



Plant Humanities

A scoping report on
RHUL-Kew collaboration

August 2020



Royal Botanic Gardens
Kew

Note on Cover Images

Cover images from Kew's Economic Botany Collection, courtesy of Royal Botanic Gardens, Kew.

Top to bottom: EBC 75783 'vacol' or rain cape, Philippines (donor: John Dransfield, 1985); EBC 55559 cotton bolls, Guyana (donor: Everard im Thurn, 1880); EBC 34898 sliced areca nuts, India (donor: India Museum, 1879); EBC 38603 parts for violin, Germany (donor: Carl von Martius, 1861).

These images give some indication of the range of materials within Kew's Economic Botany Collection of around 100,000 plant specimens and plant-based artefacts. Originally established at Kew in the colonial era to showcase the economic potential of plants based on their material properties (Nesbitt and Cornish 2016), the Collection is now a key resource for arts and humanities research projects undertaken at Kew in collaboration with researchers at Royal Holloway and elsewhere.

Plant Humanities

A scoping report on RHUL-Kew collaboration

Felix Driver & Caroline Cornish

Royal Holloway, University of London

&

Royal Botanic Gardens, Kew

August 2020

Contents

Executive summary	4
Chapters	6
1. Introduction	6
2. The emergence of Plant Humanities	10
2.1 A wider context: the environmental humanities	
2.2 Plant Humanities: initiatives and agendas	
2.3 The botanic garden as an interdisciplinary research space	
2.4 Arts and humanities research at Kew: the record to date	
2.5 Key points	
3. Prospects for Plant Humanities at Kew	19
3.1 The organisation of research at Kew: science and beyond	
3.2 Kew's collections: an overview	
3.3 Prospects for Plant Humanities at Kew: findings from interviews	
3.4 Kew and the arts and humanities: looking forward	
3.5 Key points	
4. Prospects for Plant Humanities at RHUL	34
4.1 An overview of arts & humanities research at RHUL	
4.2 Prospects for Plant Humanities at RHUL: findings from interviews	
4.3 Royal Holloway's research futures: looking forward	
4.4 Key points	
5. The potential for RHUL-Kew collaborations in Plant Humanities	41
5.1 The UK research funding landscape	
5.2 Modes of collaborative research funding in the Plant Humanities	
5.3 RHUL-Kew collaborations: identifying research project topics	
5.4 Key points	
6. Conclusions and recommendations	50
6.1 Key points summarised	
6.2 Implications for future RHUL-Kew collaboration	
6.3 Next steps	
References	56
Appendices	61
Appendix I Interviews with RHUL researchers, Kew staff and others	

- Appendix II Initial interview questions to Kew and RHUL staff
- Appendix III Research Council Funding Allocations, 2016/17-2019/20
- Appendix IV AHRC Principal Research Funding Modes
- Appendix V ESRC Principal Research Funding Modes
- Appendix VI British Academy Main Research Funding Opportunities
- Appendix VII Leverhulme Trust Main Research Funding Opportunities
- Appendix VIII Wellcome Trust Awards for Humanities & Social Science Research
- Appendix IX Other Charitable Trusts Providing Research Funding (Selected)
- Appendix X Doctoral Training Partnerships in which RHUL and Kew are Members
- Appendix XI Current RHUL-Kew Plant Humanities Projects
- Appendix XII Proposed RHUL-Kew Plant Humanities Project Topics
- Appendix XIII Other Potential RHUL-Kew Plant Humanities Project Themes

Executive Summary

1. This Report seeks to develop a basis for collaborative research in the arts and humanities between RHUL and Kew. It seeks to identify opportunities for synergy, concentrating on areas where there is actual or potential convergence in staff interests, external funding agendas and institutional priorities.
2. The Report outlines the complementary strengths of the two institutions. It highlights common priorities emerging in current reviews of research strategy and wider considerations including the impact of COVID-19, the climate emergency and the Black Lives Matter movement.
3. **Chapter 1** introduces the focus, objectives, methods and structure of the scoping project. This involved 59 interviews with staff at Kew and RHUL, supplemented by 6 further interviews relating to a recent Plant Humanities initiative at Harvard. This chapter identifies key features of the wider strategic context. At RHUL, these include growth in interdisciplinary research; an increased emphasis on partnerships with non-HEIs; a growing track record of research on global challenges; and the emergence of significant research capacity in the environmental humanities, GeoHumanities and heritage. At Kew, longstanding priorities in collections-based research and conservation are increasingly oriented to global challenges and multidisciplinary research. There is increased emphasis on partnerships alongside calls for innovative approaches to interpretation and a move towards a more explicit position on wider social and environmental agendas, including the 'decolonisation' of Kew's collections.
4. **Chapter 2** sets out an academic framework for research in Plant Humanities, situated in the wider field of environmental humanities. Such a framework suggests significant opportunities for developing collaborative arts and humanities research capable of attracting substantial external funding. The chapter suggests that this is particularly the case where scientists and humanities researchers are co-located in a botanic garden such as Kew with a world-leading research programme in plant science, a wide range of collections, an extensive programme of public engagement and a developing track record in supporting externally-funded arts and humanities research.
5. **Chapter 3** provides an overview of the organisation of research at Kew, including its world-class collections, plant science programmes and research-related activities in horticulture, learning and participation. It presents findings from interviews with Kew staff about arts and humanities research, including the value of linking collections; the role of interdisciplinary research in addressing global challenges; the need for critical engagement with Kew's colonial past; the contributions of new modes of storytelling in public engagement; and new approaches to landscape interpretation. Constraints

identified by Kew staff include incomplete cataloguing and digitisation, limited capacity to undertake research and the need for an explicit strategy in this area.

6. **Chapter 4** outlines the organisational and strategic context of arts and humanities research at Royal Holloway where there is already a developing track record of collaboration with Kew, though it is strongly focussed in a few areas. It presents findings from interviews with RHUL staff across a range of Departments, highlighting potential synergies with Kew across the arts and humanities domain. In the wider context of RHUL's research strategy, the impact of the COVID-19 crisis has thrown into relief key societal challenges in the areas of environmental sustainability, health and well-being and the Black Lives Matter movement. The chapter suggests that a strategic partnership with Kew has clear potential to deliver mutual benefit.
7. **Chapter 5** explores research funding opportunities available to support collaboration between Kew and RHUL-based researchers, notably within interdisciplinary and cross-Research Council programmes. There is clear evidence that partnership between major scientific and cultural institutions offers a way of upscaling capacity in a way that significantly enhances the potential scope and impact of arts and humanities research and the range of funding opportunities. This chapter presents ideas for a large number of potential project topics and themes in humanities-related areas based on interviews with staff. In some areas, there are common approaches between the two institutions, in others interests and methods are complementary.
8. **Chapter 6** considers the implications of the Report for future collaboration on arts and humanities projects between RHUL and Kew. It notes a number of challenges as identified in the staff interviews including capacity issues (which may be addressed through a strategic partnership); technical issues (which may be addressed through project funding); and strategic issues (including an 'under the radar' track record of success and external drivers of change which are yet to be fully articulated within institutional strategies). The chapter outlines three different scenarios for future collaboration between RHUL and Kew. Two of these require further investment of resource in the form of a strategic initiative to create a centre or institute at either RHUL or Kew. The Report concludes by outlining suggested next steps for the dissemination of findings, development of projects and strategic-level planning at Kew and RHUL.

1. Introduction

Our joint aim is to advance plant humanities, the interdisciplinary field that explores and communicates the unparalleled significance of plants to human culture.

Yota Batsaki and Alex Humphreys, 'How have plants shaped human societies?'
Scientific American (2018)

This Report is the outcome of a Strategic Knowledge Exchange project funded by Royal Holloway, University of London, in 2020. Its principal aim is to scope out the potential for a humanities dimension to an emerging strategic partnership between Royal Holloway and the Royal Botanic Gardens, Kew. Collaboration between Royal Holloway and Kew is not in itself new. In fact, it has a long history, stretching back to the nineteenth century, primarily involving research and teaching in the plant sciences at Bedford and Royal Holloway Colleges¹ In this Report, we shift the focus to the potential role of the humanities in future collaboration between the two institutions, drawing attention to a rapidly developing area of research within the field known as the 'environmental humanities' and its close relation the GeoHumanities.² Such umbrella terms typically enable interdisciplinary and cross-sector collaborations, encouraging new thinking across subject boundaries and engagement with wider issues of public concern. These collaborations, we argue in this Report, are particularly fruitful where humanities and scientific research find a common home – namely botanic gardens and related research facilities and collections. Kew Gardens is a prime example of such a site.

There are strong grounds for supporting a new strategic partnership between Royal Holloway and Kew in the broad field of environmental humanities. There is a rapidly accelerating record of research collaboration between the two institutions and clear potential for further development. The two institutions are located within easy reach of each other and have complementary strengths. Kew offers to the humanities world-class heritage collections (including manuscript, print, art and object) and global scientific assets; a globally extensive research network and deep-founded expertise, notably in the Global South; a developing profile of externally-funded research projects in collaboration with arts and humanities; and deep commitment to public engagement, learning and

¹ The women who established botany as a University subject at Bedford and Royal Holloway colleges at the end of the nineteenth century, including laboratories, gardens and reference collections, received botanical specimens and other assistance from Kew: see Cornish and Driver (2019).

² The Centre for the GeoHumanities was launched at Royal Holloway in 2016 to cultivate 'links between arts and humanities scholars, creative practitioners, geographers and the cultural and heritage sectors'. One of its major strands is the environmental humanities, another is mobilities. See the GeoHumanities Forum (<https://geohumanitiesforum.org/>) .

public understanding of plants and their cultural significance. Royal Holloway is a research-intensive university with a first-class research environment supporting researchers at all stages of their careers; an international reputation for research across a range of disciplines including the environmental humanities and the biosciences; and a strong commitment to research partnerships and collaboration.

There is also evidence of convergence in key aspects of new thinking around research and corporate strategy within the two institutions over the last 12 months, notably in responses to a series of challenges to ‘business as usual’ amongst which we would include the climate emergency, the COVID-19 pandemic and the Black Lives Matter movement. At Royal Holloway, recent developments have included a renewed commitment to interdisciplinary research;³ an academic restructure resulting in the formation of six Schools; a new emphasis on the need for strategic partnership in order to attract significant new research income, notably in the humanities; and a new willingness to engage with pressing agendas of public concern over issues relating to environmental sustainability, diversity and inclusion. At Kew, meanwhile, a parallel process of corporate and science strategy review has involved institution-wide discussion of its core values and their fitness for purpose in a moment of heightened public concern over biodiversity loss, climate change and the ethical responsibilities of Western scientific institutions. In this context, the Black Lives Matter movement of 2020 had a galvanising effect on processes of review and consultation on matters of equality, diversity and inclusion already under way at Kew, manifest in a strong desire amongst many Kew staff to engage critically and creatively with the institution’s colonial past.⁴

The coincidence of timing in the strategic review of research and corporate policy at RHUL and Kew was reinforced, by the impact of the COVID-19 pandemic whose onset coincided with the start of this project in March 2020. While some aspects of the planned project (including site visits and a projected visit to cognate overseas institutions) could not be delivered, the main parts of the planned scoping work – consisting of desk research and interviews with a large number of staff in both institutions – proceeded as planned, with only minor variations. Moreover, the global health crisis engendered a process of review and reflection on strategy at both institutions, throwing into relief some key themes in the overall project, especially those connected with the benefits of institutional partnership, the importance of new thinking around the social and ethical responsibilities of science and the connections between healthy environments, creativity and human flourishing.

³ In this Report, ‘multidisciplinary research’ refers to a combination of disciplinary perspectives in a project or programme; ‘interdisciplinary research’ refers to research which analyses and synthesises different disciplinary perspectives within a new framework (Evans and Macnaughton 2004).

⁴ See Alex Antonelli, ‘Director of science at Kew: it’s time to decolonise botanical collections’, *The Conversation*, June 19, 2020: <https://theconversation.com/director-of-science-at-kew-its-time-to-decolonise-botanical-collections-141070>, accessed 21/07/2020.

This Report has two principal objectives. Firstly, it is designed to inform staff at both RHUL and Kew about the shape and focus of research activity at the two institutions, and specifically the potential for externally-funded research collaboration in the humanities. Secondly, it is intended to contribute to the reformulation of research strategy in the wake of COVID-19 by making clear the significant opportunities which exist for partnership between humanities researchers at Royal Holloway and plant scientists and other staff at Kew Gardens. The Report focusses on research priorities and potential in both institutions, covering a range of different kinds of research collaboration and their potential for external funding, including research training at PhD level.⁵

This Report is based mainly on a combination of desk research and interviews with a total of 59 staff at RHUL and Kew.⁶ The interviews, mostly undertaken remotely, were organised following communications with senior staff - Directors of Research and Departmental Research Leads at Royal Holloway and Senior Managers at Kew, up to Director level. Potential interviewees were then selected on the basis of various criteria: an initial review of known research expertise and track record; our interest in embracing a wide a range of different types of research, extending beyond any one specialism or discipline; and a concern to include staff at various levels of experience and seniority. These initial selections were supplemented as the research progressed, on the basis of recommendations from other staff and our developing interest in particular topics.

The interviews conducted for this Report were framed initially by our focus on the Plant Humanities, a term which (as explained in Chapter 2) emerged in 2018 through a collaborative and interdisciplinary initiative between JSTOR labs, the Mellon Foundation and Harvard University at the Dumbarton Oaks research institute. Early on in the research, we interviewed key staff involved in that initiative and the recipient of one of its first Fellowship grants, in order to gain a better understanding of the key features of this programme. Dumbarton Oaks is a well-known humanities research institute and while it is very different from Kew Gardens in some respects, its focus on collections-based research, interdisciplinarity and digital humanities as key themes within the Plant Humanities is reflected in parallel developments over a longer period at Kew. Approaching questions of potential RHUL-Kew collaboration in this way was particularly useful when talking with humanities academics at RHUL for many of whom Dumbarton Oaks is undoubtedly better known as a humanities research centre than Kew. For

⁵ Other aspects of potential collaboration between RHUL and Kew, including Masters and Undergraduate-level provision or partnership in relation to research services, are not considered here except insofar as they may contribute to the development of research partnerships, as for example in the case of student placements.

⁶ A full list of these interviewees is provided in Appendix I. In addition, interviews were conducted with a former PhD, an Honorary Research Associate and four researchers connected with the Plant Humanities initiative at Dumbarton Oaks, Harvard University.

discussions with Kew staff, however, the humanities academic context was generally less familiar; for these staff, it was necessary to broaden the frame in order to consider aspects of plant science, policy and public engagement and the potential role of arts and humanities expertise. In this context, the authors' position as Honorary Research Associates at Kew not only facilitated access to senior managers but also allowed participation in events organised for Kew staff during the period of research and writing, giving valuable insights into the processes of strategic review which will continue during the remainder of 2020.

The Report is structured as follows. Chapter 2 introduces the field of Plant Humanities, explaining the immediate origins and associations of the term in the Dumbarton Oaks initiative, its wider context in the environmental humanities and the growing track record of research at Kew which is aligned to the field. Chapter 3 provides an overview of Kew's organisational structure, its major collections as key resources for arts and humanities researchers and the potential for the future development of Plant Humanities research as described by Kew staff. Chapter 4 provides an overview of research strategy and management at Royal Holloway and the potential for research collaboration with Kew across the arts and humanities as described by RHUL staff. Chapter 5 explores the potential for future RHUL-Kew collaboration in Plant Humanities, surveying the research funding landscape and outlining possible research projects proposed by RHUL and Kew staff which have the potential to attract external research funding. Chapter 6 provides a summary of the main findings and recommendations for future actions to provide a secure and sustainable basis for future collaboration between RHUL and Kew in the arts and humanities.

2. The emergence of Plant Humanities

To secure the flourishing of plant-life in the human-dominated context of the Anthropocene, we need now, more than ever, to promote an improved and nuanced understanding of the vital and diverse relationships that occur between human beings and plants.

Lewis Daly and Kay E. Lewis-Jones (2018)

2.1 A wider context: the environmental humanities

In order to introduce the idea of Plant Humanities, it is useful to consider the wider context in which a broader field – the environmental humanities – has emerged over the last two decades. In this wider context, the concerns of traditional humanities disciplines – including philosophy, literature, archaeology, history, language studies and cultural geography, to name a few – have been combined in a new interdisciplinary research area. Those who have embraced the term have often sought to address fundamental questions about the human engagement with the environment, working across the disciplinary divide between the study of nature and culture which has long shaped the Western academy (Adamson and Davis 2016). They have argued that the environmental humanities offer a powerful way of engaging with an increasingly global sense of environmental crisis, ultimately laying the basis for a new environmental ethics (Jones 2016; Oelschlaeger 1999; Mauch 2019). As a research area, the environmental humanities have clearly benefitted from strong commitment to partnerships between researchers and a variety of community groups and advocacy organisations concerned with conservation, climate change and biodiversity loss. Its growth has also coincided with, and benefitted from, an explosion of public interest in creative nature writing, popular science and environmental history, as reflected in a stream of books and films intended for wider than academic audiences.⁷

While the emergence of the environmental humanities reflected new thinking about some fundamental concepts within the humanities, it was also inspired by a resurgence of environmental activism which is often traced back to classic works such as Rachel Carson's *Silent Spring* (1963). In 2009, Munich's Ludwig-Maximilians-Universität and the Deutsches Museum, funded by the German Federal Ministry of Education and Research, created a new centre for environmental humanities, naming it the Rachel Carson Center

⁷ The combination of environmental concern, humanities research and storytelling is clearly evident in books by humanities researchers intended for a wider than academic audience (e.g. Kimmerer 2013, Macfarlane 2015; Gange 2019; Posnett 2019). It is also expressed in other media: for an example, see Matt Gandy's film *Natura Urbana: The Brachen of Berlin* (Berlin 2017) which 'tells the history of post-war Berlin through its plants': <https://www.naturaurbana.org>. The film was funded by a large research grant from the European Research Council (see also Gandy and Jasper 2020).

for Environment and Society (RCC). This globally-orientated institution has set the standard in providing an infrastructure for research and debate concerning the interrelationship between humans and nature. In its own words, the Rachel Carson Centre ‘harnesses the interpretative power of the humanities and social sciences to contextualize technologies, economies, and policies.’⁸

Today, the environmental humanities define a field of global importance, with its own interdisciplinary centres, programmes and publications. In 2012, a journal devoted to the field was launched by Duke University Press. The journal’s aim - to draw ‘humanities disciplines into conversation with each other, and with the natural and social sciences, around significant environmental issues’⁹ – was indicative of the interdisciplinary ambitions of the field. Nearly a decade later, the environmental humanities has continued to evolve, with a host of new terms being coined to describe its proliferating specialisms. Whether such terms as ‘geohumanities’, the ‘blue humanities’,¹⁰ ‘animal humanities’,¹¹ or ‘ice humanities’ (see, for example, Sörlin 2015), are ways of describing distinct sub-disciplines or expressions of a wider impulse towards interdisciplinary research engaging with environmental issues remains an open question.

2.2 Plant Humanities: initiatives and agendas

In this Report, the term ‘Plant Humanities’ is used to denote a broad and profoundly interdisciplinary project which aims to bring the imagination and methods of the arts and humanities into dialogue with the concerns, collections and public reach of the plant sciences, especially in botanic gardens. The argument for the value of a humanities perspective on the world of plants is not in itself new (cf. Sörlin 2012). In recent years, however, the case has been made with renewed urgency, particularly in the context of pressing global challenges (Shah 2020). These challenges range from food security, climate change, biodiversity loss, global health and sustainable development to calls to protect traditional knowledges, decolonise heritage and promote mental health and well-being. In the face of these challenges, the value of interdisciplinarity has been widely recognised.

As a term, the ‘plant humanities’ first entered the public domain in September 2018 when Dumbarton Oaks Research Library and Collection (DO) - a scholarly research

⁸ ‘Mission’, RCC website: https://www.carsoncenter.uni-muenchen.de/about_rcc/mission/index.html. Accessed 23/06/2020. See Mauch (2019) for a powerful statement of what arts and humanities research can contribute to changing our relationship to the environment.

⁹ <https://read.dukeupress.edu/environmental-humanities>, accessed 25 July 2020.

¹⁰ ‘A movement in literary and cultural studies that, drawing on critical practices and theoretical approaches from “new historicism” and “new materialism”, focuses on the presence of the ocean in cultural texts’ (Buchanan 2018).

¹¹ See, for example, <https://research.kent.ac.uk/kentanimalhumanitiesnetwork/>

institute affiliated with the Faculty of Arts and Sciences at Harvard University - received a three-year grant from the Andrew W. Mellon Foundation (with a sister grant to JSTOR Labs) to develop what was called the 'Plant Humanities Initiative' (Batsaki & Humphreys 2018).¹² The particular form of this initiative reflected Dumbarton Oaks' unique profile and reputation in three distinct areas of world-class humanities scholarship, each associated with research programmes, fellowships and public engagement: Byzantine studies, Pre-Columbian studies, and studies in the history of gardens and landscape architecture.

