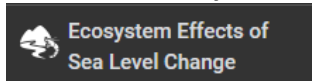




Scenario: You have limited funding for two projects over the next 5 years that return native ecology back to anchialine pools. Where should you prioritize these two projects?

Goal: Use the Ecosystem Effects of Sea Level Change app to identify areas of concern for invasive species transmission to prioritize management through invasive fish removal.

1. In your internet browser enter maps.coastalresilience.org/hawaii/
2. Activate the **Ecosystem Effects of Sea Level Change** app by clicking on the icon on the left.



3. Learn more about the goal of the app and the project.
 - Click the **“Learn More”** Link to learn about the project
 - Click on the **“Download Summary”** button to view a 2-page project summary
 - At any time, click on an audio icon  to hear a narrated description. Make sure your computer’s volume is turned up.
4. By default, you’re looking at cumulative risks to anchialine pools for a “frequent” type flood event under recent climatic conditions.
 - To learn more about what this means, click the blue  to the left of **“Choose Type of Flooding”** or **“Choose Scenario Year”**
5. View Cumulative Risks to anchialine pools under different flooding scenarios
 - Make sure that **“Cumulative Risk Score”** is selected under the Risk Variables.
 - Under **“Choose Type of Flooding”** select **“Infrequent,”** or flooding that might occur once a year.
 - Under **“Choose Scenario Year”** select **“2035”**
6. You’ll see the summary graph change to show the counts of all pools under low, medium, and high risk under this scenario. These counts are for the entire study region.
7. Explore the different Risk variables that go into cumulative risk score.
 - In the **“Select a Risk Variable to view”** box, click on the drop down menu and select **“Potential to be Impacted by future development”**
 - The graph and map change to show each pool’s relative risk for being impacted by planned future development. Under this scenario, 37 pools are at high risk of being impacted by future development.
8. To visualize how many are existing versus modeled future pools, click the **“Existing Pools”** button above the graph. The summary graph and map change to only consider pools that currently exist. 14 existing pools are at high risk.



How many FUTURE pools are at HIGH risk under this variable? _____

9. Continue to explore other risk variables.

- Under **“Select a Risk Variable to View”** select **“Likelihood of Invasive species transmission”**
- The graph and map change to show each pool’s relative risk for this specific variable. **“Unknown”** pools have not had site visits to confirm whether or not they already contain invasive fish species.

10. To summarize this risk for a custom area, zoom to your place of interest:

- Zoom to **Kiholo Bay** (shown to the right)
- Click the **“Draw Custom Area”** box underneath the graph.
- Click on the map to begin drawing a polygon, click twice to finish.
- The graph and map will change to summarize pool risk only within your area of interest.



11. Explore how invasive species transmission risk changes over time.


- For **“Choose Scenario Year”** select **“Recent”**
- Select **“2025”** then **“2035”**
- Continue to switch back and forth to examine how the high risk areas (red) grow and change. This shows how pools with invasive fish can negatively influence adjacent pools.




Understanding where risk of invasive species transmission increases over time, what area(s) would you prioritize? _____




12. For the purposes of this exercise, let’s assume we prioritize the pools in the southwestern area of the bay (shown to the left). Now you want to share your findings with a colleague.

- Click on the  icon in the upper right of the map.
- Click **“Save and Share”**
- Copy the **“Permalink”** and email it to your colleague. To test what they would see, paste the permalink into a new browser window, and hit enter.
- This link bookmarks exactly where you left off in the app and allows you to interactively collaborate with someone else while you explore scenarios.

13. After exploring invasive species transmission risks, view your priority areas in terms of solutions.
 - In the **“Select a Solution to view”** box, click on the drop down menu and select **“Invasive Fish Removal Priorities”**
 - The graph and map change to show each pool’s relative potential for this specific solution.

14. At the regional scale, individual pools are symbolized by buffered points. As you zoom in, the points turn into polygons for ONLY modeled future pools. Although existing pools are still summarized in the graph, they are not visible at the zoomed in scale due to the cultural sensitivities surrounding their exact locations.
 - Click the  in the upper right corner of the map to zoom in until the points turn into polygons to view potential extents of future anchialine pools.
 - Notice that a caveat explaining the scale limits to view existing pools appears in the graph.
 - If you require polygons of existing pools for your project proposal or you need to overlay the pool data with other sensitive data that is not publicly available, you can click the **link to contact Chad Wiggins** for a data sharing agreement and raw data access.

15. Now you want to use the map you’ve created in the app and the downloadable summary report to help make the case to use your limited funding for these prioritized invasive fish removal projects.
 - Click on the  icon in the upper right of the map.
 - Select **“Create Map”**
 - Type visible map title based on scenario year and flood frequency and click **“Generate Map Export”**
 - You will be able to view the map prior to saving to ensure the correct zoom extent. Once it is correct, save the map as a .pdf file to print and/or share digitally.

16. At any time, you can click the **Methods** button to view a detailed report on the sea level rise and anchialine pool analyses that support the data visualized in the app.

17. Now that we’ve accomplished our planning goal, continue to explore other risk and solutions variables.
 - Select **“Likelihood of being inundated by ocean”**
 - To view the flood extent layers, click the checkbox above **“Choose Type of Flooding”** to **“Show Flood Layers”**
 - Use the opacity slider to the right to change the transparency of the flood layers.



How many **EXISTING** pools are at **HIGH** risk of being inundated by the ocean in a **SEMI-FREQUENT** flood event in 2025? _____

How many **TOTAL** pools have **HIGH** Land Protection Potential in a **FREQUENT** flood event in 2050? _____