

# **Fossil Critters of Wyoming**

Palæontological Finds from the Land of the Dinosaurs

by  
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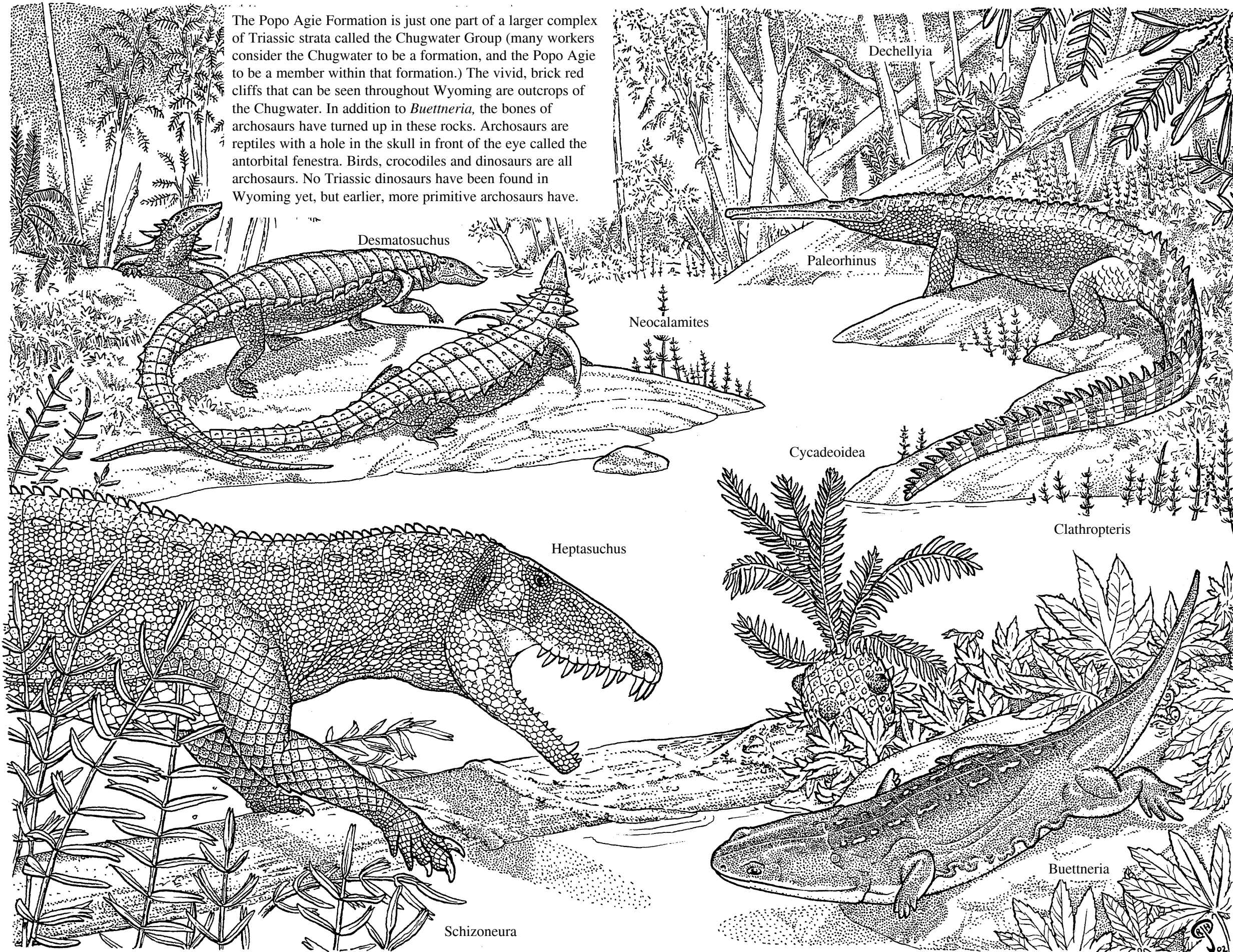
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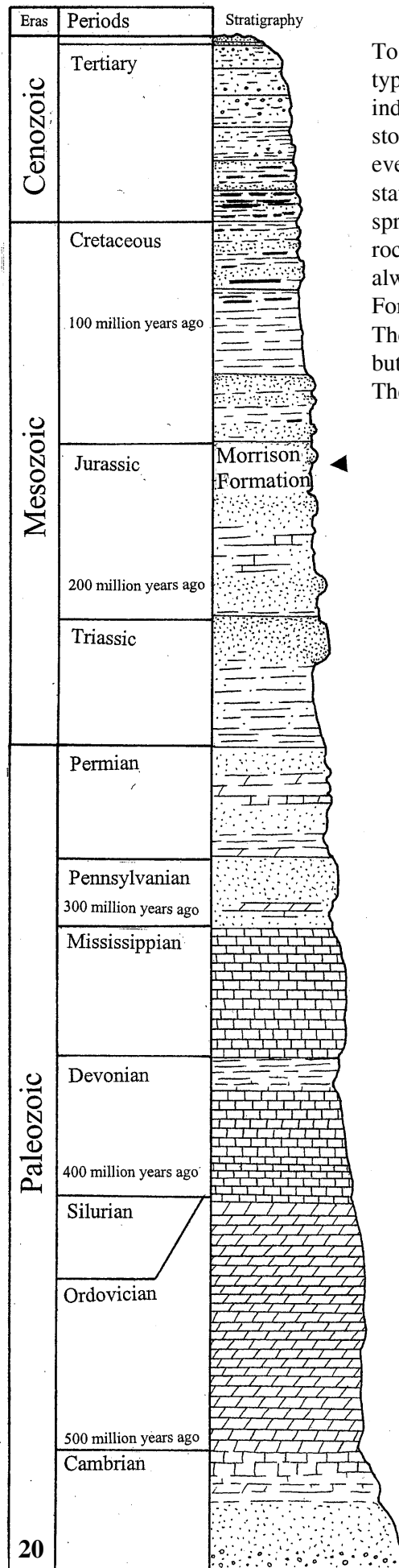
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The Popo Agie Formation is just one part of a larger complex of Triassic strata called the Chugwater Group (many workers consider the Chugwater to be a formation, and the Popo Agie to be a member within that formation.) The vivid, brick red cliffs that can be seen throughout Wyoming are outcrops of the Chugwater. In addition to *Buettneria*, the bones of archosaurs have turned up in these rocks. Archosaurs are reptiles with a hole in the skull in front of the eye called the antorbital fenestra. Birds, crocodiles and dinosaurs are all archosaurs. No Triassic dinosaurs have been found in Wyoming yet, but earlier, more primitive archosaurs have.



