JNCC Nature News Summer 2021

JNCC website

Welcome from our Chair & Chief Executive

I am pleased to announce that Dr Gemma Harper has been appointed as the permanent Chief Executive of JNCC. Gemma has been the interim Chief Executive of JNCC since April of this year.

As Chair of JNCC I look forward to working with Gemma in the years ahead. She brings a wealth of experience and real enthusiasm for JNCC's work across the UK and internationally, at this key time for nature.

Professor Colin Galbraith, Chair, JNCC

Welcome to the summer edition of *Nature News*, bringing you updates and information on our UK and international work. In this 'Super Year' for nature, it is my absolute pleasure and privilege to be leading an organisation that has been at the heart of nature conservation for 30 years.

We are celebrating another 30-year milestone – as the UK's CITES (Convention on International Trade in Endangered Species) Scientific Authority for fauna. CITES aims to ensure that no species of wild animal or plant becomes or remains subject to unsustainable exploitation due to international trade. In this issue, we showcase the remarkable efforts of our team and some of their most defining achievements. It's a fascinating area of our work, both internationally and closer to home, where we provide CITES training for UK police and UK Border Force officials. I would also like to take this opportunity to congratulate the CITES EU Exit team – a collaboration between JNCC, the Animal & Plant Health Agency, Kew Gardens and Defra – who won the 'Working Together' category at the recent Defra Group Awards. This collaboration exemplified 'Working Together' by being outward-looking, building trust and delivering the best outcomes together – I'm very proud of the team and their achievements.

We all depend on the global ocean and this was the theme of World Ocean Day on 8 June, when we celebrated the Ocean, Life and Livelihoods. On the day, we announced our leading role in a new global partnership – the International Partnership on Marine Protected Areas (MPAs), Biodiversity and Climate Change – which aims to elevate MPAs as a key tool in addressing the twin crises of biodiversity loss and climate change. There is no other partnership of its kind that has such a global reach and we're so proud to be involved.

Continuing the international theme, we move to the UK Overseas Territories. In the Caribbean, we're working with our partners to map and value the role of the natural environment and to explore how nature supports economic prosperity.

Since joining as interim CEO in April, I have been immensely impressed with the skills and expertise of JNCC's staff and inspired by their dedication and professionalism, and equally inspired by our purpose. JNCC exists to provide scientific expertise for nature conservation and recovery across the UK and internationally. It's an honour to be part of this mission. I've seen first-hand how much JNCC staff care about our science, our corporate services, our mission for nature conservation and, importantly, each other.

I hope you enjoy reading about our work, our people and our partnerships.

Dr Gemma Harper, Chief Executive, JNCC

News in Brief

Award-winning operational delivery

Our Copernicus User Uptake Project (UK Action) was a winner in the Operational Delivery category at the Geography in Government Awards 2021. Lynn Heeley, our Technical Project Manager accepted the award on behalf of the Ecosystems Analysis Team and Digital & Data Solutions Team. After hearing the news, Lynn said: "It's such an honour to have this highly collaborative and innovative project work recognised as showcasing excellence in geography and for its significant contribution to operational delivery outside of JNCC."

Through the Copernicus project, we have been exploring the use of Copernicus satellite data and services to efficiently deliver UK public environmental functions. You can find out more about the project through the Copernicus User Uptake Project video.

Zoonotic disease in the spotlight

Zoonoses represent a major global health challenge. They are responsible for billions of cases of human illness and millions of deaths each year, and the fallout from zoonotic diseases has the potential to have profound economic and social impacts on human society. In this context, wildlife trade has been identified as one of the important potential pathways of zoonotic disease emergence, as well as an activity that plays a role in maintaining existing zoonoses in circulation.

Our report, Zoonotic potential of international trade in CITES-listed species, with UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) shares the results of our analysis into the zoonotic potential of legal trade in CITES specimens and we hope this report will inform consideration by the CITES Standing Committee on this topic.

Clean Air Day for Nature

JNCC recently became an official sponsor of Clean Air Day, an annual campaign to raise awareness of air pollution, its effects and what can be done by individuals to reduce their personal impact. In previous years Clean Air Day has been particularly focussed on the effects of air pollution on human health.

We've seen that by supporting the campaign through our communications channels, we raised awareness of the huge impact air pollution has on nature and inspired individuals to make personal pledges to reduce air pollution, such as biking or walking to school or work.

UK register of offshore wind environmental evidence launched

The first ever UK-wide register of offshore wind evidence gaps has been launched – developed by our experts in collaboration with the Department for Environment, Food and Rural Affairs (Defra) and funded by The Crown Estate through the Offshore Wind Evidence and Change Programme.

The Offshore Wind Environmental Evidence Register (OWEER) will build, for the first time, a publicly accessible UK-wide register of evidence gaps and relevant research projects across three main areas – the seabed, marine mammals, and seabirds – to support the knowledge base for the sustainable development of new offshore wind farms.

The OWEER will increase understanding of the current breath and scope of the research field, it will help to reduce duplication, identify key funders and researchers, and improve the sharing of project findings. It will also raise awareness of current research to help facilitate debate, discussion and change.

The OWEER is also being used to inform the Offshore Wind Evidence and Change Programme, ensuring its strategic evidence projects are targeted where they can make the biggest difference in improving our understanding of the likely impacts of offshore wind development on the marine environment. It is also intended to encourage collaboration and help inform other offshore wind research programmes.

Environment Minister, Rebecca Pow MP, said: “We’re pleased to lead on the delivery of the first UK-wide environmental evidence register for offshore wind farms. A greater understanding of the impact these developments can have on our marine environment is vital as we protect our precious marine life and meet our ambitious offshore wind commitments.”

