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

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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

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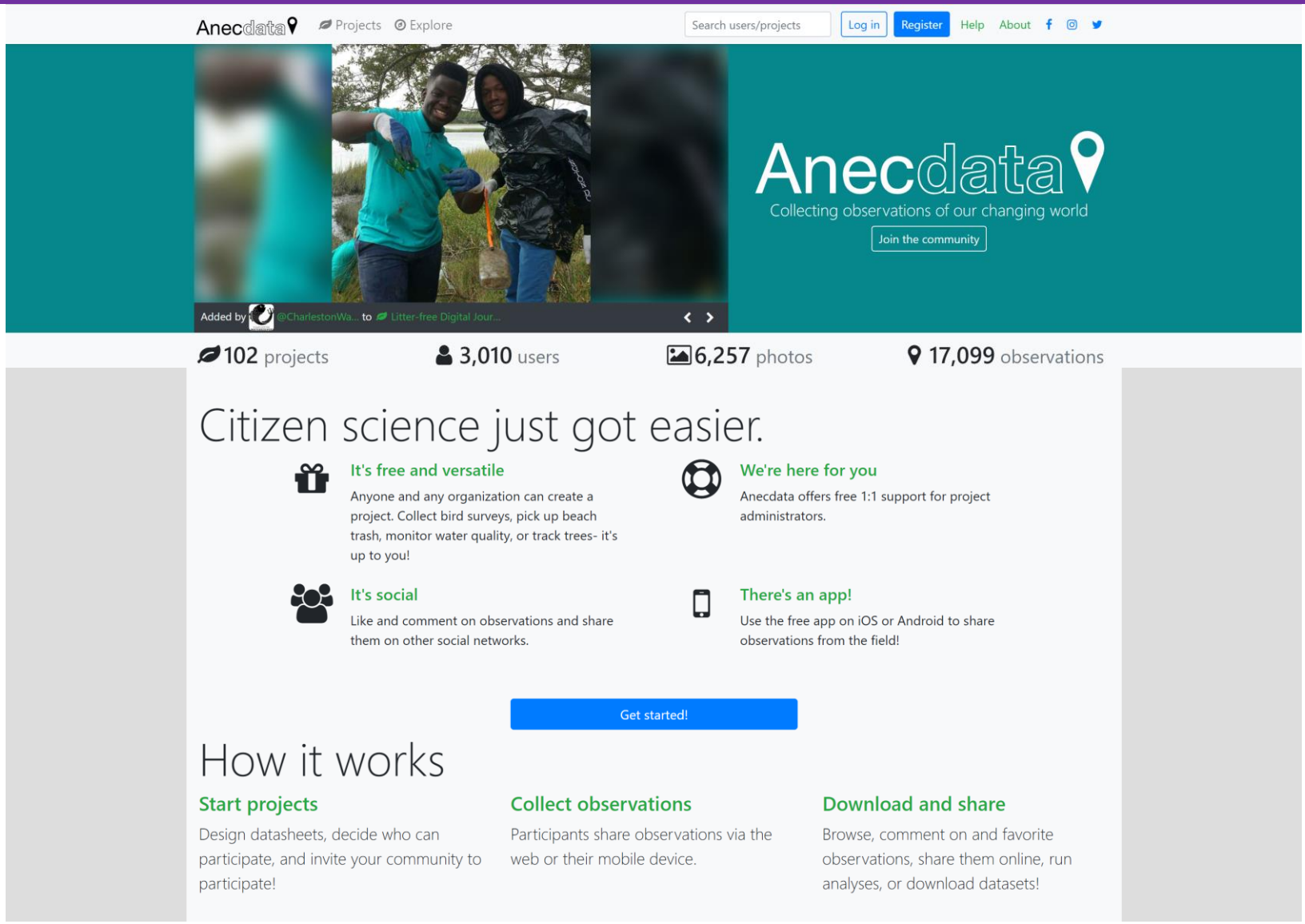

