Data Talks

Description

Data Talks are a meaningful way to begin building capacity for participatory science, storytelling, and data literacy with your students. How does data tell a story about how threats affect Clear Lake hitch populations? How does anecdotal evidence and photos tell a story about historical hitch populations? Understanding how data can help add pieces of a complex puzzle will allow students to see both how others utilize data to advocate on behalf of the Clear Lake hitch, and how their own data are important contributions to this advocacy.

Objectives

Student Objectives	Explore hitch population data and precipitation to look for patterns.	Core Activity: Develop expertise
	Learn how monitoring supports lake resilience.	Core Activity: Make meaning
	Connect students' observations and data in the region to solutions within the community.	Key Youth Practice: Youth engage in complex socio-ecological systems
Educator Objectives	Generate student questions and develop ideas for taking action from their observations and local data.	Key Educator Practice: Position youth as people who do science

Key Vocabulary

Tributaries, spawn, precipitation, water diversion and pumping, drought, invasive species and pollutants, population

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Instructions

Time

1 hour

Materials

- Print copies of the Lake County Strong Clear Lake Hitch: Freshwater Species of the Week article.
- Print copies of the California State Water Resources Control Board Clear Lake Hitch photos if without computer access.

Getting Ready

- Print copies or project the California State Water Resources Control Board Clear Lake Hitch photos.
- Print copies or project the Clear Lake Hitch Data Talks.

Facilitation

Part One

Show students the California State Water Resources Control Board Clear Lake Hitch photos on page 1 (either hand out printed copies or project on a screen). Use the prompts from The Three "I"s activity and have students share:

- What do you notice about the two photos?
- What do you wonder about the two photos?
- What do these photos remind you of?
- What are the major differences between these two photos?

Students may observe that there are many fish in one photo compared to the other photo. Explain that these photos are of the Clear Lake hitch, and we are going to use data to help figure out why there are so many hitch in the creek 150 years ago compared to now.

Students should review the data table on page 1 of the Clear Lake Hitch Data Talks (either hand out printed copies or project on a screen). Ask students:

- In what year was the hitch population the largest? How many hitch were there that year? Answer: 2023; 2,548

Students can reflect on what they notice about hitch population data since 2014. In small groups, each student should share:

- Looking at the data, a pattern I noticed is that _____.

Review the answers as a group, and if available, record on a white board.

Students should review the graph on page 2 of the Clear Lake Hitch Data Talks (either hand out printed copies or project on a screen). Ask students:

- What details become more clear as you look at a graph of the data compared to just looking at the table?

- How does it feel different than looking at the table?

Part Two

What could be causing this variation in hitch populations across this time period? Have students read the Lake County Strong Clear Lake Hitch: Freshwater Species of the Week article silently for 10 minutes. After the students read, identify as a group how the reading says the hitch population is at risk (water diversion and pumping, drought, invasive species and pollutants). Students will explore how data can show us the effects of one of these impacts: drought.

Ask students what they know about a drought. Remind them that a drought is when there is not a lot of precipitation for an extended period of time. Ask students if they can recall if there was a drought recently, and what happened to Clear Lake during the drought? What happened to the creeks? When there isn't a lot of water, then the creeks that hitch need to access in order to lay their eggs are all dried up. Show students the California State Water Resources Control Board Clear Lake Hitch photos on page 2 as an example of what this looks like (either hand out printed copies or project on a screen). Sometimes hitch can swim up the tributaries but then get stuck in pools trying to get back to the lake. Ask students:

- If we look at rainfall data for each year and compare it with the hitch population data, what pattern might we expect to see?
- Will the rainfall data show a similar pattern as the hitch data or a different pattern?

Students should review the graph on page 3 of the Clear Lake Hitch Data Talks (either hand out printed copies or project on a screen). Ask students:

- In what year was there the most precipitation? How many inches? Answer: 2017; 61.27

Students can reflect on what they notice about precipitation data since 2014. In small groups, each student should share:

- Looking at the data, a pattern I noticed is that _____.

Review the answers as a group, and if available, record on a white board.

Reflection

Part One

Students should review the graph on page 4 of the Clear Lake Hitch Data Talks (either hand out printed copies or project on a screen). Students can reflect on what they notice about the graph of precipitation data compared to hitch populations since 2014. In small groups, each student should share:

- Looking at the data, a pattern I noticed is that _____.
- Compared to the rainfall data, the hitch population _____.

As a group, compare answers. Ask students:

- Based on the data, can we say that hitch populations follow the same pattern as precipitation?

From the Lake County Strong Clear Lake Hitch: Freshwater Species of the Week reading, students know that drought (lack of precipitation) is not the only threat facing hitch populations. In addition to precipitation, or drought, water diversion and pumping, invasive species, and pollution impact populations in a given year. In small groups, each student should share:

- If we were to look at the data for the other threats – water diversion and pumping, invasive species, and pollution – what would we need to know?

Review the answers as a group, and if available, record on a white board.

Part Two

Students should review the graph on page 5 of the Clear Lake Hitch Data Talks (either hand out printed copies or project on a screen). As a group, ask students:

- This graph shows that there is zero hitch population data prior to 2014. Is this accurate? Why or why not?
- What historical events may have had an effect on hitch populations? What threat do those events each fall under?
- What events could we add to this graph?

Explain that even though we have zero data on hitch populations from our source, we do know that there were thousands of hitch in Clear Lake over 150 years ago. Ask students:

- What other sources of information can be used as data? Answer: photos, stories from elders

Remind students that the stories of the hitch, (like what they may have completed during the Community Interviews activity), are important data used in scientific studies of the hitch as evidence of their pre-2014 population numbers. Show students the California State Water Resources Control Board Clear Lake Hitch photos on page 1 again (either hand out printed copies or project on a screen). Photos are important data that can tell us a story about what was observed at a given place and time. In the next Youth Engagement with Debris Tracker activity, they can learn how their photos can be data used to monitor pollution and/or fish kills in the Clear Lake Watershed.

Youth-Driven Pathway Facilitation

For educators facilitating the youth-driven pathway, this is one of the activities you can do after your team has completed the Real vs. Ideal activity and identified the environmental issue it would like to focus on. Following the Real vs. Ideal activity, the goal is for your youth team to explore publicly-available data to see what's already known about their topic and how well it aligns with their own experiences. This process is often referred to as "ground-truthing".

While access to official data is important for community change work, they often don't tell the whole story. Ground-truthing is one important practice to help youth critically engage with publicly-available data. It allows youth to use their own observations "on the ground" and knowledge from their own lived experiences to validate, expand upon or push back against official data and the stories that are told using those data.

If your team has chosen hitch or a related topic for their environmental issue, you can facilitate this activity with them more or less as written (remembering to adapt it as needed for your youth and their age range). However, if your team has chosen a different issue to focus on, you may want to facilitate one of the other data activities in this toolkit instead (e.g., Digging into Data, Water Quality Data Investigation, or Using Fire Data).

If none of these data activities align with your group's focus, you can search for other local data sources in the community resource list. If using another data source, use the instructions and the ground-truthing worksheet in "Activity 3.5: Data Ground-Truthing" on p. 112 of Stepping Stone 3 in the Community Futures, Community Lore Stepping Stones Toolkit for youth participatory action research (YPAR) from the UC Davis Center for Regional Change and School of Education.