Karen Hall, Offshore Wind Lead, Marine Management Team, said: "JNCC is proud to be supporting the Offshore Wind Evidence and Change Programme and undertaking this important project to build the first ever UK-wide register of offshore wind evidence gaps. Given the huge UK Government ambitions for offshore wind, alongside the current biodiversity and climate change crises, it is critical that we further the vital strategic scientific evidence required to support sustainable management of our seas."

Mandy King, Programme Manager for the Offshore Wind Evidence and Change Programme, said: "Ensuring that decisions on future offshore wind farm development are based on the best possible scientific information is vital in helping to deliver the infrastructure needed to achieve net zero emissions, while maintaining healthy, biodiverse seas. That’s why we’re funding projects like this, maximising the knowledge of technical experts, like JNCC, and sharing research and data to benefit the whole sector."

Visit the Offshore Wind Environmental Evidence Register (OWEER).

World Ocean Day

Earth is truly ‘the blue planet’, with the ocean and seas covering 71% of the Earth’s surface. We all depend on the global ocean and this was the theme of World Ocean Day, where we celebrated the Ocean, Life and Livelihoods with our partners across the globe.

This year the UK hosted the G7 summit and will host the COP26 climate change conference, with the COP15 biodiversity conference being held in China. Globally we’ve seen the launch of the UN Decade of Ocean Science for Sustainable Development and the UN Decade on Ecosystem Restoration. This all makes 2021 a truly Super Year for nature. It gives us an unprecedented opportunity, as we emerge from the global COVID pandemic, to reset our relationship with the natural world. At JNCC, we believe that climate change and biodiversity loss are two global crises that must be addressed together and the effective conservation of the marine environment has a key role to play.

Our experts have been at the forefront of understanding the marine environment for decades. We’ve a strong reputation in delivering expert advice in the identification of Marine Protected Areas (MPAs), the collection and processing of data, and the development and implementation of protocols to tell us about the health of marine ecosystems. We also provide expert advice to ensure sustainable use of the marine environment. Our advice is

not restricted to our home shores but has global reach. We have a UK Overseas Territories Programme that has been running for over a decade and has worked with small island states to support sustainable approaches to marine asset management.

As part of our celebrations for World Ocean Day, we were delighted to announce our leading role in a new global partnership to elevate MPAs as a key tool in addressing the twin crises of biodiversity loss and climate change.

We'll be working with experts from Chile, Costa Rica, France, the United Kingdom and the United States, amongst others, in this global partnership to advance the role of MPAs as a nature-based solution in the fight against biodiversity loss and climate change. There is no other partnership of its kind that has such a global reach.

International Environment Minister Lord Zac Goldsmith said: "This international partnership will strengthen our understanding of the important role that Marine Protected Areas can play in tackling the impacts of climate change. Nature-based solutions, including blue carbon habitats, already play a significant role in supporting climate change adaptation, resilience and mitigation. This is why we continue to champion global efforts towards marine protection."

The partnership has launched a website http://www.mpabioclimate.org/, which will contain tools and case studies about best practices in considering climate change in the context of optimising MPA and MPA network planning and adaptation.

To celebrate World Ocean Day, we launched a video documenting JNCC's broader work on the topic of our global ocean and climate change. To find out more about our work and watch our video, visit our 'Ocean & Climate Change' webpage.

"All humanity relies on healthy marine ecosystems to support life on this planet. Marine Protected Areas are an important nature-based solution for tackling climate change. I am proud that JNCC is playing a key role in this innovative partnership, drawing on our trusted scientific expertise in nature conservation." Dr Gemma Harper, Chief Executive, JNCC.

JNCC's marine conservation expertise is diverse, but during our fortnight of celebrations around World Ocean Day we showcased some of our key functions. These included marine surveillance, our environmental programme with the UK Overseas Territories, our work on sustainable marine industries, and marine natural capital.

Through marine surveys, our experts work to deliver the science we need for the ocean we want. Take a look at our marine survey work.

The ocean is essential to so many aspects of our lives. We're developing tools for managing natural capital in ocean areas.

JNCC is privileged to be in a position to apply its marine scientific expertise across a range of geographical scales; whether that be for one of the four nations of the UK or representing the UK in regional and global negotiations. As we look forward, we are excited about the opportunities to protect ocean health and resilience as the global community seeks to reset our relationship with nature in Super Year 2021!

Meet the expert

In this issue we focus on our Ecosystems Analysis Co-Team Leader Lawrence Way, who jointly leads on JNCC's monitoring, modelling and Earth observation work

What is special about the natural environment to you?

We live very busy and resource-intensive lives. Globally, to feed and support the needs of people, we now need a huge percentage of the land area to grow and manufacture the things we use, and through fishing and pollution we put a lot of pressure on our seas. But I think we underestimate the importance of the natural environment in keeping us all sane, safe and all of this working. We can build, make and do many amazing things, but the natural world can sustain soils, weather patterns, is a rich reservoir of examples of how to solve complex problems, helps mitigate extreme events, and provides a beauty and interest that connects with our brains and contributes to well-being.

My connection with nature started through my parents, both very keen gardeners and professional horticulturalists, and particularly through an inspirational youth leader, Ann Bird and her son Edward, who ran a young ornithologists group that did everything – birds, butterflies, plants, habitat management, all sorts. I am one of the lucky few who grew up wanting to work for the environment and have got away with a career doing just that.

What does your current role involve?

