



Fossils from the past 150 million years are on show at *Past Worlds*, including this *Tyrannosaurus* skull.

PALAEOLOGY

Beyond the Jurassic

Brian Switek winds his way through prehistory at Utah's rehoused museum of natural history.

Utah is spectacularly gifted with dinosaur remains. Most of its museums, however, focus on finds from the Upper Jurassic period 150 million years ago. Now, an exhibition at the Natural History Museum of Utah that includes fossil treasures from subsequent periods is set to broaden our understanding of prehistory.

Past Worlds is housed alongside several other installations in a brand-new, copper-coated sustainable building set against the hills of Salt Lake City. A cohort of Pleistocene mammals — a mammoth, giant ground sloth and sabre-toothed cat among them — stand guard at the upper entrance, representing what life was like around 13,000 years ago, when Lake Bonneville filled the valley now cradling the city.

The exhibition features a circuitous route through some wonderful illustrations — skeletal diagrams and immense, intricately rendered prehistoric scenes — by artists Douglas Henderson, Scott Hartman and Victor Leshyk. Visitors are taken through Utah's prehistory, from youngest (the last ice age, which ended almost 12,000 years ago) to oldest. From the winding walkway, you can view Pleistocene carnivores,

Past Worlds
Natural History
Museum of Utah,
Salt Lake City.
Permanent exhibition.

an Eocene lakeshore and Cretaceous dinosaurs from more than 65 million years ago, before finding yourself among *Marshosaurus*, *Stegosaurus* and other Jurassic giants. The walkway then doubles back — a feature I found odd because it disrupts the chronology, particularly given that the eras are represented on different levels of the building.

The only linear story in the exhibit hangs overhead. Starting with modern pelicans near the upper entrance, a simplified rendition of avian evolution is revealed by birds that are representative of each time period, culminating with a suspended *Archaeopteryx* reconstruction (a creature discovered in Germany, not Utah, but which serves here as a Jurassic stand-in).

Despite the needless convolutions through time, it is a fabulous spectacle. An Eocene lake boasts sleek crocodylians and the rotting body of an archaic horse, while a gaggle of skeletal waterbirds assembles along the upper shore.

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The scene evokes the habitat in which each of the fish-bearing fossil slabs displayed in the lower gallery was formed about 50 million years ago.

But the true draws of the fossil hall are the dinosaurs. Real fossils are displayed alongside many of the skeletal casts, tying them to authentic finds in the field.

The Cretaceous exhibit is well stocked with dinosaurs exhumed from the state's Grand Staircase-Escalante National Monument. Other fauna from the era include the enormous alligatoroid *Deinosuchus*, and a juvenile-adult pairing of the recently described tyrannosaur *Teratophoneus* that prowls the upper deck. In the lower gallery, a skeleton of the hadrosaur *Gryposaurus* — a herbivore with spoon-like jaws and a high ridge running along the snout — strikes an alert pose.

Horned dinosaur skulls are ranged against the back wall in evolutionary ranks, some of which represent new and as-yet-undescribed genera. The most intriguing specimen is the 'hadrosaur under the floor' — an actual *Gryposaurus* fossil preserved with skin impressions and laid out beneath transparent floor tiles.

The same trick is used in the Jurassic display that follows. Here, bone casts are scattered beneath transparent panes in a reconstruction of the Cleveland-Lloyd dinosaur quarry. At least 46 *Allosaurus* individuals died at this site near Price, Utah, together with rarer carnivorous and herbivorous dinosaurs. Exactly what killed them is disputed. The museum asks visitors to vote by dropping pennies into cylinders marked with the various hypotheses. ('Poisoning' was the uncontested leader when I last checked.)

The Jurassic section also contains the best thrill of the entire hall: a skeletal mount of a hapless *Barosaurus* being harried by a comparatively tiny *Allosaurus*. The sauropod's ludicrous neck arcs high into the air as a young *Allosaurus* pounces on to its back and a family of the carnivores surrounds it. Whether such a scene ever took place is a matter of speculation; the vignette is an extrapolation from the many bones found together in the quarry.

The visual splendour is not matched by the signposting, however. Explanations on the plaques accompanying the displays give details of the daily lives of these prehistoric animals without explaining the pathways to that knowledge. That said, *Past Worlds* brings Utah's awe-inspiring prehistory to vibrant life, all the way from the animals' skeletons through to their habitats. ■

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