# Workshop #1 - Huakaʻi to Kawainui Marsh

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| **Lesson Objective(s) / Central Questions** | Central Questions:<br>● What is it like to explore the largest remaining wetland on Oʻahu?<br>● How can we make mindful observations while in a natural space?<br><br>Non-Standard/Values-Based:<br>● Respect for natural spaces (for example, staying on trail, not disrupting or disturbing plants and animals while making observations) is important to ethically engage with them.<br><br>Standards:<br>● CCSS-MATH.K.MD.1: Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.<br>● CCSS-MATH.K.G.1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to. |
| **Vocabulary** | ● Huakaʻi<br>● Kawainui Marsh<br>● Wetlands (broad and basic definition)<br>● Observation<br>● Kilo |
| **Resources** | ● Journals for workshop participants, something to write with<br>● Nature journaling zine - print enough copies so each group can have 1 copy<br>● Observation tools such as ruler/tape measure, magnifying glasses, etc (but keep in mind that participants cannot leave the trail to measure or more closely observe things) |
| **Community Connection / Partner** | Oʻahu: Kawainui Marsh, try to connect with Department of Land and Natural Resources if possible to see if someone is available for an optional talk-story to provide extra information about the space<br>Other Places: any local wetlands in your area, preferably one that is attached to an organization doing some kind of restorative work in the space |
| **Lesson Launch** (10 min) | Meet at the parking lot for Kawainui Marsh Trail. Introduce Kawainui Marsh as the largest remaining wetlands on Oʻahu. Split into groups and establish basic guidelines/prompts for exploration time:<br>● For children, must remain with someone above the age of 18 at all times<br>● Stay on the trail!<br>● Note down things you notice in your journal. Introduce concepts of observation and kilo, and present ideas for things to note down:<br>○ Nature journaling: draw pictures of things in nature you see (or take photos!) (refer to copies of zine if |

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| | ○ Types of wildlife or plants you can see/identify. If unsure about identification, take a photo or write enough identifying details so you can look it up later.<br>○ Counts of different things (animals, plants, bodies of water, etc.)<br>○ Descriptive features of the objects you see (including living organisms and nonliving entities): shapes, relative size, position, colors, etc.<br>○ Different elements of the marsh, and/or bodies of water that you see. Can describe if/how the water is flowing, how large they are (estimate or explain relatively to other features), where they seem to start and end, etc.<br>○ Feelings that come up for you personally as you explore.<br>○ Anything else that you notice along the experience!<br>● Establish a mutual meeting spot (can be same as starting spot or a little further along the trail, but take into account abilities of the participants and make sure it is a recognizable spot that is reasonable for everyone to reach within 45 minutes) |
| **Lesson Tasks, Problems, Activities & Sequence:**<br>*What specific activities, investigations, problems, questions, or tasks will students be working on during the lesson? Attach resource sheets if needed.* | |
| Observation Time (45 min) | In groups, workshop participants will have 45 minutes to explore along the trail at their own pace, taking time to make observations in their notebooks. |
| Observation Debrief and (*Optional) Talk-Story with someone from Department of Land and Natural Resources (20 min) | Debrief observation time by inviting participants to share some of their observations and experience in this place.<br><br>(*Optional) Talk with someone from DLNR to provide an opportunity for participants to learn more about Kawainui Marsh and ask questions if they have any. Ask about the relationship this person has with this place.<br><br>*If the talk-story is skipped, feel free to add additional time to the observation time, or to the observation debrief. |
| **Follow-Up Task** | Take 5-10 minutes to journal about your experience today, how it made you feel, and what kind of relationship you can see yourself building with this place (or what prior relationship you have with this place, if any). |

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| **Lesson Closure** | Return to the starting spot and ensure everyone has transportation back home. Mention the follow-up task and the fact that we will maintain our journals for the entire workshop series to track how our understanding of wetlands grows and our relationships with them change through the course of the series.<br><br>Next workshop, we will be learning more about Kawainui Marsh from other perspectives and connecting our learning to understanding wetlands more generally. |
| **Evidence of Success** | Participants should be able to share the observations they made while exploring the trail with each other. Some of the observations should reflect mathematical standards (taking counts, taking measurements if/when possible, describing features such as relative sizes, shapes and positioning). |
| **Lesson Reflections** | ● Were participants able to respectfully engage with Kawainui Marsh?<br>● What kind of observations did participants make?<br>● Have participants started to develop some kind of relationship with Kawainui Marsh and/or with wetlands in general, as evidenced by their sharing or journal reflections? |