I'm privileged to co-lead a team of very talented colleagues whose skills I could not dream to replicate. With Chris Cheffings, my co-team lead, we have built an interdisciplinary team to help those developing policy or implementing initiatives on the ground to cope with using the huge range of research, data and models that can now help with the complex decisions around land use and management. The skills brought together in our team include expertise in developing and running monitoring through citizen science, skills in 'new' tech, for example artificial intelligence, Earth observations, deoxyribonucleic acid (DNA), modelling, and a wealth of knowledge about aspects of the natural environment.

Through this skills mix we are tackling a wide range of issues, mostly working with other teams in JNCC. At the moment, we're producing an 'app' to help the pilot 'Nature Recovery scheme' for England show spatially the demand for actions, and another app to help the land managers in Brecon Beacon National Park assess how different land management options can help mitigate fire risk at Mynydd Du. We are undertaking complex indicator tasks covering: soil health, the global impacts of UK consumption, and biodiversity within International Climate Finance projects and programmes. We are producing an Earth observation-based habitat map with colleagues in the Department for Agriculture, Environment & Rural Affairs in Northern Ireland and developing ways of measuring the quality of the natural environment at local scales using Earth observation and citizen and land manager-led techniques.

My role is selling the big picture of how we can help our stakeholders given the many initiatives and skills they already have: in other words, a lot of planning, a fair bit of coaching and quality control.

What are the biggest challenges you face?

It's all about balance and making a difference. The scale of change to economies needed to mitigate climate change and reverse the decline in biodiversity is very significant, with dramatic implications for the way we manage the land. We need to understand the balance between the land we depend on in the UK, and the land that is linked to our consumption elsewhere. Dramatic change is starting and it's hard to keep up, but the pace is probably not yet fast enough. With all environmental policy devolved, the environment is in the hands of our stakeholders in Scotland, Wales, Northern Ireland, England, and the Overseas Territories. The challenge is picking things that will make a difference and complement what our stakeholders can do, whilst working effectively with the many technical, commercial and academic bodies that can also help them in this challenge, as well as working with JNCC's internationally focussed teams and using the same approaches outside the UK. It's also a challenge not to forget the simple things. For example, communication is key, both with our stakeholders but also within our team and organisation where increasingly dispersed and remote working will become the norm. JNCC, like many public bodies, has needed to operate with many more types of funding over the last five years, so my planning skills constantly need to improve.

What has been your greatest achievement at JNCC?

I have been working at JNCC since it was created, with my role changing dramatically every three years on average. My colleagues say this means that most things are to a degree my fault, but this has a great upside, as many things JNCC has done have been very useful.

I have been fortunate to have had a hand in the big European site selection activities of the 1990s, biodiversity action planning, a spell in marine protected site selection for birds, helping create the National Biodiversity Network and more recently helping JNCC become the catalyst for much of the application of Earth observation to public environmental functions. Whilst many in JNCC will be relieved that the corporate IT systems I helped bring in are about to be replaced, they will be more pleased with my efforts to ensure that we had a computer network and entered the internet age comparatively early for a public body.

On reflection I think my greatest pleasure comes from a period after the financial crash in 2008. JNCC and its partners British Trust for Ornithology, Bat Conservation Trust, Butterfly Conservation, Plantlife, the Botanical Society for the British Isles and UK Centre for Ecology & Hydrology (UKCEH) run a fantastic set of long-term citizen science-based species monitoring schemes. These are a major tool for measuring the overall health of the environment, and one of the few long-term systems that can show if we will be successful in 'bending the curve' to help biodiversity recover. There was a real threat to keeping this going, given less money in real teams. However, we launched a new scheme, improved the sample size and range of species surveyed in other schemes and developed new analytical methods. It was a team effort across JNCC and our partners, and great to be part of. I now watch Chris Cheffings and my colleagues leading further exciting change, improving diversity and inclusion, adding sensors, DNA, and Artificial intelligence (AI) apps into the mix to help very motivated volunteers measure the environment for us all.

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30 years advising on CITES

As well as celebrating JNCC's anniversary this year, 9 April also marked 30 years since our appointment by the Secretary of State as the UK's CITES Scientific Authority (for fauna) – a role undertaken by our predecessor body, the Nature Conservancy Council, since 1981. Our role as Scientific Authority is to provide scientific advice on the implementation of the Convention by the UK.

So, what have we achieved over the two most recent decades – the period within the memory of current team members (three staff have more than 20 years' experience each)?

A key role for us is to advise the UK Management Authorities (the Department for Environment, Food and Rural Affairs and the Animal and Plant Health Agency) on the issue of CITES permits and so, fundamentally, to ensure that trade to or from the UK will not have a harmful effect on the relevant population of the species. In CITES jargon, this is referred to making a 'non-detriment finding' which is, essentially, a test of sustainability. We currently advise on over 20,000 CITES permit consultations a year (more than 0.3million over the two decades) and we expect this to rise significantly following our departure from the European Union (EU).

But advising on permits is only part of our task. We form part of the UK delegation that attends CITES Conference of Parties (COP) meeting every two to three years, which make decisions on implementation matters and considers proposals to add (or remove) species from its Appendices. The last one was held in 2019 in Geneva, Switzerland. The next one is due to take place in July 2022. In between these meetings, tasks are delegated to its scientific (for animals and plants) and Standing Committees.

Our experts have participated in UK delegations to eight CoPs and led for the UK at 16 Animals Committee meetings and, when we were in the EU, over 80 meetings of their CITES Scientific Review Group (SRG).

Away from the formal CITES meetings, we've contributed to the work of the Convention in other ways and our work has taken us to at least 43 countries. We have also supported a wide range of research projects (see examples) and participated in several missions, to build a better and shared understanding of CITES trade and improve implementation of the Convention.

