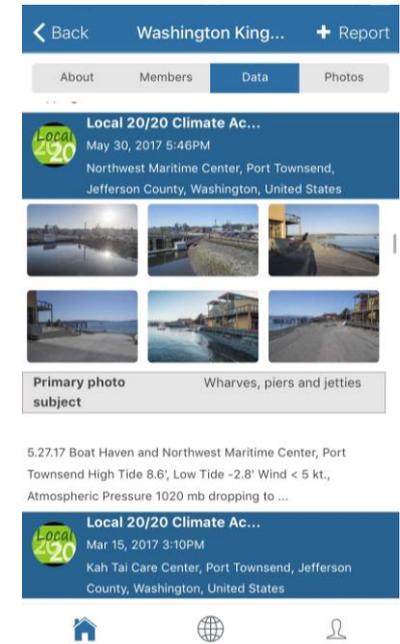
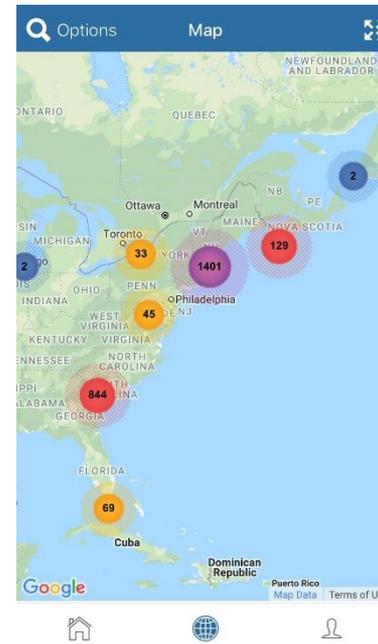
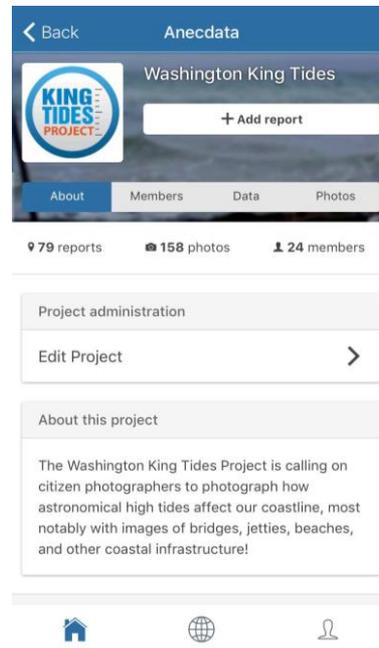
Aneccdata.org: Mobile App



Aneccdata.org 4+
Next-gen citizen science
MDI Biological Laboratory

Free

Screenshots [iPhone](#) [iPad](#)



King Tides on Aneccdata.org

KING TIDES PROJECT

Washington King Tides

Washington Sea Grant | Anyone can participate! Started December 2014

About Observations (82) Photos (186) Members (32) Discussions Map Analyze

Join project Add Observation

You're an administrator!
Edit project Manage members

About this project

The Washington King Tides Project is calling on citizen photographers to photograph how astronomical high tides affect our coastline, most notably with images of bridges, jetties, beaches, and other coastal infrastructure!

<http://washington.kingtides.net>

Your photos will help document current coastal flooding risks and visualize what may, with sea level rise, become the new tidal norm along Washington's coastline. For more information about when the King Tides are look at the Washington Sea Grant [tide chart](#).

When do I participate?

Mobile? Use the app!

Aneccdata.org
iOS Android

Admins: @btrosin

KING TIDES PROJECT

Gulf of Maine King Tides

New England Aquarium | Gulf of Maine | Anyone can participate! Started September 2014

About Observations (215) Photos (516) Members (66) Discussions Map Analyze

Join project Add Observation

You're an administrator!
Edit project Manage members

About this project

The Gulf of Maine King Tides Project helps communities in the Northeastern US and Atlantic Canada anticipate impacts from rising sea levels. Join in this international effort to document—via cameras and smart phones—extreme high tides, which will become average water levels in coming years. King Tides images help scientists and planners assess future flood risks and anticipate associated hazards.

