CONSERVATION: TOWARDS A NATURE RECOVERY NETWORK

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Brent geese *Branta bernicla*

CONSERVATION ACTION OVER THE LAST 10 YEARS

A LOOK AT THE CONSERVATION ACTION NATIONALLY AND IN KENT OVER THE LAST 10 YEARS, AND ACTIONS TAKING PLACE IN 2021.

2010

Making Space for Nature: The Lawton review of England's Wildlife Sites and Ecological Network.

2011

The UK Government published ***Biodiversity 2020: A strategy for England's wildlife and ecosystem services.***

2012

ARCH Kent Habitat Survey.

2013

First UK State of Nature report published.

First Marine Conservation Zones designated for Kent.

2014

Kent Environment Strategy public opinion survey published.

2015

UK Referendum (implications for climate and environmental policy).

2016

Kent Environment Strategy published.

UK State of Nature report 2016 published.

2017

The UK Government published ***A Green Future: Our 25 year plan to improve the environment.***

2018

UK State of Nature report 2019 published.

Landscapes Review (Glover Review) published.

Environment Bill introduced to Parliament.

2019

Five new Marine Conservation Zones designated for Kent.

Kent Business Environment Network established.

2020

Planning for the future white paper published (planning reform).

Brexit transition period began.

Kent and Medway Energy and Low Emissions Strategy published.

Kent Nature Partnership Biodiversity Strategy published.

UK signs Leaders' Pledge for Nature: Commitment to reversing biodiversity loss by 2030.

Climate and Ecological Emergency Bill has its first reading.

2021 AND BEYOND...

Environment Bill to get Royal Assent (Nature Recovery Networks, Biodiversity Net Gain).

Environmental Impact Assessment and Strategic Environmental Assessment reforms due this year.

NATURAL CAPITAL

CHRIS DRAKE AND HANNAH SIMMONS, KENT COUNTY COUNCIL, AND KATHI BAUER, SOUTH EAST RIVERS TRUST

Definitions and policy development

The concept of natural capital is a powerful tool that helps us understand and value the goods and services we get from the natural world. Kent is a county rich in natural capital, but some of the most valuable services this provides are intangible and therefore not properly considered in decision making and investment.

The term "natural capital" is not a direct replacement of the term "ecosystem services"; rather the distinction is that ecosystem services are the "flows of benefits" which people gain from natural capital, and natural capital is the stock of habitats and species from which these benefits flow.

Natural capital has become the more familiar term in recent years, partly because of the government's NCC – an independent advisory committee (2012 to 2020) chaired by Professor Dieter Helm. During its second term (2016 to 2020), the committee focused on helping the government develop its 25YEP. Natural capital is now at the centre of the Environment Bill, the legislation which will enact the 25YEP. This translates through to LNRSs, which will need to consider the contribution that natural capital principles and investment can make to delivering the NRN. Nationally, the Office for National Statistics has been developing Natural Capital Accounts since 2016, detailing the extent of natural assets on a broad habitat level, as well as their contribution to a range of ecosystem services. New Environmental Land Management schemes are looking to reward farmers for their contribution to 'public goods' by looking after natural assets on their land.

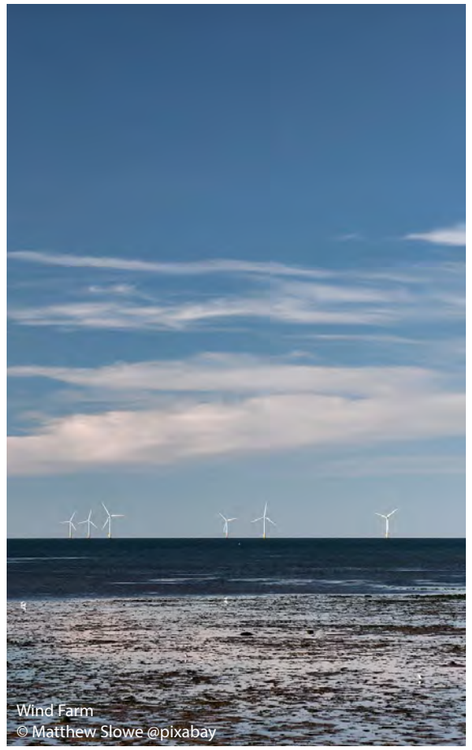
Different types of natural assets have the potential to provide different types of ecosystem services. Whether this potential is realised depends on three key characteristics for the assets:

- Quantity or extent.
- Quality or condition.
- Spatial configuration or location.

Condition and spatial configuration include a range of attributes that are specific to the type of asset and the ecosystem service being considered. The combination of these attributes relates to the ability of the asset to produce different services. For example, the extent of artificial drainage in wetland areas can negatively affect the ability of that asset to provide the service of flow regulation. Apart from the ecological function of a river system, this is vital for provision and retention of water, which in turn is important for water resources and flood risk.

A range of pressures can reduce the services natural assets are able to provide. Pollution from wastewater and agriculture, land conversion and degradation of existing habitat and climate change are some of the biggest pressures impacting the natural assets in Kent.

Investment in natural capital has also advanced in recent years. More businesses, including supermarkets, insurance companies and developers, are taking account of the natural capital on which they depend, as well as focusing on investing in natural capital as part of building resilience and their environmental offsetting. However, there is a lot more to be done here to develop markets and improve investment across Kent's natural capital.



Wind Farm
© Matthew Slowe @pixabay

Common Carder Bee, *Bombus pascuorum*, feeding on Common Knapweed © Marcus Wehrle

Kent's natural capital

In Kent, a range of natural assets support the provision of ecosystem services the county relies on. Many services depend on multiple assets in combination, and in turn any asset can provide multiple services, but their condition is often degraded. Natural England's (Natural England, 2020) Natural Capital Atlases use the best available and nationally consistent evidence to map out indicators showing asset quality, quantity and location. These atlases provide an 'off-the-shelf' natural capital evidence base for counties or city regions. Maps of four of Kent's natural capital assets are provided in figures 1-4.

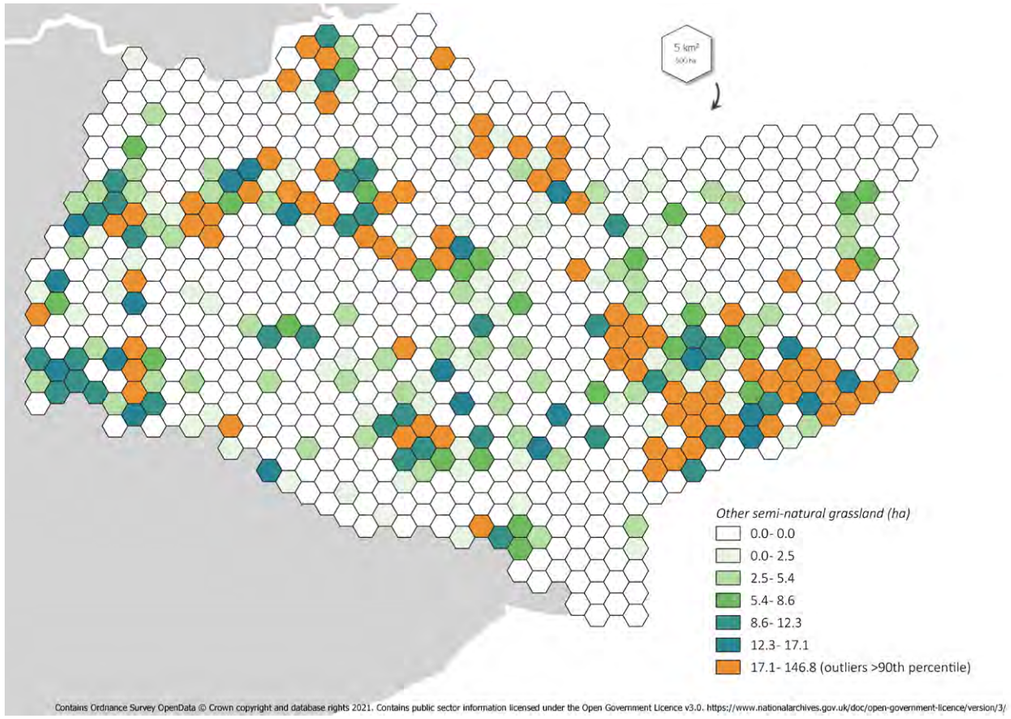


Figure 1 Area of semi-natural grassland in Kent. Area of upland meadow and lowland meadow mapped using Natural England's Priority Habitat Inventory ('upland meadows' and 'lowland meadows'). This includes traditional hay meadows and other species rich grassland.

Source: Natural Capital Atlases, Natural England, 2020.

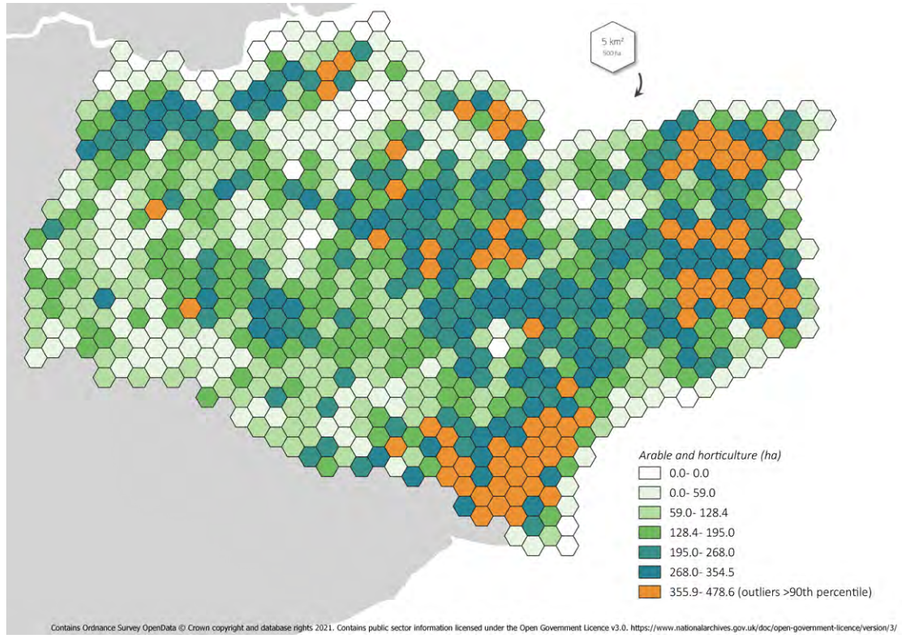


Figure 2 Area of arable and horticulture in Kent. The indicators 'Arable and Rotational Leys' and 'Horticulture' have been combined to be shown together on this map. The area of farmland used for arable and horticulture has been mapped using CEH's Land Cover Map 2015 (LCM2015).

Source: Natural Capital Atlases, Natural England, 2020.

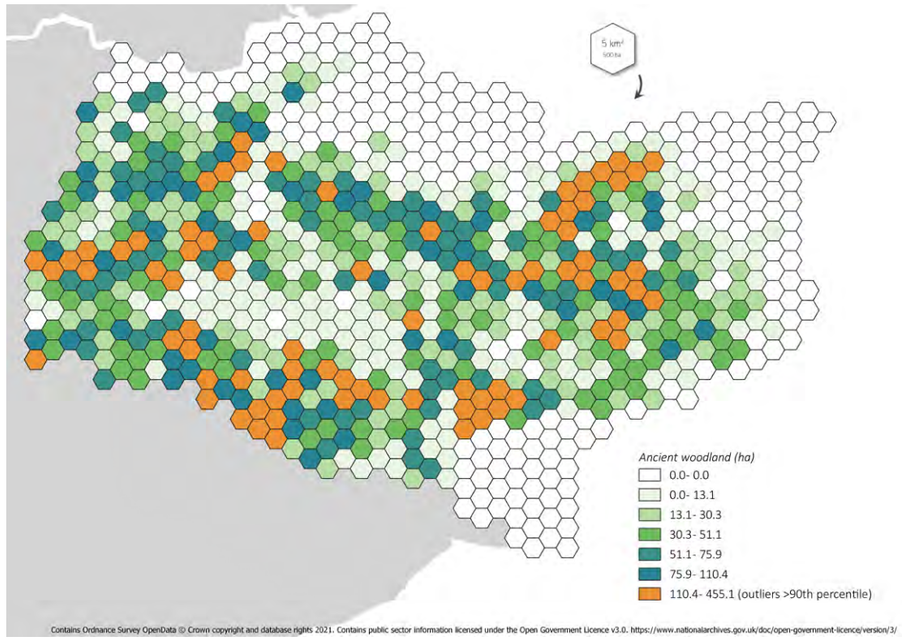


Figure 3 Area of ancient woodland in Kent. The natural capital indicator is individual/veteran trees, but it was unfeasible to map this at a national scale, so instead mapped here is ancient woodland using Natural England's Ancient Woodland dataset.

Source: Natural Capital Atlases, Natural England, 2020.

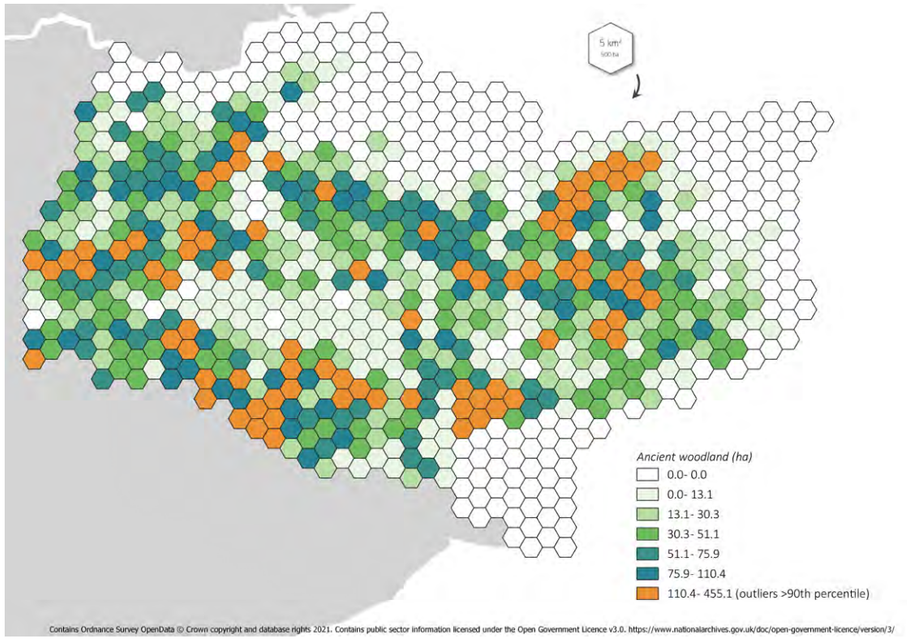


Figure 4 Area of active flood plain in Kent. The Environment Agency (EA)'s Risk of Flooding from Rivers and Sea dataset can be used to highlight the distribution of river flood plains. This map shows areas at high or medium risk. Note that coastal flood areas are also included.

