



2013 Hadyn Ellis Distinguished Lecture

Sir David Attenborough

————— OM, CH, CVO, CBE, FRS —————

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Wallace and the Birds of Paradise  
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# Welcome

It is a pleasure to welcome you to the sixth annual Hadyn Ellis Distinguished Lecture. I am sure you are looking forward as much as I am to hearing Sir David Attenborough, Britain's best-known, and I think it is safe to say, best-loved, natural history broadcaster, speak about Wallace and the Birds of Paradise.

The Distinguished Lecture Series commemorates Professor Hadyn Ellis (1945-2006), who for more than two decades helped to establish Cardiff as one of the leading research universities in the UK and, in 2004, was awarded a CBE for his contributions to higher education.

An internationally distinguished psychologist in his own right, he undertook many leadership roles at the University, including Deputy Vice-Chancellor and Pro Vice-Chancellor for Research. Professor Ellis also served as Head of the School of Psychology for 13 years.

The lectures which carry his name are now firmly established as a highlight of the University calendar, previous speakers having included Lord Puttnam of Queensgate, Sir Ranulph Fiennes, and Mrs Mary Robinson, the former President of Ireland.

Sir David's lecture will explore the work of Welsh naturalist Alfred Russel Wallace, whose pioneering observations of birds of paradise were a crucial element of the theory of evolution by natural selection.

I have no doubt that we can look forward to a stimulating, entertaining and informative evening. This evening's lecture has been kindly supported by The Waterloo Foundation.

We are delighted that all proceeds from ticket sales for this evening's lecture will go towards the creation of the Alfred Russel Wallace Travel Prize. Wallace was one of the greatest of all field naturalists and it is fitting that a prize for travel and fieldwork bears his distinguished name. The prize will be awarded to an undergraduate of the School of Earth and Ocean Sciences who submits the best proposal for a travel or fieldwork project.

**Professor Colin Riordan**  
President and Vice-Chancellor





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# Sir David Attenborough OM, CH, CVO, CBE, FRS

Sir David Attenborough OM, CH, CVO, CBE, FRS is Britain's best-known natural history film-maker. His career as a naturalist and broadcaster has spanned nearly five decades, and he has produced several landmark BBC series, which have introduced millions of people to the wonders of the natural world.

Born in London in 1926, and educated at Clare College, Cambridge, he joined the BBC as a trainee in 1952 and launched the first of his influential Zoo Quest series in 1954.

In 1965, he became Controller of BBC2, and after four years, during which the channel became the first in Europe to broadcast in colour, he was appointed Director of Programmes, responsible for both BBC TV channels.

He resigned in 1973 to return to programme making, and in 1976 began work on the first of his major projects, Life on Earth, which aired in 1979.