More broadly, we advise government on CITES policy issues which, recently, have involved trophy hunting and the ivory trade. We also work alongside Defra, the Royal Botanic Gardens Kew, and UK Border Force to build capacity in CITES implementation in the UK Overseas Territories and further afield.

We have provided courses, tailored to Territory needs, for all our Caribbean Overseas Territories and to St Helena. More recently, we have provided remote training to the CITES Authorities in Malawi, adapting (in a COVID world) to provide the training in an online forum despite significant challenges. Closer to home we regularly contribute to CITES training courses for UK police and UK Border force officials and support UK enforcement efforts by providing expert witness statements in prosecutions.

EU missions have included:

- **Cuba – 2002:** to assess their harvest of hawksbill turtles and management of their stockpile of turtle shell linked to their proposal to downlist their population.

- **Indonesia – 2008:** examining the sustainability of harvest and mariculture of corals for the aquarium trade and the captive production of reptiles – two areas which had given rise to concerns in a major source country for CITES specimens to the UK.
- **Tanzania – 2016:** we led an EU delegation to investigate the sustainability of trophy hunting of lions and elephants.

Research projects have included:

- **Surveying**, with Fauna & Flora International, the occurrence and relative abundance of raptors in Guinea due to concerns over levels of trade. (Rondeau, G, Condeé, M M, Ahon, B, Diallo, O & Pouakouyou, D. 2008. Survey of the occurrence and relative abundance of raptors in Guinea subject to international trade. JNCC report No.412)
- **Compiling** an annotated checklist of stony corals of Fiji and neighbouring Pacific islands to support assessments of coral trade.
- **Production**, with UNEP-WCMC, of a first UK Wildlife Trade Report to act as a baseline against which changes in trade (following EU exit) can be assessed.
- **Analysis**, also with UNEP-WCMC, of the zoonotic potential of legal international trade in CITES specimens as a first step in determining whether there is a role for CITES in mitigating risks of zoonotic spill over. (UNEP-WCMC & JNCC. 2021. Zoonotic potential of international trade in CITES listed species. JNCC Report No. 678, JNCC, Peterborough, ISSN 0963-8091.)

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Environmental resilience to natural hazards: identifying opportunities for nature-based solutions

The tropical warm waters of the UK Caribbean Overseas Territories (OTs) are highly biodiverse and vulnerable. Coral reefs, mangrove lagoons, salinas (salt ponds) and seagrass beds provide shelter and food to diverse communities of animals, including feeding and nesting grounds for turtles, wetlands for birds, and nurseries and spawning grounds for many species of fish and corals. These coastal habitats are also hugely important culturally, benefiting the health and well-being of island communities as well as supporting economic prosperity.

Nearshore and coastal habitats play an extremely important role in mitigating the effects of natural hazards and protecting coastal communities, infrastructure and livelihoods. Our Winter 2020 *Nature News* article, From ridge to reef, highlights the importance of these coastal habitats in enhancing ecosystem resilience. For example, coral reefs dissipate wave energy, acting as a buffer against hurricane-related storm surge, and mangroves slow the flow of flood waters.

Over 80% of the population living in the UK Overseas Territories live in the hurricane-prone Caribbean and Western Atlantic, and many businesses, infrastructure and communities are located around the coastal areas. The unprecedented hurricane season of 2017 highlighted the environmental and economic damage that such events can inflict on small island

communities with initial estimated damages of US$3,177 million to Anguilla, British Virgin Islands and Turks and Caicos Islands resulting from Hurricanes Irma and Maria.

Through the Conflict, Stability and Security Fund (CSSF)-funded *Climate change adaptation and hurricane disaster resilience in the Caribbean and Western Atlantic Overseas Territories* project (2021 to 2022), JNCC's International Implementation Team is working with British Virgin Islands, Cayman Islands, Montserrat, and Turks and Caicos Islands to develop the practical tools and evidence to integrate the natural environment into decision making. Mapping and modelling storm surge and inland flooding, we can identify infrastructure and communities at risk, assess that risk and identify opportunities for nature-based solutions to enhance coastal resilience. By developing a framework of environmental indicators, environmental change can be monitored over time as well as in the short-term, pre- and post-events; and how nature responded can be determined. By quantifying, in monetary terms, the economic valuation of the ecosystem services provided by natural capital, management actions can be assessed and prioritised.

This work will build upon the 2016, *Enhancing economic security through environmental resilience natural capital* projects and is supported by the 2021 *Implementing Coral Reef Action Plans for the UK Overseas Territories Coral Reef Initiative* funded by the CSSF and work on the Stony Coral Tissue Loss Disease. The project will directly inform the Economics for the Environment (eftec)-led Darwin (DPlus108) *Caribbean Overseas Territories Regional Natural Capital Accounting* programme.

The impacts of the devastating hurricane season of 2017 are still being felt, financially, physically, and emotionally in Anguilla, British Virgin Islands and Turks and Caicos. As pressures from development, fragmentation, disease, invasive species, pollution and climate change increase, so the environment degrades. Degraded habitats are recognised as a leading driver of disaster risk, exacerbating the impacts of storm surge and inland flooding, and placing more people, infrastructure and livelihoods at risk.

By identifying opportunities for nature-based solutions we can enhance coastal resilience for all the ecosystem services that the islands rely on, and support nature conservation.