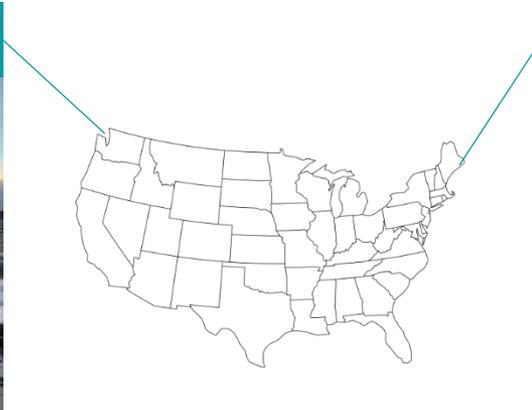
<http://gulfofmaine.kingtides.net>

What: King Tides are the highest tides of the year. Your photos of King Tides will help document current coastal flooding risks and visualize what may, with sea level rise, become the new tidal norm.

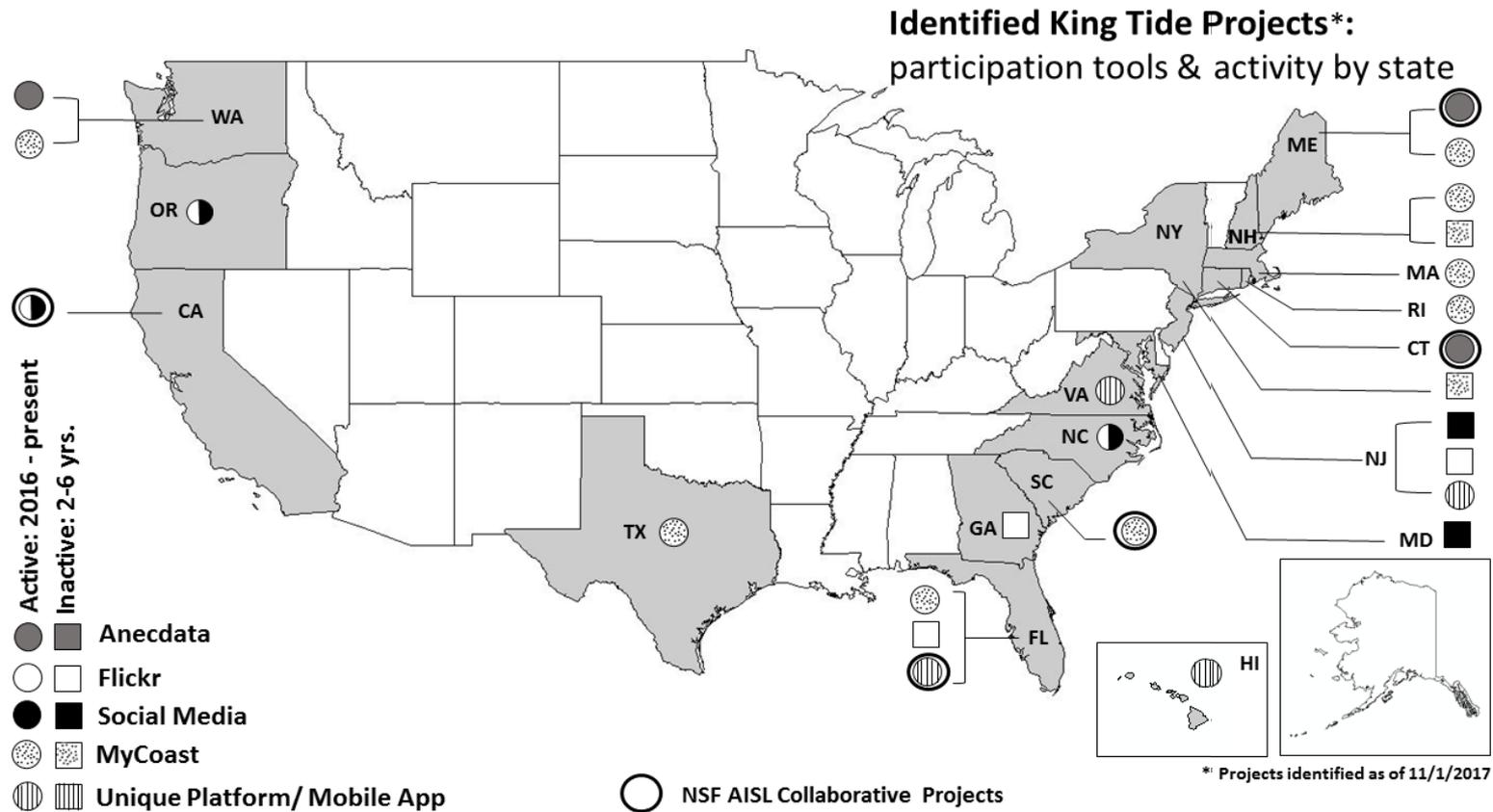
Mobile? Use the app!

