



# **NATURE NEWS**

Winter 2020



## **In this edition:**

- JNCC at CoP25
- Nitrogen Futures
- 'Climate smart' MPAs
- Goose & swan monitoring

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Mute swan © Maddy Long

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ISSN 1479-3857

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*Nature News* is published quarterly, if you have any comments, questions or feedback on the issues and topics covered please email [communications@jncc.gov.uk](mailto:communications@jncc.gov.uk)

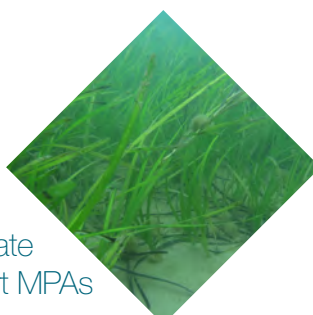
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# Introduction from John Goold

## JNCC Director

Welcome to this year's first edition of *JNCC Nature News* bringing you updates and information on our UK and international work. 2020 is going to be an important year for the environment with many opportunities for JNCC to be a force for positive change – to help shape post-EU exit work in the UK and to influence global action for biodiversity and climate change.

In December a team of our experts attended the 25th Conference of the Parties to the United Nations Framework Convention on Climate Change in Madrid. Many of our science teams are involved with projects in the UK and around the world that have an element of analysing and responding to data concerning climate change. In November, the UK will host the 26th Conference of the Parties in Glasgow, where nature-based solutions will be a priority theme. Our experts are working with Defra and the devolved administrations to provide high-quality, impartial evidence and advice that will inform future climate change action.



The start of the year saw the launch of our Terrestrial Biodiversity Evidence Strategy. We've worked with our partners to develop a new strategy that focuses on the types of biodiversity evidence we want to generate and the ways we'll achieve this. This work will include the use of Earth Observation data, as well as maintaining long-standing partnerships that co-ordinate terrestrial surveillance schemes, involving thousands of volunteer recorders.

And citizen science was in the spotlight at the *Nature of Scotland* awards, hosted by the Royal Society for the Protection of Birds and Scottish Natural Heritage. Our ground-breaking work on citizen science seabird surveys, a key part of the Calmac Ferries Marine Awareness Program, received a 'highly commended' award. It's great to see some well-deserved recognition for our seabirds team and this innovative project.

**John Goold, Director, JNCC**

JNCC is the public body that advises the UK Government and devolved administrations on UK-wide and international nature conservation. As a public body we also work in partnership with business and society. Our people are dedicated to providing high-quality evidence and advice on the natural environment for the benefit of current and future generations.



## Nature of Scotland awards



JNCC's ground-breaking work on citizen science seabird surveys has been a key part of Calmac Ferries Marine Awareness Program, which was shortlisted for a prestigious *Nature of Scotland* award.

Mark Lewis and Tim Dunn (pictured) attended the event hosted by the Royal Society for the Protection of Birds (RSPB) and Scottish Natural Heritage (SNH) and were delighted to come a close second in their category, receiving a 'highly commended' award.

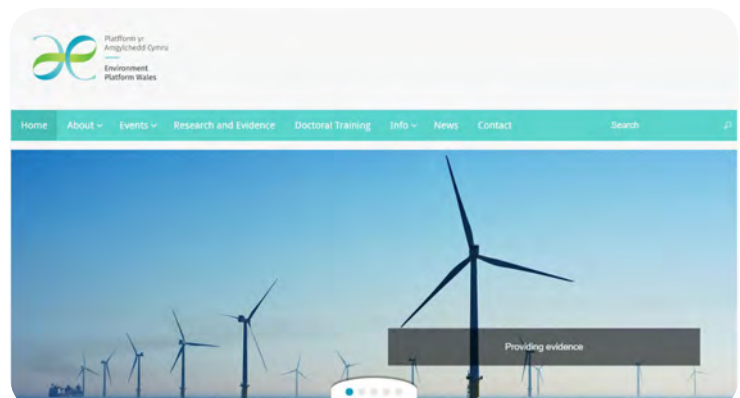
The project aims to use citizen science data collected from ferries to monitor trends in seabird abundance, distribution and phenology in UK waters.

## Environment Platform Wales

JNCC's links with Wales have been further strengthened now that we have joined [Environment Platform Wales](#).

The platform aims to bridge the gaps between researchers, evidence providers and policymakers in Wales. Researchers can engage directly with Welsh Government and Natural Resources Wales through workshops and working groups, and by supporting the development of large-scale funding applications that have direct relevance to Welsh policymakers.

Biodiversity Special Projects Manager Catherine Duigan acts as our link to the platform and its activities. Currently she is providing advice on the development of a major conference - [Environment Evidence 2020, Resilience in the Welsh Uplands – An Evidence Perspective](#) - being held at Aberystwyth University on 14-16 September.



## Enhancing economic stability in the BVI

JNCC's Tony Weighell and Amanda Gregory met with The Honourable Minister Wheatley, Minister of Natural Resources, Labour and Immigration from the Government of the British Virgin Islands (BVI) at their London office. They discussed the *Enhancing Economic Stability Through Environmental Resilience* project, looking at natural capital data, indicators, economics and reporting for disaster preparedness in the BVI.

# in Brief

## Coastal Futures 2020

A team of our marine experts joined partners from across the marine community at *Coastal Futures 2020*, at the Royal Geographical Society.

The JNCC team added a strong contribution to the programme, delivering a 20-minute talk on the UK Marine Strategy assessment of biodiversity as well as seven short talks, showcasing the diversity of work that we are delivering across the board:

- Marine Ecosystem Services Optimisation Model: Using Bayesian Belief Networks to evaluate the impacts of pressures on flows of services
- A system for making asset registers for UK habitats below mean high water
- Developing a participatory approach to the management of fishing activity in UK offshore MPAs
- Developing the evidence-base to support climate-smart decision making on MPAs
- Monitoring: How do we get the best from an MPA network?
- Using marine biodiversity indicators to estimate the provision of ecosystem services
- Taking the UK MPA mapper beyond the boundaries



## Contributing to our communities

At JNCC we're a socially responsible organisation and make time to contribute to the communities we live in.

As part of our community work, staff from our Aberdeen office took a day out volunteering and planting trees at the City Social Care facility at Anguston Farm. The team were blessed with blue skies and got a healthy dose of nature.



Meanwhile staff from our Peterborough office took part in a beach clean at Old Hunstanton in Norfolk. The team spent the day collecting rubbish and microplastics, with support from Norfolk Wildlife Trust.

**For monthly updates on our work you can subscribe to the JNCC Bulletin! Email: [communications@jncc.gov.uk](mailto:communications@jncc.gov.uk)**



# Agreement signed with Vulcan to create maps of coral reefs in the UK Overseas Territories

We're pleased to announce that a Memorandum of Agreement has been reached with Vulcan Inc to use the Allen Coral Atlas to map and monitor all UK Overseas Territory shallow coral reefs by mid-2021.

[Allen Coral Atlas](#) partners, including Planet, University of Queensland, Arizona State University's Center for Global Discovery and Conservation Science and National Geographic Society, take high resolution satellite imagery and advanced analytics to map and monitor the world's coral reefs in unprecedented detail.

"Vulcan is excited about working with JNCC and the Overseas Territories to use the Allen Coral Atlas for spatial planning, managing and monitoring coral reefs, and coastal protection." Chuck Cooper, Managing Director, Government Affairs, Vulcan Inc.

Vulcan and its partners are looking forward to gathering coral reef data for the Overseas Territories.

The Allen Coral Atlas complements work already underway in JNCC to use satellite images for mapping and monitoring habitats to understand the role of the natural environment in protecting coastlines from the impacts of natural disasters and support environmental management.

Charlie Whiton from Vulcan Inc. joined one of our Earth Observation training workshops in the British Virgin Islands (BVI) in December 2018 to explore how the Atlas might be of use to the Governments of BVI and the Turks and Caicos Islands (TCI), who were also present.

"This agreement is very exciting as it provides JNCC and the Overseas Territories with an opportunity to work collaboratively with the Allen Coral Atlas team to help to produce the best possible coral reef maps for the OTs and help with implementing planned actions to protect and restore coral reefs," said Jane Hawkrige.

This Memorandum of Agreement contributes to the delivery of the JNCC's strategy objective to "Provide evidence and advice in support of environmental priorities in the UK's Overseas Territories" and is perfectly timed to make a significant contribution to the new Environment Strategy that we are developing with the TCI Government, and will be a contribution to a Technical Assistance Partnership we are setting up with the Territory Government.

The OTs are currently contributing data to a global coral reef assessment being led by the International Coral Reef Initiative's (ICRI) Global Coral Reef Monitoring Network (GCRMN), and due for publication in mid-2020. These data will make an important contribution to validating the Allen Coral Atlas.



Jane Hawkrige and Chuck Cooper © Charlie Whiton



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# SBSTTA23 Montreal

The Christmas decorations may have been out, but ten days in wintry Montreal was no party for a UK delegation whose time was spent in long and serious preparations for 'super 2020' - the year when both the new global targets for biodiversity will be agreed (the ['post-2020 global biodiversity framework'](#)) and the UK will host in Glasgow a major global [conference on climate change](#).

The main event was the 23rd meeting of SBSTTA (Subsidiary Body on Scientific, Technical & Technological Advice), the scientific body which advises the Convention on Biological Diversity (CBD).



Members of the UK delegation from Defra, JNCC, SNH & Scottish government © Vin Fleming / JNCC

Our international expert Vin Fleming joined the Defra-led UK delegation along with two representatives from Scottish Natural Heritage and the Scottish Government. Vin then represented the UK at a further Convention on Biological Diversity (CBD) workshop to advise on how area-based measures, such as protected sites, can contribute to the new framework.