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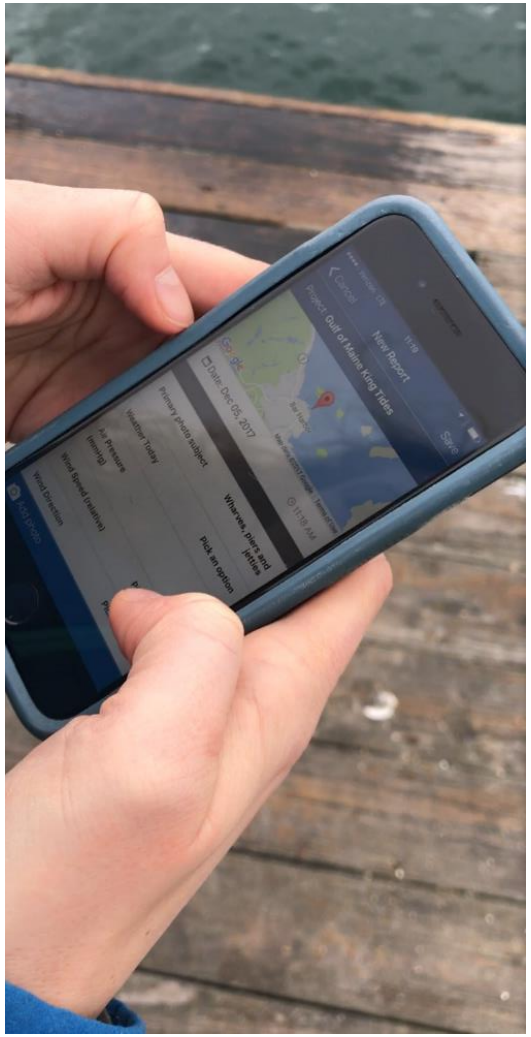

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Next-gen citizen science

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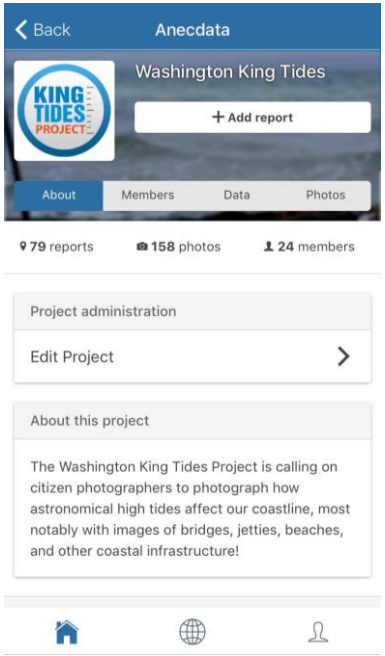
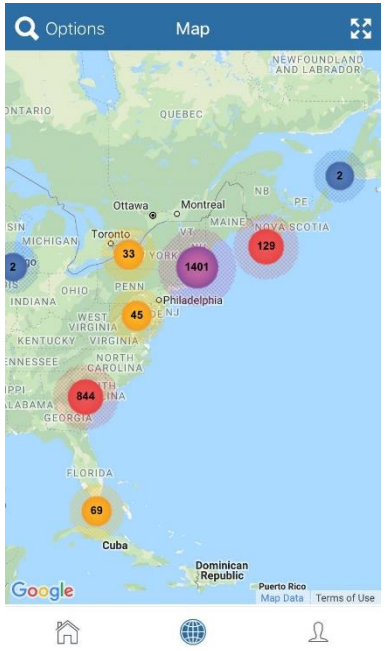
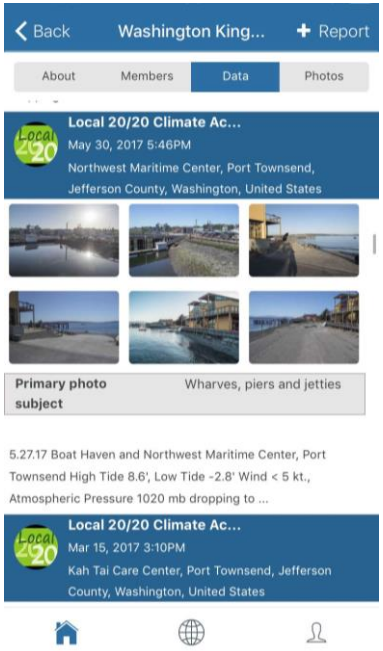
Free