Source: Natural Capital Atlases, Natural England, 2020.

Enclosed farmland covers most of the land in Kent (roughly 65%), contributing predominantly to the provision of food but also a range of cultural services. Semi-natural grasslands, including chalk downland, are much rarer and play an important role in providing clean drinking water, particularly chalk downland, located above Kent's significant groundwater bodies. These areas also support biodiversity and habitats for pollinators, but make up only 1% of the area. Approximately 808 km of rivers and streams, including globally rare chalk streams, provide drinking water, dilute wastewater, and provide opportunities for recreation; however, these are impacted by physical modifications, pollution from agriculture and wastewater, and climate change. Land area figures are from the Kent section of the Natural Capital Atlases (Natural England, 2020).

Pollinating insects are an essential part of Kent's Natural Capital. They are vital to our food production, economy, and environment. Unfortunately, due to habitat loss, pesticides, climate change and a range of cumulative impacts, pollinators are in decline. Without pollinators, most wild and cultivated flowering plants could not reproduce and will disappear from Kent, resulting in a decline in both biodiversity and agricultural production. The estimated economic value of pollinators to the UK's food production is £690 million each year, but this has only been widely recognised in recent years.

Kent County Council published Kent's Plan Bee Pollinator Action Plan in 2019. This is aimed at mobilising the people, businesses, landowners and farmers who live and work in Kent, to act to improve the habitats and the food sources of these insects and to reverse their rapid decline. Through altering services, operations, land management and planning responses to benefit pollinators, as well as raising awareness of their plight, it is hoped that the decline can be halted and reversed. Identifying pollinators as a key Natural Capital asset will be an important part of this approach, both in terms of decision making and investment.

Coastal and estuary habitats make up a total of 4% of Kent's area – including the rare shingle beaches of Dungeness – and contribute to protection against flooding, as well as providing for recreation and biodiversity. Woodland (12% of Kent's area) can provide protection from flooding and support flows, offer recreation opportunities, and provide fuel. Finally, healthy soils underpin a range of these habitats and services, not least nutrient cycling, flow regulation, carbon storage and sequestration, but are often degraded due to intensive agricultural production.

These assets in combination also create our sense of place, but there are many pressures affecting their ability to provide a given service. While more investment can help address this, care needs to be taken to ensure that in prioritising one service over another, there are no unintended negative consequences for biodiversity. This has been described as the "biodiversity double lock" approach.

Local Nature Partnership approach and market confidence

As part of a wider SENP effort, KNP has been working to ensure natural capital is used to influence decision making and achieve investment that benefits biodiversity. KNP has worked with SELEP on this, and natural capital policies and approaches have been developed, including a 2021 Sector Support Fund project called 'Accelerating Nature-based Climate Solutions'.

The approach is to protect, improve, or create natural capital assets (habitats) that supply certain goods and services in the county, to look at the risks associated with these assets, and start identifying areas spatially. Mapping natural capital is important as it provides a baseline for this approach; however, county wide mapping of our natural capital has so far proved both too expensive and too complex.

Based on Natural England and NCC methodology, draft mapping has been carried out to show the broad relationships between Kent assets (habitats) and the services they should be able to provide; however, limited data is available on the condition of habitats and current service provision. Each map is nuanced in terms of what it means. Improving this and including aspects of monetary valuation may be more feasible within specific project design.

The development of a LNRS should enable further work in this field and provide a platform for a meaningful strategic approach to natural capital in the county. NCIAs, as used in the South Downs National Park, would seem to be a useful tool if they were to nest within LNRS.

The response of Local Nature Partnerships and others is likely to involve developing the spatial and strategic tools for a natural capital approach, alongside a pipeline of projects which will help secure natural capital investment.

To enable investment, a clear case needs to be made for the benefits that natural assets can provide, now and in the future, along with the development and standard metrics and codes. For example, the equivalent to woodland carbon code and the soil carbon code may need developing for different types of assets and services. In addition, consistent approaches that support confidence from investors and allow delivery organisations to communicate and evidence their impact will need to be supported and championed.

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Beautiful wildflower meadow © James Adler

CONSERVING SPECIAL PLACES

SUE BEALE, NATURAL ENGLAND, AND LAWRENCE BALL, KENT WILDLIFE TRUST

Introduction

Places that are considered to be special for nature often gain statutory protection, by means of certain legislation in recognition of their biodiversity and/or geological value. These designations vary greatly in the level of protection they provide, and include SSSIs, SPAs, SACs, MPAs and Wetlands of International Importance (Ramsar sites). The UK network of statutory designations contains more than a million hectares of land; however, these only provide a representative rather than a comprehensive suite of sites, and instead of including every site with such interest, the individual sites exemplify the nation's most important wildlife and geological features. Conversely, non-statutory designations provide a comprehensive rather than representative suite of sites.

Ham Fen Nature Reserve

SSSI is a national designation which forms the legal backbone for conserving nature and wildlife in England, and Kent is no different. The protection of SSSIs comes from their notification under the Wildlife & Countryside Act 1981 (as amended), which means certain activities are prohibited and there are legal duties concerning how they should be managed. Sites are selected based on their fauna, flora, geological or physiographical features and are notified by NE.

SACs, designated for habitats and species, and SPAs, designated for birds, form part of a national network of sites on land and at sea, including both the inshore and offshore marine areas in the UK. These sites were previously part of the European Union's Natura 2000 ecological network, and their protection comes from their designation under the Conservation of Species and Habitats Regulations 2017 (as amended). The designation of these sites puts a duty on competent authorities to help protect, conserve and restore them; competent authorities include public bodies, such as Local Planning Authorities, Environment Agency, and Forestry England, while statutory undertakers include water companies, port authorities, energy providers and government ministers and departments.

Designated Wetlands of International Importance (known as Ramsar sites) do not form part of the national site network; however, many Ramsar sites overlap with SACs and SPAs, and may be designated for the same or different species and habitats. Although not designated in the same way as SACs and SPAs, the UK Government has stated that, as a matter of policy, listed Ramsar sites should be afforded the same level of protection.

Finally, in the last decade, a greater focus has been placed on the marine environment with MCZs and the network of MPAs being completed, which are protected under the MCAA.

Nonstatutory designations, including LWSs and RNRs (but also ESAs, IBAs, NIAs and NCAs), cover 5% of England's land surface and harbour many populations of rare and threatened species. They are managed by local partnerships, often including wildlife trusts and local authorities, and they are identified and selected locally using scientifically-determined criteria and surveys (guided by DEFRA guidelines).

Protecting special places

These designations, and the protection they afford, are of particular importance in Kent, which is under significant growth and development pressure. The key legislative requirement of the Conservation Habitat & Species Regulations 2017 (as amended), under which SACs and SPAs are designated, is the need to undertake a step-by-step process of researching and assessing the potential ecological implications of new plans or projects, before deciding whether a particular activity is given permission or authorisation. The precautionary principle is embedded within the wording of the Habitat Regulations, which means that there must always be certainty that a plan or activity under consideration will not adversely affect the integrity of the designated site. There is also the

requirement that, if any other competent authority[1] is permitting an operation likely to damage the interest features of a SSSI (either within the SSSI, or outside affecting the SSSI). If an activity or plan is going to have an adverse impact on a site, mitigation measures, either voluntarily incorporated or formally imposed, which avoid that adverse impact, must be put in place for the full lifetime of the plan; if this is not possible, the plan is not allowed to proceed unless it is judged to be of Imperative Reasons of Over-riding Public Interest.

This protection means that any proposals which may impact a SPA, SAC or Ramsar must go through this process. In the vast majority of cases, these sites are also SSSIs; however, there are a large number of SSSIs which are not covered by a SAC or SPA. As outlined previously, these SSSIs are protected under the Wildlife & Countryside Act 1981 (as amended). For every SSSI, there is a list of activities which are likely to be damaging to the features for which the site was notified, and if an owner or occupier wants to undertake that activity they need to request consent from NE. In addition, if a public body wants to undertake a potentially damaging activity as part of its function, it needs to request assent from NE; furthermore, if a public body is looking to provide permission or authorisation for a potentially damaging activity to a third party, they need to request advice from NE before making any decisions.

More than 25,000 people supported The Wildlife Trusts' campaign to call for protection for LWS, and in 2018 the government reinstated some protection for Local Wildlife Sites in the National Planning Policy Framework. The policy stated that plans should identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity – the latter including Local Wildlife Sites. Furthermore, the policy states that if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused.


Oare Marshes Nature Reserve

Protecting Kent's special places

In Kent there are 14 SACs covering 9,177 ha and seven SPAs which are either all, or partially, in Kent. There are 98 SSSIs sites in Kent covering more than 38,000 ha, and although they don't cover every habitat of quality within the county, they do provide a very broad range of interest. The area of land covered by SSSI notifications in Kent has increased over the past 10 years, with Chattenden Woods and Lodge Hill SSSI (situated on the Hoo Peninsula in North Kent) being notified in 2016, and Swanscombe Peninsula being notified in 2021. There are 460 LWS in Kent and Medway covering 27,000 ha or 7% of Kent's land area.

The Kent Nature Partnership, KWT, and Local Authorities (District Councils) comprise the Local Wildlife Sites Partnership for Kent and Medway (as defined in the DEFRA guidance), with the Kent Nature Partnership providing oversight for the LWS system. KWT administers the system, including resourcing site surveys, maintaining a secure database of landowners, maintaining a system of managing and distributing site schedules and GIS data, and liaising with local councils. Local councils can propose new candidate sites and have the final decision as to whether a site is designated, with information and guidance provided by expertise within the Kent Nature Partnership. The LWS network covers a suite of semi-natural habitats, recognised for their wildlife importance. Sites are assessed and selected against guidelines informed by the Retcliffe Criteria, which was originally developed for SSSIs. LWSs contain some of the most important and threatened species and habitats within a national, regional and local context, provide critical ecosystem services, and increase connectivity in the landscape. The 2020-45 Kent Biodiversity Strategy objective states that more than 50% of Kent's LWSs are in good management, up from the 2019 baseline of 43% (Kent Nature Partnership, 2020).

The vast majority of SSSIs, SACs and SPAs in Kent are around the coast – the Swale, Medway, Thames Estuary, Sandwich Bay and Dungeness – and this is reflected in a lot of the initiatives that have been started to conserve these core nature sites and the species that rely on them. Birdwise, for example, is a partnership made up of LPAs and conservation organisations and funded by developer contributions, that seeks to raise awareness of protected coastal birds. Developers contribute to the initiative when they build houses within a certain distance of the SPA as a mitigation measure; without the designation being in place, this project would be unlikely to exist. Another example is the North Kent Marshes Breeding Project, run by the RSPB in partnership with NE, which provides advice to farmers to ensure that land in that area is delivering in terms of breeding wader productivity. There is also the Thames Estuary Project, an independent charity, which collaborates with partners to improve and build understanding across the estuary; by pulling together maps, guidance and best practice, it is enabling a more strategic approach to management.

The Kent Downs within the Kent AONB have benefitted from long term investment by NE, with one-to-one work with farmers paving the way for nature recovery through indicators such as Duke of Burgundy and Black-veined Moth, clearly demonstrating the need for a landscape approach. The NE East Kent Valleys group is focused on species rich grassland creation and restoration, as is the case with other Kent Downs projects (Stour Valley to Stone Street and Barham Downs project) and is therefore geared predominantly towards relaxing/restricting grazing and/or encouraging hay cutting on sites to promote grassland species diversity. Further benefits from investments have been seen through work carried out by the KBG on Greater Horseshoe Bats (and the general range of larger bats, especially Serotine, that are dependent on a heavy scrub/woodland presence). For this project, static bat detectors were funded through the Defra Nature Recovery Seedcorn Funding, which has helped provide evidence of the populations and feeding patterns across the landscape. Through 2019-2020, all the farms engaged and focused on the bat project, and with a good working relationship through the collaboration, KBG is actively promoting stewardship work to a wider audience.

There is also the OCND project, which covers almost 10,000 ha along the North Downs from Kemsing to Detling, incorporating a large number of SSSIs. Special areas of this landscape have been lost or become fragmented, making it difficult for its unique wildlife to spread and survive. Many people have lost connection with nature and their local environments, which has led to ill health and what is often called 'nature deficit syndrome'. The OCND project looks to address these issues through work to improve, restore, and reconnect threatened chalk grassland habitats, while addressing the loss of people's connection with their natural environment through a variety of awareness raising and engagement schemes.

The catchments of the Stour, Beult and Medway have benefited from Catchment Sensitive Farming advice over the past 10 years, with conservationists working with farmers along the catchments to improve the quality of the rivers through reducing diffuse water pollution from agriculture. Beavers on the Stour are also now a feature of many of the SSSIs from Canterbury down to Sandwich Bay. The water environment within the Stour catchment is one of the most important for water-dependant wildlife in the United Kingdom. It is internationally important for its wildlife and is protected under the Water Environment Regulations and the Conservation of Habitats and Species Regulations; in addition, it has national protection for many parts of the floodplain catchment. There are high levels of nitrogen and phosphorous input to this water environment, with sound evidence that these nutrients are causing eutrophication on parts of these designated sites. There is uncertainty as to whether new development will further deteriorate the designated sites.

One way to address this uncertainty and subsequent risk – until any solutions are implemented to remove the current adverse effects on Stodmarsh – is for new development to achieve nutrient neutrality. NE has set out a practical methodology for calculating how nutrient neutrality can be achieved and is working with LPAs across Kent to come up with a strategic solution to achieve nutrient neutrality. The fact that Stodmarsh is protected under the Habitat Regulations means that there is a legal mechanism by which these improvements to the water environment can be taken forward.

