

Review of Dr Daniel Field's 'Birdwatching through Geological Time'

11th February 2021

Daniel joined us from the Department of Earth Sciences, the University of Cambridge

<http://danieljfield.com/Home/People.html> and started his presentation by mentioning that he missed the wonderful topography of the south west having previously been at the University of Bath. He was disappointed that he couldn't be with us in person but also because he would have loved to have seen the Northern mockingbird that has been an unexpected visitor to Exmouth this last week.

<https://www.birdguides.com/articles/britain-ireland/britains-third-northern-mockingbird-found-in-devon/> However as Daniel had videoed this bird in the USA we were fortunate to see and hear its beautiful song 'A striking songster' as Daniel described it.



Throughout his presentation Daniel showed us a series of informative charts, diagrams, photos <https://www.flickr.com/photos/131708321@N02/> and artwork that illustrated his complex work very well. <https://www.esc.cam.ac.uk/directory/daniel-field> As Daniel explained, the last decade has seen major strides in assembling a living bird tree of life, essentially a family tree giving us a comprehensive picture of the evolution of birds. He went on to emphasise the importance of understanding how it is that 200 major species of living birds sampled from across the living diversity of bird life are related to each other.

It was clear that Daniel's studies in zoology, palaeontology and geology had helped him to arrive at the point where he and other scientists could examine a large amount of genetic data from living birds and use the fossil records and recent discoveries to calibrate the rates of genetic change.

In Lockdown and having focussed on recent times over the last year it was fascinating to hear Daniel's descriptions of the dramatic change brought to planet Earth by the devastating impact of an asteroid impact, 66 million years ago. Whilst this was clearly catastrophic for tyrannosaurus and other dinosaurs not all life was destroyed.

Via colourful charts and clear explanations we were presented with plenty to think about, such as what had influenced bird evolution; for the ostriches and relatives (60 living species), chicken like birds (300 living species), duck like birds (177 living species) and all other birds (10, 240 living species). We could see via the detailed graphs and charts that Daniel and his fellow scientists needed to prepare to back up their theories that small body size was a major factor in evolution.

As I explained in my introduction I was delighted that Daniel had agreed to deliver his presentation to our u3a as I was sure that members would be fascinated and impressed by his discovery of 'Wonderchicken' (Asteriornis) <https://wserv4.esc.cam.ac.uk/online-exhibitions/index.php/Shorthand/dawn-of-the-wonderchicken-2/>



No doubt because of his comprehensive studies, impressive knowledge, amazing experience and passionate interest in evolution Daniel and fellow researchers recognised the significance of a tiny piece of nondescript rock discovered near the border between Belgium and the Netherlands. It contained a tiny and almost perfect skull from the oldest direct relative of modern birds ever discovered. With the help of a modern high resolution scanner Daniel and his team built up a 3D picture of the skull and we could see that this was a ground breaking discovery of a creature with features similar to both ducks and chickens. Daniel was modest in his delivery and expressed his thanks to his team but we all knew that this was something to be proud of and an

extraordinary find of major significance across the world. Altogether we were privileged to hear Daniel's enthralling presentation. Thank you Daniel.

Daniel is donating his fee to research in the laboratory at the Department of Earth Sciences.

Review by Christine Chittock, Chairperson and Speakers' Coordinator,