Fires and floods key to dinosaur island secrets

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An artist's impression of life on the Isle of Wight during the Early Cretaceous based on information and ideas provided by Dr. Sweetman

Fires and floods which raged across the Isle of Wight some 130 million years ago made the island the richest source of pick 'n' mix dinosaur remains of this age anywhere in the world.

A new study has revealed the Island's once violent weather explains why thousands of tiny dinosaur teeth and bones lie buried alongside the huge bones of their gigantic relatives.

The research was carried out by University of Portsmouth palaeontologist Dr Steve Sweetman and Dr Allan Insole from the

University of Bristol. It is published in the journal *Palaeogeography, Palaeoclimatology, Palaeoecology.*

“When a fire was rapidly followed by an intense flood a snapshot of life on the Isle of Wight 130 million years ago was taken and preserved for us to see today, making the Isle of Wight one of the most important dinosaur sites in the world. Apart from the sheer diversity of dinosaurs found on the island we also have the remains of the animals and plants that lived with them,” Dr Sweetman said.

“During the Early Cretaceous when dinosaurs roamed, the climate was much warmer than today. This was partly to do with the geographical position of the Isle of Wight at the time - the latitude was roughly where Gibraltar is now - but also reflects the extreme greenhouse conditions of that era.

“Rainfall occurred all year round but during the summer months, when temperatures soared to between 36 - 40^{o}C, evaporation exceeded rainfall causing drought conditions. At these times vegetation became parched leaving it vulnerable to fires caused by lightning strike.

“Occasionally very heavy rain would follow electrical storms and wild fires causing flash floods. These swept up all loose objects in their path, swallowed complete dinosaur skeletons and eroded floodplain sediments. The more debris and sediment the water collected the thicker and thicker it became until eventually it was like mixed concrete.”

This chaotic mixture, in which most of the skeletons became jumbled up, was then deposited in hollows to form what are now known as the island’s plant debris beds. They are so called because they contain large amounts of scorched and unburned plant fossils ranging in size from large logs to tiny fragments of leaves. The rotting plants in these beds removed oxygen providing ideal conditions for the preservation of

bones.

Dr Sweetman said: “On the Isle of Wight you get a complete muddle of the smallest fossils blended with the biggest, nothing quite like it has been seen anywhere else in the world. The plant debris beds and the mixture of fossils they contain are unique to the island.”

Provided by University of Portsmouth

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