Screenshots iPhone iPad







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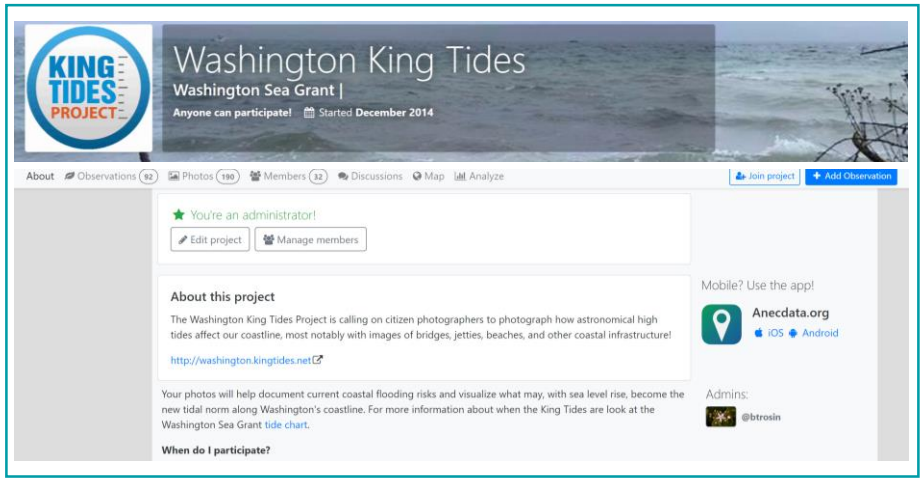
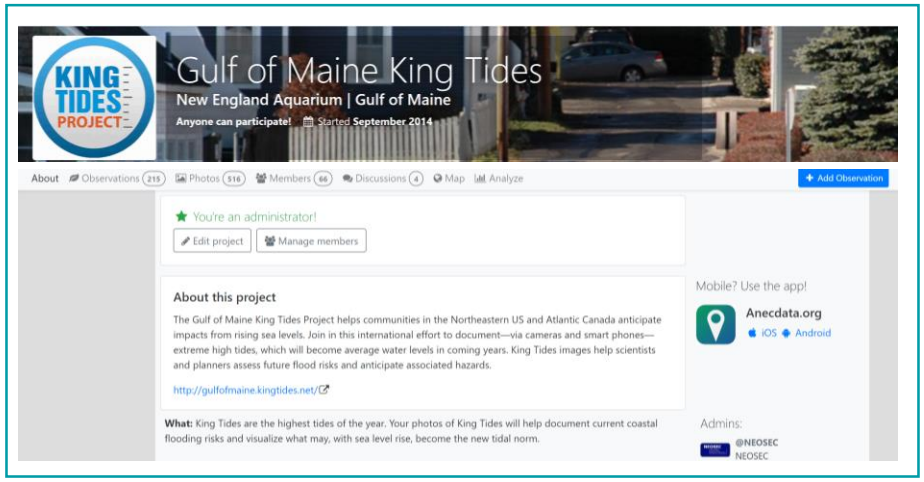
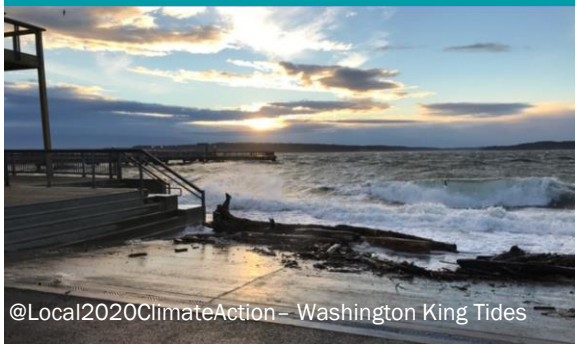
King Tides on Anecdata.org

