

The Avian Connection:

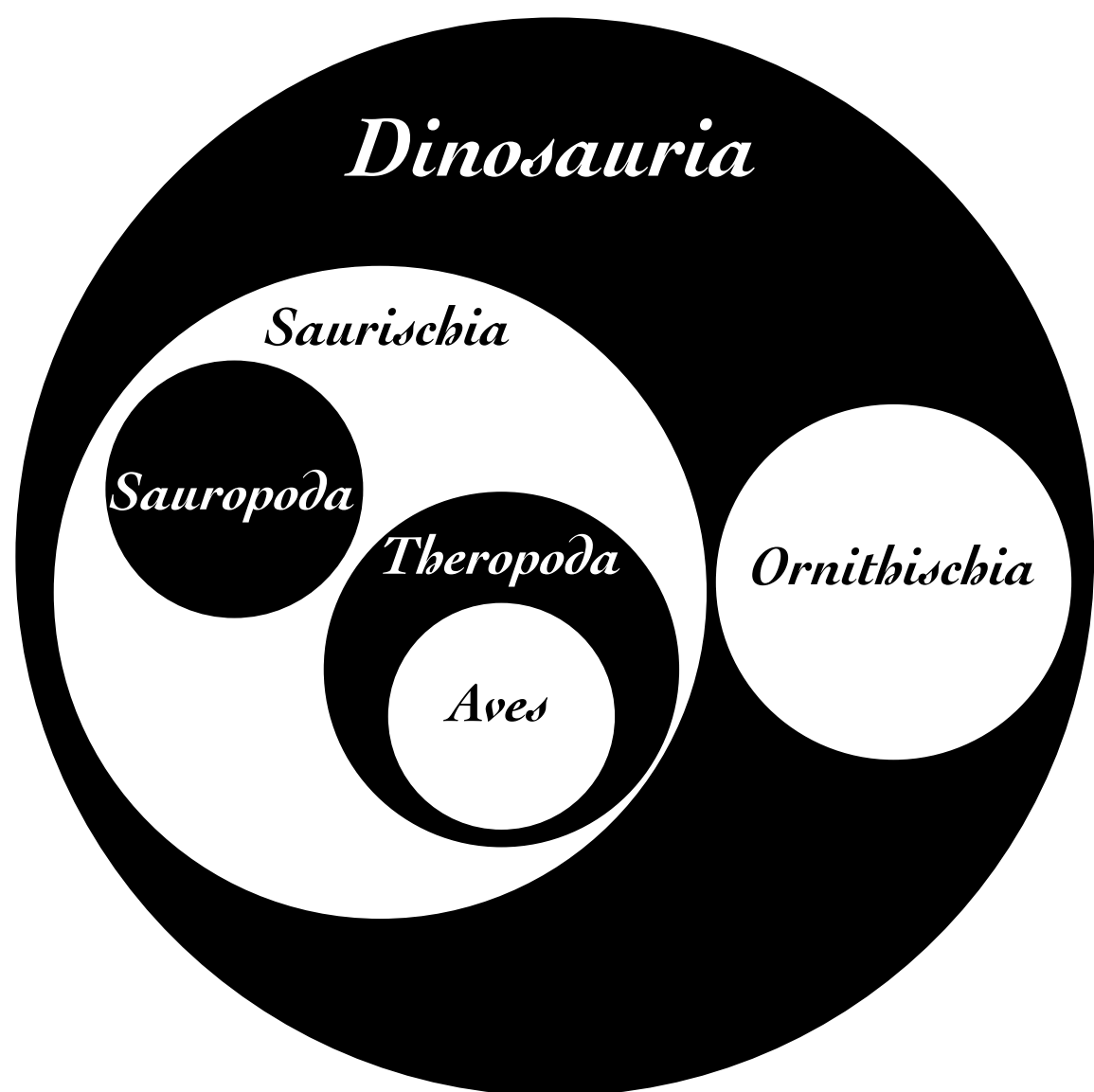
How Dinosaurs Became Birds, and Why Birds Remain Dinosaurs



Bohemian Waxwing study

Birds, like dinosaurs, are reptiles. At some point in the Mesozoic, a small running theropod dinosaur (a dromaeosaur) evolved feathers that could be used for flight and became the ancestor of a number of nonavian dinosaurs with feathers and all modern birds.

Archaeopteryx reveals to us many traits which belong to theropod dinosaurs, such as hands with claws, lizard-like hips (the saurischian condition), and a mouth full of teeth. But *Archaeopteryx* also has asymmetric feathers (feathers used for creating an airfoil in flight), something no ornithischian dinosaur ever had. For some, this causes confusion since it is the **lizard-hipped** (saurischian) dinosaurs, not the **bird-hipped** (ornithischian) dinosaurs from which birds arose. Both groups are so named because of superficial similarities in the hip structures of the earliest named dinosaurs to lizards and birds.



Evolution is highly conservative. Shared derived traits define a clade, and taxa always belongs to the clade it evolved from. Thus, Aves (birds) remain dinosaurs, even as they remain diapsids, reptiles, amniotes, tetrapods, vertebrates, and chordates. Taxa cannot “evolve out” from a clade any more than someone can cease being someone’s granddaughter or grandson (or for that matter, stop being a mammalian vertebrate).