Although the term 'Plant Humanities' was new, the idea and practice of humanities-orientated research on the subject of plants was not. From the history of plant collecting to the anthropology of health and biomedicine, from environmental archaeology to art history, and from studies of garden design to literary ecocriticism, a wide range of humanities disciplines and fields have long engaged with questions about plants and their relationship to people. Similarly, the bringing of such concerns together under a common heading specific to the world of plants also had various precedents. For example, literary and philosophical scholars in North America, Europe and Australia had previously proposed new interdisciplinary frameworks such as 'cultural plant studies' and 'Critical Plant Studies' in networks, book series and journals.¹³ These frameworks offered new ethical and philosophical perspectives on the agency of plants and their relationship with humans. Moreover, such work depended on developments beyond the humanities as academic disciplines: most obviously they reflected the resurgence of public concern over biodiversity, environmental sustainability and conservation, but they also highlighted new developments in plant science, particularly in the area of neurobiology, which led to questioning of earlier assumptions about the non-sentient nature of plants in and beyond the laboratory (see, for example Trewavas 2003).

For the purposes of this scoping project, a working map of the Plant Humanities was required in which the major concerns of humanities academics with narrative, image, matter, thought, space and ethics were represented. In the course of our discussions with academic humanities researchers (reported in chapter 4) we arrived at a working map distinguishing six major themes, each illustrated by exemplary texts, as presented in Figure 2.1. *Plant matter* refers to the material forms of plants, especially as reflected in the collections of botanic gardens as well as the colonial histories of plant collecting and transfer. *Plant stories* includes narrative forms, creative writing and the literature of plants, their intersections and possibilities. *Plant thinking* represents the active area of plant philosophy, ethics and law. *Plant visual cultures* refers to image-making and interpretation, from botanical art to scientific illustration. *Plant landscapes* includes

¹² We are grateful to Yota Batsaki and Anatole Tchikine for sharing their experience of the Plant Humanities initiative with us in an interview on April 17, 2020.

¹³ For cultural plant studies, see the Literary and Plant Studies Network: <https://plants.arizona.edu/>; for critical plant studies see Marder 2013-.

garden design, landscape history and ecological engagements with nature. Finally, *Plants, health and well-being* refers to research on the relationship between health, medicine and the plant world. Together, these themes encompass the concerns of a wide range of arts and humanities disciplines. Undoubtedly, as many of our interviewees commented, the framework could be extended further (plant governance and plant therapeutics were two suggestions made). Figure 2.1 is not offered as a definitive map of the field, still less of disciplinary boundaries within it. Rather, it is included here as a heuristic device which proved of value in framing our discussions with academic researchers (many of whom were unfamiliar with the term Plant Humanities).

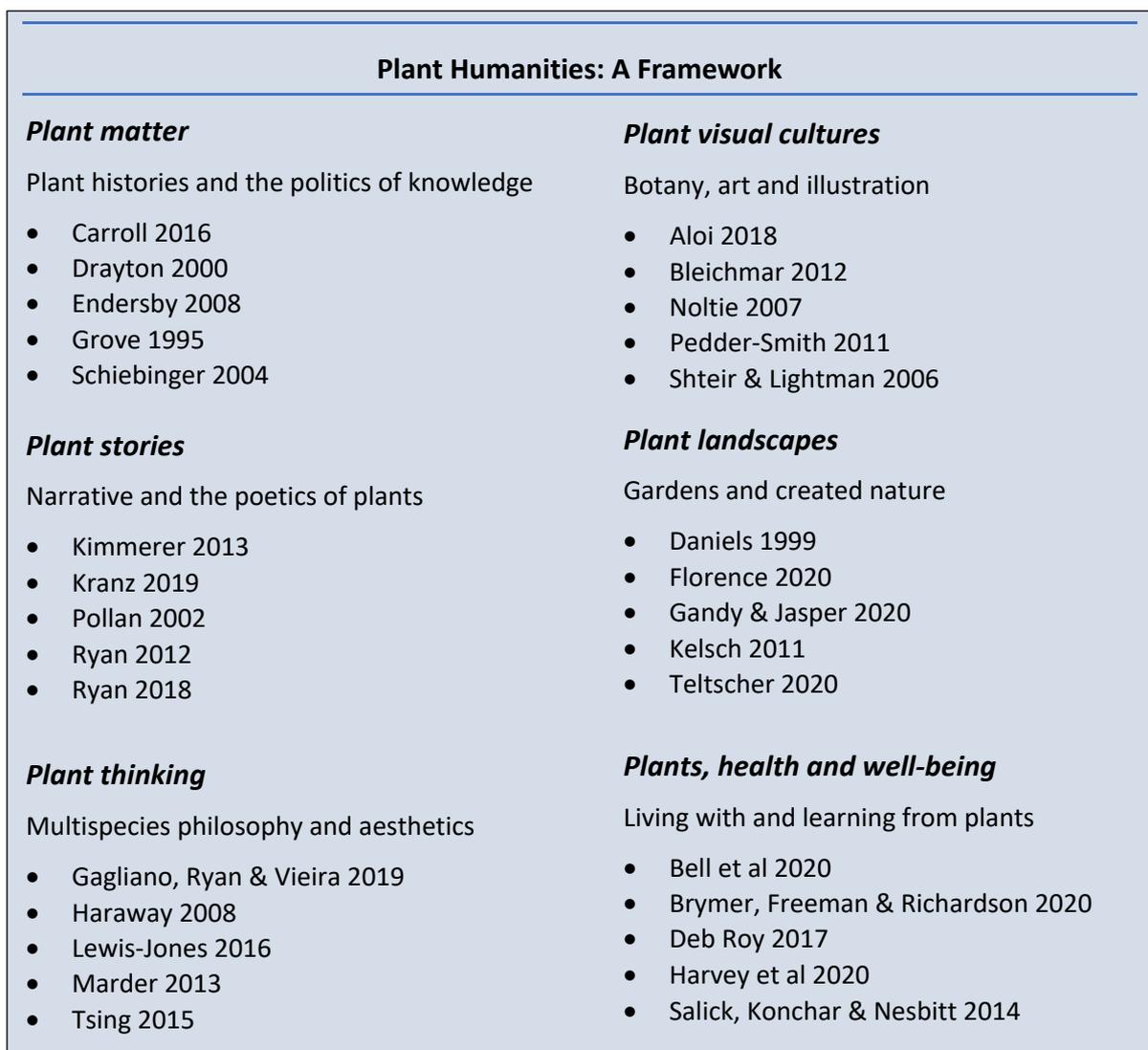


Fig 2.1 Plant Humanities: a working map

It is useful to see the Plant Humanities initiative in the context of these wider academic concerns since they help to explain its potential. However the project as realised at Dumbarton Oaks in 2018 also had a more practical inspiration. The aim was to create a digital resource linking print and visual material from Dumbarton Oaks' rare book collection to JSTOR's 'Global Plants' platform and to other primary and secondary

digitized sources ‘through interactive and visually engaging storytelling’. By conceiving this initiative not simply as a digitisation project, but as a programme engaging a much wider notion of humanities research, its coordinators wrote of a ‘new interdisciplinary field [which] explores and communicates the unparalleled significance of plants to human culture.’ Led by Yota Batsaki, the Dumbarton Oaks project team includes graduate students, post-doctoral researchers and staff. As well as two Plant Humanities Fellowships per year over its three-year duration, the project is also running a summer programme for advanced undergraduates and graduate students, and beyond the project, aims to facilitate and support related research initiatives.

2.3 The botanic garden as an interdisciplinary research space

At Dumbarton Oaks, the project of plant humanities builds on a rich research tradition of text- and image-based scholarship, combined with aspects of archaeological and anthropological research, linked through a digital humanities programme to wider questions of public engagement. This is a potent combination of expertise and resource, made possible by the particular combination of facilities and skills on the site. In this Report we suggest that the idea of plant humanities has much to offer more widely, particularly in contexts where humanities and scientific research find a common home – namely botanic gardens and their associated research facilities and collections. The co-location of humanities research infrastructure, botanical collections, plant science and a wide range of public engagement and learning activities in such sites makes them particularly fruitful for experiments in plant humanities. Examples of such initiatives already exist, as for example in the Humanities Institute at New York Botanical Garden (NYBG), founded in 2014, and (like the DO Plant Humanities Initiative) funded by the Andrew W. Mellon Foundation. The NYBG Humanities Institute has a broader disciplinary agenda, capitalising on the scientific expertise and resources underpinning the botanical and horticultural work of the botanic garden.¹⁴ The Institute offers a range of fellowships to scholars whose work ‘connects nature and the natural environment to the human experience,’ and which investigates materials in the NYBG library, herbarium and archives.¹⁵

There are other notable examples of botanic gardens in the USA providing a home for humanities research. The Huntington Library, Art Museum, and Botanical Gardens in San Marino, California, for example, combines scholarly humanities research with pedagogic and public engagement programmes. Like the NYBG it hosts visiting researchers, and it

¹⁴ The Humanities Institute ‘promotes innovative thinking at the intersection of science and the environmental humanities’. NYBG website: <https://www.nybg.org/learn/humanities-institute/>, accessed 23/06/2020.

¹⁵ ‘Research Opportunities’, NYBG website: <https://www.nybg.org/learn/humanities-institute/research-opportunities/>, accessed 23/06/2020.

has also established collaborative research centres in partnership with the University of Southern California focussed on aspects of American and World history,¹⁶ as well as an ‘informal’ humanities research institute with Caltech.¹⁷ The Huntington is not alone in combining botany and humanities research. The Oak Spring Garden Foundation (OSGF) in Virginia also offers fellowships and residencies to fund research into the arts, humanities, and plant science, emphasising ‘integrative approaches that bring together sciences, humanities and social sciences for their mutual benefit.’ OSGF has good links with Kew: its current President, Peter Crane, is a former RBG Kew director (1999-2006), and OSGF funds a digitisation initiative of selected material in Kew’s illustrations collection.¹⁸

The institutions discussed thus far – Dumbarton Oaks, New York Botanical Garden, Huntington Library, and Oak Spring Garden Foundation – rely to varying degrees on endowments which provide core funding for research and education programmes, including those connected with plant humanities. In their emphasis on collections-based research, including both botanical, print and manuscript materials, such initiatives parallel developments in other fields, most notably in the fields of museum and heritage studies, history of science and material culture studies, which have in recent years had a significant influence within the arts and humanities in the UK (Fleming 2020; Driver 2020).¹⁹ In general terms, it is the combination of new approaches to collections-based research with an emphasis on the interrelations of research, learning and public engagement that presents the most exciting possibilities for new work in the plant humanities. In a botanic garden setting such as that at Kew, these possibilities are multiplied further. Here a world-class library and archive co-exists with extensive scientific collections, and extensive programmes of learning and public engagement take place within the living collections of the gardens themselves.

2.4 Arts and humanities research at Kew: the record to date

Having established that botanic gardens provide a nexus of expertise, collections and associated programmes which is potentially highly conducive to research in the field of Plant Humanities, it is useful to examine Kew’s track record in developing and supporting

¹⁶ USC-Huntington Early Modern Studies Institute (EMSI) supports research on the historical development of European and Atlantic societies between 1450 and 1850. See: <https://dornsife.usc.edu/emsi/>; the Huntington-USC Institute on California and the West (ICW) is focussed on the history of California and the American West. See: <https://dornsife.usc.edu/icw>

¹⁷ The Huntington and the Division of Humanities and Social Sciences at Caltech have created an informal research institute known as Caltech Huntington Humanities Collaborations (CHHC). See <http://www.chhc.caltech.edu/about>.

¹⁸ RBG Kew website: <https://www.kew.org/read-and-watch/passionate-pioneers-increasing-access-to-botanical-artwork-by-women>

¹⁹ This is also reflected in AHRC’s longstanding Collaborative Doctoral Awards scheme, which has supported a substantial number of collections-based doctoral projects (Hill and Meek 2019), as well as in the AHRC’s new research programme ‘Towards a National Collection’ (see Chapter 5).

projects which could be considered part of this field. Figure 2.2 documents some of the more significant arts, humanities and social science research projects at Kew in recent years which have attracted a total of around £4m in external funding since 2004 (half of this since 2016). In view of the variety of disciplines addressed in the preceding discussion, the wide range of focus and disciplinary orientation reflected in this record is striking. Funded projects include: archive digitisation initiatives, notably the Andrew Mellon-funded Directors Correspondence project; large interdisciplinary research programmes such as the AHRC Mobile Museum project which included perspectives from history, museology and digital humanities, and the Pacific Barkcloth project (also funded by AHRC) involving a combination of conservation, anthropological and botanical expertise; experimental practice-based projects in the visual arts supported by AHRC and the Arts Council; and international interdisciplinary programmes such as the Digital Amazon project in which an artist, a cultural geographer and Kew botanists have collaborated with plant scientists, anthropologists and Indigenous peoples in Brazil to reanimate the collections of a Victorian botanist.²⁰ Figure 2.2 also includes seven AHRC Collaborative PhDs, mostly secured through membership of the Techne AHRC Doctoral Training Partnership (in which Kew is a formal partner), co-supervised by Kew staff in Library, Art and Archives, Economic Botany and Horticulture. These students are making significant contributions to public engagement and outreach programmes at Kew. In addition, the recent recruitment of an Early Career Research Fellow, Philippa Ryan, with a track record of AHRC funding including GCRF projects on traditional knowledge and agricultural resilience, is set to enhance Kew's profile of external funding for research on cultural and historical aspects of agriculture and food supply.²¹

The various projects assembled in Figure 2.2 indicate an impressive but until now somewhat hidden record of success in projects linked to the Plant Humanities. This evidence demonstrates that in practice Kew has already been engaging with arts and humanities researchers in a remarkably wide range of disciplines and modes of collaboration. While this has reflected departmental initiatives originating in Economic Botany and widened to include Library, Art and Archives, it has yet to be fully articulated in policy terms within Kew's Science Strategy. In this respect it should also be noted that Figure 2.2 excludes a considerable body of externally-funded research supported by Kew

²⁰ The Digital Amazon project has received funding from the UK Newton Fund, the British Council, British Academy and GCRF. It was developed in collaboration with Birkbeck, University of London (Luciana Martins), the Rio de Janeiro Botanical Garden (Viviane Fonseca), and Instituto Socioambiental (Aloisio Cabalzar), with input from the Museu Paraense Emílio Goeldi, Universidade Federal do Amazonas, and Federação das Organizações Indígenas do Rio Negro. See <https://www.kew.org/read-and-watch/mobilising-richard-spruce-legacy>

²¹ In 2019, Kew launched a new programme in Future Leader Fellowships in Plant and Fungal Science offering such five fellowships annually, each of four years' duration. Fellows are provided with research expenses and encouraged to use their position to secure further research funding from beyond Kew. In 2020 fellowships were awarded in Biodiversity Informatics and Spatial Analysis, Comparative Plant and Fungal Biology, and Natural Capital and Plant Health.

staff and collections resources, but not reflected in the organisation's formal involvement in grant applications or formal co-supervision arrangements. Recent examples of the latter include two notable doctoral projects which in some respects anticipated Kew's current turn towards the arts and humanities: a practice-based creative arts PhD thesis on the theme of botanical illustration at the Royal College of Art (Pedder-Smith 2011) and an environmental anthropology PhD on ex-situ conservation and ethics in the Millennium Seed Bank Partnership (Lewis-Jones 2018). While such projects had significant potential to contribute to practice and policy at Kew, the absence of a more strategic approach to arts and humanities research has perhaps limited their impact as models for future development. Kew's participation in formal partnerships (such as the Techne doctoral training consortium) or in wider networks of museums and heritage organisations (as in its membership of the Independent Research Organisation Consortium, IROC) is helping to create greater momentum towards a more strategic approach to developing this arts and humanities profile, as discussed in the next chapter.

2.5 Key points from Chapter 2

- The environmental humanities are a well-established and widely recognised part of the academic landscape in many parts of the world. Research in the field is often framed in interdisciplinary terms and connected to environmental concerns.
- Plant Humanities is the latest of a series of umbrella terms intended to bring the imagination and methods of the arts and humanities into dialogue with the concerns, collections and public reach of the plant sciences.
- Plant Humanities offers significant interdisciplinary research potential, especially where collections, scientists and humanities researchers are co-located - namely in botanic gardens.
- Kew has a developing track record of supporting externally-funded arts and humanities research across a wide range of disciplines, though it has not thus far been reflected in an explicit strategy or programme

Date	Amount	Source	Award type/stream	Project
2021-5	£75k	AHRC	Collaborative PhD with RHUL	The making of a global arboretum
2020-1	£34k	AHRC	Research Networks Grant with RHUL	The philosophical life of plants
2019-21	£29k	RHUL	Strategic Knowledge Exchange Project with RHUL	Plant humanities: RHUL-Kew scoping project
2019-21	£20k	AHRC	GCRF with IIED	Indigenous food systems, biocultural heritage and agricultural resilience
2019-21	£27k	AHRC	GCRF with University of York	Soil-safe
2019-20	£10k	RHUL/Kew	Learning evaluation project	Extended evaluation of RHUL-Kew Mobile Museum schools project
2019	£11k	UKRI/Birkbeck	GCRF with Birkbeck	Reanimating biocultural collections
2019	£75k	AHRC	Collaborative PhD with Brighton (practice-based)	Ethnobotanical artefacts of the North-West Amazon
2019	£50k	British Academy	Knowledge Frontiers grant with Birkbeck	Digital repatriation of biocultural collections
2019	£75k	AHRC	Collaborative PhD with Roehampton	Kew's imperial archive
2019	£390k	Wellcome Trust	Research grant with RHUL	Plants & minerals in Byzantine popular pharmacy
2018	£75k	AHRC (NPIF)	Collaborative PhD with RHUL	A paper world
2018	£2k	AHRC/ESRC GCRF	Indigenous engagement & knowledge mobilisation	Nubian traditional knowledge & agricultural resilience
2017	£150k	Wellcome Trust	Research resources	Miscellaneous Reports cataloguing project
2017	£75k	AHRC (NPIF)	Collaborative PhD with RHUL	Biocultural collections and networks of knowledge exchange
2017	£15k	Arts Council	Artist residency	Lindsay Sekulowicz - Plant, object, place: a Kew herbarium residency
2016	£812k	AHRC	Research Grant with RHUL	The mobile museum: economic botany in circulation
2016	£60k	British Council Newton Fund	Research Grant with Birkbeck	Mobilising the value of biocultural collections in Brazil
2015	£20k	FCO	Research Grant with Birkbeck	Digital Amazon workshop
2015	€10k	CSIC, Spain	Research Grant	The flora of ancient Iraq: a scientific approach to ancient texts
2013	£45k	KCL	Grant from KCL	Cataloguing and rehousing of Harrod Materia Medica collection
2013	£740k	AHRC	Research Grant with Glasgow	Situating Pacific barkcloth in time and place
2013	£200k	Stevenson Family Trust	Digital humanities project	Joseph Hooker correspondence
2012	£60k	AHRC	Collaborative PhD with UCL	Barkcloth as material culture
2012	£10k	AHRC	Cultural Engagement Fellowship with RHUL	Re-enchanting economic botany
2009	£60k	RHUL	Holloway PhD Scholarship	Kew's Museum of Economic Botany
2008-14	£400k	Andrew Mellon Foundation	Digital humanities project	Digitisation of Directors' Correspondence
2008	£60k	AHRC	Collaborative PhD with Birkbeck	Cross-cultural histories of tropical botany
2006	£10k	Wellcome Trust	Cataloguing grant	Recataloguing of Cinchona collections
2004	£400k	DCMS	Culture Online	Plant Cultures website and outreach

Figure 2.2 Kew arts & humanities: externally-funded research projects

3. Prospects for Plant Humanities at Kew

We use the power of our science and the rich diversity of our gardens and collections to provide knowledge, inspiration and understanding of why plants and fungi matter to everyone.

Royal Botanic Gardens, Kew (2015)

Over the last decade, a growing volume of research on arts and humanities topics has begun to figure in Kew's profile. Kew's capacity to attract external funding in these areas is likely to be an important factor in future planning since research grant income is an increasingly significant priority for Kew Science (RBG Kew 2018, 20). Currently research grant income accounts for less than 5% of all income, with funding from the Department for Environment, Food and Rural Affairs (DEFRA) representing 40% and the remainder derived from commercial revenue and fund-raising. As suggested in the previous chapter, the increasing volume of funding in support of arts and humanities research is currently focussed on a relatively small number of staff, concentrated in Economic Botany and Library, Art and Archives [LAA]), often in collaboration with visiting and external researchers. Over recent years there has been a shift in Kew's role from providing services to external projects to leading, singly or jointly, on research project development, reflected in the organisation's status as an Independent Research Organisation (IRO). In combination, these trends have presented a significant opportunity to develop new research capable of attracting substantial funding from a variety of Research Councils beyond plant science (notably AHRC and ESRC) as well as from charities such as Wellcome and the Leverhulme Trust, and bodies such as the Arts Council and the Andrew Mellon Foundation. This Chapter provides an overview of the organisation of research at Kew, including both science and other aspects of Kew's operations; identifies its major botanical collections as key resources of potential interest to arts and humanities researchers; presents findings from interviews with Kew staff concerning future prospects for arts and humanities research; and considers the current direction of corporate and research strategy at Kew in the light of the events of 2019-20.