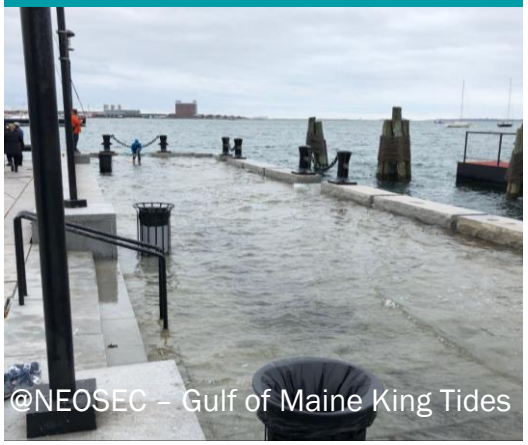




Washington Sea Grant



New England Aquarium



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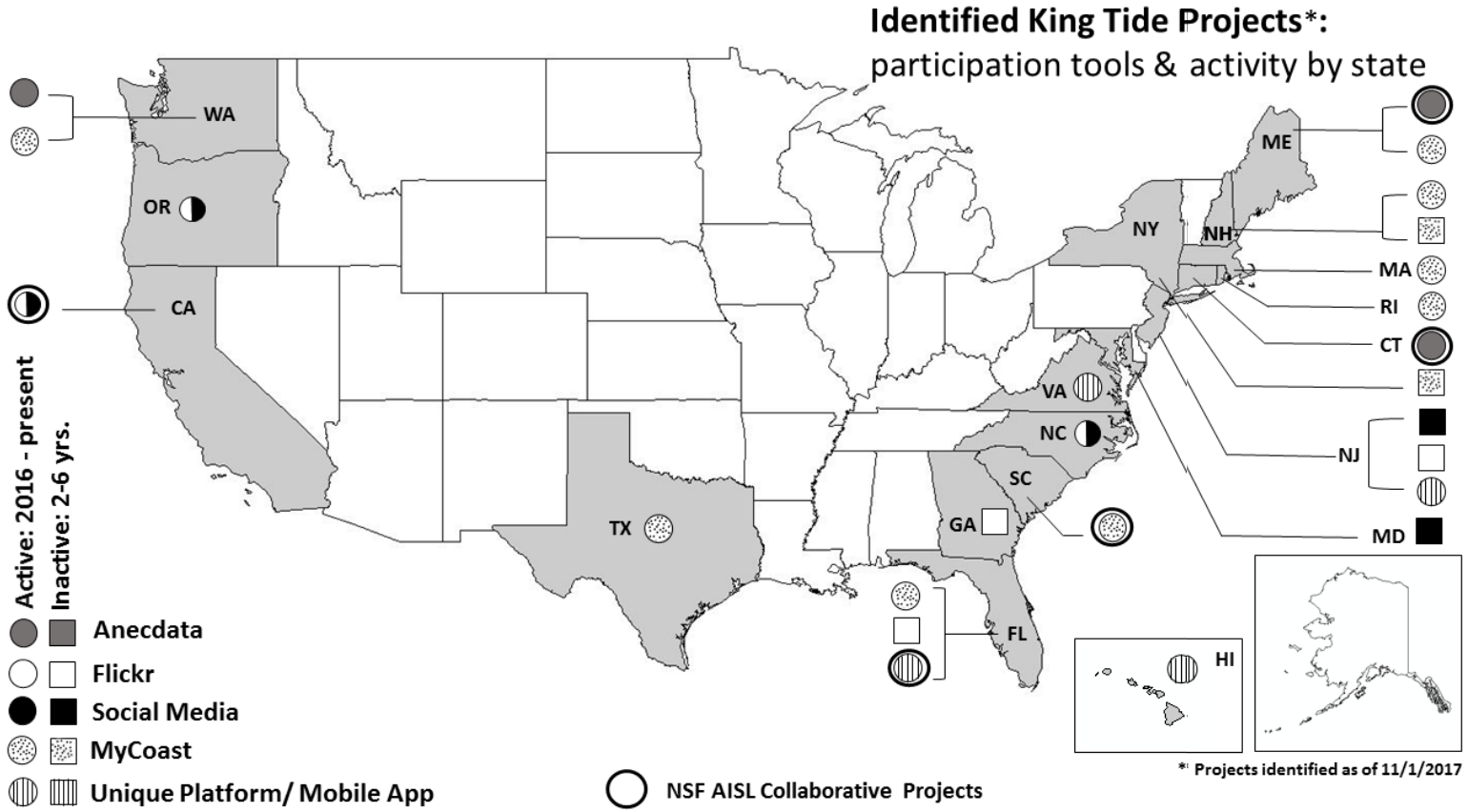
Distribution and Diversity of King Tide Projects in the U.S.



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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