The main role of SBSTTA is to consider documents and to draft decisions which the CBD's Conference of the Parties will consider at their next meeting in Kunming, China in October. Topics at [the meeting](#) included the links between climate change and biodiversity and between nature and culture, sustainable wildlife management, and ecologically or biologically significant areas in the marine environment (of the NE Atlantic). Whilst the focus

should be on the science, political issues unavoidably arise and debates on the use of terms and on principles can be long, difficult and protracted.

Discussions also took place on the future framework even though there is a separate process for this. The new framework will replace the current [Aichi biodiversity targets](#) which expire in 2020. Progress against these will be reviewed later this year by the [Global Biodiversity Outlook 5](#). The draft summary, and the recent [IPBES global assessment](#) are both clear that the news is not good, progress towards targets is inadequate and virtually all indicators of the health of nature are in decline.

Just as for our climate, there is a biodiversity crisis also. And the two are directly linked – climate change directly and detrimentally affects our wildlife but nature can also provide some of the solutions to tackling the climate crisis. The year 2020 will only be a 'super year' for climate and wildlife if we adopt ambitious targets and are prepared to transform society to put nature on a path to recovery.



Vin Fleming at SBSTTA 23 © IISD/ENB / Mike Muzurakis



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# Meet the Expert

**In this issue we focus on Vin Fleming, International Head of the UK CITES Scientific Authority (**

## What prompted your interest in the natural environment?

I can't remember not being interested in natural history. My earliest memory of wildlife, as a small boy, is seeing, on our bird table one day, a stunning male reed bunting bright against the snow. My only ID guide at the time was an album of cigarette cards of British birds. I was fortunate to grow up in industrial Lancashire where its 'unofficial countryside' of subsidence flashes, coal spoil rucks and mosslands was richer in wildlife than most people would credit, with nightjars, turtle doves and tree pipits all then breeding within sight of central Manchester. And, jewel in the crown, I was ten minutes from an old-fashioned sewage farm replete with bird-rich if odorous sludge lagoons; who could ask for more?

## How did you become involved in working on international conservation?

The simple answer is circuitously, and it wasn't a role I could have foreseen earlier in my career. After a degree in Ecology at Lancaster, I did a Ph.D. and postdoc on ectomycorrhizal fungi at Edinburgh and ITE (now CEH) before joining the Nature Conservancy Council in 1985. I was Assistant Regional Officer in Dumfries & Galloway before moving back to Edinburgh, after the creation of SNH, to the International & Biodiversity Unit which was newly created following the Rio 'Earth Summit' in 1992. This later became the Species Unit, which I led, and where SNH's first species recovery programme was launched. The CITES job became available at JNCC and to show that even the best recruitment processes can go awry, I've been doing CITES and other international work now for over 20 years.

## What does your current role involve?

As co-leader of JNCC's International team, I oversee our work on the biodiversity-related multi-lateral environmental agreements (MEAs) with a personal focus on CITES and the Convention on Biological Diversity (CBD). Our role is providing scientific advice to UK governments which, typically, includes supporting Defra on UK delegations to international meetings of the MEAs or leading ourselves at meetings of their scientific advisory bodies. The CITES team has a broader role, as the UK's Scientific Authority on fauna, we advise on the issue of permits (c20k a year) for trade in listed animals; a total that is set to increase substantially following our exit from the EU. Policy-related advice, such as trophy hunting or ivory trade, is also a key element of our role. Of course, under the CBD, we have a significant emphasis on supporting Defra and the four countries in the development of the new 'global biodiversity framework' that will set the global targets for nature conservation for the next ten years and contribute to 'super 2020' (see article on page 7).





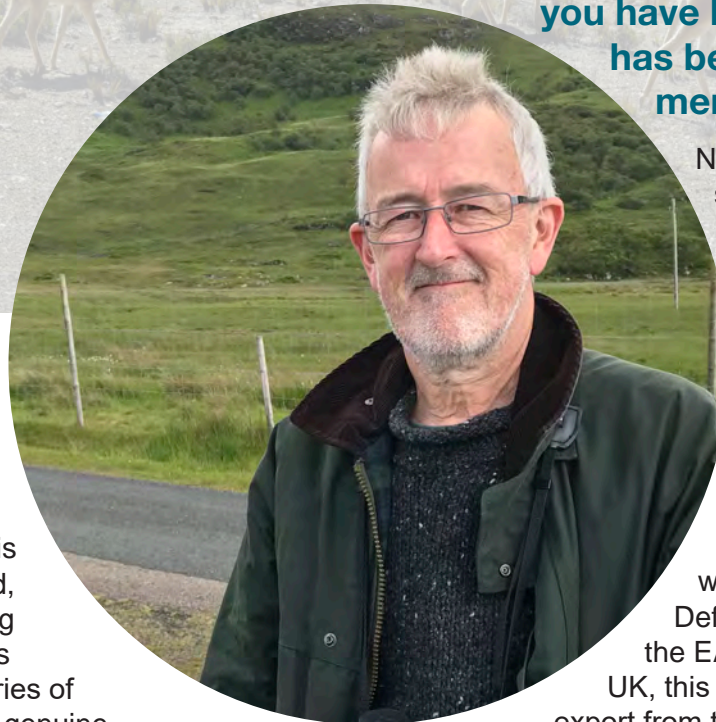
## onal team co-leader (Fauna)

### What are the biggest challenges you face in your CITES work?

One of the many challenges is that wildlife trade is perceived, in the west generally, as being negative or bad, a view that is influenced by most press stories of wildlife trade being about the genuine and serious damage caused by illegal killing and trade. The immediate reaction of many, therefore, on hearing about any element of wildlife trade, is to want to ban it without any consideration of the consequences. When have you heard a 'good news' story about wildlife trade?

To suggest that using or consuming wildlife can be good for wildlife conservation seems counter-intuitive to most. But this can genuinely be the case where the benefits from trade (and/or tourism for example) provide local people with incentives to conserve species that might otherwise be a cost to them and their livelihoods. How many of us in the UK would happily live with crocodiles, lions and elephants in our countryside, with no fences to separate us? Yet that is what we expect of some of the poorest people in the world, namely to shoulder the costs of living with wildlife but not to receive any benefits. And there are many [examples](#) – whether of vicuña in the Andes, markhor in Tajikistan, snowdrops in Georgia or crocodiles in Australia – where sustainable trade, managed by communities, has benefited both conservation and livelihoods.

Importantly, the role of CITES is not to ban trade, though this is a mechanism available, but to regulate trade to ensure that it is not detrimental to the survival of the species in the wild – to be sustainable in other words.



### Out of all the CITES applications you have handled, what has been the most memorable?

Not an application as such, but the work we have been doing over the last three years on preparing a 'non-detriment finding' for potential trade in European eel from the UK post-Brexit has been both a challenging and very collaborative piece of work involving Cefas, Defra, DAERA, AFBI and the EA. Unusually for the UK, this might involve the future export from the UK of wild-taken specimens of this critically endangered species – we feel we can demonstrate, with appropriate safeguards, that trade from the UK is both sustainable and provides conservation benefits.

### What's the best thing about going to a CITES conference?

CITES meetings take you to all corners of the globe so I have been fortunate to visit places as far apart as Fiji, St Helena, Chile and Viet Nam. But, despite the perceived glamour of international travel, the reality of the meetings is that they involve working very long hours, discussing the detail of often tedious documents, in anonymous conference centres, for up to a fortnight often with little or no time off to see anywhere - the novelty can soon wear off. The best thing about them, apart from coming home, is meeting the people with whom, over the years, you have formed close friendships and working relationships with. Oh, and the karaoke!



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# JNCC experts repr



JNCC CoP 25 team © JNCC

In December a team of our experts headed to Madrid for the 25th Conference of Parties to the UN Framework Convention on Climate Change (CoP 25) which was held at IFEMA, Feria de Madrid. Many of our science teams are involved with projects in the UK and around the world that have an element of analysing and responding to data concerning climate change.

The UK and Chile Pavilions at the CoP 25 hosted events that were supported by JNCC, including:

## How can the world's most detailed climate projection help us to prepare for the future?

This event led by the Met Office took an interesting look at how the UK Climate Projections have been used by different organisations. Gwawr Jones, our Senior Earth Observation

Specialist, presented a slide showing how the UK Climate Projections had been used to improve species distribution models.

## Nature and environment – nature-based solutions, from ambition to action

The event built on the momentum generated by the launch of the NBS for Climate Manifesto announced at the UN Climate Action Summit, by focusing on three areas:

- Raising the profile of international action on NBS, exploring how it is tackling the effects of climate change, addressing biodiversity loss and contributing to poverty alleviation; and what more could be done.
- Highlighting the latest scientific research and practitioner knowledge on NBS, through the lens of a few successful examples, demonstrating what is already being achieved.
- Exploring some of the barriers that prevent scaling up of NBS, what tools are being developed that would unlock nature's full potential, and how we can work together to deliver global action.

"It was great to see so much interest in marine events at COP 25.

The MPAs event on the UK Pavilion was well attended and led to some really useful discussions afterwards"

Beth Flavell,  
Senior MPA Adviser

The JNCC / VCCB Viticulture project *Natural Capital Approach to Landscape Planning* and EO4Cultivar were case studies presented by JNCC's Matt Smith.



