A good week for fossil hunters

July 5 2010

Rare fossil of Archaeopteryx, the 'dino-bird', looked after at the Museum. It lived 147 million years ago and was a magpie-sized insect-eating bird with dinosaur-like features.

(PhysOrg.com) -- With the discovery of an extinct big-toothed sperm whale and possibly the earliest known examples of multicellular life, this week has been a good one for fossil hunters and experts, some of who are meeting at the International Palaeontological Congress (IPC) at the Natural History Museum and Imperial College in London until Saturday.

From the well-preserved feathered dinosaurs of China, to understanding how plants and animals coped with environmental change, a huge range of topics are being covered at the week-long meeting, attended by fossil

experts (palaeontologists) from around the world.

The Natural History Museum is the perfect place for such an event, being the home to the important Palaeontology Department and world-class fossil collection of 9 million specimens, including 1 very rare specimen of Archaeopteryx - the earliest known flying bird.

Museum palaeontologists help us understand fossil discoveries. Whether it is identifying a new species of dinosaur, or an old one in a new place, such as the first ever tyrannosaur in the southern continents.

And it is not all digging for dinosaurs, although they're the fossils that most easily stick in people's minds. Recently a wasp expert found the world's oldest fig wasp preserved in a 34-million-year-old fossil in the Museum's collections.

Part of the 110-million-year-old fossilised hip bone of an ancestor of T.rex uncovered in Australia © Dr Roger Benson, University of Cambridge

Fossils are the remains of long-dead organisms that are preserved in rock. They give clues about life in the past, and about the evolution of all life on Earth.

So, from the oldest fossils of microscopic bacteria, or bacteria-like organisms over 3 billions years ago, to plants and animals, large and small, there's a lot to study.

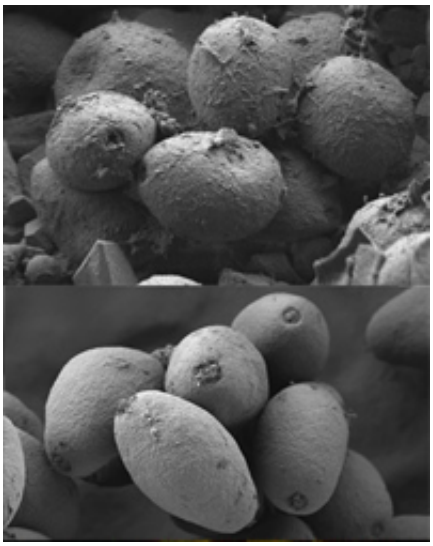
Research published in the journal *Nature* this week revealed some impressive fossils. Fossils from a 12-million-year-old sperm whale found in Peru were unveiled. The animal was a similar size to the ones living today, but had huge teeth, suggesting it was an aggressive predator of the oceans.

The second paper showed fossils from Gabon that were 2.1 billion years old. The scientists say they are the earliest examples of multicellular life.

Museum palaeontologists are experts at looking after and researching the fossil collections, often using cutting-edge technology.

They use scanning electron microscopy (SEM) to reveal the tiniest details of, for example, a new species and genus of Turkish diatom.

CT scans are used for looking inside hard tissues such as skulls and bones, producing 3D images. They can reveal, for example, how the oldest bird hears like an emu!



Scanning electron microscope images of pollen grains from the 34-million-year-old fossil fig wasp (top) and the modern fig (bottom) both at x1500 magnification.

And using laser techniques they can clean delicate specimens without the need for using chemicals. All these methods mean specimens can be studied without being damaged or destroyed.

Museum palaeontologists are also digitising fossil specimen collections that will make information more accessible, for example, by being able to publish it online.

Another area of palaeontology is the study of tiny fossil single-celled organisms called micropalaeontology. They can reveal important clues about past global environmental change, including climatic change and ocean acidification.

Palaeontologists have even been able to extract DNA from more recent fossils, such as the Neanderthals. They recently revealed the Neanderthal's genetic code that showed interbreeding with modern

humans.

So, as the IPC comes to an end and the fossil experts make their way home, we can wonder what treasures will be dug up next.

Provided by American Museum of Natural History