# Workshop #2 - Learning From Kawainui Marsh

| **Lesson Objective(s) / Central Questions** | Central Questions:<br>● Based on learning about Kawainui Marsh, what kind of space could a wetland be?<br>● How does learning from multiple perspectives help us build an image of complex ecosystems like wetlands?<br><br>Non-Standard/Values-Based:<br>● Drawing from prior experiences with and knowledge of a place can help us build a relationship with it.<br>● Learning about where you are by visiting places in your community can support learning about concepts or topics related to those places.<br>● Integration of knowledge from multiple perspectives & knowledge systems informs a richer understanding of a place.<br><br>Standards:<br>● NGSS-ESS3.C: HUMAN IMPACTS ON EARTH SYSTEMS. Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)<br>● LS2.C: ECOSYSTEM DYNAMICS, FUNCTIONING, AND RESILIENCE: Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (MS-LS2-4)<br>● CCSS-ELA-LITERACY.SL.5.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners, building on others' ideas and expressing their own clearly.<br>● CCSS-ELA-LITERACY.R.L.3.2. Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.<br>● CCSS-ELA-LITERACY.W.3.8. Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.<br>● CCSS-ELA-LITERACY.SL.SL.4.4. Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.<br>● CCSS-ELA-LITERACY.W.5.7. Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.<br>● HCSSS Content Standard SS.4.4.7.2: Explain how core values of the early Hawaiians are applicable to modern-day Hawai‘i<br>● CASEL Responsible Decision-Making, Identity: 5.A.2. Students understand the importance of curiosity and practice staying open minded when meeting diverse groups of people or in new situations.<br>● CASEL-Relationship Skills, Belonging: 4.D.3. Students explore different cultural practices and world views. |
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| **Vocabulary** | • Wetlands (specific definition informed by experiences at and knowledge of Kawainui Marsh)<br>• Mo‘olelo<br>• Flora and fauna<br>• Ecosystems |
| **Resources** | • Mind map: can be physical on paper (need large sheet of notepad or butcher paper and marker in this case), on whiteboard, or on an digital platform such as Mural)<br>  ○ If digital platform is used, ensure you have tools such as projector or screen to display the mind map as you are adding to it<br>• Jigsaw activity: Video, Ka Po'e Mo'o Akua : Hawaiian Reptilian Water Deities, Sites of O‘ahu (pg 247-251), Article about Researcher, Ramsar Wetlands Info Sheet about Kawainui Marsh, Kawainui Marsh Storymap<br>• Kawainui Marsh Virtual Tour (Google Earth) (can utilize as a primer to remind participants about their experiences in the last workshop, or as an alternative to explore if there are participants who were unable to attend Workshop #1)<br>• Another potential resource: https://scholarspace.manoa.hawaii.edu/server/api/core/bitstreams/7617577a-9a3f-486a-ab41-3a43ec58f1fb/content |
| **Community Connection / Partner** | O‘ahu: Kawainui Marsh<br>Other places: same local wetlands selected for Workshop #1 |
| **Lesson Launch** (5 min) | Introduce framing, context, intentions of workshop series:<br>• Essential Question: How does learning about local wetlands from multiple perspectives inspire us to love and care for these places?<br>• Enduring Understandings: (1) Building a holistic understanding of local wetlands as complete and complex ecosystems helps us to cultivate a loving appreciation that empowers us to care for them. (2) Engaging with different forms of knowledge, including understandings that emerge from scientific, cultural, communal, and lived experiences, can lead to multi-dimensional perspectives about a place and/or ecosystem that inform how we can help restore and advocate for it. (3) Understanding the different types of relationships humans have formed with their places throughout history and across cultures gives insights into how these places exist in the present and inspires possibilities for the future. |

| **Lesson Tasks, Problems, Activities & Sequence:**<br>*What specific activities, investigations, problems, questions, or tasks will students be working on during the lesson? Attach resource sheets if needed.* | |
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| Whole Group Discussion (15 min) | What do we think wetlands are/what do we associate them with? What relationships do we already have with wetlands? (10 min)<br>- Start creating mind map/Mural board together<br>  - If using Mural, take some time to explain how to use platform to workshop participants<br>  - As the facilitator, you can also feel free to bring up your own personal connections and associations with wetlands, especially as a way to stimulate the conversation<br><br>How has our definition/ideas around wetlands changed/expanded after exploring Kawainui Marsh? (10 min) |
| Mo‘olelo Jigsaw Activity (20 min) | This activity is meant to explore knowledge about Kawainui Marsh from different perspectives.<br><br>Split into 4 groups. Each group will explore one group of resources below:<br>1. YouTube video: https://youtu.be/NPwqmjoab5Q?si=_WhxR2qxQ3DpUB8B&t=140 (2:20-15:00)<br>2. Ka Po'e Mo'o Akua : Hawaiian Reptilian Water Deities (search terms: Kawainui + Hauwahine) + Sites of O‘ahu (pg 247-251) + Article about Researcher<br>3. Kawainui Marsh Storymap + Ramsar Wetlands Info Sheet about Kawainui Marsh (skim and focus on following sections: overview, justification for the application of each criterion,<br>4. https://www.huihawaii.org/kawainui.html + Ramsar Wetlands Info Sheet about Kawainui Marsh (focus on following sections: general ecological features, noteworthy flora, noteworthy fauna) |
| Whole Group Discussion (30 min) | Building our understanding of Kawainui Marsh:<br>- What did each group learn?<br>- What can we learn from this place?<br>- What are the different perspectives and ways of knowing we looked at to learn about Kawainui Marsh?<br>  - Why did we look at the different types of resources we did? What did we learn, for example, from the mo‘olelo and stories? How did this give us a different perspective on our relationships with land and water? |

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| | Based on what we've learned about Kawainui Marsh and other knowledge and relationships we've had from prior experiences with wetlands, what do we think wetlands are?<br>- Add to mind map/Mural board |
| Journal time (5 min) | Add to your journal based on what we just discussed and whatever else you'd like to capture from our experiences over the last two workshop sessions. |
| **Follow-Up Tasks** | Watch this quick video to familiarize yourself with the concept of watersheds before the next session: https://www.youtube.com/watch?v=QOrVotzBNto |
| **Lesson Closure** | We've spent the last two workshop sessions talking a lot about a specific wetlands here (Kawainui Marsh). Next time, we'll zoom out to talk about a larger area of land connected to wetlands: watersheds. We'll have the chance to explore the watershed in the Mānoa area. Make logistics plans for getting to a common meeting location near the area of exploration. |
| **Evidence of Success** | During the moʻolelo jigsaw activity, the different groups should be able to recount the learning in their set of resources, identify the perspectives they engaged with their set of resources, and explain what they got from this learning. Participants should be able to come up with a definition of wetlands that reflects their previous experiences, observations or Kawainui Marsh, and the learning about Kawainui Marsh in this session. The definition/conversation around wetlands should reflect the different perspectives engaged in learning about Kawainui Marsh. |
| **Lesson Reflections** | ● How did the group's definition/ideas around wetlands change from the beginning to the end of the session?<br>● How did learning from the different perspectives engaged in the moʻolelo jigsaw activity impact and/or extend the ideas participants developed around Kawainui Marsh and wetlands in general? |

