

# Dr Silvana N.R. Birchenough

## Curriculum Vitae

### Personal Details

Name: Silvana Noemi Raquel Birchenough

Nationality: British

Martial Status: Single

Address: University of Khorfakkan, Sharjah, UAE

Address: University of Khorfakkan, Sharjah, UAE



### Academic Qualifications

- **September 1999- December 2003. PhD Marine Benthic ecology.** Thesis title: “Assessing recovery of macrobenthic communities following the cessation of sewage sludge disposal”. University of Newcastle Upon Tyne, United Kingdom.
- **March 1994-December 1998. BSc (hons) Marine biology and Fisheries.** Dissertation title “Quantification of cadmium extractions with the Dithizone method in marine sediments and clams”. Universidad Arturo Prat, Iquique, Chile.
- **August 1993.** Pine Island High School. Graduated with honours from Secondary education. Pine Island High School, Minnesota, U.S.A.

### Employment History

- Associate Professor and Researcher at University of Khorfakkan and SMSRC, (Based at SMSRC, since 21<sup>st</sup> January 2026- current).
- July 2025-December 2025. Associate Scientific Advisor at Environment Consulting and research (EnvCR Ltd). London, United Kingdom.
- Principal Scientist at Environmental Resources Management (ERM), Norwich office (August 2023-September 2025).
- Group Manager (GM) of Advice and Assessment at the Centre for Environment, Fisheries and Aquaculture Science (Cefas). Lowestoft, United Kingdom (2017- 2020).

- Caribbean Science Lead at the Centre for Environment, Fisheries and Aquaculture Science (Cefas). Lowestoft, United Kingdom (January 2017 to September 2020).
- Principal Benthic Ecologist at the Centre for Environment, Fisheries and Aquaculture Science (Cefas). Lowestoft, United Kingdom (September 2009- December 2016).
- July 2007-May 2008 Maternity break.
- Principal Benthic Ecologist at the Centre for Environment, Fisheries and Aquaculture Science (Cefas) Burnham on Crouch, Essex United Kingdom (May 2003-June 2007).

## Professional Membership & Activities

- Chair of ICES Diversity, Equality and Inclusivity (DEI) 2023-2025. This role works directly with the ICES Secretariat to support and assist expert groups on DEI needs (e.g. gender, age, career stages, funding, etc.).
- Chair of ICES Science, Publications, and Impact Group (SIGP) 2023-2025. This role helps the ICES publication group to determine the science needs and compilation of key resolutions to support science products (e.g. guidelines, protocols, and methods).
- International representation across scientific Expert Groups:
  - International Council for Exploraiton of the Seas (ICES) National UK delegate and chair-invited member at the Benthic Ecology Working Group (BEWG) since 2000-present.
    - Working Group Marine Benthic and Renewable Energy Developments (WGMRED) since 2008-present.
    - Cumulative Effects Assessments Working Group (CEAWG) since 2000 to present.
- Expert Panel advisor of the Research Council of Norway (under the “climate and energy” portfolio) since 2023. My role is to review and advise on the next tranche of renewable energy projects with a dedicated synthesis of applied science to support industry needs.
- Chair and co-chair of the EU Sustainable Blue Economy Partnerships (SBEP), helping to support renewable energy, marine spatial planning projects since 2023. I have produced written reports, verbal presentations and direct recommendations to the EU, advisory groups and research council of France, Italy and Romania.
- ICES Benthic Habitats Advice Drafting Group (ADGBENTH) meeting, Contributor expert. Copenhagen (DK), 10-13 August 2015.
- ICES Workshop on guidance for the review of MSFD decision descriptor 6 – seafloor integrity II (WKGMSFDD6-I) Vice-chair. Copenhagen, Denmark, 16-19 February 2015.

## Teaching Experience

I am a marine ecologist with many years of experience teaching marine ecology, methods, sampling methods, conservation ecology, statistical design, marine invertebrates and animal behaviour (University of Newcastle upon tyne, UK and at the Millport Marine station, Scotland during field courses).

I have also delivered an Environmental Impact assessment Course (EIA) for the masters students based at the Renewable Energy at the University of Hull's Energy and Environment Institute, UK.

I have also delivered a Marine Protected Areas and conservation classes at the University of Havana, Cuba. Invited by the UK Ambassador and the Foreign and Commonwealth Office (FCDO).