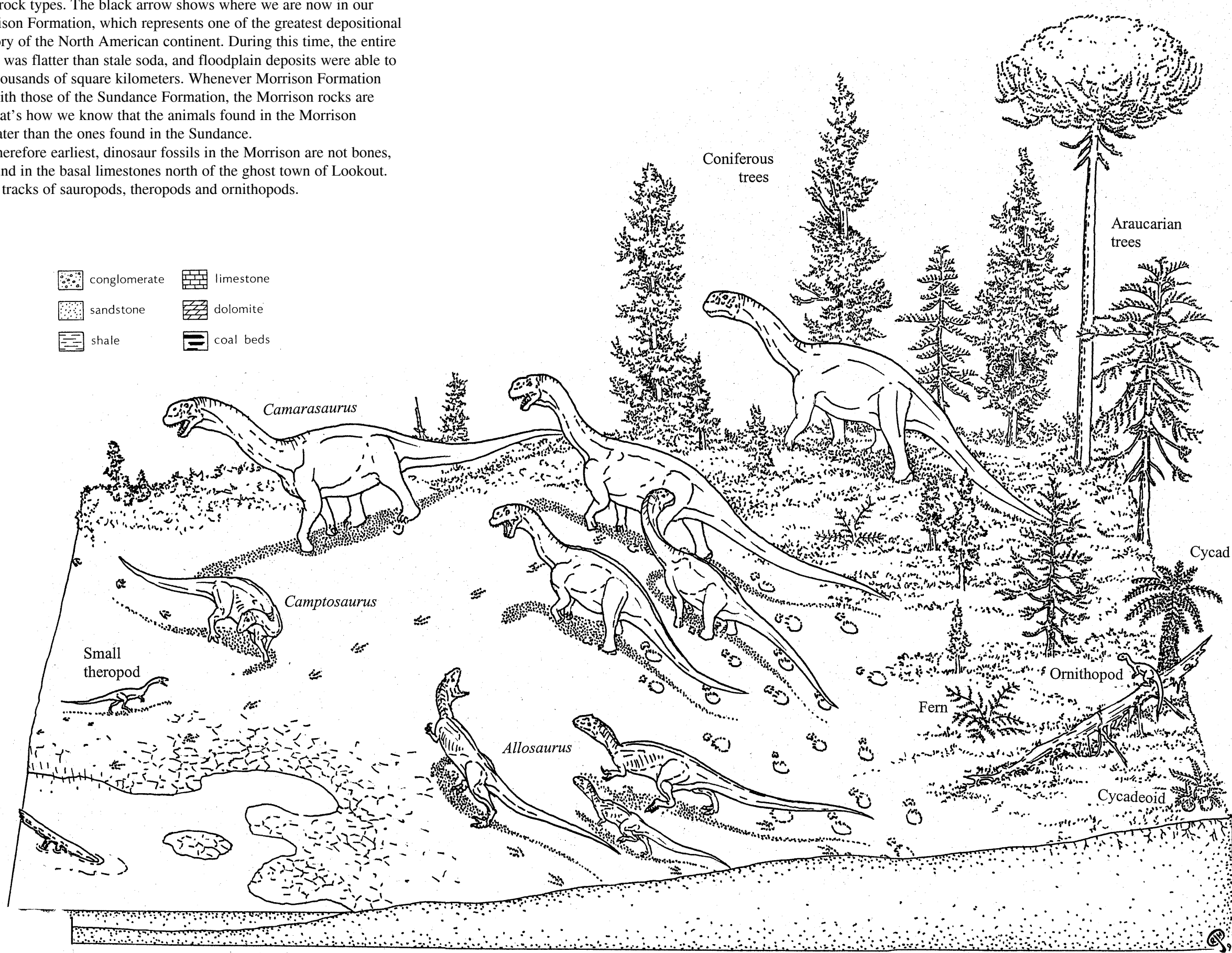
Eras	Periods	Stratigraphy
Cenozoic	Tertiary	
	Cretaceous	
Mesozoic	100 million years ago	
	Jurassic	
	200 million years ago	
Triassic	Chugwater Formation	
Paleozoic	Permian	
	Pennsylvanian	
	300 million years ago	
	Mississippian	
	Devonian	
	400 million years ago	
	Silurian	
Ordovician		
500 million years ago		
Cambrian		