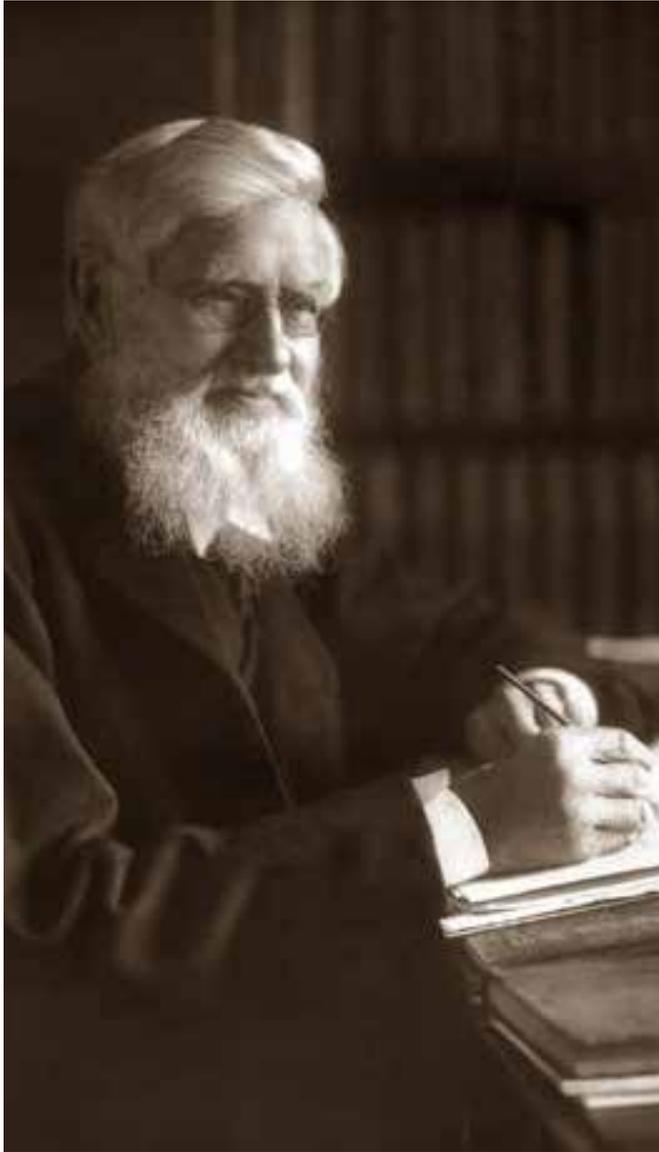
He followed this with other landmark series, The Living Planet (1984), The Trials of Life (1990), The Private Life of Plants (1995), Life of Birds (1998), Life of Mammals (2002), Life in the Undergrowth (2005), and Life in Cold Blood (2008).

Sir David's lecture will centre on archival film about Welsh naturalist Alfred Russel Wallace's ocean voyage to the Malay Archipelago and his pioneering observations of the bird of paradise. Sir David has described Wallace as "one of the greatest of all field naturalists".



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# Alfred Russel Wallace



Alfred Russel Wallace was one of the great naturalists of the 19th century and is regarded as the period's leading expert on the geographical distribution of animal species.

He was also a prolific author, an explorer and social critic – and was indeed one of the most famous people in the world at the time.

Today he is best known for independently conceiving the theory of evolution by natural selection, which prompted Charles Darwin to publish *On the Origin of Species*.

Born in Llanbadoc near Usk on January 8th 1823, he died on November 7th 1913. The University is marking the centenary of his death with a series of special events, starting with this Hadyn Ellis Distinguished Lecture.

Wallace conducted extensive fieldwork, first in the Amazon River basin and then in the Malay Archipelago, where he identified the Wallace Line that divides the Indonesian archipelago into two distinct parts: northern in which the animals are largely of Asian origin, and southern where the origins are Australasian.

As one of the leading evolutionary thinkers of the 19th century, he made significant contributions to the development of evolutionary theory, including the concept of warning colouration in animals, and the Wallace effect - a hypothesis that natural selection can contribute to the reproductive isolation of incipient species by evolving barriers against hybridization.

Away from science, Wallace was an advocate of spiritualism and a critic of many aspects of the social and economic system at the time. He was also one of the first prominent scientists to raise concerns about man's impact on the environment.

A lecture theatre in the University's Main Building is named in honour of Wallace.



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# In Wallace's footsteps...

Cardiff University research in evolution, biodiversity, environment and environmental conservation is tackling global issues and enhancing our understanding of the natural world.

Cardiff scientists have identified a collapse in the variety of mating partners as the reason India's tigers are facing extinction.

Researchers compared genetic data from modern tigers with tigers shot during the British Raj (1858-1947). With unprecedented access to the Natural History Museum of London's tiger collection, scientists identified a very high number of DNA variants in the tigers shot during the British Raj - 93% of which were not present in the Indian tigers of today.

Researchers at the Cardiff School of Biosciences found that genetic diversity has been lost dramatically compared to the Raj tigers and that what diversity remains has become much more subdivided into the small (20 - 120 individual) populations that exist today.

