

Lesson Plan 5: GIS Week 3 – Non-living Life: Connecting to abiotic factors

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
- Constructing Explanations (for Science)

Teacher Prep: Have Google Earth application downloaded on student computers/tablets. Have the GPS data* shared, or ready to share with students.

*GPS Data from FWS Park Ranger: hoppermountain@fws.gov

Lesson: *(Two class periods)*

1. Warm up: [Condor chick nest cam clips](#)

- Have students write what they notice. Have students write questions related to the video on Post-Its to add to the Question Board.

2. Class Discussion

- Class Discussion –
 - What are biotic factors (living or comes from something living) in the Condor's environment? *(Possible answers: trees, plants, other animals, bacteria, fungus, dead animals, etc.)*
 - What are abiotic factors (non-living) in the condor's environment? *(Possible answers: rocks, sun, wind, mountains, power poles, water, cars, etc.)*
 - Discuss as a class how the abiotic and biotic factors in the condor's environment relate to its behaviors. Possible examples include: soaring all day (wind and thermal lift help the condors fly – this is why the birds are always over mountains not over valleys. An example of this is holding your arms up v. putting your arms out the window of the car)
 - *Optional Extend:* Conservation of energy – trophic levels

3. GIS Activity Week 3 - Using a GIS – Google Earth (Week 3 Data)

- Guiding Question: How does the California condor's environment affect their behavior, like soaring long distances?
- Have students use their [GIS Datasheets](#)
- Have them collect data for their assigned condor for Week 3.
- Teacher will enter the student's data into the [Teacher Database](#). Or have a student representative from each group enter the data into the Teacher Database.
- After the activity, have students write 1-2 additional questions that they have (based on what they observed from the GIS activity) on Post-Its. Have students add their questions to the question board.