Matt Smith presenting on the Chilean Viticulture Project at the Nature Based Solutions event in the UK Pavillion © JNCC



# Present UK at CoP25

## Marine protected areas as tools for adaptive marine resource management in the face of climate change

This event at the UK Pavilion was a great opportunity to showcase work from across the UK on developing the evidence base for the role of MPAs in adaptive marine resource management for tackling climate change. The event was moderated by Gemma Harper, Deputy Director in Defra Marine, with speakers including Colin Moffat (Marine Scotland), Beth Flavell (JNCC), Sarah Harrison (JNCC, presenting on behalf of Silvana Birchenough, Cefas) and Laura Cussen (Chilean Ministry of Environment).

## MPAs and climate action: Science and decision-making



Sarah Harrison taking questions on the UK MPA Network © JNCC

Chile hosted this collaborative event which included representatives from Chile, the US, France, Costa Rica and the UK, giving perspectives on the role of MPAs in supporting climate change adaptation and mitigation.



Beth Flavell speaking in the UK Pavilion MPA event © Melanie Austen

## A Pole-to-Pole narrative on Earth Observation and how it underpins our response to climate change

This event focused on the role that Earth Observation technology plays in analysing climate change and included presentations from Gideon Henderson (Defra Chief Scientific Adviser), the Met Office, CEPOM, PML and ESA/University of Leicester.

Our team would like to pass on thanks to all of the event hosts, speakers, partners and to the rest of the UK Delegation for being so fantastic and making us feel so welcome, with a special thank you to Plymouth Marine Laboratory, Marine Scotland, the Chilean Ministry of Environment and the Spanish Government. Thank you for making our first experience of the COP so positive and we very much look forward to seeing you again at COP 26 in Glasgow.

"I was blown away by the support and collaboration, both internationally and between our UK partners. I am really looking forward to working with the same partners again for COP 26 next year"

Sarah Harrison,  
JNCC International Business Development lead



Gwawr Jones presenting on the use of Earth Observation data to monitor coastline natural defences, such as mangroves, in the UK Caribbean Overseas Territories © JNCC



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# Climate Smart

## Developing the evidence base to support 'climate-smart'

Finding solutions to tackle climate change is an increasing political priority. However, aside from key interventions intended to reduce overall carbon budgets, options for policy makers to respond are limited. An emerging area is emphasising 'nature-based solutions', utilising our knowledge of ecosystems and the services they provide to mitigate the impacts of climate change. The UK Marine Protected Area (MPA) network has been established to protect the range of marine biodiversity in the UK. An effectively managed MPA network has the potential to mitigate against the impacts of climate change by virtue of the services provided by 'healthy' marine ecosystems such as the sequestration or 'locking up' of atmospheric carbon in seagrass beds and the coastal protection effects of saltmarshes against predicted increases in storm surges.

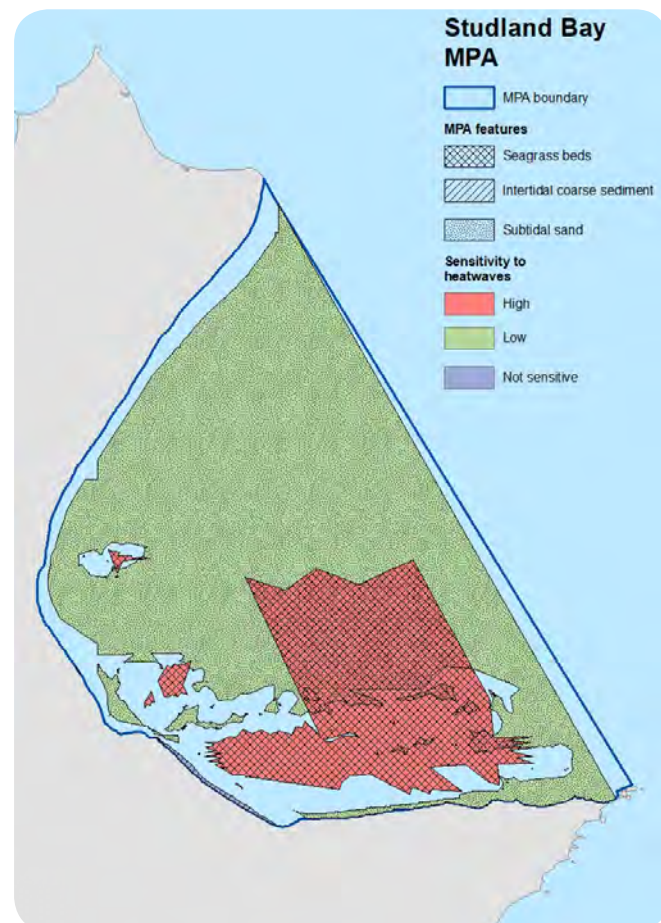


Seagrass bed © Natural England

JNCC is working with Defra and the Marine Biological Association of the United Kingdom to support climate-smart decision making around MPAs. The project aims to build the evidence base concerning which MPA protected features may be at most risk from the effects of climate change, and their functional role in mitigating the impacts of climate change. An evidence-based approach was used to prioritise MPA

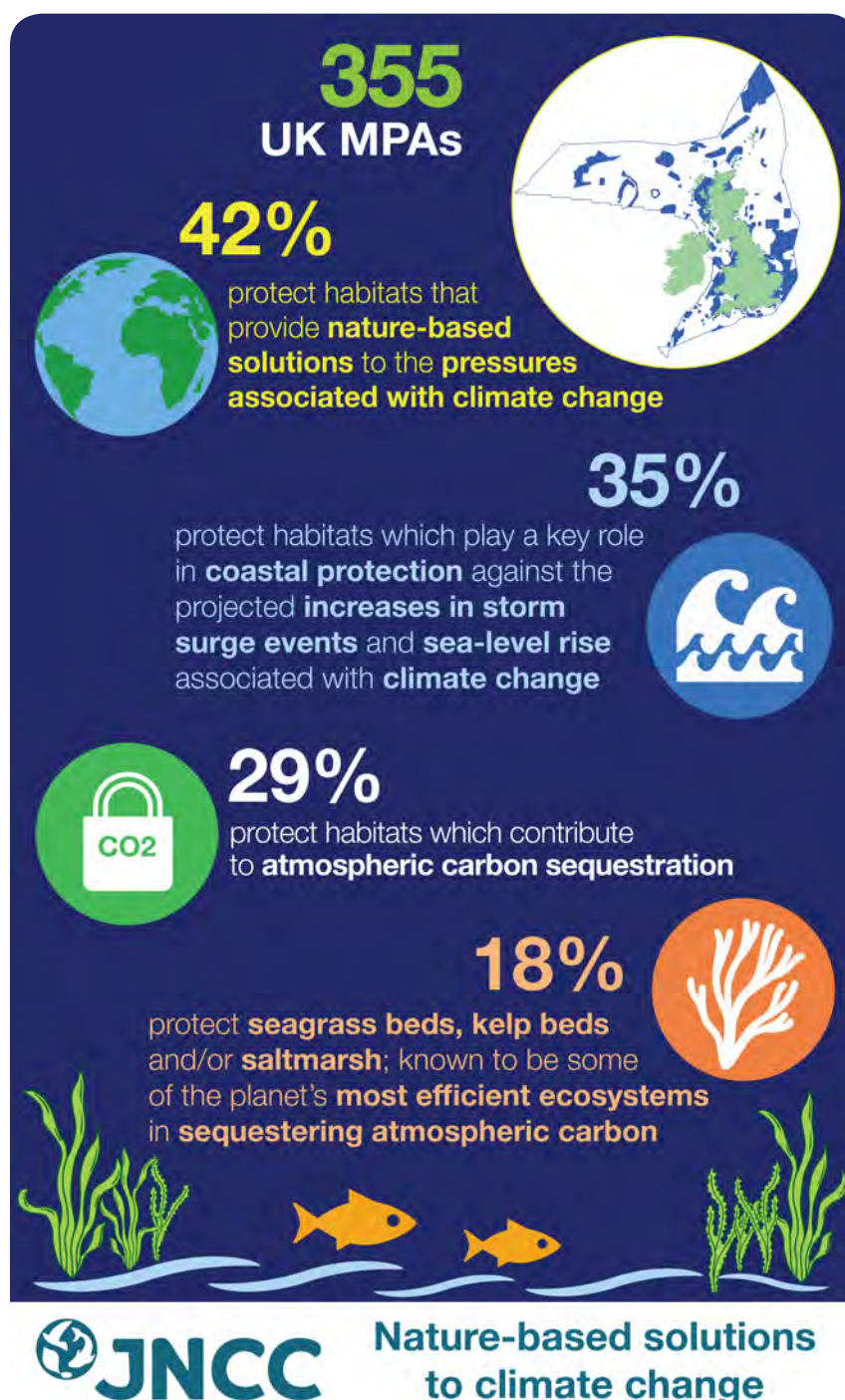
protected features in Secretary of State waters at highest risk from climate change pressures. In parallel, the role of protected features in climate regulation or mitigation of impacts associated with climate change was reviewed and MPAs that contribute to these ecosystem services identified. The sensitivity of high priority MPA protected features to climate-related pressures was assessed and is presented on the Marine Life Information Network ([MarLIN](https://www.marlin.gov.uk/)) website. To demonstrate the impacts and the role of MPAs in mitigating against climate change, climate profile report cards for two exemplar MPAs (Studland Bay and The Canyons) were prepared. The outputs of this project were presented at the recent UNFCCC COP 25 (Conference of Parties) in Madrid in December, as well as on the JNCC website, showcasing the UK's work on the designation of MPAs and their role in climate change mitigation and adaptation.

This project indicated that two major ecosystem services, coastal protection and carbon sequestration, provided by UK MPA protected features are relevant to supporting the mitigation of climate change impacts. However, the high sensitivities of protected features to climate change impacts could result in the loss of biodiversity, reducing the services they provide and their ability to mitigate climate change impacts. Therefore, MPAs can play a key role in best ensuring that protected features remain in good condition and continue to function well, enhancing their resilience to the impacts associated with climate change.



