



Press information

Collections at the Royal Botanic Gardens, Kew

The Royal Botanic Gardens, Kew (RBG Kew) celebrates its 250th birthday in 2009. A tour through its behind the scenes collections is the perfect way to explore its long and distinguished past – and the vital role it will play in plant conservation in the UK and around the world for the next 250 years.

More than 1.35 million people pass through the gates of the Royal Botanic Gardens, Kew every year. They come to view the breathtaking displays of flowers and trees, take in exhibitions, admire the historic and cutting edge architecture and participate in colourful, seasonal events. But behind the scenes, and largely hidden from view, RBG Kew is a leading powerhouse for botanical scientific research, plant conservation and cataloguing the botanical world.

Almost every conservation project in the world that aims to protect plants and their habitats relies on the wealth of information that RBG Kew and its partner organisations have gathered over 250 years of study. These collections – which can be divided into living and genetic resource collections, preserved plant and fungal collections and documentary and visual reference collections – offer an opportunity to explore RBG Kew's rich history and heritage and its present day role in championing plant conservation and the sustainable use of plants in the UK and around the world.

The Herbarium

The Herbarium collection contains over seven million preserved plant specimens, representing 98 per cent of all the genera of the world. Tucked away from the public gaze, the Herbarium was founded in 1852 and is at the heart of all RBG Kew does. It houses a maze of cabinets where specimens are meticulously filed in systematic order, according to the characteristics of their flowers, leaves, stems, fruit and roots. RBG Kew's plant taxonomists – botanists who specialise in identifying, naming and classifying plants – constantly keep the collection up to date by studying, naming and curating existing and incoming specimens and researching the relationships and classification of plants. The collection held in RBG Kew's Herbarium underpins much of the botanical work conducted around the world. It also houses specimens collected by some of Britain's most esteemed scientists and explorers such as Charles Darwin, Joseph Hooker, David Livingstone, John Hanning Speke, Richard Spruce, and Ernest 'Chinese' Wilson.

The vast majority of the specimens are plants stored in dried form, mounted on stiff paper. In addition to dried and pressed plants, the Herbarium also includes a fleshy flowers and fruits **Spirit collection** – 70,000 specimens, preserved in fluid and stored in glass. Bulky plant parts that cannot be easily pressed, such as palm fronds, are dried and stored in boxes.

RBG Kew is committed to making this important collection more accessible to botanists and others around the world for use in their own research, particularly in biodiversity, conservation, sustainable development and systematics. To enable this, RBG Kew is building an electronic Herbarium catalogue of specimen images and information taken from their collection labels. In addition, Kew is heavily involved in large digitization projects such as the African Plants Initiative (API) and the Latin American Plant Initiative (LAPI). These

international collaborations will produce online databases for plants from Africa and Latin America respectively, making it possible to combine searches and access digitised material from collections held all over the world.

In 2009 a new wing of the Herbarium opens, creating an additional 40 years of specimen storage space.

For more information

Herbarium collection see www.kew.org/collections/herbcol.html

Electronic Herbarium catalogue see <http://apps.kew.org/herbcat/gotoHomePage.do>

The Spirit collection see www.kew.org/collections/spiritcol.html

Digitising collections see www.kew.org/data/herb_digitisation.html

Library, Art and Archives

The collection of letters, books, maps, journals, botanical art and illustrations, manuscripts and photographs is one of the premier and largest sources of botanical information in the world. They are working collections, used by RBG Kew's staff and visiting scientists, historians and art historians for research. Increasingly the collections are also accessed by designers and artists seeking inspiration. Some items extend beyond RBG Kew's 250 year history, with the oldest items in the Library being printed herbals, or plant books, dating from the 15th century and the early years of printing.

The curators of the Library, Art and Archives are responsible for **one of the largest collections of botanical art**, both prints and original arts works in various media, in the world. The collection totals some 200,000 items. It ranges in date from the great masters of botanical illustration, such as GD Ehret, PJ Redouté and the Bauer brothers in the 18th century through to Walter Hood Fitch and Marianne North in the 19th century. A high proportion of the originals prepared for *Curtis's Botanical Magazine*, the longest running 200 year old botanical periodical, also feature; together with 20th-century contributors such as Lilian Snelling, Stella Ross-Craig, Mary Grierson and Margaret Stones. Present-day artists represented include Christabel King, Ann Farrer and Pandora Sellars.