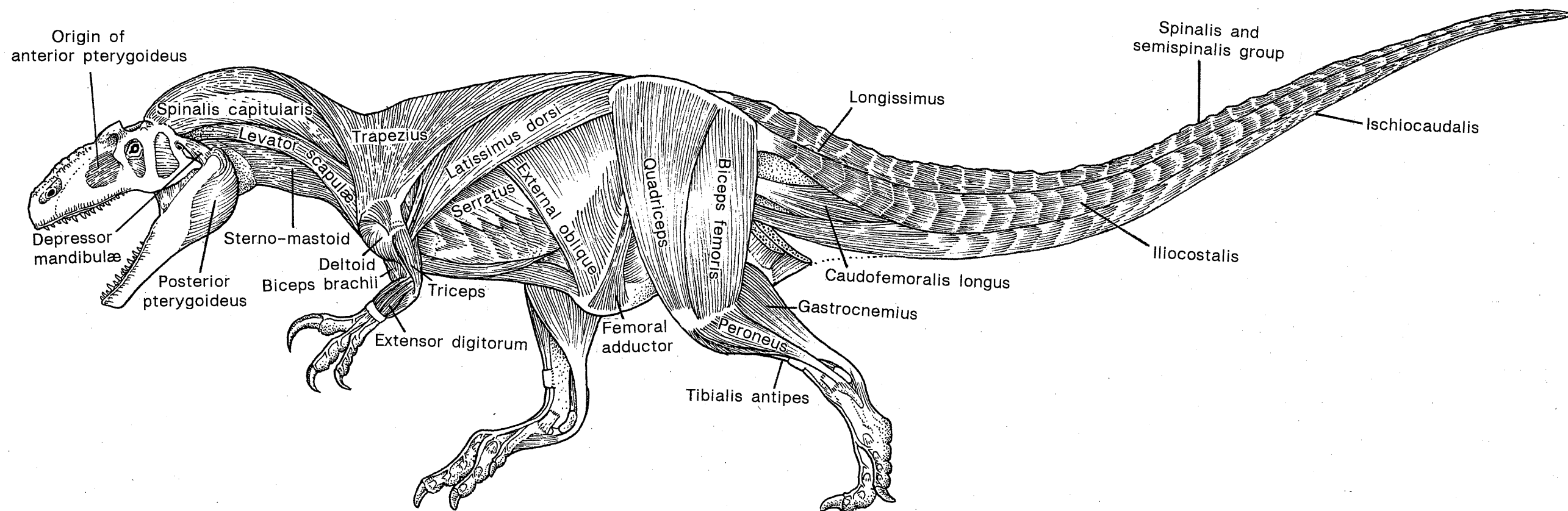
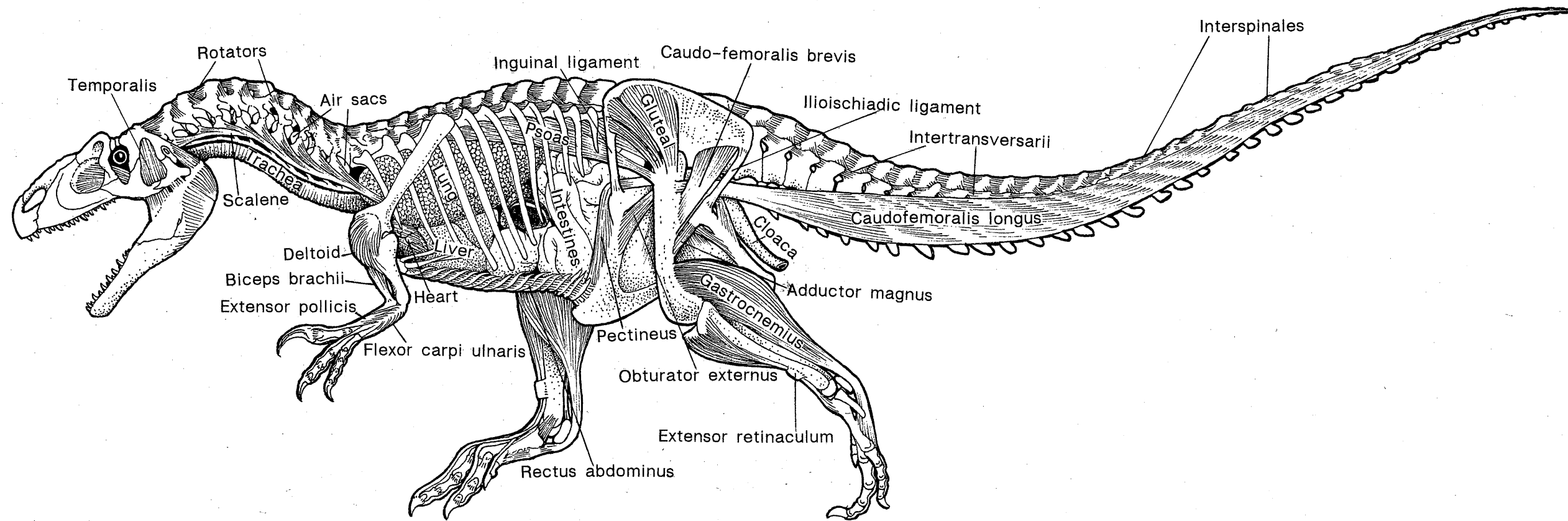