# Smart MPAs

decision-making around Marine Protected Areas (MPAs)



Further work on the role that MPAs may play in climate change adaptation and mitigation is needed to enhance our understanding and support the evidence base used to inform future management of the marine environment. This will include detailed modelling exercises that use information gained from this work to predict changes in the distribution and extent of MPA protected features.



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# ‘Defra group in Object #18 – an African

Our CITES (Convention on the International Trade in Endangered Species) Licensing Manager Nichola Burnett recently featured in Defra’s 100 objects campaign that champions the collective range and importance of work across the Defra group. With a rich history and a broad remit, the Defra group is home to many inspirational people, places and products. Each object chosen has a story behind it and here, Nichola shares her story of the python skin.

“My name is Nichola Burnett and I am the CITES Licensing Manager at JNCC which acts as the UK CITES (Convention on the International Trade in Endangered Species of wild fauna and flora) Scientific Authority (animals). I joined JNCC in 2001 after 10 years working as a zookeeper, nervously swapping my broom, wheelbarrow and wellies for a desk and computer.



African rock python skin © JNCC

So, why did I choose a python skin? Pythons are a major component of the global trade in reptiles, both live for the pet trade and as skins, manufactured into products like handbags and shoes for high end fashion houses. Trade in all pythons is controlled under CITES.

CITES is an international agreement between governments. Ratified by the UK in 1975, it is aimed at regulating trade in wildlife, to ensure that such trade does not threaten their survival. Wildlife trade is diverse, ranging from live animals and plants to a vast array of products derived from them, including food, musical instruments, timber and medicines. Many species in trade are not endangered, but the existence of an agreement to ensure the sustainability of the trade is important in order to safeguard these resources for the future.

The rock python skin in our office, an impressive 3.4 metres long, was originally seized by UK Border Force, with whom we work closely to support their efforts in tackling illegal trade at our borders.

Before trade can be authorised, an assessment of sustainability (known as a ‘non-detriment finding’) must be carried out by the exporting country. For trade entering the EU, a second assessment of sustainability is conducted prior to import (a requirement under EU wildlife trade Regulations). JNCC provides advice to APHA (Animal and Plant Health Agency) on c.20k permit applications a year. It is estimated that we may see a doubling or even trebling of current licensing volumes, with all movements of CITES specimens between the UK and the EU requiring permits.

A recent JNCC report showed that the UK is a key global consumer of CITES plants and animals. Between 2012 – 2016 the UK was the eleventh highest global importer and the 14th highest global exporter (out of 182 CITES Parties) with a combined estimated value of £404m GBP.

# n 100 objects': can rock python skin

Stories in the media have greatly influenced public perceptions about trade in wildlife and their products. If I could put across just a single message, it would be to raise awareness of the importance of sustainable wildlife trade in supporting livelihood opportunities for those living in rural communities and to recognise the incentives this provides to conserve wildlife and its habitat.

There are many examples of legal and sustainable trade contributing to both species conservation and livelihoods of rural communities including: vicunas from Bolivia, saltwater crocodiles from Australia, and snowdrops from Georgia. In Tajikistan, community-based trophy hunting of Ibex and Markhor (wild goats) provides around 300 jobs in remote areas, where there are very few other income opportunities. Trophy hunting is subject to polarised opinions and strong views; however, trophy hunting is an important form of sustainable use that has the potential to generate economic benefits and incentivize wildlife protection over vast areas, including areas which may be unsuitable for alternative wildlife-based land uses such as photographic ecotourism. More information about CITES and livelihoods can be found on the [CITES website](#)."



Nichola Burnett  
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## JNCC attains Disability Confident Leader status

We are pleased to announce that we have attained the highest accreditation in the Department for Work and Pensions' Disability Confident scheme, which recognises and supports employers who recruit and retain people with disabilities. The scheme contributes towards the [Government aim of getting one million more disabled people in work by 2027](#).



JNCC encourages a positive approach to disability internally through learning opportunities on disability awareness, unconscious bias and mental health. We also have trained [Mental Health First Aiders](#) in our Peterborough and Aberdeen offices.

"JNCC staff have been outstanding in their response and support regarding my chronic health issues putting my welfare and wellbeing first. Staff are always there to listen and proactively ensure I have all the requirements or adjustments needed to make my working life and environment comfortable."

Jason Weeks, Head of Business Development & Marketing

Dan Arons, HR Adviser, said: "We attended a Disability Confident job fair and we worked closely with the Jobcentre to arrange a work experience placement, which was a success. The placement, in our Administration Services team, gave the disabled jobseeker: recent work experience, new skills for their CV and a boost in confidence after being out of work for a period of time. We're working with the Jobcentre to arrange further placements in various JNCC departments."

"Before working at JNCC I was scared to disclose my conditions for fear I would be treated differently, but here I have never felt judged nor adversely discriminated. If it weren't for JNCC and the flexibility they allow me to juggle my work/life balance, I don't think working would be an option for me."

Anonymous

Please visit our [careers page](#) to view JNCC's commitments and contact [HR@JNCC.gov.uk](mailto:HR@JNCC.gov.uk) if you would like any further information.

General information about the scheme is available here: please visit the [Disability Confident employer scheme and guidance](#).



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# New JNCC Terrestrial Biodiversity Evidence Strategy

Our vision is to provide an evidence base on biodiversity that will meet the needs of current and future generations for understanding and improving the environment

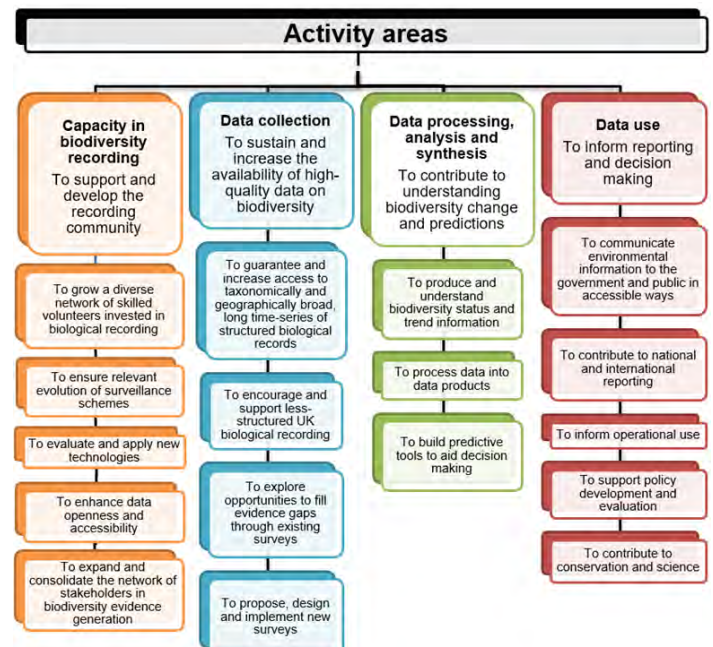
The JNCC Ecosystems Analysis team undertakes a range of work contributing to the JNCC Strategic outcome of delivering high-quality evidence on biodiversity and ecosystems, to inform decisions affecting the environment. This includes work on using Earth Observation data, as well as maintaining long-standing partnerships that coordinate terrestrial species surveillance schemes, involving thousands of volunteer recorders.

Over the past two years, our experts have been working with government, the devolved administrations and country nature conservation bodies to develop a new JNCC Terrestrial Biodiversity Evidence Strategy. This supersedes the previous strategy, which was last updated in 2013, and its development now is timely for several reasons. Firstly, there have been changes in the metrics from biodiversity data that are currently of interest: as well as understanding trends in populations of individual species, there is now also increasing interest in understanding changes in ecosystems, communities and the way they function. Secondly, leaps and bounds in technological developments mean new methods and data sources are available, for example from Earth Observation, DNA, or acoustic sensors. Thirdly, JNCC wanted to develop this strategy working closely with the UK countries, so we could really understand their current requirements and will deliver evidence that is useful and of high value for nature conservation.

The new strategy focuses on the types of terrestrial biodiversity evidence that JNCC wants to generate, and the ways we will work to achieve this. We want to collect data and undertake analyses that allow us to better understand biodiversity at a range of scales, from species' genetics right up to ecosystem functioning. We will achieve this by working towards objectives categorised into four different activity areas:

- Developing capacity in biodiversity recording
- Data collection
- Data processing, analysis and synthesis
- Data use

Development of the strategy highlighted that the current set of species surveillance schemes supported by JNCC are highly valued by UK countries, and there is support for these to continue. However, there was a consensus that schemes may need to evolve to continue to support emerging evidence requirements for nature conservation, and this need will be evaluated annually. Any changes will be made gradually and with consideration to any impact this might have on the long time series of data we have for a range of species, and on volunteer engagement with the recording. In order to generate new biodiversity evidence, we will work in new and current partnerships and will enhance our capacity to develop and apply innovative analytical techniques, allowing us to maximise value from data we already collect. For more information, you can read the [new strategy on our website](#).



# Biodiversity Evidence Strategy

## JNCC supports UK terrestrial species surveillance, including the:

- Avian Demographics Scheme
- Breeding Birds Survey
- UK Butterfly Monitoring Scheme
- UK Pollinator Monitoring Scheme
- Wetland Birds Survey
- Biological Records Centre
- Rare Breeding Birds Panel
- Goose and Swan Monitoring Programme
- National Bat Monitoring Programme
- National Plant Monitoring Scheme

## Biodiversity surveillance schemes - a partnership approach

The UK Terrestrial Evidence Partnership of Partnerships (TEPoP) brings together partners from across JNCC's terrestrial biodiversity surveillance schemes to collaborate and share news about monitoring developments and analysis. Every autumn, JNCC organises a TEPoP annual conference somewhere in the UK, and this time it was held at our Peterborough office. This was the third TEPoP meeting since its establishment in 2017, and we were delighted to have at least one representative from each of our partnership surveillance schemes, and every country nature conservation body, in attendance.