Aneccdata.org
iOS Android

Admins: @NEOSEC



Distribution and Diversity of King Tide Projects in the U.S.



Initial Findings – Interviews

- 8 interviews conducted over three months in 2018 with project leaders and key participants across the U.S.
- **Key finding 1:** There is a need to provide project participants with ways to share ideas, provide peer-to-peer encouragement and support, and build community.
- **Key finding 2:** Program participants are generally not in contact with each other and do not have opportunities to learn from each other, share information, or plan actions.
- **Key finding 3:** There is an interest by project leaders to improve communication avenues within their own projects and across projects by developing a King Tide network.

Initial Findings – Data to Action

- Examples of how photo data are contributing to coastal resilience on both coasts:

1. Geo-tagged photos are used to develop
 - coastal nuisance flooding models
 - sea level rise models

2. King tides photos are used as both input and for validation of various modeling scenarios.

3. Images from projects have been included in reports on sea level rise vulnerability and adaptation as examples of what's to come.

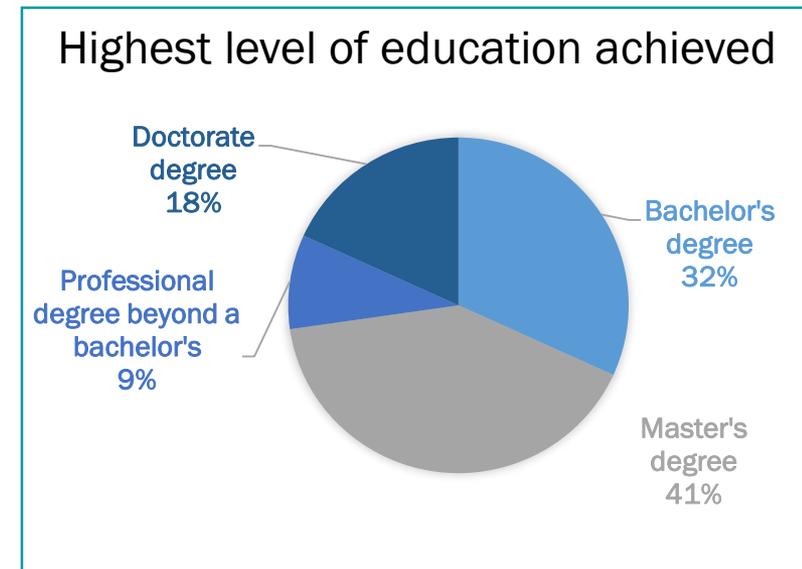
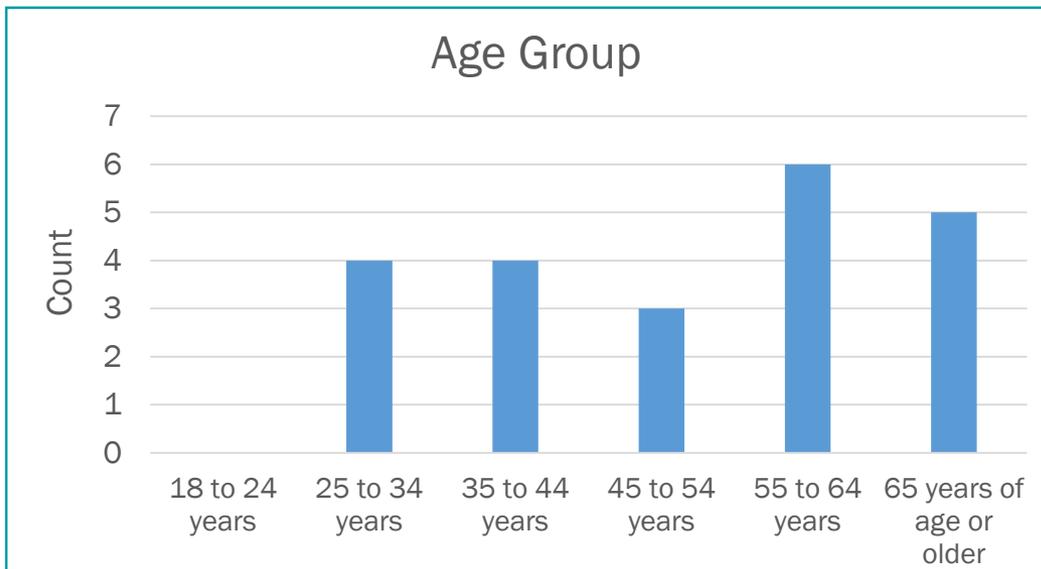
4. Geo-tagged photos are being used to **develop higher accuracy flood models** and an **economic risk assessment** for a downtown area.



