We too readily sit down, under imperfect or bad conditions instead of setting ourselves to think over what may or may not be done to alter them.

Octavia Hill
Editorial information

Views is compiled and edited by Jacky Ferneyhough. Credit and thanks are due to Anthony Lambert for his efficient proofreading.

All queries associated with Views should be emailed to views@nationaltrust.org.uk

The opinions expressed by an author or quoted person are not necessarily those of the National Trust.

This publication may be freely copied for the Trust’s internal purposes but, if directly quoted, acknowledgement of source should be given. Permission must be sought from the Editor before reproducing articles in external publications.

Distribution

The distribution of Views to National Trust properties and offices is now centrally managed. If you need to change the quantity you receive or to raise any queries, please email views@nationaltrust.org.uk

Views is available on the Trust’s intranet (search for ‘Views magazine’) and on the internet: www.nationaltrust.org.uk/views-magazine

Guidelines for contributors

Views is intended as a free exchange of ideas, experiences and practices. Comments and contributions are welcomed at any time from the Views readership. However, if a contributor’s opinion differs widely from policies and practices endorsed by the National Trust, we may wish to discuss with the contributor the best way to represent their view, whilst also giving space for the Trust’s approach to be stated in the same or a future edition.

Articles containing what could be interpreted as negative references to a named or identifiable individual within the Trust, their work or opinions, will be cleared with that person before publication.

Please email articles to views@nationaltrust.org.uk

- **Length**: Shorter, punchy pieces are easier to digest than long, complex ones, especially if you want non-specialists to read the article as well as the converted. The maximum length recommended is 1,200 words. Please use sub-headings to divide articles into manageable chunks. Corrections will be made, as necessary, to grammar and punctuation. Edited articles will be shown to you; if you disagree with the editing, please say so immediately as silence will be assumed to be agreement (i.e. we won’t chase if we’re happy with the edited version).

- **Illustrations**: These will be reproduced in black and white. We can use almost any medium but prefer high-resolution (minimum 300dpi) jpgs. We are trying to improve and increase the pictorial content and would prefer to receive an illustration with each article if possible. Please include a caption with each illustration and provide us with the name of the photographer or artist so that they may be credited.

- **Deadlines**: Please meet the deadlines given. For the next issue of Views these will be announced via Red email and other internal communications. There is no guarantee that articles or changes received after a deadline will be included.

Permission will be sought from contributors if the Trust wishes to reproduce their article in any format (printed or electronic) for an external audience.

For an information sheet on writing for Views, please email views@nationaltrust.org.uk

---

Front cover: The artist Andrew Logan and ‘Goldfield’ at Buckland Abbey, Devon. © National Trust/Steve Haywood

Small images from left: Octavia Hill by Reginald Grenville Eves, RA. © National Trust Images/John Hammond; A removal van at the foot of Lindisfarne Castle. © National Trust/John Wynn Griffiths; Marsh fritillary butterflies feeding on wild garlic. © National Trust Images/Matthew Oates; Durgan faces a storm and high tide. © Dr Bryony Onciul 2016

Page 3: The old A3, now grassed over and part of Hindhead Common. © National Trust Images/John Miller

Printed on 100% recycled paper
© 2017 National Trust. Registered charity no. 205846
Designed by Blacker Limited (6929)
Print managed by Park Lane Press
Many of us can think of a particular person or event that has made a big impression on us – a teacher or mentor perhaps, or our first sight of an extraordinary work of art or stunning wildlife. This edition of Views covers an eclectic and fascinating collection of personal perspectives of people, innovation and forces of change that have moved and shaped us and our world, and in particular have enriched and advanced our practice of conservation.

Topics covered start with, of course, our founders, and include the unconventional approach to saving Erddig by Philip Yorke, the ubiquitous effects of a changing climate, the forces shaping the Lake District’s landscape, the pioneering approach of Sir Duncan Sandys to planning and protection of places as opposed to individual buildings, and innovative technology that interprets the sounds that furniture make.

Taken together the articles convey something of the pioneering spirit, the motivation to take action and to include or share what we know and look after with others, that was there from the beginning. They also urge us on to greater ambition and innovation, not least in meeting new challenges head on, whether managing places for plants and animals, foreseeing the effects of change, offering meaningful visitor experiences or simply taking a fresh look at what we do.

This will be my last editorial as I retire from the Trust in October. It has been a great privilege over more than three decades to witness many developments in our conservation knowledge and practices, and the huge increase in the number of members and visitors able to enjoy our wonderful places. I have always felt that a key part of the Trust’s purpose is to distil what we learn from our experience of managing a vast range of properties, and to share this with, and learn from, others. Views has been an important aspect of this. Long may it continue!

Peter Nixon
Director of Land, Landscape and Nature

Onward to 2018!

We’re already looking forward to the next issue and to sharing news of work underway, innovations tried and knowledge gained.

Your work makes a difference and it’s time more people knew about it. Tell us about your motivations, your experiences, what you’ve learned and achieved or what you’re planning to do next.

The theme for Views 2018 is ‘For everyone’: how we open places and provide access while caring for sites and collections, and create enjoyable and meaningful experiences, and how we sustain growth and interest. Whether your interest is nature, people, places or collections, share your stories with us! Deadlines will be between 21 May and 1 June 2018. However, articles and recommendations of authors/projects are welcomed at any time; send them to Jacky Ferneyhough at views@nationaltrust.org.uk
Contents

Leading lights

6 Permanent preservation, for the benefit of the nation: Sir Robert Hunter and the National Trust Act 1907
Tim Butler, The Solicitor

8 Octavia Hill: the life and work of the Lady Abbess
Ben Cowell, Director General, Historic Houses Association

10 The Great Defender: Canon Hardwicke Rawnsley
Jenny Sutton, Marketing and Communications Coordinator; Elaine Taylor, Membership & Visitor Welcome Manager; and Marian Silvester, General Manager

13 Finding our competitive edge
Steve Lang, Assistant Director, Consultancy

14 New crops, old traditions: how garden conservation is shaping future food crops
Lucy Halliday, Assistant Kitchen Gardener

17 National Heritage Science Forum: influencing the heritage research sector
Katy Lithgow, Head Conservator

20 Listening to the furniture: acoustic emission technology
Nigel Blades, Preventive Conservation Adviser (Environment)

22 The trials and tribulations of paint
Christine Sitwell, Paintings Conservation Adviser

24 Move, Teach and Inspire: how our knowledge of Attingham’s past influences us today
Sarah Kay, Curator, with additional information from Saraid Jones, Research and Interpretation Officer

27 Erddig’s unconventional saviour: Philip Yorke III
Tracey Lavery, Conservation and Engagement Assistant

29 Framing the future: Sir Duncan Sandys and the conservation of places
Karin Taylor, Head of Land Use Planning

32 Monitoring butterflies on National Trust land: successes, failings and targets
Matthew Oates, National Specialist on Nature

34 Finding balance in movement
James Tomlinson, Invasive Non-native Species placement student

36 Pests and diseases on the move
Simon Toomer, Plant Conservation Specialist

38 In praise of slow: working to plant time
Holly Cowan, Propagator

40 Trees for the future and woodland resilience: some thoughts
Ray Hawes, Head of Forestry

42 Moving back: the Foxbury heathland restoration project
Jacob White, Communities Ranger
45 Every Step Counts at Hatfield Forest
Sarah Barfoot, Community Involvement Manager

47 Identification of the National Trust's freshwater assets
Kate Waters, National Trust Freshwater Assets Intern, and Stewart Clarke, National Specialist for Estuaries and Freshwaters

50 Sustainable Land Management: looking after the Lakes, for now and for the future
Rachel Forsyth and Rachel Hall, Sustainable Land Management Project Team

52 Hill farming and conservation: shaping the Lake District landscape
Matthew Tweed, Ranger (Volunteers)

55 Looking out towards the past: a project to introduce visitors to First World War shipwrecks
Antony Firth, Director, Fjordr Ltd

58 Smooth moves: how to pack the contents of a castle
John Wynn Griffiths, Conservator, North

61 Handsome carriages: a curatorial research trip to Vienna
Sytske Knol, Carriage Museum Steward

63 A moving story of a floor at Kedleston Hall, Derbyshire
Giles Warhurst, Building Surveyor

65 Responding to a changing environment at Sandscale Haws
Neil Forbes, Area Ranger

68 Tested by a tidal surge warning: did we sink or swim?
Victoria Egan, Countryside Manager

70 Developing a coastal strategy, where the means was as important as the end
Emily Gillespie, Coast Project Manager

72 Sea-level rise and the impact on cultural heritage
Oliver Maurice, Honorary Director of Membership and Advocacy, International National Trusts Organisation

74 Troubled waters: heritage and climate change
Sara Penrhyn Jones, Senior Lecturer in Media Production, Bath Spa University

76 When loss is more
Caitlin DeSilvey, Associate Professor of Cultural Geography, University of Exeter

78 Working in a permanent state of change
Phil Dyke, Coast and Marine Adviser

79 Moving below the surface: shaping a marine conservation role for the Trust
Sue Wells, Marine Project Manager
Permanent preservation, for the benefit of the nation: Sir Robert Hunter and the National Trust Act 1907

Tim Butler, The Solicitor

The Trust’s mission

The National Trust shall be established for the purposes of promoting the permanent preservation for the benefit of the nation of lands and tenements (including buildings) of beauty or historic interest and as regards lands for the preservation (so far as practicable) of their natural aspect features and animal and plant life.

1907 Act, section 4(1)

In 1907 Sir Robert Hunter, Solicitor to the Post Office and long-time campaigner to protect open spaces for the public, finished drafting the first National Trust Act. And those are the words he chose to sum up the Trust’s mission. They have lasted strikingly well.

That one sentence captures succinctly the Trust’s care for land and buildings, and the concepts of permanence, of encouraging people to participate, and of doing this for everyone.

In fact that description of the Trust’s aims – and many of the other provisions in the Act – had first been used 13 years earlier when, in 1894, Hunter and others had established the National Trust as a limited company. In that guise it was able to acquire and hold land, and by 1907 it held nearly 30 properties. But he and his co-founders realised that to achieve its twin aims of permanent protection and public enjoyment the Trust needed to have powers, and to accept responsibilities, beyond those of an ordinary limited company.

So they promoted a special Act of Parliament. In 39 separate provisions (or ‘sections’) the Act sets out those powers and responsibilities and how the Trust must run its affairs. The core power, set out immediately after the Trust’s aims, reinforces how the founders expected the organisation to operate:

…the National Trust may acquire by purchase gift or otherwise…land buildings and…any other property of whatsoever nature and may maintain and manage…lands as open spaces or places of public resort and buildings for purposes of public recreation resort or instruction…

1907 Act, section 4(2)

Inalienability

But perhaps the single most important power was set out some way down the list:

Whenever after the passing of this Act any lands or tenements (including buildings) shall become vested in the National Trust the Board of Trustees may by resolution determine that such lands or tenements or such portions thereof as may be specified in such resolution are proper to be held for the benefit of the nation and such lands or buildings shall thereupon be so held by the National Trust and shall be inalienable.

1907 Act, section 21(2)

Once the trustees declare an area of land inalienable, the Trust can never voluntarily part with it. Since 1907 other legislation has respected this special status, and inalienable land cannot be compulsorily purchased from the Trust against its will without a special procedure involving both Houses of Parliament. 110 years on, this remains the firm foundation for our claim to care for places ‘for ever, for everyone’.

Common land

Hunter began his career as a lawyer in 1866, just as public pressure was building (particularly through the recently formed Commons Preservation Society) to protect ancient commons from enclosure and development. For more than 15 years he worked vigorously on a number of anti-enclosure disputes. So it is no surprise that he took care to give the Trust, through four different sections of the Act, some very specific powers to manage the common land it acquired and – notably – the specific responsibility:

except as in this Act otherwise provided …at all times [to] keep such property unenclosed and unbuilt on as open spaces for the recreation and enjoyment of the public.

1907 Act, section 29(1)(A)

This is why, to this day, the Trust takes particularly seriously its stewardship of common land.
**Promoting preservation, and working with others**

The inclusion, in the Trust’s aims, of express reference to ‘promoting preservation’ has proved an inspired decision, and was very deliberate. An early pamphlet advertising the Trust says:

The National Trust is not only a holder of natural scenery and ancient buildings, but it also does what it can to promote local interest in the preservation of any worthy historical object or natural beauty.2

The Trust refers back to this idea often as, increasingly, we help and encourage others to protect special places we do not own.

The 1907 Act also gave the Trust power to:

*act in concert with and make any arrangements and agreements with any local authority … or with any residents … in the neighbourhood of any land or property of the National Trust or with any other persons for giving effect to the objects of this Act.*

1907 Act, section 31

This was expanded in the National Trust Act 1937 (section 7), to allow local authorities to provide financial support to the Trust to buy or care for properties within the local authority area.

**Governance**

The affairs of the National Trust shall be administered by a council ...consisting of a president of the council and fifty members of whom twenty-five shall be elected annually from among the members...[and 25 appointed by one of the bodies listed in the Act]

1907 Act, section 18

This arrangement, like many of the administrative provisions in the 1907 Act, was based on the constitution of the 1894 limited company. It has proved an enduring one. It secures involvement in the Trust’s work both from its members and from other organisations with expertise, good contacts and an interest in the Trust’s activities. The Council’s role has evolved: it now appoints the Board of Trustees (since 2005 the ultimate decision-making body in the Trust) and is a little smaller (from 2018 there will be 36 members of Council), but the basic concept remains, and over the last century and a quarter has provided welcome stability and breadth of perspective in directing the Trust’s work.

**So why did we need the later Acts?**

The Trust’s success, and the changes to the world around it, meant the Trust was able to contribute to conservation in ways which would not have occurred to its founders.

So the National Trust Act 1937 made some changes to the detail of the Trust’s powers and objects (including clearing up any doubts as to whether the Trust could care for significant furniture and artefacts as well as places). It also introduced a mechanism by which landowners could irrevocably agree not to change the use or appearance of their land without the Trust’s consent. This is the foundation for many of the Trust’s conservation covenants which now protect over 30,000ha.

The 1939 Act was passed to enable owners of ‘settled land’ to transfer their estates to the Trust if they wished. Settled land is an ancient and complex form of land ownership which had been designed to prevent the owning family from parting with large country estates — many of which were to come to the Trust in the middle of the last century.

The National Trust Act (Northern Ireland) 1946 made sure the Trust’s powers worked in the context of the slightly different land law system in Northern Ireland.

The 1971 Act modernised various aspects of the Trust’s governance (modernised still
People walking on the old A3, now grassed over, on Hindhead Common. © National Trust Images/John Miller

Further by a Parliamentary Scheme in 2005 and a short follow-up Northern Ireland Act, gave it additional powers relating to commons and the management of the then recently acquired Wey and Godalming Navigations. It also gave the Trust express power to dispose – for the only time in its history – of a complete inalienable property: Kanturk Castle in the Irish Republic, a property which had come to the Trust before the creation of the Republic and which in 2000 the Trust handed over to An with the Act of Parliament he had conceived, the ‘Trust’s Irish equivalent.

An illustration of what Hunter and the 1907 Act have achieved

Hindhead Commons in Surrey are 650ha of lowland heath – scenic, rich in wildlife and valued by the public as a place to enjoy. In the early years of the Trust, Hunter had, through the Hindhead Preservation Committee, fostered support and raised funds so these commons could be bought and given to the Trust – which they were in 1906. The next year they were one of the areas made inalienable when the 1907 Act was passed.

Over the course of the twentieth century the commons had effectively become cut in two by the increasing volume of traffic on the A3, the historic London to Portsmouth road which ran across the commons. In 2007, 100 years after the 1907 Act and following extensive discussions with the Trust to make sure the special status of the land was respected, the Highways Agency began work on the Hindhead Tunnel. When the tunnel was opened in 2011 the old road was removed, reuniting the two halves of the commons. This brought tranquillity to the special place which Hunter had first helped save for the nation, and then helped protect though the powers given to the Trust by the Act of Parliament he had conceived, the National Trust Act 1907.

References
1. 1907 Act, sections 29, 30(2), 36 and 37.
2. The National Trust: its aims and its work (National Trust, 1897).
3. 1937 Act, section 3.
4. 1937 Act, section 8.

Octavia Hill: the life and work of the Lady Abbess

Ben Cowell, Director General, Historic Houses Association

In our secular age, it is all too easy to overlook the central importance of religion to earlier generations. Not recognising the intensity of faith can lead to profound misunderstandings of people’s motivations, in the past as well as today. The National Trust’s founders were all deeply religious people, and their actions were informed by a profound sense of Christian spiritual purpose. Understanding this makes the 2017 row over Easter eggs all the more absurd: the Trust was accused by the Prime Minister, no less, of downplaying the significance of a Christian festival in its marketing of Easter activities at its properties. The fact that the Trust’s commercial partner, Cadbury, has a strong Quaker heritage, and that Quakers do not themselves celebrate Easter, seemed to be lost in much of the media commentary.

The Christian roots of the National Trust are not difficult to discern. One of the three founders, Hardwicke Rawnsley, was a clergyman. Another, Sir Robert Hunter, had himself considered a career in the Church, before taking up law. Hunter remained a worshipper all his life, and has a fine memorial tablet at St Bartholomew’s church in Haslemere, Surrey, his adopted home. Octavia Hill, meanwhile, may well have been the most committed of the three, ending her life as a practising Anglican, having been born into a Unitarian family and milieu and then influenced heavily by the preaching of the Christian Socialist F.D. Maurice. Throughout her life, Hill’s religious beliefs drove her actions, whether her work on housing or her campaigning for open spaces. Not for nothing did Ruskin refer to Hill as ‘the finest lady abbess you can have for London work’. Many of the Trust’s earliest property acquisitions had strong ecclesiastical associations, such as Alfriston Clergy House, Muchelney Priest’s House, Buckingham Chantry Chapel and Keld Chapel.

Rescuing the Christian origins of the
Trust from the condescension of posterity, as it were, was one of the aims of a serious academic enquiry that was prompted by the centenary of Hill’s death (she died in August 1912). In 2012 a two-day conference was held at Sutton House, Hackney, to explore different aspects of Hill’s life, organised by myself (at the time, the Trust’s External Affairs director) and Dr Elizabeth Baigent of the University of Oxford. I was first alerted to Elizabeth’s interest in Hill by an academic article she had published in *Rural History* in 2011 on the religious aspects of the Victorian open-spaces movement. Elizabeth proved to be very receptive to the idea of using the 2012 centenary as an occasion for a critical reappraisal of Hill’s life.

We wanted to move beyond the tendency towards hagiography, to create a more complex and nuanced picture of Hill’s work and legacy. Our conference involved a series of papers from some very impressive speakers. Gillian Darley, Hill’s biographer, opened proceedings by giving us an outline of Hill’s life as a campaigner. A sequence of papers followed, in which different aspects of Hill’s career were explored. William Whyte (Professor of Social and Architectural History, Oxford University) engaged with the aesthetics of Hill’s mission, given her early patronage by Ruskin. Robert Whelan (Deputy Director of Civitas) excavated the fascinating and largely forgotten history of the Kyrle Society, a forerunner of the Trust founded by Hill’s sister Miranda in which Hill herself was an active force. Jane Garnett (Professor of Modern History, Oxford University) interrogated questions of gender politics, so that Hill’s well-known stance against female suffrage could be understood within a broader theological world view that pitted the realm of the domestic against that of the public political sphere.

Lawrence Goldman (Director of the Institute of Historical Research, University of London) meanwhile drew attention to the way in which, by the end of her career, Hill’s outlook was looking distinctly old-fashioned and out of kilter with the social problems and political thinking of the time. A disagreement between Hill and Beatrice Webb, when they both sat on the Royal Commission on the Poor Laws 1905–9, saw the Commission issue two separate reports because of its failure to reach consensus. Webb’s minority report can be seen in many ways as one of the foundations of the modern welfare state; Hill meanwhile stuck resolutely to her non-interventionist mindset, insisting that Christian charity began at home and that Government had only a limited role to play in tackling social problems head-on. Our conference ended with a walking tour of Southwark, in which the development of different approaches to social housing in the late Victorian period can be read from the urban fabric, from Hill’s rather picturesque experiments at Red Cross Cottages to the tenement blocks of the Peabody Trust.

The richness of the diverse papers read at the conference was striking. As well as the speakers mentioned above, we heard from Melanie Hall (Director, Museum Studies) on the origins of the Trust; Astrid Swenson (Senior Lecturer, Brunel University, London) on the nineteenth-century preservation movement; Paul Readman (Professor of Modern British History, King’s College, London) on the affective connotations of the English landscape; Elizabeth Heath (Assistant Curator of the National Portrait Gallery), on Hill’s various portraits; and John Price (Senior Lecturer in History, University of London) on Red Cross Hall and Hill’s commission of murals to heroic self-sacrifice. So good were the papers that Elizabeth Baigent and I decided afterwards that they needed to be collected together in the form of a conference proceedings.

We were very grateful therefore to the Institute of Historical Research, supported by a grant from the Scouloudi Foundation, for publishing the papers as a single volume, *Nobler imaginings and mightier struggles*: *Octavia Hill, social activism and the remaking of British society* (2016).

Remembering the impact of Hill’s work through a more critical reading of her activities within the context of her day seemed, to us, a vital corrective. Hill was a complex figure. Her determination to address social ills drove her entire life and work. She stuck to a fairly consistent world view, based on the Christian duty of charity. It was a view that implied only a limited role for the state, which Hill did not think the best vehicle for addressing social problems (hence her opposition to the state providing certain welfare benefits). Her objections to the extension of female suffrage can
The Great Defender: Canon Hardwicke Rawnsley

Jenny Sutton, Marketing and Communications Coordinator, Lake District; Elaine Taylor, Membership & Visitor Welcome Manager, Allan Bank; and Marian Silvester, General Manager, West Lakes

The Rev. Canon Hardwicke Rawnsley was a bold and energetic campaigner who dedicated his life to writing rousing letters to the press, raising petitions and leading action groups. Known as the ‘Defender of the Lakes’ for his forceful campaigns on behalf of the Lake District Defence Society, Rawnsley campaigned tirelessly to preserve the Lake District landscape from commercial development.

The early years

Born in Oxfordshire in 1851, Rawnsley enjoyed a comfortable and idyllic childhood, largely spent exploring the countryside around Lincolnshire where his family moved in 1862.

In 1875, after graduating from Balliol College, Oxford, Rawnsley volunteered to work as lay chaplain in Soho. Here he became friends with the social reformer Octavia Hill and acted as a rent collector among Octavia’s tougher Soho properties. He had not been prepared for the level of poverty he would witness. The squalid conditions he encountered and lack of access to natural beauty for ordinary people had a profound effect on him and would change the course of his life.

After seven months in Soho, Rawnsley suffered a nervous breakdown, retreating to the Lake District to recuperate. In 1877 he accepted an offer made by his cousin, Edward Preston Rawnsley, of the living at St Margaret’s church, Low Wray, near Windermere. Once settled, Rawnsley ploughed his energy, effort and influence into supporting his convictions, and for the rest of his life campaigned to save special places in his beloved Lake District and nationally.

The campaigns

In 1883 Rawnsley became involved in his first major campaign, to halt the progress of a railway to serve slate quarries above Buttermere. Rawnsley organised a national series of lectures and letters appealing for money to fight the proposed Braithwaite & Buttermere Railway bill and safeguard the natural beauty of Derwentwater and Borrowdale. By April that year he had his first victory and the bill was thrown out; this was to be the first of many victories for the dogged and determined Rawnsley.

Later that year, at a meeting of the Wordsworth Society, Rawnsley proposed the formation of a Lake District Defence Society to protect the Lake District scenery from Hill’s lifetime. Hill is to be admired for her unremitting dedication to housing, open spaces and improving the conditions of the poorest in society. She was clever enough to remain above party politics her entire life, while still knowing how to win the support of people in positions of power and influence. Yet by the end of her life the world had moved on to such a degree that she was considered a rather backward, old-fashioned figure. We hope our study will encourage further investigation into the life and work of this unique and inspiring woman.

Reference

Cowell, Ben, and Baigent, Elizabeth (eds), ‘Nobler imaginings and mightier struggles’: Octavia Hill, social activism and the remaking of British society (Institute of Historical Research, School of Advanced Study, University of London, 2016).
being permanently damaged by those whose only wish was commercial gain, 'without regard to its claims as a national recreation ground'.

The years 1885 to 1888 saw him heavily involved in the Keswick Footpaths Dispute when, elected as president of the Keswick and District Footpaths Association, he and others strove to ensure that access to Skiddaw via Faw Park and over Latrigg, which had been blocked by private landlords, was safeguarded for all time.

The birth of the National Trust

As the years went by, Rawnsley’s interests and campaigns broadened to national scope and often showed incredible foresight and forward thinking. He campaigned against pollution in streams, he was an advocate for organic farming and even campaigned against the surge in popularity of white bread.

It was on hearing of the private sale of Grasmere Island in 1893 that Rawnsley felt driven to form ‘some sort of association, or trust that should exist solely in the interests of the purpose of holding lands in their natural beauty in perpetuity for the people’. Rawnsley recognised that no organisation existed to protect land from private ownership and potential development. In November that year the first official meeting took place at the offices of the Commons Preservation Society between Rawnsley and the other founders, Octavia Hill and Sir Robert Hunter. Just over a year later on 12 January 1895, the National Trust was founded.

In subsequent years Rawnsley played a central role in campaigning on behalf of the Trust to acquire, for the benefit of the public, land which was otherwise destined for private development. On 16 October 1902, in the midst of a roaring gale, Princess Louise, the Trust’s President, dedicated Brandelhow Park ‘open to the public’. It was Rawnsley who had persuaded the owner not to sell the park for building development for at least six months. Then, with the support of Octavia, he campaigned to raise funds through public subscription to purchase the 42ha of woods and fell, stretching from the lake shore towards Catbells: £6,500 was collected within five months.