# Workshop #3 - Watershed Huakaʻi

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| **Lesson Objective(s) / Central Questions** | Central Question(s):<br>● How do wetlands connect with the larger area of land they are in?<br><br>Non-Standard/Values-Based:<br>● Understanding how different ecosystems in an area of land are connected with each other.<br>● Respect for natural spaces (for example, staying on trail, not disrupting or disturbing plants and animals while making observations) is important to ethically engage with them.<br><br>Standards-Based:<br>● NGSS-LS2.C ECOSYSTEM DYNAMICS, FUNCTIONING, AND RESILIENCE. Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (MS-LS2-4)<br>● NGSS-LS4.D BIODIVERSITY AND HUMANS. Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4) |
| **Vocabulary** | ● Watershed |
| **Resources** | https://www.youtube.com/watch?v=QOrVotzBNto<br>https://www.poaww.org/<br>https://hawaii.edu/gk-12/evo/erinb.streams.tour.htm |
| **Community Connection / Partner** | Oʻahu: Lyon Arboretum or community partner who is connected with the Ala Wai Watershed, potentially could also connect with someone in the Department of Land and Natural Resources<br>Other places: accessible areas where you can see different components of a larger watershed, preferably the watershed that participants are physically located in |
| **Lesson Launch** | Wetlands are just one smaller part of a larger area of land and water. How do other areas connect to wetlands, and how do the wetlands fit into the larger environment? Today, we'll go to different parts of a local watershed to explore these questions. |
| **Lesson Tasks, Problems, Activities & Sequence:**<br>*What specific activities, investigations, problems, questions, or tasks will students be working on during the lesson? Attach resource sheets if needed.* | |
| Meet Up and Touch Base (5 min) | Meet at a prior designated meeting location. Ask:<br>● What do we already know about watersheds?<br>● What might we be expecting to see today?<br><br>Remind participants about practicing kilo and making observations in our journals along the way. |

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| Guided Tour of Watershed Area(s) + Service Learning Activity (if you are able to coordinate this with a community partner) (1 hr 15 min) | |
| Discussion (10 min) | Meet up and take some time to discuss observations from the tour and how we have built our understanding and knowledge about watersheds throughout the tour. You can discuss the following:<br>● What did we observe today?<br>● What did we learn?<br>● How has our idea of watersheds changed throughout today?<br>● How does this connect back to wetlands, or alternatively, why did we take time to learn about and explore a watershed in a workshop series about wetlands? |
| **Follow-Up Tasks** | Journal about your reflections from exploring a watershed, then, take some time (5-15 minutes) to learn about a watershed in a different place. You can do a little bit of research online, go to the library, talk to other people around you who might know more. Feel free to jot down notes in your journal. |
| **Lesson Closure** | Where do the streams that we discussed and explored today flow into? Do you think this has changed over time? |
| **Evidence of Success** | Participants should be able to share their observations of the watershed and connect what they learned back to the concept of wetlands. |
| **Lesson Reflections** | ● Were participants able to respectfully engage with the areas in the watershed?<br>● What kinds of observations did participants make?<br>● What kinds of connections did participants make with the watershed, their own lives and experiences, and what we've learned so far about wetlands? |

# Workshop #4 - Waikīkī and Wetlands

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| **Lesson Objective(s) / Central Questions** | Central Questions:<br>● What happened to the wetlands in Waikīkī?<br>● What are ways that wetlands have been harmed, and how does this harm impact the places and communities that rely on them?<br>● What ecological functions can wetlands serve?<br><br>Non-Standard/Values-Based:<br>● Natural ecosystems are vital parts of a healthy environment and should be cared for.<br>● Looking at the history of places with a critical lens involves engaging multiple perspectives, and it helps us understand what has happened and how it has impacted different communities.<br><br>Standards:<br>● NGSS-ESS3.C: HUMAN IMPACTS ON EARTH SYSTEMS: Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1). Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. (MS-ESS3-3)<br>● NGSS-LS2.C ECOSYSTEM DYNAMICS, FUNCTIONING, AND RESILIENCE. Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (MS-LS2-4)<br>● NGSS-LS4.D BIODIVERSITY AND HUMANS. Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)<br>● CCSS-ELA-LITERACY.W.3.8. Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.<br>● CASEL-Responsible Decision-Making, Identity: 5.A.2. Students understand the importance of curiosity and practice staying open minded when meeting diverse groups of people or in new situations. |
| **Vocabulary** | ● Waikīkī<br>● Ala Wai Canal<br>● Dredging<br>● Coral fill<br>● Urban development<br>● Oral history<br>● Floodplain<br>● Pollutants |
| **Resources** | Waikīkī Oral History<br>The Destruction of Waikīkī (How Did We Get Here)<br>Waikīkī: A History of Forgetting & Remembering, Ala Wai Canal chapter |