3.1 The organisation of research at Kew: science and beyond

Figure 3.1 shows the current organisational structure at Kew (as of July 2020). There are currently seven Directorates, the Heads of which sit on an Executive Board and are jointly responsible for the overall delivery of the corporate strategy and operational plan. Of these the Science Directorate is the largest and most research-focussed (with over 480 staff, including MSc students, PhDs, HRAs and interns) though in principle aspects of research activity take place in all directorates, notably Horticulture, Learning and Operations and Marketing & Commercial Enterprise. Wakehurst Place, Kew's estate in Sussex, is a separate Directorate with its own infrastructure in the areas of horticulture,

marketing, learning and commerce. As well as the links made at Executive Board level, there are a variety of cross-departmental groups and committees – to take two examples, the Sustainability Steering Group and the Kew Publishing Editorial Advisory Board. Major projects also typically have cross-departmental management groups, for example, the Temperate House project (2013-18).

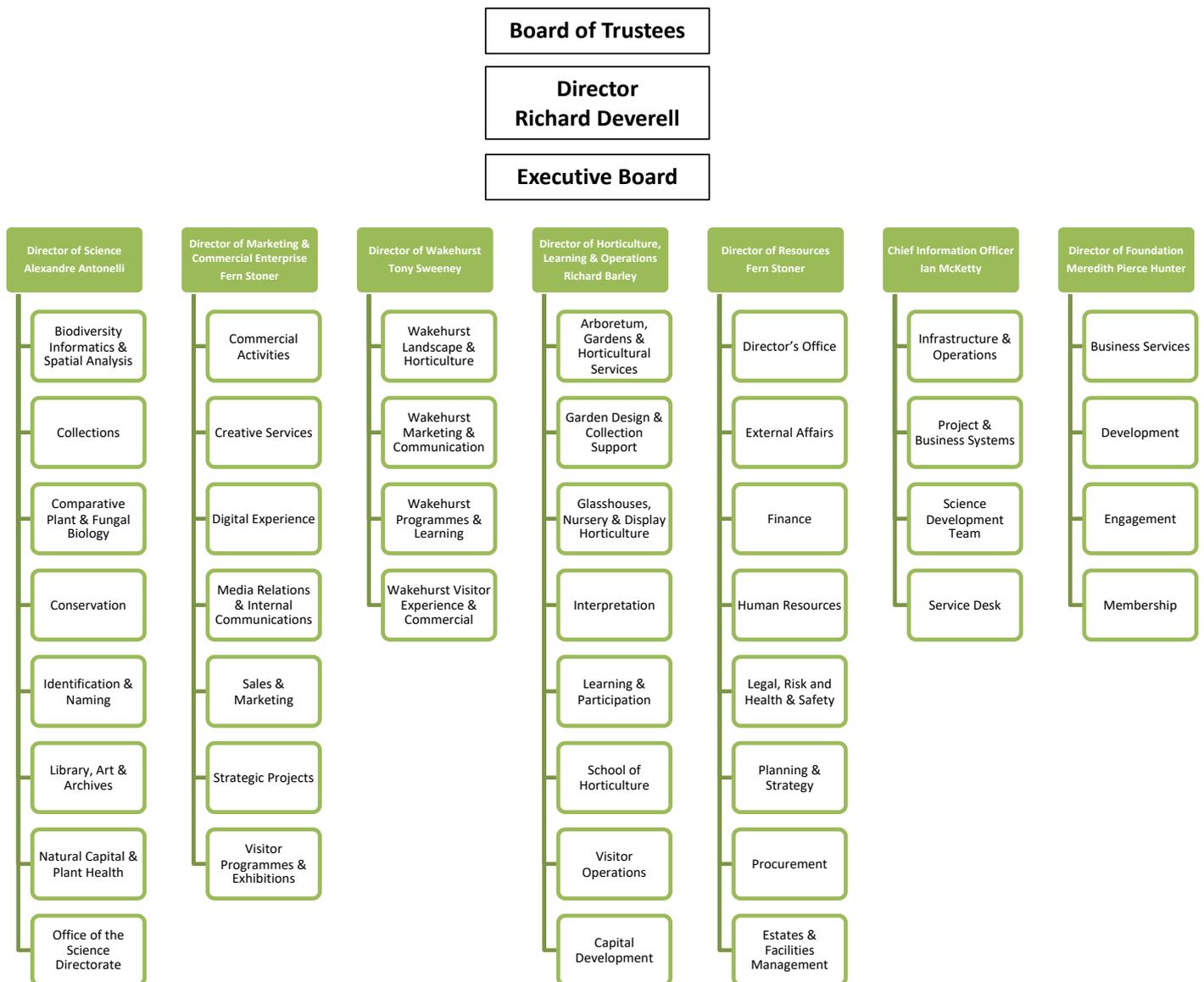


Figure 3.1 Kew organisational structure 2020 ²²

²² Kew Gardens website: <https://www.kew.org/sites/default/files/2020-07/12910%20RBG%20Keworganisational%20chart%20update%202020%20AC%5B4%5D.pdf>, accessed 21/07/2020.

Most of Kew's externally-funded research takes place in the Science Directorate. Plant science is organised thematically, with major groups on Conservation Science, Plant Identification and Naming, and Comparative Plant and Fungal Biology, in which research leaders co-ordinate work, in line with Kew Science strategic priorities.²³ Many of the scientists working at Kew are experts on particular plant families. Alongside this taxonomy-based expertise, there is a significant commitment to sustained field research on plant ecology and biogeography in particular regions, Sub-Saharan Africa, Madagascar, New Guinea, South America, South East Asia and UK Overseas Territories. The researchers working in these areas have long-term partnerships with local scientists, government departments and community bodies, including those representing Indigenous groups. Much of this field research involves collaboration with multidisciplinary teams, including humanities and social science researchers, in the UK and overseas; and much is linked to wider questions around conservation, biodiversity and – increasingly – climate change.

Science research at Kew is supported by a suite of specialist facilities including laboratories, meeting rooms and a large lecture theatre in the Jodrell Laboratory Building. The laboratories are staffed by analysts and technicians in the fields of biochemistry, in-vitro biology, seed and molecular biology, and flow cytometry. Another Science-based group (Biodiversity Informatics and Spatial Analysis) manages Kew Science's digital collections and also provides services in geo-spatial data analysis modelling and visualisation. These technical and data services may be relevant to humanities research, as in the case of Kew's Medicinal Plant Names Service (MPNS) which is collaborating with a RHUL historian to develop a methodology for the identification of plants referenced in Byzantine medicinal text.²⁴ Alongside these analytical facilities and resources are Kew's world-class Library, Art and Archives, maintained by a dedicated team of 27 staff.

The Science Directorate has provided the home for most of the collections-based arts and humanities projects listed in Figure 2.2. Whilst this may seem counter-intuitive, it follows from the fact that (with the exception of the living collections) all of Kew's collections fall within the remit of the Science Directorate, including the LAA collections, the Economic Botany Collection and the Seed Bank at Wakehurst Place. Here it may be helpful to think of science at Kew in terms of *scientia*, i.e. knowledge gained through the practice of research: in this sense it encompasses areas of the arts and humanities which

²³ Kew Science strategic priorities: 1. To document and research global plant and fungal diversity and its uses for humanity; 2. To curate and provide data-rich evidence from Kew's unrivalled collections as a global asset for scientific research; 3. To disseminate Kew's scientific knowledge of plants and fungi, maximising its impact in science, education, conservation policy and management (RBG Kew, 2015).

²⁴ Wellcome Trust Collaborative Award in Humanities and Social Science, 'Plants and Minerals in Byzantine Popular Pharmacy. A New Multidisciplinary Approach', 1/11/19 to 31/10/22. More here: <https://wellcome.ac.uk/grant-funding/people-and-projects/grants-awarded/plants-and-minerals-byzantine-popular-pharmacy-new>.

have proved capable of attracting major research funding. As yet, however, Kew's science strategy has lacked an explicit humanities dimension and its Research Services department does not have specialist knowledge in this area. As a result, those humanities projects which have developed hitherto have tended to reflect the specialisms of particular collections managers (especially in Economic Botany and LAA), combined with University-based researchers such as those at Royal Holloway, Birkbeck, Glasgow, UCL, Roehampton, and Brighton. Such partnerships have provided an essential means of generating external funding across a range of subject areas. There is significant further potential for expanding this work, subject to capacity issues as discussed below.

Research also forms part of the functions of other Directorates. Within Learning and Participation, for example, there is significant experience of research on plant-based pedagogy and engagement. This includes intensive projects with schools (as in the Mobile Museum project) and large-scale outreach programmes (such as the Heritage Lottery-funded *Grow Wild* project). Elsewhere in the Horticulture Directorate there is expertise on landscape design and ecology offering further possibilities for collaborative research. At Wakehurst Place, new approaches to landscape management are being tested in a three-year research programme launched in May 2020 to evaluate the Nature Capital approach to ecosystems services. Another example at Wakehurst is the planting of a new American Prairie Landscape which involves ongoing research. At the main Kew site, major projects such as the restoration of the Temperate House may involve significant research in support of new interpretation. In this context, Kew's status as a World Heritage Site involves a commitment to sustaining Kew's role as a research centre, as well as providing interpretations which tell 'compelling stories about Kew's global and local activities and impact' (Darroch 2020, 35). In both respects, Kew's collections lie at the heart of its work.

3.2 Kew's collections: an overview

As a well-resourced Independent Research Organisation, Kew Gardens has a mature research infrastructure supporting its scientific programmes, from lecture theatres and library resources to staff seminars and data systems. Pride of place however goes to its extensive collections, from the living collections of the gardens to specialist scientific collections such as the Millennium Seed Bank. The variety and significance of these collections needs highlighting, especially from the perspective of arts and humanities researchers. In fact, Kew could be described as 'collection of collections' - of living plants, dried plants, parts of plants, plant-related artefacts and, of course, of people who specialise in or simply enjoy plants. Given the importance of these collections to plant science and their potential significance for arts and humanities researchers, it is useful to provide an overview of the collections before considering the prospects for Plant Humanities at Kew.

Collection	Approximate size*	Description
Herbarium	7,000,000	Preserved dried vascular plant specimens. ¹ The number of species represented is unknown but the current Herbarium catalogue, which covers 12% of the collection, represents 187,500 species.
Spirit Collection	76,000	Specimens ¹ of plants, plant parts and fungi preserved in spirit, representing almost 30,000 species.
Fungarium	1,250,000	Preserved dried fungi, lichens and fungal analogues such as oomycetes and myxocetes. An additional 1,100 fungal cultures are stored in liquid nitrogen. The number of species represented is unknown but the current Fungarium catalogue, which covers 40% of the collection, contains 52,000 species.
Economic Botany Collection	100,000	A broad range of samples ² documenting the use of plants by people, including 42,000 wood collections. Approximately 20,000 species are represented.
Seed Collection	86,000	Living seed collections ³ held in the Millennium Seed Bank, with over 2 billion individual seeds representing around 38,600 species. An additional 20,000 preserved seed samples from herbarium sheets are held for taxonomic reference.
DNA and Tissue Bank	58,000	48,000 ² samples of plant genomic DNA stored at -80°C, and 10,000 silica-dried tissue samples at room temperature – together representing around 35,000 species.
Microscope Slide Collection	150,000	Microscope slides documenting plant and fungal anatomy, including c. 40,000 slides of pollen, c. 36,000 slides of wood and c. 10,500 slides of fungi. The number of species represented is unknown but the current database, which represents 37% of the collection contains 30,600 species.
<i>In Vitro</i> Collection	6,000	Living plants and fungi cultured on agar. Comprises 1,000 <i>in vitro</i> plants of over 20 species of orchids, and 5,000 cultures of mycorrhizal and non-mycorrhizal fungi corresponding to 600 genetically distinct isolates covering c. 200 identified species.

*The exact size of the larger collections and the precise number of species contained within them is unknown, and the sizes given for these therefore represent an estimate based on our knowledge of the collection and those specimens that have been digitised.

¹ A specimen = material collected from a single plant or fungal species at a given location and a given time

² A sample = tissue or DNA collected/extracted from a single plant at a given time.

³ A collection = a group of related specimens. In the case of seed collections these represent seeds gathered from the same individual or same population at the same time.

Figure 3.2 Overview of Kew's science collections (Willis, Paton and Smith 2018).

Science collections

The size and range of Kew's Science collections is summarised in Kew's Collections Strategy which was published in 2018 (Table 3.2). In the words of the 2018 Strategy, these various collections 'document plant and fungal diversity through time and space and underpin Kew's extensive research programmes, providing an exceptional research base that can be used to address contemporary issues ranging from climate change to food security and human health' (RBG Kew 2018, 2). They are, therefore, central to Kew's scientific research and will remain so in the future, though their management and the uses to which they will be put may change. While researchers at Kew may work more closely on one collection or another, their research typically involves work across the collections, so that links between them - enabled by digitisation - are particularly important. Furthermore, these same collections have become increasingly used as resources for arts and humanities research (as will be discussed in chapter 4).²⁵ Institutional collections like those at Kew tend to be well documented in registers or databases, and in many cases have associated archival sources in the form of correspondence, reports, visual records and published accounts to which they may be linked, significantly enhancing their evidential value.

In terms of the quantity of specimens, the largest of these collections is the Millennium Seed Bank collection, whose current size is estimated to be over 2.3 billion viable seeds, representing 37,000 species from 95 countries (Dickie 2018). The seed collection provides a globally important asset for science and conservation, as well as a stimulus to innovative arts and humanities research. The latter includes, for example, visiting artists interested in climate and environmental change and environmental anthropologists researching changing attitudes to 'ex situ' conservation at Kew and elsewhere. In a recent doctoral thesis on the changing ethics of seed conservation, Kay Lewis-Jones thus makes the case for the contribution of an ethical perspective to future policy and management of the MSB in the interests of reaching out to wider and more diverse communities of practice. This is one example of the ways that environmental humanities research can offer policy-makers at Kew evidence concerning the uses of their collections and models for potential future development (Lewis-Jones 2018).

Kew's herbarium, containing seven million specimens of dried plants, is viewed by plant scientists as a potential data mine for the study of climate change and conservation, as has been argued for herbaria elsewhere (Heberling and Isaac 2017; Meinecke et al 2018; Cowell, Anderson and Annecke 2020). In the humanities, the role of plant collections in herbaria has received considerable attention in historical studies of the scientific practice of naturalists such as Hans Sloane and Joseph Hooker (Delbourgo 2017; Endersby 2008).

²⁵ For a recent use of the Kew collections as a case study in developing new approaches to cultural and natural heritage, based on a 2017 workshop in collaboration with the RHUL-Kew Mobile Museum project funded by AHRC, see Harrison et al (2020).

Yet detailed and systematic research on the Kew herbarium, whether science- or humanities-oriented, is hampered by the slow progress of digitisation. While all type specimens are digitised and databased, only 12% of the collection as a whole is catalogued, which makes large-scale analysis over time and place difficult.²⁶ The collection is organised taxonomically, according to the APG III system, so it is challenging for arts and humanities researchers to locate material on the basis of, say, a particular collector, expedition, donor, date and so on. To date this has proven a significant barrier to more detailed engagement with the herbarium collection by historians in particular. Projects which have located the specimens of a given collector, for example, the Digital Amazon project, have built specialist plant science time and cost for this task into the grant proposal.



Figure 3.3 Seeds stored at -20°C at the Millennium Seed Bank. Image courtesy of the Royal Botanic Gardens, Kew.

Of the other scientific collections, the Economic Botany Collection of c. 100,000 plant specimens and artefacts, originally displayed in four museums on the Kew site and now housed within a research store, has received the most attention from humanities researchers including the co-authors of this Report (Cornish 2013; Driver, Nesbitt and Cornish 2021). The combination of natural specimens with cultural artefacts within such collections made them increasingly unfashionable in the second half of the twentieth century, and in the case of Kew their demise was undoubtedly hastened as the institution sought a less colonial vision of its global role from the 1960s onward. However, the coalescence during the early decades of the current century of increased interest in

²⁶ Work on this is however being undertaken by BISA, Kew's Biodiversity Informatics and Spatial Analysis department using Global Biodiversity Information Facility (GBIF) data (see Nicolson et al 2018).

Indigenous heritage, craft economies and environmental sustainability has led to renewed interest, notably within the environmental humanities. Research on what are often now termed ‘biocultural collections’ (Salick, Konchar and Nesbitt 2014) has been facilitated at Kew by the increasingly proactive encouragement of curators and by the existence of a comprehensive database. The collection has been associated with over half the research funding summarised in Figure 2.2, including two major AHRC projects - the Mobile Museum project with Royal Holloway and the Pacific Barkcloth project with the University of Glasgow.²⁷ In contrast to the Economic Botany Collection, other Kew collections (notably the Fungarium) have yet to receive the attention they deserve from arts and humanities researchers, including historians of science. The Fungarium, for example, contains the national mycological collection of c. 1,250,000 specimens.

Library, Art and Archives collections

The Library, Art and Archives collections contain a vast array of material of interest to arts and humanities researchers. A basic inventory of these collections is provided in Figure 3.4.

Collection	Approximate size	Description
Library	300,000	Printed books, journals and pamphlets covering the worlds of plant and fungal science and horticultural history, including: naming, classification and uses of plants and fungi; plant ecology and conservation; wild plants of the world; botanic gardens and herbaria worldwide; the history of gardening and garden design; and the development of botanical illustration.
Art	200,000	Prints and drawings assembled over the last 200 years and ranging in date from the 18 th century to the present day. Additional works on paper, portraits, photographs, and three-dimensional objects.
Archives	7,000,000 sheets of paper in 4,600 collections	Unpublished material comprising correspondence, field notebooks and photograph albums, records of plants received at Kew and sent out from Kew, and maps and plans tracing the development of the Gardens.

Figure 3.4 Kew Library, Art and Archives collections (Willis, Paton and Smith 2018)

The Kew library collection is fully catalogued and searchable via an online database. However, the same is not true of the archives collection which with some significant

²⁷ For a description and overview, see <https://royalholloway.ac.uk/mobilemuseum>

exceptions is catalogued only at the highest level, thus giving only the broadest indication of its contents. Overall the archives collection is strongest from 1840 onwards (the date when Kew itself became a public institution), though there is some material from an earlier period, including the Kew Record Books, recording the arrival and departure of plants at Kew from the 1790s; Joseph Banks' papers from the later part of his career at Kew; and naturalist William Burchell's papers. There is an ongoing programme of digitisation which is largely grant-dependent; this has enabled around half of the Directors' Correspondence files to be digitised and made available via JSTOR Global Plants, a subscription-only database; and a large part of Joseph Hooker's correspondence is now freely available online.²⁸

Similarly, Kew's collection of botanical drawings is largely uncatalogued. There is at present a digitisation post funded by Oak Springs which is focussed on women artists and Chinese artists. Currently these digital images are available primarily through Digifolia, Kew's Digital Asset Management System, which is not itself publicly accessible. However, many of Kew's watercolours can be viewed online through shared platforms, notably those of the Watercolour World project, which includes Joseph Hooker's Himalayan sketches, and Company School paintings from India.²⁹ Such materials provide the basis for innovative work on the history of botanical illustration and the visual cultures of science in general, subjects which have concerned art historians and curators alike (for example Noltie 2007 and Bleichmar 2012). In recent years, Kew has provided rare material for innovative exhibitions held elsewhere (Dalrymple 2020) and there is ample potential not only for further research to be done on the collection but also for research-based exhibitions at Kew itself.

Living collections

Kew's cultivated plants constitute an important resource for plant scientists and humanities researchers alike. In 2019, for the first time, Kew developed a formal management strategy to integrate the gardens as 'living collections' within the existing science Collections Strategy (Smith and Barley 2019). It has been calculated that the gardens, glass-houses and nurseries in Kew's 330-acre site and the 535-acre site at Wakehurst Place contain over 68,000 accessions representing over 22,000 taxa.³⁰ These include many rare and threatened species from around the world, with thirteen taxa now regarded as being extinct in the wild. A new database is almost completed which documents the living collections to standards enabling comparison with other Kew

²⁸ Joseph Dalton Hooker Correspondence, <https://jdhooker.keew.org/p/jdh>

²⁹ Watercolour World website:

<https://www.watercolourworld.org/search?query=royal+botanic+gardens%2C+Kew&displayCount=24>, accessed 21/07/2020.

³⁰ Here an accession refers to one or more living plants derived from the same collection.

collections and which will be publicly accessible, thus opening them up as potential subjects of future humanities research.