[1] A competent authority is any minister, government department, public or statutory undertaker, public body or person holding public office that exercises statutory powers

Across Romney Marsh, the Fifth Continent Landscape Partnership Scheme is successfully delivering a broad range of projects, working with landowners, agencies and communities to conserve, restore and uncover information about the landscape for present and future generations. The 'Fifth Continent' refers to the whole of the Romney Marsh, including Denge Marsh and Walland Marsh. It covers all the land south of the Royal Military Canal, from Rye in the west to Hythe in the East. The area is characterised by its low-lying flat topography, criss-crossed by a myriad of wet ditches. It is a Heritage Lottery Funded project and works with a huge number of partners including KWT, NE and Rother District Council. Although the scheme itself ends in March 2022, it is hoped that the nature of the working in partnership will ensure the legacy of the project endures. The great partnership between the NNR at Dungeness, the nuclear industry and Rother District Council has resulted in two NNR officers being the eyes and ears of the open access, and in keeping communities aware of the precious wildlife and limiting damage at this unique coastal site, which represents some 5,000 years of coastal evolution and environmental change, which are well documented through both geological study and historical records.

The future

This range of projects and initiatives across Kent gives an indication of the conservation action that has taken place over the last 10 years to conserve some of Kent's most special places. However, despite the myriad of projects that are being undertaken, these core sites are still under threat and it is clear that a broader and more joined-up strategy is needed. As part of the Government's ambition to deliver nature recovery and to reduce the impact of climate change, a range of new environmental policies will be coming over the next few years. Although these will include BNG and climate change mitigation, such as tree planting and habitat restoration, natural flood management and green infrastructure, what is really needed is for these opportunities to be brought together as a collective nature recovery, both for nature and people. The designations described and the protection they provide are important, as they provide a legal mechanism to help conserve sites, provide additional resources, and set out a physical framework upon which wider networks can be based; however, this is not enough to see nature thrive and to meet the needs of society. There is strong evidence to suggest that England's collection of protected areas is generally too small and too isolated, leading to declines in many of England's characteristic species (Lawton *et al*., 2010).

An integrated approach to nature recovery, which brings together partners, policies and investment to actively restore the natural world, enhance the benefits it provides, and to enable us all to connect with nature in our towns, cities and countryside alike, is therefore needed. The Nature Recovery Network, which is a major commitment within the Government's 25-year Environment Plan, sets out the ambition for this joined up approach. The designated sites will be part of the network, but where there are potential new wildlife habitats, these need to be restored or created to form stepping stones to help wildlife populations grow and move. Sites with non-statutory protection, such as LWS and RNRs, also offer opportunities to recognise special places for nature and advance their protected status, but greater systematic conservation planning across the county is required to optimise their contribution to landscape scale conservation approaches, such as Nature Recovery Strategies. The way forward is a move away from discrete projects, something which is being made possible with Government money being made available to fund larger projects, such as the Nature Recovery Fund and Nature for Climate Fund. These projects aim to achieve well managed nature recovery networks across land, water and sea, and importantly include the protected sites network, helping to expand on it, enhance it, and make it more resilient.

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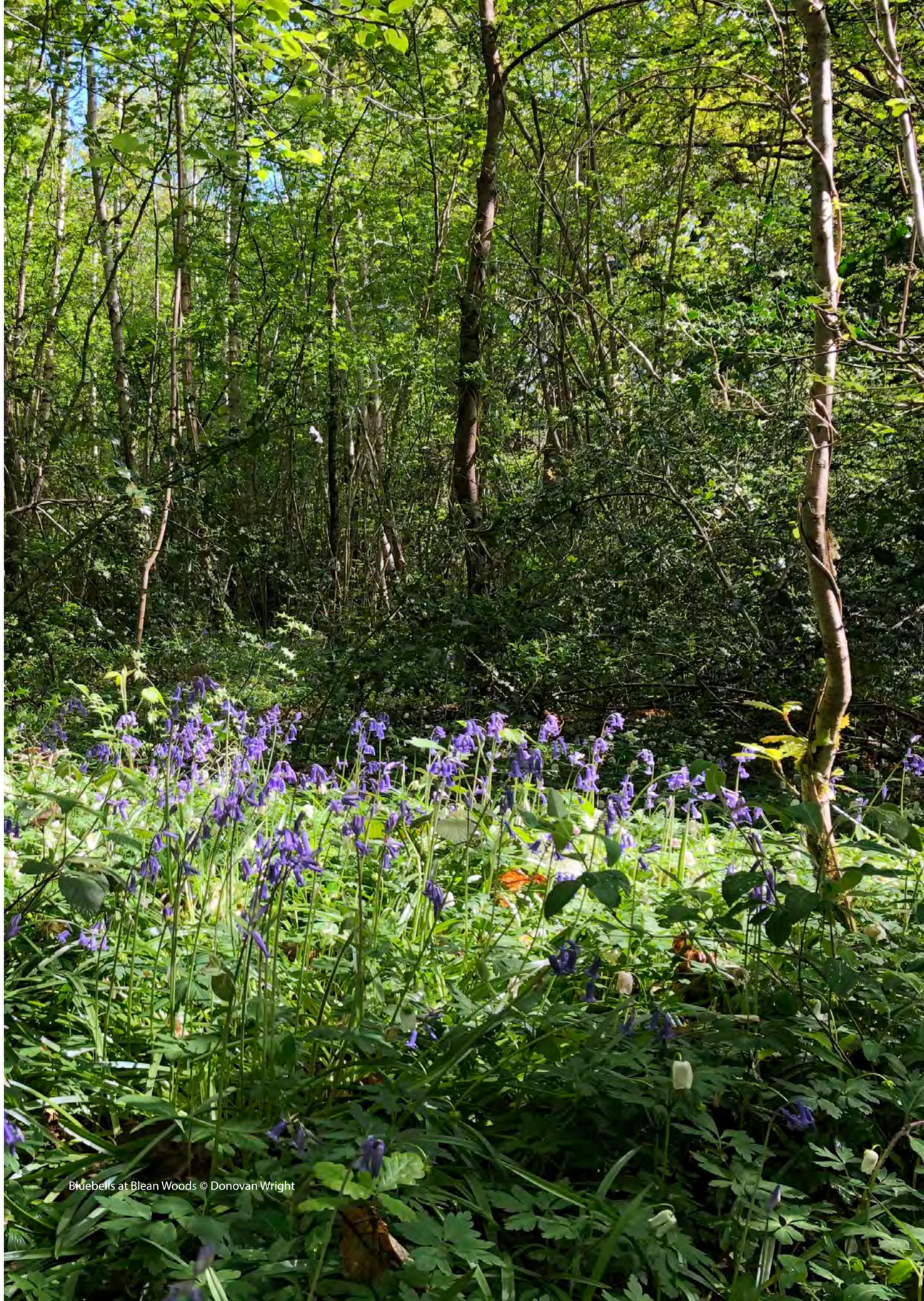
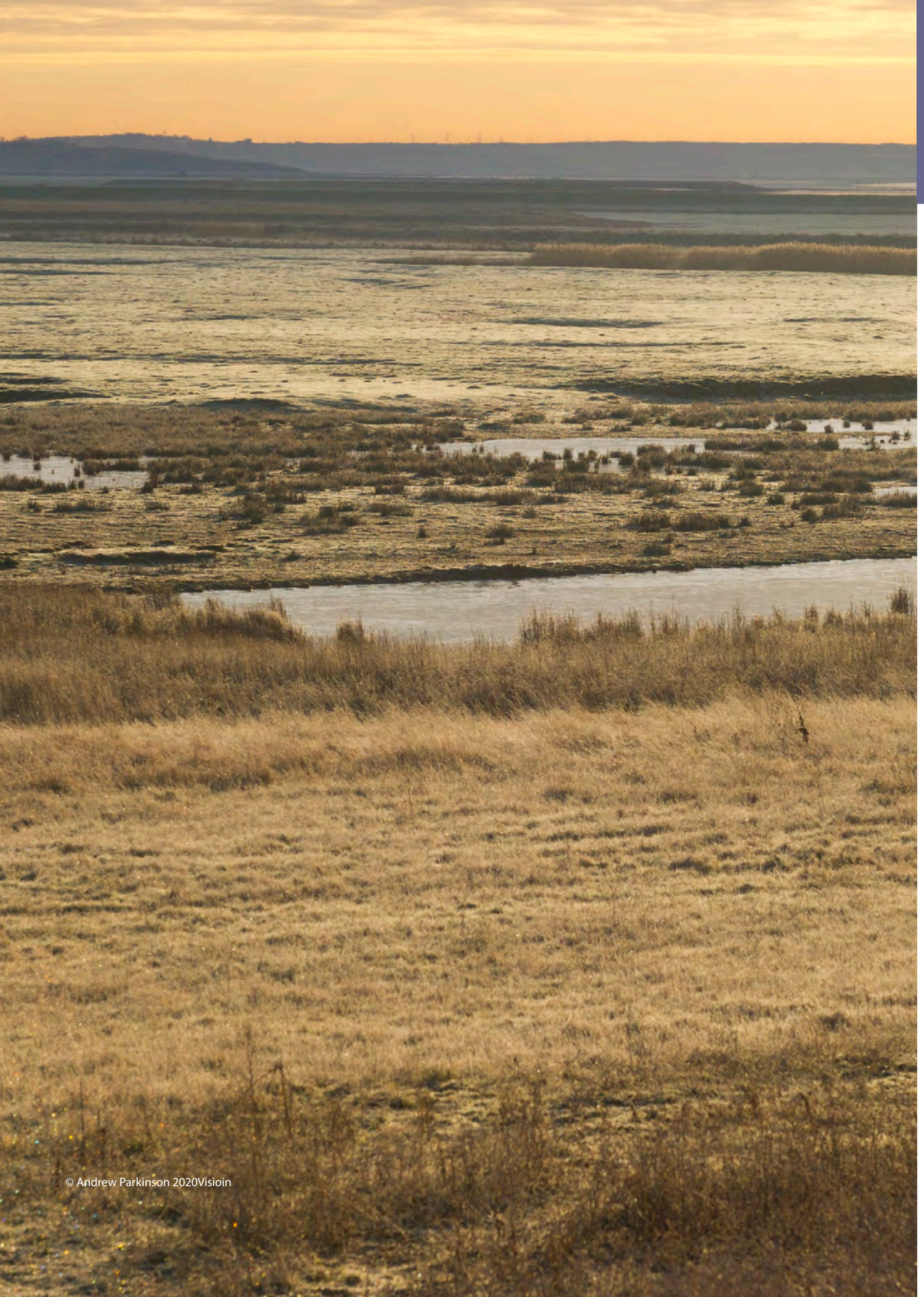


Bluebells at Blean Woods © Donovan Wright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RESTORING LANDSCAPES

CHLOE EDWARDS, KENT WILDLIFE TRUST

Introduction

Over the last decade we have seen the conservation community across Kent embrace, and begin to implement, the Lawton principles as outlined in Making Space for Nature (2010) through their collective work to drive forward nature's recovery at a landscape-scale. Landscape-scale approaches in conservation arose from the recognition that conservation action must extend beyond the boundaries of nature reserves and fully consider the many different factors across a landscape that influence both people and wildlife (Aherne and Cole, 2012).

At the heart of the most significant and successful landscape-scale schemes that have been conceived, and subsequently delivered in the county over the last decade, has been an understanding of the value of working collectively and a demonstrable willingness to collaborate. The skillsets of the many different members of the conservation community in Kent are complementary, and as rich and diverse as the habitats found across our county's landscapes.

Action to drive landscape recovery to date in Kent has been closely aligned with the county's BOAs, the spatial framework for the KNP Biodiversity Strategy (2015-2025). These have provided a tool for assisting in the direction of collective effort to secure the greatest benefits for nature across the county.

The state of nature

While there is no doubt the conservation community has coalesced in practice to take action for nature over the last decade, the collective outcomes of landscape recovery work in Kent remain challenging to comprehensively report on. In 2016, in the absence of a means to extensively and accessibly document the wealth of conservation work being undertaken by statutory bodies, charities, non-governmental organisations and others across Kent to date, KCLT was launched. During 2020, as part of the Nature's Sure Connected project, KCLT was further evolved to include extra functionality to enable it to become the primary manner in which data is gathered to inform county-wide reporting on areas of land being positively managed for wildlife. This is vital to feed into Kent's Biodiversity and Environment Strategies, Single Data List 160 (the proportion of Local Wildlife Sites in management) and the State of Nature in Kent reporting itself.

However, a combination of lack of resource and/or recognition of the value of the reporting of shared outcomes at county-level amongst the conservation community has yet to be overcome, and therefore the picture available is somewhat incomplete.

Kent Downs AONB and the High Weald AONB – the only two protected landscapes in the county – collectively cover 33% of Kent's land area. Though not their primary purpose, they have delineated focal areas in which to facilitate meaningful action to support nature's recovery in Kent over the past 10 years. For example, across the Kent Downs landscape – in which a significant proportion of globally-rare chalk grassland resource can be found – a suite of landscape-scale partnership projects have been conceived and delivered to reinstate management, restore and reconnect these iconic, nature-rich, chalk grassland habitats. From the Valley of Visions Landscape Partnership Scheme project in the Medway Gap (2008-2013) and the Up on the Downs Landscape Partnership Scheme in Dover and Folkestone (2013-2018), to the Old Chalk Down Downs project across the North Downs from Kemsing to Detling (2017-2022) and the Darent Valley Landscape Partnership Scheme (2017-2022), these projects have, and continue to, demonstrate how true collaboration can be instrumental in restoring landscapes. They have collectively restored more than 341 ha of chalk grassland to-date through developing programmes of direct partner delivery, capital grant schemes and advice for land managers.

Agri-environment schemes have also proved a valuable mechanism for delivering landscape-scale restoration across the farmed landscape. This is most effectively applied in Kent, when a designated advisor can provide one-on-one advice to farmers to target agri-environment scheme options to deliver the greatest environmental outcomes for nature. This has been superbly demonstrated in the East Kent Downs, where, over the last decade, continued engagement of farmers with their local Natural England advisor has resulted in the transformation of 900 ha of formerly arable or species-poor grassland. Through natural regeneration, green hay spreading and the sowing of native wildflower mixtures, these areas are now wildflower-rich habitats (Tuson, 2019).

Larger conservation organisations in the county, such as KWT and the RSPB, have delineated focus areas to create bigger, better and more resilient landscapes


Nature's Sure Connected Project

for people and wildlife. These voluntary approaches, such as Living Landscapes and Futurescapes, facilitate partnership working at a landscape-scale. Often, these focus areas have naturally aligned; for example, the Greater Thames Marshes Futurescape (RSPB) and North Kent Marshes Living Landscape (KWT) have proved a powerful mechanism to draw in funding to catalyse partnership action beyond the boundaries of both organisation's nature reserves in this area. This has been evidenced through several projects, many of which have, at times, run concurrently. These projects include: the Greater Thames Marshes Nature Improvement Area (2012-2015); Vole Reversal: Protecting Ratty on the North Kent Marshes (2013-2015); Water for Wildlife: North Kent Marshes (2016-2017); Breeding waders in North Kent (2015-present); Turtle Dove Friendly Zones (2015-present); and Making a Buzz for the Coast (2018-2021). At the core of these projects has been the delivery of advice and capital works to support land managers, and they have, and continue to, collectively contribute to efforts to restore and reconnect many hundreds of hectares of coastal and floodplain grazing marsh (Kent Biodiversity Strategy priority habitat). These projects also benefit Lapwing, Turtle Dove, Water Vole and Shrill Carder Bumblebee (Kent Biodiversity Strategy priority species) in North Kent. Such approaches are replicated across the county.

