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Dancing dinosaurs?

Michael J. Oard

Geologists from the University of Utah recently announced finding a remarkable array of dinosaur footprints on the Arizona-Utah border in the USA (figure 1).[1] They described their find as 'a dinosaur dance floor' and said it was located alongside an oasis in a sandy desert 190 million years ago.

Dinosaur tracks in sedimentary rocks are no longer unusual. They are found all over the world,[2] especially in the Rocky Mountains and High Plains of the western United States. Millions of tracks are now known, some of them forming large areas with a huge amount of tracks. In some cases there are so many tracks that the strata are greatly mixed up or 'dinoturbated'.

Circular impressions interpreted as dinosaur tracks

Once in a while a new find will have some unusual features. This new dinosaur track site, actually a new interpretation of an old site, displays a few unusual features. Pothole-like impressions in the Navajo Sandstone had previously been interpreted as weathering pits. But now it is believed the circular depressions were made by dinosaurs.[3] The impressions are located within the Navajo Sandstone of the Paria Plateau of the USA at the Utah/Arizona border.

The impressions, which range in size from 3 cm to 50 cm, do look like simple holes in the ground, but they have features that lend themselves to having been formed by walking vertebrates assumed to be dinosaurs. For instance, there are claw and toe impressions with rare tail drag marks (there are fewer than a dozen tail drag marks in the world). One of the most conclusive evidences is that the tracks line up to form straight trackways—practically all moving in a west-southwest direction. The holes are of the correct size and are concentrated on one bedding plane at about 12 impressions per square metre. There are probably a few thousand impressions all together. Because of the number of tracks, the authors referred to the surface as a 'dinosaur dance floor'. The dinosaurs would thus be 'dancing dinosaurs', an obvious flight of imagination given the straight trackways. But the case is strong that the impressions are modified dinosaur tracks, although one anonymous review of the *Palaios* paper still believed that the holes are erosional features.[1]

Interesting dinosaur features

Besides the strongly preferred orientation and the rare tail drag marks, a few other features are worthy of note. It is claimed that there were four types of dinosaurs including carnivores and herbivores. It is interesting that such enemies traveled the same path at probably near the same time. Also, the small tracks are interpreted to be the tracks of babies, a most unusual discovery if the small impressions are really tracks, since tracks of babies are very rare.

Also of interest is the author's contradictory interpretation. The

Photo by Roger Seiler, <www.unews.utah.edu>

Figure 1. University of Utah geologist Winston Seiler walks among hundreds of dinosaur footprints in a 'trample surface'.

tracks are in the Navajo Sandstone, interpreted to be desert sand that lithified (hardened) into rock. So, they postulate a 'desert oasis' or watering hole. If this were the case, why are practically all the tracks going in the same direction? Animals usually mill around a watering hole, making tracks in multiple directions.

What are dinosaurs doing in a monstrous desert?

The most contradictory feature is that the tracks are found in what is believed to have been a monstrous desert. The Navajo Sandstone and its equivalent deposits occupy an area greater than 265,000 km^2 and may have once been two and a half times as large before erosion. The Navajo Sandstone is up to about 600 m thick in south central Utah (figure 2). That makes this desert larger than the Sahara Desert! What are dinosaurs doing in a huge desert, even at an oasis? Desert oases are normally small and could hardly sustain dinosaurs in such large numbers.

Moreover, there are 60 other track sites in the Navajo Sandstone, mostly of carnivorous dinosaurs. Just as mysterious from a uniformitarian point of view[4] is that hardly any bones are found in the Navajo Sandstone. One would think that with shifting sands, a huge number of dinosaurs would easily be covered up, which is the first step in fossilization.

Photo Michael J. Oard

Figure 3. Navajo Sandstone with cross beds and multiple truncating planation surfaces near Checkerboard Mesa, Zion National park, United States.

Photo Michael J. Oard

Figure 2. Navajo Sandstone up to 600 m high above Kayenta Formation in Zion National Park, Utah, as seen from the top of Angels Landing.

