



A message from our Director

Royal Botanic Gardens, Kew is home to extraordinary assets: world-renowned landscapes, unparalleled scientific and cultural collections and, of course, the 17,000 plants at Kew Gardens that make us one of the most biodiverse places on Earth.

At the core of all of this is our people, and the extraordinarily fruitful global partnerships we form and nurture as we strive together for a greener, more sustainable world.

This year, I'm delighted to share news with you of significant achievements made by Kew's exceptionally talented, creative and dedicated experts in horticulture, science, education and so much more.

With the generosity of our supporters and partners, we are continuously breaking new botanical and horticultural ground, as well as securing major investments that are enabling us to share our resources, to deepen and extend our impact, and to help to advance workable, long-lasting, evidence-based solutions at national and international scales.

I'm pleased to share news in these pages of critical collaborative conservation projects between in-country experts and Kew scientists. Among other highlights, we're supporting enhanced food security in Ethiopia; community-based reforestation in south-east Mexico; and vital speciesmapping in some of the most biodiverse and threatened regions on Earth.

It's been a fantastic year here at home, too, with expansions to our MSc programmes; tremendous engagement with our Community Access Scheme; and partnerships across London boroughs supporting a lasting love of nature in disadvantaged young people and families.

Finally, Kew's flagship digitisation project continues at pace. Our most ambitious project to date, this groundbreaking endeavour to digitise over eight million plant and fungi specimens by 2025–26 will have an immense impact on global research into the most pressing environmental issues affecting us all.

In a time of serious financial challenges for all, our friends, supporters and advocates continue to ensure we can deliver our mission and at pace: to understand and protect plants and fungi for the wellbeing of people and the future of all life on Earth.

Nature is in peril. But, where there are plants and fungi, and individuals across the planet committed to understanding, protecting, and harnessing the potential of their remarkable properties, there is hope.

On behalf of everyone here at Kew, thank you for your continued support.



On behalf of everyone here at Kew, I'd like to thank you for your continued support.

العمو، لك.)،

Richard Deverell Director, Royal Botanic Gardens, Kew

Financials

1 April 2022 - 31 March 2023

Royal Botanic Gardens, Kew income

41%

Defra grant

Funding as part of our status as a non-departmental government body

4%

Other grants

From research councils and other funding streams

7%

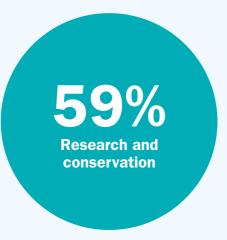
Membership

All membership categories including gift memberships and Wakehurst memberships



Royal Botanic Gardens, Kew spending



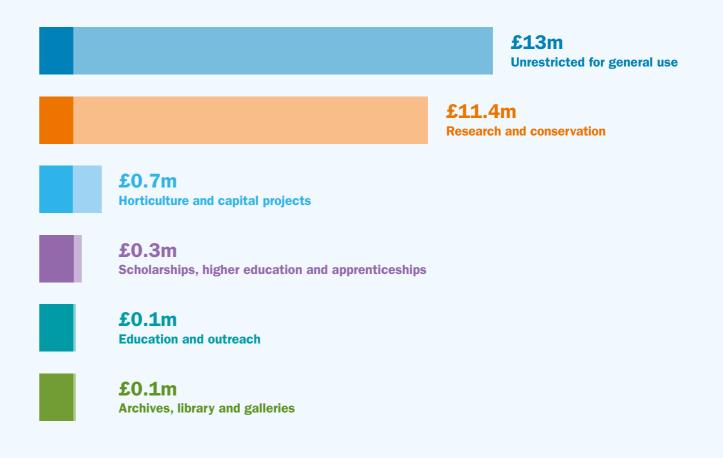


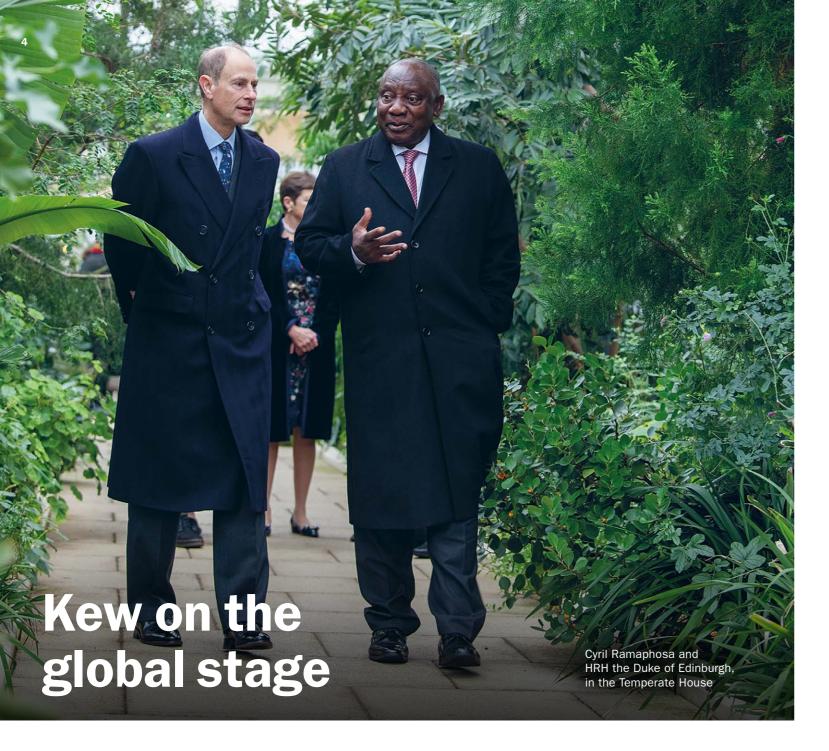


Kew Foundation is a directorate of the Royal Botanic Gardens, Kew, responsible for generating funds through philanthropy and membership. Legacy gifts are made through the Foundation and Friends of the Royal Botanic Gardens, Kew, which is a separate legal entity to the Royal Botanic Gardens, Kew.



Kew Foundation income by purpose of gift





State visit celebrates Kew links with South Africa

In November 2022, Kew Gardens was proud to host the President of South Africa, Cyril Ramaphosa, as part of the first state visit under King Charles III – also the first for the UK since the pandemic.

A large delegation from the South African government, Defra, the Foreign, Commonwealth and Development Office and the Palace attended, including HRH the Duke of Edinburgh, representing the King, and Defra Secretary of State Thérèse Coffey.

The President was taken around South African plant collections in the Temperate House at Kew by students from South Africa, and shown displays of our scientific partnerships with local organisations, including on seedbanking, the study of aloes, and combatting the illegal trade of succulent plants.

South Africa is an important country for Kew, in part due to its rich but threatened biodiversity, as well as the strength of our relationships with local partners.

In a landmark moment for the partnership between Kew and South Africa, the South African National Seed Bank for Wild Species will open next year and the transfer of duplicate seeds held at the Millennium Seed Bank will begin.

