

Princess of Wales Conservatory

Cacti from the parched deserts of the Americas, intricate rainforest orchids, the delicate ferns of cool misty cloudforests and the ever-fascinating carnivorous plants from swamps and bogs are just some of the diverse plants to be found in the Princess of Wales Conservatory. Its name commemorates two ladies who held the title 'Princess of Wales'. The first was Princess Augusta, the mother of George III, who founded the botanic gardens at Kew in 1759. Her collection of exotic plants was housed in the Great Stove, on a site just to the north of the Conservatory. More than two centuries later, the Conservatory itself was officially opened by Diana, Princess of Wales on 28 July 1987.

Special features

The Princess of Wales Conservatory has a floor space of 4490m² divided into ten different environmental zones. Two major zones encompass the wet and dry tropics, with smaller areas holding species needing more specialised conditions. With only its multi-ridged roof rising above the surrounding landscape, much of the Conservatory's space is below ground level to conserve heat. Its volume is low in relation to its floor area, so temperatures can be altered rapidly. Within each zone, the conditions are continuously monitored by computer, which automatically adjusts the heating, misting, ventilation and lighting systems accordingly to ensure efficient use of fuel and water.

The Conservatory's south-facing walls allow deep penetration of winter light, whilst the summer's stronger light is partially reflected from the shallowly angled east-west sloping roofs, to protect more delicate plants against sun-scorch.

Desert plants

Setting the scene for the dry tropics zone, the Sherman Hoyt painted diorama shows the arid stony landscape of the desert areas in the south-western USA. Among the plants this habitat supports are cacti, agaves and the Joshua Tree (*Yucca brevifolia*).

In the African area of the zone, there are more succulent plants including aloes, gasterias, crassulas and senecios (relatives of the British Ragwort). At first sight, the succulent African euphorbias look like cacti with their water-storing stems, waxy surfaces and protective spines. Although the two groups of plants are unrelated and occur on opposite sides of the world, they show how species have evolved similar adaptations to conserve water in response to the harsh desert conditions. Other succulents on display include living stones (*Lithops*) from South Africa and Namibia. These masters of disguise are so well camouflaged against the stony ground that they are almost undetectable until their brightly coloured flowers appear.

Well-known arid-land tree species displayed in the zone include a Madagascan Baobab (*Adansonia za*) and Frankincense (*Boswellia sacra*) which produces the scented resin mentioned in the Bible.

An enclosed section of the dry tropics zone, watered sparingly during the winter, houses *Welwitschia mirabilis* and other succulents and grasses from the Namibia desert and South Africa. During droughts, the acacias here shed their leaves, bulbous plants die back to their below-ground bulbs



and many grasses survive as seeds awaiting the next rainfall. Nearby, the collection of Canary Island plants includes many species that grow wild only on these islands and are now under threat due to the destruction of their natural habitats. These plants highlight the important role of Kew's collections as a conservation resource.

Rainforest plants

Entering the wet tropics zone, the atmosphere becomes hot and steamy to provide the conditions needed by tropical rainforest species. Marantas, with their attractive patterned leaves, can tolerate low light levels and are typical of the forest floor vegetation. Various species of African violet (*Saintpaulia*) and Begonia also dwell on the shady forest floor, whereas the Swiss Cheese Plant (*Monstera deliciosa*) climbs up supporting trees towards the light and many bromeliads (members of the pineapple family) attach themselves high up in the tree canopy. Crop plants grown in this zone include banana (*Musa*), Pineapple (*Ananas comosus*), Pepper (*Piper nigrum*) and ginger (*Zingiber*).

In Victorian times, one of Kew's most popular sights was the Giant Amazonian Waterlily (*Victoria amazonica*). Today, a hybrid giant waterlily is grown from seed each year and is still a great attraction. It has huge leaves (up to 2m in diameter) and attractive flowers that change colour from white to deep pink over 24-36 hours as they age. Around the pond, waterlogged soil provides ideal conditions for growing mangroves from the coastal swamps of tropical regions. Below the water surface, fresh water stingrays and tropical fish, such as the Puffer Fish, stare at visitors through the underwater viewing windows. Adjacent tanks house Water Dragons, Poison-arrow Frogs, Rainbow Crabs and various fish, all from tropical rainforest ecosystems around the world.

Plants from the cloud forests of tropical mountains are surrounded

by continuous mist in their natural habitats. An enclosed cool shaded area, where the humidity is maintained at above 85%, provides the moist conditions they require. Cloud forest vegetation is rich in epiphytic plants which perch on tree trunks or branches to obtain enough light. They get the water they need from the damp atmosphere or from rainfall.

Insect eaters

Sundews (*Drosera*), Venus Flytraps (*Dionaea muscipula*) and pitcher plants (*Sarracenia*) possess different types of trap to catch the insects they need to supplement the nutrients available from the inhospitable bogs where they grow. They live in a cool well-lit area on the eastern side of the Conservatory. Nearby in the wet tropics zone, other carnivorous pitcher plants (*Nepenthes*) attract their prey with vivid red or purple pitchers.



Each February the Conservatory is adorned with thousands of orchids for Kew's annual Orchid Festival

Orchids and ferns

Orchids, many with glorious showy flowers, feature in two zones. These include the slipper orchids (*Cypripedium*, *Paphiopedilum* and *Phragmipedium*). In the warmer tropical zone are orchids from the rainforest canopy, with the aerial

roots and swollen pseudobulbs that enable them to absorb and store water. The climbing Vanilla Orchid (*Vanilla planifolia*) from central America and the Comet Orchid (*Angraecum sesquipedale*) from Madagascar are two species of particular interest in this zone. The temperate orchid zone houses species from the cooler sub-tropics and mountainous regions of the tropics. Among them, *Dracula bella* displays its dramatic fanged flowers.

Ferns, although much less flamboyant than the orchids, are just as fascinating on close inspection, with their delicately divided and curling fronds. Amongst the tropical species are the imposing stag's horn ferns (*Platycerium*) with huge antler-shaped fronds, which attach themselves to tree trunks. Tree ferns also feature, with *Cibotium* in the tropical zone and *Cyathea* in the temperate zone.

Festival features

A more ornamental zone at the northern end of the Conservatory is dedicated to themed displays as part of the special festivals taking place in the Gardens throughout the year. Using decorative flowering and foliage plants, Kew's horticulturists can let their imagination roam free as they design landscapes from far-off lands, floral spectaculars or seasonal treats.

Plants for research and conservation

Many of the plants in Kew's collections have been acquired for specific research or conservation projects. The rich collection of Madagascan plants in the Princess of Wales Conservatory reflects the long-standing research interest in the species of this island in the Indian Ocean. It is considered to be one of the world's plant biodiversity hotspots with over 10,000 species of higher plants, 80% of which are found wild nowhere else in the world.