

Dr Becky Hitchin

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Deep-Seabed Mining Environmental Specialist

Becky has over 25 years' experience as a marine ecologist, environmental assessment scientist and a national and international policymaker. From 2016–2020, she was integral to Defra's environmental input to the International Seabed Authority's deep-seabed mining negotiations and was a member of the UK's Delegation to the ISA Council. She attended the ISA Council with the Commonwealth Secretariat (2021 – 2023). Becky was invited by the International Seabed Authority to participate on the EIA and environmental monitoring technical working group that drafted the Exploitation Regulations Standards and Guidelines, and she has also provided assessment and monitoring experience to Commonwealth countries for the development of innovative and practical national deep-seabed mining policies and practices.

Becky's deep-seabed minerals skills were developed from her ecological and policy skills working with offshore industries. She has a proven track record in creating, developing and operationalising environmental science and policy from working with regulators, contractors and academia. In 2021 she was awarded a Royal Society Science Policy Fellowship. She is recognised as an international expert on ecology and impact assessments for subtidal sandbanks and biogenic reefs. She has a track record of delivering practical consenting advice for regulators, government departments and developers, including within Marine Protected Areas.

KEY SKILLS

- Development of national and international policy, regulation, legislation, standards and guidelines
- Environmental Impact Assessment for national and international deep seabed minerals
- Development of threshold use for consent and monitoring
- Management and consenting for offshore marine developments
- Derogation and compensation procedures
- Strategic and Regional Environmental Assessment

CAREER

2021 – 23 June 2023	Commonwealth Secretariat , Deep Sea Mining Analyst
2014 – 2021	JNCC , Offshore Industries Advice Manager <i>including</i> 2020 – secondment to Defra Marine and Fisheries Communications Team 2019 – secondment to Marine Scotland Marine Conservation Team
2013 – 2014	JNCC , Monitoring Officer
2012 – 2013	JNCC , Offshore Industries Advice Officer
2007 – 2012	Kent Wildlife Trust , Marine Officer and volunteer marine ecologist
2002 – 2007	Evaluate Energy , Oil and Gas Analyst
2001 – 2002	UBS Warburg , Petrochemicals Analyst

QUALIFICATIONS

- 2000 **PhD** - University of Bristol / Natural History Museum, London
- 1995 **BSc (Hons) first class**; Marine Biology, University College of North Wales, Bangor
- Member of UK Environmental Law Association and Society of Underwater Technology
- Association of Project Managers Project Fundamentals Qualification
- Previous advisor to: Influence of man-made structures in the ecosystem Steering Group, BEIS Offshore Energy SEA Steering Group, Epifaunal representative to the National Marine Biological Association Quality Control Scheme, JNCC Offshore Wind Environmental Evidence Register Working Group
- Continued development: Masters Diploma in Coastal Zone Management, University of Ulster (2007), British Institute of International and Comparative Law course on the Law of the Sea (2021), University of Plymouth / One Ocean Hub 5-day course of deep-sea image analysis (2020)

SELECTED RECENT PROFESSIONAL EXPERIENCE

Deep Seabed Mining

Development of Commonwealth country positions at ISA / BBNJ

2020 – 2023 Environmental issues (thresholds, standards and guidelines, EIA, EMMPs, REMPs, closure, environmental assessment, environmental definitions) for countries and geographic groups. Regulatory process issues (Inspectorate and compliance, institutional matters). Lead author of publication concerning use of thresholds in deep-sea mining. Lead author of Commonwealth Secretariat position paper on the 2 year rule. Delegate for the Commonwealth Secretariat to the ISA Council and BBNJ.

Development of national deep-seabed mining regulations

2020 – 2023 Advice on EIA and environment sections of Environment Acts (Cook Is). Environmental assessment of DSM impacts (Cook Is, Kiribati, Tonga, Fiji). Development of spatial management plans for nodules and muds (Cook Is). Monitoring and inspectorate advice for development of national environment acts, deep-sea mining acts and licensing rounds (Cook Is, Kiribati). Capacity building around EIA and monitoring (Kiribati). In country stakeholder consultation as part of project DEEPEND (Cook Is)

International Seabed Authority's Mining Code

2019 – 2023 Drafting of EIA and EMMP Standards and Guidelines. Report drafting for 2019 Pretoria Standards and Guidelines workshop. Participation in REMP / MSR / taxonomy workshops and subsequent reports

Development of UK deep sea mining

2015 – 2021 Environmental assessment issues (standards and guidelines, EIA, REMPs). Co-Principal Investigator on SMARTEX (Seabed Mining And Resilience To EXperimental impact) NERC Highlight Topic £4m research project. Creation and collation of UK comments on draft collector test EIAs. Provision of benthic expertise to UKSRL on their baseline scoping study. Membership of OSPAR's technical working group on deep-sea mining. Delegate for the UK to the ISA Council.

