

Session 5: Preparing to Collect Data

Focus: Planning an Investigation
Grade Level: 7-12
Session Length: 45-60 minutes

Driving Questions

- What can we monitor to see if the Crystal Cove SMCA ecosystem is changing over time?
- What do we need to know to collect data?

NGSS Links

- Planning and Carrying Out Investigations

Systems Thinking Characteristics

- Identifying Hidden Dimensions of the System

In the the fifth session of the MPA Exploration, students prepare to collect data for Crystal Cove Conservancy's three monitoring projects!

Research teams use their models to identify what data they could collect to see how the marine ecosystem is changing. They're then introduced to the three monitoring projects for which they will be responsible for collecting and analyzing data during their virtual field trip. Research teams then assign their members to one of the three specialities -- fish monitoring, plankton monitoring, or water quality monitoring -- and explore a Voicethread to train and learn more about their specialized topic.

Learning Outcomes & Assessments

| <i>By the end of this module, students will be able to...</i> | <i>You can assess this using...</i> |
|---|-------------------------------------|
| 1. Describe how Crystal Cove Conservancy monitors the Crystal Cove State Marine Conservation Area. | Whole class discussion |
| 2. Describe what they will do during their specialized monitoring project. | Field notebook reflection |

Session Overview

| Section | Description | Length | Format |
|----------------|---|----------------------|------------------------------|
| Launch | Students watch a video that introduces the topic of the day: learning more about the monitoring projects that they'll be asked to help with during their virtual field trips. | 5 minutes | Whole class |
| Explore | Research teams use their models to reflect on what data they might want to gather. | 10 minutes | Research teams |
| | Afterwards, students learn about the three monitoring projects and are assigned to specialize in one of three monitoring projects. They explore a Voicethread to learn more about their speciality. | 20-30 minutes and up | Individual or Research teams |
| Share | Students share details about the three projects and reflect on why we need to monitor the Crystal Cove SMCA over time. | 5-10 minutes | Whole class |
| Reflect | Students reflect on their experience during Session 5. | 5 minutes | Individual |

Virtual Materials

- Session 5 Google Slides Presentation: <https://bit.ly/3qDGNWo>
- Session 5 Field Notebook template (optional): <http://bit.ly/34B199r>
- Monitoring Project Voicethreads:
 - Fish Monitoring: <https://bit.ly/3qBFreO>
 - Plankton Monitoring: <https://bit.ly/2K2eTTa>
 - Water Quality Monitoring: <https://bit.ly/2LkClf6>

Each student will need...

- A device with internet access (a computer, smartphone, or tablet will all work!)
- Field notebook and pencil

Before You Start Teaching

- Copy over the *Session 5 Slideshow* for your chosen platform to your own Google Drive account. Test to make sure that the videos work. (If not, you may have to check the permissions on the Crystal Cove Conservancy Youtube Account.)
- Decide whether you want to let students choose their own monitoring project or if you'd rather assign them to a speciality. Update *Slide 7* with any specific instructions for your class.

Learning Sequence

Launch

Getting Started with Modeling (5 minutes)

1. Open the [Session 5 Slideshow](#) and play the video on [Slide 2](#) for your class. In this video, Erick will briefly introduce Session 5 and the fact that research teams need to prepare to collect data so that we can see how Crystal Cove's SMCA is changing over time.
2. After watching the video, move on to [Slide 3](#), which gives an overview of what students will do and learn during Session 5.

Explore

Preparing to Collect Data (75+ minutes)

Part 1: What Can We Monitor (10 minutes)

1. Advance to [Slide 4](#) and play the video. Erick will ask research teams to review their model and brainstorm 3-4 things that they might be able to monitor over time to see how the Crystal Cove SMCA is changing.
2. Once the video is done advance to [Slide 5](#) and reiterate the task for students: They will need to look back at their model and think about what they could monitor over time.
3. Break students into their research teams and give them 5 minutes to brainstorm ideas. If there is time, bring them back together and ask teams to briefly share their plan.

Part 2: Preparing to Collect Data (20-30 minutes)

4. Move on on to [Slide 6](#) and play the video for students. Erick will introduce the three monitoring projects: monitoring fish using underwater cameras, collecting plankton samples and identifying plankton, and measuring different aspects of water quality. Students will specialize in one of these three monitoring projects, which they'll help to collect data for during the virtual field trip in Session 6.

5. Advance to *Slide 7*, and break students into their research teams. Ask them to assign at least one member to specialize in each of the three monitoring projects. (Alternatively, you can make these assignments for them!)

Once students have made their assignments, they can open the Voicethread for their monitoring project and begin exploring it.

- **Fish Monitoring:** Specialists will need to be able to identify fish in videos recorded using an underwater camera. During the Voicethread, they'll learn about the different fish species in the Crystal Cove SMCA and practice identifying them using a field guide.
- **Plankton Monitoring:** Specialists will need to be able to identify plankton from a sample collected in the Crystal Cove SMCA. During the Voicethread, they'll learn more about common plankton species and practice identifying them using a field guide.
- **Water Quality Monitoring:** Specialists will need to record and interpret data on pH, dissolved oxygen, temperature, and salinity. During the Voicethread, they'll be introduced to the equipment that will help them collect this data and learn about typical ranges.

6. Give students 20 minutes to explore the Voicethread and learn more about their assigned specialities.

Share

Sharing Our Monitoring Projects (5-10 minutes)

1. Open *Slide 8* and bring the class back together. Ask students to briefly describe each of the three monitoring projects.

- What will they be monitoring?
- Why is this important to monitor?
- What will they need to do?

2. After students have described the projects, invite them to spend a few minutes reflecting on why we want to collect monitoring data over time. How will data help us understand how the Crystal Cove SMCA is changing? How does this help us to protect it?



Reflect

Reflecting on Session 5 (5 minutes)

1. At the end of the discussion, advance to **Slide 9** in the slideshow and play the video, where Erick will invite them to spend a few minutes reflecting.
2. Move on to the final slide, which will share reflection questions. Ask students to spend five minutes reflecting on their experiences today in their field notebook.
3. Finally, thank the class for their time today. Tell them that when you gather again, they will go on a virtual field expedition aboard one of Newport Landing's fishing vessels to collect data for their specialized monitoring project in the Crystal Cove SMCA!