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10 April 2012

Dinosaur bones debunk migratory myth – UCT researcher Duck-billed dinosaurs stayed put and endured long, dark polar winters

Duck-billed dinosaurs were once dubbed the “happy wanderers” of the North Pole, but a new study suggests they were not migratory at all and preferred to stay closer to home.

The evidence is in their bones, according to a team of dinosaur palaeontologists from the University of Cape Town and the US. They uncovered these insights in the bones of *Edmontosaurus*, or duck-billed dinosaurs, which lived in the Arctic about 70 million years ago.

Bone histologist and head of UCT’s Department of Zoology, Professor Anusuya Chinsamy-Turan, and colleague Dr Anthony Fiorillo, of the Museum of Nature and Science in Dallas, Texas, US, reasoned that perhaps clues showing how these dinosaurs lived at such high latitudes might be recorded in the microscopic structure of their bones. With this in mind, the team -- which included postdoctoral researcher Dr Daniel Thomas, then at UCT, and Dr Allison Tumarkin-Deratzian of Temple University in Philadelphia, Pennsylvania, US -- began a study of the microscopic structure of the bones of the *Edmontosaurus*, or the Alaskan polar dinosaur.

The researchers found that the bones had an odd structure. Similar to tree rings, they showed periodic changes in texture, suggesting a summer and winter bone deposit pattern - - most likely related to the availability of food.

"Since there would not have been green foliage [during the polar night], they probably fed on alternative food such as underground tubers," Chinsamy-Turan says. "It is fascinating to realise how much information is locked in the bone microstructure of fossil bones."

In one of the largest individuals (approximately 65% of adult size), at least eight cycles of faster bone deposition were counted, suggesting that this individual lived through eight summers. Bones of *Edmontosaurus* that lived at lower latitudes in what is now southern Alberta, Canada, did not have the regular, alternating bone pattern, implying that these duck-billed dinosaurs were spared the stress of long, dark winters.

The unique pattern of bone deposition in the polar dinosaurs also suggests that they overwintered well within the Cretaceous Arctic circle. So out go the assumptions of nomadic dinosaurs.

But another question has cropped up after the researchers found bones mainly belonging to younger animals. The fact that many of them seem to have died at the beginning of spring, and that their fossilised bones are found in melt deposits, have led researchers to believe that seasonal flooding may have led to their death, says Chinsamy-Turan. "Perhaps the adults were better able to cope with seasonal flooding than the young."

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