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New findings about prehistoric flying animal

An artist's impression of the hatchling pterosaurs. Credit: Megan Jacobs

A University of Cape Town palaeobiologist is part of a new study that changes the way we think about the Late Cretaceous period, around 100 million years ago.

Professor Anusuya Chinsamy-Turan, of the Department of Biological Sciences, is among the scientists who contributed to a paper published in *Cretaceous Research* that revealed that newly hatched gigantic pterosaurs, the flying relatives of dinosaurs, probably out-competed the adults of smaller pterosaur species.

It was previously thought that smaller species of pterosaurs were outcompeted by newly evolving birds, but this study has shown that it was actually the juveniles of large and gigantic pterosaurs that dominated the skies during the period.

Led by researchers from the University of Portsmouth, the publishing of the findings comes after around 10 years of fieldwork in the Sahara Desert in Morocco. The research team also included experts from the University of Leicester and Hassan II University of Casablanca.
Chinsamy-Turan – who teaches courses on topics such as palaeobiology, palaeoecology, evolution and extinctions – contributed to the study as a world expert on the bone microstructure of pterosaurs and dinosaurs.

She explained that pterosaurs were the first animals to take to the air, before birds and bats.
"When they first evolved in the Triassic [252 million years ago] they were quite modest in size, but by the Late Cretaceous they had reached gigantic proportions – with wingspans of over 10 m or more, almost the size of a fighter jet," she said.

Chinsamy-Turan was brought onto the study when the palaeontologists involved wanted to know if they were dealing with small-bodied adult pterosaurs or the young of giant pterosaurs.
She said most of the bones recovered appear to be juveniles of large pterosaurs – an indication that they dominated the environment.

"By looking at the paper-thin sections of the bones under a microscope, I could tell that they were from juveniles as the bone was fast growing and didn't have many growth lines," she said.

"I deduced that one of the individuals was much younger than the other in that it only showed fast growing bone tissue in the jaw fragment, whereas the other individual was much older, with at least four cycles of growth in its bone, but it was still not fully grown. This implies that there must have been even larger individuals of the species," she said.

"When I saw how well preserved the bone microstructure of the pterosaurs was, I immediately knew that there would be lots of information that could be deciphered from them.
"My colleagues were also quite thrilled by my results since although they had suspected that these bones were from juveniles, my analysis of the histology (study of tissue) confirmed their findings based on other information such as surface texture," she added.

Lead author, Roy Smith, said that during the fieldwork, they had discovered over 400 specimens of pterosaurs from the Kem Kem Group, a geological group in the region.

Professor David Martill of the University of Portsmouth said that it is likely that juvenile pterosaurs were feeding on small prey such as freshwater insects, tiny fish and amphibians.

"As they grew, they could take larger fish – and who knows, the biggest pterosaurs might have been capable of eating small species of dinosaurs, or the young of large dinosaur species," said Martill.

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