



Press release

Science at the Natural History Museum

The Natural History Museum has been generating and sharing knowledge about the natural world for more than 250 years. We are a world leader on research into the burning issues facing humans and the planet. Through the collections we look after and the scientific expertise in our staff, we work with many organisations to inspire an understanding of the natural world, to help conserve its extraordinary richness and diversity, with groundbreaking projects in 68 countries.

Natural History Museum science explores natural diversity: the Earth as a planet, what organisms exist and how they interact, where they are and how diversity changes and develops. More than 300 scientists work here, tackling a diverse range of global problems such as threats to Earth's biodiversity, the maintenance of delicate ecosystems, the impacts of environmental pollution and human diseases. At the heart of our research is the description and classification of organisms and natural objects and the study of the relationships between them. The international collection of more than 70 million specimens – from meteorites and dinosaur fossils to Darwin's finches and the Thames whale – is vital to this research and is growing constantly.

There are five science departments: botany, entomology, mineralogy, palaeontology and zoology. Each is supported by a world-class library, creating an unparalleled resource for studying the natural world. Natural History Museum scientists cover two sites: South Kensington, where the majority of staff and collections are based and which includes the Darwin Centre, a state-of-the-art life sciences complex opened in 2009, and the Natural History Museum at Tring, where the bird group is based.

Museum of life

The Museum is an internationally renowned scientific infrastructure, used by thousands of scientists from all over the world each year. Scientists are able to use both collections and facilities to deliver research of global impact. Many thousands of items from the collection are sent on loan to other institutions for scientists in other countries to study.

- **Collections** – we care for one of the world's most important natural history collections, totalling more than 70 million specimens from almost all known groups of animals, plants, minerals and fossils. They represent the natural variation within and between groups and are windows to both the past and the future. They can tell us how the world might have looked millions of years ago, and can help us understand the changing environment, its effect on ecosystems and the humans who rely on them. The



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collections include a particularly high proportion of type specimens, which are the first specimens of that species to have been named, classified and described. When new research or applied science involves that species, the scientific validity of the original description is essential and scientists will refer back to the type specimen to review their findings or develop new understanding. The Museum's collections grew from those of Sir Hans Sloane, which formed the basis of the British Museum in 1753.

- **Facilities** – the Museum has comprehensive analytical, imaging and DNA-sequencing facilities that are used by staff and visiting scientists. New purpose-built laboratories are well-equipped with a wide range of modern, state-of-the-art instruments and are run by specialists experienced in preparing, analysing and interpreting a broad range of biological, mineralogical and other specimens.
- **Leading the field** – the Museum is the leading member of SYNTHESYS, a major nine-year EU-funded project involving 20 European natural history institutions. It aims to create an integrated European infrastructure for research in the natural sciences, and has greatly improved access to the collections, facilities and expertise held by the partners. SYNTHESYS is also setting standards for collections management and databases, and raising scientists' awareness of best practice.

Science in action

Museum scientists publish more than 500 research papers each year, reporting their findings from fieldwork and the laboratory, pushing forward the boundaries of human knowledge and collaborating to make scientific knowledge relevant. They are involved in hundreds of projects in 68 countries around the world, including:

- **Mosquito DNA barcoding** – up to 500 million people across the planet are infected with malaria each year. It causes more than a million deaths, and is only one of the devastating diseases transmitted by mosquitoes. New species of mosquito are found all the time, adding to the 3,500 species already recorded. DNA barcoding by Museum entomologists is proving to be the most accurate way to identify each, allowing scientists to know instantly which particular strain of disease it may carry and informing more effective disease-control programmes. In the past, scientists have relied on morphological identification, a difficult task when separating very similar species and so a barrier to the eradication of malaria.
- **The UK Whale and Dolphin Stranding Scheme** – the Museum has been monitoring whale strandings since 1913. Currently, between 250 and 550 whales, dolphins and porpoises (cetaceans) are washed ashore or stranded on the UK coast each year. They are a valuable data source to help build a picture of the distribution, biology and ecology of these marine mammals around our shores, and of the threats to their survival.
- **Human origins** – a variety of Museum research projects concern human evolution, major changes in behaviour and the ecological background to primate evolution. From plant and animal fossil information, our scientists can reconstruct past climates and changing ecologies to understand the interaction between mammal evolution and ancient environments. Museum scientists lead the Ancient Human Occupation of Britain projects, which bring together archaeologists, palaeontologists and geologists to build a calendar of the intermittent human presence in Britain from 1.8 million to 12,000 years ago, and which investigates Britain as an environment for early humans.
- **Flora Mesoamericana** – Central America is home to an enormous diversity of plants and animals, but these ecosystems are only partially understood and under threat, with new species and habitats being

discovered each year. By documenting and describing plant species that occur in Central America, collaboration between Museum researchers, the National Autonomous University of Mexico and the Missouri Botanical Garden is creating a comprehensive botanical information resource: the *Flora Mesoamericana*. The *Flora* equips scientists, conservationists, policy-makers and the public with tools to help them understand and conserve their local biodiversity.