The conference saw updates from all the partnership surveillance schemes outlining exciting developments from the year. There were some common themes running across several schemes including the involvement of volunteers recording multiple taxa, improvements to websites, and the development of new methods and analyses. It was very encouraging to hear schemes outline developments inspired by other TEPoP partners - such as the UK Butterfly Monitoring Scheme now offering '[holiday squares](#)' to improve upland coverage, akin to the Breeding Bird Survey '[upland rovers](#)'. The theme of partnership working continued throughout the day, with workshops exploring ways to work together to access new sources of funding for schemes, and how partnerships could work together to improve communications with volunteers and policymakers.

The conference also included presentations on areas of work developed through the Terrestrial Surveillance Development and Analysis Partnership (TSDA, involving the British Trust for Ornithology, the Centre of Ecology and Hydrology and JNCC). This partnership was established alongside TEPoP to undertake cross-taxon analyses using data from across schemes, to start to build more of an understanding of community and ecosystem changes. In addition, it looks at the ways schemes currently operate and the data they produce, generating recommendations on how we might improve recording to increase data availability for conservation and science. This approach can be seen in a recent [report](#) looking at making scheme data more findable, accessible, interoperable and reusable.

Other areas of work presented at the TEPoP conference included an assessment of the taxonomic and geographic coverage of all the monitoring schemes. A [report](#) was presented exploring how scheme data might be used in predictive models to help address priority research questions, such as the response of pollinators to the restoration of wildflower-rich grasslands.



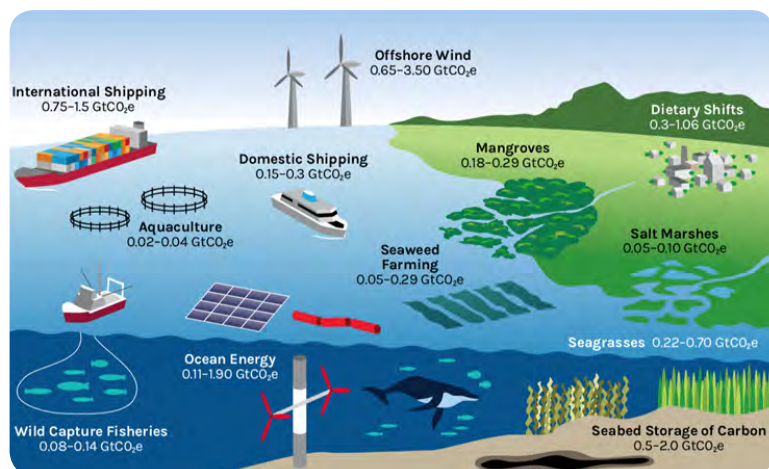
Attendees at the TEPoP annual conference © JNCC



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# Climate change effects on the ocean and proposals for mitigation



The five areas of Ocean-based Mitigation Options Explored in the report and the Annual Mitigation Potential estimated for 2050 © Hoegh-Guldberg, O., *et al.* 2019. "The Ocean as a Solution to Climate Change: Five Opportunities for Action." Report. Washington, DC: World Resources Institute. Available online at <http://www.oceanpanel.org/climate>

The Intergovernmental Panel on Climate Change (IPCC) Special Report on the Ocean and the Cryosphere in a Changing Climate ([SROCC](#)) reported in September that the results of increasing greenhouse gases are warming seas, melting ice, ocean acidification and sea-level rise. These are affecting ecosystems and societies across the globe. The IPCC report provides a confidence value on all its assessments, from low to very high confidence, which helps us to interpret their significance.

The global ocean covers 71% of the Earth's surface and contains about 97% of the Earth's water. The cryosphere refers to frozen components of the land and sea - around 10% of Earth's land area is covered by glaciers or ice sheets. The report finds with very high confidence that global warming has led to widespread shrinking of the cryosphere, with mass loss from ice sheets and glaciers, reductions in snow cover and Arctic sea ice extent and thickness, and increased permafrost temperature.

Northern permafrost regions are currently releasing additional net methane and CO<sub>2</sub> due to thaw. The areal proportion of multi-year ice at least five years old has declined by approximately 90%. By absorbing more CO<sub>2</sub>, the ocean has undergone increasing surface acidification. Global mean sea level is rising, and it is particularly significant that the rate of increase is accelerating. Effects of sea level rise are exacerbated by increases in extreme events such as tropical cyclones and rainfall.

Ocean marine heatwaves have probably doubled in frequency over the last 30 years and are increasing in intensity. This poses major challenges to tropical nations with low-lying islands. In temperate marine regions, the majority of our key ecosystems such as kelp forests are showing negative changes, including from marine heat waves, and negative impacts are seen on many human activities.

Some suggestions for mitigating global changes have been proposed by the report in September 2019 from the [Expert Group of the High Level Panel for a Sustainable Ocean Economy](#). They considered the potential for ocean-based actions to contribute to reducing greenhouse gas (GHG) emissions and report that ocean-based climate action could deliver 20% of the reductions in CO<sub>2</sub> emissions needed. Their solutions include:

- Scaling up ocean-based renewable energy
- Decarbonising domestic and international shipping and transport
- Increasing the protection and restoration of "blue carbon" ecosystems - mangroves, seagrasses and salt marshes
- Utilising low-carbon sources of protein from the ocean, such as seafood and seaweeds
- Carbon storage in the seabed.

There may be some scepticism concerning the scale of the potential from these solutions, but there has been a great deal of support for investing in them. JNCC's relevant work as covered in this and previous issues of *Nature News* includes supporting the regulatory environment for offshore wind energy; using Marine Protected Areas to protect blue carbon ecosystems including salt marshes and coral reefs; and modelling the potential for seaweed farms in the UK.



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# Comparing options for responding to ash dieback

**A new evidence synthesis by JNCC, Forest Research and Kew to inform responses to ash dieback shows the importance of combining biological evidence with views from forest owners, as well as learning from past international experience.**

Ash dieback is caused by a fungus native to Asia that was accidentally introduced to Europe and is having major effects on ash trees across the continent. In the UK, where ash is one of the most widespread tree species, the disease has been forecast to cost as much as [£15 billion](#). However, there are several options for responding to ash dieback, from relying on natural processes through to tree breeding, as well as replacing ash with other tree species. Choosing the right response could have a major bearing on the scale of impacts and so a study published in October by JNCC, Forest Research and Kew synthesises several strands of evidence to compare options.



Example of ash dieback lesion © Shutterstock

[Interviews with forest managers](#) have highlighted the importance of ash – partly because of its versatility but also because of the sense of loss if ash were no longer part of the landscape. Complementing these findings, [biological evidence from across Europe](#) indicates that although resistance to ash dieback is rare, some trees have survived for many years despite exposure to the disease. [Case studies](#) of tree breeding to resist other diseases show that some well-supported programmes are developing and using resistant trees successfully but also illustrate the long-term commitment required and difficulties that can be encountered e.g. where resistance is very rare or is produced but then overcome by evolution of the disease.

Bringing these strands of evidence together, several options seem applicable in the UK. For example, if heritable resistance is confirmed then promoting ash regeneration or establishing a more targeted tree breeding programme could allow a population of resistant ash to emerge. Landowners are already experimenting with the former and we found they were interested in tree breeding if resistant ash is durable in the field. However, neither solution is assured, not least because of the time involved and the additional risk if the highly damaging emerald ash borer reaches the UK (from North America, western Russia, or its native Far Eastern range). Planting alternative native tree species is therefore also potentially important, although the obvious downside is that ash is no longer retained.

Given the strengths and weaknesses of several solutions, a blend of approaches may be best. This could include promoting ash regeneration, identifying environmental conditions favourable to ash survival, and planting alternative native tree species. A tree breeding programme might also be a potentially more rapid way of recovering ash in the landscape than relying solely on forest management. However, such a programme would need to be adequately and sustainably supported. Most importantly, responses to ash dieback should consider options as complementary rather than competing solutions.

Woodcock P, Buggs R, Marzano M, Quine C (2019) Exploring strategies for responding to ash dieback in the UK. *Quarterly Journal of Forestry*



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# Monitoring The Goose & Swan M

Around 1.2 million geese and swans winter in the UK, over half of which are migratory. The Goose & Swan Monitoring Programme ([GSMP](#)), a partnership between JNCC, the Wildfowl & Wetlands Trust (WWT) and Scottish Natural Heritage, monitors the abundance and breeding success of populations of 11 goose and two swan species in the UK and internationally for some species.

Several surveyor networks of volunteers, including [WWT](#), carry out co-ordinated counts during the autumn and winter, and WWT collates these data on behalf of the GSMP partnership. This information is used in the production of national and international population estimates that feed into Official Statistics and Biodiversity Indicators.

The UK is one of the most important wintering areas for geese and swans in Europe. Britain and Ireland have wintering populations including all Greenland pink-footed and barnacle geese and Icelandic pink-footed geese. The majority of Icelandic whooper swans and around a quarter of Northwest European Bewick's swans also winter in Britain and Ireland.

Migratory species need suitable and safe habitat in their breeding and wintering grounds and along their migration routes, which often cross country borders. The Convention on the Conservation of Migratory Species of Wild Animals therefore commits each participating country, including the UK, to measures protecting migratory species in its territories. Under this Convention, the African-Eurasian Migratory Waterbird Agreement ([AEWA](#)) provides for flyway-wide conservation and management of migratory geese and swans, e.g. through the European Goose Management Platform.