As well as seeking to align more closely Kew's policies on horticulture, science and conservation, Kew's Living Collections strategy highlights the importance of interpretation in communicating new messages about science, sustainability, heritage and the multisensory experience of nature. Landscape planning and design are key aspects of the management of living collections, and at Kew the combination of natural and cultural heritage contributes significantly to its status as a UNESCO World Heritage Site. Landscape management and design are areas where there is significant potential for humanities researchers to contribute. The new landscape ecology initiative at Wakehurst, for example, is seeking to develop an evidence-based approach to the relationship between conservation, land management and public benefit, including the well-being of visitors.

The gardens at Kew and Wakehurst also house a number of facilities which are an integral part of public programming as well as commercial activity. These include art display spaces (such as the Shirley Sherwood Gallery and the Marianne North Gallery), as well as conference and meeting venues. There is also an active public programme including, for example, the annual Kew Science Festival; a major commitment to development and fund-raising through the Kew Foundation, and the Friends of Kew; and digital and public relations teams. These facilities and investments together provide a substantial and significant infrastructure for public engagement with the collections and the research they make possible.

3.3 Prospects for Plant Humanities at Kew: findings from interviews

For the purposes of this Report, we undertook 25 informal interviews with Kew staff (named in Appendix I). These staff represent many parts of the organisation, notably in science, collections management, horticulture and learning, based at both Kew and Wakehurst, and include staff of various levels of seniority up to and including the Director. The interviews were conducted online with respondents to an initial request and given the period they took place (during the COVID-19 pandemic) it is unsurprising that not all staff were available. The format of interviews at Kew (as at Royal Holloway) was broadly consistent, each being framed by four broad questions about the experience and potential of arts and humanities research at Kew and in similar settings (see Appendix II for details).

From our discussions with Kew staff it is clear that there is significant and in many cases enthusiastic interest at various levels of the organisation in the possibility of external collaborations with humanities researchers. There is also good reason to believe that this

extends well beyond the sample interviewed. That said, in the Kew context, staff were less concerned to make *a priori* distinctions between ‘science’ and ‘humanities’ research than to explore the ways in which interdisciplinary and multidisciplinary research could contribute to an understanding of plants and their value. In the words of one interviewee, ‘To me, whether it’s labelled art or science is very much a secondary thing; the fundamental purpose for Kew is the importance of plants to the planet and to humanity, and there’s endless different ways in which we can tell those stories’.

Kew Science

In discussions with Kew’s plant scientists about the potential for collaboration with arts and humanities researchers, four common themes emerged, as follows:

- *Linking collections.* Many interviewees commented on the value of linking botanical specimens (in the herbarium or economic botany collection for example) to relevant archival and other historical sources, and the added value of humanities in interpreting such materials. (Reference was often made to the role of digital projects and the rich resources in Library, Art and Archives discussed separately below). A number of more specific points were made about collections requiring more research (such as the mycological collection) and disciplines which may be of particular reference to them (including anthropology and archaeology).
- *Global challenges.* In relation to Kew’s core mission to mobilise plant science to address global challenges such as biodiversity loss, food security, conservation and sustainable development, the value of a multidisciplinary approach (including where appropriate humanities expertise) was universally acknowledged. Examples of such an approach abound in Kew’s work in science and conservation in many parts of the world. The importance of a partnership approach, working in collaboration with local stakeholders, was also strongly stressed.
- *Decolonising collections.* The gathering public debate in 2020 over the Black Lives Matter and related movements aroused significant interest amongst Kew staff especially in relation to an intensified focus on policies on diversity within the culture and heritage sector and calls for museums to ‘decolonise collections’. During the period in which we conducted interviews with staff, the Director of Kew Gardens issued a public statement on equality, diversity and inclusion, and the Head of Science wrote a far-reaching blog on decolonising Kew’s collections.³¹ In interviews before and

³¹ Richard Deverell, ‘Addressing racism, past and present: Richard Deverell, Director of the Royal Botanic Gardens Kew, addresses quality, diversity and inclusion in our organisation’, 12 June 2020, <https://www.kew.org/read-and-watch/kew-addresses-racism>; Alex Antonelli, ‘Director of science at Kew: it’s time to decolonise botanical collections’, *The Conversation*, 19 June 2020,

after these events, we were able to discuss these issues informally with a variety of staff across the institution. One theme to emerge was the potential of humanities expertise and arts practice to engage these undoubtedly difficult challenges for an institution whose history is so closely connected to Britain's imperial past.

- *Inspiring and engaging the public.* Several interviewees commented on the need to engage audiences through popular science and history writing. Christina Harrison and Tony Kirkham's *Remarkable Trees* (2019) and Kate Teltscher's *Palace of Palms* (2020) were highlighted as recent examples. Some of our sample referred positively to the experience of working with artists as a way of inspiring public engagement with the collections (in the seed bank and the herbarium for example). Others commented on the need for more emphasis on new approaches to interpretation, education and outreach.

Library, Art & Archives

LAA plays an important role within the Science Directorate, supporting Kew's plant scientists and providing a sort of institutional memory bank for Kew itself. In addition, this Department also has wider roles in support of humanities research (typically supporting visits and enquiries by external researchers from the UK and overseas) and public engagement (including exhibitions), and in both respects its audiences stretch significantly beyond Kew science. Most of the LAA staff hold professional qualifications in librarianship or archiving, and some have subject-specialist knowledge in fields such as art history.

In interviews with LAA, many of the same issues mentioned by Kew scientists were discussed, notably the value of research that links collections (in this case, linking the archival, library, art, object and living collections). Another theme highlighted was the challenge of Kew's colonial heritage, linked to the opportunity to tell new stories about the library, art and archive collections and to engage more diverse audiences. The positive experience of LAA staff in leading some of Kew's recent externally-funded humanities research projects (such as the Miscellaneous Reports project) and supporting others (including the Mobile Museum project led from Economic Botany) was highly valued. Interviewees welcomed the idea of a more strategic approach to humanities research, and discussed a range of types of project, including collaborative PhDs, postdoctoral research projects, participation in national research initiatives and research linked to public engagement initiatives (exhibitions, web resources, etc.).

In this context, the value of digitisation and cataloguing projects was emphasised as a means of unlocking some of the immense resources in the LAA collections. LAA staff

<https://theconversation.com/director-of-science-at-kew-its-time-to-decolonise-botanical-collections-141070>.

commented that much material of relevance to researchers is difficult to locate and research: a large proportion of the illustrations, for example, are scattered between LAA, the herbarium and fungarium. In the wider funding context (discussed further below), the LAA interviews point to new opportunities for collaborations that will unlock the potential of these collections.

Horticulture

Our sample of interviewees included staff from Horticulture (based at both Kew and Wakehurst), Interpretation (of the living collections) and Learning and Participation. While there is less experience within these areas of collaboration with externally-funded humanities research projects (compared with Economic Botany or LAA), considerable interest was expressed in aspects of research which were aligned to the objectives of these departments and the aspirations of their staff.

In the context of Kew's horticulture and learning programmes, it the living collections in the public gardens, nurseries and glasshouses at Kew and Wakehurst which are the focus of activity, though in both cases questions of research often entail discussion of the wider issues discussed above. In the context of interpretation, for example, the challenges posed by new ways of engaging audiences and of telling the stories of plants, as well as Kew's colonial history, were identified as areas where research collaboration with arts practitioners and humanities scholars has real potential. More generally, it is clear from the interviews we conducted that there is a well-articulated interest at a variety of levels in engaging with arts and humanities and social sciences research within interdisciplinary programmes, as for example in the new landscape ecology programme at Wakehurst Place.

A number of other research themes emerged in discussion with staff in the Horticulture, Learning and Operations Directorate, including the relationship between plants, health and well-being; the implications of Kew's status as a UNESCO World Heritage Site for landscape management and new approaches to interpretation; the role of vernacular knowledge and folk traditions in agriculture and forestry; and continuing inequalities in public access to the gardens and other resources of Kew. More generally, staff in the Directorate are committed to working closely with Kew science. The potential for research collaboration across both Directorates, as indicated in the Mobile Museum project for example, was highlighted in several of the interviews.

3.4 Kew and the arts and humanities: looking forward

Kew's current corporate strategy is dedicated to 'unlocking why plants and fungi matter' and it is explicitly aligned to addressing global challenges such as biodiversity loss, climate change, plant disease and food security.³² In this vision, Kew's primary function is to undertake research and knowledge exchange for public benefit, using science and collections 'to provide knowledge, inspiration and understanding'. In 2020, Kew is in the process of re-working its corporate strategy in parallel with its five-year science strategy. While new emphases will emerge, the core vision of research on plants and their significance for human welfare and livelihoods is unlikely to change: in fact, it is highly probable that questions of the human use, interpretation and experience of plants will be highlighted. Within this vision, it is clear that arts and humanities skills and insights potentially have much to offer, especially in relation to collections management and interpretation; understanding the relationships between plants and people; and public engagement and learning.

The alignment between Kew's corporate strategy and its science strategy is clear from its current policies. At the time of writing, an extensive process of discussion and consultation is underway in preparation for a new science strategy for 2021-2025. This review is built on three pillars of research, partnership and learning, encapsulated in the naming of three working groups (Explore, Educate, and Engage). While the COVID-19 pandemic has brought significant new challenges, especially given the Gardens' reliance on visitor income, it is unlikely to undermine Kew's core scientific mission - using the scientific understanding of biodiversity to prevent or mitigate its further loss.³³

Over the next five years, Kew's strong commitment to scientific research, especially as articulated within the 'Explore' pillar, will continue to be reflected its support for fundamental work in collecting, protecting, understanding and using plants and fungi. This research depends on effectively demonstrating the role of plants and fungi in global wellbeing and the economic, social and cultural benefits they bring. As noted above, the connection between plant science and sustainable development goals (Antonelli, Smith and Simmonds 2019), including questions of traditional knowledge and cultural heritage, are receiving increased attention from Kew scientists. These concerns will provide further opportunities for collaboration with external arts and humanities researchers. In addition, the work being done on Kew's role in education and learning, and in engagement with external partners to maximise impact in terms of both policy and social benefit, is likely to require further collaboration with university-based academics including arts and humanities researchers. Many of our interviewees across Kew expressed support for collaboration of this sort – in telling new stories about the living

³² *Unlocking Why Plants and Fungi Matter: Royal Botanic Gardens, Kew Strategy to 2020/21* (2015) available from <https://www.kew.org/about-us>

³³ Alex Antonelli, 'Kew&A: Our scientific mission', Kew Science Away Day, 10 December 2019.

collections, in demonstrating the value of little-known or under-utilised collections, in helping to generate external funding for digitisation and related projects and in enhancing the quality and impact of interdisciplinary and long-term research. In all these cases, staff pointed to limitations of capacity – in terms of time, skillset or sheer human resource – which could be overcome through collaboration with external partners in arts and humanities fields.

The close relationship between Kew's corporate strategy and its science strategy means that a growing emphasis within science on the engagement with external bodies will feed into its corporate policy. Conversely, institution-wide issues and priorities – notably on matters such as sustainability and equality, diversity and inclusion - will be reflected in Kew's science strategy. The development of a more explicitly ethical stance in institutional policy on such questions is in line with a wider pattern in research organisations including museums and universities. More specifically, as discussed above, the public debate over 'decolonising collections' in 2020 had a significant impact across Kew as it did elsewhere in the culture and heritage sector. This debate has a particular resonance within an institution whose origins and collections have been fundamentally shaped by its role as a centre of imperial science (Cornish 2013; Drayton 2000). Many staff we interviewed indicated that hitherto Kew's engagement with its colonial past had been somewhat limited. This is one area where collaboration with external organisations, including those involved in arts and humanities research, is likely to be of direct benefit to Kew's mission.

3.5 Key points from Chapter 3

- Kew's collections, expertise and facilities place it in a highly favourable position to lead as well as support externally-funded arts and humanities research linked to Kew's core strategic mission
- Major themes to emerge from interviews with Kew staff on this subject were:
 - i. the value of research linking collections and the need for digitisation
 - ii. the role of interdisciplinary research responding to global challenges
 - iii. the call to decolonise collections, requiring more research on Kew's colonial past
 - iv. the contribution of new modes of storytelling to inspiring and engaging the public
 - v. the value of new perspectives in landscape research and interpretation
- The main constraints on the development of externally-funded arts and humanities research at Kew are three-fold:
 - i. incomplete cataloguing and digitisation of some key collections;
 - ii. limited capacity to manage and conduct arts and humanities research within Kew;
 - iii. absence of an explicit strategy for engaging with external funding opportunities

4. Prospects for Plant Humanities at Royal Holloway

Without the humanities and social sciences, hard science and technology can do little to resolve complex societal challenges.

Hetan Shah, Chief Executive of the British Academy (Shah 2020)

4.1 An overview of arts & humanities research at RHUL

Royal Holloway is a research-intensive institution, ranked in the top quartile of UK Universities for research rated ‘world leading’ or ‘internationally excellent’ in the most recent nationwide research evaluation (REF 2014).³⁴ RHUL’s most recent strategic plan (2013-20) – like Kew’s, currently under revision – includes a key objective to create an excellent research environment in support of excellent staff capable of generating ‘exciting, world-changing research’ (RHUL 2013, 7). RHUL currently has significant areas of research strength in a wide range of disciplines across the arts and humanities, the environmental and physical sciences, the social sciences and business and management. These disciplinary areas are organised into six Schools, 25 Departments and 44 Research Centres and Institutes.

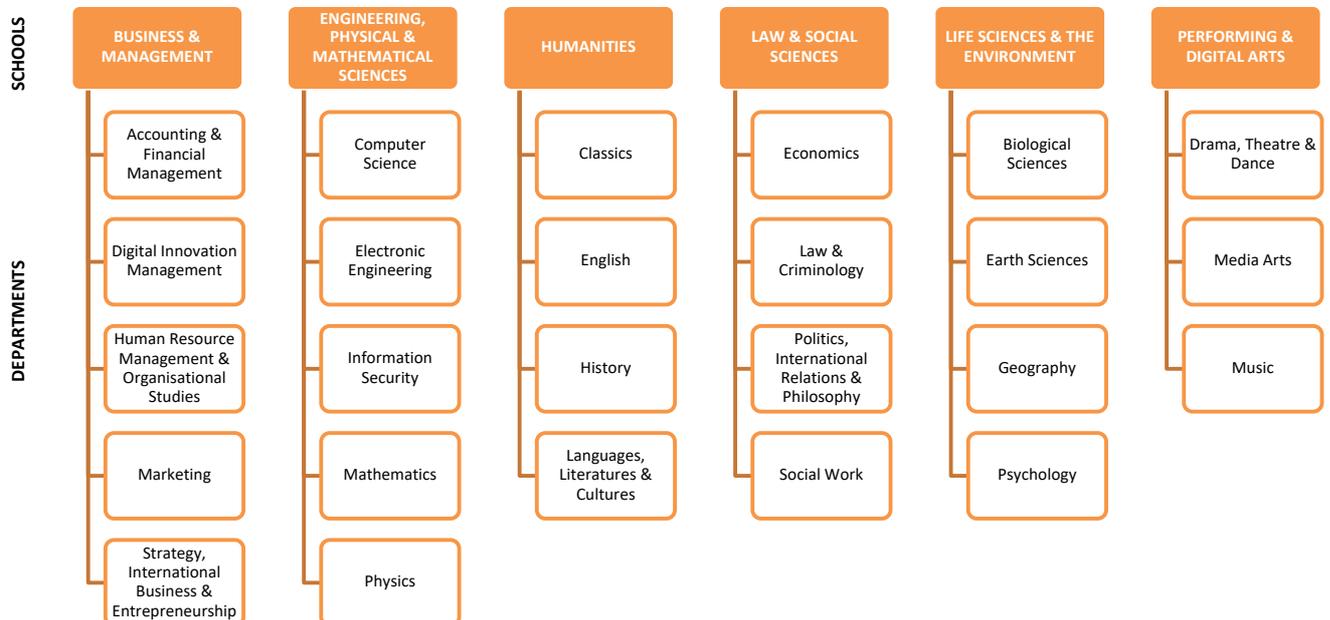


Figure 4.1 Royal Holloway’s six Schools and their constituent Departments

³⁴ Website, Royal Holloway University of London: <https://www.royalholloway.ac.uk/research-and-teaching/research/research-excellence-framework/>. Accessed 11/06/2020

Figure 4.1 summarises Royal Holloway's current academic organisation. Figure 4.2 shows some of the Research Centres and Institutes operating alongside this structure, within or across Departments and Schools. It is important to note that Arts and Humanities researchers are distributed across several Schools, notably the School of Humanities and the School of Performing and Digital Arts, with further concentrations within the School of Law & Social Sciences and the School of Life Science and Environment. Of the Research Centres and Institutes in the arts and humanities operating across these Schools, three of the most active are the Humanities & Arts Research Institute (HARI), StoryFutures (an AHRC-funded initiative devoted to Immersive Storytelling) and the Centre for the GeoHumanities (CGH).

A strong feature of research strategy within RHUL's new academic structure is a commitment to cross-departmental and interdisciplinary research projects. There is also a growing emphasis on challenge-focussed projects alongside fundamental science and scholarship. The initial response to the COVID-19 crisis suggests that these trends towards interdisciplinarity will continue to shape RHUL strategy, alongside a renewed emphasis on partnership with external organisations in order to achieve benefits of scale and to generate increased research income.

<p>MAJOR CROSS-SCHOOL RESEARCH CENTRES & INSTITUTES</p> <p>Centre for the GeoHumanities</p> <p>Humanities and Arts Research Institute</p> <p>StoryFutures & StoryFutures Academy</p> <p>OTHER RESEARCH CENTRES</p> <p>Centre for Critical and Historical Research on Organisation and Society</p> <p>Centre for Research into Sustainability</p> <p>Centre for Victorian Studies</p> <p>Centre for Visual Cultures</p> <p>Digital Organisation and Society Research Centre</p> <p>Geopolitics, Development, Security and Justice Research Group</p> <p>Hellenic Institute</p> <p>History of Television Culture and Production</p> <p>Holocaust Research Institute</p> <p>Poetics Research Centre</p> <p>Social, Cultural & Historical Geography Group</p>

Figure 4.2 Selection of Royal Holloway's Research Institutes and Centres in the arts & humanities

4.2 Prospects for Plant Humanities at RHUL: findings from staff interviews

For the purposes of this Report, we undertook 34 interviews with Royal Holloway academic staff (named in Appendix I). Respondents were recruited in two ways: initially via a group email to Research Leads, Directors of Research and Research Centre Directors; and later by approaching individuals whose research interests appeared to be aligned with Plant Humanities approaches. The final sample included staff from five of RHUL's schools, ranging in career stage from postdoctoral researchers to professors. Nearly all the researchers (30) were humanities academics, while the remaining 4 were researchers in ecology and biomedicine interested in collaboration with humanities or social science researchers. As with Kew staff, the format of these interviews was broadly consistent, each framed by four questions about the experience and potential of arts and humanities research at Kew and in similar settings (see Appendix II for details).

A small proportion of the humanities academics interviewed are already working in collaborations with Kew (see Appendix XI). These include externally-funded research projects (Geography, History, Modern Languages, Philosophy); UKRI doctoral studentships (Geography, History); undergraduate and postgraduate placements (Geography); and student placements in and visits to Kew collections (Geography and Classics). Hitherto, much of this work has been concentrated in Geography, though there has been gathering interest in other Departments, some of it attributable to recent efforts to promote collaboration with Kew.³⁵ One purpose of this scoping project was to present a more systematic case for collaboration across a wider range of disciplines.

In many interviews with humanities researchers we found a general curiosity in the possibility of collaboration with Kew without much detailed knowledge of its facilities and expertise, still less of the current direction of research strategy at Kew. In-depth knowledge of the potential of Kew collections to support arts and humanities research was limited to those relatively few researchers already engaged in collaboration. This knowledge gap may reflect a wider lack of awareness of the extent and potential uses of related archival and print scholarly resources which have already been made available in digital form through portals such as the Biodiversity Heritage Library which makes freely available an extraordinary range of materials of uses to researchers in the humanities, especially historians and literary scholars.³⁶ Given the large literature which now exists on the methods, ethics and epistemology of digital humanities research, including on Kew

³⁵ For example, a recently announced AHRC network grant on the Philosophy of Plants (involving a collaboration between Philosophy and Modern Languages and Kew LAA) was initiated following a talk on collaborative research by Mark Nesbitt at Royal Holloway in March 2019.

³⁶ The [Biodiversity Heritage Library](#) is an Open Access web resource containing the world's largest digital library of archival and print materials connected with biodiversity. It is supported by a major consortium of research libraries and botanic gardens which includes Kew, the Smithsonian Institution, Harvard University Herbaria, the New York Botanical Garden and the Library of Congress.

digital projects themselves (e.g. Svensson 2015; Martins 2021), there are good grounds for encouraging greater involvement of RHUL humanities academics in digital projects.