### **STUDENT SUPERVISION**

I am/had co-supervised for the following students:

- Haya AlQuood, Doctoral degree in Marine Science based at SMSRC and in collaboration with the Scottish Association for Marine Science (SAMS) for the course Year: 2026/27 Start Date: 01/10/2026 End Date: 30/09/2030. Topic: Thermal Stress and Early Life Stage Performance in Emerging Aquaculture Species of the Arabian Gulf.
- Rebecca Bridge Doctoral degree, student registered at the University of Southampton. Supervisors Drs Martina Stiasny, Silvana Birchenough (ongoing). Topic: Understanding the effects of multiple stressors on marine fish (submission August 2026).
- Rebecca Hunter Master's degree, student registered at the University of Southampton. Supervisors Drs Martina Stiasny, Silvana Birchenough (completed in May 2022). Topic: Risk based assessment of coral reef habitats in UKOTs: Pitcairn and BIOT.
- Mr Daniel Montgomery, doctoral student registered at Exeter University, Supervisors Drs Rod Wilson, Steven Simpson (Exeter) and Georg Engelhard (Cefas) (completed in December 2020). Topic: the effects of the deadly trio on marine fish.
- Alex Sullivan Master's degree, student registered at the University of East Anglia (UEA). Supervisors Drs Ella Howes (Cefas), Tim Jickells (UEA) and Silvana Birchenough (Cefas) (completed in May 2015). Topic: the effects of ocean acidification on UK invasive species.
- Mr Steven Newstead, doctoral student registered at Bangor University. Supervisors Drs Shelagh Malang and Ian McCarty (completed in 2019). Topic: Understanding the physiology, ecology and behaviour of the common cockle *Cerastoderma edule*.
- Mr Edward Willsted, doctoral student registered at Cranfield University, Supervisors Drs Andrew Gill and Simon Jude (completed in March 2019). Topic: Assessing cumulative effects from offshore windfarms.
- Mrs. Valeska San Martin- Chile Mussels project (completed in March 2019) Topic: understanding the effects of multiple stressors on marine species. Universidad de Concepcion, Chile.
- Miss Irene Malonda Herraes, doctoral student registered at Universidad Autonoma de Madrid. Supervisors Dr Guillermo San Martin. Title: "Polychates as tools for marine environmental quality monitoring in Cartagena harbour" (completed in 2006).

### **Conferences & Workshops**

- Alexander, K., Akimova, A., Nic Aonghusa, C., Schreiber, M.A., Arjona, Y., Arrigan, M., Balestri, E., Beermann, J., Belgrano, A., Bicknell, A. and Birchenough, S., *et al.* (2025). Workshop to compile

evidence on the impacts of offshore renewable energy on fisheries and marine ecosystems (WKCMPPORE). ICES advice to the EU Commission. Published in April 2025.

- Invited talks: i) the importance of long-term time series and ii) the challenges of decommissioning for sedimentary habitats and man-made structures. Organised by the EU "LIFE Marha" project. Marine Sedimentary Habitats Seminar for the European Atlantic Biogeographic region. 12-13th March 2025 Lille, France.
- Invited Keynote presentation entitled "Horizon scan of issues paper with an overview of likely impacts that could affect marine and coastal biodiversity conservation". At the 6th World Conference on Marine Biodiversity is organised by Universiti Sains Malaysia from 2nd to 5th July 2023 in Penang, Malaysia.
- Invited talk at the IMO Science Day 2021 entitled "Experience with comparative risk assessment for decommissioning of platforms and the disposal of vessels" hosted by the International Maritime Organization (IMO) in London and online.
- Birchenough, SNR., Soetaert, K. and Herman, PMJ (2021). Physico-chemical and commercial shellfish species data to illustrate potential vulnerability to ocean acidification. Integrated data products created under the European Marine Observation Data Network (EMODnet) Biology project.
- (EASME/EMFF/2017/1.3.1.2/02/SI2.789013), funded by the by the European Union under Regulation (EU) No 508/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund.
- Invited presentation at the UK/U.S. Lessons learnt and exchanges with Shellfish industries- invited Speaker. "Understanding the effects of ocean acidification on commercial species". 29th June 2016 at Friends House, London.
- Invited speaker to present work entitled: "la Acidification de los Océanos: estudios de organismos a ecosistemas". Universidad Santo Tomas, Santiago, Chile. 2014 (Chile).
- Co-chair and presenter "Structure and functions: What is available" at the ICES WKGMSFDD6-II: ICES workshop on guidance for the review of MSFD decision descriptor 6 – seafloor integrity II. Copenhagen 16-19 February 2015.
- Invited speaker, "Ocean acidification and commercial species". Workshop 2/6. Joint Brazilian Ocean Acidification Research and Surface Ocean-Lower Atmosphere Study (SOLAS) Workshop: biogeochemical-physical interactions and feedback between the ocean and atmosphere (March 2015).
- Invited speaker, "Scaling-up the effects of ocean acidification: moving from single species to community assessments and wider ecological implications. THE FUTURE OF THE IRISH SEA: STRATEGIES FOR ENVIRONMENTAL AND ECONOMIC SUSTAINABILITY. 4Sea, March 12-13th, 2013 at the Welsh Government Office in Llandudno Junction, North Wales
- Invited key-note speaker: A-trait based approach to predict responses of marine biota to climate change. 3rd Conference on Conservation Physiology of Marine Fishes at Olhão, Portugal 28-30th October 2013. Funded by COST Science Foundation.
- Addressing benthic function, and biological traits on marine fishes. Conference on Conservation Physiology of Marine Fishes, 20-23rd May in Montpellier, France 2015.