Sand Beach in Acadia National Park

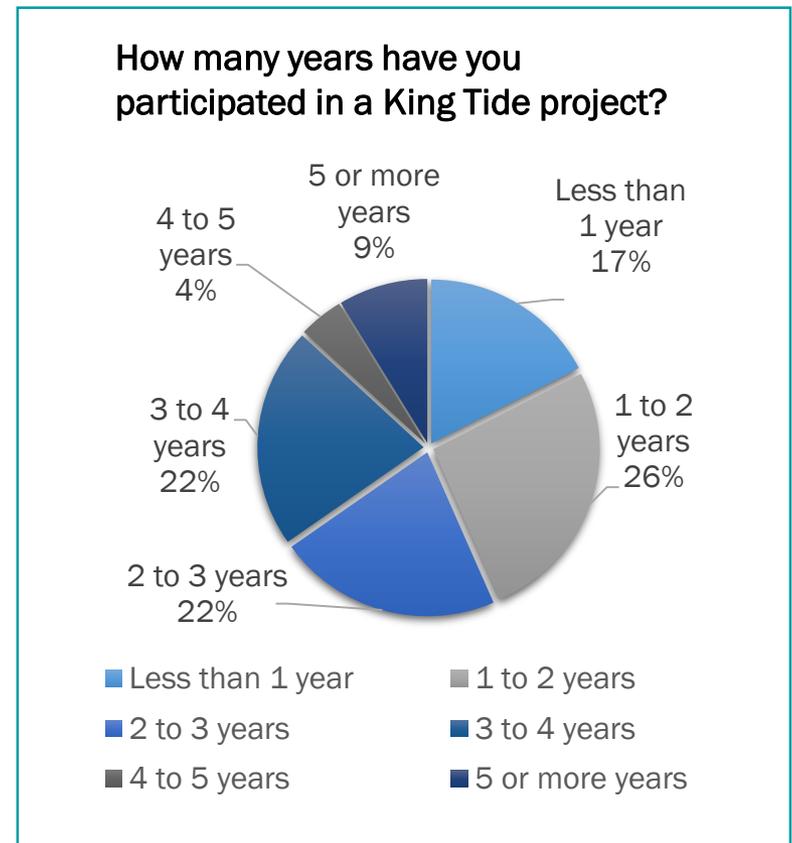
Initial Findings – Survey - Demographics

- Response & Demographics
 - 23 responses to online survey
- Work Status
 - 50% work full-time; 27% retired; 9% self-employed
 - 4.6% seasonal job; 4.6% student; 4.6% not currently working



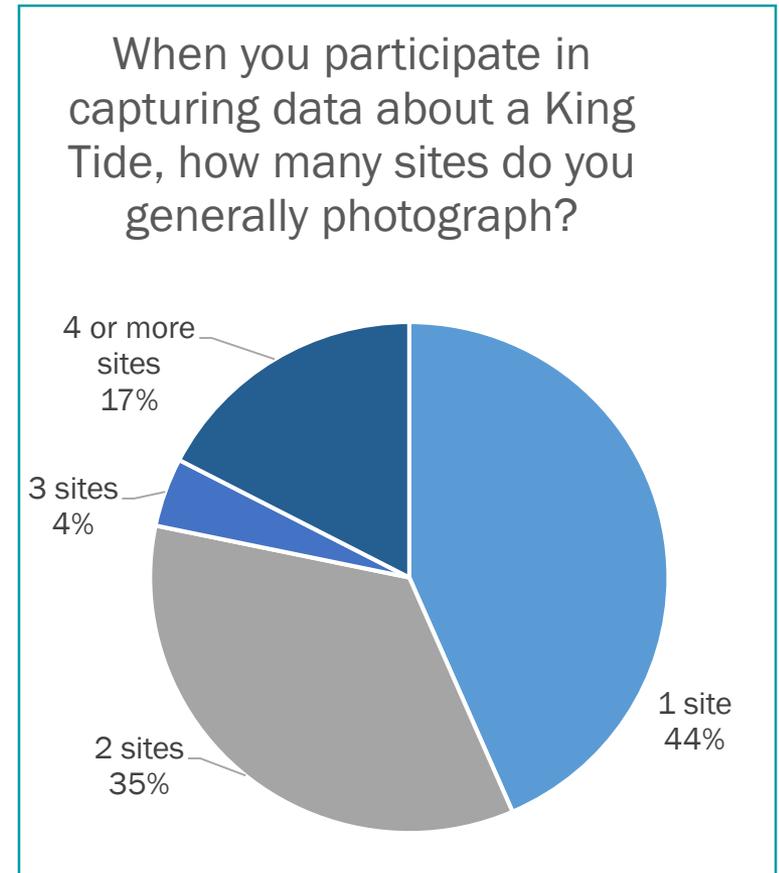
Initial Findings – Survey - Participation

- 57% know who their project coordinator or lead person is, 43% do not.
- 70% of participants did not receive training or orientation when beginning the program.
- 78% of participants are planning to take photos during the next king tide.



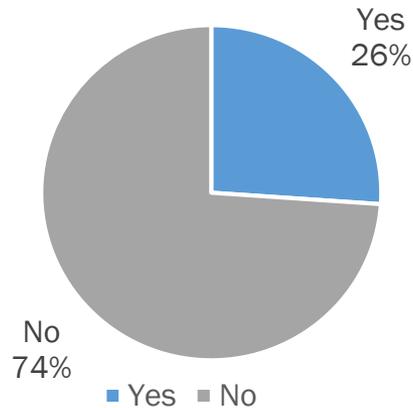
Initial Findings – Survey- Site Selection

- 70% take photographs at sites in public spaces (town pier, wharf, dock, bridge, roadside)
- 30% take photographs at recreation areas (beach, park, etc.)

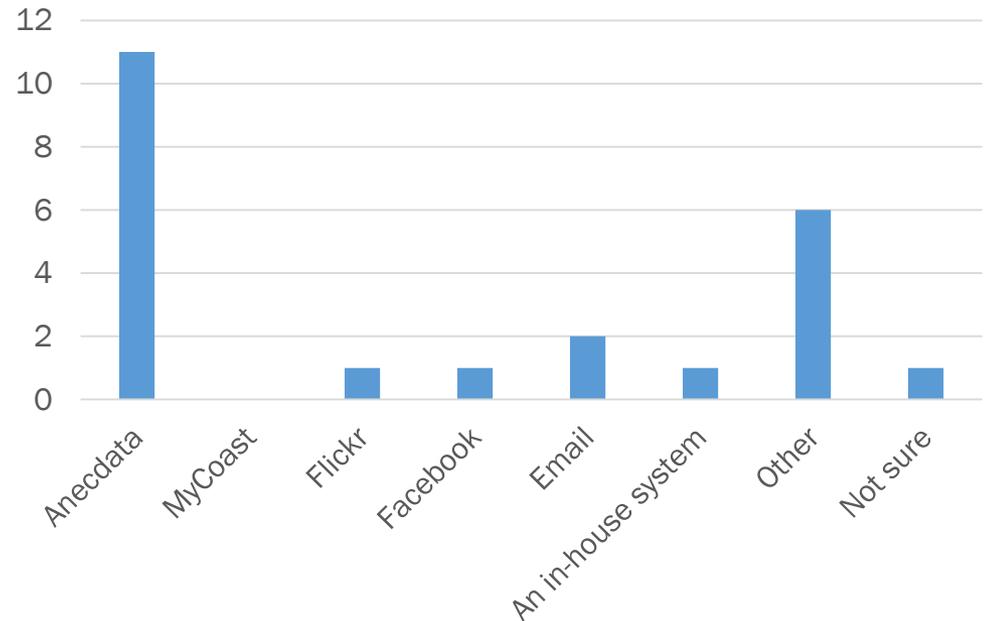


Initial Findings – Survey – Data Collection

Do you submit additional data with your photographs, such as weather, air pressure, wind speed or wind direction?



What system do you use to upload your photographs for the King Tides program?



Initial Findings – Survey- Utilizing Data

For which of the following actions do you think the King Tides data could be used? Select all that apply.