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Ecosystem accounting in the UK's Caribbean Overseas Territories

In small island communities the natural environment is extremely important, providing a substantial contribution to economic and cultural wealth. However, environment assets, or natural capital are often not measured and therefore do not feature in countries' calculations of wealth (GDP). Due to this omission, national statistics do not reflect the dependency of the economy upon nature, or the impact upon it. This means that natural capital is often under-valued and 'invisible' in weighing costs and benefits, thus losing out in land management decisions[1]. JNCC's experts are working with our partners in the UK Overseas Territories (OTs) to map and value the role of the natural environment and to explore how nature supports economic prosperity.

By assessing the flows of services that we receive from our natural capital, we can start to place an economic 'value' on benefits such as fisheries, carbon sequestration and the

coastal protection (protection services) provided by mangroves and coral reefs. Understanding these economic values helps to support the development of policies which better manage the environment and the impacts of our economic activities on them. Ecosystem accounts are a structured way to understand and consistently report on what environmental assets are present, their condition, the flow of ecosystem services, and their economic value.

The two-year, Darwin Initiative funded, *Caribbean Overseas Territories Regional Natural Capital Accounting Programme* (DPlus108) (2020 to 2022) is developing ecosystem accounts for each of the UK Overseas Territories in the Caribbean. With support from a partnership between eftec, JNCC, and practitioners from the governments of the five Caribbean Overseas Territories (OTs), Anguilla, British Virgin Islands, Cayman Islands, Montserrat and Turks and Caicos Islands, the project is developing the tools and evidence base to measure natural capital, understand the contribution of nature to the islands socio-economic prosperity and the importance of protecting it.

These ecosystem accounts will complement and enhance existing national statistics, providing evidence and understanding of the linkages between the environment, human well-being, and the pressures from our economic activities.

In this final year of the project, Jody Maxwell joins the project as the Ecosystem Accounting Coordinator to establish a regional practitioner's network and a UK OTs Caribbean regional ecosystem account. Eftec will produce the Caribbean regional account, and, with OT governments, have finalised each Overseas Territory's set of accounts, aligned to the globally recognised United Nations System of Environmental Economic Accounting — Ecosystem Accounting (SEEA EA) standard. The UN formally adopted the UN adoption of the SEEA EA standard , making its use by the UK Caribbean OTs one of the first globally. The findings will be disseminated at a Caribbean Regional conference, where the regional practitioner's network will also be present.

The natural capital approach is about understanding the value of nature and integrating this into decisions we make about our economy and society. The approach emphasises how much we rely upon ecosystems (our natural capital) and the goods and services they provide to sustain our health and well-being. These services (called ecosystem services) include coastal protection, space for recreation, and food.

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Stony Coral Tissue Loss Disease in the UK Overseas Territories

The UK Overseas Territories (OTs) are home to some of the world's most precious and vulnerable ecosystems – tropical coral reefs. These hotspots of biodiversity are not only important for marine life, but they also underpin crucial ecosystem services, such as tourism, fisheries, and coastal protection. Stony Coral Tissue Loss Disease (SCTLD), first reported in Florida in 2014, has spread rapidly through the Caribbean, causing significant coral mortality on reefs throughout the region. As a direct result of this disease, pillar coral (*Dendrogyra cylindrus*) has been declared functionally extinct in the State of Florida, USA. Responding to this threat, with funding made available from the UK Government, JNCC has spearheaded

two innovative projects, which aim to empower the UK Overseas Territories to respond as effectively as possible to SCTLD and provide tangible support to practitioners on the ground.

The Collaborative Coral Reef Working Group

The *Collaborative Coral Reef Working Group* was set up in December 2020, bringing together government representatives from British Virgin Islands, Turks and Caicos Islands (TCI) and Cayman Islands, to develop tools and increase capacity to mount an effective response to SCTLD on their islands. The Working Group broadened membership to include non-governmental organisations, recognising the important role they play in the disease response. The group also expanded to include representatives from Bermuda, Anguilla and Montserrat, recognising that early recognition of the disease and good preparation is important even before the disease is confirmed in their waters. Caribbean governance expert and former director of a similar initiative in the Dutch Caribbean, Kalli De Meyer, was brought on board to chair and facilitate meetings.

Regular online meetings enable Working Group members to share information, knowledge and resources on SCTLD. The group discuss their own responses to the disease as well as outreach and communication efforts and share their experiences of engaging with local stakeholders. An online platform, hosted by JNCC, facilitates the sharing of information and materials. Leading experts in the field of SCTLD are invited to present their findings around emerging techniques such as the use of probiotics and the potential use of cryopreservation to prevent species extinction.

Strong regional partnerships have been forged with other groups including the National Oceanic and Atmospheric Administration's (NOAA) Caribbean Cooperation Team, the Atlantic and Gulf Rapid Reef Assessment (AGRRA) and the Marine Conservation Society's (MCS) representative for the UK Overseas Territories. JNCC was asked to act, alongside MCS, as UK OT representative to facilitate collaboration with NOAA. This resulted, amongst other things, in a session dedicated to the Caribbean UK Overseas Territories, which was well received regionally. Topics for discussion have included disease responses, treatment trials, and the role of vectors such as ballast water in the spread of this deadly disease.

Working Group members have highlighted the key success of the group as demonstrating the power of collaboration on a regional level. Looking ahead the group is gearing up to increase activities around response to the disease, as new funding has been secured from the UK Government to support the work of the group into 2022.

