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Palaeoenvironments and Taphonomy of Bird Fossils (Early Cretaceous) from Jehol Biota in Western Liaoning, China

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Jehol Biota in western Liaoning and northern Hebei has been a hot topic of global concern, a large number of exquisite fossils were found in Yixian group Sihetun, such as *Sinosauropteryx, Protarchaeopteryx, Caudipteryx* and *Confuciusornis.* Scientists consider the discovering of *Sinosauropteryx* discovered so far as the earliest ancestor of birds. According to the dates of root layer, we can see warm and humid, lakes and marshes flocks, the vegetation lush, and frequent volcanic activity of Cretaceous period in western Liaoning and northern Hebei. The article analyses the characteristics and the palaeoenvironments of bird fossils by taphonomy, which current are in Sihetun museum and discovered there, so that we can know the way of their deaths. Firstly, bird fossil-bearing layer (37 m) is a thick group of volcanic interbed, volcanic was activated from 133 to 120Ma ago. Diagenesis preserved bird bones, patterns, feathers and so on, from which we can determine these fossils have been buried in volcanic ash quickly and be conserved in situ. Secondly, the distance between *Sinosauropteryx* fossil layer and the *Archeopteryx* fossil layer is only 5.5 m, the *Archeopteryx* fossil layer and *Confuciusornis* fossil layer is 8.5 m. It means that there is probability for us to discover the direct ancestors of birds under the layer of *Sinosauropteryx* fossil-bearing beds of this group. Thirdly, by measuring, *Psittacosaurus* (No.1 fossil) long axis direction is 94˚; two birds fossil in one stone (No.2 fossil) long axis direction is 78˚; the *Confuciusornis* (No.3 fossil) long axis direction is 84˚; the *Confuciusornis* (No.4 fossil) long axis direction is 85˚; the *Confuciusornis* (No.5 fossil) long axis direction is 112˚; *Psittacosaurus* (No.6 fossil) long axis direction is 133˚; the *Confuciusornis* (No.7 fossil) long axis direction is 94˚; which showed the state of collective escape by fauna. In a word, it shows a state of animals fleeing and buried in one particular geological event. Recovery plan can rebuild the palaeoenvironments and the activities of a lot of early birds and mammals escaped to 84˚-133˚ direction due the volcano eruption which lived in this ancient lake area that was conserved in Yixian group in Early Cretaceous at 126-125 Ma. As a result, we can learn that frequent volcanic activity induced the destruction of beings of the area in Early Cretaceous; on the other hand, it speeded the changes of environment, provided a platform for biological evolution, So that the evolution characteristic of local species is sudden switch in birthmutate and extinct. Of course, there is also another explanation which it is nothing about the Geological Events but only the birds died out-of-order and conserved to be fossils in short time.

Key words: *Sinosauropteryx*; palaeoenvironments; Early Cretaceous; Jehol Biota; taphonomy.