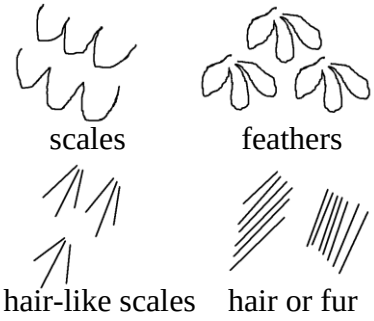
Adaptive Radiation Activity

Biology

The imaginary animals in this lab are all vertebrates, and they are all interrelated because they have a common ancestor (number 4). Your task is to construct a family tree by placing the animals' numbers in the circles on the chart on the next page. Circles marked with 'EXT' mean that the animal is extinct. Here are a few clues to help you along:

1. Biologists general classify animals on the basic body structure and function, including their method of movement.
2. The type of body covering of each animal is also very important in establishing relationships. The following symbols are used in this lab:



3. Body markings like spots and stripes are less important than the type of body covering.
4. Descendant animals are usually not radically different from their immediate ancestors.
5. Evolutionary development often proceeds from simple to complex – however, occasionally, adaptations may result in apparently simpler forms.
6. Don't be fooled by **convergent evolution** – sometimes, two animals may show the same adaptations despite the fact that they are not closely related (for example, birds and insects both have wings as an adaptation to fly even though they are very distantly related).

Questions (answer on the back of your diagram):

1. Imagine how natural selection might have led to the appearance of species 12, 14, and 16. Think about how their common ancestor might have shown different types of variation that were acted upon by natural selection. What might the environment have looked like that caused the selection of the adaptations that show up in species 12, 14, and 16?
2. The type of evolution depicted in this lab is called "adaptive radiation". Why do you think this is true?
3. The diagram indicates that species 31 is not extinct. How can this be, since species 31 clearly evolved into several other species? If those species all evolved from species 31, then why is species 31 still around?