The two key purposes of our discussions with RHUL staff were: to raise awareness of Kew's collections and related research by humanities scholars; and to explore areas of potential collaboration between humanities researchers and Kew staff, including plant scientists. In what follows we summarise some key areas of interest from our RHUL interviews, here organised by School.

Humanities. Our sample of 11 interviewees included researchers in all four Departments (English, History, Classics and Languages). Interest was expressed in a variety of topics including the language and literature of plants, nature writing, ecocriticism, economic botany, archaeobotany, consumption histories, colonial plant collecting, the history of plant-based medicines and creative writing. The Wellcome-funded project on *Plants and Minerals in Byzantine Popular Pharmacy* was mentioned by several as having alerted them to the possibilities of research collaboration with Kew. In this context, one respondent commented that in some models of multidisciplinary research, the arts are seen as an add-on, primarily relevant to research impact. There was a desire for genuinely interdisciplinary engagement with the work of plant scientists, particularly in the context of challenges around climate change, biodiversity loss, and decolonising collections. There was also interest in the possibility of residencies and partnerships for practice-based researchers interested in working collaboratively with science institutions around issues such as climate change and biodiversity loss.³⁷ However, there was some uncertainty about how to initiate discussions. One suggestion was a collaborative workshop in Kew's LAA department. Another suggestion was a network of researchers interested in the philosophy of plants, including an exhibition as an output: this project has recently been funded by AHRC (see School of Law and Social Sciences below).

Life Sciences and the Environment. Humanities researchers in RHUL's geography department have previously collaborated with Kew scientists through co-supervision of doctoral studentships, collections-based research projects, student placements, collections visits and appointments of honorary staff including a Visiting Professor. The combination of social, environmental and humanities expertise in this department also provided a basis for discussion of work under the umbrella of RHUL's Centre for the GeoHumanities which has been involved in supporting practice-based work linking the environmental humanities with the creative arts. Other suggested topics for collaboration included the sensory experience of analogue environments such as hothouses, the geography of collections storage, the interface of indigenous and scientific knowledge systems, particularly with regard to biodiversity conservation; fire

³⁷ The poet and writer Redell Olsson of RHUL's English Department was recently awarded the DARE art prize, supported by Opera North and the National Science and Media Museum, for a project exploring alternative ways of representing climate change and the threat of species extinction.

management in dry regions; natural capital and ecosystems services; environmental law and regulation. The value of links to the social sciences was also stressed in discussion with researchers in biological science and psychology, especially in the area of global challenges (around food and traditional knowledge); and in relation to ongoing research in the School on the significance of school grounds and green spaces for children's environmental knowledge and sense of well-being.³⁸ Researchers also highlighted the potential for collaboration with Kew's Learning and Participation Department.

Performing and Digital Arts. Across Drama, Media Arts and Music, Kew was envisaged as a potential site for in situ and remote performances based on critical engagements with Kew's collections, including its musical instruments, from indigenous and environmentalist perspectives. Scholars in these departments also expressed an interest in working alongside scientists, for example with indigenous communities overseas, with UK communities and citizen science projects, and to better understand the properties and cultural significance of plants used performatively or in the production of musical instruments. Sonic installations at Kew were a further suggestion, inspired by the Hive (Figure 4.3); and Kew was also suggested as a potential partner for a StoryFutures project. Finally, as with researchers in other Schools, interviewees suggested ideas for interdisciplinary collaboration with Kew, including for example the history of gardening on film and television, using innovative digital humanities methods.

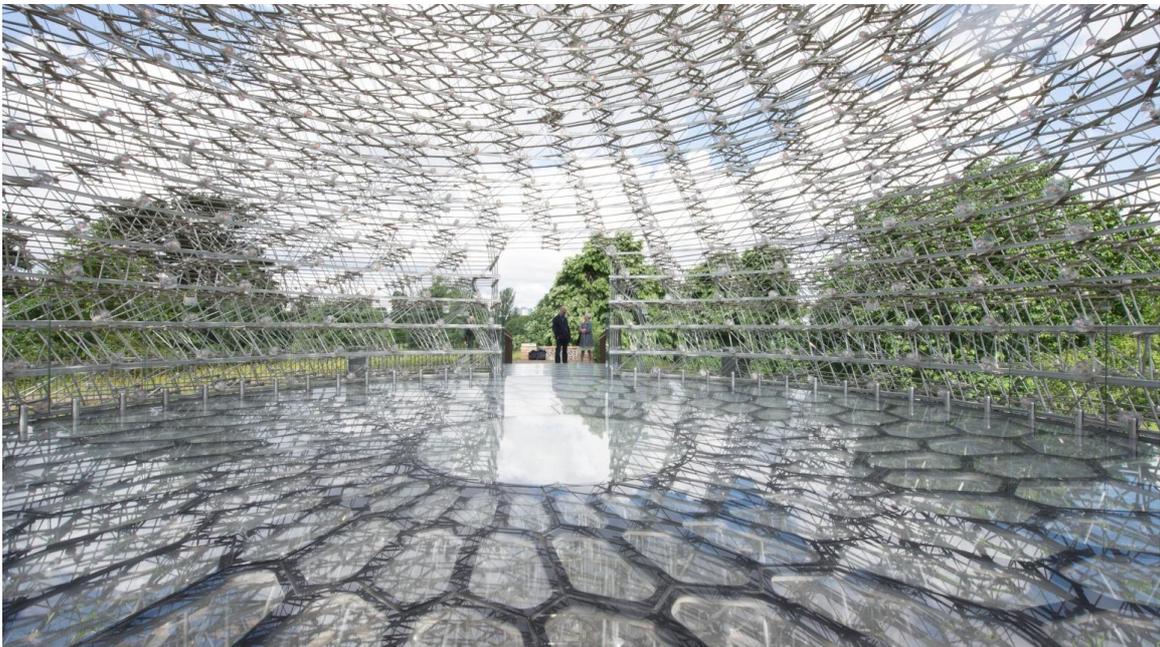


Figure 4.3 The Hive sound installation at Kew Gardens. Image courtesy of Royal Botanic Gardens, Kew.

³⁸ 'Enhancing wellbeing: Can engaging with nature in the school grounds improve children's attention and mood?' Deborah Harvey and Dawn Watling, March-July 2017, funded by NERC; 'Biodiversity in school grounds' Alan Gange, Deborah Harvey and Dawn Watling, 2017, Schools Biodiversity Project: investigating and improving biodiversity in school grounds, funded by Woodspring Trust. Website: <http://schools-biodiversity-project.com> .

Law and Social Sciences. In the time available, we were able to approach only a small number of researchers in the remaining Schools. In a number of Schools there was interest in philosophies of plant life. RHUL philosophers are collaborating with Kew's LAA Department on an AHRC-funded network on the Philosophical Life of Plants. This will involve a Kew-based workshop and exhibition showcasing Kew's first edition copy of Goethe's *Die Metamorphose der Pflanzen*. This project is explicitly represented as part of an emergent 'plant turn' in the humanities, strongly influenced by the work of philosophers such as Michael Marder, who emphasize the sentience and agency of plants (Marder 2013). In this School we were also able to interview a member of RHUL's Centre for the Study of Emotion and Law which is concerned with the social and institutional contexts of human well-being, a potentially useful theme for further discussion.

Business and Management. This School contains a number of research-active departments and Centres, including the Centre for Research into Sustainability. Our focus within the current project was on humanities-oriented research projects including an emergent interdisciplinary research interest in Equality, Diversity and Inclusion (EDI) in the arts sector led by the CHRONOS research group and linked to a collaboration with the University of Siena. In discussion, further synergies were also identified between Kew and researchers in the departments of Accounting, Marketing, and Organisational Studies.

4.3 Royal Holloway's research futures: looking forward

Research is central to RHUL's strategic planning, as is clear from the current corporate plan, covering the period 2013-20.³⁹ Core objectives as stated in 2013 included an ambition to secure a place amongst the top UK research universities by the end of 2020 (measured in terms of ranking in 'the top tier' of UK universities for research as measured through the REF). There was also an emphasis on delivering step-change in performance on teaching and research 'through joint working with selected national and international strategic partners' in order to achieve greater mutual benefit. The process of reviewing and reformulating these corporate objectives was due to take place in 2020. However, although a consultative document on institutional strategy was prepared, the process of consultation and development was interrupted by COVID-19. In the wake of the pandemic, the need to provide a flexible and high-quality education for Royal Holloway's students clearly remains the institution's most immediate objective. As far as research is concerned, discussion of planning has focussed especially on the process of adjustment to the uncertainty and risk that the post-COVID era brings.

While the process of reformulation of Royal Holloway's research strategy will continue into 2021, its key features are already becoming clear. These include: a renewed

³⁹ *Our Future: The Royal Holloway Strategic Plan 2013-2020*, available from <https://www.royalholloway.ac.uk/about-us/more/governance-and-strategy/our-strategy-for-the-future/>

emphasis on exploring opportunities for research partnership with external organisations (already a feature of the 2013 plan, as noted above); an impetus towards external engagement and knowledge exchange at various scales, including that of the region; an emphasis on digital technologies in the creative and cultural sectors; and a new emphasis on research which is engaged with key ethical and policy challenges, especially those connected with environmental crisis, diversity and inclusion, Black Lives Matter, intergenerational justice, and mental health and wellbeing. In all these respects the potential benefit of collaboration with Kew has been thrown into sharp relief by the events unfolding as this Report was being written.

4.4 Key points from Chapter 4

- Arts and humanities research at RHUL, as represented in a rich ecology of academic research across six Schools and twelve Departments, is well established and set to consolidate its international reputation in the 2021 REF.
- RHUL offers distinguished research leadership in the area of arts and humanities research, experience of working across a range of funders, capacity across the career stages, leadership in doctoral training and substantial resources to support investment in strategic innovation and project development.
- There is a track record of collaborative humanities research between RHUL and Kew which has developed over a decade of research partnership. However, these activities are strongly focussed in a few areas, notably Geography at RHUL and Economic Botany at Kew.
- Researchers across many of RHUL's Schools and Departments notably in Geography, History, English, Classics, Media Arts, Philosophy, Psychology and Biological Sciences) perceive potential synergies between their own work and that of Kew and expressed interest in participating in collaborations involving arts and humanities research.
- The impact of the COVID-19 crisis has highlighted the importance of external partnership in research planning and strategy and thrown into relief key societal challenges where there are clear benefits of working together with Kew on areas of mutual interest.

5. The Potential for RHUL-Kew collaborations in Plant Humanities

Novel, multidisciplinary and interdisciplinary approaches are needed to solve many, if not all, of the big research challenges over the next 10 to 20 years.

[UKRI Website](#) (2020)

Kew's recent success in attracting a growing volume of external research grants for arts and humanities research, combined with the findings of our interviews with staff at Kew and RHUL, suggest that there is significant potential for collaboration between RHUL and Kew in the area of Plant Humanities. Ongoing strategic reviews in both institutions concerning research partnerships and wider social and environmental agendas suggest that there is potentially high-level institutional support for such collaborations. In this chapter, we situate the discussion of Plant Humanities research within the context of the UK research funding landscape, illustrating the range of funding available and the specific modes of funding of particular relevance to the Plant Humanities. On the basis of discussions with Kew and RHUL staff undertaken for this project, we identify a number of research topics of mutual interest which have clear potential to be the subject of collaborative projects capable of attracting external funding. These suggestions represent areas where we believe there are the greatest potential synergies.

5.1 The UK research funding landscape

The following overview of the research funding landscape is necessarily selective. It focusses mainly on competitively-awarded grants in the UK for research, knowledge exchange and postgraduate training that are relevant to the Plant Humanities. These grants are provided by public bodies such as UK Research and Innovation (UKRI) and the British Academy, major charities such as Leverhulme and Wellcome, government departments and institutes, and a range of other funders. In most cases, they are equally open to researchers in Universities and in Independent Research organisations such as Kew. In addition, as the custodian of major collections, as a World Heritage Site and as a major UK visitor attraction, Kew is well positioned to bid for project funding (which may have a research component) from a number of other government and charitable sources. In this section, we focus on the funding opportunities that we believe most relevant to research and knowledge exchange connected to research collaborations between RHUL humanities researchers and Kew staff in science, collections and learning.⁴⁰

⁴⁰ In focussing on competitively awarded research-related grants, we exclude other potentially significant sources of funding for research including development income, commercial sponsorship and alumni and

The majority of public funding for research in the UK is channelled through UKRI, established in 2018, which amalgamated the seven existing UK Research Councils (including AHRC and ESRC), the national innovation agency Innovate UK and Research England which is responsible for supporting research and knowledge exchange in England. UKRI's expenditure on research grants is distributed between the seven research councils (see Appendix III for the historical pattern): in 2019-20 its total research grant expenditure was £3.28 billion.⁴¹ AHRC's share of this total was £124m (not including industrial strategy challenge funds), a substantial budget available to researchers in the arts and humanities. AHRC uses these funds to support a wide range of funding schemes, including research grants, fellowships, networks and impact grants (summarised in Appendix IV). Alongside these responsive mode schemes, AHRC regularly issues strategic calls for funding based on 'research themes' (such as 'Digital Transformations in the Arts & Humanities', 'or 'Living with Climate Uncertainty') providing further opportunities for innovative interdisciplinary and collaborative research, together with 'highlight notices' which publicise topical or urgent research.⁴² A similar range of funding schemes is managed by ESRC (with expenditure of £253m in 2019-20) which has long sought to fund policy-relevant research, including research on issues of the environment, economic development and human well-being (see Appendix V). By its nature, the environmental humanities (including many of the fields discussed in this report) crosses over the historical boundaries between the humanities, social sciences and natural sciences: it is widely understood there are many interfaces between funding agencies, especially AHRC and ESRC.⁴³

Notwithstanding the growth in government funding for arts and humanities research in recent years, AHRC remains the smallest of the UKRI research councils. Seen another way, however, this comparative data highlights the significance for arts and humanities researchers of interdisciplinary and multidisciplinary research funding, not simply with cognate areas in the social sciences (represented by ESRC) but within what are called 'cross-council programmes' which give access to a significantly expanded range of funding opportunities. Cross-Council Programmes which are most relevant to researchers in the broad field of Plant Humanities include Connected Communities, Lifelong Health and Well-being, the UK Climate Resilience Programme, Living with Environmental Change, Future of UK Treescapes, Global Food Security and Urban Living Partnership. Such programmes are likely to attract a growing proportion of UKRI's total

other donations. These sources of funding may become particularly relevant when combined with research income from other sources discussed in this chapter.

⁴¹ *UKRI Annual Report and Accounts, 2019-20* (London: House of Commons, July 2020).

⁴² A new five-year research programme of particular note is *Towards a National Collection: Opening UK Heritage to the World*, funded under the Strategic Priorities Fund. This programme is attracting particular interest in the culture and heritage sector, including IROs such as Kew, and will provide a significant stimulus to collections-based research and public engagement in the humanities.

⁴³ <https://ahrc.ukri.org/funding/research/subjectcoverage/ahrcesrcjointstatement/>

budget, and it is highly likely that environmental research will continue to figure highly in its priorities in the wake of the current pandemic.

Interdisciplinary and multidisciplinary research funding is also available through other channels including the Newton Fund⁴⁴ and the Global Challenges Research Fund (GCRF). Established in 2015, the GCRF deserves particular mention as it has provided a significant focus for Plant Humanities-related research grant applications at both Kew and RHUL. This £1.5bn fund is administered through UKRI and the national Academies (including the British Academy and the Royal Society). The emphasis in GCRF funding programmes is on interdisciplinarity as a route to finding solutions to global challenges. In reference to the 17 UN Goals for Sustainable Development and their associated 169 targets on which the GCRF is founded, AHRC has identified ‘overarching themes’ and cross-cutting issues’ where, they believe, ‘arts and humanities can make strong contributions’.⁴⁵ These ‘themes’ include Culture and Heritage; Conflict and Humanitarian Action; and Creative Economies. The ‘cross-cutting issues’ include such broad topics as Sustainability and Wellbeing which have particular relevance to research on traditional knowledge, health and agriculture already underway at both Kew and Royal Holloway.

Researchers in Plant Humanities in the UK also have access to a variety of other sources of funding. These include grants provided by the British Academy, the UK’s national body for the humanities and social sciences (summarised in Appendix VI); major charitable research funders such as the Leverhulme Trust and Wellcome Trust (Appendices VII-VIII); and a variety of other Trusts with more specific remits in the areas of social science and environmental research (Appendix IX). In addition, it should be noted that significant funding in support of UK Plant Humanities researchers may also be accessed internationally, especially where there is collaboration with overseas researchers and institutes. European Research Council grants, for example, remain open to applicants from anywhere in the world provided the research they undertake will be carried out in an EU Member State or Associated Country.⁴⁶ Furthermore, funding from Global Endowments such as the Andrew W. Mellon Trust may be relevant to certain research initiatives, including the establishment of research centres and institutes.

While the main focus of this overview is on research grants to established researchers, UKRI’s role in funding research training up to doctoral level presents further opportunities for collaboration in support of humanities research between Kew and

⁴⁴ The Newton Fund is managed by BEIS and delivered through seven UK delivery partners, including AHRC, British Academy and British Council. It aims to support research on the sustainable economic development and social welfare of 17 nominated partner countries. See <https://www.newtonfund.ac.uk/>, accessed 21/07/2020

⁴⁵ ‘AHRC and the Global Challenges Research Fund’, downloaded 15.6.2020 from UKRI website:

<https://ahrc.ukri.org/documents/publications/global-challenges-research-fund/>

⁴⁶ <https://erc.europa.eu/funding/non-european-researchers>, accessed 17/06/2020. EU Associated countries: Albania; Armenia; Bosnia and Herzegovina; Faroe Islands; Georgia; Iceland; Israel; Moldova; Montenegro; North Macedonia; Norway; Serbia; Switzerland; Tunisia; Turkey; and Ukraine.

RHUL. Much doctoral training is now delivered through UKRI-funded Doctoral Training Centres (DTCs), which are consortia of research organisations, including universities and non-HE partners. Many of these Consortia supportive collaborative doctoral studentships where projects are co-supervised in a University and a partner organisation. Appendix X shows the range of Consortia in which RHUL and Kew currently have formal membership. These include the RHUL-led AHRC Techne consortium which has in the last 3 years funded five collaborative AHRC studentships for doctoral research in collaboration with Kew. These projects, supervised by academics at RHUL, Roehampton and Brighton, are co-supervised by Kew staff in Economic Botany, Library Art and Archives and Horticulture. As well as being a partner in Techne, Kew is also member of a museum-led Collaborative Doctoral Partnership, the Science Museums & Archives Consortium (which also includes the Royal Society as well as the Science Museums Group), enabling further links into the UK heritage sector.

5.2 Modes of collaborative research funding in the Plant Humanities

The above overview provides some indication of the wide range of UK funding sources available to researchers in the Plant Humanities. In the process of formulating and developing a specific proposal, individual researchers typically rely on guidance from multiple sources, including other academics, mentors and specialist professional staff in Research Services Departments. At this point, a variety of questions may arise, especially concerning the extent to which specific modes of funding are appropriate to the scale and objectives of the proposed project, the nature of any proposed partnership and the career-stage of the applicant[s]. Figure 5.1 illustrates various different modes of funded research in the Plant Humanities, using current or recent projects from Kew as examples. All but one of these projects are formal collaborations with at least one UK University (the exception is the Kew-funded Future Leaders Research Fellowship scheme). These projects range from UKRI collaborative doctoral research projects to ongoing international and multi-institutional research programmes. The experience of collaboration between RHUL and Kew to date, although concentrated in a small number of Departments, includes several of these project funding modes. (RHUL-Kew projects active in 2019-20 are listed in Appendix XI). The staff who have been involved in such projects have sought to share their experience with colleagues in RHUL and Kew, for example through Techne, and some recent UKRI grant success can be directly attributed to this sharing of experience.

One of the topics we returned to often in the course of our interviews with staff at RHUL and Kew was the appropriateness of particular modes of funding at the early stage of a potential partnership, especially those for whom the prospect of collaborative research with an external organisation was new. It may be appropriate at this stage to explore options for a relatively small-scale grant application. Possible funding sources might

include, for example, the Research Grants Scheme of the British Academy (where much highly significant humanities research has originate); the Research Networks scheme of the AHRC (which enables international as well as interdisciplinary collaborations, as in the Philosophical Life of Plants project funded in 2020); or a collaborative PhD proposal to a DTC such as Techne.

