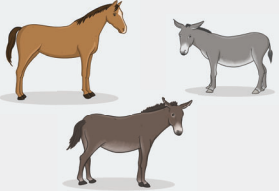

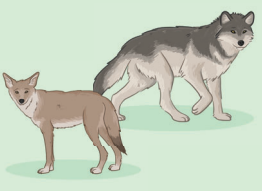
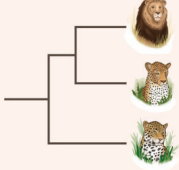


TOPIC: OTHER SPECIES CONCEPTS

Different Ways to Define Species

Biological Species Concept	Morphological Species Concept	Ecological Species Concept	Phylogenetic Species Concept
Reproductive isolation (RI). 	_____ & structural features. 	_____ with the environment. 	Smallest evolutionarily distinct population. 
<input type="checkbox"/> Asexual organisms <input type="checkbox"/> Fossils	<input type="checkbox"/> Asexual organisms <input type="checkbox"/> Fossils	<input type="checkbox"/> Asexual organisms <input type="checkbox"/> Fossils	<input type="checkbox"/> Asexual organisms <input type="checkbox"/> Fossils
+ Most widely used. + Conceptually _____.	+ Easy to apply.	+ Emphasizes adaptation to an _____ niche.	+ Can be based solely on _____ sequence data.
- Can be difficult to apply to _____ populations.	- Can be _____. - Morphology differences & RI don't always align.	- Does not directly consider _____ isolation.	- Sometimes breaks populations into _____ species than is helpful.

EXAMPLE

Read the following and use the information to answer the questions below.

Scientists have identified three potential elephant species in Africa: the African forest elephant, the African bush elephant, and the African pygmy elephant. The forest elephant is found in the rainforest of Central Africa. Male forest elephants stand ~2.4 m tall at shoulder height and breed year-round. Less is known about pygmy elephants. They have been found in many of the same areas as forest elephants but are easily identifiable by their size: the average male only stands ~1.7 meters. The African bush elephant is found in savannah habitats, with males standing over 3 m tall. Bush elephants only mate during the rainy season. Genetic testing has indicated that forest and bush elephants have not interbred for over 2 million years but shows that pygmy and forest elephants interbreed regularly, making identifying distinct ancestry impossible.

- Using only the morphological species concept, what might one predict about the number of African elephant species? _____
- Using only the ecological species concept, what might one predict about the number of African elephant species? _____
- Using only the phylogenetic species concept, what might one predict about the number of African elephant species? _____

TOPIC: OTHER SPECIES CONCEPTS

PRACTICE

Why is the morphological species concept so widely used in certain fields?

- a) The morphological species concept makes it easy to identify reproductive isolation.
- b) The morphological species concept is useful if working with fossil data.
- c) The morphological species concept utilizes modern DNA sequencing technology.
- d) The morphological species concept is most useful for understanding ecological relationships.

PRACTICE

What do the ecological species concept and the morphological species concept have in common?

- a) Neither species concept relies on genetic or reproductive data.
- b) Neither species concept can be applied to asexual organisms.
- c) Both species concepts have become more commonly employed with the advent of genetic technologies.
- d) Both species concepts are able to be applied to both fossil data and asexual species.