The challenge of reporting on the outcomes of landscape-scale conservation is twofold. Outcomes are the combined contribution of multiple actions, on multiple sites, and by multiple stakeholders, to the resilience of ecological networks. This results in a complex matrix of interventions and policies in space and time. Monitoring outcomes is therefore hugely complex, as they are often not confined within the boundaries of the individual or partnership scales of delivery. Furthermore, monitoring of site-scale outcomes is well-established and best practice is now both available and adopted. Landscape-scale monitoring is in its infancy by comparison. The absence of common standards and approaches reflects both the infancy of landscape-scale conservation and the scale and complexity of the challenge.

Nature's Sure Connected – a project led by KWT (Tinsley-Marshall *et al.,* 2021) – sought to address these challenges by consulting widely with a community of conservation practitioners to gather expertise and information on their needs from landscape-scale monitoring. It reviewed and analysed existing landscape-scale monitoring approaches, generated consensus on priorities and principles, and developed partnerships to design and test sustainable monitoring approaches. This informed the development and testing of a monitoring framework and practical approaches to landscape-scale monitoring.

The project developed a practical framework structured around a series of logical steps to inform the creation of monitoring objectives and programmes, and signposts guidance, outputs and case studies developed by the project. Guidance is offered around: defining landscape parameters; key attributes of monitoring programmes; landscape monitoring themes; and priority themes. It also offers questions for landscape-scale monitoring to address; defines and articulates monitoring objectives; and provides criteria for selecting landscape indicator species. Five key themes prioritised by stakeholders for the project to address were:

- More sites and larger areas managed positively for conservation.
- Better land management and habitat quality.
- Joined-up spaces for nature and better-connected landscapes.
- Biodiversity trend assessment at landscape-scale.
- The ecosystem function, its conservation and resilience.

The input of stakeholders fed into the development of each approach. Outputs of the Nature's Sure Connected project have enabled this State of Nature in Kent report to present, for the first time, data on the area of land managed positively for conservation in Kent, and on functional connectivity for species at landscape scale (see chapter *Landscape-scale conservation in Kent*).

The monitoring framework offered is a collaborative effort involving key stakeholders; it is evidence-led, and includes a collection of guidance and case studies – demonstrating an advancement towards best practice and providing a foundation to build on. It is not, however, fully comprehensive. In this respect, it is not designed to meet every conceivable need, nor is it the only solution to the challenge. The project team welcomes constructive feedback. Readers are encouraged to test, adopt and develop the approaches offered, to form networks to share experience and learning, and to further develop best practice in monitoring outcomes of landscape-scale conservation.

LNRS are a flagship measure in the Environment Bill. These are plans that will help drive more coordinated, practical, focused action and target investment to help nature and people flourish together, while delivering wider nature-based environmental benefits. The strategies will be a statutory requirement of the upcoming Environment Bill. This means that local councils will be required to develop a LNRS when the bill becomes law, and LNRSs at a county-scale will collectively come together to form a Nature Recovery Network for England. Councils will be required to report on progress on the LNRS every five years. KWT is assisting in the coordination, development and delivery of the LNRS for Kent, presenting an opportunity to embed the learning from the Nature's Sure Connected project in the establishment of an effective monitoring programme.

The future

Over the last decade, the conservation community in Kent has made considerable progress in restoring significant links in habitat networks and enhancing connectivity across the county. As we enter the IUCN's Decade on Ecosystem Restoration, the current government rhetoric, alongside increasing recognition of the value of nature-based solutions, gives much cause for optimism. While greater acknowledgement of the urgency of action required to tackle the dual nature and climate crisis is still called for, in Kent there appears to be real momentum to realise collective ambition to deliver meaningful nature recovery across our landscapes.

This has been evidenced in the last 18 months where successful partnership funding bids have resulted in £5 million being invested in landscape-scale restoration schemes to kickstart the restoration of almost 3,000 ha of habitat across the Blean and North Kent landscapes. For example, the People's Postcode Lottery funded the Wilder Blean project, while the Green Recovery Challenge Fund funded both the Climate Change Resilience for Blean Wood and Seasalter Levels project, and the A Greener Thames project. Initiatives such as these are striving for a level of ambition – in terms of nature's recovery – that are equal with the scale of the challenge.

Supporting land-use change in the farmed landscape, which occupies c. 70% of the countryside in Kent, remains integral to promoting nature's recovery across the county. The Farmer Cluster model advocated in Kent continues to grow to enable and support collective action from farmers and land mangers in discrete geographical areas – most recently founding the sixth Farmer Cluster in the county in the Darent Valley, jointly facilitated by KWT and the High Weald AONB. As part of the Agricultural Transition Plan, the Farming in Protected Landscapes programme promises to provide financial support to farmers and land managers to undertake works to support nature's recovery and mitigate the impacts of climate change across our AONBs in Kent. In addition, the conservation community continues to feed in expertise and experience to the future ELMS scheme through participation in tests and trials. There are also four Interreg-funded projects ongoing in Kent – PROWATER, H2O: Source2Sea, SCAPE and TRIPLE-C – which are all advancing thinking and delivery around nature-based solutions in freshwater settings. These projects will feed into future schemes in terms of how stewardship of the water resource is appropriately considered and promoted.

The refreshed KNP Biodiversity Strategy (2020-2045) is currently assisting in steering collective action in the county; the evolving Local Nature Recovery Strategy for Kent will build upon this to enable better direction of investment to secure the greatest benefits for nature across the county going forwards. Even still, in order to measure progress towards the coherent and resilient landscapes we are striving for, there are, however, still challenges to overcome. One of these is how to capture and analyse the combined contribution of multiple actions, on multiple sites, by multiple stakeholders (i.e. evidencing the landscape-scale outcomes of landscape-scale conservation). As part of this, there is also the challenge to embed the impetus to report on said action within the conservation community.

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CONSERVING NATURE IN AN URBAN LANDSCAPE

RICHARD BLOOR, MAUREEN RAINEY AND BETHANY PATEMAN, KENT WILDLIFE TRUST

Planning policy

The provisions of the Environment Bill have begun to catalyse changes in the approach that local authorities, developers and local communities are taking to conserving and promoting biodiversity in and around urban areas. The bill will require nearly all developments to provide a minimum measurable Biodiversity Net Gain of 10%, either on or offsite, and will introduce a requirement for a Kent Local Nature Recovery Strategy that should consider habitat connectivity within urban green infrastructure.

To-date, the adoption of these new policy approaches has been uneven. Some local authorities and developers have been proactive in aiming to meet and even exceed these requirements in advance of the act. However, this has not been universal, and the sheer weight of new development that will be required in Kent to meet government targets continues to pose one of the biggest threats to biodiversity. Developments that provide limited space for wildlife and threaten high value habitats continue to be proposed; this has attracted increasing activism from local communities in response.

The Kent Nature Partnership is encouraging all local authorities to adopt a minimum 20% biodiversity net gain from development and incorporate the principles of Nature Recovery Networks into local policy. This has had some success; for instance, Swale Borough Council has proposed a minimum 20% net gain policy in its new local plan and has developed a green and blue infrastructure strategy that explicitly recognises the importance of Nature Recovery Networks. Tunbridge Wells, Maidstone Borough, and Dover District Councils have also proposed mandatory net gain policies in their forthcoming local plans, and it appears that detailed green infrastructure strategies are becoming standard for most local authorities.

There has also been progress in site specific policies for new developments. Local authorities are increasingly seeking to meet housing targets through larger strategic allocations, either on the edge of existing settlements or as new "Garden Communities" on greenfield sites. This will allow for the creation of larger and more integrated areas of green and blue infrastructure within development boundaries. For instance, the 8,000-home Otterpool Garden Community within Folkestone and Hythe District will include 50% greenspace, and the developers have committed to achieving 20% net gain. Similar proposals with 10% or 20% net gain requirements for smaller garden communities have also been proposed as part of the Local Plans for Maidstone, Swale and Tunbridge Wells. Developments are also being used as a vehicle for creating high quality habitats in country parks, such as the Oare Lakes development in Faversham, where the creation of a wetland nature reserve is proposed to buffer the adjacent Swale SPA.

In spite of these positive policy directions, many developments still pose a threat to biodiversity in and around urban areas. Most prominent of these is the proposal for a theme park on the Swanscombe Peninsular between Dartford and Gravesend. This area of land was formerly used for landfill and industrial processes, and now has one of the highest levels of diversity of invertebrates for any site in the country – to the extent that Natural England are now proposing designating the site as a SSSI. A coalition of environmental NGOs and community groups are now campaigning to oppose this development.

The movement towards Garden Communities is also controversial. While it can be argued that the majority of these proposals will take place on arable land of perceived low biodiversity value, there are concerns about the impact that losing thousands of hectares of farmland to development will have on populations of species such as farmland birds. Several developments that have recently received planning permission will lead to the loss of nesting habitat for declining species such as Turtle Dove and Skylark, and compensation for the loss of these habitats has generally been inadequate to offset loss.

Turtle Dove
© Jonathan Canno @pixabay

A flock of waxwings feeding on the berries of a Cotoneaster shrub in an urban landscape.
© Terry Whittaker 2020Vision

Community action

Community groups are becoming increasingly active in trying to influence planning policy and development in their local areas through various routes, including the neighbourhood plan process, campaigns against specific developments and volunteer activity. Faversham, Tenterden and Boughton Monchelsea are good examples of how local people are trying to shape the way space for development is balanced with space for nature, including the creation of strategies to create habitat networks at a local scale. In the case of Boughton Monchelsea, the local community has been able to acquire substantial areas of land from developers to create public open space and natural habitats. These areas will be coordinated through the neighbourhood plan and funded through NbS such as BNG. Community groups have also been instrumental in successful campaigns to stop development of sites of high biodiversity value, such as the recent refusals for major developments at Wincheap Water Meadows in Canterbury and Limes Land on the edge of Tenterden.

Communities are also increasingly active in smaller scale work to improve local urban environments through activities such as creating micro habitats for pollinators and wildlife friendly gardening. KWTs Wild about Gardens Scheme aims to encourage the residents of Kent and Medway to act in their gardens and communal open spaces to reverse loss of biodiversity. The scheme is largely resourced by a volunteer team who have the skills to engage with diverse groups of people who may not be interested in gardening and/or gardeners who do not consider the effect of their actions on the environment. In 2020 alone, 100 gardeners were given advice on the phone and 250 people attended wildlife gardening workshops; the scheme worked with local recording groups including KBG, KRAG, KMG and BBCT.
The scheme has seen an increase in requests for advice on nature friendly gardening over the decade, but there is still a large proportion of 'traditional' gardeners out there who remain in denial that their actions are affecting local nature populations. These gardeners can hinder the development of green corridors through our towns and cities. By continued development of the Wild about Gardens scheme, including the introduction of open days to nature friendly gardens, KWT is hopeful that it can reverse this trend.


Roadside Nature Reserves

Roadside Nature Reserves

Another further area where progress has been made in improving urban habitat networks is on roadside verges. KWT and KCC have been working together since 1994 to create a network of Roadside Nature Reserves across the county. There are now around 150 Roadside Nature Reserves in Kent and Medway, with around 89 km of roadside protected and managed by volunteers across the county. These road verges support important species and habitats and are also valuable wildlife corridors. The priority sites that are safe to work on are managed with volunteers; these sites receive the most effective management, which is cut and collect. The remaining sites are cut once a year with the cuttings left. Through this project, KWT is working closely with the KCC soft landscape to ensure the best management of the RNRs and the designation of new sites. This partnership and the increased public interest in road verges for conservation will influence the management of the entire road verge network into the future.

There is also greater recognition from local authorities and local communities about the value of roadside verges and the benefits to biodiversity of less intensive roadside management. For example, in recent years, Medway Council has stopped regular cutting along 30 miles of its road network to promote wildflower growth; several other local authorities have expressed an interest in adopting similar policies.

Conclusion

The outlook for conserving nature in urban landscapes remains mixed. There is a greater recognition of the need to maintain and enhance urban habitat networks amongst many local authorities, developers and communities, and tangible positive action has been taken across the county to achieve this aim. However, whether this will be enough to counteract economic pressures to expand housing supply remains to be seen. The KNP will seek to support local authorities to make the most of the opportunities presented by the Environment Bill, in particular supporting the adoption of 20% BNG policies and integrating LNRS into planning policy, with the aim of ensuring that negative impacts of development on biodiversity are minimised.

Wildlife Friendly Gardening © Celia Davies

European otter *Lutra lutra*
© Andy Rouse 2020Vision

CONSERVING NATURE IN A CHANGING CLIMATE

LUCY BREEZE, KENT COUNTY COUNCIL

Introduction

Governments, together with local authorities, charities, businesses, schools, voluntary groups and individuals, are coming together across Kent and around the globe to reduce greenhouse gas emissions and limit global warming. However, even if emissions were reduced to zero tomorrow, the gases already in the atmosphere will have locked us into warmer, wetter winters and hotter, drier summers for many decades to come. Conservation activities therefore need to be designed to strengthen the natural environment's ability to withstand and adapt to current and future climate pressures, and to make the most of any opportunities these changes bring. Conservation also provides opportunities to mitigate climate change by protecting and increasing coverage of habitats that store carbon. It can also reduce human vulnerabilities to climate change; for example, creating upstream wetlands to reduce urban flooding, or urban tree planting to reduce local temperatures.

Climate change mitigation in Kent

The natural environment has evolved to adapt with gradual climatic variations; however, the current speed of climate change means that many species are unable to move or adapt fast enough, and this vulnerability is exacerbated by fragmented and degraded habitats (Natural England, 2020). Habitat connectivity and restoration projects, ideally at a landscape scale, are therefore key to managing climate risks and impacts by allowing greater opportunities for species to migrate into more suitable, or less impacted habitats. In some cases, it may be more appropriate to focus conservation efforts on improving the resilience of a specific species, such as improving food supply, increasing populations, or creating severe weather refuges to allow them to survive in their current location if natural migration is not possible (Natural England, 2020).