- Invited keynote speaker: Scaling –up the effects of Ocean acidification: moving from single species to community assessments and wider ecological implications 4Sea- The Irish of the Irish Sea: Strategies for Environmental and Economic Sustainability, Bangor 12-13th March 2013, funded by UKOA programme.
- Invited speaker at Defra Seminar: Understanding the effects of ocean acidification on the marine environment (26th February 2013, funded by NERC/Defra/DECC UKOA)
- Scaling up ocean acidification effects to understand benthic function (Annual benthic meeting 25-27th June 2013, Plymouth Marine Laboratory)
- Lead scientist of the International Working Group on the Ecosystem Level Impacts of Ocean acidification, Discussion Session 5: What approaches are available to conduct manipulative experiments on whole communities and assemblages? at MBARI, Monterey USA.
- Invited speaker. Title “What approaches can we adopt to assess benthic sensitivity to ocean acidification workshop” (UK benthic annual meeting 11-13 July 2012, St Andrews)
- Keynote entitled: “Planificación de los múltiples usos de la zona costera del Reino Unido” at Taller OECD meeting, Climate change and sustainability. 23rd June 2017 in Tongoy, Chile.
- Keynote entitled: “Understanding seafloor ecosystems: overview of effects, challenges and applied science.” BESAG, Ecology and climate change September Charles Darwin house, 15th September London.
- Keynote entitled: “La acidificación de los océanos: una perspectiva de especies comerciales, monitoreo y nuevos desafíos para la ciencia” at I Simposio Latino-americano de Acidificación del Océano, red LAOCA, 24-26 de Octubre, 2017, Buenos Aires Argentina.
- Keynote and panellist, presentation entitled: “Benthic changes resulting from climate change and ocean acidification “UN event “Ocean Science and the United Nations Decade of Ocean Science for Sustainable Development”, this was the twentieth meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea, New York, (10 to 14 June 2019). The full programme and televised discussions are available at: [https://www.un.org/depts/los/consultative\\_process/ICP20PanellistChart.pdf](https://www.un.org/depts/los/consultative_process/ICP20PanellistChart.pdf)
- Keynote entitled: “Fisheries and the marine environment” Special Session at CIESM- 7–11th October in Cascais, Portugal.

## Research Interests

- Blue Economy (benefits, challenges and opportunities)
- Marine ecology, functions and services with wider repercussions for biodiversity.
- Multi-stressors experiment on commercial species and species of conservation importance.
- Marine monitoring methods and innovative solutions (e.g. eDNA).
- Marine Spatial Planning to support management and advice of marine resources.
- Marine Protected Areas and Effective Area-Based Conservation Measures (OECMs).
- Uses of Nature Inclusive Designs (NIDs).
- Offshore Marine renewable Energy (ORE) and the uses of Man-made structures (MMS).

