

Making and Recording Observations



WARM-UP

What do you notice about your environment?

Record your observations.

Share & Discuss

- ◆ What did you observe?
- ◆ What senses did you use?
- ◆ What tools did you use?
- ◆ What tools could you use to make more detailed observations?

KEY QUESTIONS

What are observations?

What are some differences between casual and scientific observations?

What factors impact human observations?

How are observations recorded?

Observations are a way to gather information.



What observations do soccer players make during a game?

What actions might they take, based on their observations?

Observations can determine the difference between life and death.



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Powers of observation can vary greatly.

Eagles have amazing eyesight. They can focus on two places at once—forward and to the side.

Bloodhounds are superior sniffers. Millions of olfactory cells help them trace scents.

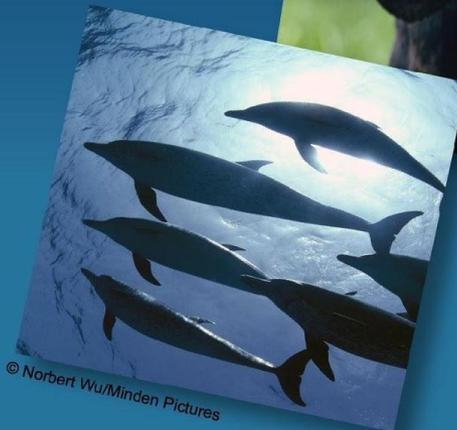
Dolphins can “see” using feedback from soundwaves. This complex sensory system is *echolocation*.



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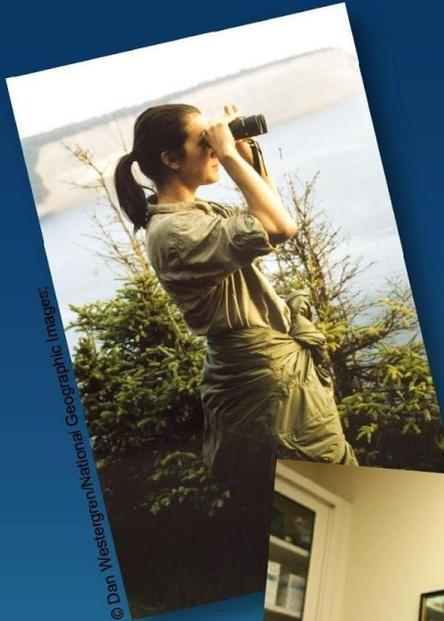


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How have humans enhanced their powers of observation?



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What factors impact human observations?

How are observations recorded?

Take a look.
Is this observation casual or scientific?



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Casual Observations

- ◆ Random
- ◆ Inferred
- ◆ Unsystematic
- ◆ Not recorded
- ◆ Missing specific details
(e.g. “It is cold outside.”)

Can you think of an example
of a casual observation?

Scientific Observations

- ◆ Factual
- ◆ Systematic, repeatable
- ◆ Recorded
- ◆ Shared
- ◆ Quantifiable, when possible
- ◆ Lead to the formation of questions and hypotheses
- ◆ Detailed
(e.g. “The air temperature is 6° Fahrenheit.”)

Can you think of an example of a scientific observation?

Take another look.
Is this observation casual or scientific?



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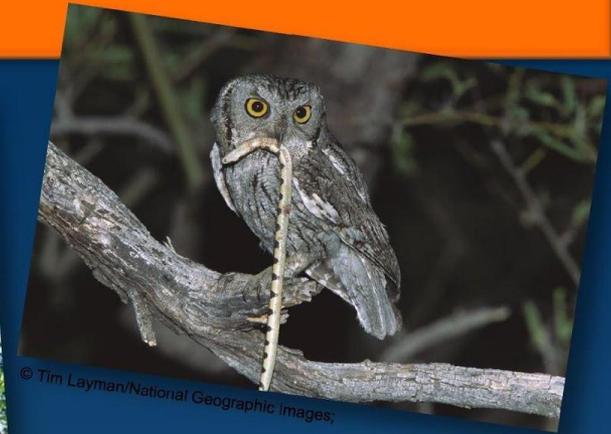
How are observations recorded?