A key aim of the Kent Biodiversity Strategy is to improve the quality, extent and connectivity of high value habitats; this will be essential if we are to effectively 'climate proof' our vulnerable habitats and species (Kent Nature Partnership, 2020). Many Countryside Stewardship options support the restoration of habitats that are vulnerable to climate change, or the creation of habitats that can boost species numbers, food supply or provide refuge during severe weather.

Climate change exacerbates existing pressures, such as those related to water pollution, over-abstraction, invasive non-native species, urbanisation, and land use change. Successfully tackling those pressures, as outlined in the corresponding chapters within this report, is helping to boost the ecological resilience of terrestrial, freshwater, and marine ecosystems.

The natural environment also provides an opportunity to help mitigate climate change and reduce greenhouse gas emissions. Soils, trees, hedgerows, grasslands, wetlands and saltmarsh all store carbon, so increasing coverage of these habitats and improving land management practices is helping to support carbon reduction targets, whilst also protecting and enhancing biodiversity. Consequently, the Kent and Medway Energy and Low Emissions Strategy has identified the expansion of green infrastructure and natural climate change solutions as a key priority for action (Kent County Council, 2020).

It is difficult to quantify the impact conservation activities are having on the ability of habitats and species to adapt to climate change, because many of the impacts of climate change are subtle and develop gradually over many years. We also have yet to experience the full magnitude of climate change and the weather extremes that this will bring. In most cases, conservation efforts to reduce other pressures will indirectly increase a species or habitat's resilience to climate change by virtue of it being healthier. For instance, many of the rivers in Kent are classified by the Environment Agency as poor. Higher temperatures and reduced rainfall are expected to lower river flows, reducing the dilution of nutrients and increasing the risk of eutrophication and deoxygenation. Conservation efforts such as Natural England's Catchment Sensitive Farming Scheme, are helping to improve water quality by reducing nutrients entering water courses through the planting of buffer strips, fencing livestock and improving farming practices. Such projects, together with improvements at sewage treatment works and regulation changes, have seen 16 rivers in Kent improve their phosphate classifications since 2015 (Environment Agency, 2020). This reduction in nutrient loading means the impact from lower river flows on water quality will be reduced, which in turn improves river species' ability to withstand the seasonal extremes associated with climate change.

Kent has benefited from a number of landscape scale conservation projects in recent years, which are all helping to improve and connect fragmented habitats. For example, the OCND project is working to improve, restore and reconnect chalk grassland habitats along the North Downs, while the Fifth Continent Landscape Partnership Scheme has supported the expansion of green and blue wildlife corridors across Romney Marsh. Such projects are providing species the space to move to habitats less impacted by climate change.

The future

Much of the conservation action that has taken place in Kent over the last 10 years has tried to improve important wildlife sites, protect key species, or counteract human drivers of change, with little consideration of the impacts of climate change. Often these activities have been carried out in isolation and it's clear that our natural environment is still under considerable and mounting human pressures, which will be further exacerbated by climate change. However, environmental policy is now undergoing substantial change and the Government has recognised the vital role of nature in tackling climate change, such as natural flood management, habitat restoration, and tree planting to increase carbon sequestration, urban shading, and green infrastructure for citizen health, wellbeing, and engagement. This will help integrate conservation actions and bring partners and sectors together to stimulate nature's recovery, which will in turn improve resilience to climate change.

There is also increasing awareness that climate change adaptation needs to be embedded within all conservation plans and activities if the resilience of the natural environment is to be improved. Existing resources such as Natural England's *Climate Change Adaptation Manual* (Natural England 2020), which contains detailed assessments of climate risks and the necessary adaptive actions for every major habitat type; and the *Kent and Medway Climate Change Risk and Impact Assessment* (Kent County Council, 2020), are excellent sources of information to inform local projects[1]. The Countryside Stewardship Scheme and emerging Environmental Land Management Scheme provide a financial mechanism for landowners to increase climate resilience. The government is also providing funding for larger, integrated projects that restore nature and increase resilience through the Nature Recovery Fund and Nature for Climate Fund. While the impacts of climate change on Kent's natural environment have the potential to be devastating, there is increasing recognition of the role nature plays in reducing carbon emissions and increasing resilience.

This recognition is beginning to be translated into national and local policies, strategies, and funding schemes. The outlook for conserving nature in a changing climate is therefore cautiously optimistic.

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[1] Natural England has also developed a methodology for undertaking a climate change vulnerability assessment at a landscape scale, which is included as an annex to the *Climate Change Adaptation Manual.*

Greater Water-parsnip *Sium latifolium* Romney Marsh © Sue Buckingham

Chough *Pyrrhocorax pyrrhocorax*
© Janet Packham

SPECIES CONSERVATION

KIRSTY SWINNERTON AND STAN SMITH, KENT WILDLIFE TRUST

Introduction

Most nature conservation in the British Isles is focused on the management of habitats, based on the adage 'build it and they will come'. This is certainly true in Kent where conservation has focused on the management of nature reserves and other protected areas. However, for many threatened species, this approach alone is not sufficient to prevent their decline or restore populations to their former ranges. This situation could be because the ecology of the species and the drivers of decline are poorly understood; the species is relatively sedentary; the population is fragmented; barriers such as roads, urban centres, or unsuitable habitat limits dispersal; or the species may occupy a highly specific niche, which does not exist outside of deliberate intervention. Additionally, the population may be very small and isolated, or it may be already extirpated either at a national or local level, with no or limited opportunities for natural recolonisation.

The Kent Biodiversity Strategy lists 387 priority species for Kent that are identified as being the most threatened in the British Isles and requiring conservation action (Kent Nature Partnership, 2020). However, unrecognised in the strategy are the historical extirpations of multiple species that could be re-established using conservation interventions. These include Corn Crake *Crex crex*, Cirl Bunting *Emberiza cirlus*, Chough *Pyrrhocorax pyrrhocorax*, Stone Curlew *Burhinus grallarius*, Pine Marten *Martes martes*, and other probable breeding species, such as White Stork *Ciconia Ciconia*, White-tailed Eagle *Haliaeetus albicilla*, and Eurasian Crane *Grus grus*. Many of these species are being successfully recovered elsewhere in the British Isles using direct interventions.

Threats to species in Kent

Population and habitat fragmentation and barriers to dispersal may be particularly acute in Kent due to the high road density in this region, extensive areas under agriculture, and urban development; road density and road length in Kent is among the highest in the country (Department for Transport, 2018). In addition to direct mortality caused by roads, barriers to dispersal and the resulting fragmentation can result in reduced gene flow among the population, low effective populations sizes, and increased vulnerability of the different subpopulations to stochastic events. Some social insects, such as bumblebees, may be particularly vulnerable to fragmentation because of their social and reproductive biology. The Shrill Carder Bumblebee *Bombus sylvarum*, one of the UK's rarest bumblebees, has suffered a major range contraction in the last 50 years. Kent remains a national stronghold, particularly on the north Kent coast, but across the British Isles and in Kent the species is largely found in fragmented and isolated 'islands' of habitat. As a result, the Shrill Carder Bumblebee suffers from low effective population sizes, with possibly a total lack of gene flow between most remaining populations (Ellis *et al.*, 2006). An integrated approach of species translocation and habitat creation could establish stepping-stone populations for these species; this could increase gene flow and long-term population resilience.

Species conservation in Kent

Threatened species are typically managed at the population-level by providing suitable habitat and controlling predators and other threats. These practices are relatively low intensity, widespread, and integrated into landscape-level management plans. In contrast, conservation interventions are directed towards the management of individuals to mitigate the factors limiting population growth and recovery, including food shortages, predation and disease. Conservation interventions aim to address demographic constraints to species recovery at the individual level; for example, increasing the survival of individuals and increasing reproductive success and productivity of young. This approach is particularly relevant for the recovery of threatened species, for small, declining, or fragmented populations, and for the re-establishment of extinct or locally extirpated species.

In Kent, as elsewhere in the UK, the provision of artificial hibernacula, refugia, and nest sites for birds, bats, small mammals, reptiles, and amphibians is widely implemented to mitigate some of the habitat and nest site deficiencies, as well as for species monitoring and development mitigation. Some practices have been culturally adopted and are encouraged by wildlife groups, such as garden bird feeding and provision of nest boxes. However, little is known about the effectiveness of these interventions, despite their relatively widespread application. For example, some 48% of households in the UK provide supplementary food for more than 30 million birds, despite the relatively poor understanding of positive and negative impacts to bird populations (Hanmer, Thomas & Fellowes, 2017).

For the conservation of threatened species, a range of direct interventions have been tried in Kent for a variety of species and taxa; some examples of these are provided in Table 1. Seabirds in particular lend themselves to targeted management because of their colonial nesting and social behaviour, and species-specific techniques to actively restore threatened seabirds are well-known and proven worldwide (Jones & Kress, 2012). Common habitat manipulation practices include scrub removal, flood management, and creation of islands or floating rafts to provide secure breeding sites for terns, waders, gulls, and wildfowl, including species of conservation importance such as Roseate Tern *Sterna dougallii* and Little Tern *Sternula albifrons* (Burgess & Hirons, 1992; Akers & Allcorn, 2006). Fencing to exclude predators, domestic animals and people, localised predator control at nest sites, and diversionary feeding or displacement of predators such as foxes, kestrels, crows and large gulls, can also contribute significantly to nesting success. In Kent, several of these techniques have been applied to increase nesting success of Little Terns at Sandwich Bay and at Castle Coote, as well as for Lapwing *Vanellus vanellus* on the South Sheppey Marshes, with mixed results (Merricks, 2010; McGregor *et al* 2019; S. Weeks pers. comm.).

For seabirds, the complete eradication of terrestrial predators from offshore islands is more challenging, but is proven to re-establish extirpated nesting colonies and rapidly increase existing ones (Lock, 2006; Bell *et al*., 2019). Additional targeted use of species-specific techniques, such as provision of nest boxes or platforms, social and acoustic attraction, and chick translocations, are also effective at achieving species conservation goals (Kotliar & Burger, 1984; Morrison & Gurney, 2007). Kent has been identified as one of several significant new areas for Roseate Tern restoration in the UK (Miles *et al*., 2018) and together with Little Tern, this species may respond well to these approaches.

Other manipulation techniques used in Kent that are directed at species include: the removal of barriers to European Eel *Anguilla anguilla* migration and the installation of bristle boards at sluices (Anon, 2020; Zoological Society of London, 2020; Hatchwell, 2020); orchid caging and hand-pollination; the manual distribution of orchid seeds to increase distribution and recruitment; increasing areas of cow wheat for the heath fritillary; provision of seed-rich habitats for Turtle Dove *Streptopelia turtur* (Dunn et al., 2020); creation of invertebrate-rich 'beetle banks' for Grey Partridge *Perdix perdix* (Game and Wildlife Conservation Trust, 2001); and provision of artificial food for Turtle Dove, Grey Partridge and other farmland birds to improve breeding success and over-winter survival. The aim of these techniques, however, is mainly to conserve existing populations or assist their recovery at a local level; as a result, these techniques will not contribute significantly towards an increased population size or distribution at a landscape scale.

The highest level of species management intensity includes conservation translocations; this is the deliberate movement of organisms from one site to another to yield a conservation benefit at the population, species, or ecosystem level (International Union for Conservation of Nature, 2013). Translocations are typically used to restore an extinct or locally extirpated species, or to reinforce a small or declining population within the species' indigenous range. Translocation may also be used to introduce a species outside of its indigenous range as an ecological analogue, such as the planned introduction of European Bison *Bison bonasus* into the Blean woods, or to avoid a species' extinction (assisted colonisation). In the future, assisted colonisations may become increasingly necessary as habitats change under a changing climate and species are unable to disperse naturally.

Vertebrate translocations are often long-term, multi-partnership projects that can be expensive, require specialist skills, and involve complex intersecting legislation. Kent has seen the translocation of several threatened vertebrates that has resulted in improvements in the species' local conservation status, including Great Crested Newt *Triturus cristatus*, European Water Vole *Arvicola amphibius*, European Beaver *Castor fiber*, and Sand Lizard *Lacerta agilis* (Table 1). The techniques for invertebrate and plant translocations are less well known, and while they are generally considered to be less difficult, they face a unique set of challenges (Berger-Tal, Blumstein and Swaisgood, 2020). Several translocations of various taxa have been carried out in Kent, including the successful translocation of Monkey Orchid *Orchis simia* to Park Gate Down, and Silver-spotted Skipper *Hesperia comma* to Wye Downs and Queendown Warren.

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10yr Action Timeline | Natural capital | Special places | Restoration | Urban | Changing climate | Species | Marine | Environmental policy | People engagement | Challenges and resources

Table 1 Conservation management interventions applied to threatened species in Kent. This list is not exhaustive but demonstrates the variety of techniques that have been used. The extensive use of bird and bat boxes is not shown as this is a widespread technique and use by specific threatened species is unknown. Kent Biodiversity Strategy species are indicated with an *.

Species	Reintroduction	Reinforcement	Predator exclusion / control	Supplemental feeding	Hibernacula, refugia, artificial nest sites	Social attraction	Habitat manipulation	Plant protection	Artificial pollination / dispersal
European Beaver *Castor fiber*	X								
European Water Vole *Arvicola amphibius*	X	X	X						
Hazel Dormouse Muscardinus avellanarius					X				
Little Tern *Sternula albifrons*			X			X			
Lapwing *Vanellus vanellus**			X						
Grey Partridge *Perdix perdix*				X			X		
Turtle Dove *Streptopelia turtur**				X			X		
Sand Lizard *Lacerta agilis*	X								
Natterjack Toad *Epidalea calamita*	X								
Great Crested Newt *Triturus cristatus*	X	X					X		
European Eel *Anguilla anguilla**							X		
Adonis Blue *Polyommatus bellargus**	X								
Silver-spotted Skipper *Hesperia comma*	X	X							
Heath Fritillary *Melitaea athalia*							X		
Wartbiter Cricket *Decticus verrucivorus*	X								
Short-haired Bumblebee *Bombus subterraneus*	X								
Monkey Orchid *Orchis simia*	X							X	X
Burnt-tip Orchid *Orchis ustulata*									X
Late Spider Orchid *Ophrys fuciflora*									X

Key opportunities for nature's recovery using species conservation

Species-specific conservation interventions are a significant part of wider nature conservation efforts. As species in Kent continue to decline, conservation interventions will be accelerated to support species in increasingly fragmented habitats and to reverse population declines in the face of climate change. Conservation interventions are also a simple and proven way of engaging with people about conservation by using charismatic flagship species that represent larger ecosystems and highlight threats. Furthermore, as more environments in Kent are developed, species translocations and other interventions will be needed in development mitigation, requiring an expansion of specialist knowledge and skills among ecological consultancies, nature conservation charities, and development companies (e.g. Furness *et al*., 2013).