Mode of funding	Example	UK Funder
Collaborative Research Studentship	A Paper World: The Collection and Investigation of Plant Materials for Paper Making, c.1830-1914	AHRC Techne
Collaborative Practice-Based Research Studentship	Collection to Source: Cosmology and ethnobotanical artefacts of the Northwest Amazon	AHRC Techne
Research Fellowship	Future Leaders Fellowship scheme (RBG Kew)	RBG Kew
Research Network	The Philosophical Life of Plants	AHRC
Research Project	The Mobile Museum: Economic Botany in Circulation	AHRC
GCRF Research Project	Soil-safe: employing archaeological insights in the co-design of agricultural soil erosion mitigation Indigenous food systems, biocultural heritage and agricultural resilience	AHRC AHRC
GCRF Research Methods 'Think Piece'	Indigenous methods case study: food systems, biocultural heritage and agricultural resilience	ESRC/AHRC
UKRI Research Programme	Future of UK Treescapes (programme call) Towards a National Collection (programme call)	NERC AHRC
International Multi-Institutional Research Programme	https://www.kew.org/science/our-science/projects/digital-amazon Reflora Virtual Herbarium	British Academy Newton Fund, GCRF, British Council, UKSIN Newton Fund, BIS

Figure 5.1 Modes of arts & humanities research funding: examples from Kew

For more experienced researchers, especially those who have managed multi-institutional and/or interdisciplinary projects before, larger research grant scheme or

fellowships involving external partnership may be more appropriate. These may be in either responsive or strategic mode and may involve multi-institutional and ongoing partnerships. A good example of this is the Digital Amazon project, linking humanities researchers at Birkbeck, museum curators in the UK, Germany and Brazil, plant scientists at Kew, botanists and anthropologists in Brazil, and Indigenous communities in Amazonia.

The development of successful proposals for collaborative research between RHUL and Kew, as between any two organisations, depends on a shared understanding of the primary interests of each partner and mutually agreed objectives. In the case of the Plant Humanities, it also involves a commitment to interdisciplinary and multidisciplinary ways of working which may sometimes be challenging to received wisdoms within particular disciplines or professional spheres. Finally, it requires a good knowledge of what external funders are looking for from partnerships, especially the potential benefit of collaboration in bringing together skillsets and expertise from different contexts.

The process of engagement between RHUL humanities researchers and Kew in the context of external funding priorities can be visualised, as in Figure 5.2, as a set of overlapping activities and agendas. There are areas where the concerns of the two

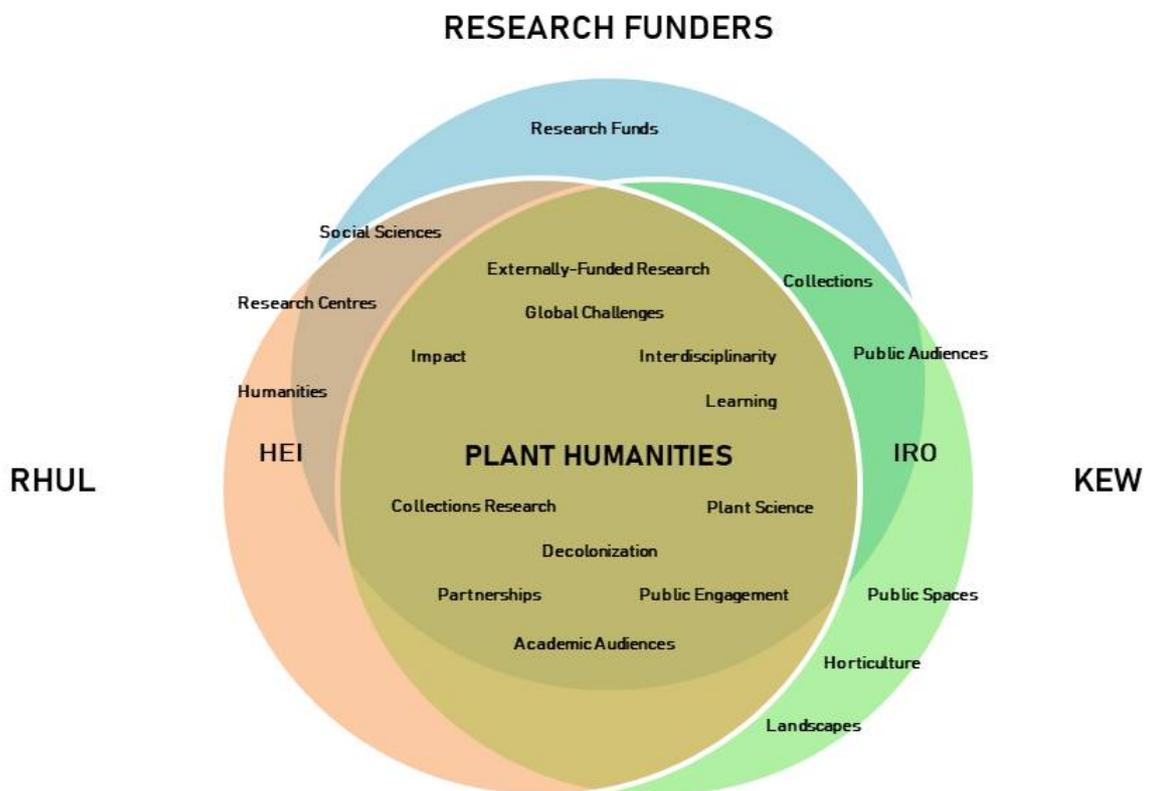


Figure 5.2 Convergence between RHUL, Kew and research funder agendas

institutions overlap, and others where they are distinct yet potentially complementary. In addition, as noted throughout this Report, the agendas of funding agencies such as UKRI are now so clearly oriented to interdisciplinary and multidisciplinary research that there exist significant opportunities for collaborations in which partnership will bring added value to both sides.

In this context of inter-institutional collaboration, the field of Plant Humanities is defined less by ideas or concepts alone than by a shared interest in a distinct set of research assets, objectives and imperatives. The research assets include collections, facilities and associated expertise (the latter including arts and humanities at RHUL as well as those of plant science and collections management at Kew); the research objectives include areas where agendas are aligned, especially in the context of external societal priorities, as in global challenges, sustainable heritage or calls to 'decolonise' collections; and the research imperatives include the agendas of funding agencies, especially in relation to impact, knowledge exchange and interdisciplinarity.

5.3 RHUL-Kew collaborations: identifying research project topics

What kinds of topics and themes provide a basis for successful collaborations between RHUL humanities researchers and Kew staff in Science, Learning and Horticulture? One of our key objectives in undertaking this scoping project has been to expand our collective understanding of the range of possible projects, methods and approaches in the area of Plant Humanities which are capable of attracting significant external funding. For this reason, it was important to reach out to a wide range of staff in both institutions, only some of whom had direct experience of collaborative research in the humanities. In the course of our interviews, a substantial number of suggestions for possible topics for research projects were made, some of which formed the basis for further conversations with staff at both institutions. In presenting some of these ideas we do not intend to be prescriptive nor to set limits to the various initiatives that could emerge from a sustained commitment to collaboration between RHUL and Kew. However, we do want to highlight some key themes and suggest specific areas where we believe there is a strong appetite for collaboration at both institutions, especially on topics which are aligned to the priorities of funding agencies.

A list of the topics discussed in the course of our interviews is provided in the Appendices. Of these, a number of suggested projects which were discussed with both institutions were deemed sufficiently robust to provide a basis for further development should there be capacity and a desire to do so (Appendix XII, Proposed Project Topics). As indicated in the Appendix, these project topics are mapped onto specific Departments at Kew and RHUL where the member of staff responsible for initiating the idea is located and/or with which these topics could potentially be associated. In each case at least two

Departments at both RHUL and Kew are identified, on the grounds that many research projects will require and/or benefit from inter-institutional collaboration as well as external partnership. In addition, the projects are aligned with academic research strands in the Plant Humanities identified in Figure 2.1 (though this is necessarily a broad-brush exercise since many projects cross several different strands).

While most if not all of the suggested project topics assembled in Appendix XII are at the earliest stages of development, in combination they represent an exciting and expansive agenda. The list includes a range of departments at both RHUL and Kew, representing different kinds of project capable of support through different modes of external funding, and aligned with different themes within the broad field of the Plant Humanities. It is also worth noting, as reflected in our experience on the Mobile Museum project, that inter-institutional projects frequently involve internal collaborations – in the case of Mobile Museum, between Economic Botany (in Kew’s Science Directorate) and Learning and Participation (in the Horticulture Directorate) – which have benefits for individual partners. At Royal Holloway too, there are further benefits to be gained from cross-departmental and cross-school collaborations in the environmental humanities.

Some of the project topics arise out of prior discussion at one institution or the other, reflecting priority areas that are ripe for development if a partner can be found (for example ‘Digitally reconnecting Joseph Hooker’s legacy’ proposed from Kew and ‘Kew and narratives of extinction’ proposed from RHUL). Other suggested topics gained momentum in the course of the project, reflecting external or internal imperatives (especially ‘Decolonising Kew’s collections’, a theme which has provided the basis for a Working Group established at Kew in the wake of the Black Lives Matter campaign). Still other proposed topics reflect suggestions made originally by individuals in one of the two institutions which have gained resonance in further discussion with the partner institution (this applies for example to ‘Gardening on Television’, and ‘Gardens and Well-Being’). While we have not mapped these potential projects onto specific funding schemes or calls, it is clear to us that in most if not all cases there are several viable options within the range of funding modes identified in section 5.2.

In addition to the proposed project topics, a further set of ideas for possible project themes were suggested in the course our interviews by a member of staff at one or other of the two institutions (these are listed in Appendix XIII, Other Potential Project Themes). These ideas represent more ‘blue skies’ thinking, coming as they do from individuals in the course of our conversations. As with the topics discussed above, these themes are mapped in Appendix XIII onto both Departments and Plant Humanities strands, though this is a very provisional exercise in many cases. It is noticeable that the range of RHUL academic departments is significantly expanded in this second, more tentative list. This is to be expected given that the experience of humanities-based collaborations with Kew to

date is limited to a small number of Departments. While most of the ideas in Appendix XIII are at a very preliminary stage, it is distinctly possible that some of them will have resonance with other researchers at RHUL or with other staff at Kew. They are listed here in order to reflect the breadth of our discussions and the wide range of topics and approaches capable of consideration under the banner of Plant Humanities.

5.4 Key points from Chapter 5

- There are substantial opportunities for funding in the area of arts and humanities research available to RHUL and Kew-based researchers
- In the UK context, there are a variety of interdisciplinary funding programmes which require and encourage collaboration between researchers in the humanities, social sciences and sciences.
- Partnership between major scientific and cultural institutions offers a way of upscaling capacity in a way that significantly enhances the potential scope and impact of research as well as the range of funding opportunities.
- There are opportunities to fund collaborative research activities in a variety of forms, depending on the nature of the project and the stage of the collaboration. The mode of funding is a key consideration for development of an emerging area such as Plant Humanities.
- A large number of potential project topics and themes capable of attracting significant external research funding have been identified in discussion with Kew and RHUL researchers

6. Conclusions and recommendations

The arts and humanities have the potential to remind us of past environmental change and positive visions for our environment. What we need, I argue, are narratives of hope.....We need stories that empower us to become thinkers, actors, and activists capable of imagining alternatives in a world dominated by technical and economic constraints. We need ideas that will find their way through the mesh of an ever-tighter net of path dependencies. And we need people who will dare to cut apart some of the meshwork.

Christof Mauch (2019)

The focus of this Report has been on developing a basis for collaborative research between RHUL and Kew in the arts and humanities, one of several areas of potential collaboration between the two institutions. We have sought to identify opportunities for innovation and synergy, concentrating on areas where we believe there is actual or potential convergence in staff interests, institutional priorities and the agendas of external funders. The Report has essentially been an exercise in triangulating between these three elements, each an essential component of a viable partnership strategy. For this reason, engaging with individual members of staff at each institution, as far as possible on their own terms, was an essential requirement. As discussed in the preceding chapters, our interviews revealed a wide range of interests and enthusiasms, including a large number of suggestions for eminently fundable projects, combined with variable knowledge of the institutional and research priorities of prospective partners.

Concerning institutional strategy, the coincidence in the timing of major strategic reviews of research at both RHUL and Kew, combined with wider considerations including the impact of COVID-19, highlighted a significant convergence in priorities which we believe makes this Report particularly timely. For RHUL, key developments over recent years include the establishment of research centres and institutes strongly committed to interdisciplinary research; an increased emphasis on partnerships with organisations beyond the University; a growing track record of research responding to global challenges; and the emergence of significant research capacity in the environmental humanities and heritage, closely connected with practice-based research in the creative arts and collections-based research in science and humanities. For Kew, longstanding priorities focussed on collections-based research and conservation are also increasingly oriented to global challenges, including interdisciplinary research combining the insights of the humanities with plant science. And here too new strategic imperatives are reflected in an increased emphasis on partnerships, innovative approaches to learning and interpretation and a more explicit stance on Kew's position with respect to wider social and environmental agendas, including calls to 'decolonise' collections. It is clear that in many respects both Kew and RHUL are moving in step with wider public concerns

and external funding agendas. In this respect, we believe there is a real opportunity here to make a distinctive intervention, taking advantage of the world-class strengths of both institutions and setting an exciting and ambitious agenda for future research. In concluding this Report, we summarise its main points and consider the implications for the future form of strategic partnership in the area of Plant Humanities.

6.1 The key points summarised

Chapter 2

The ideas and methods of the Plant Humanities have their origins in the wider field of environmental humanities, where research is typically framed in interdisciplinary terms and connected to environmental concerns. The term itself originates in a recent initiative at Dumbarton Oaks, undertaken in partnership with JSTOR and the Andrew W. Mellon Foundation, which is taking a digital humanities approach to raise questions about the relations between plants and people. A Plant Humanities framework offers significant opportunities for developing collaborative arts and humanities research. This is particularly so when scientists and humanities researchers are co-located in a botanic garden such as Kew, with a world-leading research programme in plant science, a wide range of collections and an extensive programme of public engagement.

Chapter 3

Kew Gardens has a significant though comparatively low-profile track record in supporting externally-funded arts and humanities research. With its world-class collections and plant science research programme, Kew is ideally placed to lead as well as support further research in the Plant Humanities in partnership with external arts and humanities researchers. In interviews, Kew staff emphasised: the value of linking collections; the role of interdisciplinary research in addressing global challenges; the need for more critical engagement with Kew's colonial past; the contributions of new modes of storytelling to inspiring the public; and the value of new perspectives in landscape interpretation. Constraints identified included the incomplete cataloguing and digitisation of some collections; limited capacity to manage and conduct arts and humanities research within Kew; and the absence of an explicit strategy for engaging with external funding in this area.

Chapter 4

Arts and humanities research at RHUL, as represented across its Schools, Departments and Centres, is of high standing internationally as well as nationally. It offers distinguished research leadership, experience of working across a range of funders, capacity across the career stages, leadership in arts and humanities doctoral training and substantial resources to support investment in strategic innovation and project

development. There is a developing track record of collaboration with Kew in the arts and humanities, though it is currently strongly focussed in a few areas. In interviews, RHUL staff across a range of Departments (notably Geography, History, English, Classics, Media Arts, Philosophy, Psychology and Biological Sciences) highlighted potential synergies between their research and activities at Kew and many expressed interest in potential collaborations involving arts and humanities research. In a wider context, the impact of the COVID-19 crisis has thrown into relief key societal challenges in the areas of environmental sustainability, health and well-being and decolonising collections where working in partnership with Kew has clear potential to deliver mutual benefit.

Chapter 5

There are substantial opportunities for funding in the area of arts and humanities research available to RHUL and Kew-based researchers. In the UK context, interdisciplinary and cross-Research Council programmes (including GCRF) offer new opportunities to link researchers in the humanities, social sciences and sciences. There is clear evidence that partnership between major scientific and cultural institutions offers a way of upscaling capacity in a way that significantly enhances the potential scope and impact of research as well as the range of funding opportunities. There are opportunities to fund collaborative research activities in the area of Plant Humanities in a variety of forms, depending on the nature of the project and the stage of the collaboration. In the course of interviews with researchers and other staff across both RHUL and Kew, a large number of potential project topics and themes in humanities-related areas were identified. External funding sources for these projects in a variety of modes were identified, including networks and studentships as well as projects and programmes.

6.2 Implications for future RHUL-Kew collaboration

This Report has presented evidence of substantial interest across RHUL and Kew in the potential of further collaboration in arts and humanities research. It has also set out a range of options for external funding, focussing on competitively-awarded research grants, for a range of projects and related activities. In some areas, the interests of RHUL and Kew staff suggest common concerns and approaches (for example in many areas of historical collections-based research, ethnobotany or landscape ecology); in others, these concerns and approaches may be significantly different (as for example in ecocriticism, multispecies ethnography or practice-based research in the creative arts). For the purposes of this Report, we have sought to highlight not just shared or overlapping interests between the two institutions but also distinct yet complementary ones, on the grounds that synergies may be found in both cases. The growing potential for engagement between humanities research and plant science reflects, in particular, the

increasing importance of multidisciplinary and interdisciplinary research as in GCRF projects and cross-council UKRI programmes.

In order for the full potential for a humanities-based collaboration between RHUL and Kew to be realised, a number of issues will have to be faced. It is clear that some of these barriers to innovation would be substantially lowered as a result of collaboration, while others require longer-term solutions. On the basis of our interviews with RHUL and Kew staff, we highlight three sets of issues:

Capacity issues. While there is a strong desire for inter-institutional collaboration, many of our interviewees commented on limitations in available resources, amongst which expertise and time figured strongly. At Kew, the single biggest issue was limited staff capacity in arts and humanities research, and a related lack of knowledge of methods, literatures and funding modes and sources. At RHUL, the single biggest issue was staff time, coupled with some evidence of a lack of knowledge of institutional practices and priorities at Kew. A strong commitment to partnership would enable solutions to some of these issues to be delivered through the sharing of expertise, notably experience of arts and humanities research and knowledge of relevant funding schemes. Furthermore, the generation of external research income (on the basis of clearly-established potential) would enable the enhancement of staff resource, especially at Kew.

Technical issues. While Kew has made major progress in recent years, there is much work to do in cataloguing, digitising and integrating access to its collections. Some of this work is capable of being funded through research grants and programmes (as has already been the case in LAA and the Herbarium). Realising the full potential of digital humanities projects will depend on the further integration of Kew's botanical, object and library collections. At RHUL, there have been recent developments in capacity for long-term data storage (via Figshare).

Strategic issues. Hitherto, the strategic potential of partnership between arts and humanities researchers in a top tier University and a leading scientific institution has not been widely recognised. The recent development of arts and humanities research at Kew has been, in a sense, below the radar of strategy. While remarkably successful in generating funding, this work has hitherto lacked a strategic context. However, the slow-burning fuse of interdisciplinarity is producing many new academic configurations and alliances, of which Plant Humanities is but one example. Furthermore, calls to new forms of public engagement, enthusiastically embraced by many writers and film-makers in the environmental humanities, are bringing humanities academics and plant scientists together in ways that were not anticipated a generation ago. At a corporate level, the impact of the current health and economic crisis is likely to further strengthen the strategic case for collaboration between RHUL and Kew. Together with longer-term shifts in the UK research funding landscape and societal challenges, most notably expressed in

the Climate Emergency and Black Lives Matter movements of 2019-20, such external drivers of change require a shift in strategy.

Making a detailed case for strategic partnership in support of arts and humanities research between RHUL and Kew, including the form such a partnership should take, lies beyond the scope of this Report. However, our findings do suggest the need for further review of scenarios most conducive to the development of externally-funded collaborative projects in this field. In broad terms, these scenarios suggest three different pathways:

- **Scenario 1 The present model.** Under present conditions, collaboration at an individual level will continue, supported where possible by Research Services and managers at both institutions. There will be no change in strategy and no additional resource to enhance capacity. Contributions to institutional change will be project-based and there will be no mechanism for this to be sustained. Success or failure will depend largely on individual performance; risk will be limited; opportunities to attract external funding and to develop Kew's public profile on the basis of collaborations with arts and humanities academics will be more limited.
- **Scenario 2 Formation of a research centre, cluster or hub at RHUL,** with Kew as the major external partner, in which Plant Humanities is a core theme. Under this model, collaboration at an individual level will continue to be supported by Research Services and managers, but this will be sustained a strategic commitment, bringing focus and impetus. The function of the centre, cluster or hub would be to support and generate externally-funded research projects, and it would provide a focus for related research, knowledge exchange and public engagement activity at RHUL. This will be a Royal Holloway research initiative with national reach and international collaborators. With additional resources, capacity to attract further external funding, especially at an international level, will be enhanced. Sustainability would be achieved through a business plan linked to research income generation. There will be a commitment to institutional change in the long term.
- **Scenario 3 Formation of a Humanities Research Institute at Kew,** with RHUL as a major external partner. Under this model, collaboration at an individual level will continue to be supported, but this will be sustained a strategic commitment, bringing focus, impetus and additional resources. The Institute's location at Kew would enable close access to the collections and other resources at Kew and facilitate close integration of the Institute's activities with Kew's public programmes, learning and participation. The Institute would be to support and generate externally-funded research projects, and it would provide a focus for a wide range of research, knowledge exchange and related public engagement activity at Kew. While located in Kew Science, the Institute's remit would extend into other Directorates,

including Horticulture and Learning & Participation, enabling collaboration within Kew and ensuring alignment with wider strategic objectives. This will be a national Institute with international profile, and there will be significantly increased capacity to attract further external funding, especially at an international level. Sustainability would be achieved through a business plan linked to research income generation, including the possibility of major funding from international Foundations. There will be a significant commitment to institutional change in the long term.