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| | Wetlands in a pan demo *(Addition to demo as written in link: usage of white air dry clay as "coral fill." Prior to the workshop, cut and mold piece of white air-dry clay to match the size of the sponge, and let dry. White clay piece should completely cover top and sides of the sponge—intention is for you to be able to cover the whole sponge with the piece of white clay entirely to represent filling in of the wetlands.)* |
| **Community Connection / Partner** | O'ahu: Waikīkī<br>Other places: nearest area that has functioned as (or similar to) a wetlands but has since been drained/filled in/developed in some way |
| **Lesson Launch** (5 min) | Reflect on what we learned last time as we were exploring the watershed. Where do the different streams we discussed flow into? Also can refer to the mind map/Mural and provide a refresher on some key themes and points from the discussions in the last few workshops. |
| **Lesson Tasks, Problems, Activities & Sequence:**<br>*What specific activities, investigations, problems, questions, or tasks will students be working on during the lesson? Attach resource sheets if needed.* | |
| Pair-Share / Small Group Sharing (5 min) | What have we learned so far about wetlands and watersheds? Does anything we've discussed so far about watersheds and wetlands remind you of any other places you've been to, heard about, or seen (through photos, videos, movies/TV show settings, etc.)? |
| Wetlands in a Pan Demo Part 1 (15 min) | As you might have started to discuss in your pairs/small groups, there are wetlands in many other places, as well as on O'ahu. In fact, you can find wetlands in every continent (except Antarctica) and in many different types of climates. Wetlands are really important ecosystems for a lot of reasons, and one of them is for the important ecological functions they serve. To see what these functions might be first hand, we'll do a demonstration!<br><br>Start wetlands in a pan demo, meant to illustrate in a basic sense how wetlands can function similarly to a sponge, providing flood control functions for nearby areas and helping to filter water before it reaches a larger body of water.<br>1. Flood control: pour clean water down clay, imagine a town at the base, repeat with sponge<br>2. Filtration: pour muddy water down the clay (with sponge).<br>But what happens if you take away or fill in the wetlands? This has unfortunately happened in many places around the world. |
| Waikīkī History Video (15 min) | Watch The Destruction of Waikiki (How Did We Get Here) (2:00-17:14) together. |

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| | *Recommend playing the video at 1.25x speed so there's a few minutes left afterward to provide a brief recap of the main points related to the history of Waikīkī as wetlands and its development. |
| Debrief (5 min) | What do you think happens when an area that was previously a wetlands is developed into something different? Think about the things that lived there, the way water flowed through there, and the demonstration. |
| Wetlands in a Pan Demo Part 2 (10 min) | Change out the sponge in the pan. Ask 1-2 participants for a hypothesis for what will happen if we repeat the Wetlands in a Pan demonstration, but remove or fill in the wetlands.<br><br>Place strip of air-dry white clay (coral fill) over the sponge, and repeat the demonstration of pouring regular and muddy water. Take a couple minutes to debrief what happened and how it was different with the wetlands intact. Ask, how might this impact what happens in real life when wetlands are filled in? |
| Oral History (5 min) | Introduce Oral History archives, and this specific segment, where people who live in Waikīkī discuss their experience of growing up in the area during its development and witnessing the changes. Then, play the audio at this link: Oral History (might be helpful to project the transcript as you're playing the audio). |
| Writing Exercise (10 min) | Write 3 brief journal entries imagining that you are coming from 3 different perspectives, based on the stories we just heard and the different groups of people involved in them:<br>1. Someone with some kind of relationship with the place of Waikīkī as it was undergoing development from the wetlands to what it is today.<br>2. Someone with a different kind of relationship with Waikīkī who might be coming from a very different, even opposing perspective.<br>3. Someone (or something) who was depending on the wetlands environment of Waikīkī in some way for survival witnessing the drastic change of the environment. |
| **Follow-Up Tasks** | Feel free to continue the writing exercise in your journal, and/or journal about how your relationships to the places that you inhabit have changed (if they have) in response to the knowledge we have gathered about Kawainui Marsh and Waikīkī.<br><br>Also, if anyone has recyclables (objects from the recycling bin) that they can donate, it will be helpful for an activity in the next workshop session! |

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| **Lesson Closure** | It can be heavy and upsetting to learn about what has happened to Waikīkī and many of the wetlands around the world. The good news is, many other people have loved wetlands throughout history and work hard to help restore them today, as an act of love. Throughout the rest of the workshop series, we'll talk more about the loving actions and hard work that people have taken to care for wetlands in their own places. We'll bring this learning with us into our final project of the series, which will be to envision and perform an act of love for a local wetlands or a place that used to be wetlands. We'll talk about this more in the upcoming sessions, but first, we'll spend a little time honoring wetlands by learning about how they love us, or in other words, different functions they perform for the environment, living organisms, and us! |
| **Evidence of Success** | Participants should be able to engage three different perspectives in the writing exercise to convey how development in the Waikīkī area impacted different communities. Participants should also come away with an understanding of how human activities in Waikīkī impacted the environment in different ways by putting together the information about the history of Waikīkī, lived experiences of changes, and the demonstration about wetlands. |
| **Lesson Reflections** | ● Were participants able to understand basic functions of wetlands, such as flooding and filtration, from the wetlands in a pan demonstration? What hypotheses did they have for the removal/filling in the wetlands, and how did they reconcile this with what actually happened?<br>● What types of perspectives did participants engage in the writing exercise, and how did they envision their different experiences of the development of Waikīkī? |