A small fraction of these art works is on display in **The Shirley Sherwood Gallery**, which opened its doors to the public on 19 April 2008. The Shirley Sherwood Gallery marks the first time RBG Kew has had a permanent space dedicated to exhibiting these precious, fragile art works in the right environmental conditions. The **Marianne North Gallery**, which is joined to The Shirley Sherwood Gallery by a linking gallery, is exclusively dedicated to the art of the intrepid, globe-trotting Victorian artist. The result of her epic journeys to far-flung corners of the world can be seen in the gallery named after her, when it opens to the public again in 2009. With the help of a £1,867,000 Heritage Lottery Fund grant, the gallery building and collection of 832 brightly coloured paintings, completed in 13 years of travel, will be restored and rejuvenated during Kew's 250th anniversary year.

The **Archives** contain the official records of RBG Kew, and the papers and correspondence of the many botanists who were sent on collecting expeditions on behalf of RBG Kew, gardeners and other individuals. They form a valuable resource on the history of the discovery, study, transfer and use of the world's plants and fungi. There is also a special section on the history and development of RBG Kew, called *Kewensia*. It includes books and news clippings about Kew and also holds a volume of poetry with the earliest published poem mentioning the Gardens.

The **Library's** main subject area is plant taxonomy, but it also contains material on specialised horticulture, horticultural history, and a collection of material on botanic gardens and garden history. There is also a collection of maps and travel literature relating to expeditions and regions of botanical importance.

For more information see <http://www.kew.org/library/about.html#colls>

Collections in the Jodrell Laboratory

Mycological collection

Founded in 1879, RBG Kew's mycological collection in the Jodrell Laboratory is one of the most important reference collections of fungi in the world and mycologists (fungi scientists) at Kew have carried out pioneering research on fungi for over a century.

From Antarctica to the tropics, more than 800,000 fungi from every part of the globe are represented in the collection – and it continues to grow at a rate of three to four thousand specimens every year.

The collection is backed by an unrivalled mycological library containing classical works, modern texts, and specialist journals. It is one of the most complete reference collections of literature on fungi to be found anywhere.

In addition, Kew is building a living collection of fungi for reference and research in its culture laboratories.

Despite the importance of fungi in pharmaceuticals, agriculture, biotechnology, food and soil science, only an estimated 5 % of species have been described – estimates suggest that over 1.5 million species of fungi exist. Vital work is being done by the mycology team at Kew to shed new light on these unknown species.

This lack of understanding can hinder conservation and restoration projects, since the types of plants which grow in an area are often dependent on the fungi present in the soil. This is true of about 80% of all plants.

It is not only the Jodrell Laboratory that is home to fungi at RBG Kew. Some 2,400 species are growing in the grounds of Kew Gardens.

For more information see www.kew.org/collections/fungi.html

Economic Botany Collection

The Economic Botany Collection (EBC) is a rich collection of more than over 83,000 plant based artefacts from around the world that illustrate the significant role plants have played in human culture and development. It is managed by RBG Kew's *Sustainable Uses of Plants* group in the Jodrell Laboratory. Medicines, clothing, weapons, jewellery, paper and musical instruments are just some of the items that feature in the vast, chilled storage room that is home to the EBC. A selection of these are on display in Kew's *Plants and People* exhibition.

The collection was founded by RBG Kew's first official director, Sir William Hooker, in 1847. The items in the EBC reflect the history of RBG Kew and the fascinating role it has played in the history of Britain and world economics.

The ECB is a global treasure chest with one of the world's finest wood collections (32,000 samples from 12,000 species); bottles of the finest essential oils; original samples of materials at the beginning of their trials for commercial and industrial production; crude drug specimens such as *Cinchona* (quinine) barks used in the treatment of malaria; and all manner of plant-based curiosities. They have come from companies and long-closed museums; from diplomats such as Sir Harry Parkes who, based in Japan in the late nineteenth century, made renowned collections of surprising items such as delicate hair

ornaments and water-proof coats fashioned from the bark of the paper mulberry tree; from explorers such as Richard Spruce who spent 15 years in the Amazon from 1849 and collected artefacts from local Indian tribes; from scientists such as Hooker himself and countless others, many of them famous names.

Contemporary, but perhaps fast disappearing objects from regions being researched by RBG Kew's own botanists are still being added to the EBC today.