6.3 Next Steps

This Report was funded by a Strategic Knowledge Exchange grant from Royal Holloway and will be made available to senior managers at Royal Holloway and Kew.

We envisage the following next steps, subject to further discussion:

1. Dissemination & Development

- Submission of KE Project summary report to Research & Innovation Office and participation in feedback meeting on KE projects (autumn 2020)
- Dissemination of key findings to RHUL and Kew staff (autumn 2020)
- A Plant Humanities Twitter account to provide a social media presence for ongoing collaboration (autumn 2020)
- Plant Humanities dissemination event to invited RHUL and Kew staff (autumn 2020)
- Plant Humanities Projects Workshop to develop specific RHUL-Kew project proposals (spring 2021)

2. Strategic Planning

- Submission of Report to RHUL Research Recovery Group and School Directors (Aug 2020) (follow-up meetings as necessary)
- Submission of Report to Kew Science Strategy Steering Group and Decolonising Kew Working Group (Aug 2020) (follow-up meetings as necessary)
- Preparation of Business Case for Scenarios 2 and/or 3 (as necessary)

References

- Adamson, Joni and Michael Davis. *Humanities for the Environment: Integrating Knowledge, Forging New Constellations of Practice* (Taylor & Francis, 2016).
- Aloi, Giovanni. *Why Look at Plants? The Botanical Emergence in Contemporary Art. Critical Plant Studies, No. 5* (Leiden: Brill, 2018).
- Antonelli, Alexandre, Rhian Smith and Monique Simmonds. 'Unlocking the properties of plants and fungi for sustainable development', *Nature Plants* 5 (2019): 1100-1102
- Antonelli, Alexandre. 'Director of science at Kew: it's time to decolonise botanical collections', *The Conversation*, 19 June 2020: <https://theconversation.com/director-of-science-at-kew-its-time-to-decolonise-botanical-collections-141070>
- Batsaki, Yota and Alex Humphreys. 'How have plants shaped human societies?' *Scientific American* 13 Nov 2018, <https://blogs.scientificamerican.com/observations/how-have-plants-shaped-human-societies/>
- Bell, Sian et al. 'Spending time in the garden is positively associated with health and wellbeing: results from a national survey in England' *Landscape and Urban Planning* 200 (2020) <https://doi.org/10.1016/j.landurbplan.2020.103836>
- Bleichmar, Daniela. *Visible Empire: Botanical Expeditions and Visual Culture in the Hispanic Enlightenment* (Chicago: University of Chicago Press, 2012).
- Brymer, Eric, Elizabeth Freeman and Miles Richardson. 'One health: the well-being impacts of human-nature relationships', *Frontiers in Psychology* 10:1611 (2019).
- Carroll, Khadija von Zinnenburg (ed.). *Botanical Drift: Protagonists of the Invasive Herbarium* (Berlin: Sternberg Press, 2017).
- Carson, Rachel. *Silent Spring* (London: H. Hamilton, 1963).
- Cornish, Caroline. *Curating Science in an Age of Empire: Kew's Museum of Economic Botany*, PhD thesis, Royal Holloway, University of London, 2013.
- Cornish, Caroline and Felix Driver. 'Between Kew and Royal Holloway: women, collections and science education', [Mobile Museum project blog](#), November 2019.
- Cornish, Caroline and Felix Driver. 'Specimens Distributed': The circulation of objects from Kew's Museum of Economic Botany, 1847–1914, *Journal of the History of Collections*, (2019) <https://doi.org/10.1093/jhc/fhz008>
- Cowell, Carly, Pippin Anderson and Wendy Annecke. 'Historic herbarium specimens as biocultural assets', *People and Nature* 2 (2020): 483-494

- Dalrymple, William. *Forgotten Masters: Indian Painting for the East India Company* (London: Bloomsbury Publishing, 2020).
- Daly, Lewis and Kay Lewis-Jones. 'Plant worlds: assembling the ethnobotanical', *The Ethnobotanical Assembly* 1 (2018), <https://www.tea-assembly.com/issues>
- Daniels, Stephen. *Humphry Repton: Landscape Gardening and the Geography of Georgian England* (New Haven, CT and London: Yale University Press, 1999).
- Darroch, Georgina. *World Heritage Site Management Plan* (Kew: Royal Botanic Gardens Kew, 2020).
- Deb Roy, Rohan. *Malarial Subjects: Empire, Medicine and Nonhumans in British India, 1820–1909* (Cambridge: Cambridge University Press, 2017).
- Delbourgo, James. *Collecting the World: The Life and Curiosity of Hans Sloane* (London: Random House, 2017).
- Deverell, Richard. 'Addressing racism, past and present: Richard Deverell, Director of the Royal Botanic Gardens Kew, addresses quality, diversity and inclusion in our organisation', 12 June 2020, <https://www.kew.org/read-and-watch/kew-addresses-racism>
- Dickie John B. 'Conserving seeds of wild species in the Millennium Seed Bank: "one size does not fit all"'. In N. C. Karafyllis (ed.) *Theorien de Lebendsammlung; Pflanzen, Mikroben und Tiere als Biofakte in Genbanken* (Freiburg: Karl Alber), 341-60.
- Drayton, Richard. *Nature's Government: Science, Imperial Britain, and the 'Improvement' of the World* (New Haven: Yale University Press, 2000).
- Driver, Felix. 'Plant humanities: new directions in collections-based research', Kew Science Seminar, 17 Feb 2020.
- Driver, Felix, Mark Nesbitt & Caroline Cornish (eds). *Mobile Museums: Collections in Circulation* (UCL Press, 2021).
- Endersby, Jim. *Imperial Nature: Joseph Hooker and the Practices of Victorian Science* (Chicago: University of Chicago Press, 2008).
- Evans, H. M. and J. Macnaughten, 'Should medical humanities be a multidisciplinary or an interdisciplinary study?' *Medical Humanities* 30 (2004): 1-4.
- Fleming, Martha. 'Manifesto for collections-based research and teaching'. *Periskop* 23 (2020) 30-40.
- Florence, Penny. *Thinking the Sculpture Garden: Art, Plant, Landscape* (Abingdon: Routledge, 2020)

- Gagliano, Monica, John C. Ryan and Patricia Vieira (eds.). *The Language of Plants: Science, Philosophy, Literature* (Minneapolis: University of Minnesota Press, 2019).
- Gandy, Matthew and Sandra Jasper (eds.). *The Botanical City* (Berlin: Jovis Verlag, 2020).
- Gange, David. *The Frayed Atlantic Edge: An Historians Journey from Shetland to the Channel* (London: Collins, 2019)
- Grove, Richard. *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860* (Cambridge: Cambridge University Press, 1995).
- Haraway, Donna. *When Species Meet* (Minneapolis, MN: University of Minnesota Press, 2008).
- Harrison, Christina and Tony Kirkham. *Remarkable Trees* (London: Thames & Hudson, 2019).
- Harrison, Rodney et al. *Heritage Futures: Comparative Approaches to Natural and Cultural Heritage Practices*. (London: UCL Press, 2020).
- Harvey, Deborah, Louise Montgomery, Hannah Harvey, Felix Hall, Alan Gange, Dawn Watling. 'Psychological benefits of a biodiversity-focussed outdoor learning program for primary school children', *Journal of Environmental Psychology* 67 (2020): 1-8.
- Heberling, J. M and Bonnie Isaac. 'Herbarium specimens as exaptations: new uses for old collections'. *American Journal of Botany* 107 (2017): 963-965.
- Hill, J. D. and A. Meek. 'AHRC collaborative studentships: their nature and impact on partners, subject areas and students', <https://ahrc.ukri.org/documents/project-reports-and-reviews/ahrc-funded-collaborative-studentships-report/> (consulted 25 July 2020).
- Jones, Owain. 'What are the environmental humanities' <https://ecologicalhumanities.wordpress.com/what-are-the-environmental-humanities-definition-of-the-environmental-humanities/>. Accessed 24/7/2020/
- Kelsch, Paul. 'Cultivating modernity, history, and nature', *Studies in the History of Gardens and Designed Landscapes* 21 (2011): 294-310.
- Kimmerer, Robin Wall. *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants* (Minneapolis: Milkweed Editions, 2013).
- Kranz, Isabel. 'The language of flowers in popular culture and botany', in *The Language of Plants: Science, Philosophy, Literature* eds Monica Gagliano, John C. Ryan and Patricia Vieira (Minneapolis: University of Minnesota Press, 2019), pp. 193-214.

- Law, Rebecca Louise. *Life in Death* (London: Kew Publishing, 2017).
- Lewis-Jones, Kay E. 'Introduction: people and plants', *Environment and Society: Advances in Research* 7 (2016): 1-7.
- Lewis-Jones, Kay E. 'Saving Wild Seeds in the Anthropocene: Pursuing Diverse Futures at the Millennium Seed Bank Partnership' (Report and recommendations from a PhD on ecological perceptions and ethics in seed conservation, August 2018).
- Macfarlane, Robert. *Landmarks* (London: Hamish Hamilton, 2015).
- Marder, Michael (ed.). *Critical Plant Studies: Philosophy, Literature, Culture* (Amsterdam: Brill Rodopi, 2013-).
- Marder, Michael. *Plant-Thinking: A Philosophy of Vegetal Life* (New York: Columbia University Press, 2013).
- Martins, Luciana. 'Plant artefacts then and now: reconnecting biocultural collections in Amazonia', in Felix Driver, Mark Nesbitt and Caroline Cornish (eds), *Mobile Museums: Collections in Circulation* (UCL Press, 2021).
- Mauch, Christof. *Slow Hope: Re-Thinking Ecologies of Crisis and Fear* (Munich: Rachel Carson Center, 2019).
- Meinecke, Emily, Jonathan Davies, Barnabas Daru and Charles Davis, 'Biological specimens for understanding biodiversity in the Anthropocene', *Philosophical Transactions B* 374 (2018): 20170386.
- Nesbitt, Mark and Caroline Cornish. 'Seeds of industry and empire: economic botany collections between nature and culture'. *Journal of Museum Ethnography* 29 (2016): 53-70.
- Nicolson, Nicky, A. Paton, S. Phillips and A. Tucker. "Specimens as research objects: reconciliation across distributed repositories to enable metadata propagation," 2018 IEEE 14th International Conference on e-Science (e-Science), Amsterdam, 2018, pp. 125-135, doi: 10.1109/eScience.2018.00028.
- Noltie, Henry. *Robert Wight and the Botanical Drawings of Rungiah & Govindoo: The Life and Work of Robert Wight* (Edinburgh: Royal Botanic Garden, Edinburgh, 2007).
- Oelschlaeger, Max. 'Re-placing history, naturalizing culture' in *Human/Nature: Biology, Culture, and Environmental History* edited by John P. Herron and Andrew G. Kirk (Albuquerque: University of New Mexico Press, 1999), pp. 63-78.
- Pedder-Smith, Rachel Tarn. *The Glow of Significance: Narrating Stories using Natural History Specimens*. PhD Thesis, Royal College of Art, 2011.

- Pollan, Michael. *The Botany of Desire: A Plant's-Eye View of the World* (London: Random House, 2002).
- Posnett, Edward, *Harvest: The Hidden Histories of Seven Natural Objects* (London: Bodley Head, 2019).
- Ryan, John. *Green Sense: The Aesthetics of Plants, Place and Language* (Oxford: TrueHeart Press, 2012)
- Ryan, Mary. 'Dickinson and the politics of plant sensibility'. *ELH* 25 (2018): 141-170.
- Salick, Jan, Katie Konchar and Mark Nesbitt (eds). *Curating Biocultural Collections: A Handbook* (Kew: Kew Publishing, 2014).
- Schiebinger, Londa L. *Plants and Empire* (Cambridge, MA: Harvard University Press, 2004).
- Shah, Hetan. 'Global problems need social science', *Nature* 577 (2020): 295-6.
- Shteir, Ann B. and Bernard Lightman (eds.) *Figuring it out: Science, Gender, and Visual Culture* (Hanover, NH: Dartmouth College Press, 2006).
- Smith, Rhian and Richard Barley. *Living Collections Strategy* (Kew: Royal Botanic Gardens, Kew, 2019).
- Sörlin, Sverker. 'Environmental humanities: why should biologists interested in the environment take the humanities seriously?' *BioScience* 62 (2012): 788-9.
- Sörlin, Sverker. 'Cryo-history: narratives of ice and the emerging Arctic humanities' in Birgitta Evengård, Joan Nymand Larsen and Øyvind and Paasche (eds.), *The New Arctic* (Cham: Springer, 2015).
- Svensson, Anna. 'Global plants and digital letters: epistemological implications of digitising the Directors' Correspondence at the Royal Botanic Gardens, Kew', *Environmental Humanities* 6 (2015): 73-102.
- Teltscher, Kate. *Palace of Palms: Tropical Dreams and the Making of Kew* (London: Picador, 2020).
- Trewavas, Anthony. 'Aspects of Plant Intelligence,' *Annals of Botany* 92 (2003): 1-20.
- Tsing, Anna Lowenhaupt. *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*. Princeton: Princeton University Press.
- Willis, Katherine, Alan Paton and Rhian Smith. *Science Collections Strategy, 2018-2028* (London: Royal Botanic Gardens, Kew).

Appendix I

Interviews with RHUL researchers, Kew staff and others⁴⁷

1. Royal Holloway

Humanities

Dr Sophie Gilmartin	Director, Centre for Victorian Studies
Professor Jane Hamlett	Professor of Modern British History
Professor Judith Hawley	Research Lead, English
Professor Andrew Jotischky	Research Lead, History
Professor Ruth Livesey	Professor of C19th Literature & Thought
Professor Redell Olsen*	Director, Poetics Research Centre
Dr Erica Rowan	Lecturer in Classical Archaeology
Dr Danielle Sands	Director, PGR Education, School of Humanities
Professor Hannah Thompson*	Director of Research, School of Humanities
Dr Weipin Tsai*	Senior Lecturer in Modern Chinese History
Dr Barbara Zipser	Senior Lecturer in History

Performing & Digital Arts

Professor James Bennett	Director, StoryFutures
Professor John Ellis	Department of Media Arts
Professor Helen Gilbert	Professor of Theatre
Kristina Glushkova	Business Impact Lead, StoryFutures
Dr Olga Goriunova	Research Lead, Media Arts
Dr Laura Noszlopy	Postdoctoral Research & Project Manager, Drama
Professor Tina Ramnarine	Professor of Music
Professor Stephen Rose*	Research Lead, Music
Dr Henry Stobart	Reader in Music

Law & Social Sciences

Dr Neil Gascoigne*	Reader in Philosophy
Professor Jill Marshall	Research Lead, Law & Criminology
Dr Daniel Whistler	Programme Lead, Philosophy

Life Sciences & the Environment

Professor Peter Adey	Professor of Geography
Professor Veronica della Dora	Co-Director, Centre for GeoHumanities
Professor Klaus Dodds	Director of Research, School of LSE
Professor Harriet Hawkins	Co-Director, Centre for GeoHumanities
Professor Julia Koricheva	Professor of Ecology
Dr Alice Milner	Senior Lecturer in Physical Geography
Professor Jay Mistry	Professor of Environmental Geography
Dr Dawn Watling	Senior Lecturer in Psychology
Professor Robin Williams	Professor of Molecular Cell Biology

Business & Management

Dr Giulia Achilli	Lecturer in Accounting
Professor Elena Giovannoni	Director, CHRONOS

⁴⁷ Interviews were conducted online, mostly in person (* denotes email response).

2. Royal Botanic Gardens Kew

Richard Deverell Director
Dr Alexandre Antonelli Director of Science

Science Collections

Lee Davies Fungarium Curator
Nina Davies Senior Curator-Botanist (Africa & Madagascar)
Dr John Dickie Head of Seed and Lab-Based Collections
Clare Drinkell Assistant Curator (Asia)
Dr Mark Nesbitt Senior Research Leader, Economic Botany Collection
Dr Alan Paton Head of Science Collections
Dr Philippa Ryan Early Career Research Fellow, Ethnobotany
Lindsay Sekulowicz AHRC Collaborative PhD Student (Practice Based)

Other Science

Dr Bill Baker Head of Comparative Plant & Fungal Biology
Dr Colin Clubbe Head of Conservation Science and Senior Research Leader of UK
& Islands Programme
Dr David Goyder HRA (Formerly Research Leader, Identification and Naming [Africa
and Madagascar])
Dr Olwen Grace Senior Research Leader, Integrated Monography

Library, Art & Archives

Fiona Ainsworth Head of Library, Art & Archives
Rosie Eddisford Collections & Services Librarian
Dr Martyn Rix* Editor, *Curtis's Botanical Magazine*
Kiri Ross-Jones Archivist & Records Manager

Horticulture (inc. Wakehurst)

Richard Barley Director of Horticulture, Learning and Operations
Georgina Darroch World Heritage Site Coordinator
Alison Hartshorn* Grow Wild Programme Manager
Ed Ikin Head of Wakehurst Landscape and Horticulture
Dr Valentine Seymour Landscape Ecologist, Wakehurst Place
Julia Willison Head of Learning and Participation
Sharon Willoughby Head of Interpretation

3. Dumbarton Oaks & Harvard University

Dr Yota Batsaki Executive Director & PI Plant Humanities Initiative, Dumbarton Oaks
Dr Michaela Schmuil Director of Collections, Harvard University Herbaria
Dr Anatole Tchikine Curator of Rare Books & Co-I Plant Humanities Initiative,
Dumbarton Oaks

4. Other

Dr Kay E. Lewis-Jones
Dr Henry Noltie
Dr Victoria Pickering

Former PhD Student (University of Kent); editor of TEA⁴⁸
Research Associate, Royal Botanic Gardens, Edinburgh
Plant Humanities Fellow, Dumbarton Oaks (2019-20)

⁴⁸ TEA: The Ethnobotanical Assembly, <https://www.tea-assembly.com/>

Appendix II

Initial interview questions

Kew

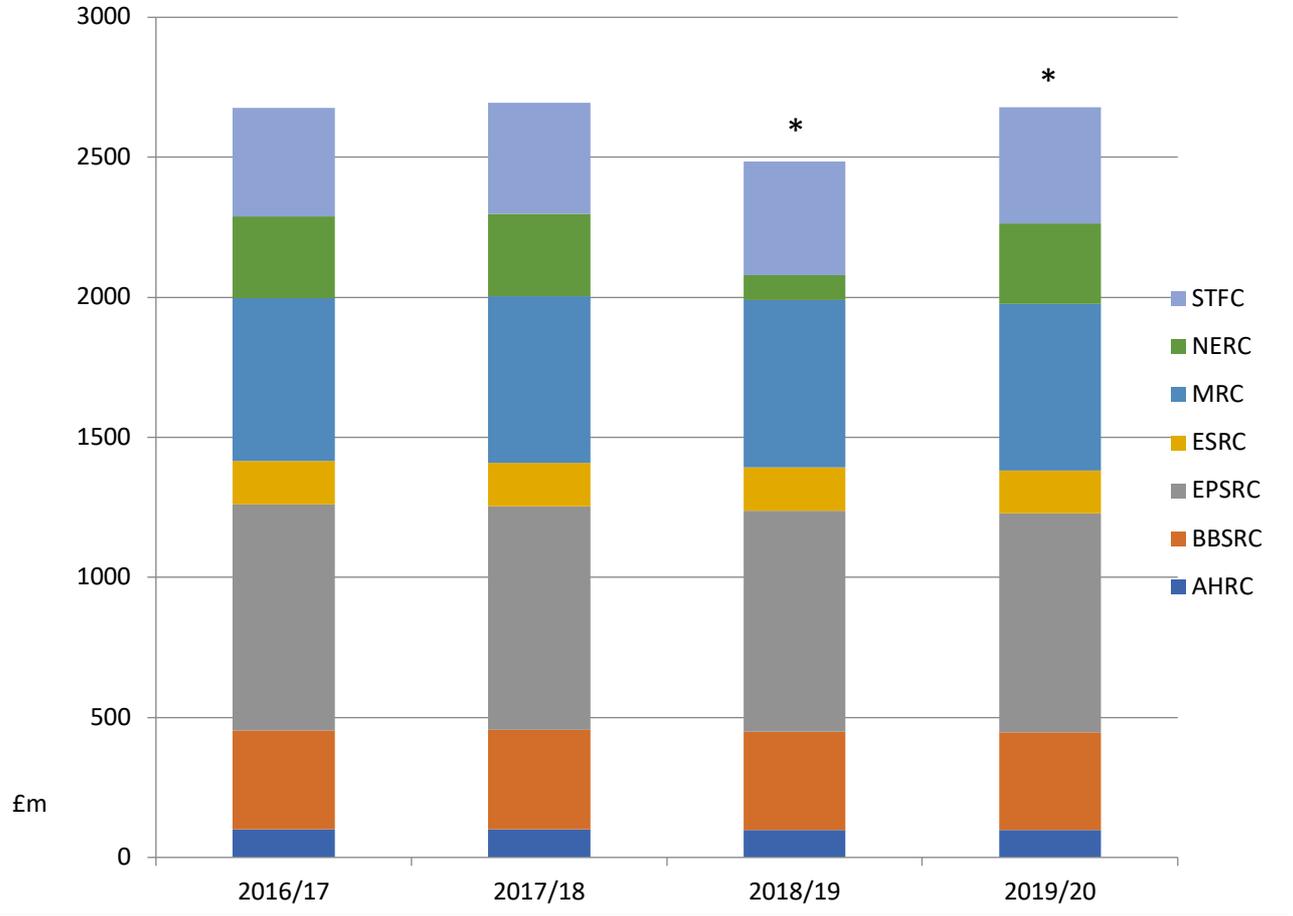
1. What are Kew's research interests and priorities?
2. Are there examples of projects at Kew or elsewhere that you consider exemplary?
3. What types of project, topic or funding interest you most?
4. Are there any barriers to be overcome?

