Module 1:
Exploring Moro Canyon

Crystal Cove® CONSERVANCY

Focus: Changing Landscapes
Grade Level: Fifth Grade
Module Length: 2-3 hours

Driving Questions
- How has the landscape in Moro Canyon changed over time?
- Is Moro Canyon worth protecting?

NGSS Links
- Asking Questions

Systems Thinking Characteristics
- Identifying System Components & Processes

In the first module of Project Crystal, students are introduced to the phenomena of how Moro Canyon's landscape has changed over time.

During a Video Field Trip to Moro Canyon, they meet Crystal Cove Conservancy staff and are invited to help protect the ecosystem there. They then explore Moro Canyon's coastal sage scrub ecosystem virtually, ask questions about how the landscape has been impacted by humans, and reflect on why we might want to protect it.

Learning Outcomes & Assessments

By the end of this module, students will be able to...	You can assess this using...
1. *Use* a field guide to identify plants and animals in Crystal Cove State Park's Moro Canyon.	Science journals
2. *Compare and contrast* coastal sage scrub and degraded landscapes in Moro Canyon.	Observations of class discussion
3. *Describe* how the history of Moro Canyon has affected and changed its landscape.	Science journals, Observations of class discussion
4. *Reflect* on why it is important to protect Moro Canyon.	Individual reflections

Module Sequence

Section	Session Title	Length	Format
Launch	**Welcome to Virtual Project Crystal** Students are introduced to Project Crystal and meet the project team through short videos. Afterwards, they set up their science journals and use them to record three things that they wonder about Moro Canyon.	30 minutes	Whole class or Individual
Explore	**Video Field Trip: Moro Canyon's Changing Landscape** On a live videoconference call, students meet a Crystal Cove Conservancy educator and explore how Moro Canyon is changing.	45 minutes	Whole class
	Moro Canyon Virtual Hike Students use Thinglink to go on a virtual hike through Moro Canyon and use their science journal to record their observations about the ecosystem.	30 minutes	Short introduction with whole class, then individual
Share	**Sharing Thoughts on Moro Canyon** In a group discussion, students share their initial ideas about how Moro Canyon's ecosystem has changed over time, and why we might want to protect it.	20-30 minutes	Whole class or small groups
Extend	**Explore at Home: Science Journaling (Optional)** Students use their science journal to make observations about a nature object that they find at home.	30 minutes	Individual
Reflect	**Do you think Moro Canyon is worth protecting?** Students share their thoughts on whether they think it is important to protect Moro Canyon.	15 minutes	Individual

Virtual Materials

- Module 1 Introduction Slideshow: **https://bit.ly/2EJBjq6**
- Virtual Hike Thinglink: **https://bit.ly/3499tMm**
- Module 1 Discussion Slideshow: **https://bit.ly/36ilNwD**
- Module 1 Explore at Home Slideshow: **https://bit.ly/3j9Et5u**
- Module 1 Explore at Home Family Directions (English): **https://bit.ly/36HoeYr**
- Module 1 Explore at Home Family Directions (Spanish): **https://bit.ly/38AV2Vd**
- Module 1 Reflection Video Prompt:
    - **Option 1:** Flipgrid: **https://bit.ly/3l7i0qn**
    - **Option 2:** Padlet: **https://bit.ly/3i59mGM**
    - **Option 3:** Video to host on the private platform of your choice: **https://bit.ly/3kVCySp**

Each student will need...

- Science journal and pencil

Before You Start Teaching

- Copy over the *Launch Slideshow*, *Share Slideshow*, and *Explore at Home Slideshow* to your own Google Drive account.

- Decide how you will have students set up their science journals. In your copy of the *Launch Slideshow*, update *Slide 7* with your chosen directions.

- Decide how you will host the Share discussion for this module. If your class already has established science communication norms, open your copy of the *Share Slideshow* and update *Slide 3* with your discussion guidelines and *Slide 4* with any sentence starters.

- Decide how you want students to share their reflections. They can post their thoughts publicly on Crystal Cove Conservancy's *Flipgrid* or *Padlet*, or you can host the discussion prompt video on the platform of your choice.

Learning Sequence

Launch

***Welcome to Virtual Project Crystal* (20-30 minutes)**
Slideshow Link: **https://bit.ly/2EJBjq6**

In this introductory slideshow, Kaitlin welcomes students to Project Crystal and introduces some of the Project Crystal team members that your students will meet during their experience. Students also learn how to set up a science journal, which they will use throughout Project Crystal to record their observations, reflections, questions, and data. They make their first science journal entry by writing down what they wonder about Moro Canyon.