"The collaboration has been fantastic and rewarding, it bolstered our resolve to find some meaningful solutions. But a more important and immediate benefit was learning first-hand what the TCI had experienced! Putting that into practice meant we were confidently able to mount our own treatment plan much quicker than would have been possible otherwise." Tim Austin, Deputy Director, Cayman Islands Department of Environment

Stony Coral Tissue Loss Disease treatment in the Turks and Caicos Islands

Responding to a request from the TCI government, our experts have been working with the TCI Department of Environment and Coastal Resources in TCI to explore treatment options for the disease. Building on previous work started earlier in the year, the project contracted disease expert Dr Greta Aeby to assist in designing a treatment programme to explore alternative disease treatment options to antibiotics. A key element included running online

training sessions to volunteers to support the delivery of the treatment schedule and increase knowledge of coral reef and disease ecology. The fieldwork has recently been completed, with the results and key recommendations shared through the Collaborative Coral Reef Working Group, regionally at NOAA Caribbean Cooperation Team Meetings, and internationally at the virtual International Coral Reef Symposium.

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Super Year 2021 – our key role in biodiversity evidence

As 'Super Year 2021' gathers pace, it's exciting to be working towards global meetings that will discuss the conservation and management of biodiversity. The relationship between biodiversity and climate change will be high on the agendas of both the Conference of Parties for the United Nations Framework Convention on Climate Change (UNFCCC COP26) in Glasgow and the Convention on Biological Diversity (CBD COP15) in Kunming, China.

The UK Government's response to the publication of The Dasgupta Review on The Economics of Biodiversity earlier this year has reinforced the message that nature, and the biodiversity that underpins it, ultimately sustains economies, livelihoods and well-being. Dasgupta has highlighted just how unsustainable the current situation is and how tangible change will require substantial changes in behaviour.

The Government has committed to delivering a 'nature positive' future, in which 'we leave the environment in a better state than we found it and ensure economic and financial decision-making is geared towards delivering that'. This huge political ambition is reflected across the globe and there is increasing public recognition of how nature will play a key role in reducing the many impacts of climate change.

This Super Year provides an opportunity to showcase the UK's valuable expertise on biodiversity and to learn from the experiences of others. We will benefit from the synergy of combining the knowledge and expertise from all four countries, the UK Overseas Territories and other international engagement. JNCC has an important convening role within this.

JNCC has a role in advising on diverse aspects of the links between the twin biodiversity and climate crises, liaising closely across the four countries of the UK. We are working with others to help explore the following strands of work:

- Reducing UK consumption to more sustainable levels, including engagement with the forthcoming National Food Strategy. Given that food production is the major pressure on the natural environment across the globe, these recommendations and how they are implemented are likely to have a significant impact on biodiversity. JNCC is working with research institutes to help apply their research to assess the UK's global impact and advise on how this evidence can be used to inform policy.
- Partnerships between public and private sectors. The scale of change and investment required cannot be achieved by governments alone and getting the right model to work with industry will be key. All four countries of the UK are considering "green/blue finance" as a mechanism to draw in support and investment from the private sector to enable the required changes. Areas include carbon budgets, offsetting the impact of developments on the natural environment, and water management. JNCC is

interested in developing the evidence base and assessing the possibility of establishing more consistent markets across the UK.

- Optimise UK land use. There are high demands on a relatively limited land area within the UK. JNCC is helping to explore how a range of evidence sources can be drawn together to inform potential outcomes at a range of scales including assessing the impact on biodiversity.
- Ensure international co-ordination and global agreement. Robust international frameworks are essential. For example, adjusting subsidies to the UK's agricultural sector could tend to reduce production here but would potentially increase it elsewhere unless the UK demand was reduced. Managing these impacts needs co-ordination through broader global strategies to make best overall use of the land that is available.

Evidence, and making best use of it, will be crucial and this is where JNCC can really help both within the UK and at broader international scales. Our marine and terrestrial work across the UK, the UK Overseas Territories, and internationally, is significantly contributing to the evidence base around how biodiversity can mitigate and help us adapt to climate change. Our experts are convening and collaborating to support the design of policies, and our monitoring and indicator evidence can assess their effectiveness. This applies within the UK and also at broader international scales.

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Celebrating 30 years of our publications

JNCC has a huge legacy of publications and resources from its 30 years — many of which are an important part of the UK's environmental history and provide a backdrop against which environmental change can be assessed.

One of the first publications following JNCC's formation was a resource we still produce annually today – the results of the Seabird Monitoring Programme (SMP). In the late 1980s, the Seabird Monitoring Programme for Britain and Ireland was already established, and the first few annual reports were published by the Nature Conservancy Council (NCC), JNCC's predecessor.

Responsibility for the publication of its annual reports on numbers and breeding success fell to JNCC upon its formation, with the publication of its first annual report in 1992 (presenting the results up to Summer 1991). Developed in association with 18 partner organisations, these updates became an online publication in 2010, and the latest online update went live on 20 May 2021.

Several other ground-breaking series already under development through the NCC, before JNCC was formed, continued for many years.

These included the Geological Conservation Review (GCR) Series, which published the results of the Geological Conservation Review Project and aimed to provide a public record of the features of interest and importance at localities known as GCR sites. The publication phase ran for over 20 years until 2010.

JNCC holds copies of most of the resources produced through the UK Biodiversity Action Plan (UK BAP), many of which were produced in the 1990s, and which, despite their age, remain hugely popular and regularly accessed. The production of the UK Biodiversity Action Plan was the UK Government's response to the Convention on Biological Diversity (CBD), developed in Rio de Janeiro (1992). This national action plan described the UK's biological resources at that time and the actions needed to assist the recovery of the most threatened habitats and species.

Interestingly, our most popular resource to this day is one of the oldest – the Handbook of Phase 1 Habitat Survey. The first version of the handbook was actually produced in 1990 by the NCC, and has been republished several times by JNCC (most recently in 2016). The handbook presents a standardised system for classifying and mapping wildlife habitats. The maps generated across the UK that used the handbook have supported nature conservation operations for decades, enabled numerous environmental impact assessments and continue to provide a baseline for describing habitat diversity and monitoring change. Over the years, we have also published some more detailed habitat classifications and National Vegetation Classification Field Guides.