Royal Holloway

1. Can you give any examples of good research projects you've come across that might transfer well to Kew?
2. Are there particular collections or other facilities at Kew which you think would make suitable resources for arts and humanities research projects?
3. In your opinion, what types of research project would work best at Kew? What do you see as opportunities for public engagement?
4. Our research proposal mentioned 5 strands or themes which we feel would work across arts and humanities research. Where do you see your own work fitting best within these?
 - plant matter - histories and material cultures (collections and knowledge)
 - plant stories (narrative form, creative writing and the matter of life)
 - plant thinking/thinking plants (philosophy, classics, critical theory)
 - plant visual cultures (art and information)
 - plant landscapes (pedagogy, design history, psychology)

Appendix III

Research Council Funding Allocations 2016/17-2019/20



* Projected at time of publication

Source: RCUK Strategic Priorities and Spending Plan 2016-20, p. 23 (£million)

Appendix IV

AHRC Principal Research Funding Modes

Grant type	Eligibility	Duration	Value
Research Grants – Standard	Support well-defined research projects; enable researchers to collaborate with, and bring benefits to, individuals and organisations through high-quality research.	Up to 5 years	£50,000-£1,000,000
Research Grants - Early Career	Assist early-career researchers in gaining experience of managing and leading research projects.	Up to 5 years	£50,000-£250,000
Research, Development and Engagement Fellowship Scheme – Standard Route	Supports both mid-career and established arts and humanities researchers, enabling Fellows to undertake ambitious, innovative research and to develop as researchers.	6-18 months	Up to £300,000
Research, Development and Engagement Fellowship Scheme – Early Career Researchers	Support early career arts and humanities researchers, enabling Fellows to undertake ambitious, innovative research and to develop as researchers.	6-24 months	£50,000-£250,000
Research Networking Scheme	Supports forums for discussion and exchange of ideas on themes, issues, or problems. Facilitates interactions between researchers and stakeholders through, for example, workshops, seminars, or networking activities.	Up to 2 years	Up to £30,000
Follow-on Funding for Impact and Engagement	Provides funds to support innovative and creative engagements, with new audiences, which stimulate pathways to impact.	Up to 12 months	Up to £100,000
Research Themes	Funding in emerging areas of interest. Themed funding calls support developmental activity, partnership-based activities, and innovation.	Variable	Variable
Highlight Notices	Used to encourage proposals in specific areas of strategic interest to the AHRC and engage the arts and humanities research community in developing these initiatives.	Variable	Variable
Cross-Council Programmes	These programmes bring together some or all of the UK Research Councils to support multidisciplinary research addressing big research challenges over the next ten to 20 years.	Variable	Variable

Source and further details at: <https://ahrc.ukri.org/funding/research/> (accessed 02/08/2020). Table excludes Doctoral Training.

Appendix V

ESRC Principal Research Funding Modes

Grant type	Eligibility	Duration	Value
Research Grants	Support standard research projects through to large-scale surveys and other infrastructure or methodological developments.	Up to 5 years	£350,000 to £1 million
Secondary Data Analysis Initiative (SDAI)	Operates alongside Research Grants. Supports high-quality high-impact research utilising existing data resources created by ESRC and other agencies to address some of pressing social challenges.	Up to 24 months	Up to £300,000
New Investigator Grants (Early Career Researchers)	Support applicants looking to make the transition to an independent researcher through managing their first major research project.	Open-ended	£100,000-£300,000
Impact Acceleration Accounts	Block awards which support knowledge exchange and engagement activities in research organisations through Impact Acceleration Accounts (IAAs).	Open-ended	Average award 2014-18 £750,000
Research Centres	Major ESRC strategic investments taking forward an ambitious research agenda, making significant impact, increasing research infrastructure and capacity and enabling research collaboration.	5 years	£2.5m-£10m
Cross-Council Programmes	These programmes bring together some or all of the UK Research Councils to support multidisciplinary research addressing big research challenges over the next ten to 20 years.	Variable	Variable
Other Strategic Calls	Other strategic calls for expert advice and research in ESRC-specific areas.	Variable	Variable

Source and further details at <https://esrc.ukri.org/funding/funding-opportunities/> (accessed 02/08/2020).
Table excludes Doctoral Training.

Appendix VI

British Academy Main Research Funding Opportunities

Grant type	Eligibility	Duration	Value
BA/Leverhulme Small Research Grants	Postdoctoral scholars (including independent researchers)	Up to 24 months	Up to £10,000
Postdoctoral Fellowships	Postdoctoral (within 3 years of viva)	Up to 3 years	Salary & research expenses
APEX Awards	Postdoctoral scholars	Up to 24 months	Up to £100,000
Mid-Career Fellowships	Mid-career	6-12 months	Up to £160,000
British Academy/ Wolfson Fellowships	Early career	3 years	£130,000
BA/Leverhulme Senior Research Fellowships	Mid-career	1 year	Salary & research expenses
Newton International Fellowships	Early career	2 years	Up to £100,000
Newton Advanced Fellowships	Mid-career researchers in Newton Fund countries	2 years	Up to £74,000
Knowledge Frontiers: International interdisciplinary Research	Postdoctoral	2 years	Up to £200,000
Humanities & Social Sciences Tackling Global Challenges	Postdoctoral	2 years	Up to £50,000

Source and further details at: <https://www.thebritishacademy.ac.uk/funding/> (accessed 02/08/2020)

Appendix VII

Leverhulme Trust Main Research Funding Opportunities

Grant type	Eligibility	Duration	Value
Early-Career Fellowships	Early career	3 years	Up to £93,000
International Academic Fellowships	Established researchers	3-24 months	Up to £45,000
Leverhulme Doctoral Scholarships	Postgraduate training	3 years	£1.05m
Leverhulme International Professorships	Professorial	5 years	Up to £5m
Leverhulme Research Centres	UK Universities	5-10 years	Up to £1m p/a
Major Research Fellowships	Well-established researchers	2-3 years	Replacement teaching costs
Philip Leverhulme Prizes	Early career	2-3 years	£100,000
Research Fellowships	Experienced researchers	3-24 months	Up to £55,000
Research Leadership Awards	Early- to mid-career	4-5 years	Up to £1m
Research Project Grants	Project leaders	Up to 5 years	Up to £500,000
Study Abroad Studentships	Postgraduate training	1-2 years	£21,000 p/a

Source and further details at: <https://www.leverhulme.ac.uk/schemes-at-a-glance> (accessed 02/08/2020)

Appendix VIII

Wellcome Trust Awards for Humanities & Social Science Research

Grant type	Eligibility	Duration	Value
Research Fellowships in Humanities and Social Science	Postdoctoral	3 years	Up to £275,000
Doctoral Studentships	Postgraduate training	3 years	Fees, stipend & research expenses
University Awards in Humanities and Social Science	Research programme leader	Up to 5 years	Salary and expenses
Master's Studentships in Humanities and Social Science	Postgraduate training	1 year	Fees and stipend
Open Research Fund	Postdoctoral; research programme leader	Up to 1 year	Up to £50,000
Seed Awards in Humanities and Social Science	Postdoctoral; research programme leader	12-18 months	£25,000-£100,000
Collaborative Awards in Humanities and Social Science	Research programme leaders	3-5 years	Up to £1.5m
Investigator Awards in Humanities and Social Science	Research programme leaders	3-5 years	£250,000-£1m
Research Resources Awards in Humanities and Social Science	Library & archives collections managers	Up to 5 years	Up to £500,000

Source and further details at: https://wellcome.ac.uk/grant-funding/schemes?field_scheme_type=94

Appendix IX

Other Charitable Trusts Providing Research Funding (Selected)

The Wolfson Foundation

Whilst the majority of Wolfson grants fund buildings, there are a number of education and research grants for individuals which are administered by the Royal Society and British Academy.

Nuffield Foundation

Supports research with the aim of improving people's life chances across three areas: education, justice and welfare.

British Educational Research Association (BERA)

A membership association which supports research into education.

Clore Duffield Foundation

A grant-awarding charity which supports cultural learning, the creation of learning spaces within arts and heritage organisations, and leadership training.

Esmée Fairbairn Foundation

Provides grants to support research in areas including the Arts, Children and Young People, the Environment, Food, and Social Change.

Equitable Charitable Trust

Funds education projects for children and young people under the age of 25 who are from disadvantaged backgrounds or disabled.

Gatsby Charitable Foundation

Established by Lord Sainsbury and currently funding projects in the fields of Plant Science, Neuroscience, Education, Africa, Public Policy, and the Arts.

Garfield Weston Foundation

Has a Museums & Heritage strand which supports heritage organisations promoting accessibility. Recipients include the National Museum Wales and the Horniman Museum.

Linbury Trust

Funds projects in the fields of culture, environment and social welfare, including those which improve the lives of people experiencing disadvantage, including older people, young people and homelessness.

Appendix X

Doctoral Training Partnerships in which RHUL and Kew are Members (July 2020)

1. Kew Doctoral training Partnerships

Training Partnership	Funding body	Academic partners	Web link
TECHNE AHRC Doctoral Training Partnership	AHRC	RHUL, Brunel, Kingston, Loughborough, University of the Arts, London, Brighton, Roehampton, Surrey, Westminster	TECHNE
SMAC - Science Museums and Archives Consortium Collaborative Doctoral Partnership	AHRC	Any UK university	SMAC
LIDO - London interdisciplinary Doctoral Programme	BBSRC	UCL, KCL, LSHTM, Greenwich, QMUL, RHUL, RVC	LIDO
NRPDTP - Norwich Research Park Doctoral Training Partnership	BBSRC	UEA, JIC, EI, QIB, TSL	NRPDTP
Environmental Research Doctoral Training Partnership	NERC	Oxford	Oxford DTP
SSCP DTP - Science Solutions for a Changing Planet	NERC	Imperial	SSCP DTP
CENTA - Central England NERC Training Alliance	NERC	Loughborough, OU, Birmingham, Leicester, Warwick, Cranfield	CENTA

Note: In addition to these formal partnerships, Kew has informal partnerships with a number of other DTPS (including the London NERC DTP) where it may be possible to co-create collaborative PhD projects.

2. RHUL Doctoral training Partnerships

Training Partnership	Funding body	Academic partners	Web link
TECHNE AHRC Doctoral Training Partnership (TECHNE)	AHRC	RHUL, Brunel, Kingston, Loughborough, University of the Arts, London, Brighton, Roehampton, Surrey, Westminster	TECHNE
SeNSS ESRC Doctoral Training Partnership	ESRC	RHUL, City University London, East Anglia, Essex, Goldsmiths London, Kent, Reading, Roehampton, Surrey, Sussex	SeNSS
BBSRC Imperial College & RHUL Doctoral Training Partnership	BBSRC	Imperial College, RHUL	BBSRC DTP
LIDO - London interdisciplinary Doctoral Programme	BBSRC	RHUL, UCL, KCL, LSHTM, Greenwich, QMUL, RVC	LIDO
London NERC DTP	NERC	RHUL, UCL, Birkbeck, Brunel, KCL, QMUL	London NERC DTP
ARIES NERC Doctoral Training Partnership	NERC	RHUL, UEA, Kent, Essex, Plymouth	ARIES
NERC CDT in Oil and Gas	NERC	RHUL (Associate Partner) Core Partners: Aberdeen, Durham, Heriot-Watt, Imperial College, Manchester British Geological Survey	NERC CDT Oil and Gas
EPSRC Cyber Security for the Everyday Centre for Doctoral Training (CDT)	EPSRC	RHUL	CDT

Appendix XI

Current RHUL-Kew Plant Humanities Projects

Project topic (& researchers)	RHUL Departments	Kew Departments	Plant Humanities Research Strand	Research Funding
<i>Mobile Museum</i> (Felix Driver, Caroline Cornish, Mark Nesbitt)	Geography	EBC LAA	Plant matter	AHRC Research Grant
<i>Plants and Minerals in Byzantine Popular Pharmacy: A New Multidisciplinary Approach</i> (Barbara Zipser)	History	EBC Biodiversity Informatics & Spatial Analysis	Plant stories Plant matter Plant visual cultures	Wellcome Trust Collaborative Award in Humanities & Social Science
<i>A Paper World</i> (Felix Driver, Mark Nesbitt, Frankie Kubicki)	Geography	EBC	Plant matter	AHRC Techne CDA (NPIF)
<i>The Quest for Quinine</i> (Felix Driver, Mark Nesbitt, Kim Walker)	Geography	EBC	Plant matter	AHRC Techne CDA (NPIF)
<i>A Global Arboretum?</i> (Felix Driver, Kiri Ross-Jones, Christina Hourigan)	Geography	LAA Horticulture	Plant landscapes	AHRC Techne CDA
<i>Plant Humanities</i> (Felix Driver, Caroline Cornish)	Geography	EBC	All	RHUL Strategic Knowledge Exchange Fund
<i>The Philosophical Life of Plants</i> (Daniel Whistler, Danielle Sands)	Languages, Literatures and Cultures Philosophy	LAA EBC	Plant thinking	AHRC Network Grant <i>awarded May 2020</i>
<i>Evidence-Based Use, Societal Benefit and Ethnobotany of Traditional Medicines in Northern Tanzania</i> (CI: Robin Williams, partners: Jenni Cole, Barbara Zipser)	Biological Sciences Geography History	Natural Capital Chemical Ecology Phytochemistry and Pharmacognosy	Plant matter Plant stories	GCRF Networking Grant (Sustainable Development) <i>Project application submitted April 2020</i>

Appendix XII

Proposed RHUL-Kew Plant Humanities Project Topics

These topics were suggested in the course of interviews with staff for the scoping project in March-July 2020 and were discussed further with staff from both RHUL and Kew. They provide a basis for potential project development.

Proposed Project topic	RHUL Departments	Kew Departments	Plant Humanities Research Strand
1. Decolonising Kew's collections	Geography History English	LAA EBC Horticulture Herbarium	Plant matter Plant stories Plant landscapes
2. Kew and UNESCO World Heritage	Geography History	World Heritage Site (Resources Directorate)	Plant landscapes Plant stories Plant well-being
3. Digitally reconnecting Joseph Hooker's legacy	Geography History	LAA Herbarium EBC Living Collections	Plant matter Plant landscapes
4. Hidden histories of botanical illustration: 'Company' artists in India & China	Geography Centre for Visual Cultures	LAA Visitor Programmes, Events and Exhibitions	Plant visual cultures Plant matter
5. Gardens and well-being	Psychology Biological Sciences	Learning & Participation Wakehurst Place (Landscape Ecology)	Plant learning Plant well-being
6. Kew and narratives of extinction	Geography Media Arts	Interpretation LAA	Plant matter Plant well-being
7. Crop Wild Relatives: indigenous knowledge, food security and biodiversity	Biological Sciences Classics (Archaeology) Geography	Millennium Seed Bank Herbarium EBC	Plant matter Plant well-being
8. Kew's archaeological collections: the deep history of plant use	Classics (Archaeology) History	EBC Herbarium	Plant matter Plant stories
9. Women in British botany	Geography Biological Sciences English	LAA EBC Herbarium & Fungarium	Plant matter Visual culture
10. Gardening on television: excavating the visual archive	Media Arts Geography	LAA Biodiversity Informatics Horticulture	Plant visual cultures Plant stories Plant landscapes
11. Kew's Georgian landscapes	Geography History English	LAA Kew Horticulture	Plant landscapes Plant visual cultures

Proposed Project topic	RHUL Departments	Kew Departments	Plant Humanities Research Strand
12. Expeditionary archives: the John Kirk project	Geography History	LAA EBC	Plant matter Plant visual cultures
13. History of mycology	Geography Biological Sciences	Fungarium LAA	Plant matter
14. Paper, plants and print culture	English Geography	EBC LAA	Plant stories Plant thinking
15. Environmental stewardship and geopolitical heritage in British Overseas Territories	Geography History	Conservation science EBC	Plant landscapes Plant governance
16. Managing biodiversity on South Georgia	Geography	Conservation science Herbarium	Plant landscapes Plant governance
17. Landscape and ecology (CASE?)	Geography Biological Sciences	Wakehurst Place (Landscape Ecology) Conservation Science	Plant landscapes Plant well-being
18. Plant blindness: barriers to engagement	Psychology Biological Sciences History	Learning & Participation Horticulture	Plant learning Plant well-being
19. Virtual/Immersive Kew	Digital Arts (StoryFutures) Media Arts	Digital Experience Learning & Participation	Plant stories Plant visual culture Plant well-being
20. Social & cultural history of rubber	History Geography	EBC LAA	Plant matter
21. Sino-British botanical networks	History Geography	LAA EBC	Plant matter

Appendix XIII

Other Potential Plant Humanities Project Themes

These were further ideas for potential themes suggested in the course of interviews with staff in March-July 2020 (either Kew or RHUL as indicated).

Potential project theme	RHUL Departments	Kew Departments	Plant Humanities Research Strand
1. Cultural history of plant commodities & products (RHUL)	English History	EBC LAA Natural Capital	Plant stories Plant matter
2. The sensory garden: gardens and disability (RHUL)	English Humanities	Horticulture Wakehurst Place Learning & Participation	Plant well-being
3. History of medicine: a collections-based approach (RHUL)	History Classics	EBC LAA Herbarium Biodiversity Informatics & Spatial Analysis	Plant matter Plant well-being
4. Kew's succulents: biography of a living collection (Kew)	Geography History	Integrated Monography Living Collections	Plant matter
5. Ethnomycology: indigenous knowledge of fungi (Kew)	Geography Classics (Archaeology)	Fungarium	Plant matter Plant well-being
6. Analogue spaces (RHUL)	GeoHumanities Media Arts	Horticulture Learning & Participation	Plant landscapes Plant well-being
7. Ethnography of intercultural festivals at Kew (RHUL)	Drama Music	Visitor programmes Learning & Participation	Plant stories Plant learning
8. Botanical travellers in Greece (RHUL)	History Geography	LAA	Plant stories
9. Environmental law (RHUL)	Law PIR	Conservation Science	Plant thinking
10. Natural Capital: 'asset' accounting (RHUL)	Management Geography	Natural Capital	Plant governance
11. Plants, well-being and human rights (RHUL)	Law Psychology	Learning & Participation	Plant-thinking Plant well-being
12. Romanticism and botany (RHUL)	English Modern Languages	LAA	Plant thinking Plant stories

Potential project theme	RHUL Departments	Kew Departments	Plant Humanities Research Strand
13. Underground life (RHUL)	GeoHumanities History	Horticulture	Plant thinking Plant visual cultures
14. Creative writing and Marianne North (RHUL)	English Geography Centre for Visual Cultures	LAA Visitor programmes	Plant stories Plant visual cultures
15. Medicinal plants and women herbalists (RHUL)	English History	LAA EBC	Plant stories Plant well-being
16. Music and ecology (RHUL)	Music Media Arts	EBC	Plant matter Plant stories Plant sonic cultures
17. The garden, horticulture and musical taste (C17-C18) (RHUL)	Music History	LAA Horticulture	Plant matter Plant landscapes
18. Philosophical basis of sexual system of classification in botany (Kew)	Philosophy English	Herbarium	Plant thinking
19. The forest as life-world (RHUL)	Media Arts GeoHumanities	Kew Horticulture Wakehurst Place EBC	Plant thinking Plant visual cultures
20. Designing the American Prairie (RHUL)	Geography English	Garden Design & Landscape Ecology at Wakehurst	Plant landscapes Plant well-being
21. Slides and the making of scientific knowledge (Kew)	Geography Biological Sciences Centre for Visual Cultures	Collections	Plant visual cultures Plant matter
22. Grow wild: enabling young people's agency in environmental change (Kew)	Psychology Geography	Learning & Participation	Plant learning
23. Sir Gerald Loder & the transformation of Wakehurst Place (Kew)	History Geography	LAA Garden Design	Plant landscapes Plant matter
24. Listing botanic gardens and the process of creating significance (RHUL)	Geography PIR	Garden Design	Plant landscapes Plant governance