AEWA commits to a periodic comprehensive international census to produce a flyway-wide population estimate for many goose and swan species during winter months, when they are easier to count. The GSMP is instrumental in this census.

Migratory waterbirds  
are protected  
under international  
agreements and over  
half of wintering geese  
and swans in the UK  
are migratory



Bewicks Swan © Kentish Plumber / Creative Commons License

The International Swan Census, a comprehensive five-yearly count in all countries holding migratory Whooper and Bewick's Swans, produces up-to-date population estimates for the whole flyway. International goose counts take place every three to five years, and many species are also counted annually to monitor the wintering populations in the UK. Further details about these censuses and how to take part can be found on the [GSMP](#) website.



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# ng focus: onitoring Programme





# Statistics seal of approval

## Trustworthiness, Quality and Value

JNCC supports a range of terrestrial biodiversity monitoring schemes in partnership with NGOs and research organisations. These schemes produce vast amounts of data, for example on species distributions and population trends. These data are useful to feed into conservation policy-making, to help with UK and country-level reporting requirements, to inform local site management, and in advancing scientific research.

The key outputs from our schemes are designated as 'Official Statistics' – indicating that they are produced following the Office for Statistical Regulation's Code of Practice for Statistics, which has at its core, three pillars of 'Trustworthiness', 'Quality', and 'Value'. Several of our biodiversity monitoring schemes feed into the annually updated UK Biodiversity Indicators compendium ([jncc.gov.uk/ukbi](https://jncc.gov.uk/ukbi)). The production process for this Compendium of statistics has been assessed against the Code of Practice, meaning that the Compendium is designated as 'National Statistics'. Having our evidence outputs designated in this way as 'Official' and 'National' statistics increases the confidence with which outputs are received, and raises their profile, meaning they have an even bigger impact.

Our Official Statistics production is more complicated than many organisations due to our model of working with multiple partners, and reliance on mass participation by volunteer recorders to collect the data

Our experts take production of such statistics seriously and regularly review processes to ensure their effectiveness, and if there are any areas for improvement. We recently hosted a meeting with Ed Humpherson, Director General at the Office for Statistical Regulation, Ken Roy, Defra Head of Profession for Statistics, David Roy, Head of the Biological Records Centre, and James Pearce Higgins, Head of Science for the British Trust for Ornithology, to discuss this topic.

The meeting resulted in some useful discussion, and Ed was impressed with JNCC's approach to various issues. We could perhaps be used as an example of how organisations could work in a similar 'partnership production' situation.

Details of upcoming JNCC Official Statistics releases are maintained on the JNCC website at: <https://jncc.gov.uk/about-jncc/corporate-information/jncc-official-statistics-list-and-release-dates/>.

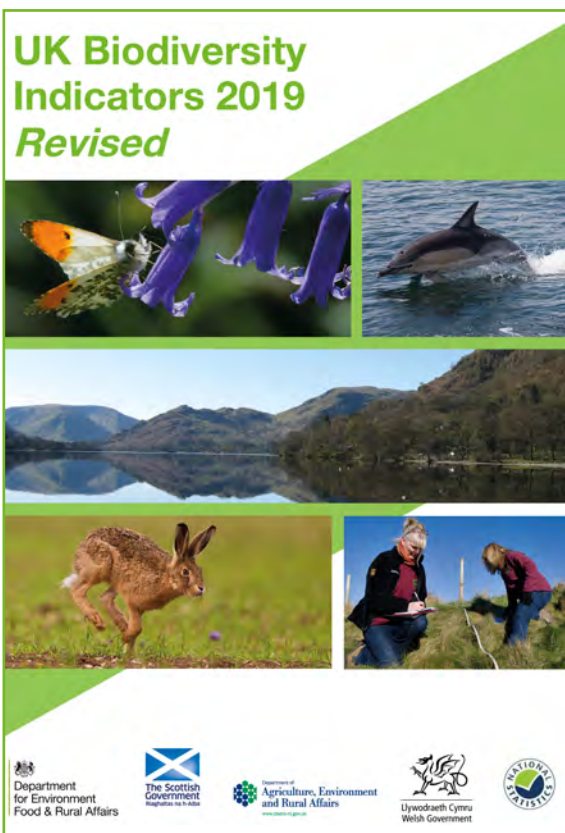


Goldcrest © Kentish Plumber/Creative Commons License



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# UK Biodiversity Indicators 2019



The UK is fortunate in having lots of information about its biodiversity, collected across a broad spread of species and habitats both by professionals and by expert volunteers. This information provides an essential source of evidence for reporting biodiversity change and the impact of policies and actions to conserve biodiversity.

Indicators are useful tools for summarising and communicating broad trends. They are not intended to incorporate all the relevant information available in the UK. They are best seen, as their name suggests, as indicative of wider changes. The UK Biodiversity Indicators are dependent on a wide variety of data, provided by government, research bodies, and the voluntary sector – in total nearly 100 organisations are involved. The presentation and assessment of the indicators are verified by the data providers, with the production and editing of the indicators overseen by government statisticians.

The UK biodiversity indicators formed a major part of the [UK's 6th National Report](#) to the Convention on Biological Diversity in March 2019, supplemented with other information relating to UK biodiversity and implementation of the Strategic Plan for Biodiversity 2011-2020.

The UK biodiversity indicators publication is a Defra National Statistics Compendium – our experts work closely with Defra to source and analyse information, undertake quality assurance with data providers, and make sure that, as a set of official government statistics, the publication is compliant with the [Code of Practice for Statistics](#).

The latest publication of the indicators was in September, with a revision published in December to allow incorporation of information that could not be included in [the earlier edition](#).

Looking forward, it is anticipated that the indicators will be published again in Summer 2020, ideally in advance of international discussions which will set a new global framework at the Convention on Biological Diversity Conference of Parties in Kunming, China. As in 2010, the indicators will then need to be reviewed to ensure they are focused on the new global targets and can help to demonstrate how the UK is stepping up to play its part in delivering global biodiversity goals.



Marbled white butterfly  
© Chris Parker/Creative Commons License



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# Nitrogen is

Nitrogen pollution from the air is a major driver of biodiversity loss in the UK. Around 60% of the UK's nature conservation sites and 17% (42,400 km<sup>2</sup>) of the UK's total landmass are threatened by damaging levels of excess atmospheric nitrogen

To address this, JNCC's '[Nitrogen Futures](#)' project, funded by the Department for Environment, Food and Rural Affairs (Defra), is exploring options for protecting habitats and species that are vulnerable to increases in atmospheric pollution. The findings of the research, led by the UK Centre for Ecology & Hydrology (UKCEH), will inform policy development at UK, national and local scale.



Cow © Alexandra Cunha

A variety of human activities such as fertiliser use, livestock rearing, road traffic emissions, waste processing, and energy generation release nitrogen into the air, in the form of either ammonia or nitrogen oxides, depending on the source. It is then subsequently dispersed and deposited on land, lakes and rivers, and the sea.

Once within a sensitive ecosystem, excess nitrogen affects its ecological functions, mainly by allowing nitrogen-tolerant plants to out-compete key sensitive species. This results in negative impacts on the plants themselves or animals within the food web, including vegetation change, local extinction, increased sensitivity to frost, drought or diseases.

Nitrogen Futures will bring together available data on nitrogen emissions and estimate the benefits of different policy options to reduce pollution and improve outcomes for people's health and nature conservation.

Researchers will quantify the effects of introducing targeted mitigation measures near conservation areas to maximise benefits to ecosystems, priority habitats and protected sites. Targeting measures to reduce nitrogen deposition has been shown to provide larger benefit than the same amount of emission reductions spread randomly across a larger geographical area.

As part of this project, the researchers will test possible local measures to reduce and mitigate nitrogen pollution, for example:

- Introducing low emission 'buffer zones' around protected sites;
- Planting trees to intercept airborne nitrogen;
- Initiatives to target pollution from transport and combustion sources, such as Clean Air Zones; and
- Reduction in emissions from power generation and industry.



Healthy and impacted moss (*Sphagnum* sp.). Ballynahone Bog, Northern Ireland © Áine O'Reilly, NIEA/DAERA 2019

# in the air...

The Nitrogen Futures project is run by JNCC in partnership with (Defra), the UK devolved administrations and the country nature conservation bodies (CNCBs). It is being undertaken by a consortium led by UKCEH in collaboration with Rothamsted Research, Aether, Air Quality Consultants (AQC), Lancaster University and Manchester Metropolitan University. Results are expected in spring 2020. From June 2020 we will be looking to use the learning from Nitrogen Futures with partners and stakeholders – get in touch if you are interested.

To learn more about this project, the organisations contributing to it and how to get involved please contact JNCC. For information about other JNCC work on air pollution visit our [Air Pollution webpages](#).

‘Nitrogen Futures’ will consider the available data on nitrogen emissions to develop scenarios for modelling different spatial targeting approaches for nitrogen mitigation measures



Power stations are among the sources of nitrogen oxide emissions. Pictured are the former cooling towers at Ironbridge, recently demolished  
© Alexandra Cunha

## The project will deliver:

- A report detailing the methods and results of modelling the different policy scenarios together with the optimisation of the spatial targeting of Ammonia (NH<sub>3</sub>) and Nitrogen oxides (NO<sub>x</sub>) mitigation measures. The report will also discuss potential co-benefits and trade-offs with other policy areas. An annex to the final report will discuss local case-studies and discussion on national vs local policy synergy and trade-off or other issues.
- Country specific and UK level communications materials summarising the project output will also be available electronically for communication with external stakeholders such as industry, farmers and wider Government.



