

Reconstructing a fossil

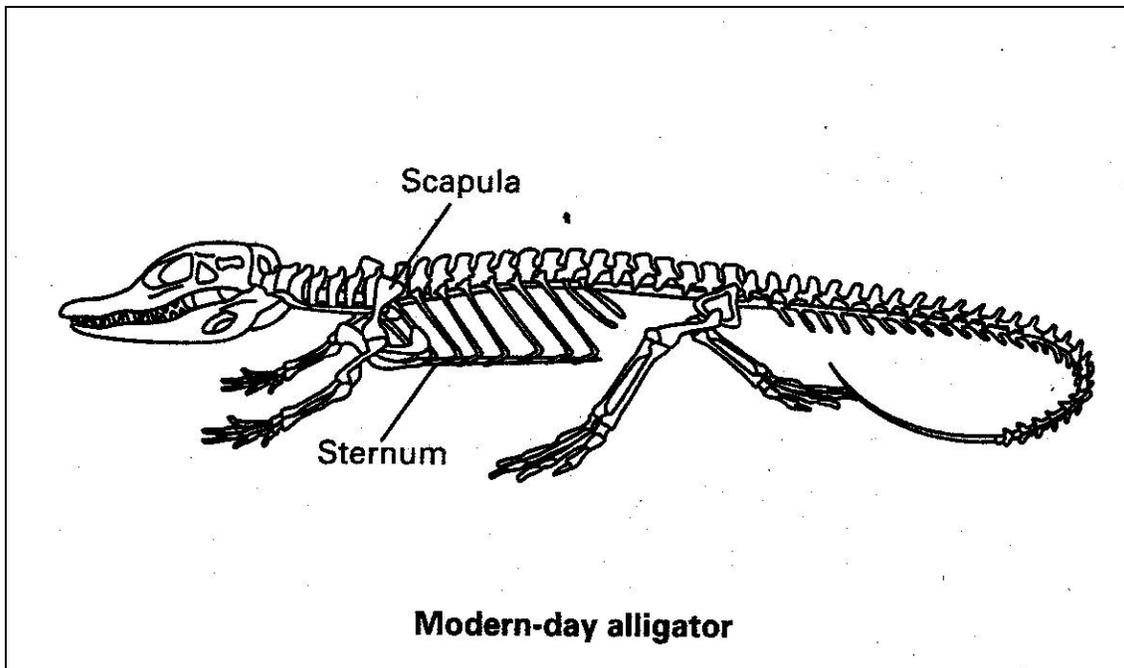
Procedures:

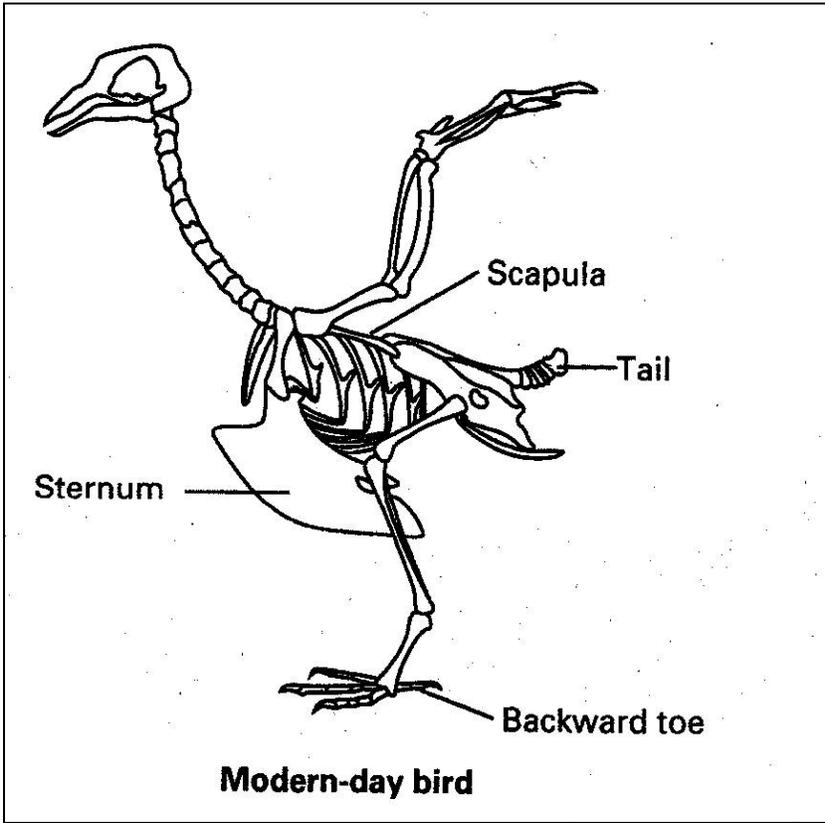
1. Illustration a is a picture of a fossilized bones found in a limestone quarry in Germany in the year 1826. Notice that most of the bones are unbroken. Observe that a few bones have changed orientation in the skeleton since the animal's death. For example, locate the rib that moved away from the animal's rib cage to become fossilized underneath the head. Identify other bones, and note their arrangement and orientation.
2. Cut out the drawings of the fossil's bones. These are about the same size as the fossil bones found in Germany.
3. Using illustration a as a reference, make a model of the skeleton of the fossil bones from the cutout bones. Find two bones that make up the skull. Position these bones above the set of bones that make up the long, curved neck. Find the pieces that make up the backbone and ribs. Identify the shoulder blades and pelvic bones. Arrange these pieces to make the trunk. The fossil's legs were short compared to its arms. Unlike other vertebrates you may be familiar with, the upper and lower parts of the leg were composed of a single bone. The lower arm bones however, were composed of two long fused bones. The hands were much bigger than the feet. The fossil had five fingers on each hand.
4. Fasten the bones of the skeleton model in position with tape.
5. Illustration b is a picture of fossilized bones from the cretaceous Period, about 115–108 million years ago in rocks of the Cloverly Formation and Antlers Formation.
6. Cut out the drawings of the fossils' bones. This is a scaled picture; the real skeleton was about 11 ft. long.
7. Fasten the bones of the skeleton model in position with tape.
8. Arrange the bones to form a bipedal animal.
9. Fill in the data table, using the skeleton of the modern bird and alligator as a guide.