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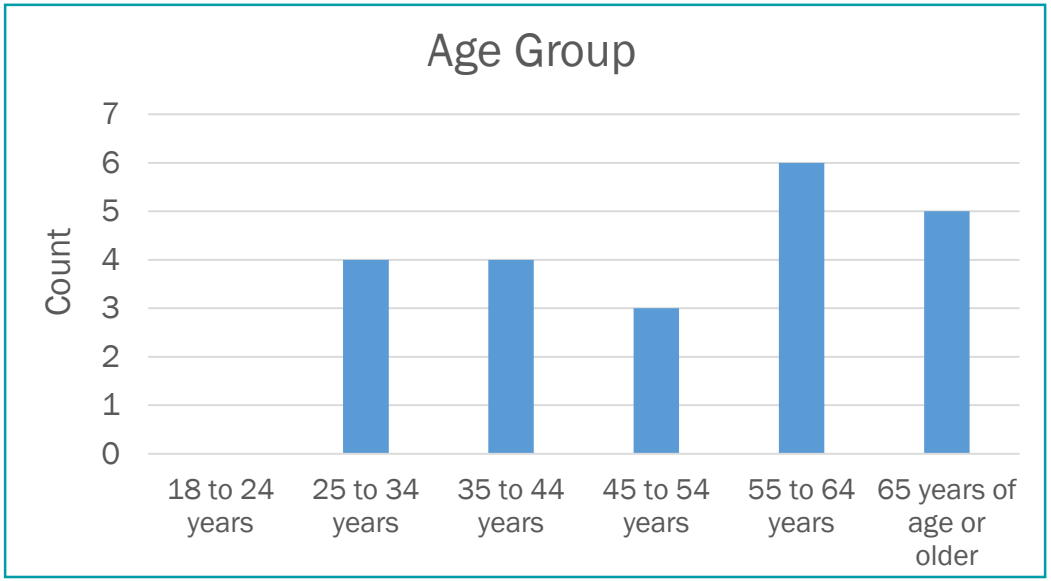
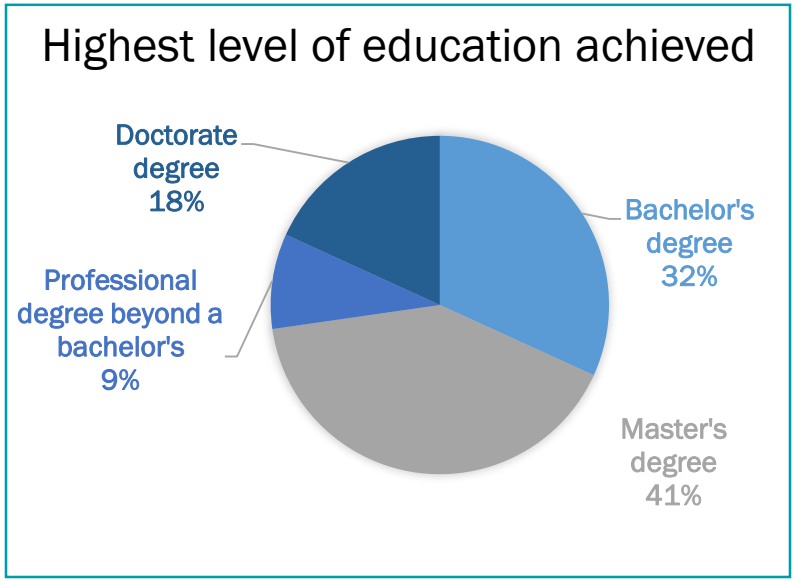
Initial Findings – Survey - Demographics

- 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





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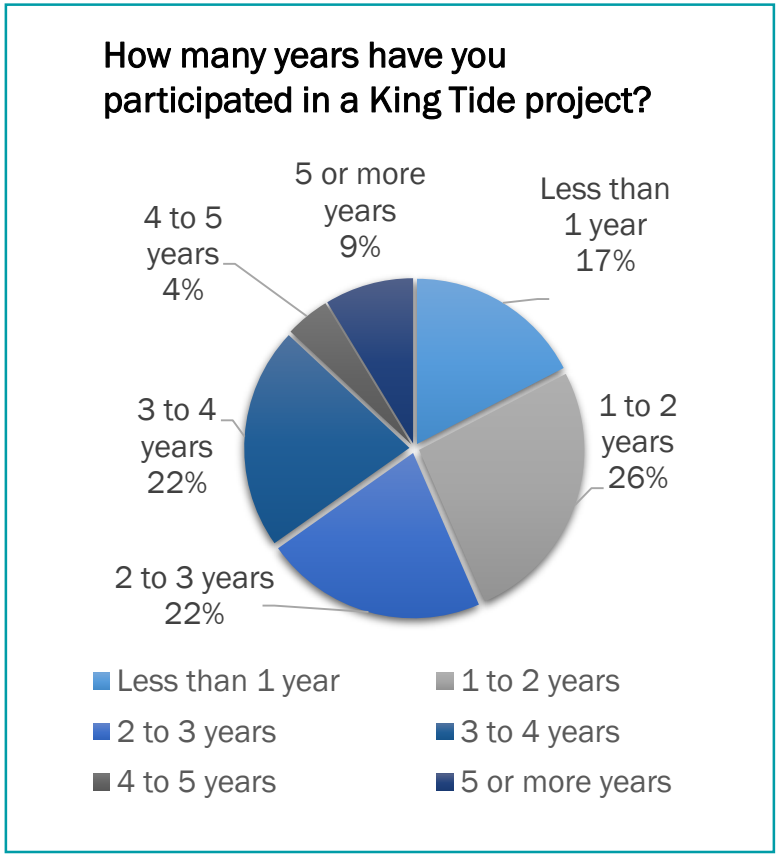
Initial Findings – Survey - Participation

- 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.



