

What Can Be Inferred from Animal Structure?

DO NOT WRITE ON THIS!!

INTRODUCTION:

Through the process of natural selection, animals have developed characteristics that allow them to feed off a wide variety of plants and other animals found in water, on land, and even in the air. One sees a great diversity of animal characteristics in response to this environmental diversity. Even among relatively closely related species such as hummingbirds and pelicans one sees vast differences in overall body size, bill structure, and foot structure. What can these differences tell us about the environments to which these birds are adapted and their food source? Could a hummingbird live near the water and feed off fish, for example? Could a pelican feed on flower nectar?

In this investigation you will examine a variety of skulls to infer from their characteristics **where the organisms lived, what they ate and any behavioral adaptations that they may have had.**

OBJECTIVES:

- ❖ To observe and record the characteristics of a variety of animal skulls and speculate about their food source and the nature of the environment in which they lived.
- ❖ To report your observations, ideas, and arguments to the class.

MATERIALS:

- ❖ a variety of numbered animal skulls

PROCEDURE:

1. Join another student and as a team of two or by yourself. For your assigned specimen, attempt to answer these questions:

- a. Where might this animal live? e.g. aquatic, terrestrial, amphibious, etc..
- b. What might this animal eat? e.g. omnivore, herbivore, carnivore
- c. What other characteristics about the animal can be inferred from the structure of its skull?

2. **Be prepared to support your answers to these questions with evidence and reasonable arguments to the class.** For an example not related to the skulls per se, you may think that the long pointed bill on bird X suggests that it eats worms and probes for them in mudflats and marshes. Does the bird have other characteristics that are consistent with this idea? Does it also have webbed feet that allow it to walk over soft mud? If so, fine. If, however, the bird has short, sharp claws, your idea is probably incorrect. In other words, once you have a tentative answer, look for other characteristics of the animals to see if they are consistent or inconsistent with your idea.

3. Make notes on your observations and arguments sheet. **I will assign one specimen to each team to report on to the class near the end of the lab period.** Use the sheet provided to record your specimen number and your tentative answers and arguments.

4. **Draw a colored picture (one per group)** of what you and your partner think this organism may have looked like when it was alive in its natural habitat.

Animal Structure

Name _____

Per. _____

Skull # _____

The Questions to think about:

- Where might this animal live?
- What might this animal eat? Is it a predator or prey?
- What other characteristics about the animal can be inferred from the structure of its skull?

Observations

Ideas and Arguments
(evidence to support your ideas)

APPLICATION QUESTIONS:

Observe the illustration below and try to apply what you learned from your previous laboratory work to answer the following questions.

1. What might be the function of the back teeth? Explain.
2. What might be the function of the front teeth? Explain.
3. Is the animal an herbivore, a carnivore, or an omnivore? Explain.
4. How might the positioning of the eye sockets be useful to this animal? Explain.
5. What other animals also have this type of eye positioning? List them.
6. Is the animal terrestrial, aquatic, amphibious, or adapted for flight? Explain.
7. The skull is really about 20 times larger than depicted in the illustration below. What animal do you think it is? Explain.

