From the moment we wake up, to the time we go to bed, we rely on plants. We drink stimulating cups of tea, eat energy-giving fruits and vegetables, live in houses built and furnished with timber products, drive in cars with rubber tyres and sleep between cotton sheets. Plants are our life support, providing us with food, medicines, building materials, clothes and environmental services such as clean air and water.

To highlight the vital contribution that plants and ecosystems make to our lives, the United Nations has designated 2010 as the International Year of Biodiversity. Hundreds of organisations around the world, including Kew, will be holding events to raise awareness of how biodiversity underpins humanity. The aim is to encourage everyone to make an effort to safeguard the rich variety of life on Earth, at a time when ecosystems are critically threatened by over-exploitation, environmental destruction and climate change.

‘We rely on plants in virtually every facet of our lives,’ explains Paul Smith, head of Kew’s Millennium Seed Bank Partnership (MSBP) at Wakehurst Place, which last year achieved its initial target of banking seeds from 10 per cent of the world’s flora. ‘Some 30,000 species of plant are eaten, and 10,000 species are used in medicines in China alone. Plants are also the primary producers that underpin ecosystems. We can’t live without them.’

Biodiversity is defined as the amazing variety of life in any environment, or on Earth as a whole. From the tiniest life forms, such as bacteria and algae, through to the impressive giant redwood tree and blue whale. It’s often used as a measure of the health of an ecosystem – a single hectare of Amazon rainforest can contain 1,500 species of higher plants, including 750 trees. According to the UN’s Millennium Ecosystem Assessment in 2005, however, habitat clearance, over-exploitation and climate change have rendered a quarter to a third of plant species at risk of extinction.

One of the reasons that conserving biodiversity is important is because the plants and animals that exist within an ecosystem have developed intricate interdependencies as they’ve evolved over millions of years. The pioneering research by former Kew director Sir Ghillean Prance into such relationships has helped scientists understand the devastating impact of wild timber logging and the importance of conserving biodiversity to save individual species.

Saving a world of diversity

As Kew celebrates the International Year of Biodiversity, Carolyn Fry explores what biodiversity is, why it’s so important, and how Kew’s scientists are working around the world to help preserve it.

ILLUSTRATIONS BY ANDY POTTS