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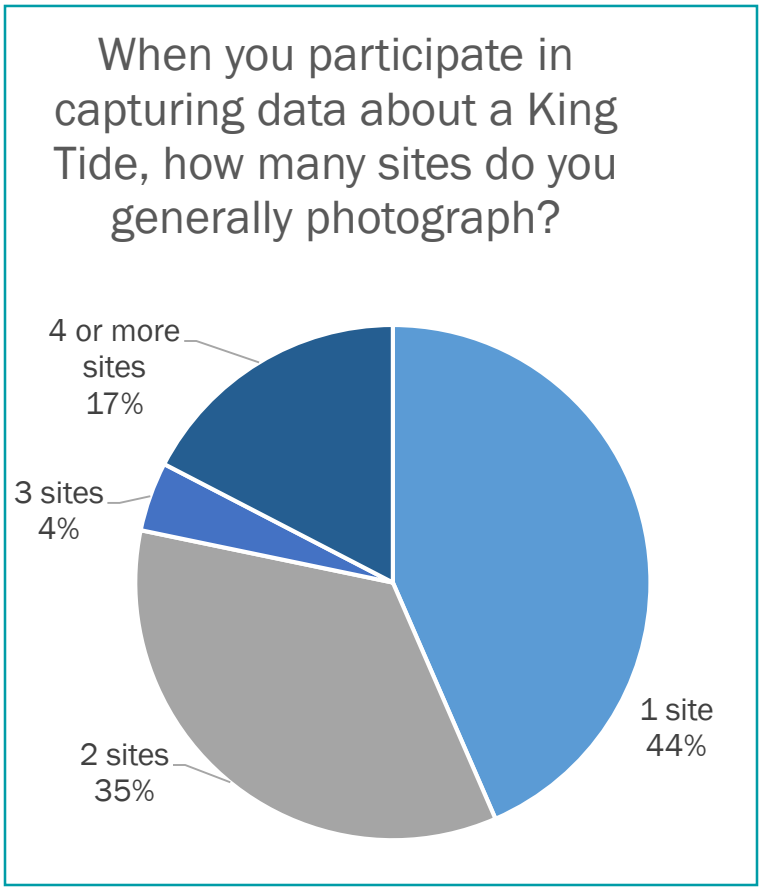
Initial Findings – Survey- Site Selection

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



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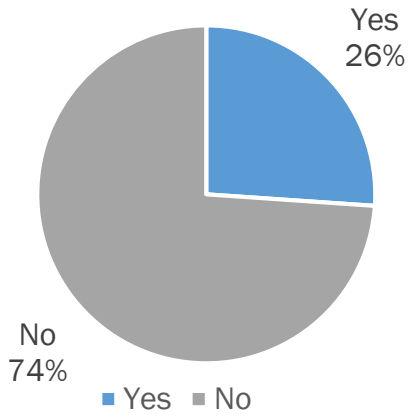
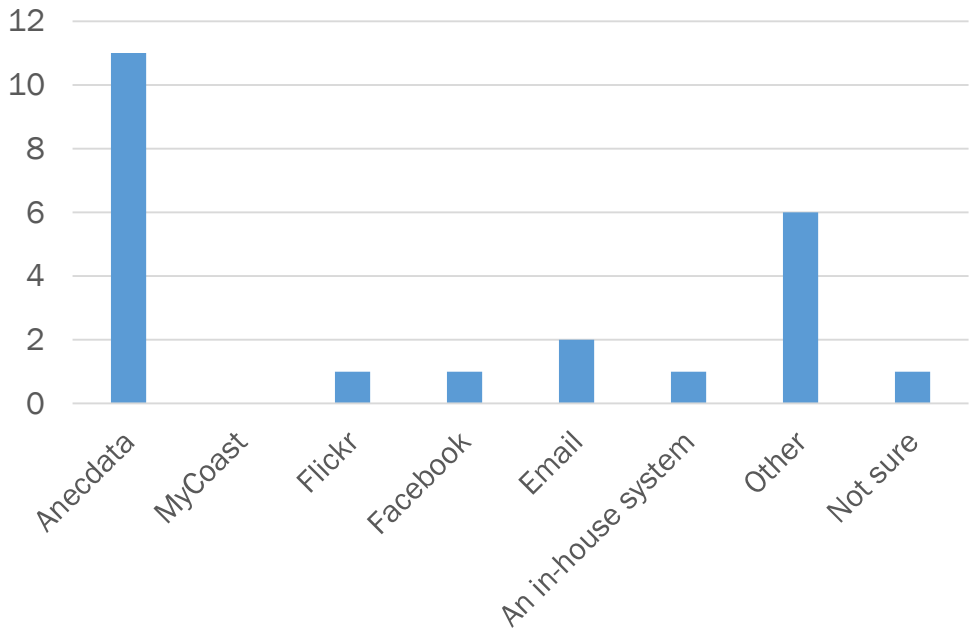
Initial Findings – Survey – Data Collection

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?



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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”.