Here are some factors:

- ◆ Location
- ◆ Duration
- ◆ Time of year
- ◆ Time of day
- ◆ Experience
- ◆ Knowledge
- ◆ Tools
- ◆ Timing



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Can you think of any others?

KEY QUESTIONS

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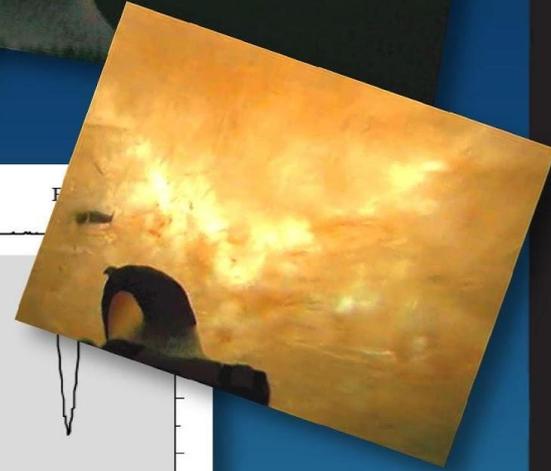
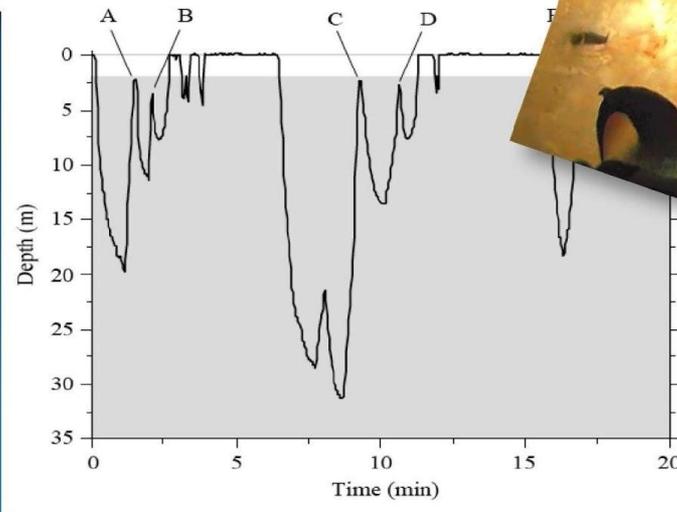
How are observations recorded?

Scientists use multiple techniques to record their observations.

- ◆ Describe it
- ◆ Draw it
- ◆ Graph it
- ◆ Map it
- ◆ Photograph it
- ◆ Videotape it
- ◆ Audiotape it