In 1906 Rawnsley campaigned through public appeal to raise £12,800 to purchase 303ha of land at Ullswater: Gowbarrow Fell and Aira Force, which he declared ‘The finest national park in England’. James William Lowther, 1st Viscount Ullswater, opened Gowbarrow to the public, thanking Rawnsley and Miss Hill for persuading 1,600 people unselfishly to donate to support the purchase of the land, declaring, ‘We have all heard of the mountain in labour that brought forth the mouse, this time the mice have been in labour and have brought forth a mountain.’

In memory of the fallen

Quite early on in the First World War, and more so after, Rawnsley focused his attention on honouring those who had lost their lives in the conflict. By then the last surviving founder, he championed the call for open spaces, rather than plaques and obelisks, to be dedicated to the fallen. He himself gifted land in Borrowdale in 1917 in memory of the men of Keswick, optimistically renaming a small mound of land at High Rigg fields ‘Peace Howe’, as a place of rest and recuperation for soldiers returning from the front lines.

‘Why should we not remember that the men laid down their lives for a very fair country and as they fought and fell in far off places their hearts went back to the beauty of their homeland? It is this beauty that we need to conserve for future inspiration.

Could we do better than make some beautiful scene, some open space, a lasting memorial of the heroic dead?

At the end of the war, Rawnsley gave an address to the House of Commons, calling for a nationwide chain of beacons and bonfires on ‘Peace Day’, 19 July 1919. The House agreed and Rawnsley was put in charge of organising a scheme that was to cover the whole of the British Isles. The Grantham Journal on 26 July 1919 (p.7) reported that ‘… the chain of fires throughout the country, gave unanimity to the nation’s rejoicing, and a remarkably impressive realisation of Canon Rawnsley’s great scheme.’

In September 1919 Rawnsley proclaimed in the media that the highest summit in England, Scafell Pike was to be given to the nation, under the care of the Trust, as the gift of Charles Wyndham, 3rd Baron Leconfield, in memory of the men of the Lake District who had died in the service of king and country.
This was to be one of Rawnsley’s final acts. He died in May 1920, and at the Trust’s Annual Meeting on 9 July that year, the Trust’s Council ‘… placed on record their sense of irreparable loss by the death of Canon Rawnsley, their honorary secretary, and the last of the society’s three founders. They had welcomed the idea that open spaces should be acquired as memorials to those who had fallen in the war ….’. The record notes the gift of the latest memorial, Castle Crag, Borrowdale, and expressed a hope that others would be moved to give ‘… the public, beauty spots which would serve as the best memorials of the fallen’.

On 7 September 1923 Friar’s Crag, Lord’s Island and part of Great Wood on the shore of Derwentwater were given to the Trust and dedicated to Rawnsley, ‘by subscribers who wish his name shall not be forgotten’. As a further pleasing footnote to his tireless work, in February 2017 the place that prompted Rawnsley to co-found the Trust, Grasmere Island, was acquired by his creation. This, and other lands in the care of the Trust, are perhaps the most lasting monument to those who love the countryside and to those who would give their lives for their country.

The continuing legacy

The gift of Scafell Pike to the Trust in 1919 inspired the Fell & Rock Climbing Club to raise money and purchase an area of land, including 12 fell tops, as a lasting memory to its members who lost their lives during the war and ‘for the use and enjoyment of the people of our land for all time’. The gift included Kirk Fell, Lingmell and Great Gable at the head of Wasdale. The summit of Great Gable was chosen as the location for a memorial plaque, and there is now a long tradition of people gathering on the mountain in remembrance on Armistice Day.

Today, Cumbria has the most Trust-owned open-space war memorials: 19,021ha of the 50,359ha total. In 2018, to commemorate 100 years since the end of the First World War, we have planned a number of activities in the Lakes under the theme of ‘The Great Gift’. Through this project we aim to re-memorialise the landscapes that were given to the Trust, and reconnect our visitors with the mountains and the reasons why they came to be cared for by the Trust for ever, for everyone. The summit cairn on Scafell Pike, which also has a memorial plaque, will be taken down and rebuilt, and work will continue on the paths to the summits of Scafell Pike and Great Gable.

References

4. ‘Beauty spots as war memorials’, Yorkshire Post, 10 July 1920.
The world’s a crazy place right now, and predicting events for the next 18 months is a mug’s game. But thankfully, soaking up beauty and feeding your curiosity still seem in fashion, as demonstrated by visitor numbers and continued eye-wateringly high investments in the UK’s cultural gems.

ALVA – the Association of Leading Visitor Attractions – recently reported visits to its member sites were up 7% on last year, and the sums going into new galleries and the proliferation of master plans, often involving ‘starchitects’, show not everyone’s equally impacted by austerity.

The Big Three in South Kensington (Science Museum, Natural History Museum, V&A) are leading the way. Space constraints in London mean that many are looking down and around rather than up to expand – Tate’s The Tanks started the trend in 2012, and the V&A’s new £41m underground gallery continues the theme this year, while the Natural History Museum is transforming its outdoor spaces for 2023. Dippy the Diplodocus has already made way for the new developments – but only for a farewell tour around the UK.

The picture is not an even one – government funding cuts are particularly hitting regional museums, with the Museum Association lamenting a £1bn cut in cultural spending by local authorities since 2010, and noting 45 museum closures since then. Not all is doom and gloom, however, outside the M25, despite a clear mismatch in allocation of government funds. Some big openings are anticipated such as the new V&A Dundee (£80m) as well as the £50m recently earmarked for an extension to Yorkshire Wildlife Park.

It’s not a UK phenomenon either – new major museums for 2017 are planned for Paris and Marrakech (both celebrating the designer Yves Saint Laurent), Potsdam, Cape Town, Philadelphia and Los Angeles, with the Louvre finally seeing its Abu Dhabi outpost nearing completion, and, of course, China getting in on the act in partnership with the V&A in Shenzhen.
New crops, old traditions: how garden conservation is shaping future food crops
Lucy Halliday, Assistant Kitchen Gardener, Knightshayes Court, Devon

Knightshayes has enjoyed a long tradition of developing new plants. The last private owners, Sir John and Joyce, Lady Amory, developed the ‘Knightshayes Pink’ Erythronium and the Gentian ‘Knightshayes’. Going further back, we can trace the fascination with new plants on the estate to the high Victorian craze for plant-hunting and breeding, and in particular to one James Peebles. Peebles was appointed head gardener at Knightshayes in 1884 and oversaw many of its finest years. Historic documents paint him as the archetype of the Victorian head gardener: fastidious and exacting with a huge knowledge and enthusiasm for breeding exotic plants. The Gardener’s Chronicle of 1889 documents his obsession with breeding Coleus varieties in the walled garden, many of which were presented to the RHS. He also bred a Tropaeolum ‘Mrs Peebles’, we assume for his wife. In the fine array of glasshouses he raised prize-winning exotics such as pineapples, peaches and melons. As a prominent South West kitchen garden of the time, the impressive stone fortifications and carefully engineered glass roofs of the walled garden would have sheltered a huge diversity of crops collected from all over the world.

Contemporary and traditional
It is in this spirit of innovation, improvement and passion for horticultural techniques that today’s kitchen gardeners have embarked on a small plant-breeding effort of their own. Almost since the restoration of the walled garden began, we have been growing a rather beautiful little tuberous vegetable with a surprising history and hopefully a great future. Oca, Oxalis tuberosa, is native to the Andean highlands of Peru where it is cultivated as a staple crop. Originally donated to us by one of our volunteer heritage vegetable experts, we collected a few more varieties of oca for the garden. In 2016 we joined the Guild of Oca Breeders (www.ocabreeders.org) and our passion for this jewel-like vegetable grew.

Interest in oca may seem like part of the current resurgence in productive gardening, particularly for those wanting to try their green fingers at something new, but it is in fact a Victorian introduction. It has been grown in the UK since its first documented cultivation in 1832. It was trialled by a Mr
A traditional technique, this is what happened to the potato to adapt it to the northern hemisphere. The process works by planting out large numbers of genetically diverse seedlings, selecting the best and then replanting the following year. This work is being carried out across the UK by volunteer grower members, and all tubers are released ethically under the Open Source Seed Initiative pledge, so taking part in the project means you commit to keeping the germplasm in the public domain.

We have grown out 30 different varieties at Knightshayes over the past year. Once they were harvested, we started a careful process of selection based on tuber size, yield per plant, taste, appearance and knobbliness (really!) and have come up with four excellent varieties which we will keep to grow on in coming years. We have also produced and recorded six varieties which we shall return to the guild for the next round of growing trials. These have large tuber size indicating early tuberisation and plentiful flowering, meaning it will be possible to cross them. Growing oca has interested the whole team and honed our knowledge of flower anatomy and our observational and scientific skills; it has been wonderful to really get into the botany of one of our crops.

Being true to our vocation

It has long been the role of kitchen gardeners to carefully select and improve their crops, and this work has bought with it a realisation. In working to restore and conserve such a grand kitchen garden as that at Knightshayes, efforts necessarily began over a decade ago with the structure and hard landscaping, paying attention to its original William Burgess-inspired design and Edward Kemp layout. Focus then turned to its cultivation with the aim of restoring its function to productivity and also its historical accuracy in terms of the crops it grew. We can now proudly say that all our abundant produce is used, and visitors enjoy our extensive range of heritage crop varieties, both in the garden and on the Stables café menu.

However, with these things in place, a new aspect of the garden’s conservation is now coming to the fore – that of the activities and skills of the gardeners themselves, the art and craft of the kitchen gardener. To raise this garden to the level...
of excellence it deserves, we have been gradually learning the subtle ways that our actions as gardeners translate into the atmosphere of the garden itself: produce can be improved, selecting better varieties for our café, working to make sure our vines and trained fruit are just so, keeping our grass edges perfectly straight, planning meticulously to get even more successional sowings in. Kitchen gardening at its ornamental finest is a dynamic art indeed and one to which our team should surely aspire. To Mr Peebles, all the little details counted and so, although it forms a tiny part of our work in the walled garden, the new knowledge, skill and excitement that working with the Guild of Oca Breeders has brought hails a timely evolution in its horticultural authenticity and weaves into the rich tapestry of its ongoing restoration.

So what comes next in 2017? We will be growing out our own seedlings alongside our favourite varieties from 2016. We will also be getting more involved in experimenting and nurturing, growing out over 300 unique one-year-old seedling varieties to bulk them up for further trials, as well as encouraging other Trust gardens that wish to take part and join the guild. As a team working in a historic Victorian garden, it has been enriching to discover how these little tubers have connected us with that spirit of innovation and excellence that the original Knightshayes gardeners cultivated so strongly.
As an interdisciplinary field, heritage science is at the forefront of trends in the research world which aim at greater innovation and impact through engaging many views to answer a research question rather than just one. The National Heritage Science Forum (NHSF) is a recently formed charity which is collaborating to build the community in the UK and demonstrate its public benefit.

Rooted in science

Heritage science is a field of shared endeavour, applying science and technology to the understanding, preservation and sharing of cultural heritage. Physics, chemistry, biology and the social sciences are used in: archaeology; conservation to document heritage and investigate technique, condition and causes of deterioration; to understand public perceptions and benefit; and to design and evaluate conservation solutions. A 'hard' scientist, such as a physicist or a chemist, is also a heritage scientist if they work in this field; a conservator or archaeologist may apply scientific methods and their outcomes to preserving or exploring the heritage in their care; a curator or visitor experience consultant is engaged if they are studying technology and communicating the 'history of making'. By deepening understanding and enhancing the meaning of cultural heritage, the field straddles the traditionally separate worlds of science and the arts and humanities.

The NHSF has its roots in the 2005 House of Lords Science & Technology Select Committee inquiry into the state of Science and Heritage, chaired by Baroness Sharp of Guildford. The final report, published in 2006, found that the UK was at risk of losing its pre-eminence in the field of heritage science because it was fragmented and undervalued, not considered in Government policy and there was insufficient transfer of new knowledge. The House of Lords recommended that the sector take action and develop a 'bottom up' national strategy for heritage science.

This strategy was based on three ‘evidence reports’ commissioned in response to the Select Committee's challenge, examining: the role of science in managing UK heritage; how science enhances understanding of the past; and the capacity of the heritage science sector. These reports identified: gaps in knowledge and practice; issues around more effective use of equipment, awareness of techniques and their application, and the management of data; the need for more training and development opportunities, better co-ordination and archiving of information; and strategic prioritisation of funding, strengthening links with industrial partners, and evidencing the public benefit of heritage science.

The resulting National Heritage Science Strategy (NHSS) was published in 2010, to act as a focal point for all the different producers and users of research, with two main aims:

- Influencing the heritage research sector
- Rooted in science

**Top: NHSF trustees visiting the SEAHA mobile heritage lab at the 2015 Members & Friends event. © NHSF**

**Above: Using statistics and the social sciences to research visitor perceptions of soiling at Charlecot as part of the Coming Clean project (with UCL Qatar). © National Trust/Katy Lithgow**
Demonstrate the public benefit of heritage science and to increase public engagement and support for it.

Improve partnerships within the sector and with others by increasing collaboration and to help its practice make better use of research, knowledge and innovation and to enhance resources, funding and skills.

Implementing the strategy

The NHSF was established as a charity in 2013 to act as vehicle to deliver the strategy to the ‘users’ and ‘doers’ of heritage science, partly inspired by the way other disciplines had formed a community to reach beyond their boundaries, such as The Archaeology Forum (TAF). From nine founding members, the NHSF has grown to include 19 of the leading heritage and heritage science organisations, universities and conservation bodies in the UK (www.heritagescienceforum.org.uk/members)2. Individuals who are not employees of the institutions can engage through membership of their professional body (e.g. the Institute of Conservation, ICON). Each organisation pays a membership fee and its representative acts as a trustee supporting a Consultant Development Director (Caroline Peach) who is responsible for the day-to-day operation, and volunteer Chairman, currently Alastair McCapra.

The NHSF implements the strategy through three working groups led by trustees:

- ‘partnerships and networks’ addresses the aim to ‘improve partnership within the sector and with others by increasing collaboration’;
- ‘resource-sharing’ (co-chaired by the author) addresses the aim to ‘help practice to make better use of research, knowledge and innovation’; and
- the ‘policy’ group addresses the aim to ‘enhance resources, funding and skills’.

Sharing knowledge

So what has the NHSF done since 2013? We have developed a ‘Kit Catalogue’, to which, at the time of writing, 12 member institutions have added equipment and facilities, showing what is used by the community in heritage science research and may be shared or lent to others through research collaborations. This is influential in heritage science funding bids as it demonstrates more efficient use of resources and partnerships, and who is knowledgeable about equipment and its applications. Last November we established a Gold Open Access Fund to pay for around six papers a year to be made free to anyone immediately on publication where this funding is not supplied by others such as Research Councils, and in April the first paper was published by this means.3 Work to open up access to heritage science research is also taking place through a series of Wikipedia workshops, run in partnership with Wikimedia UK, at which people can learn how to edit, enhance and add heritage science content on Wikipedia.

Through Historic England we have promoted research into ‘enhancing the role that heritage science can play in the teaching of science within secondary and tertiary education’. We have responded to many government papers and consultations: most recently the Industrial Strategy Green Paper; the evidence review of the Heritage Lottery Fund and National Heritage Memorial Fund; the autumn statement; the Arts and Humanities Research Council call for priorities for future EU funding; the House of Lords inquiry into the relationship between EU membership and UK science; the Department for Business, Innovation and Skills white paper Success as a Knowledge Economy, highlighting the value of EU funds allocated to heritage science research (just under €4 billion) and the importance of the mobility of researchers and facilitating international collaboration; and supporting the development of a single UK Research & Innovation structure to coordinate cross-disciplinary research. We have begun research into the gaps identified in the evidence reports: recent results have highlighted research into understanding modern materials behaviour, adapting to climate change, and ‘traditional’ materials behaviour (particularly in the built historic environment). There is also a website, featuring news, blogs and a regular newsletter promoting heritage science in, for example, British Science week which featured Trust heritage science projects, such as investigating Kedleston’s floor.

Ground-penetrating radar survey to assess the cause of movement in the floor of the Marble Hall, Kedleston, Derbyshire. © National Trust/EMC Radar Consulting (Erica Carrick)
What of the future?

Our future plans include refreshing the NHSS to strengthen partnerships with sectors beyond heritage organisations and academia, particularly businesses that use and in some cases contribute to heritage science research and innovation; and investigating the curation of scientific data for access and reuse, a vital strand in the knowledge economy.

The NHSF is not alone in its endeavour to champion heritage science – this is also the ambition of an international Heritage Science network recently formed by ICCROM which has added a new, cross-disciplinary resource to its website at www.iccrom.org/science-for-heritage. The data-focused resource primarily addresses issues of conservation, care and management of cultural heritage. It includes publications, think-tank reports, survey findings and interactive data covering a variety of topics, from strategy development to heritage conservation employment and access to knowledge.

By sharing experience, sites and research questions, the Trust is both contributing to and benefiting from heritage science, from investigating the nature of dirt and cleaning with University College London (why we remove it and what visitors think of it) to calibrating the blue wool dosimeters we use to monitor daylight exposure in light-sensitive showrooms with Historic Royal Palace’s help, and identifying building materials and points of moisture damage at The Vyne, helping us understand its structure, alterations, defects and history, and share this knowledge with visitors. This work reinforces our professional links, as Nigel Blades reports on page 20, and helps to make the impact of the whole, in growing the field of heritage science activity, greater than the sum of its individual parts.

You are able to keep up with news from the NHSF by visiting its website (www.heritagescienceforum.org.uk) or by connecting to its Facebook page (heritagescienceforum) or Twitter feed (@HertSc_UK).

References

2. Alongside ourselves, the members of the NHSF are the British Library, British Museum, Cardiff University, English Heritage, Historic England, Historic Environment Scotland, Historic Royal Palaces, Imperial College London, the Institute of Conservation, the National Archives, National Galleries Scotland, National Museum Wales, Natural History Museum, Tate, University of Cambridge Museums & Botanic Gardens, University of Oxford, University College London and the Wellcome Library.

Above: 3DX-Ray investigating the Nubian tambourine player (CMS number 129512.1) at Knole, Kent; (right) the X-ray image showing nail fixings and ‘woodworm’ tunnels made by larvae of Anobium Punctatum. © National Trust/3DX-Ray
Listening to the furniture
Nigel Blades, Preventive Conservation Adviser (Environment)

An unusual form of environmental monitoring has been set up at Knole house in Kent: tiny microphones have been attached to four pieces of furniture. What could they be for?

The answer is that they are listening in on the sound of micro-scale cracking in the furniture as it responds to a changing environment at Knole.

Many items of furniture at Knole have been in the same rooms since the early eighteenth century. Largely unheated, they have been subject to the vagaries of the British climate, filtered through a well-ventilated and uninsulated building fabric. It’s no surprise the conditions inside the show rooms have tended to be quite humid, particularly in winter, when the unheated show rooms can reach over 80% relative humidity (RH). Many items of furniture are infested with woodworm, which loves the cool, damp conditions, and mould commonly grows on the surfaces of paintings. We have long been aware that these conditions aren’t ideal for the collections and are now able to address them as part of the ongoing Heritage Lottery Fund-funded project at Knole.

The environment is being improved by the installation of showroom conservation heating to reduce the RH to around 50–60% so that mould can no longer grow and woodworm activity will gradually dry up.

However, as the RH is lowered there are risks to the furniture, which includes many rare and precious items, such as the Gole Suite table and torchères. Although subject to the attentions of woodborers and mould, the furniture has been physically stable in the high RH environment of the last 300 years. Just as a diver ascending from the depths has to rise in stages to the surface to avoid the bends, the RH must be lowered slowly and step-wise to minimise stress in the wood and its decorated finishes that could lead to cracking of the wood, flaking and delamination.

This is why we are listening to the furniture, to ensure that only small stresses are experienced by the wood and damage is avoided. The technique being used is called ‘acoustic emission’ (AE). Originally developed as a non-destructive testing method in engineering applications, AE has been adapted to the monitoring of historic furniture and wood by a pioneering research group at the Jerzy Haber Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences, Krakow. At Knole we have been working with researchers Marcin Strojecki and Roman Kozłowski to apply the technology to four pieces of furniture: the Gole Suite table and one torchère and the Jensen Suite table and one torchère. With help from Marcin, furniture conservator John Hartley attached the AE microphones in March 2016. Since then we have been monitoring the AE response to changing RH in the baseline conditions of Knole, before the introduction of heating. The microphones are attached to an amplifier and laptop that processes the data and sends it directly to the researchers in Poland using a 3G data link.

The research so far has shown that the furniture is remarkably stable in the existing spring/summer environment at Knole – very little AE occurs with the RH at the March to August average of 65–68%, so negligible cracking or flaking is being caused by the environment. In fact the Knole objects have proved to be more stable in this respect than furniture in museums in the UK and Poland, where, with much drier conditions indoors...
(RH down to 30–40%) furniture shows a ten-fold or greater AE response to the building environment.

Monitoring is continuing to understand how the furniture will respond as the RH is reduced in the show rooms to a control level of 60% RH, and how slowly we need to do this for the care of the furniture.

An unexpected discovery was that a Gole Suite torchère had an AE response caused by active woodworm! This was identified by Marcin based on previous experience of monitoring infested objects. It corresponded with the observations by conservator and house team that this was the only object of the four monitored with a known infestation. The woodworm activity was intermittent, but was more frequent at warmer times of year. This finding, whilst not central to our research, has proved of great interest to the media, and was featured in the Channel 5 documentary *Secrets of the National Trust* with Alan Titchmarsh in February. It was also picked up in June by BBC Radio 4 for an item on the *Today* programme which was repeated in a programme on insect sounds broadcast on the BBC World Service: www.bbc.co.uk/programmes/p056tjzq

Through the latter, we’ve been able to make contact with a lecturer at York University, Dave Chesmore, who has been listening to a whole range of wood-boring insects as part of his research. We hope Dave will be able to bring some monitoring equipment to Knole to help us understand which objects are infested and also, when treated, if the treatment has killed all the furniture beetle larvae.

Meanwhile research continues on understanding the environmental response of the furniture as it is now in a controlled, lower-RH environment, and we are keen to see if there has been a change in AE patterns. The results will help us improve how we look after furniture and other vulnerable collections across the Trust’s houses.
Paint not only protects the exterior woodwork of our houses and estate buildings but also complements the stone and brick of their construction and, in some cases, provides a unifying colour which is steeped in tradition for a particular estate. It also reassures our visitors that our houses are well-maintained. For centuries, the use of lead-based paints protected our houses from the onslaught of rain, snow and even sunshine! The natural ageing of the lead paint provided a mellow quality which has been greatly admired by our building surveyors and curators.

However, recognition of the poisonous nature of lead to those who produced it or removed it during repainting, and ultimately its effect on the environment, resulted in new legislation in 2007 called REACH (Registration, Evaluation, Authorisation and restriction of CHemicals) which restricts the use of hazardous materials and promotes the safe handling of chemical materials. Whilst it does not prohibit the manufacture of lead and its use on historic buildings (Grade I or Grade II*), the lengthy registration process and its cost has meant that many suppliers no longer feel that it is economically viable to manufacture it. Those companies which supplied the Trust in the past are slowly working their way through stocks and only Hirst Conservation of Sleaford still manufactures it in small quantities.

Concurrent with this legislation, new regulations related to VOCs (volatile organic compounds) regarding the amount of organic solvent in linseed oil-based paints and other paints, has meant that many manufacturers are producing water-based paints. These two regulations have had a major impact on the types of paint that the Trust will be able to use on its historic exteriors.

However, all is not doom and gloom as the Trust had been testing paints for a number of years both on an in-situ basis at properties as well as formal testing through the Paint Research Association. These tests were initially to assess the performance of a variety of paints to see how they performed over a number of years, since it is a crucial factor in the cyclical maintenance schedules for our properties. In addition, it was felt that as an environmental organisation it was important to trial ‘green’ or environmentally friendly paints to assess their performance compared to linseed oil-based paints and synthetic paints (acrylics and alkyls).

In 2001, the availability of 13 garage doors at Buscot Park Estate provided a site for testing a number of oil-based, water-based, acrylic and alkyd paints. Although the results of the tests provided visual images of deterioration in relation to cracking, peeling, fading and rusting around the metalwork as well as a ranking order, the need for their redecoration provided a second opportunity to test the performance of the best performing paints from the 2001 trial. The 2005 trial took a more systematic approach by recording on a regular basis the amount of flaking, cracking of the paint film, deterioration around joints, rusting around metalwork, knot damage and change in gloss and colour (i.e. contrast between exposed and interior door surfaces). The following 13 paints were trialled: Sikkens Rubbol Satura (solvent-based urethane alkyd resin), Sikkens BL Opaque (acrylic/alkyd base), Tikkurila Valtti Teho (solvent-based alkyd), Permoglaze Acrylic Gloss (water-based acrylic), Farrow and Ball (synthetic oil-based), two doors for Sadolin Superdeck (water-based alkyd), Dulux Trade High Gloss (solvent-based alkyd), Dulux Weathershield Aquatech (water-based acrylic), Eco Gloss Paint (solvent-free organic paint), Potmolen Clarina (modified linseed oil-based), Osmo Country Colour (linseed oil-based) and Holkham (linseed oil-based).

Result of 2005 paint trials

By 2009, the results of the tests were compiled by Trust staff using a data sheet covering the categories mentioned previously and ranked the paints based on performance in the individual categories. When comparing the results of the 2001 trials with the 2005 trials, paints which performed well in the former trial did not perform as well in the 2005 trial. This was probably due to the fact that the latter trials were assessed on a more formal basis. The results of the 2005 trial were also assessed by volunteers who had no professional knowledge of paints as well as members of the Traditional Paint Forum. What became apparent was that the results tended to be subjective. Some members felt that cracking of the paint film was acceptable as a natural sign of ageing but colour change was unacceptable, whereas others could accept colour change but not defects in the paint film.

Garage doors provided our first test site. © National Trust/Christine Sitwell
Those paints which performed above average were Sikkens Rubbol XD, Dulux Weathershield Gloss System, Sandex Trade Flexigloss X-tra System, Dulux Weathershield Quick Drying Exterior Satin, Crown Quick Drying Flexarb Opaque Finish, Valtti Ultra, Butinox 3, Demi-Dekk Optimal/Ultimate and Marston and Langinger Exterior Paint. The results in detail are available on the Buildings intranet site (search for ‘paint trials’).

