

## **Lesson Plan 4: Developing the Hopper Mountain Food Web Model**

Unit Question: What role does the California condor play in the California ecosystem, and how do changes in the ecosystem impact condors over time?

Science and Engineering Practices:

- Building and using models
- Engaging in argument from evidence

Teacher Prep:

Prepare 4 lengths of string/yarn about 20' (length of your classroom) for each of the 8 species in the Food Web. [Species ID cards](#) should be placed around the classroom where students can work in groups and can stay during the building section. If ID cards are being used, you will have to find another way to attach string/yarn directly to the species – like a [number holder type deal](#) they have at pizza places.

**Lesson:** *(one - two class periods)*

1. **Warm Up:** [Watch](#) Carol Hunsperger, the Assistant Curator of Birds at Santa Barbara Zoo loving her job.

### **2. Intro**

- Inform students that they will be studying the Hopper Mountain Ecosystem by researching data about the diet of individual species, and then working together to build a model of this ecosystem's Food Web, showing their relationships (predator/prey).
- Divide students into 8 groups.
- Assign each student group a photo or model of a species from the [Species ID cards](#).

### **3. Gather information/Research**

- Students will explore the models/photos of the species assigned to them. Have students share with their neighbor what they notice and wonder about the model or photo.
- After students have discussed what they notice/wonder, ask them what they think their animals diet is based on their observations.
- Students will identify the predators and prey (species) that the animal assigned to them interacts with.

- Option 1: Species ID cards have Predator/Prey list on back

- Option 2: have students research what their species predators and prey are.

- Have students create [Species ID cards](#).

### **4. Building the Hopper Mountain Food Web Model ([PowerPoint](#))**

- Have the students sit in their small groups. Each group should have the Species ID card of the animal that they researched.
- One student from each group will play the role of Species Guardian. The Species Guardian will stay at the desk and hold on to their groups species card (they will be busy!).
- Instruct Students to attach (tie) a string/yarn from their species card to one of the animal's prey species cards.
- Repeat this process for all of your animal's prey species.
- Once all connections are made, ask students how the California condor fits into the model.
- Introduce the condor card and have a student tie the condor card to the species it consumes.

- Condors eat carrion – dead animals, so they should connect to all prey species in the model with the exception of birds; there is no evidence that California condors will eat birds, even if they find them dead already.

## 5. Class Discussion - Using the Model

- Ask students questions which the model could be used to answer. Options:
  - What animal is the best predator/hunter?
  - What animal is the most preyed upon?
  - What would happen if humans started eating rabbits instead of chicken?
  - What is this Food Web Model missing? (The sun, water, decomposers)
  - What would happen if a human started a wildfire in this ecosystem?
  - What are the differences, in the data of the model, between primary and secondary consumers?
- Ask students what questions they have that the model could help answer.
  - Could we add anything or revise anything to help us?

## 6. Revising our Food Web Model

- We made an assumption about the condor's role in the Hopper Mountain Food Web, so now let's check out the data; share the [Condor Diet Datasheet](#) showing additional species than our model.
- Models are not perfect, and constantly need to be revised: add pigs and cows to the class food web (this can be physically with photos or biofacts tied in, or verbally stated).

## 7. Revise your Preliminary Model

- After the activity, have students add the revised food web to their preliminary model. Have them label producers, primary consumers and secondary consumers.
- Revisions can also include:
  - Changes or additions to their understanding
  - Additional information or evidence
  - Showing how their thinking has changed.
- The model should include pictures, symbols, and written explanations.

***\*Teacher Notes: Do not have students erase anything! We want to see how their thinking has changed over time. Also, you could have students revise their models in a different color pen, such as green pen - "green means go!" - So that you can visibly see how their thinking has changed over time.***