The Navajo Sandstone is not a desert deposit

The thousands if not millions of dinosaur tracks just in the Navajo Sandstone should be a big hint to uniformitarian scientists that this Sandstone is not from a desert environment. As we see with the Coconino Sandstone from Grand Canyon,[5] there are several obvious features that strongly suggest a water-laid deposit. First, the sandstone is flat or nearly flat at both its lower and upper contacts. How many desert sands have such a property?[6] To make matters worse, the overlying Carmel Formation is a marine formation[7] that should have torn up the top of the Jurassic Sandstone (as well as the thin desert Temple Cap Formation), but the contact is very flat.

Second, within the thick Navajo Sandstone, the cross beds are truncated by flat planation surfaces that can sometimes be traced for kilometres. Dozens of these planation surfaces can be seen in tall, vertical exposures of the Navajo Sandstone (figure 3). What sort of desert process shears off

sand dunes? Although uniformitarian scientists have attempted to explain such anomalous features, the lack of any close modern analog shows that they are grasping at straws.

Third, the sand grains that are well-rounded and frosted, claimed as evidence for the desert interpretation, show that the frosting was not by wind abrasion. Scanning electron micrographs show that the frosted surface is actually etched.[8] In other words, the grains have been chemically frosted, probably after deposition by water moving under pressure through the spaces between grains.

Fourth, the direction of transport of the sand is the same as the general transport of practically all the supposed eolian sandstones on the Colorado Plateau.[9] The direction is from the north to the northwest. A further problem is that the transport direction must be maintained for hundreds if not thousands of kilometres, since there is no source for the sand immediately to the north of the Colorado Plateau. Such consistent directions over a supposedly 100-million-year period make little sense. In all that time, why wouldn't a significant change in wind direction, from the south for instance, deposit some dunes with a different orientation?

What really happened?

These unusual dinosaur tracks and their strongly preferred orientation provide more evidence for the 'briefly exposed Flood sediment hypothesis'.[10–12] Tracks, as well as dinosaur eggs, were made by dinosaurs during the Flood while they were still alive, as the waters were rising. They would have perished later on, at least by Day 150, when the entire Earth was covered by water and every lving thing perished (Genesis 7:20–24). Based on many unusual features of dinosaur tracks, eggs and bonebeds, freshly-laid Flood sediments must have become briefly exposed during the first half of the Flood as the waters were rising. Such an exposure can easily be accomplished after heavy sedimentation and a brief drop in 'sea level' (and there are at least four mechanisms that could cause this). Dinosaurs coming ashore onto this 'land' would of course make tracks and lay eggs. Their death *en masse* would produce large bonebeds as found in other parts of the fossil record, graveyards that sometimes contain thousands of dinosaur remains.

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Butterfly brilliance

Jonathan Sarfati

Photonic structures in butterflies

Some butterflies, such as the blue morpho (*Morpho menelaus*) of South America and the male mountain blue don (*Papilio ulysses*) of northern Australia are known for their brilliant iridescent blues. But their spectacular colours are not caused by pigments but by their scales forming a diffraction grating.[1] These are evenly-spaced ridges or grooves that break up white light into all its component colours, but at a given angle, destructive interference cancels out all out except for the required colour, which is bright due to constructive interference. These scales have been called sub-micrometre photonic structures, because they can manipulate light waves. The very deep black on the borders of the butterfly wings is likewise not due to a black pigment but due to photonic structures that trap light.[2,3]

This research has inspired the design of very effective 'Super Black' coatings,[2] and might inspire other sorts of coatings that produce striking colours without the chemical waste in production of pigments and dyes.[4] This is yet another example of *biomimetics*: human technology copying nature—in reality, taking lessons from the Designer of nature.[5]

Dual gratings

Recent research shows that the dorsal wings of *Lamprolenis nitida* have two blazed diffraction gratings interspersed on single scales, which give two main colour signals, red to green and blue to violet.[6] This was a novel discovery, since 'Multiple independent signals from separate photonic structures within the same sub-micrometre device are currently unknown in animals.'[5] The scales form a pattern of cross ribs and flutes that have different periodicities, hence the different signals. In particular: