The role of the Royal Botanic Gardens, Kew in shaping ideas of biodiversity

In response to environmental, political, and institutional pressures emerging in the late 1980s, the Royal Botanic Gardens, Kew shifted its internal strategy to encompass new ideas of biodiversity and sustainable development. It also began to consciously communicate these ideas to a visiting public that numbered over one million people per year.

Kew's contribution to international agreements, its internal strategy, and its public education activities will be the focus of this study. It considers the construction of environmental knowledge within a multidimensional institution and considers the 'how and why' of this change. In doing so, it contributes to the growing literature in environmental history that seeks to understand the complexities of environmental ideas and interrogate the links between culture and nature. By drawing on existing studies which look at the emergence of environmental ideas in expert communities, political spaces, and environmental campaigns, this study pushes the literature forward by asking new questions about the position of cultural institutions within the environmental narrative. The biological diversity of the world hit a crisis point in the late 1980s. Although experts had been lamenting the decline of species, ecosystems, and genetic material for a considerable number of years, up until that point they had found it difficult to present a consensus or compelling narrative, and political and public awareness about the crisis was subsequently limited.¹ Frustrated at the lack of attention the crisis was getting outside the academy, Edward Wilson debuted the new media-friendly term 'biodiversity' at the *National Forum on BioDiversity* held in Washington DC in 1986.² The portmanteau was adopted with enthusiasm, providing common ground for different interest groups by successfully linking traditional values of conservation with emerging preoccupations of economic growth.³ By the 1990s the term was so widely used that historians have referred to this moment as the 'biodiversity revolution'.⁴

Within international scientific and political communities the term 'biodiversity' and the ideas associated with it certainly increased dramatically during this time.⁵ And yet, despite the long scholarly tradition of historicising scientific ideas, few studies detail the direct interactions between experts and publics in their construction; even fewer consider the 'how

¹ Timothy Farnham, *Saving Nature's Legacy: Origins of the Idea of Biological Diversity* (New Haven: Yale University Press, 2007); David Sepkoski, *Catastrophic Thinking: Extinction and the Value of Diversity*, Science Culture (Chicago: University of Chicago Press, 2020).

In Kew this is demonstrable through their international collaborations outlined in Hugh Synge and Townsend Harry, eds., *Survival or Extinction: Proceedings of a Conference Held at the Royal Botanic Gardens, Kew Entitled The Practical Role of Botanic Gardens in the Conservation of Rare and Threatened Plants* (Kew: The Benthan-Moxon Trust, 1979); J Simmons et al., eds., *Conservation of Threatened Plants* (New York: Plenum Press, 1976).

² National Forum on BioDiversity, *Biodiversity* (Washington, D.C: National Academy Press, 1988).

³ Ramachandra Guha, *Varieties of Environmentalism: Essays North and South* (London: Earthscan Publications, 1997); Paul Sabin, *The Bet: Paul Ehrlich, Julian Simon, and Our Gamble over Earth's Future* (New Haven: Yale University Press, 2013).

These ideas were advocated by The World Commission on Environment and Development, 'Our Common Future' (Oxford: Oxford University Press, 1987).

⁴ 'Biodiversity revolution' taken from Paul Warde, Libby Robin, and Sverker Sorlin, *The Environment: A History of the Idea* (John Hopkins University Press, 2018), 93.

⁵ Farnham, *Saving Nature's Legacy*; Sepkoski, *Catastrophic Thinking*.

and why' of these interactions.⁶ Although there has been important research into conservation movements, when the wider public has been brought into narratives of environmental ideas they are often seen as passive receptors of expert activities; or, when they have agency, they have been somewhat generalised through comments on media exposure, book sales, or the zeitgeist of the age.⁷

There are various explanations for this. The long scholarly separation between the History of Science and Environmental History, as outlined by Mark Hersey and Jeremy Vetter, has meant that questions on the communication of science within public spaces have remained outside the scope of previous environmental studies.⁸ In addition to the lack of existing frameworks there are also methodological difficulties that arise when exploring the integration of 'science' and 'culture'.⁹ This paper attempts this integration by building on the constructivist scholarship within histories of science and technology, and the natural history research within museum studies.¹⁰ In particular, it draws on James Secord's notion of 'knowledge in transit' which argues that the *circulation* of scientific knowledge between

⁶ Overview of existing scholarship on this theme is outlined in Andrew C. Isenberg and Michael Lewis, 'And All Was Light?—Science and Environmental History', in *The Oxford Handbook of Environmental History*, ed. Andrew C. Isenberg (New York: Oxford University Press, 2014).

⁷ For example, Donald Worster, *Nature's Economy*, 2nd ed. (Cambridge: Cambridge University Press, 1994); Harriet Ritvo, *The Dawn of Green: Manchester, Thirlmere, and Modern Environmentalism* (Chicago: University of Chicago Press, 2009); Libby Robin, *Defending the Little Desert: The Rise of Ecological Consciousness in Australia* (Melbourne University Publishing, 1994).

⁸ Mark D. Hersey and Jeremy Vetter, 'Shared Ground: Between Environmental History and the History of Science', *History of Science* 57 (December 2019): 403–40.

⁹ Max Long, 'Cultural History and Modern Science', *The Historical Journal*, 2021, 1–13.

¹⁰ Jan Golinski, Making Natural Knowledge: Constructivism and the History of Science, with a New Preface (University of Chicago Press, 2008); R Cooter and S Pumfrey, 'Separate Spheres and Public Places: Reflections on the History of Science Popularization and Science in Popular Culture', *History of Science* 32 (1994): 237–67; Samuel J. M. M. Alberti, 'Objects and the Museum', *Isis* 96, no. 4 (December 2005): 559–71; Sharon Macdonald, A Companion to Museum Studies (Wiley-Blackwell, 2008); Samuel J.M.M. Alberti, 'Constructing Nature behind the Glass', *Museum and Society* 6 (2008): 73–97.

Environmental historians have increasingly advocated for a closer relationship with other sub-fields and disciplines Sverker Sörlin and Paul Warde, 'The Problem of the Problem of Environmental History: A Re-Reading of the Field', *Environmental History* 12 (2007): 107–30; Isenberg and Lewis, 'And All Was Light?'

expert and non-expert can only be understood when questions of 'how', 'where', 'when' and 'for whom' are inherently built into the analytic framework.¹¹

This study has two aims. Firstly, in contending that the existing literature on environmental ideas has predominantly focused on scientific communities, national governments, and international organisations it seeks to fill a gap and test their arguments in the wider domain of public life.¹² In doing so it addresses Libby Robin's request to historians that they begin to document how the idea of biodiversity has 'travelled' since it first appeared in the late 1980s.¹³ Secondly, eminent environmental historian Richard Grove described botanic gardens as 'critical to the ways of defining and interpreting human influence on the world', and this study proposes that the recent history of the Royal Botanic Gardens, Kew [Kew] can offer an effective case study for approaching this task.¹⁴

Throughout its history Kew has embodied many definitions. Shaped by governments, experts, and citizens from around the world, it has been a research facility, a botanic museum, a pleasure garden, and a public educator, often all at once.¹⁵ It is this conflicting institutional identity that has allowed Kew to become a space where the public can freely interact with concepts of science and nature. Founded by Princess Augusta in 1759, Kew Gardens has been predominantly concerned with the collection of botanic specimens. The use of its expansive collections, knowledge of economic-botany, and authoritative network of

¹¹ James A. Secord, 'Knowledge in Transit', Isis 95 (2004), 655.

¹² Some notable examples are Warde, Robin, and Sörlin, *The Environment: A History of the Idea*; David C. Coleman, *Big Ecology the Emergence of Ecosystem Science* (Berkeley: University of California Press, 2010); John Sheail, *An Environmental History of Twentieth-Century Britain* (Hamphire: Palgrave, 2002); Worster, *Nature's Economy*; Robin, *Defending the Little Desert*; Ritvo, *The Dawn of Green*.

¹³ Libby Robin, 'The Rise of the Idea of Biodiversity: Crises, Responses and Expertise', *Quaderni*, 76 (1 September 2011), 26.

¹⁴ Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism 1600-1860* (Cambridge: Cambridge University Press, 1995), 13.

¹⁵ For an overview of Kew Gardens and its struggle between scientific research institute and public pleasure garden see; Ray Desmond, *Kew: The History of the Royal Botanic Gardens* (London: Harvill with the Royal Botanic Gardens, Kew, 1998).

specialists meant that by the late nineteenth century Kew had become the botanical centre of the British Empire.¹⁶ To the outrage of experts who utilised the botanic garden for scientific research it had also become a pleasure ground and, at times, merely a 'pretty tea-garden' for the general public.¹⁷ By the 1960s however, competition with the Natural History Museum and the hardships of the post-war austerity era incentivised Kew to embrace its role as a public attraction; it is now the largest botanic garden in the world with over 300 acres and 16,900 unique plant species.¹⁸ In 2020 it welcomed over two million sightseers and was the most visited tourist site in England, signifying its cultural currency and hinting at its soft power.¹⁹

Building on the work of historians who have chiefly focused on Kew's scientific origins, colonial networks, collections, famous botanists, and occasionally its conservation activities, this paper will demonstrate that Kew's recent history can offer fascinating insight into the intellectual history of biodiversity.²⁰ It views Kew as a *singular* institutional actor in the process of idea-making, including all staff, experts, associates, employees, and volunteers. There are two justifications for this framing, as demonstrated by historian Kristin Asdal in her empirical study on a 1970s Oslo power plant.²¹ Firstly, it allows abstract environmental

¹⁹ Board of Trustees of the Royal Botanic Gardens, Kew, Annual Report and Accounts for Year Ended 31 March 2020 (2020); Visit Britain, 'Annual Survey of Visits to Visitor Attractions' (2020) [www.visitbritain.org/annual-survey-visits-visitor-attractions-latest-results, accessed 9 March 2022]; 'Soft Power' was the term used to describe Kew by Michael Gove in a 2019 speech launching his environmental bill.

¹⁶ Desmond, Kew: The History of the Royal Botanic Gardens, p. 258.

¹⁷ Ibid., p. 280.

¹⁸ BBC News, 'Kew Gardens: Royal Botanic Gardens breaks record for largest plant collection' (2021) [www.bbc.co.uk/news/uk-england-london-58559491, accessed 1 February 2022]

M. Gove, 'How late it was, how late – why the earth asks us to act now', (2019) [www.wcl.org.uk, accessed 20 April 2021].

²⁰ Ray Desmond, *The History of the Royal Botanic Gardens Kew* (London: The Harvill Press, 1995); Desmond, *Kew: The History of the Royal Botanic Gardens*; Ray Desmond, *A Century of Kew Plantsmen: A Celebration of the Kew Guild* (Richmond: Kew Guild, 1993); Ghillean T. Prance, 'A Brief History of Conservation at the Royal Botanic Gardens, Kew', *Kew Bulletin* 65, no. 4 (December 2010): 501–8.

²¹ Kristin Asdal, 'On Politics and the Little Tools of Democracy: A Down-to-Earth Approach', *Distinktion: Journal of Social Theory* 9, (2008).

issues to be brought down to Earth as material concerns for institutions and the public. Secondly, to paraphrase Asdal, it will reveal, not what environmental engagement 'is', but how it 'gets carried out, in practice'.²²

This study is structured around an examination of three central questions: what was Kew's role in shaping and responding to the biodiversity crisis within political and scientific spheres? When and why did biodiversity become integrated into Kew's public education approach? And how were ideas of biodiversity constructed within a public space? Fundamentally, this paper questions how and why knowledge about a biodiversity crisis has circulated between a relatively small group of botanists and a much wider cohort of people unconnected with science (in essence, how knowledge has been *made* to move), and argues that this circulation of knowledge is consciously driven by political, economic, material, and ideological forces.

Kew had been maintaining that biological diversity and humanity's resource base was in decline long before the biodiversity crisis hit headlines. Since the 1970s it had been closely affiliated with larger conservation organisations concerned with species extinction and resource protection such as the United Nations Environment Programme and the International Union for the Conservation of Nature.²³ The gardens also hosted international conferences explicitly driven by a need to protect the 'diversity of the plant world...as an integral part of man's long-term welfare and survival'.²⁴ These conferences embodied the conservation rhetoric of the time, framed by the catastrophic predictions of the future advocated in influential publications such as the Club of Rome's *Limits to Growth* and Paul Ehrich's *The*

²² Ibid., 12.

²³ Kew Gardens Annual Report (1980), Kew Archive Richmond [hereafter KA], p. 15. Lucas Grenville and Hugh Synge, *The IUCN Plant Red Data Book* (Morges: IUCN, 1978).

²⁴ Synge and Harry, *Survival or Extinction*, vi.

Population Bomb.²⁵ However, as the dominant environmental discourse shifted through the 1980s and 'survival' was replaced with 'progress' Kew began to influence and adopt a new paradigm that presented botanical protection and economic growth as mutually supportive aims.²⁶

This integration of ecology and economics was endorsed politically at the Rio Conference in 1992 [hereafter referred to as Rio Conference or Earth Summit]. This event officially recognised the connection between conservation, biological diversity, and sustainable development by redefining botanic specimens as resources and emphasising humanity's dependence on them. Kew offered both contributory and interactional expertise to this proceeding.²⁷ It helped shape the *Convention on Biological Diversity* [CBD], a groundbreaking agreement signed at the Rio Conference by 150 nations who swore to conserve biological diversity and uphold the 'sustainable use of its components'.²⁸ As seen in the negotiating process of earlier international environmental agreements, non-governmental organisations had an important part to play by providing expertise and policing implementation.²⁹ Though shaped by politicians, experts, and advisors from around the world, Kew's particular role in the CBD was described by its Director, Sir Ghillean Prance, as one of 'active participation'.³⁰ Kew prepared reports for the European Commission and even set up a CBD post in 1996 to align its work to the objectives of the convention.³¹

²⁵ Donella H Meadows, *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind* (London: Earth Island, 1972); Paul R. Ehrlich, *The Population Bomb*, Revised. (New York: Ballantine Books, 1971); Synge and Harry, *Survival or Extinction*, 159.
²⁶ Sahin, *The But*

²⁶ Sabin, The Bet.

²⁷ The significance of 'contributory' and 'interactional' expertise in environmental thinking outlined in Warde, Robin, and Sörlin, *The Environment: A History of the Idea*, 48.

²⁸ Prance, 'A Brief History of Conservation'; Convention on Biological Diversity, (United Nations, 1992), 6.

²⁹ As noted by John McCormick, *The Global Environmental Movement* (Chichester: John Wiley & Sons Ltd, 1995), 231.

³⁰ Prance, 'A Brief History of Conservation', 504.

³¹ Ibid.

However, in relation to national policy formation there were limitations to Kew's involvement. Kew continued to hold its position as the UK's Scientific Authority for Plants and it assisted in drafting some text of the national response to the CBD, *The UK Biodiversity Action Plan*, but the government's environmental position was shaped by more relationships than just those it had with Kew.³² Calling on numerous institutions and companies – three hundred received the first consultation letter – the process to write the *Biodiversity Action Plan* became one of the largest collaborations the UK government had ever organised.³³ Kew's specific expertise reinforced the idea of sustainability as a central part of the UK's position and it received special recognition for its contribution but its material impact on government policy was limited.³⁴ Kew had to demonstrate its political value in other ways.

Notably, Kew offered valuable support to biodiversity enterprises such as the *Darwin Initiative for the Survival of Species*. This was a multilateral scientific partnership, dependent on the expertise of Kew and other organisations, through which the Department of Environment, Transport, and Regions (and later Defra) offered grant money to project leads who financially and technically supported biodiversity projects internationally, particularly in developing countries.³⁵ Projects mainly focused on research, training, or capacity building. As an example, Darwin funded individuals from developing countries to take Kew's respected *International Diploma Course in Herbarium Techniques* and encouraged them to

³² M. Strong, 'The Fourth Environmental Lecture by the Chairman and Chief Executive Officer, Ontario Hydro Chairman, The Earth Council' (Royal Botanic Gardens, Kew, 1993), KA.

³³ Eventually the government set up an Advisory Group on Biological Diversity because it became too difficult to consult everyone separately. Fiona McConnell, *The Biodiversity Convention: A Negotiating History* (London: Kluwer Law International, 1996), 38; Outlined in the *Biodiversity: The UK Action Plan*, (London: HMSO, 1994), 183-4.

³⁴ Biodiversity: The UK Action Plan, (London: HMSO, 1994), 184.

³⁵ Darwin Initiative Papers, box 502.7, First Darwin Report, 13, KA [hereafter First Darwin Report]; Darwin Initiative for the Survival of Species Guidance Notes for Applicants, September 1995, File AT 84:340, National Archives, Richmond [hereafter NA].

For information about the project, its aims and its results see David Ingram, 'The Darwin Initiative for the Survival of Species', *Oryx* 35 (2001): 97–98; Lesley King and Christa Wild, 'Twenty Years of Defra's Darwin Initiative', *Oryx* 46 (2012): 326–27.

apply these skills to herbariums across the world.³⁶ Projects such as this contributed to a vitally important publicity campaign for the government and positioned botanic knowledge as a key foundation for international biodiversity campaigns. The Prime Minister officially announced Darwin at the Rio Conference and stated that it reflected the UK's 'position as a world leader in conservation and the use of the world's resources of biodiversity'.³⁷ And the importance of Darwin did not decline over time; in 2009, Huw Irranca-Davies, Defra's Under-Secretary, counted Darwin 'as one of the most successful initiatives that my department has in its portfolio'.³⁸

The government was dependent on Kew's expertise from the very beginning of the initiative. Kew was one of five leading scientific environmental organisations that provided the government with the information it needed to materially take action on biodiversity following the Rio Conference.³⁹ Moreover, as project planning began, it was officially recommended to the Darwin Advisory Committee that funding 'should be focused mainly on those countries where links with Britain already exist...demonstrate links between British scientists and institutions with their overseas counterparts'.⁴⁰ Having the largest botanical network in the world, which was in turn supported by an aggregation of expertise and skills, Kew was indispensable: it was project lead for the largest number of ventures in the portfolio together with the Natural History Museum.⁴¹

³⁸ Huw Irranca-Davies, 'Darwin Initiative' (30 April 2009) [www.hansard.parliament.uk accessed 2 May 2021].

³⁶ First Darwin Report, 37.

³⁷ Prime Minister's speech quoted in 'UN Conference on the Environment and Development' (15 June 1992), [www.hansard.parliament.uk accessed 2 May 2021].

³⁹ Kew was named alongside The Natural History Museum, IUCN, World Conservation Monitoring Centre, and International Council for Bird Preservation. Press Release Biodiversity Launch: After the talk and signings at the Earth Summit. Where do we go from Rio?; 'News release, Kew responds to 'Darwin Initiative' statement'; 'Department of Environment News Release'; 'The Way Forward after Rio – Michael Howard', Darwin Initiative Papers, box 502.7, KA.

 ⁴⁰ Department of the Environment, *Darwin initiative for the survival of species, report and recommendations of the advisory committee*, July 1993, 5-6, Darwin Initiative Papers, box 502.7, KA.
 ⁴¹ First Darwin Report, 37.

Alongside the Darwin Initiative, Kew organised a number of plant-collecting and datagathering expeditions.⁴² Of particular note was Kew's Sustainable Environment and Development Strategy for St Helena, intended as a comprehensive review of St Helena's native plants that would guide conservation efforts. The project was said to be motivated by 'the need to balance economic, social and ecological systems to support the goal of sustainable development'.⁴³ This was achieved through a collaboration of experts who used the VORTEX programme computer simulation model to create management scenarios and evaluate impacts on endangered species. This strategy demonstrated Kew's adoption of 'futurology', in which simulation technology and a future-orientated concept of the environment were integrated to link visions of the future with a nostalgic link to the past.⁴⁴ The project was envisioned by Kew's Director as something 'to keep the spirit of Rio alive', and in this it succeeded.⁴⁵ Encompassing concepts of biodiversity and sustainability, dependent on expertise based on computer modelling and the generation of scenarios, and projecting a particular imagining of St Helena as an 'Edenic paradise' to be protected and enhanced through proper management, it was praised by the Secretary General of the Rio Conference as 'the first true plan for sustainable development anywhere in the world'.⁴⁶

Throughout the 1990s Kew Gardens also provided a platform for celebrated figures to discuss the environmental issues of the day. Kew hosted speeches from an impressive array of

⁴² Caroline Cornish, Felix Driver, and Mark Nesbitt, 'The Economic Botany Collection at Kew: Analysis of Accessions Data', *Mobile Museum Working Paper 1*, 2017, 11.

⁴³ Mike Maunder et al., 'Conservation Assessment and Management Plan for St Helena: A Collaborative Workshop', *Botanic Gardens Conservation News* 2, (1994): 44–48.

 ⁴⁴ Warde, Robin, and Sörlin, *The Environment: A History of the Idea*; T Turnball, 'Stimulating the Global Environment: The British Government's Response to the Limits to Growth', in *Histories of Technology, the Environment, and Modern Britain*, by J Agar and J Ward (London: UCL Press, 2018).
 ⁴⁵ M. Strong, 'The Fourth Environmental Lecture', 3.

⁴⁶ Desmond, *The History of the Royal Botanic Gardens Kew*, 345. St Helena as an 'edenic' imagining see Grove, *Green Imperialism*, 6.

politicians and activists as part of an annual series of lectures. Among their numbers were presidents of developing nations, the chairman of the Earth Council, the Director-General of the IUCN, and the U.S Under Secretary for Global Affairs.⁴⁷ Through these events, Kew was able to engage with the nuances and contradictions of biodiversity and sustainable development strategies, as well as keep up to date with important themes of appropriate technology, indigenous knowledge, and additional compensation. These lectures allowed Kew to engage with the fluctuating nature of environmental politics outside the larger international events and present the gardens themselves as a place of environmental authority.

In fostering these connections, Kew also acquired a responsibility to public education. The general impetus for engaging national publics on environmental issues emerged from the Rio Conference. In a speech made at Kew Gardens in 1993, Maurice Strong, Chairman of the Earth Council, stated that the 'main theme of the Earth Summit' was

The need for fundamental changes in our economic life through a full integration of the environmental dimensions into economic policies, decision making and behaviour...motivate the economic conduct of corporations and citizens.... providing positive incentives for environmentally sound and sustainable practices.⁴⁸

How this translated into the work of scientific organisations, such as Kew, was outlined in *Agenda 21*. Here it was stated that a full partnership had to be created between the scientific community and the general public with a focus on 'improving the exchange of knowledge'

⁴⁷ M. Strong, 'The Fourth Environmental Lecture'; D. McDowell, 'The Sixth Environmental Lecture by the Director-General of World Conservation Union', (Royal Botanic Gardens, Kew, 1996); Hon. T. Wirth, 'The Seventh Environmental Lecture by the Under Secretary of State for Global Affairs' (Royal Botanic Gardens, Kew, 1997).

⁴⁸ M. Strong, 'The Fourth Environmental Lecture', 10.

between them.⁴⁹ An 'exchange' of knowledge crucially did not only demand the communication of specialised information but would also encourage the public to communicate 'their sentiments to the scientific and technological community concerning how science and technology might be better managed to affect their lives in a beneficial way'.⁵⁰ The international community needed a space where a *dialogue* could be constructed.

To many commentators, Kew was the model institution for achieving this goal. In the *The Role of Collections and Displays* section of the *UK's Biodiversity Plan* Kew was named as having 'an almost unique ability to develop education and interpretation of biodiversity'.⁵¹ However, the public was unaware that they could engage with Kew on these issues. Both the Chairman of the Earth Council and the Director-General of the IUCN made this a central message in their environmental lectures presented at Kew. Maurice Strong noted the 'unique and invaluable contribution of the Royal Botanic Gardens to protect the Earth's biodiversity, through its programmes of public education, research and international outreach' but lamented that it was not appreciated 'as fully as it deserves to be by the public'.⁵² David McDowell, Director-General of the IUCN, went further and declared that this was because experts at Kew were not 'good at selling their product'.⁵³ In a fervent speech held at Kew he directed his frustration at the experts themselves,

My point is that the botanical inputs into the sustainability debate are so crucial that a reorientation of the overall global effort by botanical institutions and by individual botanists - towards more emphasis on the impacts and interactions of humans with the

⁴⁹ United Nations Conference on Environment & Development: Agenda 21, 293.

⁵⁰ Ibid.

⁵¹ Biodiversity: The UK Action Plan, 115.

⁵² M. Strong, 'The Fourth Environmental Lecture'.

⁵³ D. McDowell, 'The Sixth Environmental Lecture'.

plant world - and perhaps the injection of a greater sense of urgency into the whole process both seem to be called for...must expand on the excellent public education work already being done by botanical gardens to bring home to the public how the plant world supplies many of the answers to achieving global sustainability. Botanists must assert themselves more, to become more visible, to become more vocal.⁵⁴

To Strong and McDowell, the botanic gardens were not doing enough, either to engage visitors on the environmental issues of the moment, or even to educate them on Kew's substantial scientific work. There was potential here, but it was something that Kew needed to actively embody within their organisational strategy.

Of course, the opinion that Kew was not doing enough in the realm of environmental public education was not shared by everyone, least of all Kew's experts themselves. Prance, in introducing McDowell's lecture, questioned whether botany lacked public attention due to the fact that 'botanists have not been assertive enough, as is suggested in this lecture, or is it that the general public find animals more cuddly and alive?'⁵⁵ This was a fair question. Endangered plants had long struggled to grab the public's attention away from the 'charismatic megafauna' of wild cats and bears.⁵⁶ The IUCN's first *Red Data List of Threatened Plants* was published in 1970 with the help of Kew's Dr Ronald Melville, four years after the first 'threatened animal' list.⁵⁷ There was an obvious disparity in conservation

⁵⁴ Ibid.

⁵⁵ Ibid.

⁵⁶ The IUCN commentators had often credited this preference to the natural anthropomorphic tendencies of humans but historian Stephen Macekura has instead attributed it to a residual desire to protect 'big-game' in old colonial hunting grounds S. Macekura, *Of Limits and Growth: The Rise of Global Sustainable Development in the Twentieth Century* (Cambridge: Cambridge University Press, 2015). "Charismatic Megafauna" taken from Warde, Robin, and Sorlin, *The Environment: A History of the Idea*, 131.

⁵⁷ Desmond, *The History of Kew*, 345; D. McDowell, 'The Sixth Environmental Lecture', 4; T. Turnball, 'Stimulating the global environment: the British Government's response to the Limits to Growth' in J. Agar and J. Ward ed., *Histories of Technology, the Environment, and Modern Britain* (London: UCL Press, 2018).

priorities, illustrated by the seven pages of plant content included in the plant *Red Data List* compared to the three hundred and fifty-three pages devoted to birds and animals.⁵⁸ By 1997, a year after McDowell's lecture, Kew had made major contributions to help the IUCN in publishing a new *Red Data List* of 33,000 threatened plants to spread public awareness, it was described as 'the most comprehensive compilation of data on threatened vascular plants ever published'.⁵⁹ And so, although Prance accepted McDowell's 'challenge for botanical institutes around the world to enter more fervently into the sustainability debate', it must be acknowledged that this had been on his agenda for quite some time.

Prance himself was a passionate environmentalist. He had spent his early years in the Highlands of Scotland and the woodlands of Gloucestershire; it was an upbringing marked by wild spaces, plant collecting, and religious enlightenment. His personal environmentalism was deeply connected with Christian faith, and throughout his life Prance held strong beliefs in the glory of God's rich and diverse world, the sinful nature of humanity, and the concept of stewardship and social justice.⁶⁰ Along with his personal convictions his written work embodied the prominent concerns and rhetoric of the time, citing population growth, global warming, pollution, and the loss of biodiversity as the key considerations for heeding the environmental crisis. These values led to a career dedicated to protecting the planet and urging others to do the same; they were the driving force behind his decision to take the directorship at Kew Gardens in 1988, and he had been leading Kew's 'biodiversity revolution' ever since.⁶¹

⁵⁸ M. Sands, 'Ronald Melville: 1903-1985', Kew Bulletin 41 (1986), 761-68.

⁵⁹ Harriet Gillett and Kerry Walter, 1997 IUCN Red List of Threatened Plants (Gland: IUCN, 1998).

⁶⁰ Clive Langmead, A Passion for Plants: From the Rainforests of Brazil to Kew Gardens, the Life and Vision of Ghillean Prance (Oxford: Lion Publishing plc, 1995); Ghillean Prance, The Earth Under Threat: A Christian Perspective (Glasgow: Wild Goose Publications, 1996); Ghillean Prance, Reflections on Biodiversity and the Bible (Glasgow: Wild Goose Publications, 2013).

⁶¹ Langmead, A Passion for Plants, 173.

To address the environmental crises Prance believed that ethics needed to change both within the Christian community and more broadly throughout public life. Accordingly, under his leadership there was an increasing focus on public engagement and education.⁶² Marketing teams were expanded, a new management group was created, and material changes to the gardens - such as the new Evolution House - were encouraged, all intended to increase public awareness of Kew's work and environmental issues.⁶³ Additionally, media coverage began to be included in the annual reports, market research was undertaken to understand why people visited, public opinion was monitored through annual surveys, and Kew implemented its first customer charter.⁶⁴ Notably, the Association of Leading Visitor Attractions was contracted to create a new visitor experience survey and review the results against other leading 'attractions'.⁶⁵ Considering the efforts Kew had historically taken to brush off its 'public' identity, this shift in self-definition was notable.⁶⁶

The motivations for this change were multifaceted, and Prance's environmental ethics interlaced with a business strategy that reflected the anxieties of Kew as a commercial enterprise. Alongside funding constraints, visitor engagement became an issue with the increasing number of competing leisure activities available to the public. Individuals had a variety of options when deciding how to spend their free time and by the late 1980s Kew was forced to seriously consider how it was viewed and valued by the community, and review its work in light of 'modern social conditions'.⁶⁷ By the end of the 1990s declining visitor

⁶² Desmond, *The History of the Royal Botanic Gardens Kew*, 383; Royal Botanic Gardens, Kew, 'Review of the Work of the Royal Botanic Gardens, Kew, from April 1993 to March 1996', (1996), 53. Royal Botanic Gardens, Kew, 'Review of the Work of the Royal Botanic Gardens, Kew, from April 1987 to March 1988', (1988), 35.
⁶³ The Evolution House, box pK95.1, KA; 'Review of the Work of Kew 1996'.

⁶⁴ 'Review of the Work of Kew 1996'.

⁶⁵ Ibid.

⁶⁶ Desmond, The History of the Royal Botanic Gardens Kew.

⁶⁷ Enid Gilberthorpe, 'British Botanical Gardens in the 1980s: Changes Reflected by Bibliographical and Social Survey' (University of Sheffield, 1987).

numbers made it clear to staff that new proposals were still needed to 'ensure the long-term health of visitor amenity at Kew and...meet changing public expectations and the evergrowing competition for leisure time'.⁶⁸

Kew underwent a number of changes to foster this link, but the revival of its 70,000specimen Economic Botany Collection was the most significant. Kew had been adding to the EBC since 1847: it was the largest collection of economic botany in the world, made up of specimens that were used for the benefit of mankind. As a collection built through imperial practices it had lost justification and favour with the fall of the British Empire but it was revived in the 1990s thanks in part to the conclusions of the CBD.⁶⁹ Within this agreement 'ex-situ' conservation, defined as 'the conservation of components of biological diversity outside their natural habitat', gained global impetus.⁷⁰ Additionally, local and indigenous communities knowledge of the 'natural' world became legitimised as worthy examples of sustainable lifestyles, something which the EBC's ethnographic collection could comment authoritatively on.⁷¹ These shifts meant that Kew's EBC collection could shake off the stains of imperialism and be revived within a new rhetoric of biolowersity protection and sustainable development. This was explicitly noted within the organisation, with Prance himself stating that Kew endeavoured to change the perception of the EBC from 'enhancing the finances of an empire to...promot[ing] sustainability'.⁷²

Caroline Cornish, Felix Driver, and Mark Nesbitt's research on the 'Mobile Museum' has

⁶⁸ Visitor numbers taken from Annual Reports (1991, 1993 – 1996); 'Review of the Work of Kew 1988'.
Desmond, *The History of the Royal Botanic Gardens Kew* 383; Langmead, *A Passion for Plants*, 185.
⁶⁹ Caroline Cornish, 'Curating Science in an Age of Empire: Kew's Museum of Economic Botany' (London,

Royal Holloway, University of London, 2013).

⁷⁰ Compared to in-situ, 'the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties' *Convention on Biological Diversity: Article 2*, 3.

⁷¹ As demonstrated in the content of Kew's Environmental Lectures, (1990 – 1999).

⁷² Prance, 'A Brief History of Conservation', 505.

identified a specific phase in the EBC from the 1970s, which saw the total accession of collection items increase distinctly, relative to the previous thirty years (figure 1).⁷³ This is particularly suggestive when the EBC's annual accession numbers are analysed more closely. The decline in accession through the late 1980s and the sudden peak in the early 1990s significantly coincides with the Rio Conference, the opening of Kew's new Centre for Economic Botany, and the appointment of the first full-time seed collector at its Seed Bank. Undoubtedly, in an attempt to construct a 'post-imperial role' for itself concepts of biodiversity and sustainable development were useful for Kew especially after its role in the CBD gave plant conservation an authority and legitimacy acknowledged internationally.⁷⁴



Figure 1 Total accession events of Kew's Economic Botany Collection from 1847 to 2016. Cornish, Driver, and Nesbitt, 'The Economic Botany Collection at Kew', 48.

⁷³ Cornish, Driver, and Nesbitt, 'The Economic Botany Collection at Kew: Analysis of Accessions Data'.

⁷⁴ Cornish, Driver, and Nesbitt.

As part of the EBC's shift from an imperial to sustainable development enterprise, in 1998 the collection formed the central display of a new permanent public exhibition located in the recently refurbished Museum Number 1.⁷⁵ *Plants* + *People* was advertised to the public as an exhibit to 'celebrate man's effective and ingenious use of plants' and it gave Kew an opportunity to educate and engage the public on their scientific work within the context of a global biodiversity crisis.⁷⁶ The exhibition was labelled internally as a resounding success, welcoming over 125,000 visitors in the first year and winning a prestigious award from the Society for the Interpretation of Britain's Heritage.⁷⁷

Whether it is the site of exhibition, the practise of viewing, or the collection itself, the displaying of natural history items has been of considerable interest to historians across many sub-disciplines.⁷⁸ One theme that has been prominent within this literature and can help frame an analysis of *Plants* + *People* is the relationship between natural specimens and material culture. When we consider how Kew moved environmental information in light of this theme, the economic botany specimens presented in *Plants* + *People* can offer a clear example of an exhibit that removed boundaries between nature and culture and *entangled* museum display and material culture.⁷⁹

At the heart of the exhibition were three interconnected aims: one to 'educate people about the importance of plants and fungi, about conservation, and sustainable use'; one to make people think about 'why they do the things they do, that have led to the current

⁷⁵ News Release from Kew, 1994, box pK94, KA [hereafter News Release from Kew].

⁷⁶ News Release from Kew.

⁷⁷ Visitor Totals, 1998-99, box QH1830, KA; Award presented to Kew Gardens from interpret Britain, 2 Feb 1999, KA; Email from Hew Prendergast to John Harris, 29 Jan 1999, box QH1830 KA [hereafter email from Prendergast to Harris]

⁷⁸ As summarised by Samuel J.M.M. Alberti, 'Constructing Nature behind the Glass'; Inbal Livne, 'Nature and Culture in Museums: An Introduction', *Museum Ethnographers Group*, 2016, 9.

⁷⁹ The importance of economic botany collections in demonstrating and constructing this connection is laid out in Livne, 'Nature and Culture in Museums'.

predicament'; and one to 'bring more visitors into Kew and to tell them what we are doing'.⁸⁰ In integrating these aims Kew used once-organic specimens to communicate a biodiversity crisis. The exhibit identified unsustainable exploitation of plants as the issue and presented informed consumer choices based on botanical expertise as the answer: the display was used to define a crisis and simultaneously frame a solution.⁸¹

As with other methods of environmental communication the exhibition was grounded in the authority of the expert. Traditionally, Kew had presented itself as an authority by pointing to the legacies of famous botanists, plant discoveries, esoteric scientific knowledge, and the sheer quantity of enigmatic items it could fit in its cabinet of botanical curiosities (as demonstrated in figure 2): in doing so, it separated its authority from public life.⁸² Yet, because environmentalism was seen in the organisation as a people-based movement, managers felt that the expertise in this exhibition needed to be found in both science and culture.⁸³ Although taxonomic authority was preserved through the botanical naming of the EBC items, Kew also presented itself as a *cultural* expert that could remove the boundaries between human and non-human world.⁸⁴ Naturally, the content of the exhibition still needed to be legitimised as 'science' by specialists. The organisers made it clear internally that the exhibition should be seen as a central part of Kew's scientific work despite the lay audience: in their minds, the scientific information and collections presented in the exhibition were just as important to the circulation of knowledge as the research published in the leading journals

⁸⁰ Email from Hew Prendergast to Hew Prendergast 14 Jan 2000, box QH1830, KA [hereafter email from Prendergast to Prendergast]; Memorandum: Design Brief, 6 June 1996, box QH1830, KA [hereafter Design Brief].

⁸¹ Robin, 'The Rise of the Idea of Biodiversity', 25.

⁸² Cornish, 'Curating Science in an Age of Empire: Kew's Museum of Economic Botany'.

⁸³ Design Brief.

⁸⁴ Email from Hew Prendergast to Ruth Linklater, 4 June 1999, box QH1830, KA [hereafter email from Prendergast to Linklater.

and should be acknowledged as such.⁸⁵ Despite this traditional appeal to scientific authority, by explicitly trying to remove the frontier between academic and public spheres the exhibition attempted to create a more natural dialogue between expert and visitor.



Figure 2 Museum Number 2, early 1960s. The first home of the Economic Botany Collection at Kew. Box QH1830, KA.



Figure 3 Plants + People exhibition entrance. Kew. Plants + People.

⁸⁵ Email from Prendergast to Prendergast; Email from Prendergast to Linklater.

Each item, text, image, and action within the exhibition was a deliberate act of communication; visitors could engage with and respond to statements, items, and activities in the process of constructing their own personal understanding of a biodiversity crisis. Kew crafted a symbiotic authority that drew on science and culture by carefully curating the EBC as both organic plant specimens and commercial objects central to modern life. The specimens were organised depending on their utility to mankind; split into four groups, those used for food, drink, health and well-being, clothing and diverse plant use were grouped together to demonstrate the direct dependency between plants and people.⁸⁶ Consumerism was an important but implicit theme here. Many specimens were donated by well-known businesses which had tapped into 'green' marketing and 'ethical consumerism' early, such as The Body Shop.⁸⁷ Anita Roddick, its notoriously activist CEO, had been a well-known face in the gardens for years, and the partnership between Kew and The Body Shop bestowed a cultural and environmental authority on both organisations.⁸⁸ This authority was built upon in the exhibition by presenting plants as the foundations for modern living, spanning everything from aspirin to garden furniture. Indeed, economic botany was identified by the Director himself as the best way to stimulate public interest in conservation due to its relevance to everyday life.89

Drawing on this authority, Kew made value judgements about commercial products and

⁸⁶ News Release from Kew.

⁸⁷ Royal Botanic Gardens, Kew. *Plants + People: An Exhibition of Items from the Economic Botany Collection in Museum No.1 Official Catalogue* (1998), 17; Sharon M. Livesey and Kate Kearins, 'Transparent and Caring Corporations?: A Study of Sustainability Reports by the Body Shop and Royal Dutch/Shell', *Organization & Environment* 15, no. 3 (2002): 233–58; Rob Harrison, Terry Newholm, and Deirdre Shaw, eds., *The Ethical Consumer* (London: Sage Publications, 2005).

⁸⁸ For example in 1991, Anita Roddick presented the prizes for a 'Rainforest' national school competition. She also opened the Victoria Gate Visitor Centre and Shop Complex in 1992. 'Review of the Work of Kew 1996', 11, 42.

⁸⁹ Ghillean T Prance, 'A Paradise for Economic Botanists: The Eden Project', *Economic Botany*, 2002, 226.

consumer behaviours by defining them in terms of sustainable or unsustainable consumerism. The exhibition created a visual construction of the plant-to-product life cycles: through the collection Kew constructed imaginative journeys which started with a single living plant and ended in their exploitation as a consumer product. In most of the displays, the organic specimen and the final consumer product were presented as interconnected states, and they were both problematised by commenting on the ecological cost of the plant and the 'sustainability' of the product.⁹⁰ In one typical example, a specimen of rattan was used to tell the story of the climbing plant's passage from the 'wild' to the visitors' backyard.⁹¹ The media takeout from this story was the sobering reminder that although rattan was 'charming as garden furniture, it is still harvested from the wild and some species are near extinction'.92 Another example was a bath scrub made from the fibres of two species of Agave, described as 'being marketed in this country as part of a sustainable development initiative'. This was placed next to a similar product made from Acacia, described as 'becoming increasingly rare in the wild due to overharvesting'.⁹³ The display connected endangered plant species to material products, and the exhibition became a space where the natural and human worlds were essentially connected and mutually threatened.

These static displays traversed with a more 'interpretative' element of the exhibition. To encourage a dialogue between public and expert Kew actively brought the visitor and their everyday choices into the centre of the exhibition, allowing them to consider the ideas shaped

⁹⁰ For a history of the construction of this idea see Paul Warde, *The Invention of Sustainability: Nature and Destiny, c. 1500-1870* (Cambridge: Cambridge University Press, 2018).

⁹¹ Lancet Newspaper, 1998, box QH 1830, KA [hereafter Lancet Newspaper].

⁹² Lancet Newspaper. Because of its global cultural and economic importance, rattan had been a species at the centre of Kew's 'threatened species' activity; the species was the focus of conservation efforts around the world, and Kew had provided considerable expertise on their protection and breeding over the decades. Its field experts, herbarium, and now public interpretation departments had all been heavily involved in the conservation of this species 'Kew Annual Report 1982', 80; 'Review of the Work of Kew 1988', 50; 'Review of the Work of Kew 1993', 36.

⁹³ Kew. *Plants* + *People*, 17

by the exhibit and apply them to their own behaviours. Visitor experience was crucial, and visitor agency was significant.⁹⁴ As the correspondence between exhibition organisers and designers demonstrates, it wasn't enough to spread awareness, the exhibition needed to be designed to make people *think* about environmental issues and take an active role in tackling them.⁹⁵ 'Interpretation' became a buzzword for the exhibition. This term had become a subprogramme in Kew's annual reports from the early 1990s as part of its public-education strategy and was a central theme in Plants + People.⁹⁶ The team provided 'wands' and multimedia guides for audio learning and computerised displays for hands-on activities; they were even resolute about the most effective lighting for controlling the mood of the display, agreeing that 'fibre-optic lighting...is considered sympathetic and atmospheric'.⁹⁷ Visitors could also partake in quizzes where their purchasing choices were further examined against measures of sustainability and graded as to their environmental friendliness. According to one newspaper, this was to teach the public about the importance of consumer choices, and to encourage them to replicate this action in their everyday lives.⁹⁸ By encouraging the interpretive nature of the visitor experience, a dialogue about choice was materially played out within Kew's walls.

The impact of the exhibition was measured through a 'front end evaluation'. 'Before and after' questionnaires were proposed to draw out environmental preconceptions and note individual responses to the interactive displays.⁹⁹ Although these sources have not been

⁹⁴ Simon J Knell, 'Museums, Reality and the Material World', n.d., 28.

⁹⁵ Design Brief.

⁹⁶ 'Review of the Work of Kew 1996'.

⁹⁷ Extract 3; Interpret Britain Awards 1998 Judge's Comments, box QH 1830, KA.

⁹⁸ Lancet Newspaper.

⁹⁹ Extract 3. This study is confronted by an enduring problem for historians, that of cultural reception. Although there are limited available sources to demonstrate visitor responses to these displays, in accepting the work of science and technology historian Jean-Baptiste Gouyon, it can be assumed that the content of Kew's exhibitions were shaped by visitors in the sense that they had to remain within the boundaries of what the public understood

preserved, their application signposts a transformation in Kew's public education strategy – one that prized a change in ethics and mentality, and acknowledged that visitors enter a space with their own environmental ideas. The exhibition reviews from leading newspapers suggest that readers were aware of the wider environmental context shaping this exhibition, with most writing of plant exploitation and declining biodiversity as assumed knowledge.¹⁰⁰ It can therefore be supposed that the exhibition drew on various pre-existing ideas of sustainability and resource exploitation, as well as subtle shifts in consumer ethics and behaviours, to create a space for plants in the public environmental imaginings and to encourage visitors to consider their own exploitative behaviours in the context of a biodiversity crisis.

The idea of biodiversity has travelled far since it was first coined in 1986. This paper has proposed a specific case study to consider how the dialogue between experts and their publics have constructed ideas of nature within a defined cultural space. It has offered a brief contextual analysis to explain the motivations for this dialogue, pointing to the complex web of international political agreements, expert collaborations, commercial targets, cultural preoccupations, and ethical values as key drivers moving this idea.

Kew's experts played a significant role in shaping the CBD and, as part of a wider group of NGOs, in influencing the UK's *Biological Diversity Plan*. As the international community incorporated these new values into the environmental narrative, Kew embraced them as part of its core strategy. Pressured by funding issues, declining visitor numbers and a need to justify their role in a post-colonial context, Kew used the ideas that were ratified through the Rio Conference to garner support and awareness for biodiversity projects such as the Darwin Initiative, the Sustainable Development Strategy of St Helena, the Economic Botany

or found relevant. Jean-Baptiste Gouyon, '1985, Scientists Can't Do Science Alone, They Need Publics', *Public Understanding of Science* 25, (2016): 754–57.

¹⁰⁰ Lancet Newspaper.

Collection, and the Environmental Lecture series. Through these actions, they set themselves up as a leading biodiversity and sustainable development authority.

Alongside this shift into new forms of environmental expertise, Kew found itself pressured to increase its role as a public education institution. Educating the public had become an important political tool to gain citizens' support for the idea of sustainable development and international agreements had explicitly outlined this new agenda which had to be supported by institutions at all levels of society. As a location of public interface and a symbol of the new environmental discourse, Kew was both compelled and inspired to adopt this objective to justify its existence.

An analysis of the interpretive *Plants* + *People* exhibition demonstrates that Kew engaged the public through a dialogue that aimed to understand and shape their environmental sensibilities, rather than just to communicate specialised knowledge. The exhibition was driven by both ethical and commercial interests, but it fundamentally removed the boundaries between organic specimens and material culture to problematise the state of the plant kingdom and suggest a solution. Collection items, interactive activities, and interpretative displays worked together to circulate ideas of biodiversity and sustainable development and encourage visitors to think about their individual connection to the decline in the number of plant species. Importantly, the exhibition created a space where visitors could individually engage with plants as the foundations for everyday life, evaluate their personal role in plant exploitation and sustainable consumerism, and adopt new values in light of the global biodiversity crisis.

25