The PESGB’s national public outreach initiative

Why Dinosaurs Matter
With Professor Ken Lacovara

8-15 April 2017
Kenneth Lacovara has unearthed some of the largest dinosaurs ever to walk our planet, including the supermassive Dreadnoughtus, which at 65 tons weighs more than seven T. rex. In his quest to understand these titanic creatures that strain the human imagination, Lacovara blends exploration in remote locations across the globe with the latest imaging and modeling techniques from engineering to medicine. When he’s not excavating fossils in far-flung locations, Lacovara works on the cutting edge of applying 21st-century technology to the study of dinosaurs. By using 3D imaging, 3D printing, robotics, and medical modeling techniques, his work is helping to shift our perspective of giant herbivorous dinosaurs from their historic portrayal as hapless lumbering prey to that of fearsome, hulking, hyper-efficient eating machines that deserve our awe and respect.

Lacovara led the effort to create the Rowan University Fossil Park in New Jersey. Within its quarry, Lacovara and his team are using a globally important cache of 65 million year old fossils to shed light on the calamitous events that wiped out the dinosaurs and helped shaped the modern world. As a community inspired park, Lacovara’s vision is to create a center for citizen science that connects people to their ancient past and fosters pathways into the STEM disciplines for students of all ages and backgrounds.

A popular public speaker, Lacovara enjoys sharing the wonders of science and discovery with audiences around the world. He has appeared in numerous television documentaries and his discoveries have landed him three times in Discover magazine’s 100 Top Science Stories of the year and in Time’s Top Stories of 2014. Lacovara was named by Men’s Journal as one of the The Next Generation of Explorers and he is an elected fellow of the prestigious Explorers Club in New York.

Kenneth Lacovara earned his Ph.D. in Geology from the University of Delaware. He is the founding Dean of the School of Earth & Environment at Rowan University and Director of the Rowan Fossil Park.
Why study the ancient past? Because it gives us perspective and humility. It’s the past that gives our world context. And it’s the past that gives us foresight.

Dinosaurs were tiny, and huge. They were skittish and ferocious. Fast and slow. Runners, walkers, climbers, flyers, and sometimes swimmers. They were solitary and gregarious. Nocturnal and diurnal. Meat-eaters and plant-eaters. Hunters, scavengers, grazers, and browsers. They were drab, colourful, scaled and feathered. But, most of all, they were astoundingly adaptable.

Dinosaurs dominated every continent and were thriving the day before their demise. Snuffed out by an asteroid, along with 75% of species on the planet, their sudden extinction emphasizes the contingent nature of Earth history. Over geological time, improbable, nearly impossible events do occur. By studying the ancient past, we begin to see ourselves as part of nature, connected across deep time to all other living things.

After 165 million years, the dinosaurs died in the world’s fifth mass extinction, wiped out in a cosmic accident, through no fault of our own. They didn’t see it coming and they didn’t have a choice. We, on the other hand, do have a choice and the nature of the fossil record tells us that our place in this world is both precarious and potentially fleeting. Right now, our species is propagating an environmental disaster of geological proportions that is so broad and so severe, that it can rightly be called the sixth extinction. But, unlike the dinosaurs, we can see it coming. And, unlike the dinosaurs, we can do something about it. That choice is ours.
Collect your own fossils on this family field trip led by Dr Andrew Racey in the Kimmeridge area of Dorset, famed for both its oil bearing Kimmeridge Shale and abundance of sea life fossils.

**DORSET**

**Saturday 8 April, 13.00-17.00**
Kimmeridge Bay & Lulworth Cove Field Trip
FREE, but booking essential
Family-friendly event

Register for field trip and evening event at: eventbrite.co.uk/e/geoliteracy-festival-kimmeridge-bay-and-lulworth-cove-family-field-trip-and-the-etches-collection-tickets-29778379936

**Saturday 8 April, 17.00-19.00**
The Etches Collection, Museum of Jurassic Marine Life
FREE, but booking essential
Family-friendly event

Or just register for the evening event at: eventbrite.co.uk/e/geoliteracy-festival-the-etches-collection-museum-talk-and-reception-tickets-29819616275

**WIN the chance to dine with Ken and Steve at The Castle Inn at 8pm ...watch this space**

In conversation with Steve Etches

It was long thought that the local Kimmeridgian clays had little to yield by way of evidence via well-preserved fossils. A belief that was changed by the amazing discoveries of Steve Etches, local to Kimmeridge, fossil collector and expert who over the last 30 years, has discovered, collected and researched over 2000 incredible late Jurassic Kimmeridgian specimens. An achievement that has resulted in a collection of the most extensive and finest fossil specimens ever found in the Kimmeridgian Clay Formation. The Etches Collection is the result of one man’s passion. Over 30 years of discovery and diligent research, dogged determination not just to find and collect specimens, but also to bring to life the amazing stories of the creatures that existed in the Kimmeridgian age.

During the visit inside the new purpose built home of the Etches Collection enjoy some well-earned drinks and nibbles whilst listening to Ken Lacovara and Steve Etches discuss a shared passion in discovering Fossils.

Following this ‘in conversation event’ you will be welcome to stay and enjoy the hospitality while chatting to our speakers.

**ACTIVITIES TO INCLUDE**

For 5 and under:
Little Explorer Day Dinosaur Storytelling Session & Activities including dig pits

Family show:
‘Giants of the Past’ – this hands-on show will look at the science behind the fossils and how scientists have discovered them

Fossil Roadshow

Make your own Fossil Workshop
**DORSET**

**Why Dinosaurs Matter...**
in Lyme Regis

**PESGB KEITH PALMER LECTURE**

**Why Dinosaurs Matter...**
in Birmingham

Hosted by Alice Roberts

**EDINBURGH**

**Why Dinosaurs Matter...**
in Edinburgh

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**ABERDEEN**

TED Talk Screening & Live Q&A
Hunting for dinosaurs showed me our place in the universe

**TED**

IDEAS WORTH SPREADING

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**BIRMINGHAM**

**FREE, but booking essential**

**Public event**

Register at:
eventbrite.co.uk/e/geoliteracy-festival-lyme-regis-tickets-29779384942

Register at:
eventbrite.co.uk/e/geoliteracy-lap-worth-museum-of-geology-tickets-29788841226

Register coming soon...