The final phase of testing is now underway and is jointly funded by the Trust and Historic England (formerly English Heritage). In order to replicate repainting procedures on our properties, the original panels were repainted with either the same paint or a different paint to assess further their performance and provide information about the compatibility of different paints.

Change is inevitable and, in this case, unavoidable due to regulations, but the Trust is meeting that challenge by assessing paint performance to ensure that our paint selections will be sustainable and economical. In addition to sustainability, we want to retain that visual character of lead paint, which is often difficult to describe but is so visually apparent in the paint surface, by finding comparable substitutes.

As a result of this trial and the new legislation related to lead paint and VOCs, it was decided to approach the Paint Research Association to undertake a new set of paint trials to assess performance by a recognised industry standard methodology. The Trust (lead partner), English Heritage, Historic Royal Palaces, National Trust for Scotland, Historic Scotland, SPAB (Society for the Protection of Ancient Buildings), Cadw (Welsh Government’s historic environment service) and the Traditional Paint Forum formed a consortium to fund the trials and agreed a list of 34 paints for testing which represented paints commonly used by members of the group as well as paints from the larger commercial manufacturers. The types of paints included water-based and solvent-based and included oils, alkyds, acrylics and alkyd/acrylic mixtures.

For each paint sample, four samples on pine panels were prepared (three would be exposed and one left unexposed to use as a reference). In 2011, the samples were placed on a rig and exposed to outdoor conditions for a period of three years. After the third year, it was agreed to extend the trial for an additional year to assess whether further deterioration occurred.

After four years, the panels showed noticeable deterioration, and the results ranked the paints according to those which performed above average, average and slightly below average based on overall results in cracking, flaking, blistering, mould growth, chalking, colour and gloss change.
Move, Teach and Inspire: how our knowledge of Attingham’s past influences us today

Sarah Kay, Curator, with additional information from Saraid Jones, Research and Interpretation Officer, Attingham Park, Shropshire

The Attingham Archive Cataloguing Project was a rare, possibly unique, example of a long-term collaboration between a National Trust property and its local archives service to catalogue a large proportion of the estate’s archive material.

The project spanned seven years, with the first exploratory and scoping meeting in March 2010 and the final project team meeting in March 2017. It had been identified as a Conservation Performance Indicator (CPI) objective, in line with the Trust’s standard procedure of depositing archival material at the relevant record office, providing both the best conservation environmental conditions coupled with access for all under managed conditions. The vast bulk of Attingham’s papers had already been deposited at Shropshire Archives in Shrewsbury in the mid- to late twentieth century (Attingham came to the Trust in 1947), but a large quantity of Lady Berwick’s personal papers and other estate documents remained at the property after her death in 1972. She had kept them in various pieces of furniture, trunks and boxes. Valiant inroads had been made into sorting and listing them a number of times, but none had been completed, nor were they computerised.

Funding was provided entirely by the property to the tune of £13–15,000 per year. That this amount was given to archive cataloguing was largely due to the recognition by the General Manager and other decision-makers of the benefits of archival information for enriching the visitor experience through better interpretation and staff and volunteer knowledge. Archives and research provide precious raw material and human, emotional ingredients, fundamental prerequisites of the Trust’s ‘Move, Teach and Inspire’ strategy. However, time, patience and expertise are needed to sift the gold from the pages, letters, diaries and documents, deciphering scrawling handwriting, understanding archaic terminology and foreign languages, recognising oblique references to family members and linking them all together into their inter-connected web.

Mission accomplished

This monumental task has now been achieved: 225 archive boxes of letters and documents have been sorted, numbered and catalogued onto the archival database CALM (Cataloguing software for Archives, Libraries and Museums). This may not sound many, but each box could contain several hundred individual items. By far the largest section was the 62 boxes containing c.30,000 letters relating to Teresa Hulton, who became Lady Berwick when she married Thomas, 8th Lord Berwick, in 1919 in Venice. She was a prolific letter writer all her life: the earliest letter was written at the age of five and her last in 1972. The quantity is staggering: in an age when letter-writing was the principal form of communication, she seems to have kept every letter she ever received since she was a child.

Lady Berwick was brought up in Italy (her mother, Costanza Hulton, was half-Italian), so much of her family correspondence is in Italian. With her English father’s artistic...
Lady B had a strange obsession about the past – not letting it go and recording everything. At the same time, it has been hard to gauge her true emotions: ‘Her diary entries are quite succinct, without emotion or much context’ and ‘there are hardly any emotional outbursts in the correspondence.’ Reading other people’s letters about her, many referred to her as saintly. Her letters of condolence were never trite, they were genuine – she crossed the divide between people, rich and poor.

We also learnt more about the personality of Lord Berwick. The sense that comes through from his letters to his wife and her sister Gioconda is akin to a female chatting to a girlfriend. He had a rare depth of interest in aspects of the female world, such as couture and dancing. It throws light onto Lord and Lady Berwick’s relationship; he seemed quite helpless in so many ways and

background and her own role as an Italian Red Cross nurse in the First World War, her acquaintances were cosmopolitan and, in most cases, life-long. As Ivar Romo, Shropshire Archives’ archive cataloguer, noted: ‘The scope of correspondents is unusual, being Europe-wide... She knew just about everybody who was anybody.’ There is, for example, fascinating insight into Czechoslovakia via her friend Maria Dobřenský and people’s reactions to Mussolini.

It has not always been a straightforward process, sometimes having to discern a person’s reflection in their correspondents’ letters, gradually absorbing the thoughts that they committed to paper, but Ivar has become intimately acquainted with the Berwick and Hulton families. He has produced 75 ‘pedigrees’ of people related to Attingham and is carrying out a complete transcript of Lady Berwick’s version of the courtship correspondence between her and Lord Berwick. ‘Lady B had a strange obsession about the past – not letting it go and recording everything.’ At the same time, it has been hard to gauge her true emotions: ‘Her diary entries are quite succinct, without emotion or much context’ and ‘there are hardly any emotional outbursts in the correspondence.’ Reading other people’s letters about her, many referred to her as saintly. Her letters of condolence were never trite, they were genuine – she crossed the divide between people, rich and poor.’

We also learnt more about the personality of Lord Berwick. The sense that comes through from his letters to his wife and her sister Gioconda is akin to a female chatting to a girlfriend. He had a rare depth of interest in aspects of the female world, such as couture and dancing. It throws light onto Lord and Lady Berwick’s relationship; he seemed quite helpless in so many ways and
she became almost a mother figure to him. Gordon Miller, the land agent, wrote mostly to Lady Berwick, not him. The cataloguing work has also revealed information on things as diverse as the Italian front in the First World War, the Adult Education College’s occupancy of Attingham from 1947 to 1974, and Lady Berwick’s penchant for silk pyjamas. On the 40th anniversary of her death, it was wonderful to be able to announce that the catalogue of her letters spanning her childhood to her honeymoon in 1919 was available on-line.

Over the life span of the project, evidence, quotations and snippets have been highlighted and celebrated in articles, exhibitions and guided tours of Attingham. As a result, the main protagonists are more rounded and fleshed-out, instead of mere two-dimensional characters. This has particularly been the case when the documentary is allied to the photographic archive, another cataloguing project, where the benefit has been mutual due to the cross-referencing possibilities of putting faces to names and vice versa. For example, the ‘Hidden Lives’ exhibition demonstrated the power of archives (both documents and photographs) to bring objects and stories to life; see box below.

Inevitably, there will be some loose ends and it is the nature of archives that more material emerges over time, but the catalogue’s structure can be expanded if required and information can be added. As the project’s life span draws to a close, Ivar has intimated, in true National Trust spirit, that he might consider tackling this on a voluntary basis... within reason!

Acknowledgements

The archive cataloguing project team was formed of a combination of Property and Archives staff and volunteers. From Attingham, the staff team compromised the Curator, Research & Interpretation Officer, Engagement & Conservation Officer, and Volunteers and Staff from Shropshire Archives. From Shropshire Archives: Mary McKenzie (Team Leader Archives) and Samantha Mager (Senior Archivist) and, of course, Ivar Romo and his crack team of archive volunteers, particularly Pam Metcalfe, Jayne Owen and Jan Williams. The unflagging dedication, skill and advice of all those involved in this project both past and present is gratefully acknowledged – we would not have succeeded in this mammoth task without them.

Enriching knowledge, interpretation and engagement at Attingham

Saraid Jones, Research & Interpretation Officer

The last Lord and Lady Berwick were fundamental to securing Attingham’s future and it was essential that we had a greater understanding of these two people and the history of their time. Ivar Romo from Shropshire Archives has been incredibly generous in sharing his knowledge from the catalogue work and we built up a great working relationship.

The archive project has fed into many different areas of work. Working with volunteers and staff from Shropshire Archives, sharing information and making decisions along the way has brought us closer to the material and given us a greater insight than we may have had if it had already been catalogued or catalogued to a lower standard.

At the same time, we also worked on the photographic archive project. Using Ivar’s family trees and names of friends to cross-reference helped immensely with the photo project. Here are a few other examples of where we have been able to use the new knowledge to create great visitor experiences:

Creating exhibitions such as ‘Hidden Lives: Royalty, Glamour and War’, ‘A picture tells a thousand words’ and ‘Whose Rooms: Whose expectations?’: Quotes from archive letters were placed alongside copies of historic photographs and objects from the collection to tell the story of an object or event. The quotes gave a more personal touch to key national events. Copies of archive documents also helped to evoke the time period of the topic. Ivar was able to share information on the personality of Lady Berwick which helped bring aspects of the exhibitions to life.

An authentic Christmas display: Material from the archive has been used to feed into the planning and display of the Attingham Christmas event. Rather than offering a generic 1920s experience, specific information on 1920s Attingham gave authenticity to our visitor offer.

First World War research: Having the material catalogued has made it much easier for our volunteers to carry out research into the First World War history of Attingham and its people. This has led to displays, tours and blog posts.

The Attingham Re-discovered project and collections research: The letters have sometimes revealed information on historic decorative schemes and other contents which has fed into the restoration and re-display of the mansion. As the project progressed, we would often ask Ivar and the volunteers to look out for certain pieces of information which would otherwise have taken us a very long time to find.
Erddig’s unconventional saviour: Philip Yorke III
Tracey Lavery, Conservation and Engagement Assistant, Erddig, Wrexham

Thanks to the man who saved Erddig, I work in a very special place, full to the rafters with beautiful things. I would like to give you an insight of how it came to be, and what this means to a Conservation & Engagement Assistant in the twenty-first century.

When Philip Yorke III inherited Erddig in 1966 on the death of his brother Simon, the house was in a very sorry state. The National Coal Board had caused subsidence by driving shafts underneath the house, and it was in dire need of restoration. Although its early eighteenth-century furniture was worth a small fortune, Philip refused to part with any of it, a long-standing family trait which turned out to be most fortuitous for me! I listen to visitors every day exclaiming their delight at seeing so many lovely things in one place, and which will always remain in the house to which they belong. I believe Erddig has a very special atmosphere and our visitors often agree.

Guardian angel

In contrast to his reclusive brother, Philip has been described by those who knew him as eccentric, gregarious and lovable. He described himself as a ‘non-smoking, non-gambling, vegetarian teetotaller’. He never expected to inherit and when he did so, at the age of 61, some may have thought he would sell up and retire to Spain, a country he loved very much. However, Philip was made of stronger stuff, and being the last Squire of Erddig turned out to be an appropriately peculiar ending to a very full and diverse life. Philip had had many jobs after being told the priesthood wasn’t for him owing to his less than conservative analysis of the scriptures. His career path included prep school teacher, security guard, groundsman and tour operator. His amateur acting gained him some notoriety, as he was fond of changing the script on-stage to keep his fellow thespians on their toes. He also had a host of actor friends who came to visit him at Erddig; one of his life-long friends was the actor Frank Thornton, Captain Peacock from Are You Being Served?

Philip’s many career changes in fact gave him a good grounding for life as Erddig’s protector. He camped out in the freezing, collapsing house, having booby-trapped the entire perimeter with tin cans, string and bamboo. The Coal Board was persuaded by Philip to shore up the worst of the subsidence, local people were drafted in to paint gates and do makeshift repairs, and, after much discussion with friends and locals, Philip made the decision to approach the National Trust.

‘The National Distrust’

Philip was determined to save Erddig, and its contents, and so, it turned out, was the Trust ... eventually. The negotiations were to last six and a half years. Philip was adamant that the house and all its contents
I have been a member of the Erddig House Team since 2014. No two days are the same, just as no two visitors are the same, and because of the Yorke family’s reluctance to part with anything, I have the pleasure of helping to care for one of the largest, most diverse and historically significant collections in the Trust.

Forty years ago, Philip Yorke stood on the steps outside the Entrance Hall and said to a friend, ‘It’s probably what my father would have liked … the old place restored to its former glory.’ He was always adamant about what he wanted for Erddig: for it to be restored and preserved as it once was, for generations to come. His personality and perseverance achieved what he wanted, and on 27 June 1977, HRH the Prince of Wales opened Erddig to the public.

As a former actor, Philip made appearances in several television programmes, and was very adept at plugging the restoration, and once the house opened, he acted as an unofficial tour guide, regaling visitors with stories. One of our long-serving volunteers, Barbara, knew Philip and remembers him as a kind and lovable man, who drove Trust staff to distraction, stepping over the ropes to show things to the visiting public. Shortly after the house first opened, Barbara asked Philip what he thought of it all, and he answered, ‘Do have one of these scones’; a National Trust scone, it seems, was all that was needed to give him satisfaction.

This is Erddig’s 40th anniversary, so we have some exciting installations to help us celebrate and help visitors appreciate the decisions and challenges that the last squire, and the Trust, had to face over 40 years ago.

Fuzzy Duck, a company specialising in interactive film, animation and e-learning experiences, will create a series of digital pieces in the outbuildings and within the house. Digital design technology, linking film and animation, will be used by 3D designers, graphic designers and software programmers, working across all disciplines of interactive multi-media. A series of audio-visual experiences will bring together elements from the archives to build a picture and take the visitor through the highlights of the house at its peak, through its gradual decline, and its restoration. Within the house, projections on the walls will reflect the worries and concerns of the last squire, as he measured the needs of the house,
while living in one room. The projections will show his thoughts, memories, mounting bills and potential solutions. The visitors will then be able to see the house through his eyes as they continue their visit, and feel empathy for the man and his decision. When encountering the installations, the visitors will be given an insight into the lifespan of the house, the responsibility of owning a piece of history, and the continued maintenance of its legacy by the Erddig team.

A man of vision

One of Philip’s quotes which I see every day is: ‘My only interest for many years has been that this unique establishment, for which my family have foregone many luxuries and comforts over seven generations, should now be dedicated to the enjoyment of all those who may come here and see a part of our national heritage preserved for all foreseeable time.’

Octavia Hill could not have put it better.

Framing the future: Sir Duncan Sandys and the conservation of places

Karin Taylor, Head of Land Use Planning

‘In the process of reconciling the old with the new, we usually have to make some sort of compromise. But it is not always a happy one. For we have not yet learnt how to marry preservation with progress.’

So wrote Sir Duncan Sandys in January 1967, a year which turned out to be pivotal in the conservation of place as opposed to individual buildings. The preservation of buildings had enjoyed statutory support since the 1944 Town and Country Planning Act introduced the concept of listing, but apart from the somewhat narrow definition of ‘curtilage’, protection did not extend far into the settings of important buildings, nor to areas of open space around and between them. Furthermore, the character of both urban and rural areas was being eroded by the demolition of unlisted, but attractive or vernacular, buildings.

Sir Duncan (later Lord) Sandys had a deep interest in architectural history. In 1957, whilst Minister for Housing and Local Government, he had founded the Civic Trust (now Civic Voice), causing some consternation to his Permanent Secretary, Dame Evelyn Sharp, who was appalled at the idea of her Minister setting up a ‘pressure group’ that she thought was bound to be a ‘nuisance’ to the department. In the summer of 1966 he sponsored a Private Member’s Bill which the following year became the Civic Amenities Act.

The 1967 Act required local authorities to ‘… from time to time determine which parts of their area are areas of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance…’. In 1972 a new Town and Country Planning Act was passed which gave teeth to the Civic Amenities Act.
by controlling the demolition of unlisted buildings within conservation areas and by making provision for grants towards conservation work.

By 1980 some 5,000 conservation areas had been designated. Many of these were in villages, but most research on the effects of designation related to urban areas. As a Geography undergraduate, I was intrigued at what difference, if any, conservation area designation had made to villages. For my dissertation I chose to study three villages in north-west Kent and to assess the impact of the 1967 Act on the villages themselves and on the perception of their inhabitants.

**Impact of the Civic Amenities Act**

Shoreham, Farningham and Sevenoaks Weald (more often referred to simply as Weald) are near Sevenoaks, Kent, within the Metropolitan Green Belt. All are now within the Kent Downs Area of Outstanding Natural Beauty (AONB), although at the time of my research only Shoreham and Farningham were covered by an AONB designation. In 1980 all three villages were of comparable size and quality, but the number of conservation areas in each village varied, with two in Shoreham, one in Farningham and none in Weald. By undertaking surveys of the detailed individual character of the villages, of their planning histories since the 1967 Civic Amenities Act was passed, and of local perception of conservation, I set out to determine what had happened in the subsequent 12 years. How far had areas of special architectural or historic interest been preserved or enhanced, in character or appearance?

Shoreham lies astride the River Darent, with the wooded chalk ridges of the North Downs rising on either side. In 1980 there were 32 listed buildings, all falling within the two conservation areas: Mill Lane at the north end of the village; and Church Lane to the south. The two conservation areas were separated by a narrow gap containing late nineteenth-/early twentieth-century mill workers’ houses and an extensive area of open space and allotments. Little recent development had taken place apart from three estates built in the 1960s. At the time I commented that the quality of new housing was variable, but generally lacked sympathy with the surrounding buildings. No new building had taken place, however, since the conservation areas had been designated in 1969, and in 1979 a character appraisal had been undertaken by the county council which showed that there had been a decline in the character of the area. This was confirmed by my own observations, with a number of derelict buildings, including some of historic interest, unkempt areas, clutter and unsympathetic exterior decoration: ‘one particularly prominent building has been painted bright pink, a colour which is totally out of context in Kentish villages’.

Sevenoaks Weald lies two miles to the south of Sevenoaks, at the foot of the Lower Greensand ridge. Unlike Shoreham and Farningham, it is not a riverside village, and in 1980 there was no conservation area in the village although it had an attractive village green and, like the other two, a number of characteristic Kentish buildings such as timber frames with brick infill and white weatherboarding. Being an ‘Excepted Village’ within the Green Belt, some recent development had taken place, although this had been through infill development rather than outward expansion.
My research in 1980 revealed that the designation of conservation areas did not always result in the preservation or enhancement of character and appearance and that, likewise, non-designation did not necessarily lead to the destruction of character. It was largely up to local people to preserve character by maintaining their property and to builders to continue the vernacular tradition as far as possible. The Local Planning Authority appeared to have relatively limited powers to promote preservation and enhancement. A survey of local perception demonstrated that public awareness of conservation areas was low. Why then, I asked myself, were they designated? Were they necessary?

But did it work?

Thirty-five years later, the 50th anniversary of the Civic Amenities Act has led me not only to revisit these questions, but also to revisiting Shoreham, Farningham and Weald. In the meantime, the research I carried out when I was 19 had had a profound effect on my life, influencing me to train as a planner which meant that in turn I designated conservation areas myself and was able to play a direct role in writing policy and controlling and influencing development in and around them.

My return to the three villages revealed them to be essentially the same as they were in 1980, and some research on Sevenoaks District Council's website showed that conservation policy had been strengthened; the two conservation areas in Shoreham have been joined together and enlarged; Farningham's conservation area has been extended; and a new conservation area has been designated in Weald in the area I had identified as being of special character. Listed buildings in all three villages have been well-preserved and all unlisted buildings of local character have been retained, with remarkably little in the way of inappropriate or unauthorised alterations. The exception to this is in the area of mill workers' cottages in Shoreham. In 1980 these were excluded from the conservation area; in 2017 they are within the enlarged conservation area, having in the meantime suffered from an outbreak of plastic windows, satellite dishes, porches and dormer windows now detracting from the area's character compared to how it was before. Farningham has experienced major enhancement since 1980, particularly in relation to the sensitive renovation and redevelopment of all of the derelict and unsightly areas, the removal of much clutter – and the repainting of the pink house!

Well done, Sir Duncan

Pressures of my ‘day job’ and family life in another part of the South prevent me from repeating an in-depth analysis along the lines of my undergraduate research. However, my rapid review of the effects of conservation area designation in three Kentish villages has demonstrated to me that conservation policy is alive and well, that special architectural or historic interest has indeed been preserved or enhanced, and that the villages have benefited from the inspired work of Sir Duncan in 1967. Other planning controls, including landscape designations and Green Belts, have no doubt contributed, and the dedication of Planning and Conservation Officers over the years, with the support of local communities and residents, has ensured that the tools of planning policy have been used to protect the essential character of these places.
Monitoring butterflies on National Trust land: successes, failings and targets
Matthew Oates, National Specialist on Nature, and specialist in butterflies

From out of tiny acorns, mighty oaks are indeed born. The UK Butterfly Monitoring Scheme (UKBMS) was launched at the start of the long hot summer of 1976, after three years of trials at Monks Wood Experimental Station near Huntingdon, and the use of a punch-card computer. The aim was to produce a butterfly equivalent of the successful Common Bird Census. Thirty-four wildlife sites contributed to the scheme that memorable summer, mostly national nature reserves. No one could foresee the scheme's success.

At a symposium staged last November to celebrate the scheme's 40th anniversary, attended of course by a Views reporter, it was announced that butterflies were being monitored on a staggering 2,436 sites UK-wide. Over 27 million butterflies had been counted, and the records all fed into and processed by a sophisticated database. Butterfly enthusiasts, mainly volunteers from the charity Butterfly Conservation, had walked some 850,000km whilst counting butterflies. The data had been used in 148 peer-reviewed scientific papers, including papers on long-term population changes and on climate change. Comparable monitoring had sprung up in 22 other European countries, and the methodology was now threatening to go global.

The main UKBMS method consists of walking a fixed route in suitable weather each week throughout the butterfly season, identifying and counting each butterfly which comes within an imaginary box around you. This is known as the transect method. The frustrations are significant, notably poor weather and disturbance by other visitors, yet counting butterflies is decidedly addictive. Indeed, walking the 'butterfly transect' is the highlight of each summer week for many of the country's butterfly enthusiasts, because no two days in butterflying are ever the same, let alone weeks, months or years. This is citizen science recording at its best.

Butterfly monitoring has been so successful in this country that the government adopted butterflies as official indicators of environmental health, alongside the likes of farmland birds. Butterflies are therefore on the political radar – and they need to be for their declines have been horrific. Our scarcer butterflies are now all but restricted to protected sites. Without such protection we would not be talking about butterfly declines but mass extinctions, such was the devastating impact of late twentieth-century farming, forestry and development.

Status of butterflies on National Trust land

Of course, the Trust owns many of the richest butterfly sites in England, Wales and Northern Ireland, including one or two of the original 34 UKBMS ‘transect’ sites. All bar one of the 59 resident UK species occurs annually on Trust land, the exception being the chequered skipper which is found only in Scotland. The Trust fully recognises – and celebrates – its responsibilities here.

Recently, the Trust commissioned Butterfly Conservation to review the performance of butterflies on our land, on
behalf of the UKBMS partnership. Its findings are fascinating, and mostly hugely positive. The good news is that, in general, the scarcer butterflies are performing statistically (though not radically) better on Trust land than off it. Now this is interesting, because as these species are found almost exclusively on Sites of Special Scientific Interest, the fact that their performance on Trust land is generally better than that on land managed by other conservation organisations means we must be managing these habitats particularly well (though, this is not a competition, but a wildlife conservation partnership). Species such as Adonis blue, Duke of Burgundy and marsh fritillary are faring better on land that we manage. The picture for these scarcer species is by no means perfect for us. Butterfly Conservation’s review found that a few of the rarer species are doing less well on our land than off it, including some top national rarities. We need to improve the performance of heath and high brown fritillaries on our land – and we are already making monumental efforts for these two endangered species. Without such efforts, we could easily have lost them altogether. Also, and interestingly, the white admiral is faring worse on our land than off it, indicating that we need to adopt more positive management in our woods and forests for this denizen of ordinary countryside. This is a simpler target butterflies away from protected sites, ‘Wider Countryside Butterfly Survey’, to encompass sizeable amounts of Trust land. However, only a dozen of these 89 squares hold significant amounts of Trust farmland, a grossly inadequate sample size.

Working with Butterfly Conservation, we have set up the National Trust Farmland Butterfly Monitoring scheme, requiring recording on only two or three days during the main butterfly season of June to mid-August. Recording takes place in 1km squares which are determined by random number selection. Of the 850-odd squares which have been recorded, 89 encompass sizeable amounts of Trust land. However, only a dozen of these 89 squares hold significant amounts of Trust farmland, a grossly inadequate sample size.

Farmland butterfly monitoring
In 2009 Butterfly Conservation launched a second monitoring scheme, called the ‘Wider Countryside Butterfly Survey’, to target butterflies away from protected sites, in ordinary countryside. This is a simpler scheme, requiring recording on only two or three days during the main butterfly season of June to mid-August. Recording takes place in 1km squares which are determined by random number selection. Of the 850-odd squares which have been recorded, 89 encompass sizeable amounts of Trust land. However, only a dozen of these 89 squares hold significant amounts of Trust farmland, a grossly inadequate sample size.

Working with Butterfly Conservation, we have set up the National Trust Farmland Butterfly Survey, using a new set of 1km squares, at least 70% of which consist of Trust farmland. The uptake from properties on this new scheme has been impressive, not least because squares only need to be recorded between three and six times a summer. This means that we will shortly know whether so-called farmland butterflies are faring any better on our land than off it. More purposefully, we will be able to monitor how our LON ambitions are benefiting butterflies on our farmed land.