- Improve accuracy of sea level rise maps and models (21)
- Support climate action and climate resiliency plans at varying levels of government (21)
- Justify upgrades to roads or other public infrastructure (19)
- Inform my community about the impacts of sea level rise (19)
- Support city and county shoreline plans (18)
- Provide data to support actions or recommendations (17)
- Support scientific research (17)
- Revise building codes (14)
- None of the above (2)
 - None of the above – Text
 - “ I’m not sure if there is much applicability. But citizen science generates a lot of information. Just think how far iNaturalist has come. So maybe there will be some application as the dataset grows.”
 - “my city’s plans are to let people build anywhere they want”

Initial Findings – Survey- Utilizing Data

Have you personally used King Tides photographs or data to do any of the following? Select all that apply.

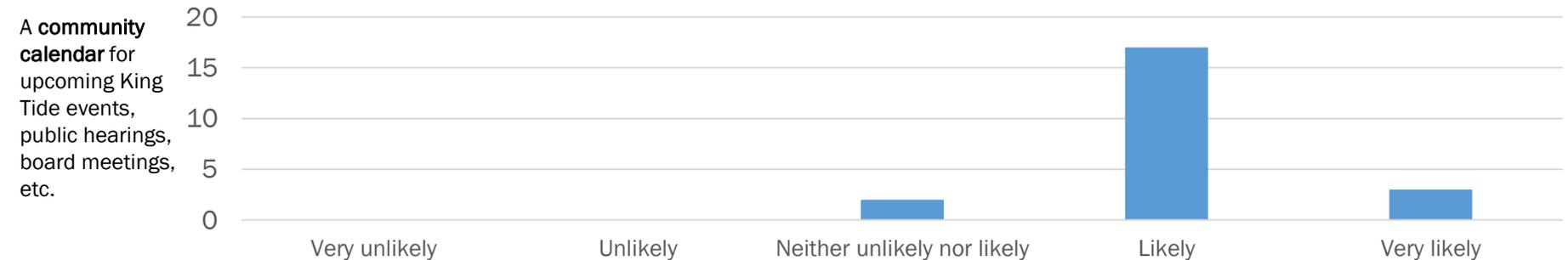
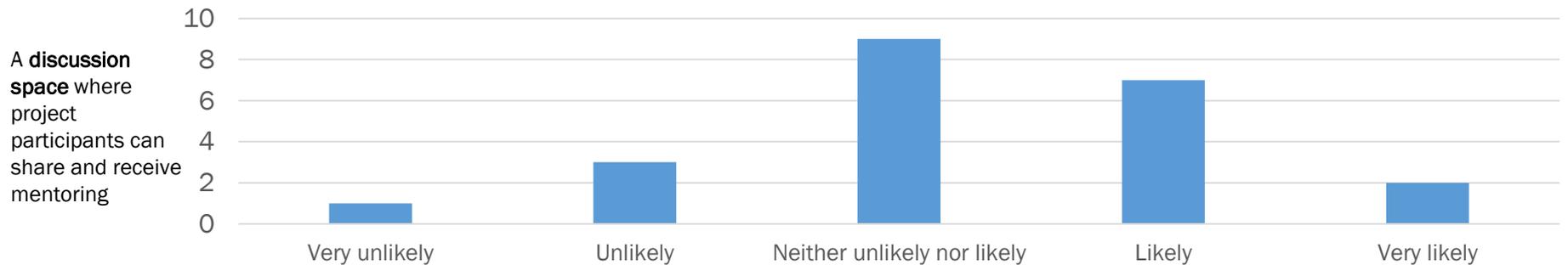
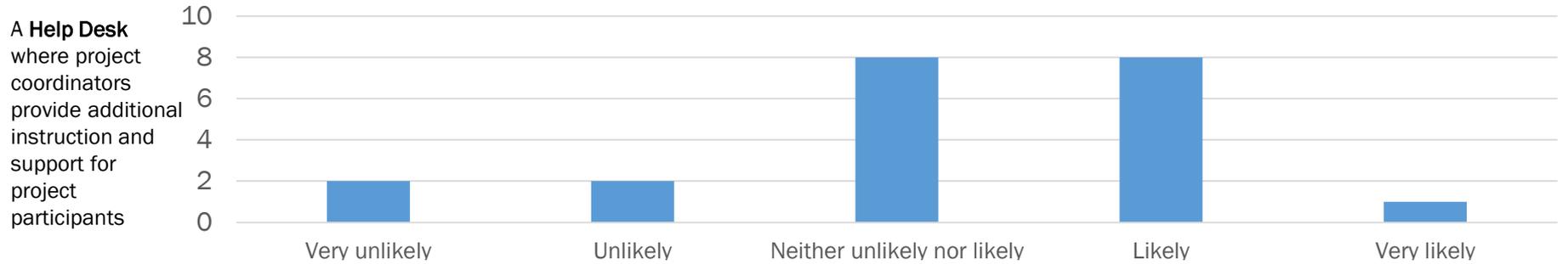
- Share photos and/or data with a town official (2)
- Join with other interested community members to take action (2)
- Other (2)*
- Share photos and/or data at a municipal meeting (e.g. town council or selectboard meeting) (1)
- Work to create a policy to regulate certain actions (1)
- Write a letter to the editor of a newspaper (0)
- Contact a state legislator (0)
- Contact a federal legislator (0)
 - * “The only thing I’ve done is show up at end of project events with speakers and maybe a slideshow of the photos people submitted. Those have been fun and maybe connected me a bit with the coordinator sand other interested people. These are small local community events”.
 - * “ Communicate sea level rise”.