This lack of genetic diversity can be explained by the loss of habitat and habitat fragmentation, meaning lower population sizes, and the prevention of tigers from dispersing as they once would have, which means their gene pool is no longer mixing across the subcontinent. Tigers need genetic diversity to survive – especially under climate change.



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Scientists at Cardiff University have made a major breakthrough in understanding how the Peregrine and Saker falcons evolved to become ultimate predators.

The falcons' genome sequences have shown that the birds underwent a rapid genome-wide evolutionary change in order to become successful hunters. Falcons take extreme risks in order to survive, constantly living life on the edge.

Professor Mike Bruford of the Cardiff School of Biosciences, explained: "This is the first time birds of prey have had their genomes sequenced and our research shows that under strong selection pressures, Peregrines have had to adapt very rapidly to survive."

The genome sequences were obtained by scientists working at Cardiff's School of Biosciences and the Beijing Genomics Institute in China.

The sequenced genomes allow scientists to identify the genetic basis of what makes the Falcons unique. This is important not only for increasing our understanding of the evolution and biology of these iconic species, but also for the management of their health and conservation.

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## A major programme of Cardiff University research is exploring resilience in natural-social systems.

Researchers from the Sustainable Places Research Institute are investigating the sustainable management of natural landscapes in order that they may continue to deliver the services needed for human wellbeing, while also maintaining biodiverse and functional ecosystems.

Ensuring sustainable environments requires a new understanding of how physical, ecological and social processes are inter-related.

Interactions between these processes determine quality of life and how natural systems can function. Understanding their coupled relationship is vital for adaptive systems of management and governance that can ensure sustainability, despite increased pressure stemming from climate change, food security, and water scarcity.

In addressing these challenges, the team, led by Dr Isabelle Durance, is working at the interface between ecology, earth sciences and social sciences.

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## Cardiff University scientists work with Sabah Wildlife Department in Malaysia to establish a field centre in Borneo.

The Danau Girang Field Centre is a focus for biodiversity research and training and for field courses in tropical biodiversity assessment. Since opening in July 2008, the Centre has received field courses from universities in the UK, Germany and USA.

Its focus is on establishing long-term programmes on several species to provide insights into their ecology, density, behaviour and genetics in order to develop species distribution and habitat suitability models, and understand biological responses to rainforest fragmentation and oil palm monoculture.

The Centre's major programmes include work on elephants, carnivores, nocturnal primates, proboscis monkeys, crocodiles, and wildlife monitoring. It is also working on a number of other projects on orangutans, tree-shrews, banteng, monitor lizard, sea eagles, and hornbills.

The Centre's work has led to the implementation of Species Action Plans, for the Bornean orangutan and the Bornean elephant.



Copyright: Danau Girang Field Centre / Sabah Wildlife Department



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## The Waterloo Foundation

The Waterloo Foundation is an independent charitable Trust, based in Wales, with specific funding interests under four main programmes: World Development, Wales, Child Development and Environment.

Through its Environment fund, the Foundation supports projects which can help mitigate the damaging effects that humans are having on the environment. The fund has two main themes: Marine (support for projects working to halt declining fish stocks) and Tropical Forests (support for projects protecting tropical rain forest, principally through avoided deforestation).



### Size of Wales

The Waterloo Foundation has been a key supporter of the *Size of Wales* campaign since its inception in 2010. It aims to bring everyone in Wales together to help sustain an area of tropical forest the size of Wales as part of a national response to climate change.

*Size of Wales* encourages the people of Wales to take positive action and help protect an area of rainforest equivalent to the size of our nation.

On 1st March 2013 *Size of Wales* reached its initial target of raising £2M to help protect an area of rainforest equivalent to the size of Wales. Supporters of *Size of Wales*, of which Cardiff University is one, are linked directly to forest projects and communities assisting sustainable management of forest resources helping to reduce global carbon emissions.

*Size of Wales* is chaired by Peter Davies, Sustainable Futures Commissioner for Wales. The project has recently secured funding support from the Welsh Government, under their Wales for Africa and Climate Change programmes.