Towards a better future
People love butterflies, and society values them. Butterflies can teach us much about our environment: as Dr Keith Porter stated at last November’s symposium: ‘What happens to an insect – a butterfly – today will affect your tomorrow.’ Our butterflies are useful emissaries of wider environment changes, negative and positive. In consequence, butterfly monitoring has usefully influenced environmental policy at UK and European levels. The Trust has achieved a lot for our scarcer butterflies, especially over the last 25 years, but it can do better, and must, and will.
At the start of spring I was tasked with identifying an impish-looking animal that was caught on a camera trap near Malham Tarn in North Yorkshire. After freeze-framing the video hundreds of times, the best guess of mine and colleagues at the Trust was that it was a polecat or a polecat/ferret hybrid.

Both are about the same size, have similar predatory preferences and both fulfil a similar role in the habitat. It’s very difficult to distinguish them without genetic testing, yet the hybrid is generally considered to be an introduced pest while the polecat enjoys legal protection.

Since starting my placement at the Trust, work like this has challenged my attitudes towards the practical and intrinsic value of a species in a habitat, particularly where invasive non-natives are concerned. This has made me more eager to promote a conversation about one of nature’s biggest tests, and perhaps most significant opportunities.

Invasive non-native species explained

Any plant or animal that has established only with the aid of human activity is considered to be non-native. Their capacity to affect, in a detrimental way, the health of people, native wildlife and the economy defines them as invasive, with up to 300 of the 2,000 non-natives in the UK having a significantly damaging impact (see www.nonnativespecies.org).

These species have arrived as stowaways in suitcases and ships, escapees from gardens and via many other pathways. Some of the most prolific are hugely damaging and costly to manage, with £1.7 billion spent per year in the UK. This cost includes the bill for their management and repairs for damage to infrastructure or the habitat of native, naturalised or long-settled species. A great case for the eradication of as many of them as possible, it seems.

There are, however, plenty of voices in the world of conservation that claim excessive control of these species would only worsen the state of nature. Their reasoning is that most invasive species are as damaging as they are because they are successfully exploiting an already hugely modified environment.

Challenges in control

Defra's framework for non-native species acknowledges this degradation, with a stringent approach to prevent the establishment of those that might be a threat to industry or native and long-established species. This includes taking punitive action against anyone proven responsible for the introduction of a particularly harmful species.

These prevention strategies are backed up by a growing knowledge base of the potential pathways to non-native species introduction. Research has been carried out to identify pathways on a species-by-species basis, including stress tolerance and stowaway ability in a variety of different environments. Reports, such as State of Nature 2016, compile and analyse the greatest risks, such as habitat fragmentation and the change in land use, and how this might facilitate the success of invasive species.

Where these species already exist, however, efforts are instead going towards the most practical plan for eradication and control.

The Trust is working with the RSPB and many other organisations to start the push-back against invasive mammals on small islands where they compete with, and are aggressive to, birds that nest on the cliffs and in burrows. Any mammals present, especially grey squirrels and brown rats, would have arrived as stowaways on ships for sightseeing and supply. It is an unfortunate probability that their presence may cause local extinctions of some valuable bird species, forcing a choice between whether they or the birds should critically occupy the space.

Other organisations focusing on non-native invasive species are looking at the capacity for biological management. The Centre for Agriculture and Biosciences International (CABI) is running experimentation programmes to test the suitability of species for the control of pests, without the controlling species itself becoming invasive (as happened in the case of the cane toad in Australia). The project’s outcomes are encouraging, with a psyllid species already tested and approved for release by Defra and the Welsh government for the deliberate and effective control of Japanese knotweed.

Ultimately, CABI is also helping to
illustrate that the primary factor in the success of invasive species lies in the fact that they have ‘outrun’ their natural predators by hitching a ride on international transport. These projects have also shone a light on the principle that a species has a harder time becoming established after introduction if it has no/few allies from its original range. These allies facilitate the success of other invasive species from the same region by creating more complex and suitable habitats.

On course for a meltdown?

This may be what’s happening in many habitats in the UK. The invasion of many species from the Ponto-Caspian region in eastern Europe, and its surrounding aquatic and marine habitats, is seeing the disruption of a range of local ecosystems. A study published in 2014 by Belinda Gallardo and David Aldridge attributes this to the aptitude of these species for creating better conditions and environments in which each of them can more easily thrive. An example would be the zebra mussel and its aptitude for increasing water clarity and therefore light penetration deeper into the water. This can cause the proliferation of species more suited to these conditions, but a negative impact on native populations.

The study goes further to assert that this could cause acceleration in the rate of invasions from this region, and lead to a compounded damaging effect on any ecosystems affected. This is a well-known occurrence across some of the water bodies of the United States, which are already feeling the consequences of an invasional meltdown, and are being severely impacted by the interception and retention of nutrients from the water by zebra and quagga mussels, as mentioned above.

The vulnerability of our ecosystems invites pessimism when looking at conservation efforts, but it can be argued that the successes of new settlers might also be a cause for optimism.

Not a zoo

To focus on the conservation of nature, at least a little positivity and trust must be granted to nature’s dynamism and the fluidity and movement of species. Many ecologists are now accounting for this, and are beginning to argue against the eradication of invasive species. This is an opinion that has been gaining traction for as long as non-native invasive species have been considered: Fred Pearce, James Lovelock and environmentalists such as Edward Abbey are proponents, arguing that for true wilderness to be achieved, the wild should be allowed to be just so; see their popular writings: The New Wild, The Revenge of Gaia, and Desert Solitaire respectively. If a philosophy like this were to be adopted, it could see the wilding of Britain occur more naturally through a greater acceptance of change, while care is still taken of the species we most identify with. This kind of attitude and subsequent actions, however, would not be without a great deal of effort in research and development. Management plans for habitats of a variety of sizes and complexities would need to incorporate the compatibility of some species; even to the extent of considering introductions of larger predators that we haven’t seen on these shores in recent history, or ever before.

But with these developments, the Trust, and everyone invested in the conservation of nature, could work with the tide rather than spending time and resources in trying to build barriers against it.

Many of the most invasive species are expressing functionality in a heavily modified environment, and just lack any mechanisms for control. Ultimately, I think the main aim of conservation in the Trust should be about balance, where invasive species can be kept in check by predation, while still being allowed to feature in a vast and varied stock of wildlife in the UK.

To use an old adage and a quote from Edward Abbey: ‘Balance is the key’.

References

Pests and diseases on the move

Simon Toomer, Plant Conservation Specialist

Our gardens, parks and countryside have been greatly enriched over the last few centuries through the introduction of thousands of exotic species of plants. When it comes to trees, the British Isles are especially poorly endowed, with only around 30 native species – Japan, by comparison, has 24 species of maples alone! No wonder therefore that we have ‘borrowed’ liberally from the botanical resources of other countries to provide greater aesthetic diversity in gardens, and enhanced production for forestry and horticulture. From the days of the pioneering plant hunters, trade in plants has become big international business with an ever-increasing range of plants available for consumers. But alongside all the benefits of botanical globalisation, there are many downsides; some species, such as Japanese knotweed and Himalayan balsam, take too well to their new home countries’ climatic and biological conditions, and become damaging invaders. Even where the plants themselves provide no threat, they may provide a means of transport for harmful pathogens or pests.

Accelerating change

Plants and the pests and diseases that live on them evolve alongside each other. Neither is unchanging or immobile, and part of the evolutionary process gives plants a level of adaptability to combat evolving and mobile pathogens. Even without human intervention, it is likely that climatic or geological changes have always provided impetus for disease organisms to increase rapidly in their range and cause epidemic disease in plants. However, human trade and activity have greatly accelerated the potential rate of spread to a point that undermines the ability of plants to adapt. Natural barriers, like oceans, mountain ranges or unsuitable habitats, can be bridged by hitching a ride on container ships, planes, trains, road vehicles and other means of passage.

The inadvertent import of pests and diseases on plants is not a new thing: the organism Phytophthora infestans that caused the devastating potato blight in Ireland in the mid-nineteenth century is thought to have been introduced from South America in 1840. But the rate, range and direction of flow of pests mirror overall trade in other goods. Wooden crates and pallets, as well as wood products used for packaging other goods. Wooden crates and pallets, for example, have been responsible for transporting to our shores damaging pests such as the Asian longhorn beetle. When the US army landed in France towards the end of the Second World War, they brought with them ammunition loaded in crates made from the wood of the American plane tree (Platanus occidentalis). It is thought that, via the crate wood, they also brought the fungal pathogen Ceratocystis platini that causes fatal plane-tree wilt disease in hybrid or London planes. Long stretches of the UNESCO-listed Canal du Midi, famed for its iconic plane trees, have been devastated by the disease with an estimated 15,000 trees (about 35%) lost in the last 10 years alone.

In more recent years, examples of tree diseases such as ash dieback (Hymenoscyphus fraxineus) and ramorum disease (Phytophthora ramorum) have demonstrated the potential for enormous ecological and landscape damage and cost through the introduction of plant pathogens. New disease or pest organisms such as these arrive at our shores to find existing plant populations with little adaptation to tolerate or resist them. The fungal pathogen that causes plane-tree wilt coexists with trees in its native US whereas European species were quite unprepared. As well as having access to a vulnerable new host range, fungal, bacterial and viral agents often demonstrate a tendency to interact (hybridise) with similar ones encountered through movement, giving rise to potentially more pathogenic varieties. Many of Europe’s most valuable alder-dominated riparian forests, for example, have been devastated by the pathogen Phytophthora alni, first identified in the UK in 1993. Rivers have provided an amenable transport network for the spread of the disease, now considered to be a complex hybrid of three or more species of unknown origin. As the global ‘flux’ of these organisms has increased, so have the opportunities for such interactions.

Breaking the chain

Much of the effort spent tackling plant pests, diseases and invasive species revolves around preventing their movement. This can be at a global level through border inspections and trade restrictions or at much more local scales, even within an individual garden by preventing entry to diseased plants or cross-contamination through tools or machinery. At an international level, movement restrictions on plants may give rise to conflict with the principles and economic benefits of free trade. When ash dieback first arrived in the UK, fingers were immediately pointed at imported trees from the Continent with calls for greater trade controls. Our lack of ability to impose such restrictions unilaterally was even used as a justification for Brexit!

Chart 1: Number of pests on the UK Plant Health Risk Register; October 2013 to August 2016. © National Trust/Simon Toomer
It is well recognised that plant diseases pose enormous risks to the conservation of our natural cultural heritage, but they can also put a great burden on local or national finances when it comes to paying for eradication or control. Outbreaks of diseases such as Phytophthora ramorum can necessitate large areas being cordoned-off to visitors and result in reduced visitor enjoyment and return visits. Valuable garden and heritage landscapes, such as box parterres or Brownian treescapes, can quickly be devastated by diseases such as box blight or cedar wilt, and may cost hundreds of thousands of pounds to restore.

In response to threats such as these, we are increasingly taking a proactive and risk-based approach to conserving gardens and their landscapes. Finding suitable alternative species and ‘hedging our bets’ through diversification are both useful elements of this approach. Box is a good example where we consider a range of replacement species and cultivars with visual characteristics similar to box. We can't predict whether some of these species may become victims of (as of yet unknown) future diseases, but greater variety should provide some resilience at a landscape level.

At the highest policy level our Plant Health Instruction is explicit in requiring quarantining and inspection of plants brought into our gardens and parks. To measure performance in managing biosecurity at a property level, the Plant Health Standards and associated awards are now included as measures within CPI objectives. But these are just the formal elements of what needs to be part of our behavioural culture in assessing risk and adapting practices.

For more information, follow guidance on the Trust’s intranet pages on plant health or issued by Defra on its Plant Health Portal (https://planthealthportal.defra.gov.uk/).

The body responsible for enforcing EU legislation in England and Wales, on behalf of Defra, is the Animal and Plant Health Agency (APHA). The agency uses a range of measures including Plant Movement Notices, Quarantine Pest designation, Protection Zones and other legal ‘instruments’ to prevent import and movement of diseases and pests. A recent example of the use of one of these devices is in the attempted restriction of sweet chestnut blight (Cryphonectria parasitica) discovered recently in south-west England. This fungal pathogen is a listed ‘quarantine pest’ and a restriction order is now in place banning the movement of trees or plant material of sweet chestnuts from affected areas.

A useful ‘barometer’ and source of reference for plant diseases is the UK Plant Health Risk Register (https://secure.fera.defra.gov.uk/phir/riskRegister/). In recent years there has been a dramatic increase in the number of organisms causing concern; see Chart 1. The pest types are shown in Chart 2.

### Playing our part – the Trust’s role

The National Trust is involved in the movement of plants and plant-based materials through a range of activities. Gardens and plant retail outlets, in particular, buy in plants and growing media, but responsibility is not confined to horticultural activity. Many events use plants for display, and woodchip may be used to surface paths or help mitigate ground damage in car-parking areas. Soil may be imported for landscaping projects and contractors can transfer diseased material on machinery. There are many potential pathways for spreading plant diseases both into and from our places, and awareness of this fact should be part of every property’s list of essential risk assessments.

---

Top: Plant and landscape heritage, like this cedar of Lebanon planted by ‘Capability’ Brown at Croome, Worcs, is at risk from new pathogens. © National Trust Images/Chris Lacey

Above: Miles of box hedging and skilfully nurtured sculptural topiary could be lost to box blight, such as this at Hidcote, Gloucestershire. © National Trust Images/Andrew Montgomery

Left: Chart 2: UK Plant Health Risk Register entries by pest type. © National Trust/Simon Toomer
The Plant Conservation Centre (PCC) was set up over 30 years ago to help conserve the botanical diversity held within Trust gardens, parklands, countryside and coast. Since 1982 over 45,000 plants have been grown and sent out to places across England, Wales and Northern Ireland. By propagating rare, unusual, threatened or historically significant plants and returning them to properties, outdoor staff receive plants that are botanically or culturally special, grown peat-free, to replenish the landscapes they look after.

We propagate a huge range of plants; from the scarce and diminutive Galanthus ‘Bill Malecki’ to the critically endangered Nothofagus alessandrii from Chile. Often our work is planned many years in advance, but it can also be an immediate response to an event such as the catastrophic storm of 1987 in which thousands of trees were uprooted in one night of extreme weather.

Trust gardeners and rangers send material to our purpose-built, state-of-the-art nursery where we can propagate and grow a wide range of plants using whichever method works best, from scaling tiny bulbs to grafting apple trees.

Saving plants in the lab

We work closely with Duchy College in Cornwall to save species at risk from diseases such as Phytophthora, particularly rhododendrons which are an important part of many gardens.

Plants can take up to five years to produce at the college’s micropropagation laboratory. Flower buds from infected plants are rigorously cleaned in a 70% bleach solution and dissected before being placed in sterile agar gel in a sealed plastic pot and kept in a temperature- and light-controlled growth room. As the plantlets develop, the agar is enriched to stimulate root production. Once the plantlet has put on sufficient growth to be deemed viable, they are delivered to the PCC where they are placed in a lightbox for six months to develop further fine roots. They are then potted up into 6cm bark pots; this is a very delicate procedure where the risk of loss is highest. As the plants get bigger, they move through the nursery for up to five years, and are then sent out to gardens.

Micropropagation is the only way to produce healthy plants from infected material and has been a lifeline to gardens affected by Phytophthora. Many historical and impressive specimens, such as the original Rhododendron macabeaeum from Trengwainton, have been reintroduced to gardens following soil improvement programmes, and show improved vigour and some resistance to reinfection.

Many types of plants can be micropropagated, such as historic Rheum (rhubarb) hybrids from the kitchen garden at Clumber Park. As threats to plant health become common and widespread, micropropagation will doubtless be increasingly used to ensure the continuity of our plant heritage.

Grafting – a rare skill

At the PCC we graft ornamental trees and shrubs, as well as the ever-popular fruit trees, throughout the year. Most grafting is done in the winter when trees are dormant; this year we produced over 1,600 in six weeks.

The grafting process depends on having suitable rootstock and healthy, viable scion material – material from the original tree which determines the identity of the grafted plant. We get most of our rootstocks from commercial growers who guarantee uniform, healthy whips. Most growers deliver in the late autumn so we need to get our order in by the end of August to ensure we have everything we need. We also grow many of our own rootstocks because species which were once commonly available commercially have become impossible to source from reputable suppliers.

Once the rootstocks are on site we request scion material from properties. The timing depends on the weather; if it’s too warm, the trees won’t be dormant and grafting is unlikely to be successful. When we receive material it is tested for Phytophthora and soaked in a bleach solution in our clean room before being grafted. The tree will then spend between two and six weeks on our hot-pipe grafting bench while the union callouses. Last year we installed a second unit, pushing up our capacity to around 1,700 plants at a time; this was essential to complete all the requests within the ever-shortening time available to us; Chris Trimmer, Nursery Manager, recalls: ‘Thirty years ago I could graft from December through to the end of March; nowadays, due to milder winters or unusual weather conditions, I need to plan exactly what I’m doing in the next month.’
we are lucky if we get a six-week window of opportunity.' Using a hot-pipe system reduces the time it takes for unions to callus over; with apples this can be reduced from several weeks to as little as ten days.

**Location, location, location**

Our propagation house is home to up to 2,000 grafted trees during the spring, with up to 5,000 cuttings year-round on our four mist benches and a bespoke lightbox. During this stage it is essential that pests and diseases are not allowed to become established while the young plants are vulnerable so they are cared for individually. The plants soon outgrow the space in the prop house and are potted on and moved to our glasshouse, one of our polytunnels or the outdoor shade area. Apples are often ready to be sent out in the same year, but other plants can take several years until they are ready to go it alone. Plants that remain for more than one season are potted up in the spring and moved through the nursery until they are large enough to be delivered to properties and planted out.

**Playing our part**

The PCC is a bio-secure entry point for plants from other organisations such as the Royal Botanic Garden Edinburgh (RBGE), Kew and Bedegbury Pinetum; plants are grown on, propagated if necessary, and then distributed to Trust places. Often these plants are of international significance, such as the Cedrus libani seed collected by RBGE from threatened stands of trees in the Lebanon, and grown on at the PCC. Many of these trees have been planted in parklands as part of the ‘Capability’ Brown 2016 celebrations. By sharing plant material with our conservation partners, we are helping to fulfil the UK’s commitment to the Global Strategy for Plant Conservation (a programme of the UN’s Convention on Biological Diversity) which hopes to halt plant extinction around the world.3

**The future**

On site we are continuing our commitment to reducing energy consumption: a solar thermal array provides hot water and 30 solar panels on our potting shed provide on average 38 per cent of our electricity, powering our heated mist benches, ventilation fans and the equipment in our office. We collect rainwater from our buildings which is filtered and used on the nursery and in the office, which are completely off mains.

We are exploring ways in which we can play our part in delivering a ‘healthy, beautiful, natural environment’, not only by continuing to propagate significant plants in Trust gardens but by assisting more rangers with the plants in their care, in particular the British species which are threatened by habitat degradation, climate change and severe weather events, and pests and diseases.

We hope to continue to have the flexibility and expertise to adapt our services to the needs of all staff who look after plants and to help them in their conservation efforts as new challenges present themselves; our aim is to ensure that the incredible diversity of plant life in Trust care is conserved for future generations to enjoy.

**References**


Trees for the future and woodland resilience: some thoughts
Ray Hawes, Head of Forestry

There was a time not so long ago when a newly planted tree, providing it survived the first few years, would, in the absence of a catastrophe, continue to thrive for many years until it was felled for a purpose or declined gently through old age. We also gave little thought to 'woodland resilience' as we were confident that we could manage our woods, including the species of our choice, to achieve the results we wanted. Sadly, this is not now the case, and the number of tree species that we can no longer have confidence will survive or be able to contribute specific values is increasing, for various reasons, and we can only guess at what further problems might arise in the future.

The impact of threats, whatever their form, are exacerbated by their cumulative effects. In no particular order, the current foreseeable threats to tree survival or aesthetic qualities are as follows:

- Diseases – fungi, fungal-like organisms, mildew, bacteria, viruses
- Climate – extremes and also general increasing temperatures, drier and wetter periods
- Invertebrates – beetles, moths, leaf miners, gall wasps and others
- Vertebrates – grey squirrels, domestic and wild stock, including increasing deer populations, rabbits, voles and occasionally beavers

Land management – including agricultural practices and infrastructure developments – should generally be under our control so not covered here but still a threat.

Although there are many known pests and diseases already present in the UK or likely to arrive, it is of concern there will also be new threats.

The Trust has been looking after trees for a long time: the black bands on the trees in Clumber Park’s Lime Tree Avenue were put there in the 1970s to curtail insect damage using thick grease. Planted in about 1840, the double avenue of 1,296 trees is almost two miles long, making it the longest such avenue in Europe. © National Trust Images/Andrew Butler
be unknown ones which are not currently considered which could arrive or be formed by the hybridisation of two or more existing ones. So what does this all mean when we are considering tree planting or regenerating woodland, and particularly when planning to replace a specific arboreal feature such as an avenue, tree clump or even individual parkland trees?

Thinking ahead

Clearly it is not sensible to plant tree species that already have specific UK-established pests and diseases likely to kill them or seriously compromise their health. Among these species would be common ash, horse chestnut, Japanese and hybrid larches and vulnerable elm species.

There are also a number of species that are facing serious threats, some of which have only recently been recognised; these include sweet chestnut, London plane, Corsican and Scots pine, juniper and Atlantic cedar.

Unfortunately there are also a number of commonly planted native and introduced trees that can be seriously affected by the bark-stripping habit of grey squirrels, particularly beech, sycamore, hornbeam, oak species and sweet chestnut. Although there are ways of controlling this type of damage, it requires a very long commitment of resources to achieve satisfactory results. Control/prevention of damage by animals that do not climb is relatively easy and fortunately beavers are not yet of major concern, but in the future...

So what are we left with to plant if we want large, impressive, long-living specimens – a few limes, monkey puzzle, giant and coastal redwoods, a couple of poplar species and a few other exotics? Fortunately, despite the gloomy situation I have depicted, I do not think that we need give up on many of the species that have been planted in the past to create the features we now cherish, but there are some principles worth taking into account:

- Choose trees which will give the form and size for the outcome/feature wanted.
- Make sure that trees are only planted in conditions where they will thrive, taking account of their individual requirements such as soil types, pH, etc., and including predicted future conditions – the right tree in the right place at the right time!
- If a particular form of tree is required, make sure that it is planted in a way which will achieve this using other ‘nurse’ species if necessary.
- If wildlife is the main objective, identify which alternative tree species have the closest ability to support the required wildlife – existing or desired – and provide a similar habitat to the tree species under threat, e.g. ash.
- In Ancient Woodland Sites, no new non-native trees must be planted without consultation with relevant advisers and overall agreement.
- Even if the plan is to replace a single species feature such as an avenue, consider the possibility of using more than one suitable species planted in such a way that if one fails then the other/ others will provide options to manage for the desired result.
- Only acquire trees from sources that are reputable, from known and traceable origins and grown in the UK – or preferably grow our own. This will give the best chance of success and crucially is the best way of ensuring that we are not the unwitting and embarrassed source of introducing yet another pathogen!
- Do not neglect formative pruning when the trees are young enough to respond favourably – this is a significant reason why many trees never achieve their long-term potential, and pruning older trees leads to problems.
- Protect trees from browsing, grazing and mechanical damage.
- Looking after existing trees should be a priority – their continued survival is the best means of supporting their associated wildlife, preserving aesthetic features and may possibly be a source of disease resistance/tolerance.

Woodland resilience

Following these principles will give us the best chance of providing attractive trees and arboreal features for future generations to enjoy in our gardens, parks and the wider countryside. They can also apply to woodlands when regenerating existing ones and creating new ones. But what about general woodland resilience? Much has been written about this in the past decade, with particular emphasis on the effects of predicted climate change. One suggestion to mitigate for this is to use provenances of native species from areas where the current climate is similar to that predicted for the relevant UK location. This generally means obtaining seeds from places that are further south, 2 to 5 degrees is suggested, and may possibly have merit for some species, such as obtaining pedunculate oak from the middle of France.

However, the main threat to tree survival is more likely to be pests and diseases, so resistance or tolerance to these will offer the best prospect. Planting trees selected for specific attributes such as climate-change anticipatory adaptation will not necessarily provide this resistance, but managing to achieve abundant natural regeneration of a number of desirable species should attain at least a certain level of genetic variation and therefore overall tolerance/resilience. Producing woodlands with a diverse age, structure and species mix, including genetic variation, should be the aim, even if we are often starting from a less than ideal situation, particularly when we have woods and plantations that have been created and managed primarily for productive aims. All woods are different and therefore need individual approaches to develop them as we want, but there are fairly standard practices that can be modified to suit most situations. Providing sufficient space for the desired trees at the right time is crucial. To summarise one of the primary principles of our woodland policy, we should work with natural processes and not fight nature, intervening only where we have to and using management that mimics nature unless we can improve on this – sometimes nature needs a hand to achieve our goals. This can be quite dramatic, and nature has yet to learn how to create a formal avenue!

What now?

I think the key message is that because of rapidly changing conditions we cannot just continue to replicate what has gone before. Careful consideration is required when planting trees in all situations and we must manage woodlands in a way that maximises the chances of achieving our long-term aims. Fortunately the Trust has some very knowledgeable tree people who can help with this, and with collaborative advice we should not be afraid to try a bit of experimentation, as our predecessors did. If we are seeking overall resilience for our trees and woods, then we must not be too prescriptive and allow for a certain amount of individual ingenuity to maximise variation. We also must be open to new ideas, so if you have any, let us have them as they might just be the answer we are looking for!
The New Forest is one of the best preserved and extensive pieces of lowland heathland in western Europe, which in some areas hasn’t changed for thousands of years. Since time immemorial it has been carefully managed by the local farmers, known as commoners, whose grazing livestock and traditional farming techniques have produced a rich landscape teeming with wildlife.

The diverse mosaic of interconnecting rare habitats supports some of the most protected wildlife in Europe, such as the Dartford warbler, nightjar, curlew, smooth snake, southern damselfly, stag beetle, small fleabane and great crested newt. These open-space habitats are in decline, the New Forest being one of the few places in Europe to retain them.