Development of Regulations and guidance

2012 – 2023 ISA draft Exploitation Regulations, Standards and Guidelines. Cook Islands Environment Act, Deep Sea Mining Regulations, Standards and Guidelines. BEIS oil and gas decommissioning guidelines. Commonwealth Secretariat decommissioning guidelines. MMO / MCAA s126 guidance. JNCC / NE compensation guidance. UK offshore conservation objective packages. Oil and Gas UK survey / monitoring guidelines. UK quality standards for subsea image collection and analysis. Deep-sea image database standardisation guidance.

Offshore Wind Farms

Technical Lead for JNCC and Natural England advice for Hornsea 3 OWF

2019 – 2021 JNCC lead for derogation and compensation processes, advice to BEIS on sandbanks compensation processes, member of Ørsted Compensation Group for sandbanks.

2015 – 2019 Development of Natural England advice for representations and public examination. Benthic ecology and marine nature conservation responses for scoping, PEIR, EIA and HRA particularly North Norfolk Sandbanks and Saturn Reef SAC (sandbanks and *Sabellaria spinulosa* reef) and Markham's Triangle MCZ.

2014 – 2015

Technical Lead for JNCC advice on Dogger Bank OWFs (Teesside, Creyke Beck, Dogger Bank)

2012 – 2021 Benthic ecology, noise and marine nature conservation for scoping, PEIR, EIA and HRA

2012 – 2015 Development of cumulative assessment tiered approaches.

Technical lead for JNCC advice for Norfolk Boreas

2019 - 2021 Development of Natural England advice for benthic compensation schemes.

Technical lead for JNCC advice for Norfolk Vanguard

2019 – 2021 Development of Natural England advice for benthic compensation schemes.

Technical lead for JNCC advice for East Anglia 1 OWF

2016 – 2018 JNCC lead for benthic ecology for scoping, PEIR, EIA and HRA

2014 – 2016 Development of JNCC advice for relevant and written representations and public examination, including acting as an Expert Witness

Technical lead for JNCC advice for East Anglia 2 OWF

2014 – 2016 Development of JNCC benthic ecology, noise and marine nature conservation support

Technical lead for JNCC advice for Hornsea 1 OWF

2012 – 2016 JNCC lead for benthic ecology, noise and marine nature conservation support for scoping, PEIR, EIA and HRA

Technical lead for Natural England advice for Hornsea 2 OWF

2016 - 2018 Development of Natural England advice for relevant and written representations and public examination.

Erebus Floating Wind Farm

2020 – 2021 Benthic ecology, noise and marine nature conservation support

Oil and Gas

2021 – 2022 Development of Commonwealth Secretariat’s Decommissioning Toolkit for Governments

2018 – 2019 Co-Principal Investigator for ‘Evidence based approach to effect of decommissioning on MPA conservation and ecosystem services’, INSITE project lead by University of Hull

2014 - 2020 Development of UK SEAs and Offshore Energy SEAs

Technical lead for JNCC advice for Southern North Sea decommissioning

2015 – 2020 Benthic ecology for scoping, EIA and HRA consultations for gas decommissioning (over 40 platforms with accompanying pipelines and infrastructure), including marine nature conservation support and HRA for North Norfolk Sandbanks and Saturn Reef SAC and Haisborough Hammond and Winterton SAC.

2015 – 2020 Development of decommissioning advice in NNSSR, facilitating operator and regulator group, work with BEIS to create and develop decommissioning advice.