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# Working together on nature conservation in the UK



Pevensey Levels SSSI  
© Natural England / Peter Wakely

Successful nature conservation is dependent on working together. In a changing world, the shared mission is to conserve biodiversity, and to secure a nature recovery network and a wider landscape-scale approach to sustainable environmental management. In the UK, JNCC has a special supporting role for the country nature conservation bodies (CNCBs), producing joint advice on the selection of high value nature areas and setting standards for their monitoring. As our understanding of the natural world and environmental pressures grows, we need to make sure this is reflected in advice and guidance.

Sites of Special Scientific Interest (SSSIs) remain the building blocks of UK nature conservation. This is why we're working with the CNCBs to revise their [Guidance for the Selection of Biological SSSIs](#) to include an ecosystem approach, current national and international responsibilities, climate change and new science. Revised in 2013, Part 1 covers the scientific rationale underpinning the selection of sites and the political devolution of nature conservation responsibilities. Part 2 covers species and habitats, spanning 24 chapters and sub-chapters, just over half of which have been fully updated.

This revised guidance also recognises the influence of human activity and the dynamic nature of sites driven by ecological and physical processes. It is anticipated that an evolving series of protected and connected sites will help to protect nature and the delivery of ecosystem services and processes in the future.

Alongside these revisions, JNCC and the CNCBs have produced [a statement on common standards for monitoring protected areas](#) to assess environmental condition. It encourages the use of a range of evidence, new technologies and modelled approaches - it is not a standard field methodology. In addition, specific consideration of the impact of pressures will provide insight into healthy and resilient ecosystems.

By following common standards, it is possible to report on the environmental condition of protected areas at local, national and UK scales, as illustrated by the recent State of Nature Report.

In 2019, the proportion of protected sites assessed as being in favourable condition was 43% for Special Areas of Conservation, 50% for Sites of Special Scientific Interest and 52% for Special Protection Areas, with the majority of non-favourable sites assessed as "unfavourable recovering"

*State of Nature 2019*

There is potential for these standards to be applied beyond protected areas and thereby add to the understanding of healthy and resilient environments at different levels. They also represent an opportunity for more engagement with stakeholders, such as NGOs, government, scientific researchers, environmental consultancies and businesses. JNCC looks forward to continuing to work with partners on new ideas about monitoring, indicators of ecosystem health, nature networks and the value of natural systems to society.



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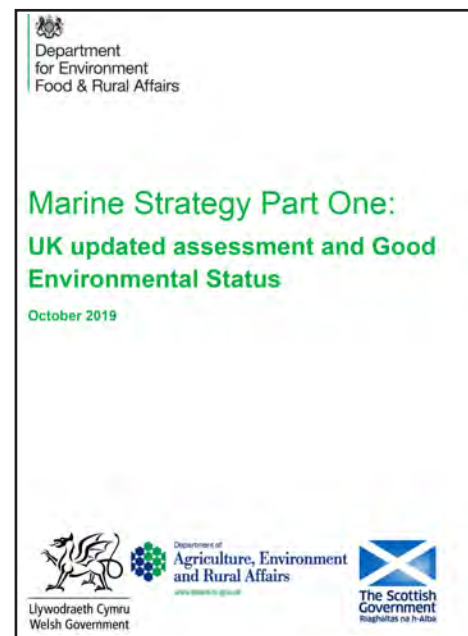
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# UK updates its assessment of the marine environment

The UK's marine environment extends over 880,000 square kilometres - more than three and a half times the UK land area. It is rich and diverse, stretching from estuaries and coastal waters across the continental shelf into the NE Atlantic and down to depths of over two kilometres. The UK has over 30,000 kilometres of coastline. But most of the marine environment lies beneath the waves, hidden from view, so how is it doing?

In October 2019, Defra published an update of the state of our marine environment: [Marine Strategy part one: UK updated assessment and Good Environmental Status](#). The UK Marine Strategy provides the framework for delivering marine policy at the UK level and sets out how we will achieve the vision of clean, healthy, safe, productive and biologically diverse oceans and seas. The report concluded that the UK has "made good progress towards achieving Good Environmental Status (GES)". This was based on an assessment of 60 indicators describing the state of biodiversity and fish stocks and the pressures being exerted by human activities. These indicator assessments show that:

- GES has largely been achieved for eutrophication, hydrographical conditions, contaminants and contaminants in seafood;
- there is a mixed picture for marine mammals, fish populations, seabed habitats and food webs;
- more is needed to understand and protect bird populations;
- measures to tackle non-indigenous species (NIS) and marine litter need longer to take effect;
- we remain uncertain about whether GES has been achieved for underwater noise.



The updated Marine Strategy is the most comprehensive assessment of the state of the UK's seas, and has highlighted where further work is required, particularly around understanding how activities are impacting on marine species and the habitats they rely on. The further development of marine indicators is key, if we are going to address knowledge gaps and improve confidence in future assessments.

JNCC has played a major role in co-ordinating the biodiversity assessments with other organisations via the Healthy and Biologically Diverse Seas Evidence Group. Our experts led the 14 indicator assessments for marine birds, marine mammals, benthic habitats and Marine Protected Areas (MPAs). We also led the assessment of impulsive underwater noise using data collected through the [Marine Noise Register](#). Most of these indicators had to be developed from scratch and the publication of the UK assessment marks the culmination of eight years' work by our team. During that time, we worked closely with other marine experts from the UK and neighbouring countries in Europe. Many of the UK indicators were also used in the OSPAR Intermediate Assessment of the north east Atlantic published in 2017. JNCC represents the UK in much of OSPAR's biodiversity work and led many of the assessments in 2017. We have facilitated the input from scientists outside JNCC to ensure all our outputs meet the needs of the UK Marine Strategy and OSPAR and are easily understandable and relevant to everyone.

Further details on the UK assessments can be found on the new [Marine Online Assessment Tool](#) (MOAT) portal. JNCC is working with Defra to update Part 2 of the UK Marine Strategy on Monitoring Programmes, which will be published in 2020. We are also collaborating with other European experts to update our assessments of biodiversity in the North East Atlantic, as part of OSPAR's Quality Status Report (QSR), due in 2023. The results of the QSR2023 will feed into the UK's third update of the Marine Strategy Part 1 assessment in 2024. And so the cycle continues.....



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# Returning to West Shetland S



The team onboard the MRV Scotia © JNCC

Last August JNCC and Marine Scotland Science (MSS) scientists embarked on a cruise aboard the *MRV Scotia* to survey the offshore seabed of West Shetland Shelf Marine Protected Area (MPA). Regular readers of Nature News may remember West Shetland Shelf as the MPA where a new species of worm was found and described for the first time last year.

The main purpose of this survey was to collect high-quality evidence on the condition of seabed habitats in the MPA so that they can be monitored over time. To achieve this the *MRV Scotia* was equipped with a variety of survey equipment including multibeam sonar (for measuring the depth and hardness of the seabed), a drop-camera (for taking video and still images of seabed species and habitats), and a Hamon grab for collecting samples of sediment and the animals that live within the sediment.



*Ampharete oculicirrata*, the worm first described from West Shetland Shelf  
© National Museum of Scotland

This survey was also the first sea trial of JNCC's new Deep-Sea Hamon grab. Designed to be more reliable in deep water than standard Hamon grabs, the grab also performed well on the gravelly seabed found at West Shetland Shelf.



JNCC's new Deep-Sea Hamon grab on the hanger deck of MRV Scotia © Liam Matear



Monkfish and crab  
© JNCC/MSS



Seven-armed starfish  
© JNCC/MSS

# Shelf Marine Protected Area



News articles from the UK and abroad

Before the survey our experts worked with Historic Environment Scotland (HES) to identify shipwrecks of historic interest near to West Shetland Shelf for two purposes:

1. Provide a clearly identifiable seabed object that can be used to calibrate our multibeam.
2. Provide new information on the position and condition of wrecks of interest to HES

The multibeam images we collected of the wreck of the *MV Lagaholm* attracted plenty of positive media attention for JNCC, MSS, and HES and demonstrated the benefits of this collaborative working for all parties.

The data collected on this survey now needs to be processed and analysed. Once this has been completed the results will be described in a JNCC monitoring report, which will be published on the JNCC website.



Sunrise from the MRV Scotia © Tom Tangye / JNCC



Processing data on the MRV Scotia © JNCC

*For more information on this survey as well as past and future ones, see our [offshore survey blog](#) and follow [JNCC on Twitter](#)*



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# West of Scotland: A hotspot for deep-sea biodiversity could soon be protected in Europe's largest proposed marine protected area

On 27 September 2019, Marine Scotland announced the start of a twelve-week public consultation on a deep-sea marine reserve to the west of Scotland, which aims to further the protection of vulnerable deep-sea habitats and species in the region. The deep waters to the west of Scotland has been featured in many scientific studies over the past 10 years and the high biodiversity and intrinsic value of the ecosystems it contains is now widely recognised. Indeed, the region was the test site for some of the earliest studies of marine life in the deep sea.

