

Rationale

To understand the complexities of condor reproduction and nesting, students will illustrate the roles of condor families and conservationists.

Objectives

1. Students understand the roles of the condors and conservationists in breeding and nesting.
2. Students identify the typical characteristics of a condor nest site.

Aligned Standards

NGSS: Using Models, Conducting Investigations, and Using Mathematics; Structure, Function
LS3.A: Condors inherit and learn nest finding and egg laying skills from their parents (3-LS3-1). The environment also influences a condor's nest finding (3-LS3-2).

Time

Day 1 of three-day lesson
Teaching time: one hour (approximately)

Vocabulary

nest site
cavity
nesting
incubate

Materials

Nest site videos, Nest Activity
Materials: box, brown paint/paper/etc., pebbles, plastic egg

Tech Integration

Nest Tech photo library
Nest Cam use

PROCEDURE – DAY 1

IMAGES (20 minutes)

Have students watch videos of condors nesting and wildlife biologists monitoring the nest sites. Discuss the characteristics of nest sites (i.e. cavity, cliffs, close to a roost). Discuss the purpose of a nest site. Focus on how each nest is different and specific to the needs and resources of each bird species. Look closely at one image of a nest site; ask the students to identify what they see (i.e color, materials, location). Connect the nest to a local habitat.

CREATE (40 minutes)

Give each student a shoebox-sized box, materials to make the outside of the box look like mountain terrain, pebbles, and an egg. If materials are available, have the students create a life-sized nest cavity to crawl into. Clarify that condors find their nest sites instead of building a nest in a tree or on the ground. When finished, students must hide their nests around the classroom. Discuss what condors look for in a nest (i.e. rocks, big trees, above ground, wind conditions).

EXPLORE

For the next two lessons, students will respond to scenarios and explore what it is like to monitor a condor nest. Their priority is to keep their nest safe and have “nest success.” Nest success occurs when a chick hatches and successfully fledges, or learns how to take flight. Choose from the available scenarios in preparation for the next lessons, place the scenario card in each nest, and have students respond to the circumstances.

Chick hatched!	Chick hatched!	Predators (Ravens) spotted nearby	Predators (Ravens) spotted nearby
Egg rolled out of nest	Egg rolled out of nest	Check nest for microtrash	Check nest for microtrash
Condors are taking turns leaving the nest	Condors are taking turns leaving the nest	All condors have left nest area	All condors have left nest area

Before you begin

For optimal effectiveness, this lesson set should be facilitated over the course of 3 consecutive days. Prepare to project videos and photos from Nest Techs photo library. Gather materials for sets of nests: brown paper, tissue paper, pebbles, shoe boxes, etc.

What to do

In the center of our conservation efforts to help condors reproduce in the wild is a specific practice called a “Nest Observation” done by “Wildlife Biologists” and “Nest Technicians.” Before a student is able to understand this important practice, it is important to understand the process of nesting and reproduction.

For background info on Nest Management see 2013 HMNWRC California Condor Recovery Program Annual Report section 2.4 “Nest Management” that begins on page 9.

Think, See, Wonder is a Visible Thinking Routine that initiates curiosity and cultivates inquiry. In this case, we will use a photo of a Nest Technician conducting an inspection in a condor nest.

Tell the class that they will participate in an activity called “Think, See, Wonder.” They will be shown an image that they may or may not have seen before. They will be asked to make an inference about what the image is. In their observation journals, they will complete these three statements: “I think..., I see..., I wonder..”

Consider appropriate responses with your students. Discuss in advance what they might see, why such things occur, and what an appropriate response might be. For example, discuss whether or not the students should yell “EWW!” or hide underneath a desk.

Images

If there are not any further questions, project image “Nest tech16” on a large screen in front of the class. Give the students a few minutes to examine the photo and then write their statements in their observation journals. Walk around and read over each student’s response as they are working. Occasionally ask for support for their claims. “I think” should be a statement that is visually supported or supported by previous experience or knowledge. “I see” should be an objective statement of the image. “I wonder” can be very open, as long as it is regarding the image. When they are done, ask if anyone would like to share their inferences and observations. Encourage all responses even if they are inaccurate. Carefully guide them to the conclusion that the photo is of a scientist (conservationist) who is inspecting a condor nest to ensure that the egg and/or parents are healthy.

Following the activity, have a brief discussion of what a nest is... What is its purpose? What does it look like? Who finds them? Project various photos of nests in general (nests photo library on website). Focus on how each nest is different and specific to a bird species based on its habitat and needs (i.e. hummingbird vs. crow, duck vs. vulture).