# Workshop #5 - How Do Wetlands Love Us?

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| **Lesson Objective(s) / Central Questions** | Central Questions:<br>• What ecological functions can wetlands serve?<br>• How do wetlands support biodiversity?<br><br>Standards:<br>• NGSS-LS2.C: ECOSYSTEM DYNAMICS, FUNCTIONING, AND RESILIENCE: Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (MS-LS2-4)<br>• NGSS-LS4.D BIODIVERSITY AND HUMANS: Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)<br>• CCSS-ELA-LITERACY.SL.SL.4.4. Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.<br>• HCSSS-Inquiry Standard SS.3-5.4.3: Present arguments and explanations using a variety of print, oral, and digital technologies<br>• CASEL-Self-Management, Agency: 2.H.2. Students practice managing their own time, organizing their materials, and gathering what is needed for a task or activity. |
| **Vocabulary** | • Habitat<br>• Biodiversity |
| **Resources** | • The Role of Wetlands in Maintaining Biodiversity<br>• Box of recyclables and sponges<br>• Visual art supplies: coloring pencils, watercolor kits, paints, crayons/pastels (whatever is accessible), pens/pencils |
| **Lesson Launch** | Today, we'll learn more about the ecological functions that wetlands serve and focus on how they are important for biodiversity! |
| **Lesson Tasks, Problems, Activities & Sequence:**<br>*What specific activities, investigations, problems, questions, or tasks will students be working on during the lesson? Attach resource sheets if needed.* | |
| Video + Discussion (15 min) | The Role of Wetlands in Maintaining Biodiversity + take some time to reflect (can journal or share quietly with a partner) on how wetlands support living organisms and the environment in general |
| Creative Activity (40 min) | Participants will create a creative representation of how wetlands support living organisms and nonliving aspects of the environment. They can choose to make this representation individually, as pairs, or in small groups. Some options for creative representations for this include:<br>• A story, poem, or song about the wetlands written from the perspective of a living or non-living entity that benefits in |

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| | some way from the existence/functions of wetlands<br>● A visual or performance art piece (skit or scene, interpretive dance, etc.) depicting how the wetlands support the living and nonliving things in/around it<br>● A "diorama" or demonstration scene (can take inspiration from Wetlands in a Pan demonstration) that depicts how wetlands function in a way that helps the living and nonliving things in/around it<br>● Some combination of the above elements, or another creative idea! |
| Presentation (15 min) | Participants will present their creations to one another. Depending on time and the creative routes taken by participants, this can be done as assigning a set time for each participant to take the stage and present to the rest of the participants or as a "gallery walk" type activity where groups of participants walk around and see each others' pieces. |
| **Follow-Up Tasks** | Journal about one or both of the following prompts:<br>● How do wetlands love us, and how does learning about this love impact your feelings and the actions you might take around wetlands in general?<br>● How did the creative activity impact your relationship-building process with the wetlands? |
| **Lesson Closure** | In the next session, we'll go on a huakaʻi to a local fishpond to continue our learning about wetlands as ecosystems and start to think about how we, as humans, can love wetlands back.<br><br>Make logistics plans for getting to Waikalua Loko Iʻa, offer more information in terms of expectations of the session, what to wear and bring, etc. |
| **Evidence of Success** | Participants should be able to convey how wetlands environments can sustain and support living and nonliving aspects of the ecosystem and/or larger environment through their creative products. They should also be able to successfully present their creations to other workshop participants. |
| **Lesson Reflections** | ● How did workshop participants creatively express how wetlands love "us" (living organisms, nonliving aspects of ecosystem/environment, the environment as a whole, humans)?<br>● What kinds of understandings about wetlands as ecosystems and the ecological functions of wetlands are included in participant creations? |

# Workshop #6 - Huakaʻi to Waikalua Loko Iʻa

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| **Lesson Objective(s) / Central Questions** | Central Questions:<br>● How have people in Hawaiʻi cultivated and learned from wetlands as ecosystems?<br>● How can we help cultivate wetlands as ecosystems? Why is this important?<br><br>Non-Standard/Values-Based:<br>● Indigenous cultural practices and knowledge systems include examples of scientific learning and sustainability.<br>● Respect for natural spaces (for example, staying on trail, not disrupting or disturbing plants and animals while making observations) is important to ethically engage with them.<br><br>Standards:<br>● NGSS-5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.<br>● NGSS-ESS3.C: HUMAN IMPACTS ON EARTH SYSTEMS: Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1). Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. (MS-ESS3-3)<br>● NGSS-LS4.D BIODIVERSITY AND HUMANS: Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)<br>● NGSS-LS2.B CYCLES OF MATTER AND ENERGY TRANSFER IN ECOSYSTEMS: Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS2-1). Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. (MS-LS2-3)<br>● CCSS-ELA-LITERACY.W.3.8. Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.<br>● HCSSS-Content Standard SS.4.4.7.2: Explain how core values of the early Hawaiians are applicable to modern-day Hawaiʻi<br>● HCSSS-Inquiry Standard SS.3-5.5.2: Explain different ways students could work individually or in collaboration with others (e.g., other students, teachers, community and/or global organizations) to address local, regional, or global problems or issues and predict possible results of their actions |

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| | • CASEL-Social Awareness, Agency: 3.G.2. Students explore the importance and power of community participation and service. Students collaborate with others to identify ways to contribute productively to their learning community.<br>• CASEL-Relationship Skills, Belonging: 4.D.3. Students explore different cultural practices and world views. |
| **Vocabulary** | • Loko iʻa/fishpond<br>• Aquaculture<br>• Trophic levels<br>• Service learning |
| **Resources** | https://www.thepaf.org/<br>https://www.thepaf.org/waikalua/<br>https://kuahawaii.org/huimalamalokoia/ |
| **Community Connection / Partner** | Oʻahu: Waikalua Loko Iʻa or another fishpond on island, Pacific American Foundation.<br><br>Other places: A place in the community that exemplifies how humans, either in the past or in the current moment (ideally, both if possible) have cultivated ecosystems in relationship with wetlands. |
| **Lesson Launch** | Get to Waikalua Loko Iʻa, connect with community partners. Prompt participants to take notes as they can in their journal (especially when it comes to the different types of organisms and numbers, as that will be used for an activity in the next workshop). |
| **Lesson Tasks, Problems, Activities & Sequence:**<br>*What specific activities, investigations, problems, questions, or tasks will students be working on during the lesson? Attach resource sheets if needed.* | |
| Talk-Story/Tour with PAF (30-45 min) | Learn from PAF about Waikalua Loko Iʻa, history of place, ecosystem that is present here, and how the technological features of fishponds, as well as their cultivation into sustainable aquaculture systems that fed many. |
| Service Learning Activity (30-45 min) | Assist PAF with a service activity based on their current needs. |
| **Follow-Up Tasks** | Journal about the experience and examples you saw of people loving their wetlands (and/or fishponds) during huakaʻi |
| **Lesson Closure** | After learning more about wetlands as ecosystems and how humans have utilized and taken inspiration from wetlands in Hawaiʻi, we can start to think about different types of relationships different groups of humans have had with wetlands over time. In our next session, we'll connect the learning from today to discussions around ecosystem |