The Forest has many different landowners and over 100 interest groups and stakeholders who shape its future. In a boundary-less landscape, the importance of partnership working is paramount.

Moving back: the Foxbury heathland restoration project
Jacob White, Communities Ranger, New Forest, Hampshire
Foxbury Plantation

In 2006 the National Trust purchased Foxbury, a 150ha site of mixed evergreen plantation on the edge of the New Forest next to an already owned common. The aim was to restore Foxbury back to the lowland heathland and mixed deciduous woodland habitats that historical records tell us it once contained and, for the first time ever, reconnect an extensive area of the New Forest’s lost habitat.

Since then the majority of the plantation trees have been removed, natives have been retained, and Foxbury is once again rich in wildlife, with gorse, heather, grasses, bracken, scrub and wildflowers having re-established across the entire site. It is grazed by belted Galloway cattle, owned by a local commoner, which are able to browse the difficult roughage. Current open-space habitat management involves continued removal/control of invasive species, such as rhododendron, bracken, pine and birch saplings. Ponds and ditches on site will also be backed up to create mires and bogs.

We are also creating 50ha of native broadleaved woodland (25ha of which is a designated Planted Ancient Woodland Site) to increase habitat diversity and ensure a productive, sustainable future for Foxbury through timber sales and wood products.

Wildlife-wise, Foxbury now has one of the densest nightjar populations in the New Forest, and breeding Dartford warbler, woodlark, adder, silver-studded blue butterflies and over 17 species of dragonfly and damselfly – key indicators of good habitat health and a likely accomplishment of the project’s aims.

Community involvement

With such an undertaking of habitat restoration, we knew local community involvement was fundamental for long-term success.

Tree planting has been the perfect engagement activity, when people have personal involvement in creating a woodland, they feel invested in it – it becomes ‘their’ woodland. They will also enjoy re-visiting and will care what happens to it. So far over 150 people have helped us plant trees, survey for wildlife and maintain the heathland, clocking up over 500 volunteer days. We have worked alongside groups such as the Prince’s Trust, the John Muir Award, Women’s Institute, scouts, cubs and local schools.

We hope this ongoing involvement and volunteering by the local community will help foster a close relationship and create ambassadors for the site, resulting in a local group committed to help look after Foxbury’s woodlands and wildlife in the long term.

A unique opportunity

The New Forest is open-access land and is coming under ever-increasing visitor pressure through recreation, with over 13 million day visits every year. This has impacts on both the environment and the commoners’ livestock.

Foxbury, however, is not open-access but is restricted to an invitation-only policy. Initially this led to some friction from the local community, many of whom used to unknowingly trespass through the plantation. The majority are now fully supportive of the project due to its benefit to the local environment and contributions to the local community. That there are 26,000ha of open-access lowland heathland in the New Forest to explore is reason enough to restrict the 150ha of Foxbury to ensure a successful habitat restoration and re-establishment of heathland species.

We want to use Foxbury to offset recreational pressures from the open Forest and lessen their impact. By using the five miles of gravel tracks left by timber extraction, and separating livestock away from any activities, users can enjoy the landscape and nature without disturbing the wildlife or causing detriment to habitats. This also creates a safe space for vulnerable groups to enjoy the Forest, enabling us to host a range of events for local community groups.
Education and learning

Foxbury is also being used to help people, especially children, get outdoors and closer to nature, through events that help people connect with the New Forest’s historic culture, its wildlife and the key messages of conservation and sustainability. This ranges from our weekly Forest School, where under-fives get involved in outdoor learning activities, to a regular visit from Thornden School from Southampton who undertake heathland fieldwork study, to our programme of ranger-led wildlife events where visitors can observe the protected wildlife that we are trying to conserve.

‘Our Past, Our Future’

In 2014 we signed up to a four-year, £4.4million New Forest landscape partnership project known as ‘Our Past, Our Future’ headed by the New Forest National Park Authority (NPA), which has the long-term aim of conserving the Forest’s unique environments, way of life and history. The project involves 11 partners including the NPA, Wildlife Trust, Hampshire County Council, Commoners Defence Association, Verderers, Forestry Commission, Freshwater Habitats Trust and many more. This has led to a great culture of partnership working that is expected to continue post-project. The funding is helping us to better facilitate Foxbury’s long-term aims through:

- **Habitat restoration** – tree planting and future woodland maintenance of the site, including tools, trees and volunteer training.
- **Access** – the improved site entrance track and car park using grass-protection matting will mean that Foxbury can be used all year round. A bird hide by the ponds and a new planned boardwalk enables visitors to go pond-dipping and learn about what lives out on the bog.
- **Facilities** – the installation of three cabins, providing shelter, meeting space, classroom and volunteer/educational equipment storage. An all-access compost toilet has also been installed.
- **Interpretation** – installation of new Trust outdoor orientation signage, finger posts and experimental sculpture, banners and sensory learning interpretation.

The project has also given us targets, including working with seven youth groups, eight community groups, 14 school visits and over 500 volunteer days over the next four years – all of which we are already meeting or exceeding.

Projected outcomes, aims and measures

First and foremost Foxbury is a site of wildlife conservation. Our primary aim is to increase the richness of heathland habitat and associated biodiversity, creating a healthy, more beautiful environment. This will be supplemented through educational visits and experiences that move, teach and inspire; encouraging responsible recreational use of the wider Forest in tandem with our partner organisations.

Measures of success for the project include an increase in population and diversity of key indicator species of lowland heathland in Foxbury, and an increase in Foxbury’s productive sustainability with self-funding through event and wood product income.

The changes in human behaviour and levels of understanding are being measured through feedback forms, visitor numbers and diversity of engagement with different community groups. These in turn may be measured on the open New Forest through a decrease in the negative impacts on the environment associated with high recreational pressure.

Foxbury evolves every year, becoming increasingly relevant to wildlife conservation, sustainable recreation and learning, and a productive resource for our New Forest team. Another upcoming Heritage Lottery Fund project may also see local artists visit the site, enabling a more diverse group to help others connect with wildlife and local culture.

Please see our website for our events programme and opportunities to get involved – www.nationaltrust.org.uk/newforest – or call 01425 650025.
Cared for by the National Trust since 1924, Hatfield Forest is one of the last remaining examples of an intact royal medieval hunting forest in the world. Home to more than 4,000 species, it also welcomes around 500,000 visitors each year, many of whom are local repeat visits.

Part of our job is to monitor the visible signs of stress around the forest, such as muddy paths. Being on clay soil, these are hardly surprising; each year visitors would start complaining about the mud in January and February, but it wouldn’t be too long before drier weather sorted everything out. Over the past few years, however, we’ve noticed that the paths were muddy by the end of November and a mud bath after the Christmas holidays!

Clearly the forest needed help. In August 2016 our journey to secure a sustainable future for Hatfield Forest began with our ‘Every Step Counts’ project.

Identifying and understanding the issues

Hatfield Forest, on the A120 and M11 corridor, is part of London’s commuter belt. It is in the district of Uttlesford, which has the perfect combination of idyllic countryside that is close to the capital’s many urban attractions. Over the last decade, many villages have doubled in size and there is a regular threat of new developments. There has been a steady infilling of small plots and arable land, many of which are advertised as ‘close to the National Trust property of Hatfield Forest’.

With an estimated half million visits a year, three-quarters of them arriving by foot, it was clear that we needed to invest heavily in messaging and start conversations with the local community. Gate-counter data indicated our northern boundary as one of the busiest, despite our main entrance being located to the east. Locals also drive to the property and park either on double yellow lines or in our main entrance car-park (more so in winter). Both increase conflict through residents not being able to exit their drives, emergency services being unable to gain access or from general frustration at the limited space. If you are ever in doubt as to whether you have a carrying capacity issue, just monitor the level of tension in your car-parks!

Understand the past and you can shape the future

Tom Williamson is Professor of Landscape History at the University of East Anglia in Norwich and has written widely on the development of the medieval and post-medieval landscape. His books include Rabbits, Warrens and Archaeology: Environment, Society and Landscape in Early Medieval England and Rethinking Ancient Woodland. Professor Williamson is one of the researchers helping us further understand the importance of the forest. His initial commissioned report concludes with the following:

What is clear is that Hatfield is the best-preserved forest landscape in England, boasting a combination of features – lodge, warren, plains and enclosed coppices – without parallel elsewhere in England, and possibly Europe. The continuing survival of the complex mosaic of traditional management regimes (sward, coppice, pollards, scrub), and of the associated genetic pool of woody material, depends on the perpetuation of versions of archaic techniques, here practised on a uniquely extensive scale. This is a unique inheritance which deserves particular protection into the future.

Finding solutions and opportunities

Through our stakeholder work and conversations with the local community and visitors, we’ve become more aware of external perceptions and have started...
to get some ‘quick wins’ by changing our language and messaging. For example, instead of referring to ‘rides’, which is historically correct, we started to refer to them as ‘grassy paths’. That way there was no ambiguity as to whether our communications were directed at everyone or horse riders. This greater understanding of the power of language has also led to marketing briefs holding a list of preferred words. Staff and volunteer training has been given priority and we have held cause, conversation and resilience training, as well as starting regular walks where people share their knowledge and passion for the site.

We still need to understand what our carrying capacity is, but with a permeable boundary we struggle to know exactly how many people walk here. Gate-counters help, but with vandalism, equipment malfunctions and budget constraints, we may never have a definitive figure.

We know anecdotally that some people are shifting their visiting behaviour, but as the forest is such an attractive location, it feels more like we’re dealing with an ever-filling leaky bucket. Working with others to spread the capacity was a hope, but other sites in the surrounding area, including neighbouring Trust, English Heritage and Essex County Council sites, are already struggling to meet demand during the winter months because of the local clay soil. Many visitors to these sites are local, regular repeat (often daily) dog walkers and walkers, giving us consistent demand all year round, but the carrying capacity of the ground is vastly reduced in winter. While our grass car parks can accommodate around a thousand cars on a dry summer’s day, our hard-standing parking is quite limited.

In the long term, we need to influence others to change their policies around planning. Hatfield Forest is no longer considered the token ‘green space’ in Uttlesford District, and the local parish councils are regularly citing our plight as a reason for objecting to larger planning applications in the area. We are working with our stakeholders to apply pressure on planners to identify a Suitable Alternative Natural Greenspace.

Our goal is to acquire land around the forest to act as a buffer and absorb the impact, leaving the forest as a pristine core which can cope with the number of visitors who reach it. The RHS has taken a similar approach to Rosemoor in Devon.

Promoting recovery

When testing the levels of compaction on the paths, Bartlett Tree Research Laboratory explained that the scale measured 1–5, 1 being perfect and 5 being as impenetrable as concrete. At 1.34 some tree roots are unable to penetrate the soil. Some of our soil samples came back around 2.5 which was the equivalent to brick. So how can we reverse this? Our first approach was to instigate diversions around the worst impacted paths to allow them to rejuvenate. In this compacted state, however, the plants which grow are those which can cope with those conditions. We have begun a three-year investigation into whether an injection of bio-char into the soil will aid the decompaction process.

Left: Collins path in winter 2014 before restoration works (© National Trust/Simon Cranmer) and in May 2017, with improvement works underway. © National Trust/Ade Clarke

Below: Stakeholder engagement at WoodFest! © National Trust/Alexandra Stone
Co-creating our future

Last winter, we ‘switched off’ our usual marketing and engaged Dialogue Matters, specialists in environmental decision-making. They have been guiding us through our stakeholder dialogue and designing a process which has been very productive and insightful. We chose to facilitate two workshops and a wider engagement process. Forty stakeholders were identified and categorised into interests and specialisms. They met in the first workshop to collaborate on identifying what options might be available. The cognitive shaping of the workshops always focused on the positive without dismissing the challenges; by the end we had eight options to take to our wider engagement activities, including: path closures and their communication; adjacent land visitor centre and facilities; income not dependent on visitors.

We were able to use a web-based engagement platform to pose questions and garner support for the options proposed. At the same time we held a drop-in session for those who wanted to come along and find out more. Once feedback was collated, we dropped the least popular options (bigger sacrificial area and a long all-weather surface path) and we held a second workshop to discuss the six options which had the most support.

We have now embedded messaging about Every Step Counts in all of our marketing and communications activities and internal communications. Our next steps are to establish a working group to drive those options forward and facilitate a wider local forum which can pose questions to their wider networks and engage in constructive feedback.

Sharing our progress and our learning

It is important to say we do not have the solution yet. The situation is a complex one, but we are getting a better understanding of what we need to find out, how we can garner support and shape behaviour. So, watch this space, and if you want to visit, please wait until the summer when we are able to cope with a few extra people!

Identification of the National Trust’s freshwater assets

Kate Waters, National Trust Freshwater Assets Intern, and Stewart Clarke, National Specialist for Estuaries and Freshwaters

The National Trust has a ten-year plan to halt biodiversity loss and restore the parts of the natural environment in its care. These include its freshwater assets – the hundreds of lakes, natural and ornamental ponds and wetlands across its 257,082ha of land. What we know is that Trust-owned waterbodies receive surface water from 43% of the UK’s land surface. One known concern is that 28% of Trust land is at high risk of erosion, which could cause the affected waterbodies to receive sediment and excess nutrients which can damage water quality and reduce biodiversity. There is little knowledge, on a national level, of the total number, location and status of freshwater assets that the Trust owns and manages; information on individual waterbodies is often held by local staff but as there is no common, accessible dataset for all this valuable information, this makes it difficult to manage freshwater assets nationally.

A major challenge for historic landscape owners is redressing the loss of biodiversity
for conservation while maintaining aesthetically pleasing waterbodies. To achieve this, the Trust requires access to cutting-edge scientific evidence on environmental management as well as income to support on-the-ground land and water management measures. In recognition of this, the Natural Environment Research Council (NERC) has commissioned an Innovation Knowledge Exchange Internship to assess the Trust’s waterbodies.

The NERC Innovation Knowledge Exchange Internship goals

The main aim of the project is to help the Trust gain a better awareness of its freshwater assets and how to manage them more effectively in the face of a changing environment. The translation of scientific evidence into guidance, tools and outputs to transform the management of these assets will support the Trust’s strategy aim of ‘restoring a healthy, beautiful, natural environment’. Our initial focus has necessarily been on creating a national waterbody dataset which will include each site’s water quality, and the ecological and economic data that will enable more effective management. Over the last few months we have been gathering basic data, including:

- How many waterbodies the Trust owns or part-owns, and the number that are next to land in Trust ownership.
- The location of Trust-owned waterbodies.
- Data allowing, the condition and status of designated lakes. This is done by looking at those where condition is monitored as part of a Site of Special Scientific Interest (SSSI) and status through the Water Framework Directive (WFD).
A dataset will enable Trust staff to look up information on individual waterbodies and to look at specific parameters on a national/regional scale to help achieve European and national conservation targets for freshwaters. The dataset can be linked to other datasets to assess risks to Trust waterbodies and could be used to help prioritise freshwater management nationally. It will be a useful resource for Trust staff, particularly General Managers, to gather information for Conservation Performance Indicator annual assessments.

**Outcomes of the project**

An initial identification has been possible through using the UK lakes database https://eip.ceh.ac.uk/apps/lakes/ but further work is needed, especially in Northern Ireland. So far, we have identified 4,662ha of freshwater within 448 waterbodies in England and Wales (see Figure 1 and Table 1). We have found that the Trust owns a large number of small waterbodies (161) across England and Wales, which are 1ha or less in size and account for 59.1% of all waterbodies identified. The majority of these are in England and are most likely to be ornamental ponds/lakes. Within England, there are 32 waterbodies within an SSSI that have ‘Standing Open Water Habitat’ as a reportable feature, and 46.7% of these SSISs are in Favourable condition for this feature. Twenty-seven waterbodies are monitored as part of WFD, of which 38.7% are in either good status or high status. Waterbodies in Northern Ireland and Wales will be examined further in terms of SSSI condition, WFD status and basic parameters.

**Further work needed**

The work to identify all Trust waterbodies continues. We hope to add more property data, such as visitor numbers, income and expenditure to the waterbody database to allow national prioritisation of their management. This data should give us an idea of the amount of visits properties with lakes get and whether lakes that are susceptible to annual algal blooms have a negative effect on visitor numbers. Income and expenditure data will allow staff to see if proposed lake management methods are feasible financially. The most significant surrounding land use for each waterbody, such as grassland, would highlight the type of nutrient concentrations that could affect water quality.

Reference


Acknowledgements

Our thanks to the following who provided information for this article and the project: Tim Ball and Ian Dawes, National Trust; Ruth Hall, Natural England; Tristan Hatton-Ellis, Natural Resources Wales; Linda May and Bryan Spears, Centre for Ecology & Hydrology; and Jo-Anne Pitt, Environment Agency.

Table 1. Waterbody numbers and freshwater hectares (ha) for which the National Trust has responsibility

<table>
<thead>
<tr>
<th>Waterbodies on or next to National Trust land</th>
<th>England</th>
<th>Wales</th>
<th>Northern Ireland</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number in NT ownership</td>
<td>274</td>
<td>39</td>
<td>62</td>
<td>375</td>
</tr>
<tr>
<td>Number where NT is joint owner</td>
<td>13</td>
<td>10</td>
<td>4</td>
<td>27</td>
</tr>
<tr>
<td>Number next to NT-owned land</td>
<td>34</td>
<td>9</td>
<td>3</td>
<td>46</td>
</tr>
<tr>
<td><strong>Total waterbody number</strong></td>
<td>321</td>
<td>58</td>
<td>69</td>
<td>448</td>
</tr>
<tr>
<td>Total area (ha) of freshwater in NT ownership</td>
<td>1,500.5</td>
<td>145.7</td>
<td>-</td>
<td>1,646.2</td>
</tr>
<tr>
<td>Total area (ha) of freshwater where NT is joint owner</td>
<td>290.2</td>
<td>58.7</td>
<td>-</td>
<td>348.9</td>
</tr>
<tr>
<td>Total area (ha) of freshwater next to NT-owned land</td>
<td>2,589.8</td>
<td>77.3</td>
<td>-</td>
<td>2667.1</td>
</tr>
<tr>
<td><strong>Total area (ha) of freshwater</strong></td>
<td>4380.5</td>
<td>281.7</td>
<td>-</td>
<td>4662.2</td>
</tr>
</tbody>
</table>
‘Sustainable Land Management (SLM) – saving the world one valley at a time’

While the casually created strapline above is an exaggeration, it is still an incredibly exciting project to be leading. Work doesn’t get much better than spending time in a beautiful landscape, with great people, looking at different valleys and getting to know them in detail. Joining the team here in October last year we took on a project that was three years in the making. The aim? To create an ambition for our land that is long term, at a valley scale and founded on clear evidence.

This article explains the process and how different evidence – a mapping tool, tenant interviews and staff workshops – are supporting our decision-making.

‘So how do you do it?’

We are using principles from the Conservation Management System (CMS) approach to management planning to support our process and make sure we answer key questions.1

So that our property teams get the best from the mapping tool, we run a training session with them before we begin the process. This means they can explore the Land Function maps before and during a series of workshops. During the gathering information phase we create an initial ‘data pack’ based on existing reports, data and the mapping tool. This is presented to property and consultancy teams before we hold a first workshop when the information is checked and added to.

We then begin our tenant interviews (more about these below) and discussions with external stakeholders. We have had to be selective in choosing stakeholders to make sure we aren’t overwhelmed; we ask them to add on-the-ground knowledge and help us understand their strategic objectives. This information is added to the original data pack to be used as a basis for the next stages.

The second stage is a workshop with the property team to identify the important features and services the valley provides and their current condition, before using the Geographic Information Science (GIS) tool and our knowledge to identify and understand where land can deliver more. At the final workshop, we create an ambition for our land, after which we go back to our tenants to discuss this ambition with them: how does it sound? Where do they think they can help us deliver it?

SLM was always intended as a valley-scale tool and we have struggled with this, as we tend to focus down to a narrower scale, especially when talking with tenants. However, having detailed discussions provides a huge amount of material to inform Estate Management Plans (EMP), and SLM has seamlessly fitted in as the way to gather information and create the vision/ambition that sits at the front of the EMP document. The SLM document consists of the ambition for land in that valley, supported by maps showing current status, future ambition and the opportunities between. Whilst the process is focused on our land, it does also identify where we could deliver more with partners.

The value of tenant interviews in the process

The criticism the Trust received for the Thornethwaite acquisition shone a bright light on the Lake District and on how the Trust manages stakeholder relationships. We were accused of making decisions behind closed doors, of being out of touch with local communities and of putting farming under threat. Of course, these are not universal truths: there are many great relationships and partnerships between us and our tenants. We don’t know everything about the way people value the Lake District, however, so tenants are seen as key to SLM to help us fully understand how each valley works.

This has been a massive commitment for staff. The feedback from interviews is that we are learning a lot, which helps our decision-making now and in the future. Interviews have been conducted by estate managers and rangers, with the support of the project team.
team. By using a series of topic areas, rather than a specific set of questions, individuals can tailor the flow of the interview. They are documented on large printed maps of the farm, so that information can be spatially recorded.

To use the information in a more scientifically robust way, and to make it relevant at a valley scale, we use thematic analysis on the interviews. This involves writing up the notes and then coding each interview, before creating a thematic map and analysing trends. This will be done for each catchment as well as an overarching document for the whole of the Lake District.

We are also creating an intern role to map spatial data onto GIS, so it could eventually sit as a layer on the GIS browser to be used in the project and by teams in years to come.

We are already finding common themes. Whilst tenants have not directly referenced the unsustainable nature of fell farming, it comes through strongly. Reliance on subsidy, woefully inadequate prices for lamb, increasing costs of inputs, decreasing productivity of soil, farmers having to buy or rent land elsewhere, climate change and insufficient or unsuitable infrastructure were all indicators that the system is collapsing.

The SLM mapping tool

Funding from partners (United Utilities, Environment Agency, Natural England, Lake District National Park Authority) was secured to develop a mapping tool that would help us understand the capability of land to deliver a range of functions that ultimately benefit people in numerous ways. Developed by the James Hutton Institute, the tool has three applications:

1. Land function maps give an overview of the current ability of our land to deliver good water cycling (the impacts of water flow), recreation, production, carbon storage and biodiversity. Within each function, there are a number of datasets that have been used to provide a picture of overall function.

2. Opportunity maps show where there is potential to improve the delivery of each land function.

3. The options tool allows the user to ask more specific questions, e.g. I want to plant 1,000ha of new woodland to support habitat connectivity and water cycling – where are the best places to do this?

The SLM mapping tool can show the current ability of our land to deliver biodiversity, water cycling, production and (clockwise from left) carbon storage, erosion and accessibility from the transport infrastructure and Public Rights of Way network. © National Trust © Crown copyright and database right 2016. Ordnance Survey AL100023974.
Research from Newcastle University in 2015 showed that the average hill farm made a loss of £13,162 from production, with other income keeping the business afloat. With the threat of Brexit and potential changes to the subsidy, we have a unique opportunity to review how land is farmed, and support our tenants move into new business models and ways of working that support a healthy, beautiful natural environment – as well as supporting the cultural heritage and production of hill farming.

What have we learned?

The biggest lesson was accepting some risk. We didn’t know how our tenant interviews would go and there was some apprehension about asking for their involvement. It has been an incredibly positive experience and, rather than showing that we are poles apart, it has highlighted where there are opportunities to work together. We also understand more about what our tenants value, which puts us in a great position to make decisions that we can agree on. Don’t underestimate the time this will take; each interview and follow-up conversation took about two hours, plus travel time, so with 90 tenants it is huge commitment, but making it of value to wider processes has encouraged buy-in from teams.

Whilst this is a process based on evidence, it is the people who will make it a success or failure. We have to understand what everyone values so we can take them with us and create a more sustainable future for the Lakes and the people within it.

References


Hill farming and conservation: shaping the Lake District landscape

Matthew Tweed, Ranger (Volunteers), High Wray, Cumbria

Since the beginning of the nineteenth century, when William Wordsworth first ‘wandered lonely as a cloud’, the Lake District has come to be lauded as an iconic, ‘cultural’ landscape. The significance of hill farming in shaping this environment, through its system of upland sheep grazing, should not be underestimated. It has moulded the Lakes for over a thousand years, developing over centuries the ‘cultural’ landscape of isolated farm buildings, dry-stone walls and open hillsides, or fells, that are highly valued today, and which were instrumental in the Lake District's successful bid for UNESCO World Heritage Site status.

Tradition and uncertainty

Due to the impoverished nature of the Lake District National Park (LDNP) uplands, hill farming is necessarily extensive in nature. It relies on a high proportion of common land, whereby hill farmers have traditional rights to graze livestock, predominantly sheep, on areas of land shared with others. Approximately one-third of all common land in England is in Cumbria, and 16% of the county is set aside for this purpose. The extensive nature of hill farming over many hundreds of years has, according to practitioners, resulted in the system of ‘hefting’, whereby sheep are maintained on a particular area of fell, or ‘heft’, through learned behaviour, passed down from ewe to lamb. Hefting reduces the requirement for shepherding and instils in the sheep knowledge of the location of shelter and advantageous grazing at any particular time of year.

It is recognised, however, that hefting and commons grazing are under threat, primarily from changes derived from agri-environment schemes. These schemes, under the EU Common Agricultural Policy (CAP), provide financial incentives to farmers to deliver environmental benefits; these include a reduction in sheep numbers, which erodes the continuity of the hefting system. Major changes to the CAP from 2000 saw a move away from subsidies based on livestock numbers, or ‘headage’ payments, towards an emphasis on environmental stewardship. As a result, livestock has decreased within the Lake District by around 30% since 2000, and further changes in the form of stewardship schemes and ‘greening’ measures will tie the level of financial support directly to natural
The challenges facing hill farmers have intensified in recent years, as economic circumstances have affected incomes, and a changing climate has seen greater emphasis placed upon environmental outcomes in the uplands. Hill farming has had to adapt to society’s evolving priorities, and those resilient enough to do so appear to recognise that their role, as with the landscapes they play such an integral part in managing, must evolve with them. Research and experience are increasingly leading to recognition of the non-cultural ecosystem services (ES) benefits that the uplands can deliver – for example in providing clean air and water, storing carbon and protecting and enhancing biodiversity. Recent devastating floods in the region have highlighted the role that the LDNP uplands can play in protecting communities from the effects of increasingly frequent and severe weather events. Hill farmers, with their unique connection to and place in the LDNP landscape, are ideally placed to deliver these benefits.