In the marine environment, the Marine Nature Conservation Review, which began in 1987, extended our knowledge of benthic marine habitats, communities and species. It identified sites and species of nature conservation importance, culminating in a series of key publications. Building on the science of the MNCR, a regional seas governance approach, international collaboration and spatial planning were pioneered as part of the Review of Marine Nature Conservation through the Irish Sea Pilot Project. In addition, working with a wide-ranging consortium of researchers and stakeholders, the Coastal Directories Series was published between 1995 and 1998. These regional reports collated baseline environmental and human use information, including fisheries, for the coastal and nearshore marine zone of the UK, including Northern Ireland, the Isles of Scilly, Shetland, Orkney and the Isle of Man. This information was designed to meet the needs of planners and coastal zone managers and users. Our current suite of marine protected areas (MPAs) was built on this outstanding conservation effort and environmental legacy.

So, what do we 'publish' now?

In 2020, we published over 45 reports, many in association with other research organisations and conservation charities. And while we do still publish updates and reports on the status of species and habitats – including through the annual updates of the UK Biodiversity Indicators, which are available as both an online resource and as a downloadable summary – our publications have evolved along with our work. We now publish resources on global impacts (e.g. The LET Guide), on sustainable management of the environment, including overseas (e.g. EO4Cultivar), and on the use of the Natural Capital Approach (e.g. Natural Capital in the Overseas Territories). As well as publishing reports and documents, we also release datasets and produce material in other formats, including a vast range of very popular videos and interactive resources, such as our MPA mapper and the Chile Viticulture Mapper and Vines App. Let's hope that, in another 30 years, these resources will have the same value as some of our earliest publications.

With thanks to Catherine Duigan for her contribution to this article.

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Student placement success

We are pleased to have welcomed a record number of placements this year through the NERC (UKRI) Policy Internship scheme.

Our increase in flexible working arrangements, albeit challenging, has meant that a greater number of students have had access to, and pursued, a broader range of opportunities. Those that joined us in the first half of 2021 have contributed to projects such as Nitrogen Futures and ITAPA (Integrating Tools for Air Pollution Assessment), and produced materials for the scientific council meeting that feeds into the Convention on Migratory Species (CMS).

NERC will shortly announce the next round of the scheme for eligible doctoral students. We will share these announcements through our social media channels.

We are keen to hear from, and welcome, individuals from diverse backgrounds with a scientific or corporate skill-set, particularly those studying Finance or Accountancy.

Our placements offer multiple benefits and are a great opportunity for staff to hone their coaching and mentoring capabilities. Students bring a fresh perspective to furthering our work, helping us to achieve our strategic goals. In return, they gain invaluable work experience to further their career development.

As an organisation we are committed to helping individuals shine and achieve their ambitions.

Find out more about some of our placement successes…

Lisa Hecker

My background is in Chemistry and Biophysics but during my PhD with the *CDT for Sensor Technologies* I discovered my interest in environmental sensing and nature conservation. A NERC internship with JNCC was the perfect chance to learn more about this field. During my placement I worked with the Ecosystems Analysis Team on the analysis of Earth observation (EO) data to inform the condition of habitats. Specifically, I focussed on indices derived from the imagery that allowed me to determine management techniques of semi-natural grassland sites in the UK. I discovered surprising similarities between EO methods and the biomedical imaging techniques that I used during my PhD and enjoyed the friendly atmosphere and interdisciplinary work at JNCC. I have now permanently joined the Ecosystems Analysis team as an Earth Observation Specialist, and I am happy to be able to continue working on habitat change detection and a variety of other interesting projects.

Joshua Day

I am a geographer by training and specialised in Coastal and Marine Resource Management with a long-standing interest in nature. One of the things I enjoyed about the placement was being able to learn a new technology – BIIGLE – for imagery annotation whilst deepening and applying my knowledge of marine conservation developed during my Masters. I used this technology as part of the Big Picture project, working to annotate footage from Faroe-Shetland Sponge Belt, Wyevale Thompson Ridge and Rosemary Bank amongst others. In my current role, the experience from my placement has enabled me to develop an in-depth awareness of JNCC's work in marine resource management. This strengthened my

application for my current Marine Support Officer role by adding valuable, additional practical experience to my skillset.

Chiara Cooper

During my internship I worked with the Nature Conservation Policy and Advice Team on a legislation and policy project to provide intelligence to JNCC staff on new or changing legislation/policy across the four countries of the UK. This project allowed me to develop new skills through the production of a communications plan (working with the Communications Team), reviews, webinars and other products. I also helped design a new intranet page for easy access to the materials. When the internship ended, I was fortunate to be able to join JNCC on a short-term contract to continue the work and to support other projects in the team, including building a relationship between JNCC and the environmental governance bodies that are being established across the UK. I am really enjoying my time here and working in a team where I feel included and supported.

Monitoring focus: Nest Record Scheme

Most of the biodiversity monitoring schemes supported by JNCC focus on counting individual animals, but the Nest Record Scheme aims to go deeper – investigating the success of a critical life stage for bird populations – hatching and raising chicks!