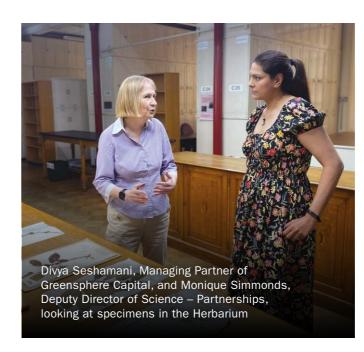
Rosemary Newton, one of our South African scientists, presented the President with some seeds in recognition of this achievement, and Dame Amelia Fawcett, Chair of the Board of Trustees, presented a Marianne North print of the same plant. This marked the third decade of partnership with the South African National Biodiversity Institute (SANBI), and was in celebration of Kew's long-term science and conservation collaborations in the country.

New joint venture agreement for climate investments

In July 2022, Kew signed a climate change exclusivity agreement for climate and technology investments with Greensphere Capital, who specialise in investing in nature-based technological solutions to solve environmental problems.

Gaia Sciences Innovation (GSI), Greensphere Capital's climate incubator, will work with Kew and other science and commercial partners to commercialise and scale up research in biodiversity, botanical and fungal science, forestry, agriculture and habitat restoration.

This agreement, the first of its kind by Kew, aims for the investments made by GSI to further develop the UK as an international scientific and entrepreneurial hub, as well as paving the way for developing nations to use science to become more resilient in the face of a changing climate and unprecedented habitat loss.



Addressing current and future plant health challenges

In September 2022, Defra, the UN Food and Agriculture Organization, and the International Plant Protection Convention Secretariat (the IPPC) co-hosted the first International Plant Health Conference in London.

More than 550 of the world's leading authorities on plant health and biosecurity convened for this landmark conference, to help develop policies and strategies to tackle critical plant health challenges.

Kew Gardens hosted the official reception, with Dame Amelia Fawcett, Chair of the Board of Trustees, delivering a keynote speech.

UN biodiversity chief Elizabeth Maruma Mrema awarded the Kew International Medal 2022

The Executive Secretary of the UN Convention of Biological Diversity, Elizabeth Maruma Mrema, was awarded the 15th Kew International Medal, an annual award given to individuals for distinguished, internationally recognised work aligned to the mission of Kew.

Ms Mrema was selected for her vital work championing the importance of biodiversity conservation and leading the most important international law mechanism for sustainable use of biodiversity. For over two decades, she has held various positions at the UN Environment Program (UNEP), focusing on the development, implementation and enforcement of environmental laws.



KEW ON THE GLOBAL STAGE



Helping halt biodiversity loss in Montreal: COP15

The United Nations Biodiversity Conference, COP15, held in Montreal in December 2022, was the fifteenth meeting of Parties to the Convention on Biological Diversity (CBD), bringing together 196 countries to agree on new targets to halt and reverse biodiversity loss. The urgency of the conference was heightened following more than 2 years of delays due to the pandemic.

It has been widely recognised that action this decade will be critical if we are to reverse the trajectory of biodiversity loss.

The CBD is a landmark international agreement to protect the environment, resulting from the Rio Earth Summit in 1992. It sets out guidelines for countries to protect biodiversity, ensure sustainable use of natural resources, and promote fair and equitable benefit sharing.

Six Kew experts and our Chair of the Board of Trustees, Dame Amelia Fawcett, attended COP15. Held with partners Plantlife International, the Kew stand in the convention centre highlighted the Important Plant Areas worldwide that our experts and colleagues have identified as needing particular focus. Kew scientists demonstrated to delegates the vital role of Important Plant Areas in supporting governments with their international biodiversity obligations. Identifying these Areas helps to halt the extinction of rare species and ensure more robust protections for the planet's most vulnerable territories.

Kew Director of Science, Professor Alexandre Antonelli also presented at several sessions, highlighting best practices for achieving transformations in global biodiversity, food security and ecological citizenship.

Dame Amelia co-hosted a dinner with Thérèse Coffey, Secretary of State for Environment, Food and Rural Affairs, aimed at mobilising private sector finance, and went on to support a similar high-level event convened by the King and British government in February. Dame Amelia has since been appointed co-chair of the international 'Advisory Group on Biodiversity Credits' launched by the UK and France.

Parties to the CBD endorsed the Kunming-Montreal Global Biodiversity Framework on Monday 19 December 2022. The deal included an agreement on how to increase financing for biodiversity, and important mechanisms for planning, monitoring and reporting worldwide.

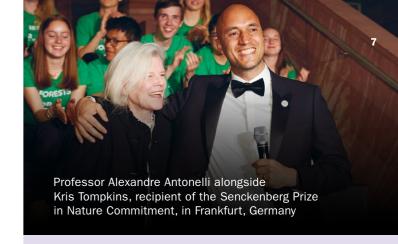
Fighting the extinction crisis in Panama: COP19

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a global policy helping to fight the extinction crisis through wildlife trade regulations.

Kew has played an important part in CITES for decades. As the Scientific Authority for Flora in the UK, we provide impartial and independent scientific advice to both Defra and the Animals and Plant Health Agency (APHA) for CITES licence applications, as well as helping develop government policy.

In November 2022, six of our scientists attended the nineteenth CITES COP (COP19) in Panama, where more than 500 species of plants and animals were confirmed to be afforded greater protection from international trade.

Many side events took place in Panama, with Kew experts presenting, among other things, our work on medicinal plants and the illegal wildlife trade. We also worked closely with the musical industry on the sustainable trade of Brazilwood (*Paubrasilia echinata*), which is used to make violin bows, and presented the new and first ever CITES checklist for the economically important *Dalbergia* genus (rosewoods), which Kew produced with a team of international *Dalbergia* experts.



Prizes for Kew Science

In May 2022, Kew Director of Science Professor Alexandre Antonelli received the prestigious Senckenberg Prize for Nature Research, in recognition of his internationally visible achievements in nature research.

Among other awards for Kew's world-renowned scientists this year, we congratulate an international team from Brazil, Argentina and the UK, including Kew Research Leader Steve Bachman, who won joint first prize at the 2022 Ebbe Nielsen Challenge.

Held by the Global Biodiversity Information Facility, the challenge is an annual competition that seeks to inspire innovative applications of open-access biodiversity data.





News from Kew Science



Supporting reforestation in Mexico

In last year's review, we highlighted our work to support community-based reforestation in Veracruz, southeast Mexico. The location is part of the Mesoamerica Biodiversity Hotspot, which includes exceptionally exceptionally biodiverse pine-oak forests and tropical montane cloud forests. This hotspot faces some of the highest deforestation rates in the world, due to climate change, habitat destruction and deforestation for timber, and land-use changes for agricultural purposes.

Kew experts, in partnership with the Facultad de Estudios Superiores Iztacala of the Universidad Nacional Autónoma de México (Fes-IUNAM), Pronatura Veracruz A.C. (PNV) and Instituto de Ecología A.C. (INECOL), are focusing on using seeds of native tree species important for the livelihoods of local communities.