2015 – 2020 Development of trade-offs / Bayesian Belief Network ecosystem modelling for assessment of ecosystem services during decommissioning

Technical lead for JNCC advice on North Sea construction and operation

2012 – 2021 EIA / HRA for oil and gas development in Dogger Bank SAC, East of Gannet and Montrose Fields MCZ and West of Shetland SAC / SCIs. Falkland Islands oil development (Rockhopper) and ship to ship transfer methods. Responses to BEIS on over 200 Environmental Statements and over 1000 EIA Justifications.

Marine Aggregates

2014 – 2020 JNCC advice on Licence Applications in Southern North Sea and Severn Estuary, especially those in sandbanks

2014 – 2020 Benthic ecology and marine nature conservation support for aggregates applications in NNSSR SAC and in Dogger Bank SAC

2014 – 2018 JNCC lead on development of Regional Seabed Monitoring Plans and OneBenthic

PUBLICATION RECORD

Selected recent publications:

Hitchin, B, S Smith, S, K Kröger, DOB Jones, A Jaekel, N Mestre, J Ardrón E Escobar, J Van Der Grient and T Amaro. 2023. Thresholds in Deep-seabed Mining: A Primer for Their Development. *Marine Policy* 149.

Hitchin, B, A Swaddling, J Ardrón, C Nyapi and D Wilde. 2021. Triggering change: the next two years of seabed mining regulation development. Commonwealth Secretariat Briefing Note. 11pp.

Hitchin B, J Turner and E Verling. 2015. Epibiota remote monitoring from digital imagery: Operational guidelines. NMBAQC and JNCC.

Howell KL, Davies JS, Allcock AL, Braga-Henriques A, Buhl-Mortensen P, Carreiro-Silva M, **Hitchin, B**, et al. 2019. A framework for the development of a global standardised marine taxon reference image database (SMarTaR-ID) to support image-based analyses. *PLoS ONE* 14(12): e0218904.

O'Brien, SH, H Baker, S Canning, K Hall, **B Hitchin** and S Mendes. 2021. Review of priority evidence needs around the impact of offshore wind development on key receptors and research underway. A report for the Offshore Wind Evidence and Change Programme Steering Group. No. OW001. JNCC Report No. 675, JNCC, Peterborough, ISSN 0963-8091.

Reach, IS, M Kyle-Henney, **B Hitchin** et al. 2023. Seabed Infrastructure in Marine Protected Areas with Designated Subtidal Sandbanks. Natural England Research Report.

Turner J, **B Hitchin** and H van Rein 2016 Epibiota remote monitoring from digital imagery: Interpretation guidelines. NMBAQC and JNCC.

Selected papers and publication contributions:

JNCC. 2017. Supplementary Advice on Conservation Objectives for North Norfolk Sandbanks and Saturn Reef Special Area of Conservation December 2017

JNCC. 2020. Statements on conservation benefits, condition & conservation measures for North Norfolk Sandbanks and Saturn Reef Special Area of Conservation December 2020

Noble-James, T, A Jesus and F McBreen. 2018. Monitoring guidance for marine benthic habitats (Revised 2018). JNCC Report No. 598. JNCC, Peterborough.

Pearce, B and J Kimber. 2020. The Status of *Sabellaria spinulosa* Reef off the Moray Firth and Aberdeenshire Coasts and Guidance for Conservation of the Species off the Scottish East Coast. *Scottish Marine and Freshwater Science* Vol 11 No 17

Pidduck, E, R Jones, P Daghish, A Farley, N Morley, A Page, A and H Soubies. 2017. Identifying the possible impacts of rock dump from oil and gas decommissioning on Annex I mobile sandbanks. JNCC Report No. 603. JNCC, Peterborough.

Selected PhD publications:

Hitchin R and MJ Benton. 1997. Congruence between Parsimony and Stratigraphy: Comparisons of Three Indices. *Paleobiology* 1997(1): 20-32.

Benton, MJ, **R Hitchin** and MA Wills. 1999. Assessing Congruence Between Cladistic and Stratigraphic Data. *Systematic Biology* 48(3) 581-596

Benton, MJ, MA Wills and **R Hitchin**. 2000. Quality of the fossil record through time. *Nature* 403(6769):534

Benton, MJ and **R Hitchin**. 1997. Congruence between phylogenetic and stratigraphic data on the history of life. *Proceedings of The Royal Society of London* 264:885-890