The Nest Record Scheme (NRS) is currently run as a partnership between the British Trust for Ornithology (BTO) and JNCC, and is reliant on the untiring support of hundreds of volunteer nest recorders. But the scheme was actually set up before JNCC, or its predecessor organisations, even existed. The BTO set up the Hatching and Fledgling Inquiry in 1939, just a few years after the organisation was founded, and in the first five years 1,988 nest record cards were sent in. Fast forward to 2021, and the scheme has almost 2 million records, a rich source of data that has been used in hundreds of scientific research papers and which has revealed important insights for the environment and conservation.

This year the scheme celebrates its 82nd birthday – making it the longest running scheme of its kind in the world!

Anyone can take part in the Nest Record Scheme, from families wanting to record a blackbird nesting in their garden or a local park, to experienced ornithologists searching for nests in specialist habitats. A Code of Conduct is followed to minimise disturbance to the birds, and for most protected species, such as Kingfisher and Barn Owl, a licence/permit is also needed. On finding a nest, volunteers use simple standardised techniques to monitor it. They note the location, nest contents (e.g. number of eggs and chicks), the date, habitat, and position of the nest site. Ideally the nest is visited on several occasions, for example every four days until the chicks have fledged or died, so the outcome, successful or not, is known.

Over the years, data from the NRS have provided valuable evidence that has influenced policy and legislation impacting the environment. For example, in the 1950s to 1970s new technologies were increasing agricultural production in the UK – but many ‘advances’ turned out to be to the detriment of wildlife. The use of organochlorine pesticides was widespread, not only subduing crop pests, but also having severe negative impacts as these persistent compounds accumulated up the food chain. Alongside other data sources, data from the NRS showed an increase in egg failure rates as the use of these types of agro-chemicals increased. It turned out that the chemicals resulted in the thinning of egg shells, so they

broke easily when the parent birds sat on their eggs to incubate them. This contributed to population crashes of raptors such as the Peregrine falcon, and NRS data also suggested that many common songbird species faced similar reductions in breeding success. Organochlorine pesticides were banned, and fortunately the breeding success of most impacted species recovered.

More recently, data from the NRS were used to address a challenge to official guidance on hedge cutting times in England. Analysis of nest record data showed that a significant proportion of birds were still nesting during the challenged dates. The data provided sufficient evidence to indicate that the hedge cutting guidance was needed to prevent nest disturbance and destruction and so contribute to conserving bird populations.

The long-term nature of the NRS dataset makes it particularly suitable for investigating long-term drivers of change.

When the scheme was set up, nest recorders would not have imagined that many decades later the long run of data would be informing the picture on a changing climate.

The studies of this dataset were among the first to demonstrate the wide-reaching biological impacts of climate change by showing that many species begin nesting earlier as atmospheric temperatures rise. Although an earlier laying date can be an advantage as it prolongs the breeding season, the picture is more complicated as it can result in a mismatch between the timing of chicks hatching and the availability of their food source, potentially impacting breeding success.

The NRS holds data on laying dates, clutch sizes and breeding success for most breeding species in the UK and regularly reports on trends of 90 of them. Results from the Nest Record Scheme can be found on the BTO website. Many thanks to the hundreds of volunteers who take part. If you are interested in birds or spot a bird's nest near you, why not join them and add to this valuable long-term dataset?

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Conservation Conversation

In this issue we meet our Independent Chair Professor Colin Galbraith. Colin is Director of his own consultancy, dealing with a range of environmental issues in Scotland and at the global level. Until 2010 he was the Director of Policy and Advice in Scottish Natural Heritage (now NatureScot). Colin began his JNCC journey 30 years ago, as Head of Vertebrate Ecology and Conservation Branch.

Species that inspired you as a child?

Growing up in the Highlands of Scotland I was surrounded by nature. I was particularly inspired by the basking shark, as it was amazing to have the second largest fish in the world

in our waters; golden eagle – stunningly majestic, and by the corncrake – travelling all the way from Africa to the UK each year just seemed incredible.

What concerns you most about the natural world?

It has to be climate change. It is already having a profound impact around the world on species, habitats and the wider ecosystems that we all depend on for our well-being. It is concerning also that a “nature-based solution” to climate change is still not accepted at the global level, although we are making progress.

What do you do away from the office?

There doesn’t seem to be too much time at present, but I am a keen birdwatcher (but not really a twitcher), and photographer. I do some hillwalking and gardening – with some limited success.

Where is your favourite place?

I would pick two locations – Loch Fyne in the west of Scotland, and Kenya, especially the Masai Mara which is simply an incredible wildlife spectacle.

Who is your human hero in the natural world?

It has to be Sir David Attenborough. His impact as a communicator and educator has undoubtedly been greater than any other naturalist, and his enthusiasm and passion still inspire me today.

If you could dine with any four guests who would they be?

If the question was what forty guests, it might have been easier! My four would be Barack Obama – to discuss world events; Mary Berry – to make sure the food was good; Billy Connolly – to make sure the event was amusing and Andrea Bocelli – in the hope that he might give an impromptu concert after the meal.

Desert Island Disc?

Another really difficult question. Fleetwood Mac, Paul Simon, Van Morrison all come close, but it has to be Andrea Bocelli singing “Ave Maria” – the perfect voice and the perfect song!

Place you’d most like to visit?

Antarctica – I have never been, but it looks to be an amazing place.

What would you like to achieve in your time as JNCC Chair?

Lots! I am keen that we play our part in tacking the twin emergencies of biodiversity loss and climate change. To do this we need to raise the profile of the organisation, and to use our skills to communicate to others in a way that is credible, balanced and convincing. I am keen also to continue to make JNCC a good place to work – it is already of course – and to be respected for “how” we deliver our work as well as for what we say.

If you could choose another job or career, what would it be?

Probably a wildlife photographer – a good picture can tell a great story and can be very persuasive.