This slideshow can be assigned independently or shared with the whole group. Students can look at the Google Slides presentation and watch videos on their own, or you can choose to present it to the whole class.

Explore

Video Field Trip: Changing Landscapes (45 minutes)

This virtual field trip introduces students to the big problem faced by natural resource managers in Crystal Cove State Park. In a synchronous video conference with Crystal Cove Conservancy staff live from Moro Canyon, students compare two types of landscapes in Moro Canyon -- coastal sage scrub habitat and the degraded landscape dominated by black mustard -- and share their observations and initial ideas.

You can schedule a Video Field Trip program for your class with us at a time that is convenient for you, or have your students join a public livestream on YouTube, which will be scheduled quarterly. All public livestreams will also be available afterwards to watch asynchronously. Contact Kaitlin Magliano at **kaitlin@crystalcove.org** to schedule your Video Field Trip.

***Investigation: Moro Canyon Virtual Hike* (30 minutes)**
Thinglink Link: **https://bit.ly/3499tMm**

In this investigation, students take a virtual hike through Moro Canyon using Thinglink, a fun, easy-to-use online platform that lets you explore interactive 360-degree photos. During the virtual hike, students use their science journals to record their observations and reflections as they use online field guides to identify the unique plants and animals of Crystal Cove's coastal sage scrub ecosystem and make observations about how human impacts have changed the park over time.

Before sharing the Thinglink with your students, you may want to introduce the virtual hike to the group and briefly demonstrate how to navigate the Thinglink:

1. Tell students that they'll be taking a virtual hike in Moro Canyon to explore how the landscape has changed and learn about the plants and animals there.

2. Pull up the Thinglink overview and demonstrate how to click on the first stop (which is labeled with the number 1). Once you enter the first 360-degree photo, show students how they can use their mouse to scroll around and click on different points of interest to explore the area.

3. Remind students to have their science notebooks ready: Kaitlin will ask them to use field guides to identify different plants and animals on their hike, which they should record down in their science journals. She will also ask them to write down what they wonder about or reflect on what they see.

4. Demonstrate how to click on the arrow to move to the next stop on our virtual hike.

5. Remind students that at the end of the hike, they'll share their observations during a class discussion!

Share

Discussion: Sharing Thoughts on Moro Canyon **(20-30 minutes)**
Slideshow Link: ***https://bit.ly/36ilNwD***

Once students have taken part in the Explore activities, this discussion lets them share what they've noticed and learned about Moro Canyon. This discussion can take place on Zoom or in the classroom, either as a whole class or in small breakout groups.

Since this is the first discussion of the program, you may want to review science communication norms and sentence starters with students before getting started. Suggested norms and sentence starters are included in the Google Slides presentation, although you can edit them or use your own!

Extend

Explore at Home: Science Journaling **(30 minutes)**
Slideshow Link: *https://bit.ly/3j9Et5u*
Family Directions (English): *https://bit.ly/36HoeYr*
Family Directions (Spanish): *https://bit.ly/38AV2Vd*

During this optional Explore at Home Investigation, your students will step away from the screen and practice using their science journal to record their observations of nature around their home. They choose a nature object (which can be a leaf, a rock, a fruit or vegetable from the kitchen, or something they've found around their home), draw a picture of it, and then respond to three sentence starters to share their thoughts about it.

As an extension, you might choose to have students share their nature object with their classmates, either during a small group discussion or by filming a video for Flipgrid or another platform, or encourage them to share their nature object with a family member or friend.

Reflect

Reflection Question: Do you think Moro Canyon is a place worth protecting? Why or why not? **(15 minutes)**
Flipgrid Link: *https://bit.ly/3l7i0qn*
Padlet Link: *https://bit.ly/3i59mGM*
Video Link: *https://bit.ly/3kVCySp*

At the end of the module, students reflect on whether or not Moro Canyon is a place worth protecting, and share some initial ideas on how they might restore a place like Moro Canyon.

If you'd like, you can have students share their reflections to the broader Project Crystal community of students on our public *Padlet* or *Flipgrid* pages. You can also use the video reflection prompt with Kaitlin on your own discussion platform of choice, such as a private Padlet or Flipgrid for your class.