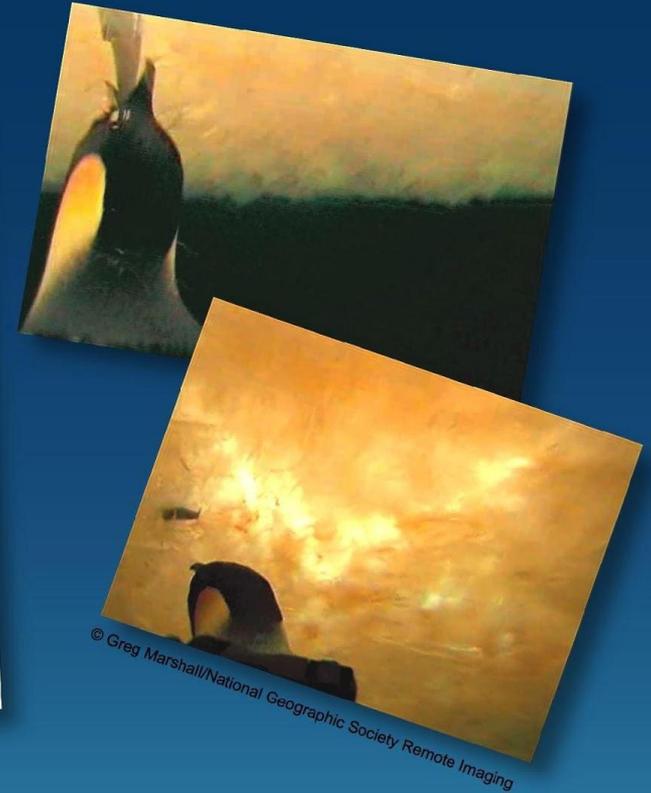
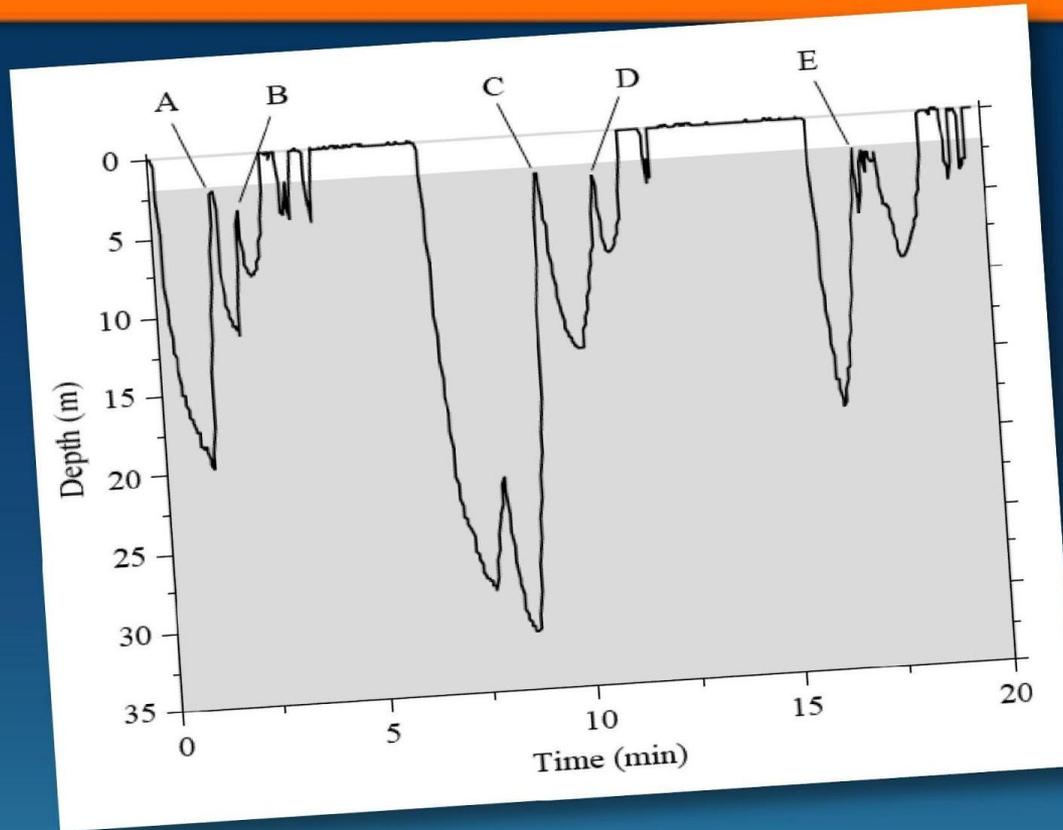
Introduction

The isolated dive hole paradigm has been the primary method for investigating the diving physiology of emperor penguins (*Aptenodytes forsteri*). Heart rate responses, swimming velocities and metabolic rates have all been examined (Kooymann et al., 1992; K. A. Nagy, G. L. Kooymann and P. J. Ponganis, in preparation). Most importantly, this is the only situation in which the aerobic dive limit of an animal has been determined with post-dive lactate levels (Ponganis et al., 1997). Although the aerobic dive limit is a function of diving activity of these birds, it is also a function of body mass and



Shown: Research on emperor penguin feeding behaviors. Data and images collected in Antarctica by Paul Ponganis and Greg Marshall.

Next, observations are interpreted.



What can be learned from the graph?
What do the images reveal?

Now Try Again

What do you notice about your environment?

Practice making and recording scientific observations!

Share & Discuss



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What did you observe?

What senses did you use?

Did factors such as time, location, tools, or knowledge impact your observations?

Making and Recording Observations