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| | organization, energy, and sustenance. In the meantime, you can also start thinking about what it might mean for you to love the wetlands to help you with brainstorming for our final project. |
| **Evidence of Success** | Participants should be respectfully engaged during the huakaʻi and service learning activity and should have notes about specific information and details about the loko iʻa ecosystem that they can use in the next session. |
| **Lesson Reflections** | ● What was it like to participate in the service learning activity with the workshop participants? |

# Workshop #7 - Relationships in the Wetlands

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| **Lesson Objective(s) / Central Questions** | Central Questions:<br>• How are living organisms connected with the other living organisms and nonliving features within a wetlands ecosystem?<br><br>Standards:<br>• MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.<br>• PS3.D: ENERGY IN CHEMICAL PROCESSES AND EVERYDAY LIFE: The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5-PS3-1)<br>• LS2.A INTERDEPENDENT RELATIONSHIPS IN ECOSYSTEMS: The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1) Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. (MS-LS2-1)<br>• CCSS-ELA-LITERACY.SL.5.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners, building on others' ideas and expressing their own clearly.<br>• CCSS-MATH.3.OA.7: Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 ×5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. |
| **Vocabulary** | • Food web<br>• Photosynthesis<br>• Nutrients |
| **Resources** | • Large pieces of paper and pens/pencils/markers<br>• Laminated sheet or powerpoint display slide with generic food web<br><br>https://education.nationalgeographic.org/resource/food-web/ |
| **Lesson Launch** | Reminder of huakaʻi, ask participants what they learned and remember from the session. |

| **Lesson Tasks, Problems, Activities & Sequence:**<br>*What specific activities, investigations, problems, questions, or tasks will students be working on during the lesson? Attach resource sheets if needed.* | |
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| Loko I‘a Math Activity (15 min) | Have participants refer back to the notes they took during the huaka‘i. Split them into groups, and have each group create a visual model to represent the trophic levels of the ecosystem in the loko i‘a. Using numbers discussed in the huaka‘i for rough levels of fish production and sustenance of people, calculate amounts (roughly) needed within each trophic level to feed 10 people, going up in scale to 50, 100, 1000, etc. |
| Food Webs and Interconnection in Ecosystems (20 min) | Have participants look at their trophic level models, and think of how they can rearrange them/create a different model to depict the relationships between the living organisms. Have participants consider: where do the respective organisms get their energy from? How might these living organisms interact?<br><br>After 5-10 minutes, depending on how participants are doing, you can introduce the generic food web model as one example of how ecologists represent these connections. |
| Brief Group Discussion (10 min) | What do living organisms need to stay alive? Then, how might wetlands (or the living organisms and nonliving features within a wetlands) provide these things for each other? Some topics for consideration that you can present as the facilitator (if they don’t come up organically) are:<br>- Energy (conversion from sunlight into food)<br>- Decomposers and formation of soil for plants<br>- Cycling and uptake of nutrients such as carbon, phosphorus, and nitrogen (also can think from the perspective of living organisms not just in the wetlands but ones, for example, in the ocean that the streams that run through wetlands eventually feed)<br>- Habitat/shelter construction<br>- Water flow and levels (especially for plants and animals that are neither fully land or water-based) |
| Beyond the Food Web (20 min) | Based on the conversation and new information presented, participants will revise or recreate their visual models to incorporate different types of relationships that exist among living organisms and nonliving features within wetlands as they see fit. |
| **Follow-Up Tasks** | Journal about the relationships that exist within wetlands and reflect on whether this influences your own relationship with wetlands (or with something within the wetlands). |

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| **Lesson Closure** | After building up our knowledge of wetlands by learning about wetlands in our place, the functions of wetlands, different relationships within wetlands, and human relationships with wetlands, in the last few sessions, we'll focus on how we can love the wetlands. Next session, there will be a panel with community members who have built their own relationships with wetlands and taken different actions to love them. Start thinking about your project and what kind of act of love you or a group participants want to carry out for wetlands! |
| **Evidence of Success** | Participants should create some kind of model depicting relationships between living and nonliving things in and impacted by wetlands. |
| **Lesson Reflections** | • How did participants model the relationships and connections that exist within the wetlands? How do these models extend beyond simpler, energy/sustenance-based models of relationships such as the food chain or even the food web? |