Then show an image or video of the condor nest. Looking closely at it, have students identify what they see. What is unique about it and why is it necessary (color, materials, location)? Have students watch videos of condors and biologists in nest sites from the Nest Tech photo library. In each photo or video, discuss the style of the nest site and have students point out key characteristics. Ask specifically, “What do you see in this condor nest? What is it made up of, and why do you think the condors chose this

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(approximately)

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VISIBLE THINKING ROUTINE;
THINK, SEE, WONDER:
(Harvard Project Zero):
“This routine encourages students
to make careful observations
and thoughtful interpretations.
It helps stimulate curiosity and
sets the stage for inquiry.

Ask students to make an observation
about an object - it could be
an artwork, image, artifact or
topic - and follow up with what
they think might be going on or
what they think this observation
might be. Encourage students to
back up their interpretation with
reasons. Ask students to think
about what this makes them
wonder about the object or topic.

The routine works best when a
student responds by using the
three stems together at the same
time, i.e., “I see..., I think..., I
wonder..” However, you may find
that students begin by using one
stem at a time, and that you need to
scaffold each response with a follow
up question for the next stem.
What do you see?
What do you think about that?
What does it make you wonder?”
www.visiblethinkingpz.org

location?” You will be looking to hear the words “cavity,” “cliffs,” and “close to a roost.”

Introduce vocabulary words as these words come up. A nest site is the location of the nest. A cavity is a small cave or hole in the side of a rocky cliff. Nesting is what birds do when they are preparing for their eggs to hatch. Different bird species have slightly different nesting behaviors. Incubating is the process of warming and caring for the egg. A Roost is a place for a condor to perch, such as a high branch.

Create

Now that the details of a condor nest have been explained, the class will create condor nests of their own. The activity can be done in small groups or pairs, depending on the class size and materials available. Explain that the nest they are creating will be the one they are in charge of and will be acting as nest observers for. Their goal is to have “Nest Success,” meaning that their egg will hatch successfully and their hatchling will fledge (learn how to fly) successfully.

Each student pair or group is given a shoebox-sized box, materials to make the box brown in color, small pebble-like objects, and an egg. Tell the class they will have about 20 minutes to create their nests. Then they will be selecting a nest site in the classroom and leaving their nest there for the next 3 days.

Walk around while the groups are constructing their nests. Encourage the students to begin considering a good nest site; they should consider safety from predators, stability, a roost, and accessibility to food (hypothetically speaking). Be sure to clarify that condors do not “make” their nests but find them.

As the groups finish, help them place their boxes in the designated locations and have them look over the possible scenarios that might occur while the nests are “unattended.”

If there is time, discuss what happens during one nesting period:

- Nests are entered about 5 times during the egg laying to chick fledging (first flight).
- Nest observers/monitors enter first to check for egg fertility. They hold a light to check if the egg has blood vessels and an embryo. They will go inside a trash bag so that it is dark to do this check. It looks hilarious.
- During later checks, they measure, weigh, and get blood samples from the chick; they sift for trash, vaccinate (only later entries), and record data on a sheet for each entry. Blood is taken at the nest but tested at the office.
- If the egg is infertile, they will replace the infertile egg with a dummy egg and then return to the nest with a foster egg that is about to hatch. The nest techs then switch out the dummy egg for the foster egg.
- Basically, the monitoring program wants to give condor pairs the best shot they have at hatching an egg in the wild and being reared in the wild. They think it is the best possible way to go for the population right now.
- Some signs they look for to see if they need to enter nests/check on chicks: possible predation, tail feather growth (a sign the chick is healthy or not healthy), injuries (broken legs, wings), lead in chick’s blood, lead in parents’ blood, death of parent or pair.

(After the class has left for the day, place an event card in each nest indicating activity that has taken place in their absence.)



OPTIONAL EXTENSION:
Participate in the “Introducing Nesting Birds” activity from the Cornell Lab of Ornithology.



ELL modification:
Translate the vocabulary words to Spanish. Have the ELL students write the word in both English and Spanish to be glued into their observation journals for reference.

Strategically pair students heterogeneously or balance the groups to have fairly equal ability.



OPTIONAL EXTENSION:
Instead of (or in addition to) having the class create small shoebox sized nests for each pair, have the students create a giant nest that they can crawl in to for nest examination. This can be completed with a large cardboard box.



OPTIONAL EXTENSION:
Students who finish early can explore the images in the photo gallery and use the Think, See, Wonder Routine in their Observation Journals. They can also journal their thoughts about “replacement clutching.”