## Research Publications (Books, Journals & Conferences papers)

1. Birchenough, S.N.R., Oug, E., Beermann, J., Desroy, N., Blomqvist, M., Guerin, L., Janas, U., Labrune, c., Magni, P., Reiss, H., Dannheim., Trannum, H., Donnay, A., Kröncke, I., Degraer, S., Craeymeersch, J. (2026). The importance of long-time series of benthic data for science and management. *ICES Journal of Marine Science*. <https://doi.org/10.1093/icesjms/fsag015>
2. Smolinski, S., Isaksson, N., , Birchenough, S.N.R., Browman, H.I. (2026). One hundred years of topics and citations in *ICES Journal of Marine Science*. *ICES Journal of Marine Science* , 2026, Vol. 83, Issue 5, fsag067 <https://doi.org/10.1093/icesjms/fsag067>
3. Hall, A. E., Stamp, T., Davies, P., Woillez, M., Laurans, M., Gonse, M., Couturier, L. I. E., Blanpain, O., Frangoudes, K., Quillérou, E., Graner, E., Reubens, J., Muñiz, C., Hawkes, L. A., Witt, M. J., Horton, T. W., Hooper, T., Pender, R., Quemeneur, E., Birchenough, S.N.R. Sheehan, E. V. (2025). A collaborative approach to marine species tracking: Insights from the Fish Intel Acoustic Telemetry Network. *Ecological Solutions and Evidence*, 6, e70148. <https://doi.org/10.1002/2688-8319.70148>
4. Dannheim, J., Beermann, J., Coolen, J., Vanaverbeke, J., Degraer, S., Birchenough S.N.R., Garcia, C., Lacroix, G., Fiorentino, D., Lindeboom, H., Krone, R., Pehlke, H., Braeckman, U., Brey, T. (2025). Offshore wind turbines constitute benthic secondary production hotspots on and around constructions. *Journal of Environmental Management*. <https://doi.org/10.1016/j.jenvman.2025.126922>
5. Dannheim, J., Kloss, P., Vanaverbeke, J., Mavraki, N., Zupan, M., Spielmann, V., Degraer, S., Birchenough, S.N., Janas, U., Sheehan, E. and Teschke, K., (2025). Biodiversity Information of benthic Species at ARTificial structures–BISAR. *Scientific Data*, 12(1), p.604. <https://doi.org/10.1038/s41597-025-04920-1>
6. Papadopoulou, N., Smith, C.J., Franco, A., Elliott, M., Borja, A., Andersen, J.H., Amorim, E., Atkins, J.P., Barnard, S., Berg, T. and Birchenough, S.N., (2025). ‘Horses for courses’—an interrogation of tools for marine ecosystem-based management. *Frontiers in Marine Science*, 12, p.1426971. doi: 10.3389/fmars.2025.1426971
7. González-Pola, C., Mills, K.E., Beszczynska-Möller, A., Bresnan, E. and Birchenough, S.N.R. (2024). Decadal (2010–2019) variability in the marine ecosystems of the North Atlantic. *ICES Journal of Marine Science*, 81(3), pp.505-511. <https://doi.org/10.1093/icesjms/fsae029>
8. Wood, L.E., Clarke, S.A., Murphy, D., Davison, P.I., Thrush, M.A., Bass, D., Birchenough, S.N.R., Peeler, E.J. and Tidbury, H.J. (2024). Monitoring of non-indigenous marine species for legislative and policy goals in the UK. *Marine Policy*, 162, p.106027.
9. Birchenough, S.N.R. (2024). Removal of Physical Resources From Ecosystems: Navigation and Aggregate Dredging and Disposal. Book Chapter for *Treatise on Estuarine and Coastal Science*, 2nd Edition.
10. Knights, A.M., Lemasson, A.J., Firth, L.B., Beaumont, N., Birchenough, S.N., Claisse, J., Coolen, J.W., Copping, A., De Dominicis, M., Degraer, S. and Elliott, M., (2024). To what extent can decommissioning options for marine artificial structures move us toward environmental targets? *Journal of Environmental Management*, 350, p.119644.
11. Watson, S.M., McLean, D.L., Balcom, B.J., Birchenough, S.N., Brand, A.M., Camprasse, E.C., Claisse, J.T., Coolen, J.W., Cresswell, T., Fokkema, B. and Gourvenec, S., (2023). Offshore decommissioning horizon scan: Research priorities to support decision-making activities for oil and gas infrastructure. *Science of the Total Environment*, 878, p.163015.
12. Katsanevakis, S., Olenin, S., Puntilla-Dodd, R., Rilov, G., Stæhr, P.A., Teixeira, H., Tsirintanis, K., Birchenough, S.N., Jakobsen, H.H., Knudsen, S.W. and Lanzen, A. (2023). Marine invasive alien species in Europe: 9 years after the IAS Regulation. *Front. Mar. Sci*, 10, p.1271755.
13. Birchenough, S.N.R., 2023. Knowledge-based science in support of the blue growth ambition for smallisland developing states. *ICES Journal of Marine Science*, 80(8), pp.2166-2170. 12. Herbert-Read, J.E., Thornton, A., Amon, D.J., Birchenough, S.N., Côté, I.M., Dias, M.P., Godley, B.J., Keith, S.A., McKinley, E., Peck, L.S. and

