

# Mum and dad Theropod dinosaurs shared the work, research shows

May 15 2013

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Fossilised dinosaur egg, Arizona, USA

(Phys.org) —Research into the incubation behaviour of birds suggests the type of parental care carried out by their long extinct ancestors.

The study aimed to test the hypothesis that data from extant birds could be used to predict the [incubation](#) behaviour of Theropods, the group of [carnivorous dinosaurs](#) from which birds descended.

The paper, out today in *Biology Letters*, was co-authored by Dr Charles Deeming and Dr Marcello Ruta from the University of Lincoln's School of Life Sciences and Dr Geoff Birchard from George Mason University, Virginia.

By taking into account factors known to affect egg and clutch size in

living [bird species](#), the authors – who started their investigation last summer at the University of Lincoln's Riseholme campus – found that shared incubation was the ancestral incubation behaviour. Previously it had been claimed that only male [Theropod dinosaurs](#) incubated the eggs.

Dr Deeming said: "In 2009 a study in the journal *Science* suggested that it was males of the small carnivorous dinosaurs Troodon and Oviraptor that incubated their eggs. Irrespective of whether you accept the idea of Theropod dinosaurs sitting on eggs like birds or not, the analysis raised some concerns that we wanted to address. We decided to repeat the study with a larger data set and a better understanding of bird biology because other palaeontologists were starting to use the original results in *Science* in order to predict the incubation behaviour of other [dinosaur species](#). Our analysis of the relationship between female body mass and clutch mass was interesting in its own right but also showed that it was not possible to conclude anything about incubation in extinct [distant relatives](#) of the birds."

Palaeobiologist Dr Ruta was involved in mapping the parental behaviour in modern birds on to an [evolutionary tree](#).

Dr Ruta said: "As always in any study involving fossils, knowledge of extant organisms helps us make inferences about fossils. Fossils have a unique role in shaping our knowledge of the Tree of Life and the dynamics of evolutionary processes. However, as is the case with our study, data from living organisms may augment and refine the potential of fossil studies and may shift existing notions of the biology and behaviour of long extinct creatures."

The project has helped in understanding the factors affecting the evolution of incubation in birds. More importantly it is hoped that the new analysis will assist palaeontologists in their interpretation of future finds of dinosaur reproduction in the fossil record.

**More information:** Evolution of parental incubation behaviour in dinosaurs cannot be inferred from clutch mass in birds, *Biology Letters* [rsbl.royalsocietypublishing.org ... .1098/rsbl.2013.0036](https://royalsocietypublishing.org/doi/10.1098/rsbl.2013.0036)

Provided by University of Lincoln

Citation: Mum and dad Theropod dinosaurs shared the work, research shows (2013, May 15)  
retrieved 26 April 2024 from <https://phys.org/news/2013-05-mum-dad-theropod-dinosaurs.html>

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