Questions to answer:

1. What type of animal are these two fossils, what can you infer about its biology, behavior, its habitat?
2. What is the main function of the bones in the little finger in illustration a? What is the main function of the bones in the foot of illustration b?
3. List features the two fossils have with modern birds, with alligators. Which features are unique to the fossils?
4. Could either of these fossils fly? Explain.

Characteristic	Alligator	Bird	Fossil 1	Fossil 2
Narrow scapula (shoulder blade)				
Wide scapula (shoulder blade)				
Prominent sternum (breastbone)				
Three primary toes on hind feet				
Four primary toes on hind feet				
Extra toe that points backward				
Hind legs underneath the body rather than to the sides				
Long tail				
Short tail				
Claws on front feet				
Claws only on hind feet				
Bipedal (walks on 2 legs)				
Quadrupedal (walks on 4 legs)				
Teeth				





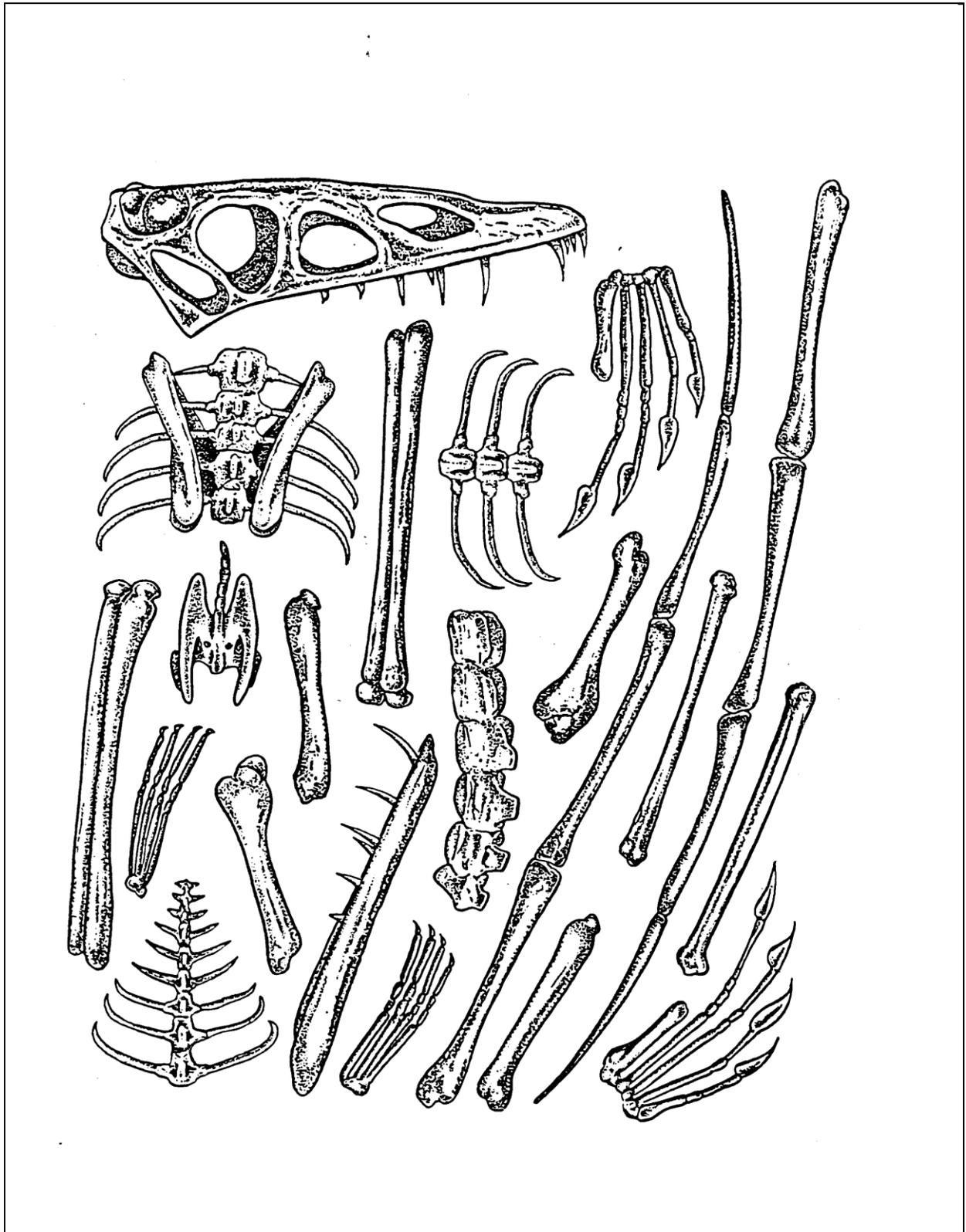


Illustration a.

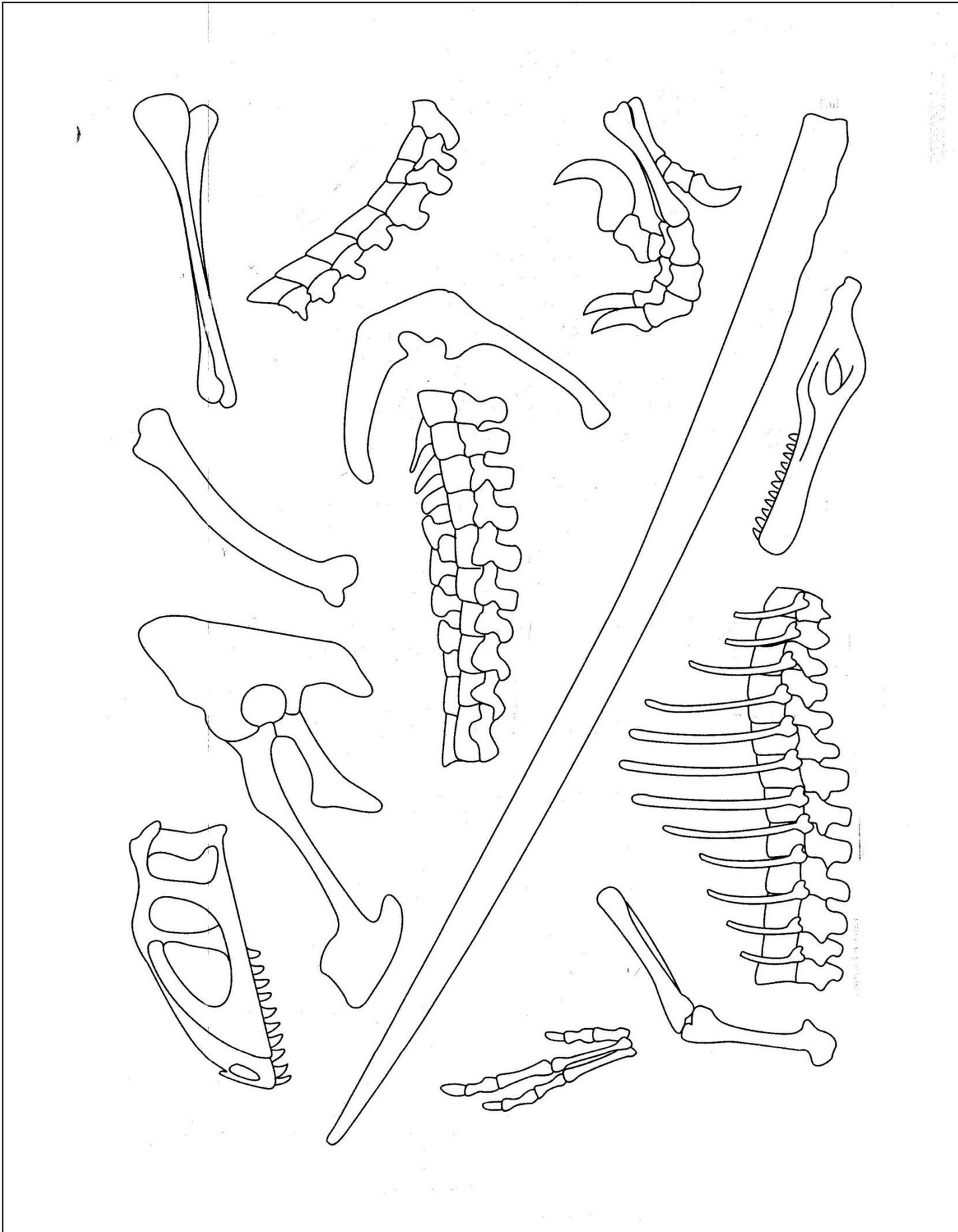


Illustration b