

# New forms of dinosaur eggs (Dictyoolithids) found

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Fig.1 *Paradictyoolithus zhuangqianensis*, from Upper Cretaceous Chichengshan Formation, Zhuangqian, Tiantai County, Zhejiang Province of China. Credit: WANG Qiang

Paleontologists from the Institute of Vertebrate Paleontology and Paleoanthropology (IVPP), Chinese Academy of Sciences, collected some dinosaur eggs of the oofamily Dictyoolithidae from the Upper Cretaceous Chichengshan Formation in the Tiantai Basin of Zhejiang

Province. On the basis of general external shape, size, eggshell thickness, and eggshell composed of 3-4 superimposed slender shell units with a reticulate organization, researchers established a new oogenus and two oospecies, *Paradictyoolithus zhuangqianensis* oogen. et oosp. nov., and *P. xiaxishanensis* oogen. et oosp. nov., as reported in the January issue of *Vertebrata Palasiatica* 2013 (1).

The Upper [Cretaceous strata](#) of the Tiantai Basin consist of the Laijia Formation and the overlying Chichengshan Formation. The Laijia Formation is composed of lacustrine sediments such as red silty mudstones and granule conglomerates, with many layers of interbedded laminated tuffs. The Chichengshan Formation can be subdivided into two members. The lower member, which has yielded a large number of [dinosaur eggs](#) and bones, is composed of red conglomerates, sandstones, and silty mudstones with interbedded tuffs; whereas the upper member is composed of red conglomerates and [sandstones](#) interbedded with muddy siltstones. SIMS U-Pb zircon dating of the Laijia and Chichengshan formations indicated an age of 98–91 Ma, corresponding to the early Late Cretaceous (Cenomanian-Turonian).



Fig.2 *Paradictyoolithus xiaxishanensis*, from the Upper Cretaceous Chichengshan Formation, Xiaxishan, Tiantai County, Zhejiang Province of

China. Credit: WANG Qiang

Eggs of *Paradictyoolithus zhuangqianensis* is nearspherical, similar to those of *Dictyoolithus*, but the eggshell is composed of three or four superimposed shell units with a reticulate organization, and shell units connect to each other, forming a [honeycomb](#)-like structure in tangential section through the middle part of the eggshell. Therefore, these eggs are referred to a new dictyoolithid oogenus and oospecies.

Eggs of *Paradictyoolithus xiashanensis* is near-spherical, irregularly arranging in the nest. The eggshell composed of three or four superimposed shell units, and shell units are not fused near the outer surface, quite different from those eggs of *Paradictyoolithus zhuangqianensis*.



Fig.3 *Protodictyoolithus neixiangensis*, from the Upper Cretaceous Zhaoying Formation, Shibangou, Chimei, Neixiang County, Henan Province of China. Credit: WANG Qiang

The Dictyoolithidae is previously represented by one oogenus and four oospecies, *Dictyoolithus hongpoensis*, *D. neixiangensis*, *D. jiangi*, and *D. gongzhulingensis*, all of which are known exclusively from the Cretaceous of China. As previous descriptions of the dictyoolithid eggs are brief due to the scarcity of materials for comparison, researchers re-examined the holotypes of the four oospecies, and established a new oogenus *Protodictyoolithus*, and propose only *D. hongpoensis* belong to the *Dictyoolithus*, the other that three species of *Dictyoolithus* should be reassigned to *Protodictyoolithus neixiangensis* comb. nov., *P. jiangi* comb. nov. and *Similifaveoolithus gongzhulingensis* comb. nov., respectively.



Fig.4 Protodictyoolithus jiangi, from the Lower Cretaceous Quantou Formation, Liufangzi, Gongzhuling City, Jilin Province of China. Credit: WANG Qiang

"The newly discovered dinosaur eggs are very important for understanding the composition of the Tiantai dinosaur eggs oofauna and providing new materials to study the eggshell formation and evolution of the dinosaur eggs in the Cretaceous", said first author WANG Qiang of the IVPP.

**More information:** [www.ivpp.cas.cn/cbw/gjzdwxb/xb...0130131\\_3759376.html](http://www.ivpp.cas.cn/cbw/gjzdwxb/xb...0130131_3759376.html)

Provided by Institute of Vertebrate Paleontology and Paleoanthropology

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