Opportunities

The challenges facing hill farmers have intensified in recent years, as economic circumstances have affected incomes, and a changing climate has seen greater emphasis placed upon environmental outcomes in the uplands. Hill farming has had to adapt to society’s evolving priorities, and those resilient enough to do so appear to recognise that their role, as with the landscapes they play such an integral part in managing, must evolve with them. Research and experience are increasingly leading to recognition of the non-cultural ecosystem services (ES) benefits that the uplands can deliver – for example in providing clean air and water, storing carbon and protecting and enhancing biodiversity. Recent devastating floods in the region have highlighted the role that the LDNP uplands can play in protecting communities from the effects of increasingly frequent and severe weather events. Hill farmers, with their unique connection to and place in the LDNP landscape, are ideally placed to deliver these benefits.

Encouragingly, hill farmers appear broadly supportive of practitioners aiming to enhance these regulatory ES in the LDNP. Indeed, many are actively engaged in practices that have sympathetic objectives, facilitated through vital economic subsidies.
Nevertheless, there appears to be a range of cultural and practical barriers which may prevent farmers from engaging fully with upland restoration. Foremost amongst these are the effects that livestock reductions and changes in management regimes have on the pillar of hill farming, the commons grazing system. Commons grazing lies at the heart of hill farming in the LDNP and its highly valued cultural landscape. Any initiatives to improve the provision of ES in its uplands must therefore reconcile these benefits with impacts upon the commons grazing system and the ability of hill farmers to maintain the cultural landscape, particularly in light of the newly acquired World Heritage Site status. Failure to do so may result in hill farmers being marginalised and alienated from upland restoration initiatives, with potentially negative impacts on the long-term sustainability of both regulatory and cultural ES provision. If climate change predictions are realised, more pressure could be placed on hill farmers to deliver and be held accountable for regulatory ES. Hill farmers already feel obligated to provide the cultural landscape that is highly valued by the lucrative tourist economy, despite a sense that they do not always share in its rewards. There is a danger therefore that farmers may be ‘squeezed’ by this apparent dichotomy, with consequences yet more acute than those experienced during Storm Desmond in the winter of 2015–16.

For upland restoration to achieve sustainable success, practitioners must improve their understanding of the motivations and influences that drive hill farming in the LDNP and how hill farming, despite the challenges, is a way of life for those involved. This can only be achieved through consultation and collaboration with those on the front line of landscape management changes – where farmers feel involved in the decision-making process, they are more likely to engage with the practical implementation of upland restoration. For their part, hill farmers must accept that their role appears to be changing to include an increasing emphasis on delivering regulatory ES benefits such as flood mitigation. Encouragingly too, many farmers appear to recognise this and are willing, with the necessary support, to adapt accordingly.

The LDNP, as with other upland regions across the UK, appears to be at a crossroads, marking the beginning of a re-evaluation of what we expect our uplands to provide for society. Recent conflicts such as the acquisition of a LDNP hill farm by the National Trust have demonstrated a renegotiation that is taking place between traditional approaches to land management in the uplands and those seeking to deliver a broader range of ES. Two recent publications highlight this: *Feral*, by the campaigning journalist George Monbiot, calls for a revolution in Britain’s ‘sheepwrecked’ uplands including, where appropriate, the re-introduction of once common predators such as wolves and lynx, to restore naturally functioning ecosystems. *A Shepherd’s Life*, by contrast, sees hill farmer James Rebanks eulogising about a bucolic, if challenging, landscape and traditional way of life that are under threat from change. Between these two ideological extremes lie the people who will decide what the LDNP landscape will deliver for society. If the varying expectations of all stakeholders can be accommodated while adapting to unpredictable environmental and socio-economic conditions in the uplands, the unique natural and cultural landscape of the Lake District can be safeguarded to benefit hill farmers, local communities and wider society well into the future.

This article is based on independent research in LDNP hill farming, conducted by the author throughout 2016. For more details, including references, please contact matthew.tweed@nationaltrust.org.uk

The flooded Borrowdale valley looking towards Keswick in winter 2015: managing the land for flood mitigation may become an important role for hill farmers. © National Trust Images/John Malley
Looking out towards the past: a project to introduce visitors to First World War shipwrecks
Antony Firth, Director, Fjordr Limited

One of the most striking aspects of Souter Lighthouse is – unsurprisingly – its amazing view of the sea. You can see for miles – from the coast of Northumberland right round to the North York Moors. Rather closer lies the mouth of the Tyne to the north, and the mouth of the Wear to the south – both with harbour walls with their own lighthouse reaching out into the sea. You can often see cargo ships, ferries, fishing boats and yachts but otherwise the sea seems empty. Turning around, the history of this area is embedded in the landscape – Souter Lighthouse itself, lime kilns, the site of the colliery village of Marsden, and the humps and bumps of former industry. In contrast, the sea seems timeless. Unlike the landscape, the sea changes by the second under the influence of winds and tide. It bears no trace of its history.

The team at Souter Lighthouse is working with my company, Fjordr Limited – a consultancy specialising in the marine historic environment – to enable visitors to rediscover a critical episode in the maritime history of the North East. Throughout the First World War, ships were being sunk by enemy action and other perils right on the doorstep: over 40 vessels were lost within sight of the lighthouse between 1914 and 1918. Thousands more passed by safely because of the huge effort to defend east-coast shipping from attacks. Later in the war, convoys of up to 70 ships would have passed by in each direction, escorted by patrol vessels, aircraft and airships. Throughout the war, minesweepers – often requisitioned fishing trawlers – swept a safe route along the east coast to the Thames.

This swept channel gives its name to the project, East Coast War Channels: Souter and the Leas. The project is supported by a grant...
from the Heritage Lottery Fund under its ‘First World War: then and now’ programme. The project at Souter Lighthouse has developed from a broader project being carried out by Fjord Limited for Historic England which is using the East Coast War Channels along their entire length – from North Foreland in Kent to Berwick-upon-Tweed – to examine the heritage of the conflict over civilian shipping on the east coast during the First World War.

Moving targets

The East Coast War Channels were introduced as a countermeasure to minefields laid by German ships in August 1914, including off the Tyne. Although they may have been intended to sink warships, the first casualties were cargo ships and fishing boats. The Admiralty decided that it could not sweep up all the mines but instead would concentrate on clearing a single channel along the east coast, with spurs off to each of the east coast ports on one side and to the North Sea trade routes on the other.

The War Channels became a focus for attacks by German U-boats, which targeted the north east heavily in 1917 and 1918. Ships were sunk by torpedo and by surface gunfire from U-boats, but specialised U-boats also came very close inshore – to within a few hundred metres of the mouth of the Tyne and the Wear – to lay deadly mines.

One of the principles of the project is to use the stories of individual wrecks to paint a much broader picture of the conduct of the First World War at sea on the east coast. The shipwrecks do not represent just random misfortune. Rather, they point towards key themes that connect directly to the history of the region. For example, many of the ships wrecked off Souter were built in the region, reflecting the huge importance of shipbuilding and repair in the north east, especially in wartime. The heritage of this industry now lies on the seabed, and this project is one way to draw people’s attention to a sector whose history is now much less evident in the local landscape.

Another key theme in the region is coal-mining. The cargo ships off Souter were predominantly carrying coal – or returning empty ‘in ballast’ for more coal – when they were sunk. The transport of coal from the north east to London and the south coast, including for gas and electricity supply, was a major wartime flow. Often ships were travelling to France, which had lost access to many of its own coalfields when Germany first attacked, rendering it dependent on north-east coal. Coal from Whitburn Colliery at Marsden, adjoining Souter Lighthouse, would have been transported by rail down to the coal staithes in South Shields and onto ships that would have passed the lighthouse heading south. The vital role of shipping in the supply of energy is represented by wrecks of ships such as the Ravensbourne, mined in January 1917, and the Firelight, torpedoed in May 1917.

New engagement on land

The project at Souter Lighthouse is bringing attention back to the War Channels through various activities. Training has already been provided for Trust staff and volunteers so that they can include the War Channels in their interaction with visitors, as well as running their own activities. A series of ‘wreck walks’ is also being developed; some of which will be guided by Trust staff and volunteers while others will be self-guided and available for download. To support these – and to reach members of the public who come onto the property without necessarily visiting the lighthouse –
The record of wrecks (grey) and recorded losses (white) in 1914-18 forms a key element of First World War heritage all along the east coast. © Fjordr/National Record of the Historic Environment © Crown copyright and database rights 2017 Ordnance Survey 100023974

additional signage and waymarks are to be installed. As mentioned earlier, the walks and signage will tell the stories of individual wrecks but also link them to the broader themes and circumstances that caused ships to be lost in this place. A mobile exhibition and materials both online and in print will provide further detail.

An initial Family History Workshop has been held at Souter Lighthouse to explore the connections between local families and the East Coast War Channels, and further events are planned at The Word, a cultural venue in South Shields. Feedback from the first event indicated that this was a dimension of local history with which the participants were not familiar, and they appreciated the guidance they were given on sources of information about the First World War at sea that they could use in their own research. Information about local connections to the War Channels gained through these workshops will be used, with permission, in the walks, signage and exhibition that are developed over the course of the project.

One particularly innovative aspect of the project is a series of Creative Writing Workshops being run in conjunction with a poet, Winston Plowes. Engaging with shipwrecks that lie hidden beneath the waves always requires the exercise of imagination. These workshops will combine creativity and historical research to shine a new and different light from Souter Lighthouse onto its maritime landscape.

The story of the War Channels could resonate with Trust properties along the entire east coast. The details of individual shipwrecks create specific, local interest; but they also provide connections to much broader themes associated with the First World War. The project is also serving as a case study in engaging with heritage that lies just offshore, which might assist other coastal properties focusing on other periods. The East Coast War Channels project is clearly showing that Trust properties like Souter Lighthouse are exceptionally well-placed to help visitors rediscover neglected facets of their maritime past.
Lindisfarne Castle on the Northumberland coast is encased in scaffolding as it undergoes a major building project. The castle, largely designed by Edwin Lutyens, is a victim of its own dramatic location: difficult to access, theatrically eccentric and exposed to an excess of weather. Lutyens's determination to keep the building stark and austere of line excluded fittings that would throw off the rain, so it needs major work to make it both weatherproof and able to manage its internal environment more successfully than it has done. Before the work could begin, however, everything that wasn’t pinned down – and some that were – had to be moved out.

**Extreme moving**

The collection numbers just over 2,000 objects, including hinged curtain brackets and shelves that hitherto hadn’t been on the inventory but were added to allow their removal and storage to be documented. There are approximately 300 ceramics, 139 metal items, 55 prints, 126 pieces of furniture and a few complications such as the Wind Indicator.

Some challenges we faced are common to other properties, namely a very small house team and limited spaces to store packed materials. We also had tides, a short period of time in which to pack and document the collections, and, during the packing, a severing of the power line from the mainland which meant the island had no power and no water as this depends on a pump. On that particular day, we stopped work early, abandoning the castle to darkness. For the removal firm, the endless steps and the stone, cobbled ramp were all factors that made this project one of their most complex.

From the start of planning, it was clear that we would have to bring in staff and volunteers from other properties to help with both the packing and the documentation. I recruited experienced members of staff from other properties in the North East and also asked some of their most skilled conservation volunteers to help. In the end we had volunteers from five other properties and staff from four. Cragside, Seaton Delaval Hall and Wallington had all in their time packed up their collections so there was a
reservoir of experienced staff and volunteers to help. The most southerly property was Souter Lighthouse (appropriately in view of the maritime setting of the castle) and the smallest was Cherryburn, whence two diligent volunteers came.

In preparation we ran two training days for the volunteers, making sure everyone understood how to pack objects properly and also to explain the documentation procedure. I was very keen to ensure that we documented the packing and removal thoroughly and so used a case study from the Snowshill project as a template for my documentation plan. The castle has some skilled photographic volunteers who photographed each room in great detail. The images were printed off and formed, along with the inventory for that room, the basis of the room folders we prepared in advance of the packing.

**Packing up and shipping out**

A time-consuming and repetitive task was creating labels for each and every object, which involved printing, cutting, laminating and puncturing for tying on. This led to the demise of one laminator and the scouring of every property office I visited for laminating sleeves.

In addition to packing small objects into crates, there were several larger or more vulnerable pieces that had special crates or transit frames made for them. Of these, the most fragile was the model ship that hangs from the ceiling of the eponymous Ship Room. The *Henrietta* was set in her crate on a cradle of conservation-grade foam, lashed down with cotton tape; this dry dock kept her safe through the removal.

The most awkward item, and one that caused a rethink part-way through, was the Wind Indicator. One of the castle’s iconic pieces, this was commissioned by Lutyens and painted in late 1912 by MacDonald Gill. Originally I wanted a full transit case for it, but seeing it being made in the Building Conservation Team’s workshop, and just how large it was, I realised we would have to think again. One of the team’s skilled joiners, Craig Mason, instead made a pared-back transit frame, and even this only just fitted down the Portcullis Steps and out the door. Craig was invaluable during the whole packing work: making and altering crates, taking down Lutyens’s shelves and curtain brackets, and even getting roped in by the media when they were on site.

The actual move was carried out by a firm based in Edinburgh, which had emptied two rooms at the castle in the run-up to the investigation work earlier in 2016 so were well-rehearsed in their role. We planned the move around the tides and scheduled it for the most favourable. As a furniture conservator, I was able to supervise and take apart even quite large items: four beds and a surprising number of huge armoires left the castle in carefully labelled and numbered sections. A combination of access issues, tight doorways, low ceilings and sharp corners meant that six pieces of furniture could not be taken out of the castle. Some couldn’t even be extracted from their rooms, let alone taken down the Portcullis Steps, having either been assembled there or the doorways having been changed.

The other factor we couldn’t improve was the weather: for the days of the move, we had showers and wind. The removal men worked around these squalls, making runs down the ramp when the rain held off. This was a little worrying at times with pieces of furniture uncovered as they carried them, but I had agreed to this in view of the great distance and awkward lifts involved. In the end, all went well.

The media were, as expected, very interested in the whole project and were at the castle from the first day of the packing. We scheduled a couple of key tasks especially for them, such as taking down the Wind Indicator and lowering the *Henrietta* and mooring her in her crate, with both done in front of the cameras. Rehearsing, running through the operations beforehand and removing the safety lines from the *Henrietta* ensured things went smoothly.

**Finishing off**

The moving project went very well: we had all the collections packed in four days and the removal took a similar amount of time. We were even able to deep clean and...
thorough and accurate, making them ideally suited to documentation. This is, I think, one of the reasons we achieved such a good standard of recording. The engagement of the volunteers with the process and their work was excellent. As critical were the staff from other properties who took on the responsibility of managing their teams and maintaining a high standard of work throughout. And as important as all the preparation was the goodwill and good humour of all involved!

This is a very brief summary of two busy and intense weeks, not to mention the weeks of planning that preceded them. A few hints worth passing on: time spent planning was invaluable and meant the actual move went smoothly. The days we had for training or familiarisation, and the careful matching of teams with staff, resulted in focused and effective work. The careful selection of volunteers and staff meant we had people with the particular skills each team required. For example, we had support from volunteers who work on the inventory and so are used to being thorough and accurate, making them ideally suited to documentation. This is, I think, one of the reasons we achieved such a good standard of recording. The engagement of the volunteers with the process and their work was excellent. As critical were the staff from other properties who took on the responsibility of managing their teams and maintaining a high standard of work throughout. And as important as all the preparation was the goodwill and good humour of all involved!
Over the last four years I have been working at the Carriage Museum at Arlington Court. I am part of a small team, responsible for the preventive conservation programme and the day-to-day running of the museum, as well as the interpretation and presentation of the collection.

Working with a specialist collection brings both challenges and opportunities. As we are probably the most accessible carriage museum in the UK, we are regularly asked for advice on carriage history and conservation which pushes me to continue developing my understanding and expertise. We have many carriages in original condition which is unusual as such vehicles are more often restored to working condition and used. This is why we tend to refer to our collection as a ‘reference collection’ which describes its purpose as a resource for researchers, who may be amateurs or professionals. In spring 2016, we had a visit from an Austrian carriage restorer, Florian Staudner, and his colleagues. They wanted to examine a carriage in original condition from a specific maker in order to help them with a carriage they were working on: a state chariot by Hooper & Co., one of the finest London coach builders of the nineteenth century, on loan from the Trustees of the Craven Estate (CMS number: 272915). We spent quite a bit of time with them and at the end of their visit I was invited to visit Florian’s workshop in Vienna. With the encouragement of the property team, I investigated the feasibility of a research trip as Florian had proposed an interesting and relevant research programme.

My primary objective was to learn more about the role of a carriage restorer/conservator so that the Arlington team could improve future visits for specialists. I also wanted to know more about carriage construction. I hoped to visit the Kaiserliche Wagenburg, or Imperial Carriage Museum, in Vienna as well as some private collections, and spend time with one of the Wagenburg’s conservators to compare notes on conservation, display and interpretation of carriages in museums. It would be a good opportunity to broaden our network by meeting other carriage and museum specialists. Sharing and applying any knowledge gained on this trip was, of course, the ultimate goal.

It was not easy to find an appropriate travel grant until a colleague pointed me in the direction of the Art Fund which offered the Jonathan Ruffer grant for curatorial development and collections-based research. Working with the Art Fund was a pleasure and resulted in a successful application. My travel, as well as any other expenses for this trip, were covered by the grant so the property’s training budget was still available for the rest of the team to use.

Visiting the Viennese carriage collections

During my week in Vienna last October, Florian was kind enough to be my guide. As well as spending time in his workshop, where
I learned more about carriage construction, we visited several private collections not normally open to visitors and several museums with carriages or carriage-related collections. He had also organised a private tour at the Spanish Riding School for us, and gave me a tour of the historic city centre where we could see working carriages. The highlight of my visit though was a whole morning spent with a carriage conservator at the Kaiserliche Wagenburg.

The museum is situated in the old stable block of Schönbrunn Palace with coach-houses similar to the one at Arlington Court, but the work is carried out on an entirely different scale. Our collection is relatively static as there are few options to rotate items: carriages are enormous objects and even though they have wheels, they cannot be easily moved. Storage is always a problem, but the size of carriages takes the problem to an entirely different level. In contrast, the Wagenburg houses a permanent display, as well as an annually changing exhibition, of around half its collection of 163 carriages. The museum has enormous store rooms where they house carriages not on display and vast amounts of carriage-driving paraphernalia, including state harnesses and liveries.

As the imperial collection has a specific history and provenance, their interpretation methods are quite different from ours. Family stories are prominent at the Wagenburg whereas at Arlington little is known about the previous owners of the carriages so it is the workings, technological advancements, general social history and purpose of the carriages that are given prominence.

The Kaiserliche Wagenburg is part of Kunsthistorisches Museum Wien, a group of Viennese museums, and it rents space from Schönbrunn Palace. In 2016 the group’s annual exhibition had been themed to tie in with several other imperial collections, and combination tickets could be bought. Apparently Schönbrunn Palace generally overshadows the carriage museum when it comes to visits, so this arrangement has been very helpful in raising awareness for this specialist collection. The situation is similar at Arlington, and we would probably struggle for visitors (something that seems to be quite common for carriage museums) were we not linked to the house and gardens. It is encouraging that our visitors are pleasantly surprised when they stumble upon the collection and the feedback is overwhelmingly positive.

From a conservation point of view, the Kaiserliche Wagenburg has the luxury of having its own conservation/restoration studio, and work is prioritised to suit forthcoming exhibitions. Whereas Arlington is able to freeze small items with pest infestations, at the Wagenburg whole carriages are vacuum-packed in plastic tents and then treated with nitrogen gas, removing the need for insecticides. I also learnt more about the issues with disintegrating rubber tyres, which we are now looking to alleviate at Arlington by jacking up all carriages with rubber tyres. Furthermore harnesses will be hung up wherever possible, to prevent the leather from bending. Interestingly for me, the Wagenburg also struggles with visitors touching the displays. Highly advanced barrier and alarm systems have been implemented, some of which may be experimented with at Arlington.

A valuable tour

I returned from Vienna feeling incredibly inspired. Not only had I managed to fulfill my objectives, I had met interesting and helpful people and broadened my knowledge on the history of equestrianism and horse-drawn vehicles. Working in a specialist museum, it was a tremendously valuable experience spending time with a member of staff at a carriage museum with high standards in display and conservation. Of course, my trip would not have been this successful without my valuable tour guide, Florian Staudner.
The floor in Kedleston’s Marble Hall dates from the original construction of the mansion in the 1760s, and is arguably the most precious floor in the possession of the National Trust. It is finished with Hopton Wood stone and decorated with Italian marble borders and detailing in a honeysuckle-inspired design.

Fairly soon after the floor was laid out, signs of movement were noted, and in 1805 cast-iron columns were added within Caesar’s Hall, the room directly below, to provide additional support. Despite this intervention the floor continued to move, resulting in uneven slabs, trip hazards, damaged slab edges and cracked slabs and marble inserts. Today, of course, the house welcomes thousands of visitors, and the Marble Hall and its floor are central to the visitor route; restrictions to areas and paths across it potentially prevent access to significant portions of Kedleston Hall.

Recording damage to the floor has been underway for several years, providing evidence that it is continuing to deteriorate in terms of cracking, uneven slabs and damaged slab corners. For a recent survey, we commissioned a 3D laser scan of the floor which was compared to the previous level survey from 1999. This verified that the floor was continuing to move. While the movement is generally small (3–4mm), it appears to be ongoing, and in places it was more than 3–4mm with values as high as 8–10mm not uncommon. Getting results like this confirmed the need for further investigation. An examination of the areas of greatest movement indicates that this increased movement coincided with the visitor route across the room, suggesting that there is a correlation between visitor movement and deterioration of the floor.

While this is not 100% conclusive, it does seem to fit with common sense that the more people we have walking over an area, the more deterioration we shall see.

The first ‘physical’ work undertaken was to lift selected areas of uneven floor and re-lay them to remove trip hazards and at the same time allow us to investigate what material was below the slabs. We discovered that the slabs lie on a mix of sand and lime, so weak as to be effectively just sand. The marble decoration sits on bricks. The bricks and sand/lime sit on oak boards, which in turn sit on oak trusses. This design has possibly contributed to the movement of the floor through the loss of sand/lime through gaps between the oak boards.

An opportunity for a close look

While the floor was lifted and excavated, we arranged for a panel of experts to visit and view the floor and its structure. This
A panel included a timber decay specialist, a structural engineer, conservators, the property architect and a number of Trust representatives. We also arranged for an archaeologist to record the excavated areas. The specialists were able to establish that, although the exposed areas had suffered some beetle attack and timber decay, this all appeared to be historic and not severe enough to compromise the floor’s performance.

The archaeologist noted a couple of points of interest: firstly, the presence of a boot heel print in plaster made in an attempt to seal a gap between the oak boards. This was recorded and sent to a boot museum in the hope that they might be able to date the boot. Had that been possible, it would have confirmed for us that the floor had been subject to repairs after its initial construction. Sadly no conclusive opinion could be provided, although the strong suspicion is that the boot print is later than the original construction of the floor so it is probable that this is a later intervention.

The archaeologist also noted black lines drawn onto the oak boards which appear to be the setting out for an alternative decorative design. As well as the current decorative design, we were aware of proposals for another design which was not adopted. However, the design found below the floor does not correspond to either of these. While only fragments of this proposed design are visible, it is intriguing, particularly for visitor engagement.

**Moving on**

Once most of the floor had been re-laid (which had to be done promptly to allow the new floor lime and sand sub-base to ‘cure’ before opening the house again), dynamic testing was carried out by a structural engineer. This consisted of applying impulses of a fixed amount of force to the floor which was picked up by sensors in various locations across the hall. The response of the sensors to these impulses gives information about the strength of the floor: different responses from different sensors highlight any particular areas of weakness. Conclusive results from this testing are not yet available. However, initial findings suggest that there is a weakness in one of the supplementary columns added in 1805.

Finally ground-penetrating radar is to be used in an attempt to locate any voids or anomalies. The results of this will be considered alongside the dynamic testing results to inform any further possible opening up of the floor, or any need for structural repairs.

While we await the results of these tests, we can at least say we have learned a lot and that we have eliminated a number of trip hazards and vulnerable exposed edges.

Exposed boards complete with (left) marking (lower right corner) for alternative decorative design, and (right) with lime/sand mix partly excavated. © National Trust/Giles Warhurst.
In a naturally functioning dune system, there is a large degree of dynamism, with the twin processes of erosion and accretion constantly reworking sand and sediment, either maintaining or creating new areas of pioneer habitat. From the second half of the twentieth century it has become apparent that many UK dune systems have become increasingly stable with significant consequences for those species that depend on open habitats. For example, an article in *British Wildlife* in 2012 reported major losses of bare sand, sparsely vegetated dunes and the low-lying and low-nutrient open dune slacks across the major Welsh sand-dune systems. A growing awareness of the potential impacts of climate change on coastal areas often have erosion and loss of conservation habitats as the main focus. While erosion will not occur at every site, other factors related to climatic changes may impact upon coastal species and habitats in ways that can initially seem counterintuitive.

Aerial photographs of Sandscale Haws show an obvious trend towards increasing stabilisation of the dune system between 1946 and 2013. Although new areas of pioneer habitat, including embryo dunes and dune slack, have formed recently, it has been on a relatively small scale. Our concern about how climate change may impact dune habitats and species led us to commission Kenneth Pye Associates to conduct a geomorphological study in 2016 to provide an evidence base for future management. The core aims were to quantify the extent of the site’s historical habitat changes and to predict the possible impacts of sea-level rise and other environmental changes. This article summarises some of the study’s key findings along with related areas of work now in progress.