In this financial year, thanks to funding from the Garfield Weston Foundation and the Aldama Foundation, tree plantations have been established in seven reforestation sites and one landscape design site in Veracruz. As of March 2023, 3,267 trees and shrubs have been planted. Species include *Tapirira mexicana*, whose aromatic wood is used in manufacturing, medicine and agroforestry systems, and *Oreomunnea mexicana*, which is used for the construction of houses and to produce baseball bats. The endangered oak *Quercus insignis* has also been planted. It has the largest acorns in the world, which serve as food for pigs, and its wood is used to make furniture and produce firewood and charcoal.

Next year, the plan is to propagate and plant 6,000 additional seedlings in the shade-grown coffee plantations and other potential sites, as well as maintain and monitor the reforestation sites that have already been established.

Digitisation: update

In October 2021, we secured first-stage funding to start to digitise 6.75 million of Kew's plant and fungal specimens to create a complete catalogue of our internationally significant collections, making specimen records and images freely available online.

In March 2023, the project reached the milestone of capturing over one million records. The records will be accessible to researchers across the globe, bolstering worldwide efforts to tackle some of the most critical challenges facing humanity, such as climate change and habitat degradation.

The digitisation of our collections and the online portal have been part-funded by Defra, a Kew Fund appeal, private philanthropists, and the first Chairman of Kew's Board of Trustees, Lord John Eccles. We will be seeking funding for the remaining costs to digitise our complete collection of over eight million specimens.

114 plants and fungi officially named in 2022

In 2022, Kew and partners named approximately 114 plants and fungi from across the planet. They range from a record-breaking giant waterlily (*Victoria boliviana*) in the wetlands of Bolivia to a Turkish 'winter daffodil' (*Sternbergia mishustinii*) with non-opneing flowers discovered in Ukraine.

Sadly, many of these discoveries represent extremely rare species already threatened with extinction, some of which only exist in single locations, and at least one is considered already globally extinct.

By heading out into the field with our international partners to discover, characterise, and name plants and fungi that are new species to science, our experts at Kew are aiding worldwide efforts to halt and reverse the global biodiversity crisis.

NEWS FROM KEW SCIENCE

Harnessing the power of plants through artificial intelligence to find new drugs

Plants have given us some of our most important medicines, yet new drugs for devastating diseases such as cancer, Alzheimer's and malaria are still urgently needed.

Kew scientists have had success in an ongoing pilot project developing an artificial intelligence (AI) method that combines expert knowledge and plant trait data to predict species that contain bioactive molecules, to accelerate drug discovery.

Thanks to a private philanthropic donation, our scientists and collaborators, have found that their Al model enhances their ability to predict which species have antimalarial properties. This approach could greatly accelerate the search for new pharmaceutical drugs for malaria, and other diseases, too – potentially providing a vital step forward in the fight against diseases.







Species conservation and restoration in South Africa's Succulent Karoo Biome

South Africa's Succulent Karoo Biome is located between southern Namibia and the uplands of the Western Cape and has an extraordinary level of plant endemism, with 40 per cent of its species found nowhere else on Earth.

So far, the project team has assessed 859 species to be of conservation concern and 489 as threatened. The main threats to the Succulent Karoo Biome are agriculture, overgrazing, mining, unregulated tourism and the illegal collection of succulents and bulbs, but in the past two years, an unprecedented upsurge in wild plant poaching has escalated the need for urgent conservation action. Many of the targeted species are already in danger of becoming extinct.

A collaborative project between Kew and the South African National Biodiversity Institute (SANBI), funded by the Davis Foundation and the 3 Ts Charitable Trust, is helping to safeguard viable plants and seeds through ex situ conservation to ensure the possibility of later recovery. This two-year project aims to deliver ex situ seed conservation for 45 critical species that are being illegally harvested from the Karoo biome, with additional ex situ conservation of 50 species from their habitat. Multiprovenance collections of critical species will be made to conserve their genetic diversity. Restoration goals involve the urgent research or implementation of species recovery for five individual localised projects and the development of species recovery template that can be adapted for widespread, long-term use.



Identifying Tropical Important Plant Areas in Indonesian New Guinea

Indonesian New Guinea is one of the largest remaining wilderness areas on the planet. However, agriculture and development are severely threatening the region's unique biodiversity and a lack of reliable data hinders the protection of species and habitats. Kew has been working in Indonesian New Guinea, thanks to a private philanthropic donation, to identify especially rare and threatened habitats and to designate these as Tropical Important Plant Areas (TIPAs), providing recommendations for their sustainable use and protection.

In December 2022, Kew joined the Crown Jewel Consortium to work with the West Papua Government, who have identified a large area of the Bird's Head Peninsula as the 'Crown Jewel of Tanah Papua', which will include a mix of conservation and sustainable development areas.

The TIPAs team has identified the Anggi Lakes region in the Arfak Mountains as the first TIPA in West Papua. The mountains rise to 2,955 m and are well known to harbour many endemic plant and animal species, including several birds of paradise. The region has large areas of untouched lowland to montane forests that are now accessible through improved roads. Kew's TIPAs team will be helping to undertake vegetation surveys in the Arfaks during 2023.

Incentivising agrobiodiversity conservation in Ethiopia

Conserving the diversity of plants we eat and grow (agrobiodiversity) is critical for future food security. In Ethiopia, enset is a staple food for around 20 million Ethiopians, and there are many enset landraces (a locally adapted variety of a species developed over time) that offer different qualities such as being drought-tolerant, pest-resistant or even medicinal. However, this diversity is in danger of being lost.

Funded by the Ellis Goodman Family Foundation, a Kew team in Ethiopia has built an incentive mechanism to compensate farmers for growing a wider variety of enset landraces. During this financial year, the team surveyed 500 farmers from 22 communities to learn from their vital knowledge. They also identified 57 rare landraces.

In March 2023, our experts held workshops with community leaders to outline the competitive tender process, where communities submit bids for growing different landraces. All 22 communities chose to bid and had an average of 23 farmers per community. We received offers for 52 of the 57 rare landraces and over 45,000 individual plants were offered in total. The process has demonstrated the potential for substantial enset diversity conservation in a cost-effective, equitable and transparent framework. The high engagement from local farmers also suggests that the approach can potentially be scaled up and applied to other crops.



A biodiversity hotspot

With its unique geographical position and geology, Thailand is home to a rich plant flora, estimated to include at least 10,000 vascular plant species of which 756 are endemic (found nowhere else on Earth).

However, significant habitat loss, a result of unsustainable land use and over-development, has led to the country and the surrounding area being designated as one of the planet's 'biodiversity hotspots' – the most biologically diverse yet threatened areas.

Covering more than 2 million square kilometres, Indo-Burma is one of the most threatened of the world's biodiversity hotspots, with only five per cent of its area remaining relatively undisturbed.

It is vital that the area's plant species are identified and conserved to stop them becoming extinct. So, as part of the Weston Global Tree Seed Bank Project, this year Kew has been working with two partner organisations in Thailand – the Forest Herbarium in Bangkok (BKF) and the Forest Restoration Research Unit at Chiang Mai University (FORRU-CMU) – to collect and bank seeds for research, propagation and use, both now and by future generations.

The project aims to collect and bank seeds of 300 mainly rare, endemic and useful woody plant species and make full International Union for Conservation of Nature

(IUCN) plant conservation, or Red List, assessments of 225 tree and shrub species. Red Listing is an essential tool to help prioritise conservation actions, yet in the tropics most species remain unassessed.

Previously, seed collections have been banked at Kew's Millennium Seed Bank at Wakehurst, but the newly completed National Biobank of Thailand is now able to accept duplicates. FORRU-CMU has also opened a small seed bank, which is being used to accumulate duplicate seed collections generated by the project, facilitating incountry seed banking for reforestation.

Conserving important medicinal plants

Among the seeds collected by scientists from FORRU-CMU this year are important medicinal plants including *Daphniphyllum griffithianum*, which has a long history of use as a herbal medicine. In India, the root is used in Ayurvedic medicine. Research in Thailand has found that extracts of ziziphine, a type of alkaloid found in this plant, have an effect against the malarial parasite *Plasmodium falciparum*.

FORRU-CMU also banked the seeds from *Nauclea* orientalis, called 'kanluang' in Thailand and also known as the Leichhardt pine. Studies on alkaloids extracted from Leichhardt pines have indicated possible antimalarial and anticancer effects.

The medicinal species *Ploiarium elegans*, (collected by BKF) is a slow-growing woody plant found across South-East Asia whose leaves and roots have antibacterial properties and are used to treat stomach ache and acne.

Other plants collected included *Ficus pongumphaii*, which occurs only on limestone hills in central Thailand – its habitat is endangered by the use of limestone rock for the cement industry.

Making conservation assessments

Of at least 10,000 native vascular plant species, Thailand has only carried out global Red List assessments of 2,087 species.

However, following intensive support provided by Kew's Conservation Assessment Coordinator, Jack Plummer, and Project Coordinator, Dr Kate Hardwick, FORRU-CMU has made tremendous progress in Red Listing species.

BKF has also engaged two new researchers, who have received support from Kew to help with their Red Listing assessments.

Education opportunities

This strand of the Weston Global Tree Seed Bank Project not only supports seed collection for forest restoration, but also allows our partners to offer training and education opportunities in Thailand and nearby countries.

In 2022, FORRU-CMU's seed bank was used for training sessions for senior Forest Department officers from Bangladesh, for undergraduate practical sessions from three universities, and training for schoolchildren.

Stephen Elliott, Co-Founder and Research Director at FORRU-CMU, says: 'Garfield Weston funding has helped FORRU-CMU to maintain and improve our seed-collection programme and our seed bank, thus supporting the production of tree saplings to restore northern Thailand's indigenous forest ecosystems. We've also been able to pass on the techniques that Kew staff taught us to other organisations through our education events and workshops.'

He adds: 'Our seed bank now provides a seed-supply service to local schools, enabling the younger generation to grow a wide variety of indigenous tree species in school tree nurseries to plant for their own restoration projects. So, the project is not just about direct support for FORRU-CMU – it has allowed us to pass on several benefits to the younger generation and other restoration practitioners.'



Weston Global Tree Seed Bank: Unlocked

Since 2015, the Garfield Weston Foundation has supported Kew's work to conserve the world's most threatened and useful trees through the Millennium Seed Bank Partnership. Long-term, generous funding has enabled the creation of the most ambitious tree seed banking project in the world, the Weston Global Tree Seed Bank.

This year, the Garfield Weston Foundation has awarded a further £5 million for a new three-year phase – the Weston Global Tree Seed Bank: Unlocked. With everincreasing threats from climate change, deforestation, pests and disease, experts from Kew will utilise this additional funding to unlock the potential of resources held in the held in the vaults of the Millennium Seed Bank and partner countries and accelerate on-the-ground conservation activities.

In addition to collecting and banking seeds, this new phase of the project will enhance global understanding of the climate resilience of important and threatened trees and help to restore forests in sites critical for tree diversity in six countries facing significant deforestation threats: Thailand, Indonesia, Madagascar, Mexico, Dominican Republic and Ghana. The funding will also support development of new techniques for conserving currently un-bankable species – those not suitable for drying or freezing – and give practical, evidence-based solutions to global partners for saving trees on the brink of extinction.



Highlights

Inspiring the next generation

- In May 2022, Charles Shi, Botanical Horticulturist in the Arboretum and Kew Diploma graduate, won the Chartered Institute of Horticulture's Young Horticulturist of the Year competition in a closefought contest.
- In September 2022, Kew launched two new MSc courses, 'Global Health: Food Security, Sustainability and Biodiversity' in partnership with Royal Holloway, University of London, and 'Biodiversity and Conservation', in partnership with Queen Mary University of London, which was funded through a legacy. Both offer students unrivalled access to Kew's scientific collections, laboratory facilities, partnerships and landscapes.
- During 2022, a gift in Will also funded the recruitment of a doctoral partnership manager to Kew, helping to support and increase PhD study at Kew. At present, our experts co-supervise 97 PhD students.
- This financial year, we delivered a new overseas taxonomy course, 'Plant Taxonomy Skills for Conservation and Ecology', in Ghana and Bolivia, as part of our work building capacity in countries that are high in biodiversity but have relatively limited conservation resource.

Extending our reach

- In November 2022, we launched our Outreach Strategy 2022–2027. We aim to increase the number of garden visitors from under-represented communities tenfold, as well as engaging with individuals and communities offsite. Visit kew.org to read the strategy.
- By December 2022, we had sold 22,000 £1 tickets to Kew and Wakehurst. This low-cost entry price was launched in January 2022 for people in receipt of Universal Credit or Pension Credit to make both gardens more accessible to people of all ages and all incomes.
- Kew has launched new resources to support families of children with special educational needs and disabilities (SEND). We provided inclusive learning experiences as well as new SEND activities, including family sensory tours and the provision of sensory story sacks.
 Feedback from families has been overwhelmingly positive. (See Kew in the Community, p27.)

IN THE GARDENS



Inaugural Shirley Sherwood Award for Botanical Art

In 2022, we launched the Shirley Sherwood Award for Botanical Art, which recognises an artist who has made a significant and broad contribution to the field of contemporary botanical art.

Its first recipient was Mieko Ishikawa, from Japan, who came to Kew to receive her award in October 2022. Mieko is highly knowledgeable about the plants she depicts and is renowned for her paintings of the flowering cherries of Japan, rainforest plants of Borneo and conifers. She has played an inspirational role in introducing global audiences to Japanese artists and the country's flora through her teaching and exhibitions.

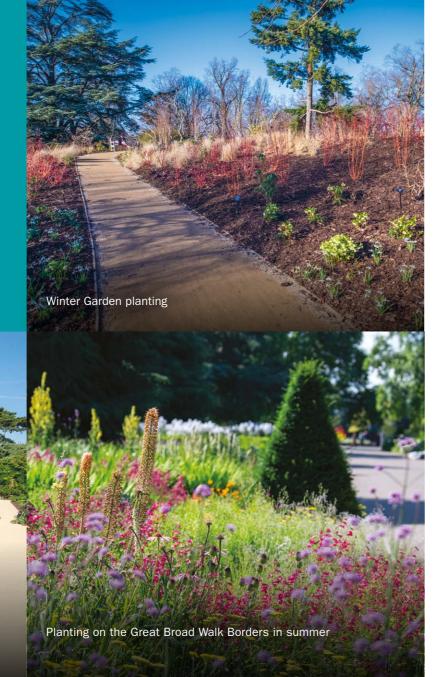
New at Kew Gardens

Edible Science: Kew's Kitchen Garden

In September 2022, Edible Science: Kew's Kitchen Garden reopened with a bold new design prioritising sustainability and addressing the issues of biodiversity loss and food insecurity, funded entirely by philanthropy.

In October 2022, the Winter Garden opened, full of winter interest and home to over 500 species.

In spring 2023, through funding from The Davis Foundation we extended the Great Broad Walk Borders, with the new beds highlighting drought-tolerant plants from regions with a Mediterranean climate that will thrive in hot, dry summers. Visitors will be inspired by plants such as red-hot pokers (*Kniphofia*), *Salvia*, catmints (*Nepeta*), *Agapanthus* and Mediterranean spurges (*Euphorbia*). We also reopened the Grade I listed Orangery, designed by William Chambers and completed in 1763, following a refurbishment.





Orchids

In February 2023, our annual orchid festival, sponsored this year by Cazenove Capital, showcased the beauty and biodiversity of Cameroon. It was the first time that our annual extravaganza has been themed around an African nation. Visitors were able to learn about the work of our scientists and their local partners in identifying Important Plant Areas (IPAs) in the country.

Awards for the Kew podcast

In January 2023, the second series of our critically acclaimed podcast, *Unearthed: Journeys into the future of food*, was awarded Bronze and the Listener's Choice Award in the 'branded shows & advertising: science & education' category at the Signal Awards.

The podcast also won two awards in the highly prestigious Webby Awards 2023. Series two of *Unearthed* explores how our relationship with food is impacting the health of our planet. It offers insights, ideas and inspirational actions from artists, thinkers, chefs and Kew scientists who are all working to overcome some of the biggest food challenges we face globally.





An award-winning attraction

The 2022 summer and autumn festivals at Kew Gardens and Wakehurst – *Food Forever, Nourish*, and *Mexico* – as well as a series of specially commissioned exhibitions in the Shirley Sherwood Gallery of Botanical Art, a range of Easter and half-term activities including *The Very Hungry Caterpillar™* and *Room on the Broom*, along with our annual showstoppers, *Christmas at Kew* and *Glow Wild*, saw Kew continuing to be a popular and award-winning visitor attraction.

Kew Gardens won 'Best Garden Visit' at the Group Leisure & Travel Awards 2022, while The Family Kitchen & Shop at Kew Gardens won the Sustainability Award in the Cultural Enterprises Awards 2023. In a survey conducted by *Which?*, Wakehurst was named a top-ten UK historic attraction.

Wakehurst in focus

New conservation and research nursery

This year, we have secured funding for a new nursery at Wakehurst, which will harness Kew's horticultural and scientific expertise to unlock the extraordinary seed collections of the Millennium Seed Bank.

The Lansdown Conservation and Research Nursery will enable our experts to mimic and model different climatic conditions and cultivate beneficial wild plant species. This will help us to improve natural habitats for carbon sequestration and provide new sustainable, resilient and nutritious food crops.

The completion of the nursery will also enable Wakehurst's historic walled garden to be transformed into an accessible educational centrepiece, which will connect the public with the enriching power of plants.

The Board of Trustees of Royal Botanic Gardens, Kew would like to thank Stephen Lansdown CBE and Margaret Lansdown, the Wolfson Foundation, and all other supporters of this project.

Nature-based solutions for climate change

Natural habitats contain large amounts of carbon and will play an important part in reaching Net Zero greenhouse gas emissions. Throughout this financial year, our scientists and partners developed methods and researched carbon and biodiversity across Wakehurst's woodland and grassland habitats. The methods will feed into a landscape modelling tool to evaluate nature-based solutions to change. They will also inform government policy and business practice on nature-based solutions and investing in nature for Net Zero.

This activity is part of the Nature-based Solutions for Climate Change at a Landscape Scale programme, with partners Natural England, the Environment Agency and the Forestry Commission. This £12.5 million programme is funded by the Treasury's Shared Outcomes Fund and co-sponsored by Defra and the Department for Energy Security and Net Zero, with additional support for programme activities from Sky.

We now have a year's worth of data on above-ground carbon, mainly from trees, greenhouse gas flux and below-ground soil carbon and biodiversity. In February 2023, six pioneering nature projects were awarded funding to upscale this research across England, alongside new initiatives to trial the most effective ways to capture carbon and mitigate the impacts of climate change.



The Millennium Seed Bank



New Silk Road Steppe

In 2022, we started planning the creation of a new landscape at Wakehurst, inspired by the beauty and diversity of the Silk Road. Covering an area of nearly 40 acres, the design will draw on the serenity of the steppes found along the ancient trade routes and will complement Wakehurst's existing meadows and American Prairie, forming a beautiful trinity of temperate grasslands.

The Silk Road Steppe represents a shift in Wakehurst's approach to horticulture. The landscape will be managed according to principles of ecological restoration. This means selecting plants that are ecologically attuned to the environment which, in time, will form a mosaic of resilient wild plant communities.

A key feature will be an orchard with rare and threatened fruit tree species from Kyrgyzstan, Armenia and Georgia. Many of these species, such as the Niedzwetzky's apple, are wild ancestors of domesticated fruit varieties found on our supermarket shelves. The orchard will provide displays of blossom in the spring and fruit in the autumn.

This project has been initiated thanks to two generous gifts in Wills and will be completed once the remaining funding has been secured.

Renovating the Mansion roof

This year, we embarked on the most ambitious renovation project in Wakehurst's recent history to restore the roof of the Grade I listed Elizabethan Mansion. A bespoke photomontage called *Planet Wakehurst*, by Australian-born artist Catherine Nelson, was commissioned to cover the Mansion while it undergoes restoration. It is one of the UK's largest outdoor art installations and showcases the wealth of biodiversity at Wakehurst.



In numbers: Nature Unlocked

Through Nature Unlocked: the Landscape Ecology Programme at Wakehurst, we are researching and sharing the multiple benefits of biodiversity, generating valuable evidence to shape public policy and corporate strategies.

6 million

The number of viewers we reached when showcasing our Nature Unlocked carbon and wellbeing research in action on Channel 5's Kew Gardens: A Year in Bloom.

1,100

The number of members of the public who have engaged with our research. In the last year, we have continued to engage people through citizen science activities, ranging from soil sampling to pollinator counting. We've had two public engagement days, and commissioned a new animation to illustrate Wakehurst's living laboratory in action.

10

Kew scientists reviewed existing literature and provided expertise on the role of nature in Net Zero investments for business to produce the *Ten Guiding Principles for Investing in Nature*, in partnership with Sky.

Nature connectedness and wellbeing

This year at Wakehurst, in partnership with Royal Holloway, University of London and as part of Nature Unlocked, we delivered a pilot study researching how connected to nature people feel in different biodiverse habitats and how that impacts mental health and wellbeing.

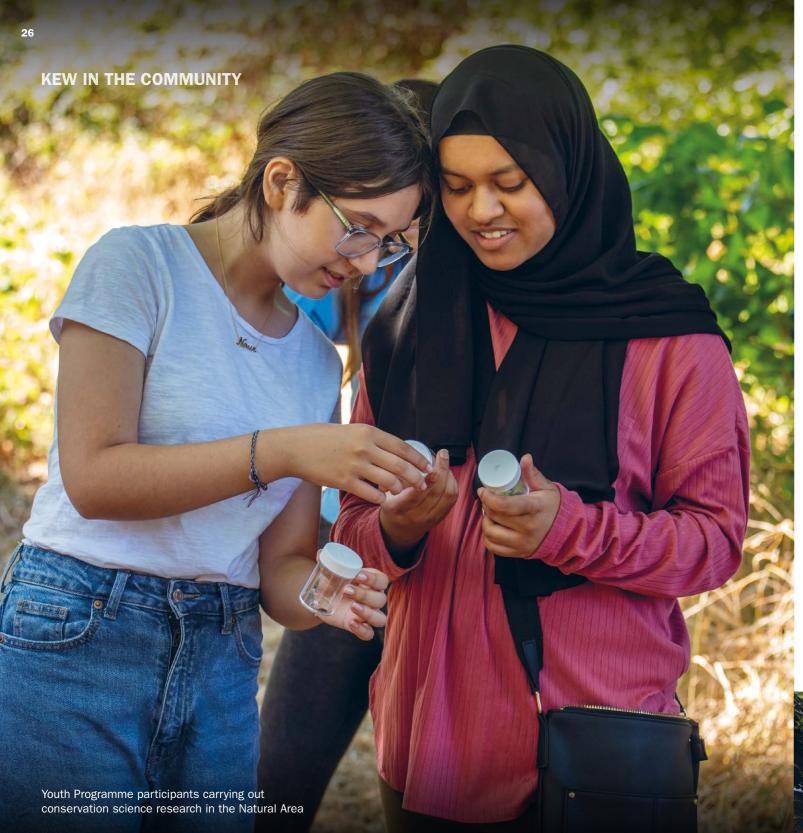
This research will inform architects, planners and government, as well as the way we design our landscapes and educational programmes at Wakehurst. Over six months, more than 1,300 schoolchildren participated in the study, visiting different habitats around the Sussex site. And more than 300 adults participated in a walk, where they wore a Heart Rate Variability Monitor to monitor heart rate and their route.

Early findings showed that children experienced a higher connection to nature in meadows. Children who had lower pre-visit mental health scores before their walk were more likely to have greater positive changes in wellbeing post-walk. And, for adults, men tended to get greater benefits for their mood following a walk.

In 2023, research with Royal Holloway, University of London, will continue exploring the link between nature connection and wellbeing, diving deeper into questions around eco-anxiety and thinking about landscape design and the role of technology in increasing nature connection.







A new partnership with Children's Centres across London

This year, Kew has partnered with ten Children's Centres across five London boroughs (Ealing, Hammersmith and Fulham, Islington, Tower Hamlets and Southwark) to successfully launch the 'Connecting Children with Science and Nature in the Early Years' programme, funded by Mount Anvil and Partners for four years.

We've engaged with over 200 families across the five boroughs during outreach sessions. Over 150 families visited our natural dye workshop at Kew in May and all five boroughs are organising visits to Kew in 2023. We are also running Children's Centre staff training.

One of the workshop participants from Tower Hamlets said: 'My family and I had a wonderful, much-needed day out and such great fun at the plant dye workshop your team booked us in for. The families that attended with us are also grateful for having the opportunity to take time out of their hectic lifestyle and just enjoy Kew Gardens without worrying about additional costs. Kew Gardens staff were very accommodating and supportive towards the SEN families. All in all, we had a fantastic time.'





Success for summer ecology camp

In August 2022, thanks to a private philanthropic donation, the Kew Youth Programme introduced a new summer biodiversity and conservation programme called Earthwise, open to young people aged 14 to 17.

Places were prioritised for young people who would benefit most from the opportunity. Over the two weeks, 40 young people took part in the programme using Kew's Natural Area as a research site. During each week-long programme, the young people conducted their own biodiversity research project, which was interspersed with opportunities to explore the Gardens, hear from Kew experts, and participate in workshops facilitated by Kew MSc students.

One participant said: 'Maybe I can see myself doing something to do with plants and conservation and biodiversity in the future, that I hadn't thought about before.' The young people also mentioned how much they valued the opportunity to hear from such a wealth of Kew staff, in different fields and at various stages in their careers.



Plans for the new Learning Centre at Kew Gardens

It is a long-held ambition to build a dedicated Learning Centre at Kew Gardens, and our plans are now at an advanced stage. The Learning Centre will provide an inspiring learning environment to all who visit, and will feature four flexible learning labs, an early years room and garden, community and adult learning rooms, and a seminar room. The much needed and environmentally sustainable building will enable us to deliver greater impact by offering year-round programming, facilitate a broader range of activities, increase our offering to secondary school pupils and increase our engagement with community and underrepresented audiences. Once we have secured the remaining funding, we expect construction to take twelve months.

Thank you to all those who have given to, or pledged their support for the Learning Centre so far, including Steve Almond, Sarah Fransen, The George Family Foundation, the estate of Barbara Rowe, J & R Savery, Jake and Hélène Marie Shafran, and The Winslow Family.

My time as a Wakehurst Apprentice

Carmen Sheridan



I started as a Wakehurst Apprentice in April 2021, and the two years I spent here have completely changed my life.

Coming out of the pandemic, I had lost a lot of confidence and faith in my abilities, so was a bit daunted to apply for the apprenticeship, but the team at Wakehurst were incredibly supportive and encouraging. I was delighted to be offered a funded scholarship.

The Wakehurst Apprenticeship is made up of placements in different sections of the gardens, so the other apprentice and I spent one to two months in each. Wakehurst arranged our rotation of placements to be in sync with the seasons, so that with every new area we worked in, we were incredibly lucky to see the gardens at their finest (and be faced with plenty to do, of course!).

It is hard to whittle down my highlights – there are so many – but tree climbing was so much fun, and being out in the wider landscape, where Wakehurst really does live up to its 'wild' name. I really loved the times that I was pushed outside of my comfort zone – driving a tractor was one such occasion! And, spending so much time in the landscape, you get to know the space in such a different way.

As we moved through each placement, we received careful and thorough instruction from Kew's experts, who really nurtured us to develop our interests. It was amazing to be around people who are so knowledgeable and passionate, with such long and varied careers in horticulture. I was able to soak up all that knowledge

and wisdom, and it was a really open environment for being curious and asking lots of questions. I left feeling calm, confident and empowered to pass on my knowledge to others in future.