## Development and Alumni Relations

For more than 125 years, Cardiff University has tackled the biggest issues in society, through its research, teaching and public engagement.

The University makes a real difference to people’s lives by pushing back the frontiers of human knowledge across the academic disciplines from health to the environment to culture. The quality of our work is recognised by the support we receive from government agencies, international organisations and businesses.

However, we still rely on donations from individual and organisational supporters. More than 3,000 people have already supported us with gifts to help fund research, scholarships and facilities.

If you feel you could help us with a gift, no matter how small, or would like to learn more about our fundraising programme, visit [www.cardiff.ac.uk/giving](http://www.cardiff.ac.uk/giving) or contact our Development and Fundraising Office on 02920 876727, or email [donate@cardiff.ac.uk](mailto:donate@cardiff.ac.uk)

Cardiff University is a registered charity. No. 1136855



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## Postgraduate study at Cardiff

Cardiff University has a thriving postgraduate community of more than 7,000 students from more than 100 countries. Our three Colleges offer a variety of research and taught postgraduate programmes, including over 200 taught courses and 140 areas for postgraduate research across a wide range of subjects.

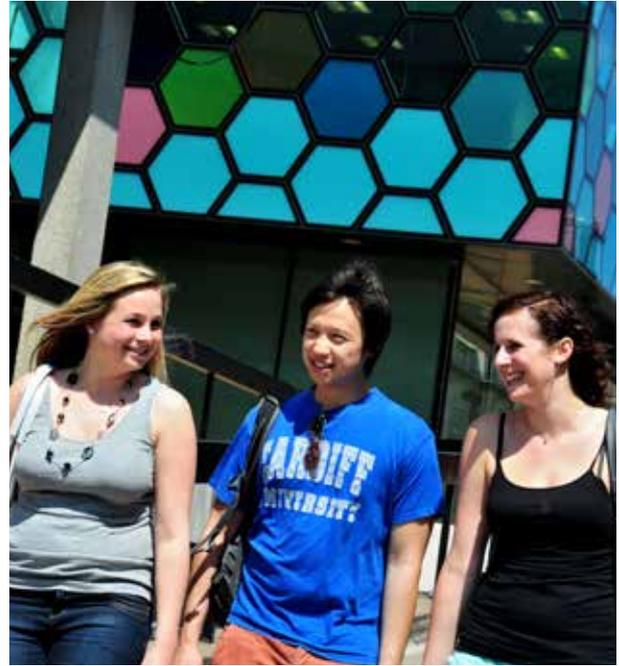
Postgraduate research students have the opportunity to work alongside and learn from leading researchers in their field, often on cutting-edge, interdisciplinary research, while our extensive and innovative portfolio of postgraduate taught programmes reflects the latest research and developments.

Many of our taught programmes provide the opportunity for flexible learning, from full-time and traditional part-time study to modular Continuing Professional Development courses and distance learning courses.

The University offers a number of competitive studentships, including more than 200 fully-funded PhDs per year and a range of scholarships for taught courses.

Our Graduate Centre provides a focal point for the broader taught and research community and hosts a programme of social events.

For further information on postgraduate study, visit:  
[www.cardiff.ac.uk/postgraduate](http://www.cardiff.ac.uk/postgraduate)



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## Discover more with Cardiff University

Cardiff University hosts public events throughout the academic year, ranging from public lectures to exhibitions and from open days to concerts. Events are usually free to attend, but it may be necessary to book in advance.

For information on forthcoming events, visit: [www.cardiff.ac.uk/events](http://www.cardiff.ac.uk/events)

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## Learn more about Wallace

### Wallace Lecture Series

The many aspects of Alfred Russel Wallace's work and life will be celebrated in a series of free lectures, hosted by the University's School of Earth and Ocean Sciences over the coming months. All lectures will be held in the Wallace Lecture Theatre in the Main Building at Cardiff University and will begin at 6.30pm. No advance booking is required. Further details can be found at [www.cardiff.ac.uk/earth](http://www.cardiff.ac.uk/earth)