Figure 1: Changes in extent of areas mapped as bare sand (mottled area to the left of the dotted line) at Sandscale Haws determined from 1946, 1960, 1988, 2011 and 2013 aerial photos (Adapted from KPAL Report No. 18095). © National Trust
A young site

Sandscale Haws is thought to be a relatively young dune system that developed largely towards the end of the Little Ice Age (c.1300–1850). Five key groups of parabolic dunes make up the main system with a series of more recent foredune ridges that lie parallel to the northern and western shores. Since the 1980s a series of embryo dunes and low foredune ridges have formed and now enclose a dune slack in the north-east corner of the National Nature Reserve (NNR). Finally, an extensive primary dune slack has formed since 2014 between Sandscale Haws and Askam-in-Furness to the east of the NNR/Trust ownership boundary.

Up to the mid-nineteenth century the dunes were very mobile with approximately 34% of the site mapped as bare sand. By 2013 this had decreased to approximately 2.5% (Figure 1). Bare sand is a critically important habitat for pioneer plants to grow. It also provides habitat for the many invertebrates, such as solitary bees and natterjack toads, which need open areas for their burrows.

It is clear from Figure 1 that while the periphery of the system has retained some mobility, the larger inland dune ridges have almost completely stabilised since the 1960s. Furthermore the main lines of parabolic dunes moved substantially eastwards between 1847 and 2013, with most of the movement taking place before 1960, again emphasising the shift from a dynamic (unstable) dune system to a mainly fixed (over-stable) system during the past century.

Sandscale Haws is a wet dune system, and some of the rarest plants occur in the dune slacks. Some of these, including the Nationally Scarce Corallorhiza trifida and Equisetum variegatum, have a marked preference for early-stage or open dune-slack communities. A survey by the Centre for Ecology and Hydrology (CEH) for Natural England in 2012 concluded that there had been little change in the extent of dune slack and wetland habitats between 1987 and 2012. A total of 28.5ha were mapped as dune slacks and 38ha as other wetland habitats out of a total area of 282ha. A full National Vegetation Classification (NVC) survey was commissioned by the Trust in 2012, and whilst there are some discrepancies between the two reports (habitat mapping is not an exact science and dune habitats can be particularly subjective), both clearly showed that only a tiny area (0.1ha) of the dune slacks consisted of pioneer vegetation.

**Key findings**

The geomorphological report concluded that ‘the balance of evidence suggests that climate change (reduction in frequency/duration of sand-moving winds, increased rainfall and increased temperature) has been the dominant factor influencing the changes described above. Other factors may include changes in management (reduction in stock grazing levels), much reduced rabbit population and higher inorganic nitrogen deposition. It is unlikely given the current and projected climatic conditions that there will be a natural significant increase in the extent of mobile or pioneer habitats; despite the unusual frequency of relatively severe storms, often coinciding with high tides, between December 2013 and February 2014 which led to erosion around the southwestern shore, most areas had recovered much of their former extent due to new foredune growth by March 2016.

On a positive note, sea-level rise is not expected to cause serious loss of habitats at Sandscale Haws. This is because the Duddon Estuary is relatively sediment-rich and therefore the intertidal and frontal dunes are probably able to keep pace with the projected sea-level scenarios. Erosion is unlikely to be a major concern, at least in the medium term, but any further loss of bare sand or pioneer habitats will have consequences for the species that rely on these habitats.

**Additional work and trials**

In recent years our focus has been on gathering evidence better to inform future management of the NNR, of which the geomorphological report is a key component. To gain a better understanding of fluctuations and movement of groundwater across the site, we have installed nine new dipwells with automatic data loggers in partnership with CEH. Each of these dipwells has an associated 2m x 2m fixed vegetation quadrat that is marked on the ground with a metal post and mapped using a differential GPS. Additional quadrats have been established in other key locations, mainly pioneer dune slacks, and some quadrats that were previously set up in the original Sand Dune Survey of Great Britain established by CEH in 2012 have also been added to the monitoring network. Regular vegetation surveys will allow us to assess how changes in rainfall patterns are influencing the vegetation of dune slacks and other wetland areas. This data will also enable us to monitor how quickly succession occurs in areas of pioneer dune slack.

A series of small-scale trials has also been established. There is anecdotal evidence from the NNR that cutting coarse vegetation such as dense Salsola repens may lead to increased abundance of flowering spikes of C. trifida. To test this hypothesis, five 10m² trial plots have been established in different dune slack habitats, each with a neighbouring control plot. The managed plots are brush-cut each autumn/winter, all arisings removed and the surface scarified to create areas of bare ground. A full vegetation survey, alongside counts of flowering spikes of C. trifida, is expected to cause serious loss of habitats at Sandscale Haws. This is because the Duddon Estuary is relatively sediment-rich and therefore the intertidal and frontal dunes are probably able to keep pace with the projected sea-level scenarios. Erosion is unlikely to be a major concern, at least in the medium term, but any further loss of bare sand or pioneer habitats will have consequences for the species that rely on these habitats.

**Additional work and trials**

In recent years our focus has been on gathering evidence better to inform future management of the NNR, of which the geomorphological report is a key component. To gain a better understanding of fluctuations and movement of groundwater across the site, we have installed nine new dipwells with automatic data loggers in partnership with CEH. Each of these dipwells has an associated 2m x 2m fixed vegetation quadrat that is marked on the ground with a metal post and mapped using a differential GPS. Additional quadrats have been established in other key locations, mainly pioneer dune slacks, and some quadrats that were previously set up in the original Sand Dune Survey of Great Britain or established by CEH in 2012 have also been added to the monitoring network. Regular vegetation surveys will allow us to assess how changes in rainfall patterns are influencing the vegetation of dune slacks and other wetland areas. This data will also enable us to monitor how quickly succession occurs in areas of pioneer dune slack.

A series of small-scale trials has also been established. There is anecdotal evidence from the NNR that cutting coarse vegetation such as dense Salsola repens may lead to increased abundance of flowering spikes of C. trifida. To test this hypothesis, five 10m² trial plots have been established in different dune slack habitats, each with a neighbouring control plot. The managed plots are brush-cut each autumn/winter, all arisings removed and the surface scarified to create areas of bare ground. A full vegetation survey, alongside counts of flowering spikes of C. trifida, is expected to cause serious loss of habitats at Sandscale Haws. This is because the Duddon Estuary is relatively sediment-rich and therefore the intertidal and frontal dunes are probably able to keep pace with the projected sea-level scenarios. Erosion is unlikely to be a major concern, at least in the medium term, but any further loss of bare sand or pioneer habitats will have consequences for the species that rely on these habitats.

**Additional work and trials**

In recent years our focus has been on gathering evidence better to inform future management of the NNR, of which the geomorphological report is a key component. To gain a better understanding of fluctuations and movement of groundwater across the site, we have installed nine new dipwells with automatic data loggers in partnership with CEH. Each of these dipwells has an associated 2m x 2m fixed vegetation quadrat that is marked on the ground with a metal post and mapped using a differential GPS. Additional quadrats have been established in other key locations, mainly pioneer dune slacks, and some quadrats that were previously set up in the original Sand Dune Survey of Great Britain or established by CEH in 2012 have also been added to the monitoring network. Regular vegetation surveys will allow us to assess how changes in rainfall patterns are influencing the vegetation of dune slacks and other wetland areas. This data will also enable us to monitor how quickly succession occurs in areas of pioneer dune slack.

A series of small-scale trials has also been established. There is anecdotal evidence from the NNR that cutting coarse vegetation such as dense Salsola repens may lead to increased abundance of flowering spikes of C. trifida. To test this hypothesis, five 10m² trial plots have been established in different dune slack habitats, each with a neighbouring control plot. The managed plots are brush-cut each autumn/winter, all arisings removed and the surface scarified to create areas of bare ground. A full vegetation survey, alongside counts of flowering spikes of C. trifida, is expected to cause serious loss of habitats at Sandscale Haws. This is because the Duddon Estuary is relatively sediment-rich and therefore the intertidal and frontal dunes are probably able to keep pace with the projected sea-level scenarios. Erosion is unlikely to be a major concern, at least in the medium term, but any further loss of bare sand or pioneer habitats will have consequences for the species that rely on these habitats.
carried out each summer. The aim is to continue the management for three years and monitor for at least a further three years. By carrying out full vegetation surveys, we will be able to assess if the NVC habitat type changes in response to the management as well as which species benefit or lose out. The control plots are important as these will enable us to exclude changes not directly linked to the management.

We have also established three small scrapes which are being monitored to assess colonisation of artificially created bare-ground habitats. At sites such as Kenfig in South Wales, this technique has proved successful in increasing the abundance of *Liparis loeselii* in slack habitats. There have been some positive indications but trials need to be conducted on larger plots to reduce colonisation by species growing around them.

We are now planning further trial areas including the mechanical excavation of 100m² within a mature dune slack and turf-stripping from a 100m² section of coarse fixed dune grassland. We are also experimenting with brush-cutting marram grass around historical erosion features within semi-mobile dunes to stimulate sand movement. On similar UK sites, large-scale dune destabilisation work has been carried out to revive mobility. Figure 2 highlights some potential activation areas for such work at Sandscale Haws. However, these techniques are still considered to be experimental and can have unintended consequences such as an increase in ruderal species (those that are first to colonise disturbed land) such as *Rubus fruticosus agg.* and *Jacobaea vulgaris*. Thought must also be given to how to protect the natterjack toad population and other key species during the course of any large-scale works. One alternative is the reintroduction of rabbits, but there are ethical concerns over the continuing presence of the endemic rabbit haemorrhagic disease, so again further assessment is required.

The NNR management plan is due for review this year and we will be working up proposals for further trials alongside possible additional methods with Natural England. Any work undertaken will be carefully monitored to add to the evidence base for future dune management techniques.

References

This article summarises the Norfolk Coast team’s response to flood warnings about an impending tidal surge in January 2017, based upon emergency planning and lessons learned from recent floods.

Background to our flood preparations

The North Norfolk coast is a low-lying stretch of coast, dominated by expanses of salt-marsh, sand dunes, sandflats and shingle spits, shaped by nature. Sea walls protect freshwater grazing marshes. Together these areas are home to rare plants, birds and insects and are managed for their wildlife value which is of international significance.

The coast is also an extremely popular visitor destination with its quaint flint villages, great opportunities for walking, sandy beaches and being able to sail and boat from the harbours and creeks that wind their way through the marsh. The trips to see the seals of Blakeney Point attract thousands of visitors who enjoy this wildlife spectacle.

Along this stretch, the National Trust looks after expanses of wild landscape, reclaimed salt-marsh behind sea walls, visitor facilities and listed buildings, many of which are in the flood-risk zone, including a watermill, a windmill and the Dial House Brancaster Activity Centre. Being so close to the sea and low-lying, we are ever-mindful of developing weather conditions that have the potential to create a tidal surge. We were in this situation again earlier this year.

On the east coast of England, certain years are etched in the memory of the local communities: 1953, 1978 and 2013, when the full power of the sea was felt in significant flooding and, in 1953, considerable loss of life. Friday 13 January 2017 was shaping up to be the next one.

In North Norfolk, a storm surge on 5 December 2013 brought an extra 1–2m of water on top of the high tide level and, coupled with high winds up to 70mph, came onshore, causing immediate flooding of homes and businesses, damage to infrastructure and lack of access to parts of the coastline. Further high tides over the following day caused repeated flooding. What drove this event was a combination of high winds, heightened water levels on top of already high tides in the monthly cycle, and it was the fourth worst on record; in places the tide level was higher than in 1953.

The predicted January event

On Tuesday 10 January 2017, one of our Outdoor Learning and Engagement Team, Rob Jones, who monitors weather conditions closely, alerted us to a low-pressure system that coincided with high tides and a predicted wind direction that would funnel water onto the coast later in the week.

On the same day we also received an ‘Urgent – Action Required – North Sea flood alert’ from Natural England. At this point, the risk was low but significant and evolving enough to warrant an alert. We also heard from the Environment Agency which was mobilising its barriers and checking structures.

Friday 13 January was looking to be a worrying day, especially the 7am high tide.

Precautions

After the initial alert, we spent the next couple of days monitoring the developing situation and liaising with the Environment Agency and Natural England, and informing our tenants and partners.

On the 12th, the national guidance was predicting gale- or severe gale-force northerly winds over the North Sea that would generate large waves on top of spring tides, and another coastal surge for the evening of the 13th. During daylight hours our team mobilised an ‘in preparedness plan’ which was largely based on lessons learned from the 2013 surge: what could we pre-empt and what action could we take to reduce impacts?

There were in fact nearly 100 actions; they included filling vehicles with fuel, checking emergency phones were working, raising items in buildings, installing flood gates, turning off water and electricity, locking doors of vulnerable buildings, moving rat-bait stations onto higher ground, ensuring livestock weren’t present, removing boards from sluices to aid evacuation of water if sea walls were overtopped, ensuring...
boats were well-anchored, checking sails on the windmill were fully choked, and ensuring staff and volunteers weren’t in the flood-risk zone.

We focused on developing logs, keeping people safe (including cancelling group accommodation), measures to protect property, emergency procedures for dealing with an incident, information packs for teams out assessing damage, welfare plans and keeping the main hub going to coordinate responses.

Within the team, we allocated clear roles for team members – a communications lead, an operational incident lead, incident decision log-keeper, welfare manager, area surveyors, volunteer coordinator and logistics coordinator.

Alongside this, we developed a clear communications strategy, alerting our regional comms team, Assistant Director (Operations), Regional Director, Consultancy Manager and Operational Risk Partner to the developing situation. We set up teleconferences for the morning after the high tide and the next day, as high tides were still predicted for the evening/following morning, to keep everyone up to speed and respond to calls for assistance/advice.

By the end of the working day on the 13th, we were braced for an extra 1.56m of sea on top of the high tide. Several flood warnings, with immediate action required, were in place and the Flood Information Service maps for North Norfolk were a sea of red warnings.

So, what happened?

Fortunately, all the factors that together would create the perfect surge didn’t happen at the same time so the surge height was lower than predicted, with an overall low impact on property and wildlife.

Our toilet block at Brancaster was flooded and the adjacent University College London’s Old Lifeboat House had 60cm of water in it but no serious damage. There was significant movement of shingle along a ridge that had been overtopped, and the freshwater marshes between Cley and Salthouse were under water, which also flooded the main coast road, closing it for a few days. Sea defences had been eroded and scoured, the sails on the windmill had moved, and boats had come loose from their moorings and washed up. One of the main operational issues was the volume of thatch and debris that washed up. We logged all the incidents, prepared remedial works and quickly set up a project code to track all related spend.

We focused on developing logs, keeping people safe (including cancelling group accommodation), measures to protect property, emergency procedures for dealing with an incident, information packs for teams out assessing damage, welfare plans and keeping the main hub going to coordinate responses.

Within the team, we allocated clear roles for team members – a communications lead, an operational incident lead, incident decision log-keeper, welfare manager, area surveyors, volunteer coordinator and logistics coordinator.

Alongside this, we developed a clear communications strategy, alerting our regional comms team, Assistant Director (Operations), Regional Director, Consultancy Manager and Operational Risk Partner to the developing situation. We set up teleconferences for the morning after the high tide and the next day, as high tides were still predicted for the evening/following morning, to keep everyone up to speed and respond to calls for assistance/advice.

By the end of the working day on the 13th, we were braced for an extra 1.56m of sea on top of the high tide. Several flood warnings, with immediate action required, were in place and the Flood Information Service maps for North Norfolk were a sea of red warnings.

So, what happened?

Fortunately, all the factors that together would create the perfect surge didn’t happen at the same time so the surge height was lower than predicted, with an overall low impact on property and wildlife.

Our toilet block at Brancaster was flooded and the adjacent University College London’s Old Lifeboat House had 60cm of water in it but no serious damage. There was significant movement of shingle along a ridge that had been overtopped, and the freshwater marshes between Cley and Salthouse were under water, which also flooded the main coast road, closing it for a few days. Sea defences had been eroded and scoured, the sails on the windmill had moved, and boats had come loose from their moorings and washed up. One of the main operational issues was the volume of thatch and debris that washed up. We logged all the incidents, prepared remedial works and quickly set up a project code to track all related spend.

Our volunteer observers were invaluable:

We walked the coastline from Stiffkey to Blakeney to see if there was any damage caused by the surge, luckily very little was noted. Some wildlife were casualties including one seal. The next call was to clear up as much of the rubbish brought in on the tide as possible and to put the walkway back in place on the Point.

Peter, Volunteer Ranger

It was great to be given the opportunity to help survey the consequences of the surge, physical damage, litter, wildlife casualties, etc. Although what really sticks in my mind was trying to make notes in horizontal, torrential rain and a biting easterly wind. Coffee and cakes at the end were much appreciated! Helping with the litter-picking was a positive task to return Blakeney Freshes to their pre-surge state. It was interesting to see the types of rubbish washed up. How do so many people lose one flip-flop? It was good to be kept up to speed as to what the next steps would be and being part of the larger team and being able to get to know some of them better was really good for me.

Bud, Visitor Welcome Volunteer

Lessons learnt and top tips

Lessons from the 2013 surge set us up really well to prepare for a similar event. We had a clear preparation and response plan, and taking the time to log all the considerations and list new discoveries means anyone can pick it up, without worrying about missing things and losing staff knowledge through team changes.

Communication was also really strong, and alongside defined roles we had confidence as a team that we did the best we could.

What’s next?

We are linking our ‘in preparedness actions’ list with hazard logs and to our infrastructure inspections. We will be factoring considerations into our adverse weather policy and testing our emergency plan.

We are currently undertaking a coastal adaptation project, scoping the considerations that coastal change will bring across our different work areas. This includes identifying projects and the key actions we can take to improve our resilience.

We know we will have another surge; it’s just a question of when!
Developing a coastal strategy, where the means was as important as the end

Emily Gillespie, Coast Project Manager, London and South East

The backdrop

Two years ago, in 2015, London and South East, along with other National Trust regions, took part in a year-long celebration of the coast. It was a fantastic year full of energy and passion, and with good reason – we were celebrating 50 years since the launch of the Neptune Coastline Campaign ('Enterprise Neptune' as it was originally called). The Trust launched Neptune in 1965 in response to growing concerns about rapid and unchecked development at the coast. Its mission, via funds raised through Neptune, was to acquire as much 'pristine' coastline as it could so it could be protected and enjoyed in perpetuity. Fifty years on, the success of Neptune was clear to see: through the generosity of thousands of people, the Trust has acquired hundreds of miles of coastline, and we now look after 775 miles across England, Wales and Northern Ireland. Neptune's success also reflects the tremendous appeal that the coast holds for many people in the UK. In a survey conducted for the Trust in 2015, 94% of people interviewed agreed that it was important to them that Britain’s coast is kept beautiful for future generations to enjoy – a resounding note of support for the Trust’s work at the coast, if Neptune’s success was not proof enough.

Shaping the next 50 years

As the celebrations drew to a close, the coastal teams in London and South East, led by a project manager, set about creating a strategy which would set the direction for our work for the next 50 years. Neptune has had a significant impact in the London and South East region, with over 80% of the coast we own acquired since 1965, including the iconic White Cliffs of Dover. The activity and attention during 2015 also helped to build the profile of and sense of connection between the coastal sites in the region, which are spread out from our southern and westernmost edges at the Isle of Wight across to our easternmost point at Sandwich and Pegwell Bay in Kent. The linking up of individual projects and events started to forge a more cohesive identity for these sites and gave us the sense of how and where we could be greater than the sum of our parts by uniting and working together.

As well as being a year of celebration, 2015 was also an opportunity to take stock and consider where we should focus our efforts on the coast over the next 50 years. In 1965 the threat of over-development provided a pressing need to which we could respond. There are fewer opportunities to acquire land of this kind (thanks in part to Neptune’s success) so we need to concentrate instead on today’s most pressing challenges and opportunities, including climate change and rising sea-levels, the decline in nature, development pressure, and the delicate balancing act required to manage increasing numbers of visitors in the country’s most densely populated region, alongside the need to protect the health, beauty and tranquillity of the landscapes they come to enjoy.
The means

From the outset the approach taken to shaping and producing the final strategy was deliberately collaborative. The aim was to create a document which would harness the energy, passion and knowledge of the coastal teams and a wide range of relevant consultants, and ultimately deliver a strategy they would own and use.

The process started with a thorough review of what outcomes we wanted the final strategy to help us achieve. From there we established a framework to structure our thinking, which included setting out what we wanted to see happen and how we were going to realise that. A collective thinking and refinement process was created via two workshops and a three-stage review and sign-off process, aimed at creating an environment in which, guided by the project manager, regional and national consultants, the coastal teams and Senior Management Team, could feed in their thoughts and ideas.

A matter we had to tackle early on was whether or not the strategy we were producing would be a primarily internal one, a ‘touchstone’ to guide us in our work, or a wider piece, bringing together players from across our coastal properties. We decided we needed to start by distilling our ambitions for the coast under our ownership, especially given the (at the time) relatively recent publication of the organisation’s overarching strategy, Playing our part, and the latest report outlining the Trust’s ambitions for responding to climate change, Shifting Shores; Playing our part at the coast. We wanted to bring together and articulate what the principles and ambitions set out in these documents meant for the coast in our region. But, we also determined that the strategy should be accessible to others less familiar with the Trust’s coastal work, be they other internal colleagues or external professional partners. It was also intended that the resulting strategy could be a conversation starter with partners, and that we would remain open to updating or adapting our approach.

The end

The final strategy, Playing our part on the coast in London and South East, creates for the first time a cohesive identity for the region’s coastline and unites disparate sites under a common set of themes. The process of creating the strategy showed us that planning in detail beyond ten years was impractical, so we set a ten-year timeframe for defining success in a measurable way, and set a broader vision for beyond that. The Coast Group has been tasked with monitoring delivery, and in turn they will report on progress to the region’s Land, Outdoors and Nature Board, ensuring that the strategy is strongly embedded.

A final reflection – the process matters

One of the key purposes in producing the strategy was to create a stronger identity and profile for the coastal sites the Trust owns in London and South East, whilst another was setting an overall future direction for our work there. Just the existence of the document, the ‘end game’ as it were, helps with achieving these; it represents a commitment on our part to the coast which goes well beyond the celebrations of 2015 and feels like a fitting way to proceed on the next stage of our coastal journey. However, in this project, the process has been as important in fulfilling our original purposes as the outcome, possibly even more so. The collective thinking and brainstorming which shaped the final outcome have helped create a wider sense of ownership because the strategy reflects the passion, knowledge and expertise of many of those involved.

References

2. The land-use survey of the coast carried out in 1964–5 prior to Enterprise Neptune identified 3,342 miles of ‘pristine land for permanent preservation’. Through Trust ownership and protection by Areas of Outstanding Natural Beauty, National Parks, Heritage Coast status and Sites of Special Scientific Interest, the total stretch of coastline in England, Wales and Northern Ireland which is considered ‘protected’ is 3,139 miles, equal to 94% of the coastline identified as ‘pristine’ in 1965. Source: National Trust (2015) Mapping our shores: 50 years of land use change at the coast: 15.
Sea-level rise and the impact on cultural heritage
Oliver Maurice, Honorary Director of Membership and Advocacy, International National Trusts Organisation

Background

It is fairly certain that some readers will not have heard of the International National Trusts Organisation (INTO), and it is important to put this in context. For 40 years or thereabouts, the world’s National Trusts have been coming together every other year for the International Conference of National Trusts (ICNT). At the Washington ICNT in 2005 a steering committee was established to produce a Charter for the establishment of an umbrella organisation. At the following ICNT in New Delhi in 2007, the Charter was agreed, and so the INTO was founded with a mission to ‘promote the conservation and enhancement of the heritage of all nations for the benefit of the people of the world and future generations’.

When I retired in 2002 I offered my services in a voluntary capacity to the worldwide National Trusts to support them in any way I was able, using the expertise I had gained after 32 years with our own National Trust. This resulted in visits to Bali, Sumatra, Java, New South Wales, Fiji, Barbados, Malta and Canada, in a consultancy capacity. At the Delhi Conference I was invited to apply for the post of Honorary Director of INTO, and in March 2008 I started in my new role working alongside Catherine Leonard, who is now our much-admired Secretary General.

Since those early days, INTO and many of its (now) 70 or so member organisations have been concerned with the impacts of climate change, arguably one of the greatest challenges of our time and likely to remain so for the foreseeable future. To that effect, at the 13th ICNT, held in Dublin in 2009, delegates unanimously agreed the Dublin Declaration on Climate Change, and at the following 14th ICNT, held in Victoria, British Columbia, delegates once again unanimously supported the Victoria Declaration on the Implications for Cultural Sustainability of Climate Change.

The INTO Executive Committee decided that INTO should be represented at the UN’s Framework Convention on Climate Change (UNFCCC) 2009 Conference of the Parties (COP 15) in Copenhagen. I was a member of our delegation, led by the then Chairman of INTO, Simon Molesworth, and have since attended a further five COPS, leading the delegation at COP 21 in Paris in 2015 and COP 22 in Marrakech last November.

These two Declarations have provided much of the basis for our arguments at the COPS that greater attention must be paid by world leaders to the effects of climate change on, specifically, the cultural heritage, both tangible and intangible.

COP 22, Marrakech

It is perhaps worth explaining a little of how the COPS work. INTO, as a NGO or non-government organisation, is, like the other 900 or so NGOs that are admitted as an ‘observer’ organisation, unable to take part in the high-level discussions nor, for the most part, to be present at them. However, we are still able to make our voice heard by networking and applying for and obtaining one of the many side events held during the fortnight’s duration of a COP.

There are invariably many more applications than slots, and the UNFCCC Secretariat looks more favourably on joint applications. So, at Marrakech, for the first time, we succeeded in being awarded a side event with the International Polar Foundation. We were also fortunate to be invited not only to repeat this side event at the British Embassy pavilion and to hold another side event there the following week on a slightly different topic, but also to speak at the UNESCO pavilion on the same topic.