- **NASA's Stardust mission** – when the *Stardust* space mission returned to Earth in 2006 it carried material from the comet Wild 2, the first sample from the outer solar system. Natural History Museum mineralogists have world-leading expertise in meteorite studies and have made key contributions to the study of this new material to uncover more about the origins of our solar system. We will also study material from future NASA missions.
- **UK Biodiversity Programme** – if, as a society, we are really committed to tackling the environmental challenges ahead, then scientists and the public need to face the future together. Thus, we are working to establish the first community-led study of the UK natural environment as part of a new nationwide partnership, Open Air Laboratories. We are inspiring and developing the next generation of naturalists and many Museum researchers are involved in a number of key projects as part of the national UK Biodiversity Action Plan. This work aims to focus conservation resources on those species most at risk.
- **European Distributed Institute of Taxonomy (EDIT)** – many of the world's leading natural history institutions, including the Natural History Museum, are working together to develop taxonomic knowledge. Funded by the EU, EDIT is a network of leading European and US institutions that are working to develop complementary research strategies, collaborative online platforms for taxonomy, common approaches to public communication and training, and other initiatives.

Enquiries and consulting

Museum scientists are renowned internationally for their specialist expertise. Identification and information services are available for scientists and the public on a worldwide range of animals, plants, minerals and fossils. Our experts are consulted by government and a broad range of clients, from mining companies and health authorities to customs officers and police forensic teams.

Natural History Museum science in numbers

- more than 300 scientists and research projects in 68 countries
- 70 million specimens including:
 - 28 million insects in 140,000 drawers, of which 8.7 million are butterflies and moths
 - 28 million zoology specimens, some from famous collectors such as Linnaeus, Darwin and Wallace
 - nine million palaeontology specimens with the oldest fossils dating back over 3,500 million years
 - 5.2 million plants, 10 per cent of which come from the British Isles
 - 405,000 mineralogy specimens, of which 198,000 are minerals and gems and 1,881 are meteorites
- 5,000 visiting scientists, who spend over 18,000 days a year using our collections and facilities
- 500 peer-reviewed papers published each year
- 150 postgraduate students
- three fellows of the Royal Society

Science at the Darwin Centre

The new Darwin Centre is a state-of-the-art life science complex and collections store, home to 22 million zoology specimens stored in alcohol, 17 million insects, three million plants and facilities for over 200 working scientists. The centre is a hub of scientific activity with curators and researchers working on vital research, using the vast specimen collections and high-tech laboratories.

In the new centre, the world's leading scientists work to increase our understanding of the natural world through the naming, identifying and investigation of the relationships of organisms – as many as 90 per cent of the world's species are yet to be named and classified. Scientists in the Darwin Centre will also concentrate on researching global and environmental change.

The centre has over 850 square metres of specialist laboratory space, adding significantly to the Museum facilities already in place. High-tech equipment will be used by teams of researchers in flexible open-plan workspaces.

With the addition of the Darwin Centre, over 60 per cent of the Museum's vast collection of 70 million items is now kept in world-class storage conditions, many inside an enormous eight-storey concrete cocoon at the heart of the building. The collections contain some of the world's most valuable and historic collections. From the cocoa collected by Sir Hans Sloane in Jamaica in the seventeenth century to malaria-carrying mosquitoes collected in 2009, they are crucial for research into disease, climate change and threats to Earth's biodiversity.

As well as expanding the Museum's role as a world leader in science research and communication, the new centre will protect our valuable collections and scientific work for future generations. Most of the specimens in the Darwin Centre are vital to our research such as fighting malaria and responding to climate change.

Darwin Centre in numbers

- over 200 scientists
- 17 million insect specimens
- 22 million zoology specimens
- 3.3km of cabinets, which if put end to end would stretch from the Natural History Museum in South Kensington to Westminster Abbey
- three million flowering plant specimens, 18 per cent of which come from the British Isles
- 140,000 drawers of insect specimens
- three million insects from the British Isles
- 300,000 type insect specimens

Ends

For more information and images, please contact the Natural History Museum Press Office:

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