Initial Findings – Survey- Utilizing Data

Which, if any, of the following factors did or would discourage you from taking action with King Tides photographs and data? Select all that apply.

- I'm not sure what to do with the information (8)
- I don't have time to take action (7)
- I don't know who to contact (4)
- I don't know when my local public hearings, or other events when decisions get made, happen (2)
- I'm not sure how to interpret data from the project (2)
- I tried to take action, but don't feel like it impacted decisions (1)

Initial Findings – Survey – New Tools



Model Projects

Oregon is translating photographic data to action

Oregon King Tides

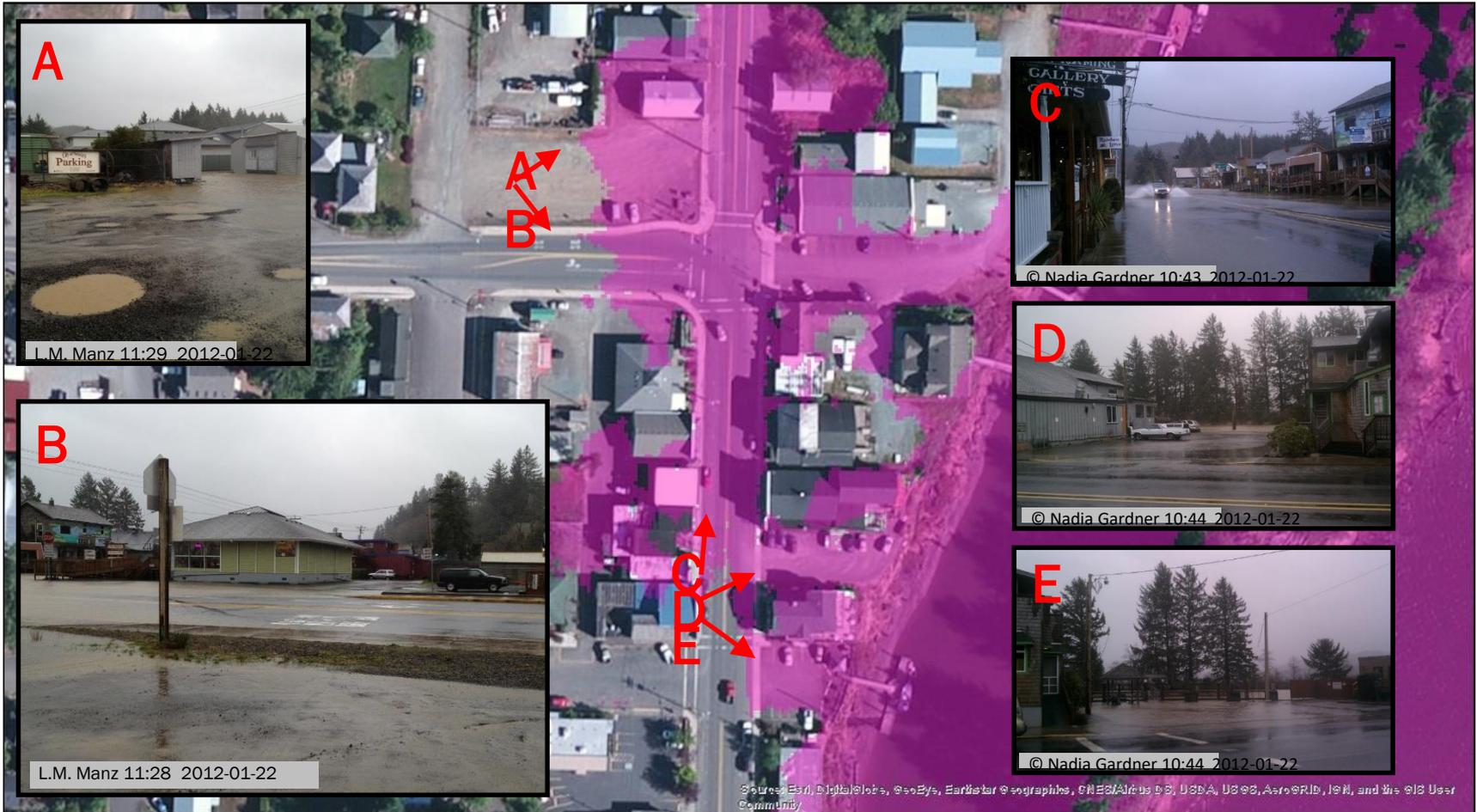
SNAP THE SHORE, SEE THE FUTURE!