To the left is the geologic time scale, and a stratigraphic column showing rock types that are typical of the various periods in Wyoming. Different patterns indicate different rock types. The black arrow shows where we are now in our story — the Morrison Formation, which represents one of the greatest depositional events in the history of the North American continent. During this time, the entire state of Wyoming was flatter than stale soda, and floodplain deposits were able to spread out over thousands of square kilometers. Whenever Morrison Formation rocks are found with those of the Sundance Formation, the Morrison rocks are always on top. That's how we know that the animals found in the Morrison Formation lived later than the ones found in the Sundance.

The lowest, and therefore earliest, dinosaur fossils in the Morrison are not bones, but footprints, found in the basal limestones north of the ghost town of Lookout. These include the tracks of sauropods, theropods and ornithopods.

- conglomerate
- sandstone
- shale
- limestone
- dolomite
- coal beds





So, how do we know what dinosaurs and other prehistoric animals looked like? All we have of most fossil species are the bones. However, even just the bones can give us a pretty good idea of the appearance of the living animal. Scientists and artists can look at the way the muscles of modern animals attach to the underlying bone, and extrapolate the positions of the corresponding muscles in fossil species. Fortunately, the muscular system is pretty conservative, and most of an animal's muscles have counterparts in other species, even ones that are only very distantly related. The scars that mark the point at which the muscle attaches to the bone can often be identified, and these can provide further clues. Dinosaurs are descended from reptiles that were close to the ancestry of modern crocodiles, and many scientists believe that some dinosaurs may have been the ancestors of modern birds. So dissecting birds and crocs gives us most of the information we need to reconstruct dinosaurs. At top is a reconstruction of the deep anatomy of *Allosaurus*, the most common predator of the Morrison. In many instances, I've labeled the muscles as their homologues (corresponding human anatomy), so that you can more easily compare them to your own muscles. Those muscles that do not have human homologues are usually named with a description of what the muscle does. The lower picture shows the superficial musculature.