# Workshop #8 - Cultivating and Loving the Wetlands

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| **Lesson Objective(s) / Central Questions** | Central Questions:<br>● What types of relationships have people in Hawai‘i and in the community had with wetlands, and how can we activate these relationships to care for our wetlands?<br>● What types of actions can we take to restore and advocate for wetlands?<br><br>Non-Standard/Values-Based:<br>● Community members may have lived experience in advocating and restoring places within their community, and it is valuable to learn from these perspectives.<br><br>Standards:<br>● NGSS-5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.<br>● CCSS-ELA-LITERACY.SL.5.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners, building on others’ ideas and expressing their own clearly.<br>● HCSSS-Inquiry Standard SS.3-5.5.2: Explain different ways students could work individually or in collaboration with others (e.g., other students, teachers, community and/or global organizations) to address local, regional, or global problems or issues and predict possible results of their actions<br>● CASEL-Relationship Skills, Agency: 4.E.2. Students use constructive strategies to communicate their perspective and listen openly to the perspectives of others to solve a problem.<br>● CASEL-Responsible Decision-Making, Identity: 5.A.2. Students understand the importance of curiosity and practice staying open minded when meeting diverse groups of people or in new situations. |
| **Vocabulary** | ● Ahupua‘a system<br>● Lo‘i (taro patches)<br>● Advocacy<br>● Testimony |
| **Community Connection / Partner** | Various community members and community partners who have been involved in wetlands and ahupua‘a restoration and advocacy work in different ways. Some ideal candidates: people/organizations who have advocated for/currently advocate for protection and restoration of wetlands, loko i‘a and lo‘i on island; university researchers and ecological engineers who do work related to wetlands, loko i‘a, and biocultural restoration; people/organizations who do ecological health assessment work and have worked in/around wetlands spaces, etc. |
| **Lesson Launch** | Introduce panelists, mention that we will start discussing the final project at the end of today’s session and to think of how panelists might inspire project work. |

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| | As a reminder, your project is to envision and perform an Act of Love for a local wetlands (current or historical wetlands space), and it can take any form that you choose. You're welcome to do the project individually or within a group. |
| **Lesson Tasks, Problems, Activities & Sequence:**<br>*What specific activities, investigations, problems, questions, or tasks will students be working on during the lesson? Attach resource sheets if needed.* | |
| Talk-Story with Panel (45 min) | Panelists share how they have contributed to wetlands restoration and advocacy work in different contexts and ways, including details on specific actions they have taken, how they got to their current role in this work, how this work has impacted them, how restoration and advocacy are related to love, etc. |
| Discussion (15 min) | Workshop participants have the opportunity to engage in discussion based on learning from the panel with panelists. Can do this as a whole group, or as smaller groups with individual panelists. |
| Project Brainstorm (10 min) | Give time for participants to brainstorm about how the different work from panelists might inspire them for their own projects. |
| **Follow-Up Tasks** | Continue brainstorming and/or journal about reflections from the panel. |
| **Lesson Closure** | I hope you're all starting to think seriously about your final projects. There were some great ideas today. Keep in mind that you want to reflect your learning from multiple perspectives in your final project and that we will present to each other during the last workshop session. In the next session, we will go back to Kawainui Marsh with an organization that has been working to restore and advocate for the area. Make logistics plans for getting to Kawainui Marsh, offer more information in terms of expectations of the session, what to wear and bring, etc. |
| **Evidence of Success** | Participants should engage in discussion and demonstrate through their initial brainstorming or journaling about inspiration for their final project from the community members' perspectives about restoration and advocacy work. |
| **Lesson Reflections** | • How did the participants engage with the panelists? |

# Workshop #9 - Huakaʻi Back to Kawainui Marsh

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| **Lesson Objective(s) / Central Questions** | Central Questions:<br>● What types of actions can we take to restore and advocate for wetlands?<br>● What role does community play in restoration and advocacy work?<br><br>Non-Standard/Values-Based:<br>● Respect for natural spaces (for example, staying on trail, not disrupting or disturbing plants and animals while making observations) is important to ethically engage with them.<br><br>Standards:<br>● NGSS-5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.<br>● HCSSS-Inquiry Standard SS.3-5.5.2: Explain different ways students could work individually or in collaboration with others (e.g., other students, teachers, community and/or global organizations) to address local, regional, or global problems or issues and predict possible results of their actions<br>● HCSSS-Content Standard SS.4.4.7.2: Explain how core values of the early Hawaiians are applicable to modern-day Hawaiʻi<br>● CASEL-Self-Awareness, Belonging: 1.E.2. Students describe their roles and contributions in the different settings in which they participate.<br>● CASEL-Social Awareness, Agency: 3.G.2. Students explore the importance and power of community participation and service. Students collaborate with others to identify ways to contribute productively to their learning community.<br>● CASEL-Responsible Decision-Making, Identity: 5.A.2. Students understand the importance of curiosity and practice staying open minded when meeting diverse groups of people or in new situations. |
| **Vocabulary** | ● Biocultural restoration |
| **Resources** | https://www.kauluakalana.org/ |
| **Community Connection / Partner** | Oʻahu: Kawainui Marsh and Kauluakalana<br>Other places: same wetlands visited in Workshop 1 with a restoration group that works on-site |
| **Lesson Launch** | Introduce Kauluakalana and mention final project |
| **Lesson Tasks, Problems, Activities & Sequence:**<br>*What specific activities, investigations, problems, questions, or tasks will students be working on during the lesson? Attach resource sheets if needed.* | |
| Discussion/Talk-Story and Demonstrations with Kauluakalana (30 min) | Hands-on learning activities about restoration work and discussions around this work. |
| Service Learning | Assist Kauluakalana with a service activity based on their current |

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| Activity (20 min) | needs. |
| Brief Group Discussion (10 min) | How can we bring this experience with us into our projects? |
| **Follow-Up Tasks** | Journal about the experience, prepare accordingly for project work time. |
| **Lesson Closure** | Next workshop will mainly be work time for our projects. Make sure to bring any resources you need and make requests for any resources you need from me. |
| **Evidence of Success** | Respectful engagement with Kauluakalana and Kawainui Marsh through the session and during the service learning activity. Participants should journal about how this experience relates to their final project work. |
| **Lesson Reflections** | ● How did the way participants engaged with Kawainui Marsh change from the first huakaʻi to now? |