- Oregon Coastal Management Program
- CoastWatch

Website: www.oregonkingtides.net/

Mapping the tide

ArcGIS Survey 123 app



King Tide

December 2017

UMaine at Machias

Downtown Machias

ArcGIS Survey 123 app

3D Modeling based on
king tide levels visible in
user-submitted images

Part of downtown
resilience project



Recommendations

- Develop a nation-wide working group of King Tides Project leaders and participants
- Provide suite of tools to improve communication among participants and facilitate sharing data with town and state leaders
- Translate collective knowledge to action that will result in climate resilience
- Interview or survey municipal workers, Dept. of Transportation officials, and others who could directly utilize these data



Q: What else do you think would benefit your project?

“I think having more staff and better tools to use. We used to have a network of other king tide organizers from the different states, and that has sort of gone away. I think our project would benefit from having a better connection with the other king tides programs.” –Participant from Northwestern U.S.

Next Steps

- Submission to NSF AISL -> \$\$ for further research and collaborative efforts
- Funding to build out the Anecdota platform

The screenshot shows the Anecdota website interface for the Gulf of Maine King Tides project. The header includes the Anecdota logo, navigation links (Home, Projects, Explore), a search bar, and user profile information (dbailey). The main banner features the King Tides Project logo and the text: "Gulf of Maine King Tides", "New England Aquarium | Gulf of Maine", "Anyone can participate!", and "Started September 2014". Below the banner is a "Civic Action Toolkit" section with three main components:

- Communicate and connect:** Includes buttons for "Discussion forums", "Upcoming events", and "Brainstorm on the idea wall".
- Next event:** "Nov 30, 2018: Bar Harbor Planning Commission".
- Resources:** Includes links for "Civic Literacy Primer", "Ways to get involved", and "More resources...".

Below the "Next event" section is a calendar for November and December 2018. The calendar shows the following dates:

November 2018							December 2018						
Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su
29	30	31	1	2	3	4						1	2
5	6	7	8	9	10	11	3	4	5	6	7	8	9
12	13	14	15	16	17	18	10	11	12	13	14	15	16
19	20	21	22	23	24	25	17	18	19	20	21	22	23
26	27	28	29	30			24	25	26	27	28	29	30
							31	1	2	3	4	5	6

Below the calendar is a "Future website preview" section with two main components:

- Civic Activity Tracker:** Includes links for "See all participants' recent activity" and "Log a civic activity or an outcome".

Acknowledgements

- Thank you to project leaders and participants
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- Contact Information: jdisney@mdibl.org or (207) 288-9880 x 125
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 - MDI Biological Laboratory



@SylviaScharf – Gulf of Maine King Tides

Questions?

Aneccdata ™

Next-gen citizen science



Get in touch with the Aneccdata team: aneccdata@mdibl.org



Duncan Bailey
*Systems Developer, MDI
Biological Laboratory*



Jane Disney, PhD
*Director of Education, MDI
Biological Laboratory*



Ashley Taylor
*Data Specialist, Community
Lab, MDI Biological Laboratory*



Anna Farrell
*Program Coordinator,
Community Lab, MDI Biological*

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