For more information see www.kew.org/collections/ecbot/

Kew's Millennium Seed Bank

Kew's Millennium Seed Bank (MSB) is the largest wild plant seed bank in the world. Based at Wakehurst Place, Kew's sister site in West Sussex, the MSB is home to more than a billion seeds, each with the potential to become a plant. By 2010, it will contain seeds from around 30,000 (10%) of the world's wild flowering plant species as an insurance policy against loss of these species in the wild. The seeds are stored in an underground vault at -20°C . To access the vault, visitors have to don a protective suit.

Kew's Millennium Seed Bank has the capacity to store up to half the world's wild flowering plant species and already holds 96 per cent of the UK's flora. Species for collection and conservation are prioritised by the 123 organisations in Kew's Millennium Seed Bank Partnership: all are endangered, rare or of potential economic value.

But the idea is not to lock these seeds away. Where species have gone extinct, or are on the brink of disappearing, Kew's stores are used to replenish wild populations. Seed from Kew's MSB is currently being used in species re-introduction and habitat restoration programmes worldwide. Examples include the restoration of tall grass prairie in the USA; restoration and fire management of sand plain fynbos in South Africa; reintroduction of starfruit in the UK; and restoration of mined land in Australia and Madagascar.

Kew's MSB also ensures that seeds are made available for research in areas such as combating desertification; identifying plants that can tolerate high salt content in soil; and seeking photosynthetically efficient crops and pharmaceutically active species. Scientists from around the world use the seed collection, including RBG Kew scientists based at the Jodrell Laboratory within Kew Gardens. Examples of how seed from Kew's MSB is currently being used in partner countries includes developing drought resistant forage plants for animals to graze in Egypt and culturing threatened medicinal plant species that are in danger of disappearing in Pakistan. Used in this way, seeds from the MSB will be vital tools if people are going to adapt to climate change.

With 2010 getting nearer, and with the Partnership right on track to store 10% of the world's plant species, the Partnership has even more ambitious plans for the future. RBG Kew is actively seeking funding for this vital conservation project beyond 2010. If more money can be raised, the Programme aims to have 25% of species safely stored by 2020.

For more information see www.kew.org/msbp

DNA Bank

A vast whirring freezer in the Jodrell Laboratory contains over 31,500 samples of plant DNA material, representing more than 5,000 families of plant species, all stored at -80°C. The DNA Bank, already the world's largest store of genetic material from wild plant species, is growing all the time, with more than 4,500 samples added in 2007. In some ways a "hi-tech version of the Herbarium", DNA samples are sent all over the world to organisations that are involved in plant research and conservation.

For more information see data.kew.org/dnabank/

Anatomical Slide Collection

RBG Kew also has an extensive reference collection of around 100,000 anatomical microscope slides of plant fragments including leaves, stems, roots and a large number of wood sections. The collection is used in forensic research to help identify plant material for organisations such as the police; as well as archaeologists, antique dealers, hospitals, vets, furniture restorers and HM Revenue and Customs.

In the UK, Kew is the Scientific Authority for Plants for Cites. This means it is the first port of call when customs officers seize plants or products made from plants and need to identify whether or not they are made from endangered materials such as ramin. Ramin is the common name given to a number of tropical hardwood tree species native to the peat swamp forests of South East Asia and the South Pacific, which are important carbon sinks. It is often made into pool cues, blinds and tool handles.

For more information see www.kew.org/scihort/applanat.html

The Living Collection

Kew Gardens has the largest living plant collection in the world, with 30,000 different kinds of plants. The beauty of the Gardens, and its Grade 1 listed historic landscape, is the foundation of Kew's ability to attract the visiting public and educate them about the importance of the plant world. The collections include exotic carnivorous plants; rare orchids; over 14,000 trees, including the wollemi pine which is endangered in the wild in its native Australia; palms, including RBG Kew's newest discovery from Madagascar, *Tahina spectabilis* – or the 'suicidal palm' – the seedlings of which are being cultivated behind the scenes in the Jodrell Glass Nursery; grasses, including bamboo, economically important cereals and a British native grass species, *Bromus interruptus*, extinct in the wild; delicate alpine plants; giant water lilies and a foul-smelling titan arum in the Princess of Wales Conservatory. The oldest glasshouse plant in the Gardens, a cycad, is found in the iconic Palm House. *Encephalartos altensteinii* was introduced from South Africa in 1775.

For more information see www.kew.org/collections/plants.html

Ends

Members of the media interested in a behind-the-scenes look at RBG Kew and its collections should contact the RBG Kew press office, telephone 020 8332 5607, e-mail pr@kew.org.