To date, monitoring and evaluation of species interventions in Kent seems to be poor, especially over long-term timescales. Few of the actions shown in Table 1 have published details of the techniques nor scientific evidence to demonstrate success. To develop our conservation toolbox and increase the outputs of conservation interventions, we need to publish and share knowledge of successes and failures.

A significant barrier to species reintroductions and translocations is one of perception. A common view is that species arriving 'naturally' are of higher value than those deliberately placed there; however, in the highly modified environments of Kent and the British Isles, this view of 'natural' is very grey and often contradictory. A second barrier is the partitioning in nature conservation of academic science, land management, captive species management, and people engagement. Species interventions, especially translocations, need an integrated approach across disciplines to support long-term species recovery. We may also need to accept a greater degree of human intervention in ecosystems that are increasingly anthropogenic.

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Heath Fritillary *Melitaea athalia*
© Eric Karits @pixabay

Common Redshank *Tringa totanus*
© Shalley Lewis

MARINE CONSERVATION

CHRIS DRAKE, KENT COUNTY COUNCIL

Introduction

The drivers of change described in the previous chapter are all exerting pressure on marine biodiversity; this section describes the conservation action taken over the last 10 years which has been undertaken to address some of those pressures. We will need to learn from the successes and failures of these as we consider how a Nature Recovery Network might function in the marine and intertidal areas of Kent, along with the ambitious steps that will need to be taken to bring about marine nature recovery.

Policy change

The Marine Act was described in the previous section as a positive driver. Here we look at the impact areas such as MCZs and Marine Planning have had, plus associated conservation action.

Education and management for MCZs

For MCZs, the GMA considers the sensitivity of the features to pressures, as well as the extent of features; this is referred to when determining appropriate management of a site. One of the perceptions of MCZs is that many of the new sites are just lines on a map at present, with little in the way of management measures or enforcement.

Natural England advise IFCAs on their MCZ assessments. The Kent & Essex IFCA has also drawn up – and are enforcing – a range of marine bylaws, some of which relate to MCZs. For example, the Medway Estuary MCZ is now part of a NTZ. Kent & Essex IFCA, working with the Rochester Oyster and Floating Fishery, developed this bylaw to prohibit any fishing activity within the intertidal areas along the northern banks of the estuary.

Aside from bylaw development and enforcement, in the last 10 years there has also been some significant project work carried out around MCZs. KWT collaborated with local authorities, coastal partnerships and Natural England for the HLF project Guardians of the Deep, which set out to raise awareness of the importance of the marine environment and the need to protect it with a particular focus on MCZs.

The project came about through discussions between the partners involved around the need to raise awareness and promote Kent's marine environment. An application was submitted to HLF in 2015 to secure development funding for the proposal. Following the success of the application, the group carried out a gap analysis of existing public engagement in the marine environment, to identify target audiences, along with consultation work based on this. Following a further successful application to HLF, the full project began in 2017 and ended in 2020. The project contained elements for all ages, including a programme for schoolchildren.

The Guardians of the Deep project not only helped increase awareness of the local marine environment – as well as highlighting its connection – to the people in Kent, but it led to an increased number of informed coastal volunteers. Many of those volunteers are still working with the partner organisations despite the project finishing (Resources for Change, 2020). Medway Swale Estuary Partnership has recently secured two years funding from Swale Borough Council to deliver its 'Wild Estuary' project, which incorporates successful elements from the Guardians of the Deep project.

In Thanet, the idea of coastal wardens goes back to 2005, with the driver being the need for better management of the Natura 2000 designated sites (SPAs and SACs) though a Natural England led management scheme. Guardians of the Deep helped to extend this type of volunteering, and a large team are still in operation in Thanet, managing the human impacts on biodiversity through direct action such as litter picking, and also through education and being the eyes and ears for any illegal or damaging activity.

Guardians of the Deep also trained 180 volunteers in intertidal survey, meaning that additional marine data is now coming back into KWT to help shape future conservation action (Resources for Change, 2020). Overall, the awareness-raising and capacity development the project achieved has resulted in better ongoing support for MCZs, their protection, and management.

Guardians of the Deep project © Tony Child

Marine planning

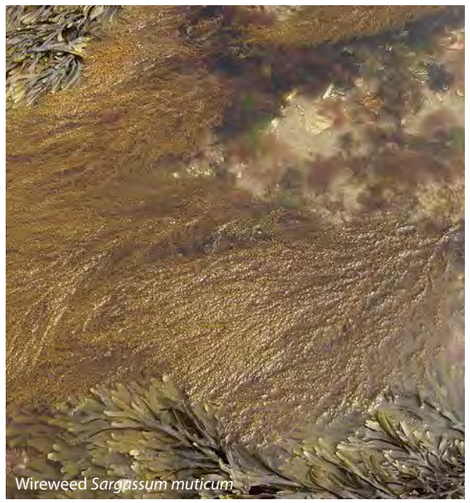
Sourced from the Marine Management Organisation (MMO)

Another significant part of the Marine Act is marine planning. As covered in the previous chapter, the South Marine Plan only covers a small part of the Kent marine and coastal area; however, it is still interesting to consider, as it is already being used in decision making – despite only being adopted in July 2018. The following information is gathered from the first three-year report on the South Inshore and South Offshore Marine Plan.

Decision-makers external to the MMO, including local authorities and delivery bodies, have used the plan to inform a range of consenting and planning decisions, drafting bylaws and sub-national policy documents, and providing consultation advice.

Outcome monitoring found that the plan has had a positive effect on:

- Promoting coexistence by facilitating effective use of marine space and minimising conflict, ensuring proposals avoid or reduce any negative impacts on other activities.
- Supporting provision of new infrastructure through the decision-making process.
- Enabling protection of marine biodiversity and ecosystem services through appropriate consideration and mitigation of impacts, such as for herring spawning.
- Reducing impacts on seascape through the provision of an evidence base to support proposals siting themselves appropriately.
- Supporting the assessment of Good Environmental Status by increasing applicant submissions to the Marine Noise Registry.



Wireweed *Sargassum muticum*

In summary, although positive progress is being made towards achieving the objectives of the South Marine Plan, it is too soon to determine the effectiveness of many of the policies in securing plan objectives. In addition, the South East Inshore Marine Plan was only adopted in June 2021, so it is too early to evaluate this plan as well.

The MMO and DEFRA are currently considering the needs of future marine plans.

Invasive non-native species

Willie McKnight, independent (formerly Natural England)

The Pacific Oyster is a good example of an INNS once thought unable to survive in colder UK seas, but one which is now not only surviving, but smothering native Common Mussel beds on the Kent coast. This species and a range of other INNS are described in the marine *Drivers of Change* chapter.

In terms of action to combat marine INNS, a lot of this has focused on the NEKMPAs through Natural England's INNS project; although the Medway Swale Estuary Partnership also had licence to control Pacific Oysters and operated this between 2015 and 2018. In response to the baseline NEKMPA findings, Natural England developed best practices for the control of Pacific Oysters and Wireweed, as covered in "*Pacific Oyster control within the inter-tidal zone of the NEKMPA (2015)*". A group of volunteers was recruited, trained, and kitted to control Pacific Oysters and Wireweed. The team was launched in 2012 under the name of 'Coastbusters' and remains active in 2021. Initially, the team was mobile, responding to priority sections identified from the monitoring programme, but it is now predominantly committed to two sections which form part of the National Nature Reserve at Pegwell Bay, Ramsgate. Control effort here has been successful in reducing and stabilising an oyster population which was expanding exponentially. Though oysters are still present, reef formation has been prevented. In addition, loss of an important intertidal mussel bed (5.4 ha) has been avoided, oyster establishment on adjacent mudflats has not occurred and the protected chalk substrate is maintained.

Since its launch, a total of 322,495 oysters have been removed and 1,543 volunteer hours have been spent onsite. Wireweed with a wet weight of 1,252.5 kg has been removed from locations at Ramsgate and Broadstairs, with 54 volunteer hours spent onsite. However, the scale of success must be considered relative to the absence of intervention at the vast majority of remaining sections forming the NEKMPA. This prompts the question: Is management failing to achieve the objectives of DEFRA's INNS strategy (DEFRA, 2015)?

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Within the NEKMPA, horizon scanning for new INNS is managed by the NEKSCAG, which reports to the management group. The most recent arrival is the Brush Clawed Crab *Hemigrapsus takanoi*, which has been recorded across the Thanet coast. This species is abundant across northern European coasts and may have entered the UK in ships' ballast water. Research in the Netherlands suggests it may be responsible for the decline in the native Green Shore Crab *Carcinus maenas* (van den Brink *et al*, 2012).

Via the EU funded Rapid Life project in 2018, RIMPs were written to describe the threats to aquatic and riparian systems at a localised level. The South East RIMP identified more than 50 existing INNS currently affecting coastal and freshwater habitats across Kent (Griffiths and Loos, 2018). This and broader terrestrial INNS issues are described in the previous *Drivers of Change* chapter. For the marine area, the South East RIMP also describes sources of INNS ranging from shipping and recreational boating to fishing along with priorities for future action.

Medway Valley Countryside Partnership and MSEP led on the South East RIMP and have undertaken a range of education and engagement work on INNS for some years. For the 2012 Olympics, MSEP launched "What's Under Your Boat", aimed at minimising new invasives from increased yachting activity in marinas. This was updated under Guardians of the Deep into a new guide called Beneath the Water, which encourages water users to check, clean and dry boats and equipment to minimise the spread of INNS.

Wildlife disturbance

Sourced in part from Bird Wise North Kent

The issue of bird disturbance in winter is described in the previous chapter. Through developer contributions, two Bird Wise (Bird Wise, 2020) projects have been set up in Kent. The most established is Bird Wise North Kent, which is addressing the problem through the following engagement measures:

- Coastal codes – developed in consultation with the public and other coastal organisations, these cover everything from photography and airborne and water activities, to bait digging and a Dog Walkers Canine Code.
- Coastal Canines Club – those who register receive regular updates on how dogs can enjoy the coast in a way that does not cause disturbance. Guided walks and other dog-themed events have been organised.
- Volunteering programme – a team of Bird Wise volunteers are regularly out on the coast meeting people, promoting the codes of conduct and advising on bird disturbance.

Common Tern *Sterna hirundo*
© Lubos Houska @pixabay

A similar programme has been established for east Kent, but both are targeting bird disturbance in winter. It could be argued that there are many wildlife disturbance issues in the summer too which would benefit from a similar approach. Other disturbance issues on the coast include the disturbance of shoreline wildlife, ranging from rock pool creatures and seals to areas which are less easy to tackle by the above means, such as underwater noise from shipping.

The idea of coastal wardens in Kent goes back a long way; for example, in 2005, the Thanet Coast Project set up a programme (described under MCZs) which looked more broadly at human impact on the coast and established codes of practice and species advice, such as turnstone disturbance. This programme continues, but a lack of resources for such initiatives is an ongoing problem; however, when given resources for coordination and equipment, these programmes seem to be cost effective ways of managing a range of environmental issues while connecting people with nature.

Plastic pollution

With the public imagination caught by the likes of the BBC *Blue Planet 2* programme, there has been a surge of interest in volunteering and litter picking on the coast, and projects such as Guardians of the Deep could hardly keep up with the demand to carry out this specific activity. Removing plastic pollution washed up or from other sources is commendable and necessary, but preventing the problem getting worse is a global issue tied into the materials we choose to produce, recycling, waste disposal and other factors. Unless change occurs here, we will continue to need volunteers to remove tonnes of plastic waste from our shoreline every year. The interest in plastic pollution is encouraging, however, there may be a challenge to spread this awareness to a wider range of marine environmental action and volunteering.

Kent Biodiversity Strategy 2020-45

This KNP strategy contains actions and champions for a range of coastal habitats (and some species). The strategy was only recently published, but KNP will now be working towards the habitat targets outlined below.

- **Habitat: Intertidal mudflats and coastal saltmarsh Champion: Environment Agency**
  KNP partners are committed to protecting these habitats through shoreline management plans and strategies. The target of 50 ha for coastal saltmarsh and intertidal mud is based on coastal squeeze affecting designated sites; this target requires considerable landowner cooperation and therefore requires a lengthy timeframe for delivery. In addition to the creation target for this habitat, the strategy also aims to ensure that sensitive areas and the species they support are protected from recreational disturbance.
- **Habitat: Coastal and floodplain grazing marsh Champion: RSPB**
  The target is to restore 2000 ha. The most likely opportunities up to 2025 will be restoring existing grazing marsh. This target includes habitat creation at Higham Marsh, Harty Marshes, Lydden Valley, Seasalter Levels and the Environment Agency's Flood and Coastal Risk Management programme. In addition to the restoration target for this habitat, the strategy also aims to ensure that sensitive areas and the species they support are protected from recreational disturbance.
- **Habitat: Vegetated shingle Champion: Natural England**
  The target is to maintain total extent of coastal vegetated shingle habitat; ensure no net loss; and restore all coastal vegetated shingle to favourable condition (or unfavourable to recovering).

Shingle is a finite resource. In southern England, much of it is composed of flint eroded out of chalk cliffs and moved by longshore drift along the coast. Shingle in Kent takes the form of the cuspate foreland at Dungeness, which is by far the largest site in the UK at more than 2000 ha of exposed shingle. The remaining areas in Kent are fringing shingle beaches exposed to storm action and display temporary and mobile strandline communities. Being a finite resource, the target is to maintain the coastal vegetated shingle habitat in Kent, ensuring no net loss. Opportunities to create shingle habitat are extremely limited and of limited success.

For species, there are also targets for Sandwich Tern, Lapwing, European Eel, Harbour and Grey Seals, with delivery against targets championed by KNP members.

Conclusion

This section describes some of the conservation efforts which have been applied over the last 10 years. Despite development, pollution, fishing and other pressures, the marine environment is less fragmented than the terrestrial environment and potentially has greater capacity for nature recovery. However, the marine environment is a more complex area to manage, and a fully resourced integrated approach is required to achieve positive outcomes for biodiversity.

Better recording of marine biodiversity using the latest technologies will help to establish a more complete baseline for our work, and new project approaches focusing on natural capital and nature-based solutions will be needed alongside more traditional management. More robust management of our MPAs will be key to this.

