

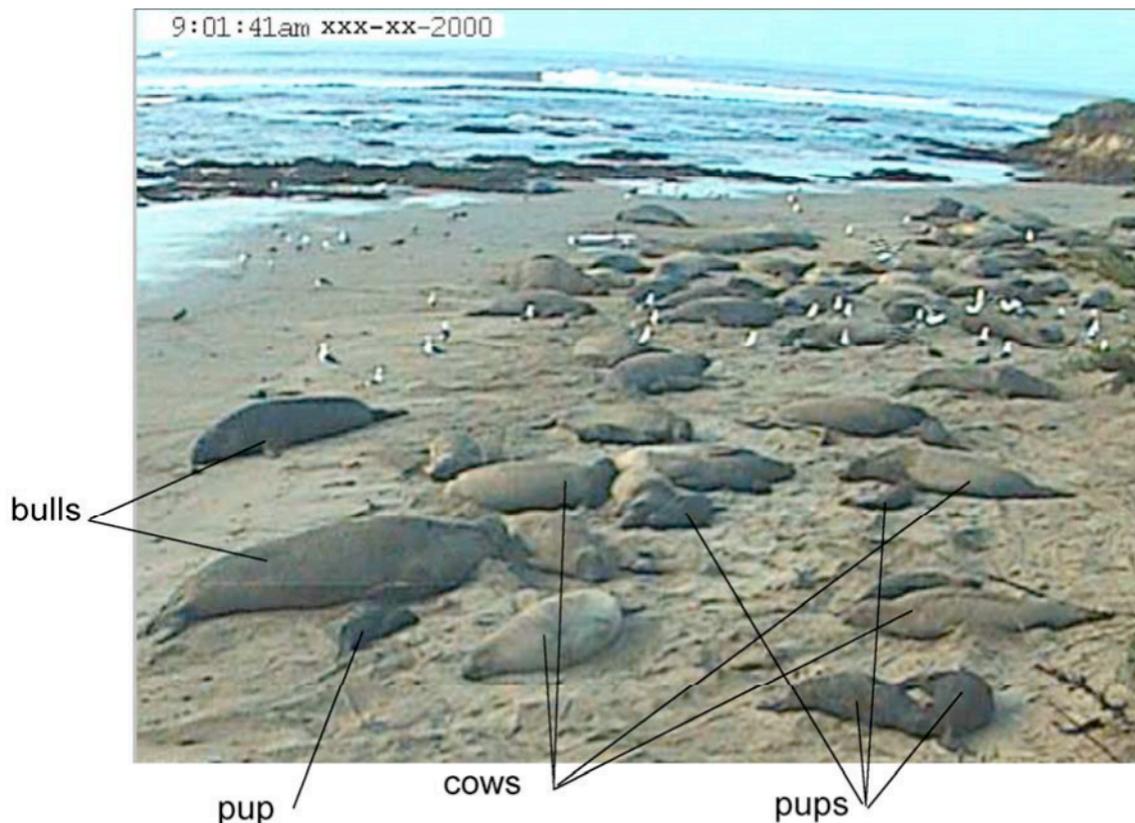
Introduction to Data Analysis

This activity explores analysis through study of visuals. You will watch a time-lapsed movie made up of 900 pictures that were shot with a web cam at Año Nuevo State Park, every morning at 9 am for 2 1/2 years.

The camera was installed at a beach where elephant seals mate and give birth to their pups. You will be able to see patterns of the elephant seals movements and changes throughout the year.

Male elephant seals, or bulls, are not always in the habitat with the female cows. The cows are not always in the habitat when the pups are present.

Each picture has a time stamp on the upper left corner. Scroll through the pictures using arrow buttons, swipe features, or other methods available on your device.



Identifying elephant seals

Bulls: Bulls are large, and have huge noses (proboscis). Their fur often looks darker than the females. (Maybe because they are in the water more than the females, which makes their fur look darker.)

Cows: The female cows are smaller than bulls and their fur often looks lighter.

Pups: Pups are small, and have black fur at first. As they grow their fur turns brown.

The Scientific Method

The scientific method is a way of finding out about nature. [Tell me More!](#)

- The scientific method is based on research and [OBSERVATION](#) of physical things you can see, hear, touch, taste, or smell.
- You will ask questions about the things you observe that can be answered by seeing, hearing, touching, tasting, or smelling (or using tools that can provide these answers).
- After you investigate, you will form a [HYPOTHESIS](#). A hypothesis is a good guess to your question that is based on what you already know.
- You then collect data and [PREDICT](#) an outcome that you can use to test your hypothesis (see if you were right or wrong).
- You examine or analyze the data as your [EXPERIMENT](#) to determine if your hypothesis was correct or incorrect.
- Form a [CONCLUSION](#). What does your data tell you about your hypothesis. If the data does not support your hypothesis, can you think of reasons why you were wrong? Can you think of new questions to answer?

Using the scientific method:

In this exercise you are given a question that can be answered by carefully going through the elephant seal pictures.

The question is “What time of year are elephant seal pups born?”.

It is your job to:

1. make a guess (form a hypothesis) about the answer to the question,
2. go through the pictures and gather data that can help you test your hypothesis,
3. analyze the data to see if your hypothesis is correct,
4. form a conclusion about you results (is you hypothesis correct or incorrect?). If your hypothesis is not correct, think of reasons why being born at a different time of year might be better for the pups than the time you thought.

Use the [data sheet](#) to record your answers.

Analyze and chart the data:

Look at the dates you have written down for when elephant seals pups are first seen on the beach.

What time of year do the pups appear the first year? _____

What was the most number of pups you saw in a picture the first year?

What time of year do the pups appear the second year? _____

What was the most number of pups you saw in a picture the second year?

Did you have difficulty identifying the pups? _____

What other problems did you have? _____

Form a conclusion:

Does the data support your hypothesis? (y/n) _____

What can you conclude about the time of year elephant seals are born?

If the seals are not born when you thought they would be, can you think of a reason why it might be better for them to be born when they were? (Hint: the water is very cold in the winter time.)

Can you think of other questions that the pictures could help to answer?