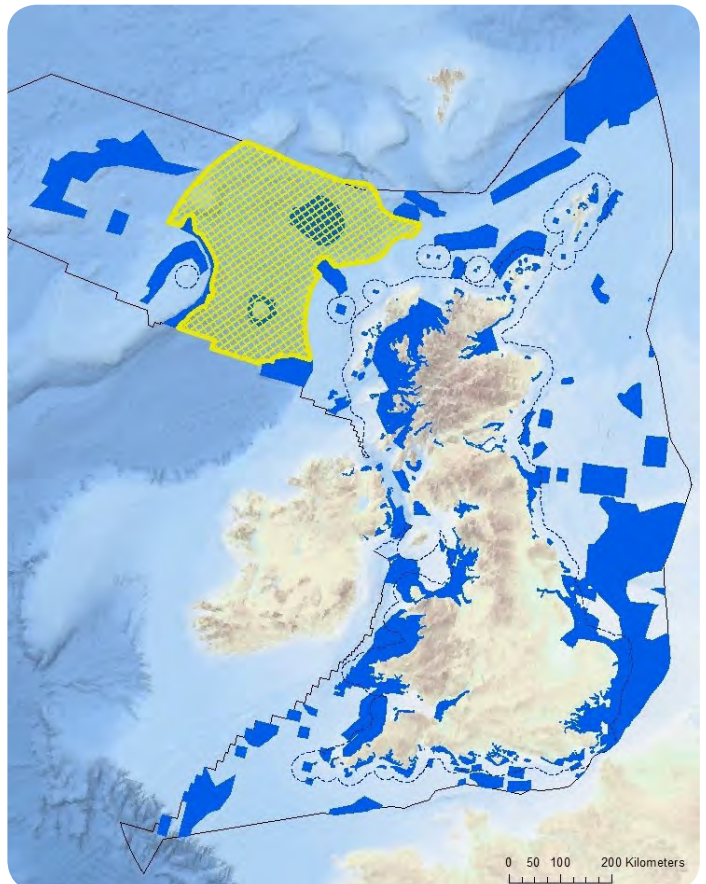


JNCC has been leading on the provision of scientific advice for the proposal to Marine Scotland (featured in map below), which if designated will become Europe's largest marine protected area (MPA).

The possible MPA covers 107,773 km<sup>2</sup>, creating an area larger than Scotland and Wales combined. The possible MPA will afford additional protection fragile vulnerable marine ecosystems such as coral gardens and aggregations of deep-water sponges, more commonly occurring but equally as important marine habitat types such as the communities associated with deep-sea sediment habitats, and long-lived deep-water fish species such as Portuguese dog fish. Overall, the scale of the deep-sea marine reserve is intended to support an ecosystem-based approach to conservation action in the deep-sea.

The habitats and species within the possible MPA provide a wide range of ecosystem services that in turn support human wellbeing. Examples include mud habitats that play a role in the sequestration or 'locking up' of atmospheric carbon in mitigation against the impacts of climate change.

The consultation closed on 31 December 2019.



Map of the West of Scotland proposed deep-sea marine reserve (yellow hatched area) and the wider network of existing UK marine protected areas (MPAs)



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# Mitigating the impact of demersal towed gears on seabed habitats in Scottish waters

In 2016, almost two-thirds of all landings by UK vessels were caught in the Northern North Sea and West of Scotland, over 100,000 tonnes of demersal (bottom-feeding) species with a value of £183 million. Fishing operations that disturb the seabed may have significant effects on benthic habitats, which indirectly impact on the services that they provide.

Delivering sustainable ecological and socio-economic outcomes is a key element of responsible fisheries management. Recent studies have focused on understanding the environmental impacts of fisheries, and it is now critical that we use this information to inform mitigation strategies to help reduce environmental impact but not fishing opportunity.

Our fisheries experts led a project in partnership with the University of Aberdeen and funded under Fisheries Innovation Scotland (FIS) to explore how knowledge of benthic habitat sensitivity, spatial distribution of commercial marine species and the effect of bottom-contacting fishing gears can be used to better inform mitigation measures to reduce the impact of those gears.

The project had three objectives:

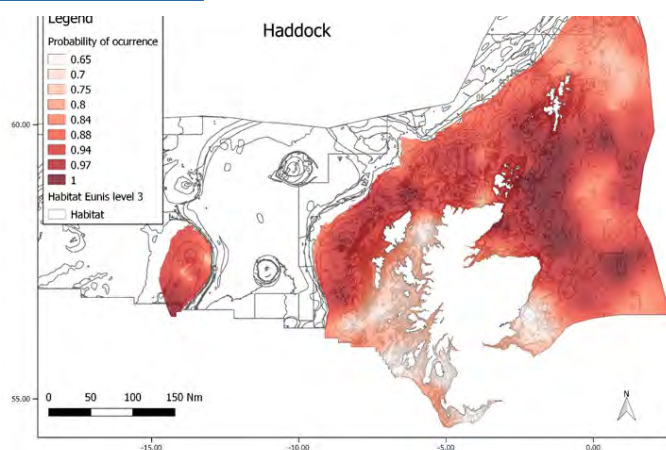
- to review actual mitigation measures used worldwide;
- to provide spatial distribution maps for benthic habitats, seven commercially exploited marine species and habitat sensitivity to demersal towed gears in Scottish waters; and
- to recommend mitigation measures to reduce the impact of demersal towed gears.

The worldwide review of mitigation measures can be divided into spatial and technical measures. Spatial measures include full/seasonal closures and use of effort and spatial restrictions. Technical measures include gear modifications that have an effect on the seabed.

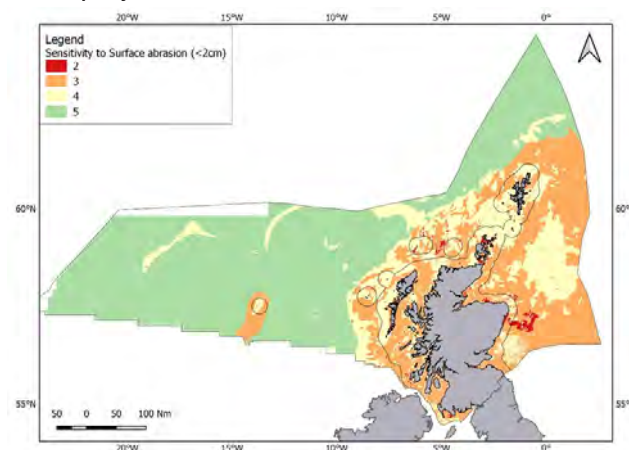
The study area of the project was Scottish waters (0-200 nm), and the species distribution maps showed high variation according to seabed habitat type e.g. the scampi or Nephrops are strongly dependent on muddy habitats while other species (e.g. haddock or whiting) (Figure 1) are more evenly distributed across habitat types in Scottish waters.

Habitat sensitivity is characterised as the resilience and resistance of the habitat to a specific human-induced pressure – in this case fishing pressure. Sensitivity of benthic habitats in Scottish waters varies (Figure 2), with deep-sea habitats being the most sensitive to fishing pressure due to the slow recovery rates of many deep-sea species.

Considering the variability of both the sensitivity of habitats and the distribution of commercial marine species, information from this project can guide managers and fishermen on where (and where not) to focus fishing effort to minimise benthic impacts in Scottish waters. The full report of this project can be found on the [Fisheries Innovation Scotland website](#).



**Figure 1.** Probability of occurrence of haddock in Scottish waters



**Figure 2.** Map of sensitivity to surface abrasion for Scottish waters (5 is the most sensitive to abrasion and 2 the least sensitive).



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# Conservation *Conversation*

This issue we focus on Natalie Askew, a zoologist turned marine mapper who has spent 15 years making policy-relevant marine evidence products, including creating the first full-coverage European seabed habitat map as part of the MESH project. Natalie led an international consortium to deliver the pilot phase of EMODnet Seabed Habitats, the European Commission's data initiative to make harmonised marine data, products and metadata freely available to users. After spending two years in Fiji using spatial data for community resource management projects, Natalie returned to JNCC and now co-leads JNCC's Marine Monitoring and Evidence team with Elly Hill and Karen Webb.



## Q Species that inspired you as a child?

From as early as I can remember I was obsessed with the great apes and their protection. I still remember seeing a picture of an ashtray made from a gorilla's hand. I met Jane Goodall several times and named all my ape teddies after her study chimpanzees. I boycotted PG Tips for years and refused to go to Colchester Zoo because at the time they had a traumatised gorilla in a tiny cage.

## Q What concerns you most about the natural world?

Big picture, that we are outgrowing our planet and killing it and all its inhabitants in the process. But it's hard to stay terrified all the time about something happening relatively slowly. On a smaller scale, I get very upset when I think about the places that have already changed forever and that my (over-abundant) children will never experience in the same way – like the turtle doves that used to be so noisy when I was growing up, that we haven't seen for the last decade or so.

## Q What do you do away from the office?

My five-year old and two-year old twin boys keep me busy. Any spare energy goes into solitary sporty things like swimming, running and yoga. In the summer months I'm partial to a snorkel in the River Nene (yes, you can see fish!) and a Kelly Kettle on the bank.

## Q Where is your favourite place?

Probably the most magical place I've ever been is the Lau group of islands in Fiji. The snorkelling was immense, surrounded by karst limestone scenery. Fiji is without a doubt the friendliest country I have ever been to.

## Q Who is your human hero in the natural world?

Gary Larson. He's done a lot to remind humans that we're not really in charge.

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

Assuming this is living dinner guests... David Attenborough and Sylvia Earle for some inspirational natural history stories, Tim Minchin could provide musical entertainment and Derren Brown could ensure everyone at least thought they had a fantastic time.

## Q Desert Island Disc?

Bohemian Rhapsody. My boys love it so I could imagine them singing it, plus it's so long and diverse that I'd get good value-for-money.

## Q Place you'd most like to visit?

With unlimited money and time, I would take a liveaboard boat to the Tuamotu archipelago in French Polynesia, to dive with incredible visibility and a whole load of sharks.

## Q What would you like to achieve in your time at JNCC?

I would like to make the people I work with (even more) happy and productive so that JNCC can keep making a difference in nature conservation.

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

A midwife – in a modern version of Call the Midwife with better bikes but without NHS cuts, and where there is still time for tea and cake.