I really enjoyed working in the Tropical Nursery at Kew Gardens – I got the chance to come up to London for two weeks – and I learned a great deal about different orchid species and their cultivation. I was also taught how to mount orchids onto bark – a great specialist skill to acquire.

I also loved working on the American Prairie and seeing it develop. I learned how to collect herbarium specimens there, as well as collecting seeds to cultivate for next year. I have really enjoyed the varied conservation projects I've had the opportunity to be involved in. For example, in the UK, black poplar populations are in massive decline because people stopped planting female trees due to the white cottony seeds they produce. I helped with an ongoing conservation project at Wakehurst where the team takes the hard-wood cuttings of black poplars, propagates and plants them, and distributes them to landowners around Sussex for replanting. I feel proud to have been a part of helping restore this native tree's population.

Finally, a huge highlight for me was that, as part of my apprenticeship funding, I was able to take part in a two-week field trip. We had the freedom to research a place we might want to go, and I decided to go to Ecuador, which was phenomenal.

I was drawn to Ecuador because I was interested in learning more about Ecuador's tropical rainforests, their unique ecosystems and their conservation.

I first visited the Quito Botanical Garden in the capital and then travelled to the Santa Lucia Cloud Rainforest Reserve. I then chose to spend two weeks at the Tesoro Escondido Reserve because of its dedicated community-based approach to conservation.

While at Tesoro, I supported the conservation of the critically endangered *Magnolia dixonii* alongside local parabiologist and field coordinator, Yadira Giles. I also helped compile a guide of orchids found growing on the reserve, using different resources to help identify as many as possible. It was a big challenge, but well worth it because the reserve will now use the guide for orchid identification, and they can continue to add to it when they discover new species.

After visiting Ecuador and seeing an abundance of orchids in the wild, I was interested in learning more about their cultivation back home and developing my knowledge of this fantastic plant family. The work placement in the Tropical Nursery at Kew was perfect because I could do exactly that.

In Ecuador it was so inspiring to see how at the Tesoro Escondido Reserve they took such a 'peoplefirst' approach to conservation. The community project was run local women, who shared skills and expertise with fellow local women with a view to helping them gain greater financial security. While it was challenging hiking in the mud and rain in wellies (there were some spectacular falls!), it was worth it as the landscapes were breathtaking. There were so many magic moments - seeing spider monkeys in the rainforest, and tropical plants like you have never seen. Just a few short miles away, we witnessed palm oil plantations stricken by disease, and it really brought home how essential the work the locals were doing to rebuild was, as well as how important the work of collaborations like those with Kew and other botanic gardens worldwide are to combatting the urgent environmental challenges we all face.

All in all, this apprenticeship has given me the unique, once-in-a-lifetime opportunity to fully immerse myself in horticulture at one of the UK's most prestigious botanical and horticultural institutions. I have loved every minute of my time at Wakehurst and have grown significantly, both

professionally and personally. Reflecting on how I was at the start of the apprenticeship versus now gives me an enormous sense of accomplishment.

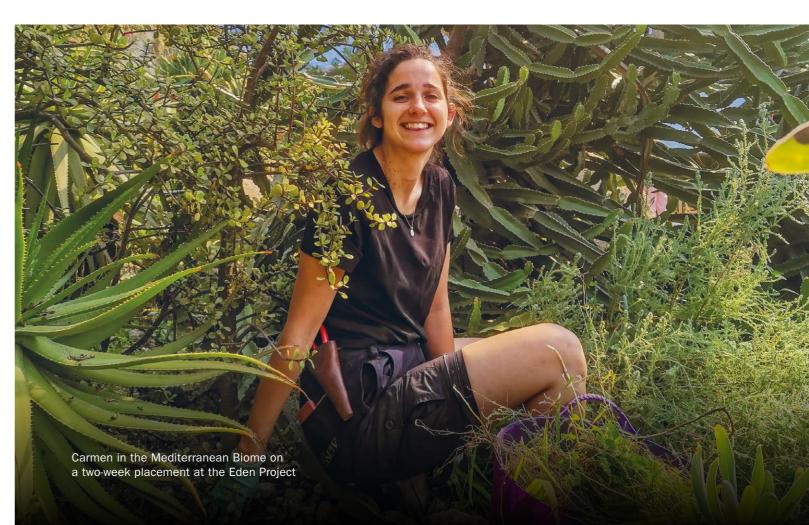
I was absolutely thrilled to gain a permanent position here as Cultural Gardener and can't wait to see what the future holds.

With thanks to Sarah Fransen for her support of Carmen's apprenticeship.

Learn more

The Wakehurst Apprenticeship, a Trailblazer Standard apprenticeship, provides the highest quality training in amenity and botanical horticulture. Apprentices graduate with the technical skills and specialist knowledge they need to support them in obtaining senior craft level positions in botanical, ornamental, and historic gardens.

Search for 'learning' at kew.org to discover the wide range of educational and training opportunities we offer at Kew and Wakehurst, with programmes tailored to inspire a lasting love of nature in all.



Thank you

The Board of Trustees of the Royal Botanic Gardens, Kew thank the following for their generous support of our vital work in the financial year 1 April 2022 – 31 March 2023

Oamer Adam*

The A. G. Leventis Foundation

Robert and Jennifer Akester

The Aldama Foundation Steve Almond

The Amar-Franses & Foster-Jenkins Trust

Arcadia

Arup Barbara Aspinal

The Auriga Academy Trust

Bain & Company Francis Bangay³

Bank of America

Bloomberg LP

Dorothy Booth*

Botanic Enviro Sustainable Innovations Ltd (B.E.S.I Ltd)

