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## Research interests

Mass extinctions act as big reset buttons for ecosystems globally, and none was bigger than that across the Permian–Triassic boundary at 252 million years ago. Following this event many newly-evolved groups took advantage and diversified into new ecosystems: this is when some of the first marine reptiles evolved and quickly came to dominate the oceans. While the actors in the oceans were different, how did the building of marine ecosystems change across this mass extinction?

I'm interested in problems associated with major transitions, such as at mass extinctions or with the evolution of novel features and ecologies. The rapid evolution and diversification of marine reptiles from the beginning of the Triassic period is a key opportunity to study several different groups that evolved different traits as a solution to the problem of life in the water. I am researching how these new traits evolved, when and how quickly; how different groups diverged and modified to suit their particular ecology, and formed ancient ecosystems; and what groups 'rediscovered' similar solutions to their aquatic niche through convergent evolution. Key groups that I study include ichthyosaurs, sauropterygians, and fishes, using observational palaeontology and comparative phylogenetic techniques.

## Research output

### **Early high rates and disparity in the evolution of ichthyosaurs**

Moon, B. C. & Stubbs, T. L., 13 Feb 2020, In : *Communications Biology*. 3, 8 p., 68 (2020).

### **Convergence and functional evolution of longirostry in crocodylomorphs**

Ballell, A., Moon, B. C., Porro, L. B., Benton, M. J. & Rayfield, E. J., 1 Nov 2019, In : *Palaeontology*. 62, 6, p. 867-887 21 p.

### **Effects of body plan evolution on the hydrodynamic drag and energy requirements of swimming in ichthyosaurs**

Gutarra Diaz, S., Moon, B., Rahman, I., Palmer, C., Lautenschlager, S., Brimacombe, A. J. & Benton, M., 13 Mar 2019, In : *Proceedings of the Royal Society B: Biological Sciences*. 286, 1898, 9 p., 2786.

### **Does exceptional preservation distort our view of disparity in the fossil record?**

Flannery Sutherland, J. T., Moon, B., Stubbs, T. & Benton, M., 27 Feb 2019, In : *Proceedings of the Royal Society of London B: Biological Sciences*. 286, 1897, 10 p., 20190091.

### **Ichthyosaurs of the British Middle and Upper Jurassic. Part 2. Brachypterygius, Nannopterygius, Macropterygius, and Taxa invalida**

Moon, B. & Kirton, A. M., 2018, In : *Monograph of the Palaeontographical Society*. 172, 650, p. 85-176 92 p.

### **A new phylogeny of ichthyosaurs (Reptilia: Diapsida)**

Moon, B. C., 11 Dec 2017, In : *Journal of Systematic Palaeontology*. p. 1-27 27 p.

### **Ichthyosaurs of the British Middle and Upper Jurassic. Part 1 - *Ophthalmosaurus***

Moon, B. C. & Kirton, A. M., 30 Nov 2016, *Monograph of the Palaeontographical Society*, 170, 647, p. 1-84 84 p.

### **The skull and endocranium of a Lower Jurassic ichthyosaur based on digital reconstructions**

Marek, R. D., Moon, B. C., Williams, M. & Benton, M. J., 1 Jul 2015, In : *Palaeontology*. 58, 4, p. 723-742 20 p.

### **The fossil record of ichthyosaurs, completeness metrics and sampling biases**

Cleary, T. J., Moon, B. C., Dunhill, A. M. & Benton, M. J., 1 Jan 2015, In : *Palaeontology*. 58, 3, p. 521-536 16 p.

**A new species-level phylogeny of the Ichthyopterygia and analysis of macroevolutionary trends**  
Moon, B. C., Nov 2014, p. 190–191.

## **Activities**

### **Society of Vertebrate Paleontology Annual Meeting 2017**

Benjamin C Moon (Participant)  
26 Aug 2017

### **Journal of Vertebrate Paleontology (Journal)**

Benjamin C Moon (Peer reviewer)  
2017 → ...

### **Journal of Systematic Palaeontology (Journal)**

Benjamin C Moon (Peer reviewer)  
2016 → ...

### **Progressive Palaeontology**

Benjamin C Moon (Speaker)  
22 May 2014

### **Acta Palaeontologica Polonica (Journal)**

Benjamin C Moon (Peer reviewer)  
2014 → ...

### **Adventures in ichthyosaur evolution**

Benjamin C Moon (Speaker)  
13 Nov 2013

### **Symposium of Vertebrate Palaeontology and Comparative Anatomy**

Benjamin C Moon (Speaker)  
29 Aug 2013