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eventbrite.co.uk/e/geoliteracy-festival-lyme-regis-tickets-29779384942

Register at:
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Register not required
The Stoneley Lecture Series is the PESGB’s flagship outreach event which was established in 2011 with the aim of raising the profile of geology and earth sciences in the public consciousness.

Professor Lacovara follows a line of engaging speakers who are leading figures in the communication of scientific and technical material, including; Professor Iain Stewart, Hugh Denis, Dallas Campbell, Sir Tony Robinson and Lord Robert Winston.

The Stoneley Lecture Series is named in honour of Professor Bob Stoneley (1929 – 2008), eminent geologist and educator and an Honorary Member of PESGB.

### LONDON

📅 Tuesday 11 April, 18.30
📍 Cavendish Conference Centre
💰 £15, includes drinks reception
👥 Public event

Register at: eventbrite.co.uk/e/pesgb-stoneley-lecture-2017-tickets-29787885367

### ABERDEEN

📅 Friday 14 April, 18.30
📍 Aberdeen Science Centre
💰 £10, includes drinks reception
👥 Public event

Register at: eventbrite.co.uk/e/pesgb-stoneley-lecture-2017-aberdeen-tickets-30885106184

The PESGB are proud to announce the next lecture and date to continue our Stoneley Lecture Series in memory of Professor Robert Stoneley.

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*Adventurous geologist who made perilous expeditions in search of oil and enthused his students with his passion for discovery.*

(The Times, Newspaper, 17 October 2008)

*Earth, Exploration & Excitement: travels in modern geology* by Professor Iain Stewart

Tuesday 13 March 2012

Central Hall, Westminster, London

Doors open at 6pm, Lecture will start at 6.30pm

Iain Stewart is professor of Geoscience Communication at the University of Plymouth. He is also a television and radio presenter, and has worked on a variety of programmes such as ‘Journeys From the Centre of the Earth’, ‘Earth: The Power of the Planet’, ‘Hot Rocks’, ‘The Climate Wars’ and ‘How Earth Made Us’.

His more recent work includes; ‘Making Scotland’s Landscape’, shown on BBC One in late 2010 and; ‘Men Of Rock’, a television series about pioneering geologists in Scotland.

Registration Open

Book now to reserve your place.

Tickets cost £15 and £5 for students* (proof of status will be required on the evening)
New tricks for old bones
The study of Dreadnoughtus schrani—a massive titanosaurian sauropod dinosaur from the Upper Cretaceous of southern Patagonia—insights from bone histology, biomechanics, and molecular paleontology

Dreadnoughtus schrani is a new species of supermassive dinosaur from southern Patagonia, Argentina. At 26 m long and weighing about 59,300 kg in life, Dreadnoughtus is the largest land animal for which a body mass can be accurately calculated. It weighed as much as a dozen African elephants or more than seven T. rex. Surprisingly, skeletal evidence shows that when this 60-tonne specimen died, it was not yet full grown.

Dreadnoughtus is known from exceptionally complete skeletal remains, with over 70 percent of the bones, excluding the head, represented. Because all previously discovered super-massive dinosaurs are known only from relatively fragmentary remains, Dreadnoughtus offers an unprecedented window into the anatomy and biomechanics of the largest animals to ever walk the Earth. For example, Argentinosaurus was of a comparable and perhaps greater mass than Dreadnoughtus, but is known from only a half dozen vertebrae in its mid-back, a shinbone and a few other fragmentary pieces; because the specimen lacks upper limb bones, there is no reliable method to calculate a definitive mass of Argentinosaurus. Futalognkosaurus was the most complete (27%) extremely massive titanosaur known prior to Dreadnoughtus, but is known from only a half dozen vertebrae in its mid-back, a shinbone and a few other fragmentary pieces; force of muscles that the animal had and where they attached to the skeleton – information that is lacking in many sauropods.

With a body the size of a house, the weight of a herd of elephants, and a weaponized tail, Dreadnoughtus would have feared nothing. The name refers to the turn-of-the-last century battleship the H.M.S. Dreadnought, which was huge, thickly clad and virtually impervious to existing technology.

Rapid burial in liquifaction crevasse-splay deposits resulted in both the extraordinary skeletal completeness of Dreadnoughtus and the exquisite preservation of its bones, including finely detailed muscle insertion scars. Efforts are underway in the Lacovara Lab to understand this dinosaur’s body structure, growth rate, and biomechanics.

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LONDON

Monday 10 April, 12.30-14.00
Natural History Museum
FREE, but booking essential
Academic event

Register at: eventbrite.co.uk/e/geo-literacy-london-natural-history-museum-tickets-29785037850
The Petroleum Exploration Society of Great Britain was established in 1964 by a group of like-minded professionals keen to create a community of geoscientists for networking and sharing ideas. Over 50 years on, we have a membership of over 5000 individuals, active in all six continents.

The Society’s objective ‘to promote, for the public benefit, education in the scientific and technical aspects of petroleum exploration’ is achieved by a variety of means including; lectures, field trips, the monthly magazine, special interest groups and regular conferences and events. As part of our charitable objective we have a growing programme of disbursements and outreach projects. We have donated over £2m supporting various educational projects including; school-based education, university support and public engagement.

pesgb.org.uk
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