In addition to this, marine planning will need to be utilised to ensure streamlined sustainable decision making, and with the new Environment Act it will be necessary to consider what a marine Nature Recovery Network should look like and collectively work towards this vision in the coming years.


Dungeness © LoggaWiggler @pixabay

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European eel *Anguilla anguilla*
© Willfried Wende @pixabay


Higham Marshes © Explore Kent

Protesters speaking about the impacts of climate change
© Leanne Manchester

ENVIRONMENTAL POLICY

JULIA HUNT, KENT WILDLIFE TRUST

Introduction

From how to feed the nation, and whether to invest in renewable energy, to when to mow a local park, there are numerous decisions that impact the state of nature. Environmental policy is an umbrella term describing the measures, approaches and commitments by a government or organisation to managing the relationship between humans and the natural environment. Traditionally, these policies have focused on protecting natural systems by limiting the negative impacts of human activities, such as by managing air and water pollution, and conserving wildlife. More recently, environmental policy is increasingly recognised as a means to deliver multiple benefits for society, industry, and wildlife.

In the UK, laws and regulations governing environmental policy are largely managed by DEFRA and the devolved administrations of Wales, Scotland and Northern Ireland. Delivery of these laws and regulations is often delegated to local authorities, whose functions include addressing planning applications, handling waste streams, and managing public spaces; a wide range of organisations, including Local Nature Partnerships, environmental groups and community schemes, also help manage these policies as well. At the same time, businesses are increasingly cultivating their environmental credentials in response to growing expectations from consumers.

Over the past five years, the environmental policy arena has experienced major changes. The UK's departure from the European Union has initiated an overhaul of our environmental policies, most of which were previously overseen from Brussels. Meanwhile, the Covid-19 pandemic has had considerable impacts, both positive and negative, on natural systems, including notably air pollution from changing vehicle use, and littering of disposable masks. Throughout the pandemic, there has been widespread acknowledgement of the vital role nature plays in maintaining mental wellbeing.

The international scientific community broadly agrees that the next 10 years will be critical to halting the devastating loss of biodiversity and abundance that we have witnessed over the past decades, and for tackling climate change (UN Environment Programme, 2019). Effective, integrated environmental policy is essential.

Changes in environmental policy

In 2010, much was made of transitioning to a green economy; most notably, David Cameron pledged to lead the 'greenest government ever' (Randerson, 2010), and the Lawton Report highlighted the need to establish a coherent and resilient ecological network (Lawton, 2010). However, environmental policies were increasingly seen as a constraint on business and progress was halting. Nonetheless, the 2011 Natural Environment White Paper introduced the need for Local Nature Partnerships – although it did not grant funding, unlike the Local Enterprise Partnerships (HM Government, 2011). In 2012, the KNP was established to drive positive change in the local natural environment, enabling a diverse range of organisations to make the best use of their available resources to achieve significant gains for Kent's biodiversity.

In 2016, the Government once again committed to environmental values, stating its aim to be the first generation to leave the environment in a better state than it had inherited it (Leadsom, 2016); however, the loss of EU oversight left a gaping hole in both the governance of environmental policy and its enforcement. While its 2018 '25 Year Environment Plan' presented a framework for delivering this, it lacked legal standing (HM Government, 2018). A number of Acts have subsequently been introduced that directly or indirectly manage our natural resources, including:

- The Agriculture Act 2020, which provides the legislative framework to replace the agricultural support schemes of the EU's Common Agricultural Policy (HM Government, 2020a).
- The Fisheries Act 2020, which provides the legislative framework to replace the fisheries management systems of EU's Common Fisheries Policy, including quota management (HM Government, 2020b).
- The Climate Change Act 2008 (as amended in 2019), which made the UK the first country to legally commit to reaching net zero carbon emissions by 2050 (HM Government, 2008).
- The Trade Act 2021, which provides for the implementation of international trade agreements (HM Government, 2021).

The state of environmental policy in 2021

Overall, there is now increased understanding of the role of nature in both economics and human wellbeing. The Agriculture Act is striking in its recognition of the need to support farmers to deliver public goods, such as soil health and pollinator populations, as is the UK Government's 2019 commitment to net zero carbon emissions by 2050. The interconnectedness of the climate and nature crises are increasingly understood, and politicians are starting to understand that nature-based solutions have a key role to play in tackling them. Nonetheless, there have been some alarming examples of un-joined-up thinking, including the ruling to allow emergency use of a bee-killing neonicotinoid pesticide, which was passed during a public consultation on how to use pesticides sustainably (Department for Environment Food & Rural Affairs, 2021). Another example is the permitting of the construction of the HS2 rail line (Royal Courts of Justice, 2020), which will destroy vast swathes of irreplaceable ancient woodland: This happened during the same time in which it was announced that 30% of the UK's land and sea would be managed for nature by 2030 (Prime Minister's Office, Department for Environment, Food & Rural Affairs, The Rt Hon Boris Johnson MP, 2020). It is not sufficient to give with one hand while taking with the other. For nature to recover, environmental sustainability must be front and centre of decision-making across all government departments and all parts of society.

Access to high quality green space has proven benefits for physical and mental health, workplace productivity, education and more (Public Health England, 2014). The Covid-19 pandemic has led to a surge in people accessing public green spaces for leisure and exercise. Unfortunately, while the phrase "green recovery" has become common in political circles, the recognition of the role of nature in covid recovery plans is, so far, scant.

Nonetheless, Kent is committed to delivering real and lasting change. KNP is driving innovation and change at local and national level. From carbon sequestration and biodiversity uplift, to energy and emissions, KNP members are leading research and practical delivery of transformative projects that bring multiple benefits to the community, while demonstrating the national implications of these approaches. Their collective aims are set out in the following documents and new innovations are continually strengthening the county's environmental credentials:

- The Kent Biodiversity Strategy looks to protect and recover threatened species and enhance the wildlife habitats that Kent is particularly important for. It also aims to provide a natural environment that inspires citizen engagement and is well used – and appreciated – in the hope that the mental and physical health benefits of such a connection can be realised by the people of Kent (Kent Nature Partnership, 2020).
- Kent Energy & Low Emissions Strategy sets out how Kent County Council, Medway Council and the Kent district councils will respond to the UK climate emergency and drive clean, resilient economic recovery across the county (Kent County Council, 2020).
- Kent Environment Strategy recognises the challenges and opportunities that the anticipated and unprecedented growth and change over the coming decades will bring. It seeks to support economic growth, whilst protecting and enhancing the natural and historic environment, creating and sustaining communities that are vibrant, healthy and resilient (Kent County Council, 2016).

The future

The Government's flagship Environment Bill, initially posited in 2018, has, at the time of writing, still not passed into law (UK Parliament, 2021). Among other things, this Bill proposes the development of a Nature Recovery Network of land and sea managed for nature, the development of Local Nature Recovery Strategies, and the establishment of a mandatory minimum 10% biodiversity net gain from development. KNP is leading important work to pilot the implementation of these new approaches. These are vital steps in protecting and restoring our habitats and species, although stronger measures, including binding interim targets for nature's recovery and effective enforcement systems, are also required. Additional upcoming legislation, including around proposed planning reforms, also has the potential to significantly impact environmental recovery – for better or worse. To ensure they play a part in nature's recovery, these reforms must plan wildlife, access to nature, and community engagement into every level of the planning system.

In November 2021, the UK hosted the COP26 Climate Change Conference, aiming to position itself as a world leader in the field (UN Climate Change Conference UK, 2021). The conference helped set international expectations for climate action for the coming years. The next 10 years are crucial in tackling the climate and nature crises. Delivering a strong Environment Act is a necessary first step, but its effective delivery is also key, requiring adequate funding and guidance for local authorities to implement Local Nature Recovery Strategies. Furthermore, nature's recovery must be embedded into much wider policy, supporting sustainable human development.

Ultimately, protection and management of our natural resources is a shared responsibility; from governments, to businesses and members of the public, we all have a role to play.

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PEOPLE ENGAGEMENT

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Introduction

Engagement with nature can be as simple as identifying the name of a plant using a website or an app, to fully immersing ourselves in nature through recreation and educational activities, volunteering and citizen science schemes. Whatever the level of engagement, people are a key component of a nature recovery network. Engagement journeys and their impact can be difficult to map, but can provide an insight into a person's experience with nature. When focusing on one specific area of engagement, it is often easier to understand the individual drivers that encourage engagement. However, it can be more difficult to track an individual's engagement journey across larger organisations, as these cover more than one element of conservation work. As a community we are beginning to use social science to gauge change resulting from engagement activities; however, demonstrating individual changes can be complex, especially surrounding the need to protect anonymity to ensure ethical standards when surveying people.

We need to engage people in conservation to drive positive change:

- Most nature conservation mitigates the impacts humans have on nature; stakeholders therefore need to be involved in projects from start to finish to ensure conservation success.
- Protecting nature relies on people having knowledge of, experiencing and caring about it.
- Engaging people helps measure the impacts of conservation projects. For example, studies have shown that when 25% of people adopt a new normal (social norm) it creates a tipping point from which others follow suit, where behavioural intent becomes behaviour change (Salazar *et al*, 2019; Verissimo, 2019).
- Nature has a huge role in human wellbeing (Woodhouse *et al*, 2016; Brymer *et al*, 2019), which means different things to different people, but creating that link to new and existing audiences sustains conservation success past project timelines.

The challenge, therefore, is to engage Kent's population in a vision in which nature has space to thrive and everybody has the opportunity to experience it in their daily lives. No one person or organisation can achieve this alone, but through a collaborative approach this aspiration is becoming a reality.

There is an urgent need to understand and reduce the negative impacts we have on nature, many of which are documented in this report. Engaging with stakeholders is a vital part of the solution to restoring nature. Engagement with nature not only improves that state of nature of Kent, it improves the perceptions, attitudes and tolerance of, and how nature is valued in Kent. For example, the 2018 Kent Environmental Strategy Impact Report recognised 21 individuals, organisations and projects that made a significant contribution to nature that year.

Finding ways for people to connect with nature has never been more important. The global pandemic saw people reconnecting with nature in their gardens, local parks and greenspaces. For many people, nature became solace, entertainment, exercise and mental stimulation. Such connectedness with the environment can bring benefits for nature and should be capitalised on. One benefit is amplified public support for greater protection for wildlife. Nevertheless, as this report demonstrates, increased public engagement can lead to increased pressure on the environment, and as with all things, there is a need to find a balance between suitable access to nature and the protection of nature.

Engagement is necessary in conservation projects to create desired behaviour change and improve the state of nature in Kent. Engagement can be both long- and short-term, depending on the project, who is being engaged and how. Changing human values, social norms, attitudes and tolerance towards wildlife takes time (Verissimo, 2018; Verissimo, 2019; Vaske and Manfredo, 2012; Frank, 2016; Jones *et al*. 2016), which is another reason why engagement should occur from project start to end and as project legacy. Engagement is part of a large discipline, social science. Although social science is not new, using social science in conservation research and action is expanding quickly, with adoption of new approaches, for example, conservation psychology (Perry *et al*., 2020).

Volunteers at Hothfield Heathlands
© Jon Hawkins

How engagement acts to create a nature recovery network

Many recent conservation projects have attributed their ongoing success to the education and engagement activities that took place before and during project delivery. The legacy being that the local population have adopted, protected, and continue to act to ensure long-term success and positive outcomes both for nature and people, and ultimately the nature recovery network.

Education

A well-established engagement tool that is known to engage both new and long standing nature enthusiasts is the format of an educational programme or talk. There are various educational programmes available across the county, delivered through a variety of providers focusing on their area of expertise, as well as more general and entry level provision. For example, KWT deliver various adult learning courses at varying levels from beginner to advanced, while the RSPB local groups and Kent Bat Group deliver specific courses on birds and bats respectively.

School education programmes are a key engagement tool that provide access for children and young people to learn about the importance of nature to the environment, their wellbeing and future, and the range of wildlife in Kent. Such programmes are offered by multiple organisations across the county, engaging thousands of young people. These opportunities vary from individual activities and events, through to longer term programmes that offer a deeper connection to nature. Educational visits for school groups run by organisations at parks and nature reserves offer some children their first experience of the countryside. Those first positive experiences of pond dipping and catching a water boatman, to rolling over a log to discover a slug hiding away, are often the experiences that shape attitudes to nature. Between 2011 and 2020, KWT engaged 49,440 people through their onsite education programmes.

When it comes to nature education programmes, primary school children are well catered for across the county; however, this is not the case for secondary ages. For example, 88% of schools that have signed up for the KWT Wilder Kent Awards are primary schools, while just 12% are secondary schools. Providers often have difficulty engaging with secondary schools due to the pressure teachers are under to deliver a packed curriculum. KWT have committed to working with Canterbury Academy to develop an educational field pack that supports GCSE and A-Level Geography students in achieving their qualifications. This will help to ensure that more young people undertake this element of their learning in Kent, while retaining the focus on nature and wildlife.

KWT's Forest Schools and Nature Tots programmes give children – and in the case of nature tots, parents and carers as well – the opportunity to learn about and explore nature independently. The sessions are packed with activities, ranging from fire building and bug hunting, to den building. These experiences are set in wild spaces to inspire a life-long love of nature. Feedback from participants shows that parents and carers feel more confident to go outdoors with their children as they understand more about the wildlife they might encounter. Over the last 10 years, KWT has engaged 4,499 people in Forest School and Nature Tots events through both on-site and off-site courses.

Education in the form of on-site signage has traditionally been the starting point for visitor engagement. Signage can both educate people about the place they are visiting and advise people about how they can help look after the site. Done well, signage is a powerful tool in any site management plan, steering visitors away from sensitive areas and minimising disturbance, whilst providing visitors with the experience in nature that they seek. Signage also encourages people to ask questions and begin a journey of learning about nature.

Nature Tots © Jdrew

Health and wellbeing

The evidence base demonstrating the positive benefit nature can have on our health and wellbeing is extensive and forever growing. The use of Social Prescribing within the environmental sector is now becoming recognised by clinical bodies such as the NHS and GPs. Social prescribing is a term that refers to the system where GPs, nurses and other primary care professionals refer people to a range of local, non-clinical services to support their health and wellbeing. Conservation psychology is the study of how nature relates to our wellbeing (Perry *et al*., 2020). Being in nature or even viewing scenes of nature reduces anger, fear, and stress and increases pleasant feelings. Exposure to nature not only makes people feel better emotionally, it contributes to their physical wellbeing, reducing blood pressure, heart rate, muscle tension and the production of stress hormones. Some people refer to it as nature's vitamin (Bragg *et al*, 2015; Wood *et al*, 2016).