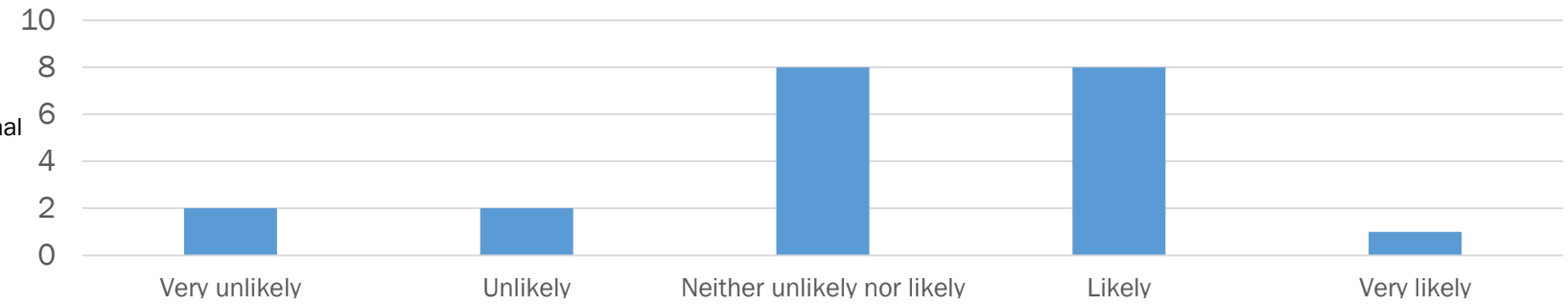
Initial Findings – Survey- Utilizing Data

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.

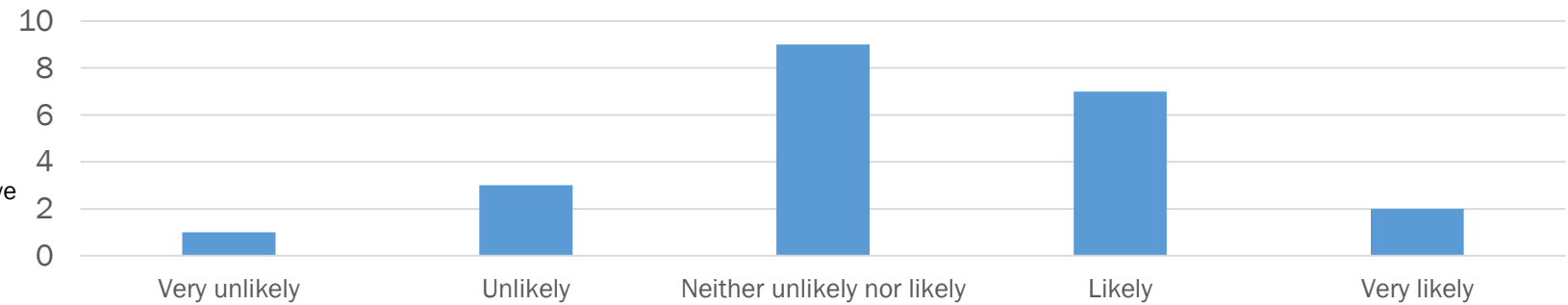
- I'm not sure what to do with the information (8)
- I don't have time to take action (7)
- I don't know who to contact (4)
- I don't know when my local public hearings, or other events when decisions get made, happen (2)
- I'm not sure how to interpret data from the project (2)
- I tried to take action,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

Initial Findings – Survey – New Tools

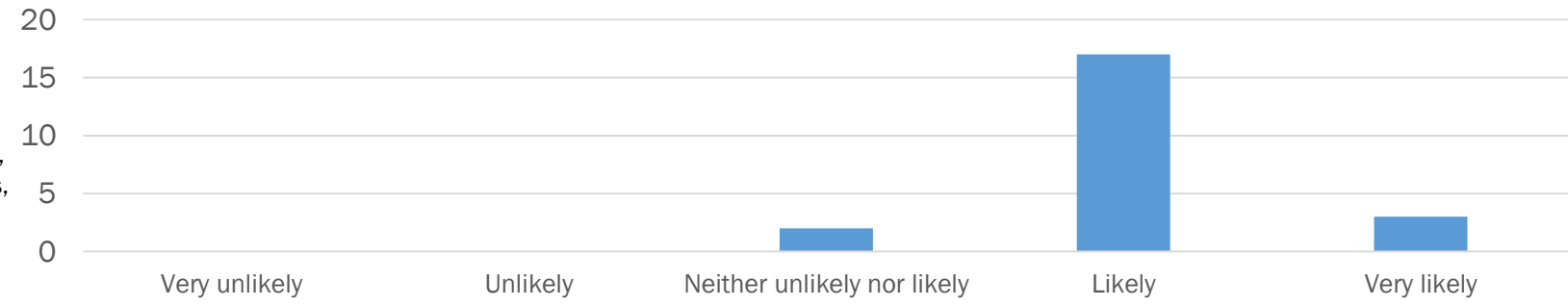
A **Help Desk** where project coordinators provide additional instruction and support for project participants



A **discussion space** where project participants can share and receive mentoring



A **community calendar** for upcoming King Tide events, public hearings, board meetings, etc.