# Workshop #10 - How We Love the Wetlands (Part 1)

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| **Lesson Objective(s) / Central Questions** | Central Questions:<br>● What types of actions can we take to restore and advocate for wetlands?<br>● What happens when a community comes together to love their local wetlands?<br><br>Standards:<br>● NGSS-5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.<br>● CCSS-ELA-LITERACY.W.3.8. Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.<br>● HCSSS-Inquiry Standard SS.3-5.5.2: Explain different ways students could work individually or in collaboration with others (e.g., other students, teachers, community and/or global organizations) to address local, regional, or global problems or issues and predict possible results of their actions<br>● HCSSS-Inquiry Standard SS.3-5.5.4: Show evidence of taking individual or group action on one or more problems or issues<br>● CASEL-Self-Awareness, Belonging: 1.E.2. Students describe their roles and contributions in the different settings in which they participate.<br>● CASEL-Social Awareness, Agency: 3.G.2. Students explore the importance and power of community participation and service. Students collaborate with others to identify ways to contribute productively to their learning community.<br>● CASEL-Self-Management, Agency: 2.H.2. Students practice managing their own time, organizing their materials, and gathering what is needed for a task or activity.<br>● CASEL-Relationship Skills, Agency: 4.E.2. Students use constructive strategies to communicate their perspective and listen openly to the perspectives of others to solve a problem.<br>● CASEL-Social Awareness, Belonging: 3.D.2. Students identify appropriate, trusted people to seek support from based on their specific needs and recognize ways they can support others. |
| **Resources** | Resources requested by participants, if any |
| **Lesson Launch** | Dive right into project work time, offer assistance as needed. |
| **Lesson Tasks, Problems, Activities & Sequence:**<br>*What specific activities, investigations, problems, questions, or tasks will students be working on during the lesson? Attach resource sheets if needed.* | |
| Project Work Time (1 hour) | |
| Discussion Around Final Needs for Projects (5-10 min) | Ask if anyone has final questions or needs for their projects, and specific needs for the presentation day. |

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| **Follow-Up Tasks** | Finalize project details as needed so everything is ready to present in the next workshop. |
| **Lesson Closure** | Next session, we'll present! |
| **Evidence of Success** | Participants work on their projects. |
| **Lesson Reflections** | • Do we feel ready to show our community how we love our wetlands? If not, what else do we need to feel ready? |

# Workshop #11: How We Love the Wetlands (Part 2)

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| **Lesson Objective(s) / Central Questions** | Central Questions:<br>● What types of actions can we take to restore and advocate for wetlands?<br>● What happens when a community comes together to love their local wetlands?<br><br>Non-Standard/Values-Based:<br>● It is important to be an active listener while our community is sharing their work with us.<br><br>Standards-Based:<br>● NGSS-5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.<br>● CCSS-ELA-LITERACY.W.3.8. Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.<br>● CCSS-ELA-LITERACY.SL.SL.4.4. Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.<br>● HCSSS-Inquiry Standard SS.3-5.5.2: Explain different ways students could work individually or in collaboration with others (e.g., other students, teachers, community and/or global organizations) to address local, regional, or global problems or issues and predict possible results of their actions<br>● HCSSS-Inquiry Standard SS.3-5.5.4: Show evidence of taking individual or group action on one or more problems or issues<br>● HCSSS-Inquiry Standard SS.3-5.4.3: Present arguments and explanations using a variety of print, oral, and digital technologies<br>● CASEL-Self-Awareness, Belonging: 1.E.2. Students describe their roles and contributions in the different settings in which they participate.<br>● CASEL-Social Awareness, Agency: 3.G.2. Students explore the importance and power of community participation and service. Students collaborate with others to identify ways to contribute productively to their learning community.<br>● CASEL-Self-Management, Agency: 2.H.2. Students practice managing their own time, organizing their materials, and gathering what is needed for a task or activity.<br>● CASEL-Relationship Skills, Agency: 4.E.2. Students use constructive strategies to communicate their perspective and listen openly to the perspectives of others to solve a problem.<br>● CASEL-Social Awareness, Belonging: 3.D.2. Students identify appropriate, trusted people to seek support from based on their specific needs and recognize ways they can support others. |
| **Community Connection / Partner** | Kauluakalana, Pacific American Foundation, others who have been involved in the workshop series (such as panelists from Workshop #8) |
| **Lesson Launch** | Introduce projects that workshop participants came up with based on their learning over the past weeks, relationships they've developed, and experiences they've had. (can reiterate more project details) |

| **Lesson Tasks, Problems, Activities & Sequence:**<br>*What specific activities, investigations, problems, questions, or tasks will students be working on during the lesson? Attach resource sheets if needed.* | |
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| Project Showcase (entire length of workshop) | |
| **Follow-Up Tasks** | N/A |
| **Lesson Closure** | Wrap-up speech: thank audience members, thank and uplift workshop participants, maybe share a bit about how participating in the workshop series alongside participants has impacted you/what you've learned/how your own relationships with local wetlands and community has evolved as well. |
| **Evidence of Success** | Presentations of final projects are the authentic assessment to demonstrate that participants have answered the Essential Question of the workshop series in their own ways and have built the Enduring Understandings. Participants should be able to present their acts coherently while being respectful and engaged audience members when other participants are presenting. |
| **Lesson Reflections** | ● Based on participants' projects, does it feel like they answered the Essential Question and built the Enduring Understandings?<br>● How has facilitating this workshop series impacted you and your own relationships with local wetlands and communities? |