Nature-based interventions through social prescribing can reduce the pressure on our health systems and is financially efficient. According to a report published by The Wildlife Trusts, every £1 spent on a project (such as a social prescribing in nature project), has a social return on investment of £6.88 and allows a person-centred approach to positively improve individuals' health and wellbeing (Bagnall *et al*, 2019). This type of engagement can reach people who normally wouldn't visit a nature reserve, and by introducing them to this hugely valuable resource, it can help individuals live a happier and healthier life.

There are a number of projects that focus on nature and wellbeing being delivered across the county. KWT's Take Root project, was a 2.5 year project funded by the National Lottery Community Fund; it delivered six week nature-based programmes and mindfulness walks via Green Social Prescribing. The aim of the project was to reduce loneliness and isolation, and therefore improve overall wellbeing, for older people in the Sevenoaks area. Data analysis was carried out by an independent resource and found that the project met its aims. All participants showed an improvement in all their self-assessed wellbeing measures by an average of 35% over the duration of the project, which is a significant finding. The biggest improvement of measures was seen across the loneliness measure. The mindfulness in nature programme proved the most effective in improving loneliness and wellbeing measures. These findings are made more significant in that participants' loneliness measures improved, despite a global pandemic disrupting the delivery of over half the project lifetime – where online resources were delivered during national lockdowns.

KWT's Down to Earth project, funded by Sport England, has proved very effective at engaging women and improving wellbeing through access to nature, physical activity and volunteering. Motivated by a lack of services in their area, Down to Earth volunteers have created weekly family opportunities to get physically active in nature. To date, a total of 52 volunteers have taken part in the project, and 48 women have attended one event with their children or have engaged with the project about attending future events. Volunteers started with little understanding of – or connection with – nature and the therapeutic value it can provide. But through weekly exposure, person-centred support, and opportunities to access formal training, volunteers have been able to establish family-based activity groups that they are confident to deliver. The weekly groups not only continue to cultivate the volunteers' therapeutic connection with nature, but also that of the families that attend.

Communities

As well as these structured programmes, there are also various activities that take place across the county to engage individuals, families and wider community groups in taking action locally for nature. These are delivered by parish councils, local community groups, conservation charities and special interest groups, including Gardening for a Wilder Kent, various 'In Bloom' groups, Butterfly Conservation, and the RSPB to name but a few. There are also more structured engagement activities that are delivered through specifically funded projects. The RSPB Rewetting the Blean project aims to make the woods more resilient to climate change through volunteering opportunities and public events; this is funded via the Green Recovery Challenge Fund.

As public perception of nature and wildlife evolves, so too have the techniques to engage people. When The Wildlife Trusts' Wild About Gardens programme (Wild About Gardens, 2021) was first established, the biggest challenge was to overcome the perception of some gardeners that a wildlife garden meant a messy garden. Now we are reaching a point where gardeners recognise the value of long grass and wilder areas within their garden, and see it as something to be proud of rather than a sign of poor garden management. Whilst we are yet to reach the point where long grass is universally recognised as important wildlife habitat, this change in public perception begins to make it easier for councils to alter the way in which they manage land for wildlife. From engagement with conservation organisations and public pressure, local councils are increasingly changing the way in which they manage road verges, reducing the cutting regimes to promote greater biodiversity (Hambrey Consulting, 2013; Bromley *et al*., 2019).

In 2020, more than 20 community groups downloaded the KWT Wilder Kent Award form for community groups, and 25% went on to make a full application. While these numbers are relatively low, it demonstrates that community groups are starting to understand the impact they can have on the environment locally, and how they can use their collective voices to inspire change and demand local and national government to take action. The Wilder Kent Award for villages, towns and cities will be launched in 2021 and we hope that this award will encourage collaboration with local schools and community groups and develop a nature recovery network with people taking positive environmental action.

Communities are also beginning to work together to tackle rural crime. KCC and Kent Police encourage the use of the Country Eye app which is a proactive and positive way for people to report negative behaviour and rural crime quickly and efficiently using mobile devices. The app allows data to be shared with Kent Police about the patterns and frequency of behaviour that impacts on our rural communities and wildlife. Kent police also provide advice and guidance on the prevention of rural crime (Country Eye, 2021)

Volunteering

Volunteering opportunities are a key way to engage audiences and individuals in restoring and protecting nature in Kent. Multiple organisations across the county rely on volunteers to enable them to deliver organisational objectives. Aside from the valuable time and capacity volunteers provide, volunteers are also excellent advocates of organisational aims, values and key messages. Engaged volunteers will support the organisation and in turn drive friends and family to do the same.

Volunteering with nature-focused organisations can also offer people a deeper understanding of, and connection with, our natural world. In the past, the majority of conservation volunteers have been either retirees looking to usefully fill their spare time, individuals with a passion for natural heritage, or those seeking to gain practical experience with a view to a career in conservation. With people staying longer in full-time employment and the competing demands on time, organisations are having to develop a more flexible approach to engaging volunteers.

Time is often a barrier for people wishing to volunteer. Consequently, organisations have been pushed to develop engagement opportunities that have a flexible level of commitment. This has led to the development of volunteer-led citizen science projects. One of Kent's most effective citizen science projects – The Coastbuster project – has been volunteer-led for more than 10 years. The Coastbuster project aims to tackle the spread of the invasive non-native Pacific Oyster and was set up in Thanet by Willie McKnight in 2011 with the support of Natural England (De Blauwe Cluster, 2020). Since its inception, countless Pacific Oysters have been dispatched and a second volunteer team has been established to tackle the problem across the north Kent coast. Additionally, companies have committed to this project and won environmental awards (SIOEN, 2020).

The National Lottery Heritage-funded Guardians of the Deep project also took a very flexible approach to volunteering with its team of Coastal Guardians (Guardians of the Deep, 2021). These volunteers – the eyes and ears of the coast – were able to volunteer their time whenever it was convenient to them. Over the course of the project (2016-2020), a network of 400 trained volunteers was established, self-supported and connected via social media. They support the work of statutory organisations by reporting anything from fishery violations to pollution incidents. For all organisations, when it comes to encouraging engagement with the wider community, volunteers play a key role as they are often promoters of shared causes.

Site management

At honeypot sites, as popularity increases so does the need for careful management to avoid conflicts between different user groups and nature. Zoning of such sites can prove an effective management technique; this ensures there are areas for nature which can remain undisturbed, quieter areas for enjoyment of nature and designated areas set up to cater for higher footfall. This type of management approach is commonly used by organisations such as the RSPB and the National Trust, particularly at sensitive sites. By doing so, these sites can effectively accommodate 100,000s visits each year, without compromising any conservation objectives.

Human-wildlife conflict management

Human-wildlife conflicts affect a large range of species and communities globally (Woodroffe *et al*, 2005; Frank *et al*, 2019). As ambitious conservation approaches continue to grow and more species are reintroduced, creating coexistence between wildlife and local people is vital for successful conservation (Woodroffe *et al*, 2005; Frank *et al*, 2019). To achieve such coexistence, KWT has recruited two new roles, a Human-wildlife Coexistence Officer and a Wilder Engagement and Education Officer. Both these roles are vital for stakeholder engagement and increasing tolerance towards wildlife. For example, the Human-wildlife Coexistence Officer organises and chairs a working group at Sevenoaks Wildlife Reserve for a collaborative approach for all users to be involved in improving conservation activities. They also organise and chair the East Kent Beaver Advisory Group; this is an interdisciplinary partnership to manage beavers across East Kent which provides support and advice on coexistence with beavers. In addition, the Wilder Engagement and Education Officer develops and implements a range of engagement and education programmes for a variety of wilder projects, such as Wilder Blean and the Chough Reintroduction Programme; this ensures community support of these projects.

Equality, diversity and inclusion

The lack of diversity within conservation volunteering in Kent is a factor that all conservation organisations are aware of and keen to address. The members of the Kent Nature Partnership believe that everyone should have the opportunity to experience the joy of wildlife in their daily lives, and are committed to putting equality, diversity and inclusion at the heart of it's movement. This means inspiring, empowering and engaging people from all backgrounds, cultures, identities and abilities, to change the natural world for the better and take action to help wildlife in their daily lives.

"No one will protect what they don't care about; and no one will care about what they have never experienced."
– David Attenborough

We know that not everyone has equal access to nature. Therefore, it's important for the conservation community to better understand and address inequalities experienced by many communities in accessing nature, to improve connection and inclusivity for all, and ensure everyone is able to benefit from wildlife. We need everyone from all backgrounds to experience, care for, and protect nature. It is also recognised that the conservation sector is one of the least diverse professions in the UK. The conservation community is committed to ensuring it reflects and represents all parts of society by improving access to jobs and training opportunities for groups currently under represented in our sector. People, whether within or outside of organisations, are critical to conservation. It is therefore vital to cultivate inclusive work spaces that are free from discrimination, where differences are valued, and everyone can be themselves and flourish, just like nature.

Conclusion

Over the last 10 years, a plethora of engagement activities have seen thousands of people begin and develop journeys that enhance their connection with, and enjoyment of, the natural world; this ultimately leads to better protection and restoration of nature. Engagement needs to link more closely to the evidence-based conservation, linking social science to positive impacts on nature and people. Demonstrating tangible outcomes of engagement is key to leveraging continual and sustainable resource to further engagement activities.

Over the next 10 years, KWT would like everyone to experience a wildlife rich natural world as part of their education and engagement learning journeys. KWT recognises that people of all ages and backgrounds deserve the chance to engage, learn and experience the wildlife, and to understand the value of the natural world. To enable this, there needs to be an increase in the quantity and quality of nature-connecting education and engagement events in Kent – all while considering how to increase audiences and the diversity of people taking part. Education and engagement needs to sit at the core of conservation projects across the county. Through all the methods described in this section, KWT will give local communities and individuals a range of opportunities to learn, experience wildlife, improve their wellbeing and take action for nature.

Kent Wildlife Trust Gardens at Tyland Barn, Maidstone


Kent Wildlife Trust Volunteers

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CHALLENGES, RISKS, OPPORTUNITIES AND RESOURCES FOR CONSERVATION

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Cattle along the riverbank
© Kevin Caster

Urgent change is required now in order to secure a sustainable future for the resourcing and delivery of conservation impact in Kent. Without it, there will be a continuous spiral of competition for resources, grant fund reliance and short-term projects; there will also be low skill and knowledge retention in conservation organisations, not to mention a lack of innovation, all of which is required to tackle the crises we face.

Conservation in the UK is failing. Successive State of Nature reports repeatedly show declines in species across the board; the common are increasingly becoming rare. Much of what we do has limited impact and focuses too much on individual species at the expense of greater bio-abundance. Prescriptive conservation techniques are often labour and resource intensive, with marginal biodiversity impacts for significant expenditure, not to mention use of machinery and other CO_2 emitting equipment. The climate and biodiversity crises have been declared, and Kent – by nature of its physical location – has to be at the forefront of tackling them. As well as increasing environmental stresses, drought, invasive species, and plant pathogens such as ash dieback, there are also issues of rising sea levels and drier summers – all against a back-drop of increasing development pressures and fragmented landscapes.

As a sector, conservation has been too dependent on grant and charitable funds, creating a culture of dependency on National Lottery and other funding. Whilst such funding is important, this has led to a cycle of projects which do not deliver the conservation impact required; realistically, projects need perpetual reinvention to secure additional funds to prevent significant challenges in the retention of skilled staff.

This has created a culture of parochialism and competition for resources within the sector. This needs to change if we are to meet the scale of challenge we currently face.

Public engagement in environmental issues is at an all-time high, however, many stakeholders and the wider public struggle to understand the complexities of landscape-scale working, natural processes and conservation techniques. Kent is under significant threat from development, poor land use, and a lack of effective resourcing on the part of statutory agencies who should be driving the scale and ambition of change it needs to see. And yet, the opportunities right now, both in public engagement, government

European Beaver *Castor fiber* at Ham Fen

rhetoric and the realisation in the private sector that the climate crises can be tackled, in part, through the restoration of nature at scale, are massive – it is beholden on us to make sure they are harnessed to meet the challenge.

So, whilst we face significant risks and multiple challenges, this remains one of the most interesting and exciting times for UK conservation, with opportunities not before seen.

The recent announcement by George Eustice MP, Secretary of State at DEFRA, talks directly to the need to think differently and be ambitious in our vision. The creation of a legally binding, species abundance target speaks to approaches championed by KWT and others. A move away from single species, single habitat foci, and a recognition that traditional adherence to condition assessments based upon designations granted to sites at arguably their most nature-depleted state (and reinforced by 'creeping baseline syndrome') has not served the protection of species – let alone driven the restoration of nature we need to see. While there are opportunities arising from development through mechanisms such as Biodiversity Net Gain (now finally mandated through the Environment Act), these need to be applied effectively, and inappropriate and damaging development will still need to be defended against. The most effective ways to ensure BNG delivers its benefits will therefore need to be considered.

The application of Nutrient Neutrality schemes on the River Stour and elsewhere, alongside a focus on

the role of carbon related finance and BNG, provide tangible routes to creating blended finance, which can support the restoration of nature at scale. These are tangible PES schemes, which if properly deployed have the potential to lever in game-changing levels of finance to nature's recovery, whilst also providing tangible Nature-based and Natural Climate Solutions.

To tackle these crises and to realise the opportunities available (while balancing and mitigating the threats), the current model of working needs to be reviewed.

Kent has an extraordinary breadth and depth of skills and experience within conservation organisations across the public and third sectors, encompassing land management, ecological monitoring, landowner advice, marine, and wilding approaches. These skills need to be deployed in a more impactful way, to allow a confident and collective voice.

Ultimately, by waiting for government to lead, this will not happen. It requires new ways of working, emerging partnerships between conservation, landowners and the private sector. This in turn will require new skill sets, resources, and systems brought in from other sectors. It requires investment through NbS, from businesses (Corporate Social Responsibility/ Environmental and Social Governance) and carbon reduction commitments, from engagement with utility companies and through close working partnerships between the public and voluntary sectors.

What this report demonstrates is the extraordinary resources of skill and experience available in Kent to tackle the climate and nature crises. It also lays bare the challenges and its failings.

The development and delivery of Kent's Nature Recovery Network and Nature Recovery Strategies provide an opportunity to engage the public, private and third sectors in a dynamic way, to leverage funding from all into delivering nature recovery at a scale commensurate with the crisies. This represents not only the most challenging time the conservation of nature has faced in the UK, but also the greatest opportunity, to work differently and bring new resourcing to bear in a way which has not been done before.

Combe Down

European Bison *Bison bonasus*
© Donovan Wright