We also successfully applied for a stand where we were able to exhibit relevant material related to our members’ concerns and to show a film on a loop entitled Troubled Waters concerning the ever-present threat of sea-level rise to the inhabitants of Kiribati. Kiribati is effectively a microcosm of the many present and potential repercussions of sea-level rise to the cultural heritage; see page 74.
Sea-level rise

The Intergovernmental Panel on Climate Change (IPCC) in their 5th Assessment Report attributed, with 95% certainty, the warming of the past half-century mainly to the burning of fossil fuels. For some a 95% probability is still not enough, but for most reasonable people the ‘smoking gun’ exists in the mounting evidence.

Due to global warming, glaciers the world over are retreating and the ice of Antarctica and Greenland are melting at an increasing pace. That, coupled with the warming of the upper layers and thus the expansion of seawater, is causing the rise in sea levels.

Coastal erosion, inundation and much more frequent coastal surges mean that people are having, and will have, to flee their homes in the future, leaving their cultural heritage, their history and their livelihoods behind.

Climate change poses a threat to the well-being of all peoples of the world, but its impacts will disproportionately affect the developing world. It threatens the viability of many traditional practices – indeed, entire cultures – that have evolved in harmony with their natural surroundings.

A series of difficult questions arises if populations are forced to leave behind the land upon which they have survived for countless generations. This is especially so for the peoples for whom the link to the land is an essential component of their lifestyle, as is the case in many of the South Pacific islands such as Kiribati. How are cultures and identities to be maintained if people are required to leave behind their homes? How do you replicate your island culture if you are forced to move to, say, the outskirts of Melbourne or Auckland?

Other speakers at the side event explored some of these issues further, in particular:

- The role of cultural heritage as a tool for integration and social cohesion.

While this serious situation in some of the South Pacific islands is ever-present, the threat is already real or posed in the coastal regions of many other countries around the world including the UK, the US, France, etc.

A solution?

To my mind the ultimate solution to the problem is to aim for 100% renewables as soon as possible. It is generally accepted that, since the Industrial Revolution, the burning of fossil fuels has been the primary cause of global warming leading to sea-level rise. At the present time we are on course for a temperature rise of well of over 3°C above pre-industrial levels. This has to be brought down to a maximum of 1.5°C and preferably lower. The continued licensing of fossil-fuel extraction, be it coal-mining, fracking or drilling for oil, simply has to cease immediately if the planet is to be saved. This is what heads of governments accepted by signing up to the Paris Agreement following COP 21. Since then, of course, the US president pulled the world’s largest economy out of the Paris Agreement; however, it is encouraging that a number of its state governments, cities, towns and businesses of every size immediately volunteered to sign up. It also demonstrates that the actions are in our hands as well as those of the politicians, councillors and businesses we choose to support.

And actions speak louder than words or, in this case, signatures!

References

1. Both documents on climate change can be found on the INTO website https://into.org.uk/programmes/campaigns/climate-change

About the author

Oliver Maurice was Director of the National Trust's Northumbria Region between 1984 and 1992 and of its North West Region from 1992 until his retirement in 2002. He remains very much involved with the Trust through his work with INTO.
Troubled waters: heritage and climate change

Sara Penrhyn Jones, Senior Lecturer in Media Production, Bath Spa University

I first heard of Kiribati after meeting a remarkable woman, Claire Anterea Tangaroa, at a UN Climate Change Conference in 2010. She described how coastal inundation was affecting her homeland, before saying something that I have never forgotten: ‘The way that I see it, the future for my people is ... disappear.’

To test your geographic knowledge, you could try to find Kiribati (pronounced Kiribas) on a map. It may take a while to locate this island nation within a massive region, sometimes referred to as Micronesia. You might even need to reach for your reading glasses to spot the 33 atolls, scattered like crumbs in the Pacific Ocean, stretching across 2,400 miles of water. Kiribati was the historic site of one of the bloodiest battles of the Second World War. Today, it is also presented in the global media as a sinking paradise, and a gloomy premonition for the rest of us.

Claire was haunted by the awareness that the entire population of Kiribati, over 100,000 people, may be displaced by rising seas this century. She was anticipating the pain of lost connections to land, culture and language. I was struck by the capacity that climate change has to undermine fundamentally everything that feels meaningful to us. Yet back then, in 2010, very few people seemed to be talking about this more cultural and emotional aspect of environmental change.

This personal encounter helped to shape the collaboration between a team of university researchers and the National Trust on the project ‘Troubled Waters: heritage in times of accelerated climate change’. We’ve worked together to try to understand more about how specific communities respond to the current or projected threat of climate change.

Closer to home

As well as focusing on Kiribati, the Trust helped us choose two other sites for our research in the UK: Porthdinllaen on the Llŷn Peninsula in North Wales, and Durgan in Cornwall, the village below Glendurgan Garden. Both have been identified by the Trust as needing a coastal adaptation strategy. Each of these places has a coastal community that is experiencing current or projected inundation and flooding. We know that climate change will increase the severity and frequency of extreme weather globally, and that sea levels are projected to rise steeply. This also means that relying on hard sea defences in the long term might be unrealistic. Although there may be differences in terms of scale and magnitude of change in different locations, we all need to find a way to come to terms with, and plan for, change.

Dr Bryony Onciul, from the University of Exeter, talked with local community members in Durgan and the Glendurgan National Trust team who work on site, facilitating conversations around planning for the future. Despite being an idyllic environment for most of the year, the coast around Durgan experiences landslides that frequently fall trees and erode the coastal path, causing it to be regularly relocated. Storms also threaten and damage the waterfront road and buildings. Staff and community members emphasised their love for the place, including the seemingly timeless gardens, and the sheltered beach, with its hermit crabs and anemones, so popular with families all year round.

Yet, these conversations highlighted that there were differing priorities on how this heritage should be managed now, and in the
future. Ideas about what even constituted this heritage were also very diverse. It ranged from the tangible – buildings being weathered and battered by storms – to the intangible heritage practices of boat-building and water access. Changing environmental and social factors have also altered the make-up of the village, sparking discussion of the importance of the next generation in maintaining the life of the village and continuing its traditions.

One key finding was the need to address local current concerns, which may seem small scale, such as parking and toilets, and to build and maintain positive relations within the Trust and between it and the local community. This seems essential in order to plan realistically for long-term, large-scale issues such as climate change and its local impacts.

Porthdinllaen is a traditional fishing village and similarly vulnerable to coastal inundation and flooding, as well as landslips. The long-term leaseholders of the cottages on the beach expressed acceptance of some flooding, due to being so close to the sea. Although all the tenants were non-permanent residents, most also had deep personal connections with the houses and place over several generations. There was a belief that these houses would not merit very expensive coastal protection, yet there was some adaptation that they could manage themselves (such as installing floodgates on the doors of houses). One tenant also spoke of the need for the Trust to factor in climate change when wording long-term lease agreements at vulnerable sites. Some thought it was human nature to be more concerned with issues such as mortgage repayments, saying that ‘nothing comes through the letterbox’ on climate change. Others who worked for the Trust, or were permanent local residents, emphasised the broader economic and social importance of Porthdinllaen for the wider community in the nearby village of Nefyn, and beyond.

One suggested the bold idea of relocating the historic houses and amenities to higher ground. A local business-owner was very sceptical about whether climate change was happening at all, citing apparent mixed-messages from the media.

Raising awareness without putting people off

To understand how the climate-change minefield may be negotiated (or not) by the heritage sector more generally, Dr Anna Woodham, from King’s College London, spoke to 15 representatives from heritage organisations across the UK. She found that there was no cohesive approach to communicating climate change. While there may be a false public perception that heritage management is about keeping things the same, most professionals in this arena understand that heritage is about managing change in a responsible way. However, raising climate change is particularly difficult because it may lead to reputational damage, as the public may expect an organisation to save and protect everything. Climate change is also a very broad challenge to try to understand and address in a concrete way. Furthermore, there may be large differences in terms of understanding and perception within organisations themselves, indicating a need for internal training. Some individuals felt motivated, but unsure of how to proceed, feeling a sense of paralysis within their organisations. There was a sense that conversations with the public were very important but also risky. There was disagreement about whether the heritage sector even should be explicitly calling for action on climate.

A collective responsibility

This project team believes that those of us who are heritage professionals or enthusiasts all have important values in common. We all care about the special places and buildings that connect us to our own histories and to the natural world more
When I moved from Montana to Cornwall in 2007, I’d spent most of the previous decade curating a derelict homestead in the foothills of the Rocky Mountains. That place had gradually convinced me – contrary to conventional wisdom – that rot and remembrance could go hand in hand. At the homestead, I worked with things that were crossing over the threshold between culture and nature, and my doctoral thesis argued that the accommodation of decay and disintegration could sometimes offer more productive opportunities for interpretation and engagement than straightforward preservation.

I arrived in the UK keen to test these ideas out in other contexts, and found myself living a few miles from Mullion Harbour, Cornwall. Following on from the recommendations in the 2005 report *Shifting Shores* (which accepted that, ‘valued cultural features in the coastal zone will be conserved and enhanced as far as practicable, whilst not necessarily seeking to protect them indefinitely’), the decision had been taken that management of the Victorian harbour would eventually transition to managed retreat. Mullion seemed a good place to think about the potential for a heritage of process, rather than permanence.

I contacted the National Trust managers at Mullion to explain my interest; the conversations I had with them led to an exploration of change and adaptation at other Trust coastal properties, including Studland and Brownsea Island in Dorset; Formby, Merseyside; the Gower Peninsula, West Glamorgan; and Orford Ness, Suffolk. I returned to Orford Ness to speak to managers about the policy of continued ruination applied to the remnant structures of the Atomic Weapons Research Establishment, and to visit the imperilled lighthouse. I made a side trip to Castle Drogo, Devon, to check out their imaginative, counterfactual interpretation of the decay of the structure (had they chosen not to carry out conservation work).

All of these places were negotiating the...
tension between holding on and letting go in creative – and sometimes contested – ways. I became familiar with the Trust mantra about conservation being defined as the ‘careful management of change’, and in each place I tried to understand the different ways in which that care was being applied. I visited other places as well – St Peter’s Seminary in Scotland, Duisburg-Nord Landscape Park in Germany, various properties in the Cornish Mining World Heritage Site – but the most useful conversations I had were often at Trust properties, where discussions developed into relationships that were sustained through new projects and publications (including the current Heritage Futures project,¹ and the co-authored Anticipatory History²).

Coming to acceptance

The research I’ve been carrying out over the last decade has been brought together in my recently published book, Curated Decay: Heritage Beyond Saving.³ By now it seems evident that climate change, falling budgets and other pressures will mean that some heritage sites cannot be protected in perpetuity. If heritage has to be lost, I argue, this should not always be viewed as a failure, but can involve a deliberate decision to allow nature to take its course and to learn from change. I ask what happens if we choose not to intervene, and what possibilities emerge when decay is embraced rather than resisted.

Since publication, I’ve been pressed several times by journalists to propose a ‘hit list’ of places where a philosophy of curated decay could be applied. I struggle with answering this question, partly because I’m reluctant to put forward a generic, one-size-fits-all solution to what are always complex, site-specific problems of investment, attachment and adaptation. The book is as much about the challenges inherent in applying such an approach as it is about instances in which its application has been successful and relatively seamless.

I’ve also come to appreciate that there is something special about the way the Trust thinks about its responsibility for the special places in its care, and that it’s not a coincidence that so many Trust properties found their way into my research. When I started researching this topic, I was sceptical about the claim that places could be protected ‘for ever, for everyone’. But now I wonder if it isn’t the ability to take the long view – to look into the deep future – that gives the organisation the freedom to experiment with approaches that seem risky and radical to organisations more concerned with short-term outlooks (and politics).

English Heritage acknowledges that sometimes structural change is unavoidable, but stops well short of embracing the potential for retreat and ruination to engage and educate.⁴ In the United States, the National Parks Service recently published a climate change strategy for cultural resources:⁵ while reasonable efforts will be made to protect resources and mitigate the effects of climate change, when this isn’t feasible managers may choose to document threatened features and prepare for their ruination and eventual loss. The organisation has yet to make the tough decision to apply this policy to a specific site, however.

It’s not easy to accept that adaptation may mean letting some of the places we know and love change beyond recognition. However, it is easier to do this if you appreciate that sometimes caring for a place ‘in perpetuity’ may involve taking a step back, and seeing places as they are caught up in ecological and geological processes that operate on much longer timeframes than our limited human perspective usually allows for. Stories about the colonisation of buildings by travelling plants, the interplay of structural and coastal erosion, and the abiding aesthetics of decay can be as interesting and valuable as stories that require a (more or less) stable historic artefact as a reference point. Curated Decay represents an attempt to tell some of these stories, in collaboration with a handful of places where these experiments in creative non-intervention are already underway.

Reference

1. Heritage Futures project: see website https://heritage-futures.org/

Left: Mullion’s vulnerable harbour wall will soon reach the point of being structurally impractical and financially unviable to repair. © National Trust/Layla Astley

Above: Curated Decay. © University of Minnesota Press
From a coastal perspective the publication of *Curated Decay* is a timely reminder that as climate change kicks in, the pressure to ‘defend’ the shoreline from increased coastal erosion and flooding will intensify. Less developed rural coastal areas, including many natural and cultural heritage sites, will not have the priority of urban areas when it comes to defence, and consequently face an uncertain future. It’s here that adaptation to coastal change through our ‘Shifting Shores’ approach becomes the plausible alternative.

To help plan for this uncertain future, the Trust undertook research looking at how our coastline is likely to change over the next 100 years through a process of Coastal Risk Assessment (CRA) and the Future Coast project. This evidence allowed us to identify 90 hotspot coastal change locations across the Trust: places where increased flooding and coastal erosion, driven by sea-level rise, will pose an increasing threat to people and place.

*Curated Decay* reveals some of the sensitivities that we all experience in our work at the coast when it comes to managing change. We’re very conscious that at many of these special coastal places we have some big challenges associated with sea-level rise and increased storminess. We know also, and sometimes from bitter experience, that managing coastal change can be contentious. *Curated Decay* is likely to be a red rag to a bull for die-hard believers in ‘hold the line’, but for me many of the topics Caitlin DeSilvey explores simply reflect the everyday angst and paradox of coastal conservation. At the coast we as a society and, on occasions, the Trust, try to impose permanence in coastal landscapes whose very nature and beauty is characterised by dynamism and change.

In the future there may be a place for sea defences but in the Trust we’re clear that these structures will only buy time so that we can develop long-term and adaptation-based approaches to manage our future coast. This will mean making some tough choices, not least for coastal cultural heritage, and loss will occur. Our challenge is to tell the story of the long-term benefits of this adaptive approach, and through reference to Mullion Harbour and Orford Ness, *Curated Decay* perhaps helps build our confidence to think the unthinkable at the boundaries of our conservation comfort zone.

We accept the challenges of looking after coastal heritage, and that includes accepting our limitations: even the granite stones of Botallack Mine in Cornwall will succumb to time and weather one day.

© Barry Gamble
Moving below the surface: shaping a marine conservation role for the Trust

Sue Wells, Marine Project Manager

When I spotted the advert for the National Trust’s first Marine Project Manager, I admit I was slightly surprised. Despite having been a member for decades, I had assumed, probably like many others, that its main interests were on land. However, conservation of the marine environment is inextricably linked to sound management of rivers, catchments, agricultural land and terrestrial habitats – areas about which the Trust is very knowledgeable.

Indeed, an interest in the sea was there at the beginning with our first property, Dinas Oleu, overlooking Cardigan Bay. This interest was given a major boost through Enterprise Neptune, launched in 1965, which aimed to save as much unspoilt coastline as possible from the development pressures it was then facing. By 1989, our potential role in marine conservation was recognised in an internal report. Conservation of intertidal marine wildlife had been an important consideration in the acquisition and leasing of parts of the foreshore of Strangford Lough, Northern Ireland, and Low Newton, Northumberland; fish farming was seen as a threat to scenic value and also to the marine environment; and we actively supported Lundy’s designation as England’s first Marine Reserve, collaborating with the Marine Conservation Society (MCS) on the establishment of Voluntary Marine Conservation Areas at Wembury and Low Newton. Because of our extensive ownership of the coast (then 500 miles) and consequent control of access and damaging land-based activities, we knew we could do more for marine conservation – for example, by supporting the designation of statutory and voluntary Marine Protected Areas (MPAs), and by leasing areas of the seabed next to Trust-owned coastline where these had conservation interest.

Today we own 775 miles (10 per cent) of the coast around England, Wales and Northern Ireland. About 180 of around 235 coastal properties include marine estate in the form of leased or owned foreshore and, in some cases, subtidal seabed. Quite how much seabed, we don’t know: initial estimates suggest that some 9,000ha are in our care through ownership or leases, over 50 per cent of which is found in...
Strangford Lough and 10 per cent along the North Norfolk coast. We need a better understanding of these assets, and of our intertidal and subtidal habitats. Most is intertidal, including large areas of salt-marsh and mudflat, and some rocky intertidal reef – all habitats of critical conservation importance for marine biodiversity. A much smaller amount is subtidal, such as Newtown Harbour, Isle of Wight, where we own a tranquil network of creeks and channels.

We are responsible for numerous islands, cliffs, headlands, beaches and emergent sandbanks that are critical habitat for sea life. Common seals breed on at least four Trust properties and there are nationally important breeding populations of Atlantic grey seals on the Farne Islands in Northumberland and the Dale and Marloes coast in Pembrokeshire. Numerous properties protect nationally and/or internationally important populations of seabirds, such as the Farne Islands and Cemlyn Bay on Anglesey (sandwich and Arctic terns) and the North Norfolk coast and East Head in Sussex (little terns). However, protection of breeding and roosting colonies of these iconic species is of limited long-term value if they are threatened in other ways. Many seabirds are declining, with shags, kitiwakes and puffins recently added to the IUCN Red List, a primary cause being the disappearance of their food sources.

Current marine conservation priorities

Although the UK has long been considered a global leader in conservation on land, this does not extend to the marine environment, despite its heritage and strong tradition in the marine sciences. My appointment fortuitously coincided with some soul-searching by marine NGOs and academics on how to address major challenges.

The UK was late to designate MPAs and although rapid strides have been made in recent years, establishing an ecologically coherent network of well-managed MPAs, as required by the Convention on Biological Diversity, is an urgent priority. Addressing pollution at sea, particularly plastics, implementing marine spatial planning, managing fisheries sustainably and mitigating the multiple threats from climate change are equally critical.

Making a difference

We have been looking at the particular areas where we could make a difference to marine conservation, building on the broad areas of interest laid out in our 2006 Coast and Marine Policy: an aspiration to deliver Integrated Coastal Zone Management within our site management and advocacy at all levels; support for development on the coast only where proper account is taken of coastal change and sea-level rise as well as environmental, cultural and landscape considerations; and ensuring that acquisition and leasing includes the seabed as appropriate. Many of our partners are already involved, but we have some unique and attractive attributes: access to some of the most important marine wildlife locations; huge scope for education and awareness-raising among our members and visitors; and land management practices that do not impact on the marine environment.

Survey and monitoring

Once we have a better understanding of our marine assets and their wildlife, we shall set up a more co-ordinated approach to survey and monitoring, similar to that for terrestrial habitats. Marine surveys have often been undertaken by other organisations and the data not necessarily lodged with us. We plan to collate this to provide a baseline understanding of the marine wildlife we care for. Many properties collaborate with the MCS and the Wildlife Trusts on initiatives such as BioBlitzes and shore monitoring programmes like Capturing our Coast. We need to bring these efforts together, ensure adequate training of rangers and volunteers, and introduce standardised methods to allow a full analysis.
Improving MPA management and supporting completion of the network

Our properties include many of the ecologically richest areas of coastline which tend to occur adjacent to the most diverse and productive marine areas: for example, the species-rich chalk downland of the Sussex coast drops down the famous white cliffs to submarine chalk reefs inhabited by a myriad of underwater creatures. These are often the areas designated as MPAs or proposed for inclusion in the national MPA network. At least 122 properties overlap and/or are adjacent to European Marine Sites – marine areas designated under the EU Directives for habitats and birds as Special Areas of Conservation (SACs) and Special Protected Areas respectively. Some 45 properties overlap and/or are adjacent to Marine Conservation Zones (MCZs) which are sites protected for their national importance. A further 27 properties overlap or are adjacent to proposed MCZs or MCZ extensions. Many properties also overlap with SSSI, ASSI and Ramsar sites that protect marine species and habitats.

We are already involved in management of individual sites, such as Lundy, often participating in partnership forums that are increasingly being established to manage locations where there are overlapping and adjacent designations. Undoubtedly, we could do more to support partners like the regional Inshore Fishery and Conservation Authorities (the primary regulators for MPAs in England) and other management bodies. For example, Birling Gap (which receives around half a million visitors annually) and Cuckmere Haven in Sussex are the main public access points to Beachy Head West MCZ, and in particular to one of its Educational Conservation Areas. There is immense scope here for direct involvement in interpretation, management of recreation and monitoring of habitats and species that the MCZ has been set up to protect.

The future of the MPA network is a little uncertain under Brexit – the long-term management arrangements for European Marine Sites is not yet known – but we can help make sure that new policy and legislative frameworks ensure effective management, and that the network is completed through the designation of the final tranche of MCZs.

Marine planning

We already play an active role in the UK’s marine planning process by responding to consultations and informing national policies for development activities that might affect our places. This will help us to ensure that our approaches to coastal management and defence in the context of climate change will be adopted, and that the value of seascapes, as well as landscapes, is fully understood in the planning for future developments, such as offshore wind farms and tidal energy fields.

Fisheries and sustainable seafood

We have promoted the use of sustainably caught fish for years, through our food sourcing standards and the Sustainable Fish recommended practice, which is based on MCS’s Good Fish Guide. In North Wales, we helped set up a plant to process ready-to-eat dressed crab, caught with lobster in the local Aberdaron fishery.

We may also want to develop a greater advocacy role, promoting sustainable fishing through appropriate policy development,
Recreation

The access provided and encouragement of outdoor activities may in some places conflict with our aspirations to protect marine wildlife, whether from motor or sail craft, or recreational and sporting activities on our beaches. With the roll-out of England's new Coast Path, supported by our project Coastal Connections, ensuring good management of recreation will become a priority.

We have helped develop codes of conduct for particular activities; for example, staff at Marloes, Pembrokeshire, are helping manage recreation in the adjacent Skomer MCZ, and Lundy MCZ has developed an underwater trail and interpretation below, as well as above, water. Such places provide exemplars that could be extended to other 'hot-spots'. Most marine-based recreation is unregulated and only recently has research begun looking at the impact of such activities on marine wildlife. The findings of studies commissioned by Defra and the Marine Management Organisation will be used to advise our properties.

We are also looking at the potential for installing environmentally friendly designs of moorings, which have been successful in other countries but have so far only undergone a few pilot trials in the UK. Anchoring and mooring can cause immense damage, with the chains sweeping across the seabed, uprooting seagrass and other communities, according to shifting winds, tides and swells. We're working with partners at Porthdinllaen in the Pen Llŷn a'r Sarnau (SAC) which has one of the largest and densest seagrass beds in North Wales, covering an area the size of 46 football pitches, but where large circular gaps are now visible.

Pollution and litter

Nutrient enrichment and soil loss/run-off are two growing concerns in inshore waters, particularly estuaries and enclosed bays. The Trust's 2008 position on water management shows the potential we have for demonstrating how good land management and farming practices can reduce these impacts. Catchment Sensitive Farming, which involves working with farmers to reduce agricultural pollution, and the project 'Catchments in Trust' encourage approaches that respect natural river catchments and their processes, and that consider impacts on water from source to sea.

Plastic pollution has become a huge global concern that directly affects our 155 properties adjacent to a beach. We are also in a strong position to take action locally and to lobby for policy changes. Many properties take part in the annual clean-ups organised by the MCS; others carry out their own clean-ups, such as our Welsh Coastodian programme, or work with other anti-litter campaigns. We plan to set up a co-ordinated system in collaboration with MCS, to involve more properties, collect data on the amount of litter collected and raise awareness of this growing threat to the oceans.

Improving ocean literacy

Trust members and visitors have a demonstrable love of the coast; what is needed now is to translate this into a similar recognition of the importance of life under water and of the value of a healthy marine environment to our well-being. We already work with many coastal communities whose culture, traditions and livelihoods are based on the sea, and these provide a starting point for innovative communication and interpretation. Wembury Marine Centre, which is run in partnership with Devon County Council, Devon Wildlife Trust and others, is an example, and similar facilities could be developed in other locations.

References

2. The foreshore out to 12 nautical miles is owned mainly by the Crown, with the Crown Estate responsible for its management. The remainder is either in public (e.g. local councils) and private ownership (e.g. Duchy of Cornwall). Beyond this limit, the seabed is ownerless but various government bodies have sovereign rights over marine resources to the edge of the continental shelf and the 200 nautical mile limit (the exclusive economic zone).
4. Good Fish Guide www.goodfishguide.org/
6. From Source to Sea: working with water (National Trust, 2008).
Give us your views!

Please take a few moments to give us your opinion of Views – these feedback forms are all read and, as necessary, acted upon. Please detach this page and send it to Views, Conservation, National Trust, Heelis, Kemble Drive, Swindon SN2 2NA, or email your comments to views@nationaltrust.org.uk.

How did you like this issue of Views?

Dull  Brilliant!
1  2  3  4  5

Would you contribute to a future edition?
If yes, what would you write about?

Do you keep Views for reference?

Are there any other comments you would like to make?

Have you any comments on a specific article?

If you read other conservation/heritage/countryside/environmental magazines, how does Views compare?

Have you any suggestions for articles or a theme for a future issue?

Your details

Whom would you suggest that we approach for an article?

Your details are useful if we need to follow up feedback but not obligatory. We would appreciate a note of your job title in order to see who in the Trust takes the most interest in Views.

Job title ..............................................
Name .............................................(Optional)
Property/office .........................(Optional)

Thank you!
Views is also available as a pdf on the intranet and on the website at www.nationaltrust.org.uk/views-magazine or by emailing views@nationaltrust.org.uk or by telephoning 01793 817791

The National Trust is a registered charity no. 205846
Printed on 100% recycled paper