Frances Bremner* Brown Advisory Ltd

Buffini Chao Foundation The Calleva Foundation

Svlvia Carter*

Eduardo, Alex and Adrian Catalano

Cazenove Capital

CSSC Sports and Leisure

Vivienne DanielI*

The Davis Foundation

EcoWorld London

The Ellis Goodman Family Foundation

John and Catherine Emberson

Esmée Fairbairn Foundation

Anne Evans*

Evolution Education Trust

Pamela Farley*

Dame Amelia Fawcett DBE, CVO

Findlay Charitable Trust Florence Follows*

Franklinia Foundation Sarah Fransen

Garfield Weston Foundation

Gatwick Airport Limited

Anna Gofrvk*

Goldman Sachs Gives – Jason Silvers

Prudence Green* Elizabeth Grenfell*

Ground Control Ltd

GSK

Margaret Guilder*

Evelleen Hain-Wybrow* Ondre Haynes*

Jill Hood*

William Howard*

Svlvia Huggins*

Sharon lckringill* IKEA of Sweden AB

Imperial College London – International Students Team

The Ingram Trust JATO Dynamics

The John Eccles Charitable Trust John Lewis Partnership

John Lyon's Charity

JRS Biodiversity Foundation

Fay Katz*

Margaret Kerr* Richard Kirby*

Kusuma Trust UK

Dave and Vikki Lawrence

Dora Lockley* Maestro DOBEL®

The Mallinckrodt Foundation

The Marris-Webbe Charitable Trust

Alexander McOueen Brian Meldrum*

Microsoft

Nick Miskin Patricia and David Moss*

Mount Anvil & Partners

Kathleen Murphy*

Navarino (UK) Ltd

The Negaunee Foundation Old Dart Foundation

PerkinFlmer

Jan and Linda Pethick

Players of People's Postcode Lottery

PuraPharm

Quorn

Richmond Parish Lands Charity

James Robertson*

The Roger and Ingrid Pilkington Charitable Trust

Nicola Rose* Barbara Rowe*

Margaret Ryan* Ann Saver*

The Schroder Foundation

Sfumato Foundation

Jake and Hélène Marie Shafran

James Sherwood and Dr Shirley Sherwood OBE

Jeremy Stanley-Smith*

Ten Lifestyle Group

The 3 Ts Charitable Trust

Toshiba International Foundation

Trov Asset Management

Vida Voles*

Wolfson Foundation

World Monuments Fund

Worley

*signifies a legacy gift

Patrons

Princess Augusta

Peter Allen and Alexandra Stuart

Steve and Claire Almond

Stephen Brenninkmeijer and Julie Fry Jeremy and Rachel Darroch

Dame Amelia Fawcett DBE, CVO Bob and Rohini Finch

David Fransen

Sarah Fransen

Michael and Joanna George

Mark and Meganne Houghton-Berry

The Hon Robert Lloyd George and Donna Lloyd George

Chrissie Marris

David Owen and Emma Walmsley

Carol and Pippa Sellars

Jake and Hélène Marie Shafran Johanna Waterous CBE

Janet and Peter Winslow

Joseph Banks

Marcus Agius CBE and Kate Agius Sir Henry and Lady Angest

Sebastian and Juliet Bailey

Elizabeth Banks

Rosamund and Richard Bernays

Moira Black and Robert Gurd

Angela Bunbury

Stuart Donachie and Chris Carter

Jonathan Drori and Tracy Chevalier

Michael Fuchs

Lady Hamlyn

Frances Hellman and Warren Breslau

Will and Kate Hobhouse

Sir John Kemp-Welch

Diane Klat Latifa Kosta

Joan Lambert Sonia and Nick Land

Jeremy Lloyd and Bettina Baikie

Flora and Sebastian Lyon

Jamie and Annabel Montgomery

Leo and Sue Noé Peter Oliver and Philippa Watson

Tim Pennington and Kerry Godden

Jan and Linda Pethick

Brigid Philip

Michael and Sue Pragnell Sheila Rankin

James and Joey Ritblat

Marilyn Taylor

Paul and Annette Wates Willis Lease Finance Corporation

Jochen and Kate Zeitz

Queen Charlotte

Elizabeth Amey

Jack Andrews MBE

Dr Helen Baxter

Miel de Botton Rosamond Brown

Christoph Burgard and Silke Petzold

Gay and David Cheyne

Joseph Childs John Cook and Lucy Munro

Janet Cooper OBE

David Dutton and Mave Turner

Robert Enserro and Vanessa Colomar Giles Gostwick

Michael and Anna Hatchard

Shelley Jacobson and Brendan Robinson

Daphne Jarden Sally Johnson and Robin McCron

James and Clare Kirkman

Fiona Mortimer Maggie and Peter Murray-Smith

Richard Powell and Anne McKenzie

Elizabeth and Stephen Roberts Sir Simon and Lady Robertson

Sibel Roller-Walach Ruth and Tigg Savery

Sir Harry Solomon Robin Thomas

Margaret and David Walker

William Hooker A La Carte Tours and Events Ltd Diana and Richard Allan

Abigail and Mike Amey James Bartos

Judith and Geoff Batchelar

Christopher and Margaret Beels Tracey Bleakley

Tess Canfield

Hirsh and Gill Cashdan Alex and Adrian Catalano

David and Elizabeth Challen

Sir Ian and Lady Cheshire Maureen and Martin Cole Sophie and Carlo Comninos

Lord and Lady De Ramsey Beverley and Kevin Dean

Lynn Deegan-McGraw

The Hon Simon Eccles and Carolyn Hitt

Nicholas and Jane Ferguson

Carole Garcia

Barbara Ghodse Val Gooding CBE

Alan Greasley and Katriona Wilson

Margaret de Heinrich de Omorovicza

Gayle and Chris Hopkinson

Edward and Rosemary Hoult

Nicolás Ibáñez Scott and Jon Strickland Sir Donald and Lady Insall

Edward Joy and Andrew Joy

Louise Kaye and Clare Arafa

Jennie Kettlewell and Ian Bruce Sonya Leydecker and Steven Larcombe

Jonathan and Helen Little

Jasmina Ljuhar

George and Angie Loudon

Joanna Millan Neil and Laurence Monnery

John and Caroline Morcom Simon Movle

Zara and Dennis Muren

Julian and Fiona Mylchreest Grayson and Alexandra Nash

Jeannetta Riding Peters Bleddyn Phillips and Anne Pringle

Frances and Rodney Pickering Brian Pitcher

Kate Priestman

Chelsea Purvis and Alnawaz Jiwa Marie-Louise Rabouhans

Sally Rankin Chris Rybczynski

Adrian Sassoon Caroline and Mark Silver

Robert and Hilary Swift Marian Thomas and Stephen Reisbach

Valentine Thomas

Stephen and Caroline Townley Herta Von Stiegel

Sheenagh Wallace

Carol Walsh-Knutson and Kelley Knutson Peter and Geraldine Williams

Foundation Council Jeremy Darroch (Chair from 1 January 2023)

Pippa Wicks (Chair until 30 November 2022)

Stephen Brenninkmeijer (from 1 August 2022)

Marcus Agius CBE

Peter Allen (from 1 April 2022) Judith Batchelar

Barbara Davis Sarah Flannigan

David Fransen

Joseph Gromacki Margaret de Heinrich de Omorovicza

Lily Jencks (from 11 November 2022) H.E. Razan Khalifa Al Mubarak

Kenneth Khaw (until 30 June 2022)

The Hon Robert Lloyd George (until 19 October 2022) Jan Pethick

James Ritblat (until 7 June 2022)

Hélène Marie Shafran John Taysom

Herta Von Stiegel Johanna Waterous CBE

Ruth Yeoh (until 30 June 2022)

And all our other supporters, including those

who have chosen to remain anonymous.

Looking ahead

Life on Earth is in peril.

The plants and fungi we depend on are disappearing faster than ever before and the planet's life-supporting ecosystems are being destroyed. But there is hope. Together, we can power a new age in conservation.

In the critical decade ahead, the Royal Botanic Gardens, Kew will push the frontiers of plant and fungal science to set out a clear path to protecting global biodiversity – the richness of all life on Earth.

We are committed to creating a step change in how humanity understands the plants and fungi our planet needs to thrive, to developing sustainable solutions to some of our biggest global challenges, and to inspiring action to protect nature for the future.

With your support, we will generate evidence, solutions and actions to restore and protect all life on Earth.

For more information, contact the Kew Development Office via development@kew.org