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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

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THE UNIVERSITY OF MAINE AT MACHIAS
Maine's Coastal University

King Tides Project

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

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Recommendations

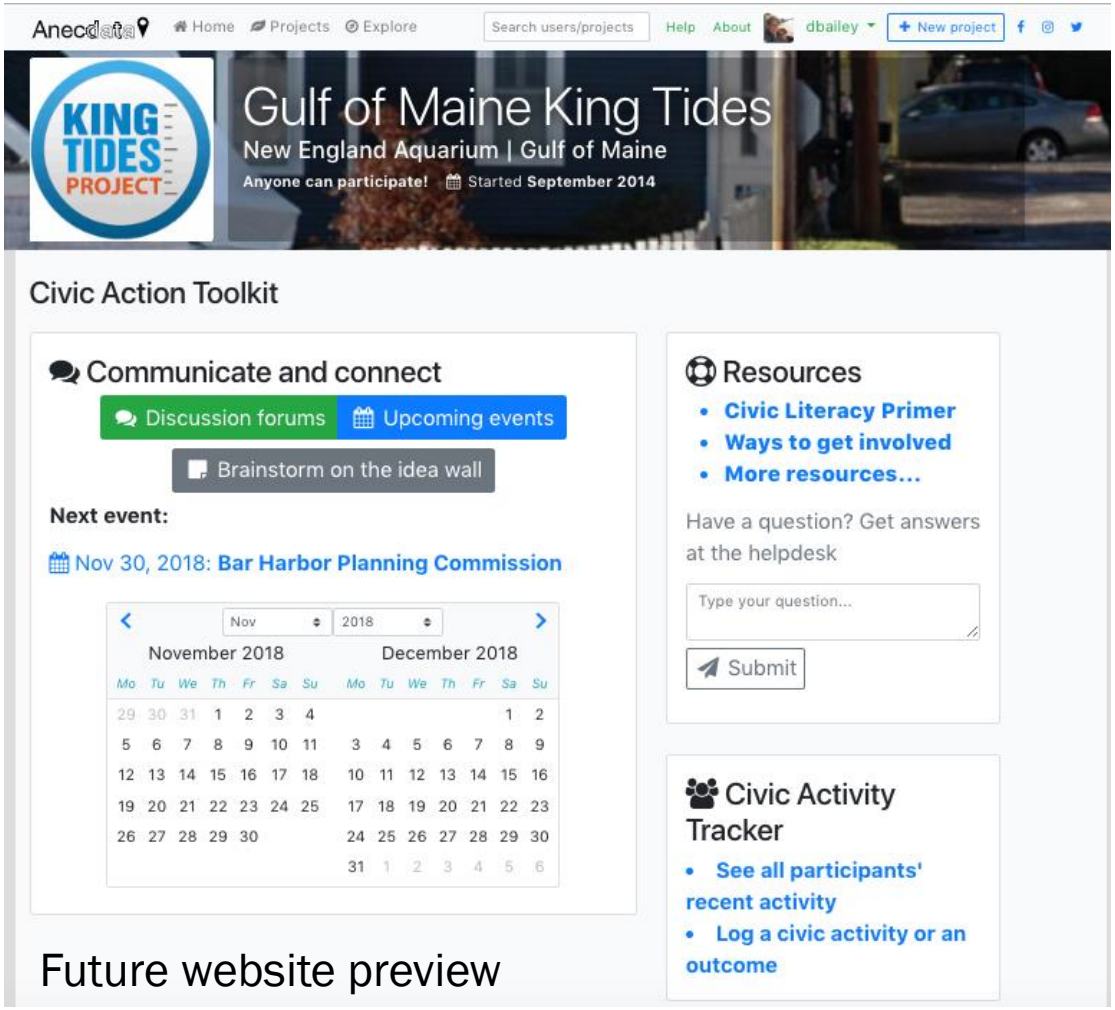
- Develop a nation-wide working group of King Tides Project leaders and participants
- Provide suite of tools to improve communication among participants and facilitate sharing data with town and state leaders
- Translate collective knowledge to action that will result in climate resilience
- Interview 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 Anecdata platform



Future website preview

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Questions?

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