- Calado, R. (2022). A global horizon scan of issues impacting marine and coastal biodiversity conservation. *Nature Ecology & Evolution*, 6(9), pp.1262-1270.
14. 13. Kohler, P., Monsanto, M., Binetti, U., Silburn, B., Russell, J., Corbin, C., Lyons, B., Birchenough, S.N.R. and Maes, T. (2022). A Blue Future: Developing a national marine litter action plan in SIDS – lessons learnt in Belize. *ICES Journal of Marine Science*.
  15. 14. Hutchinson, Z and Birchenough, S.N.R. (2020) Shellfish evaluations and Offshore Windfarms. NOAA Synthesis of Science.
  16. 15. Birchenough, S.N.R, Methratta, E., Hogan, F. and Slayton, I. (2020) Assessing Cumulative effects across Offshore Windfarms. NOAA Synthesis of Science.
  17. 16. Findlay, H., Birchenough, S.N.R, Stiasny, M., Artioli, Y. and Hardman, S. (2023) MCCIP Ocean acidification report card- synthesis of evidence.
  18. 17. Birchenough, S.N.R, Dupont, S., Stiasny, M., Artioli, Y., et al. (2023) Biological Effects from the ocean acidification perspective. OSPAR Quality Status Report 2023.
  19. 18. Coolen, J.W.P., Vanaverbeke, J., Dannheim, J., Garcia, C., Birchenough, S.N.R., et al., (2022). Generalized changes of benthic communities after construction of wind farms in the southern North Sea. *Journal of Environmental Management* 315, 115173
  20. 19. Lincoln, S., Andrews, B., Birchenough, S.N.R., Chowdhury, P., Engelhard, G.H. et al.(2022) Marine litter and climate change: Inextricably connected threats to the world's oceans. *Science of The Total Environment*, 155709
  21. 20. Lean, D.L., L.C. Ferreira, J.A. Benthuyesen, K.J. Miller, M-L. Schläppy, M.J. Ajemian, O. Berry, S.N. R. Birchenough, T. Bond, F. Boschetti, A.S. Bull, J.T. Claisse, S.A. Condie, P. Consoli, J.W.P. Coolen, M. Elliott, I.S. Fortune, A.M. Fowler, B.M. Gillanders, H.B. Harrison, K.M. Hart, L-A. Henry, C.L. Hewitt, N. Hicks, K. Hock, K. Hyder, M. Love, P.I. Macreadie, R.J. Miller, W.A. Montevecchi, M.M. Nishimoto, H.M. Page, D.M. Paterson, C.B. Pattiaratchi, G.T. Pecl, J.S. Porter, D.B. Reeves, C. Riginos, S. Rouse, D.J.F. Russell, C.D.H. Sherman, J. Teilmann, V.L.G. Todd, E.A. Trembl, D.H. Williamson, M. Thums (2022). Influence of offshore oil and gas structures on seascape ecological connectivity. *Global Change Biology* 28 (11), 3515-3536
  22. 21. Elliott, M., Birchenough, S.N.R. (2022). Man-made marine structures-Agents of marine environmental change or just other bits of the hard stuff? *Marine Pollution Bulletin* (176):113468, doi: 10.1016/j.marpolbul.2022.113468
  23. 22. Lonsdale, J.-A.; Gill, A.B.; Alliji, K.; Birchenough, S.N.R.; Blake, S.; Buckley, H.; Clarke, C.; Clarke, S.; Edmonds, N.; Fonseca, L.; Goodsir, F.; Griffith, A.; Judd, A.; Mulholland, R.; Perry, J.; Randall, K.; Wood, D. (2022). It Is a Balancing Act: The Interface of Scientific Evidence and Policy in Support of Effective Marine Environmental Management. *Sustainability*, 14, 1650. <https://doi.org/10.3390/su14031650>
  24. 23. D.W. Montgomery, Kwan, G.T., Davison, W.G, Finlay, J., Berry, A., Simpson, S.D., Engelhard, G.H., S.N.R. Birchenough, Tresguerres, M., Wilson, R.W. (2022). Rapid blood acid-base regulation by European sea bass (*Dicentrarchus labrax*) in response to sudden exposure to high environmental CO<sub>2</sub>. *J. Exp. Biol.* 10.1242/jeb.242735
  25. 24. Townhill, B.L., Reppas-Chrysovitsinos, E., Sührling, R. Halsall, C.J., Mengo, E., Sanders, T., Dahnke, K., Crabeck, O., Kaiser, J., Birchenough, S.N.R. (2021). Pollution in the Arctic Ocean: An overview of multiple pressures and implications for ecosystem services. *Ambio* 51, 471–483, <https://doi.org/10.1007/s13280-021-01657-0>
  26. 25. Anderson, E., Bartolino, V., Birchenough, S.N.R., Browman, H.; Gibbs, M., Hidalgo, M., Prellezo, R. Yates, K. (2021) Sidney Holt’s legacy lives on in fisheries science. *ICES Journal of Marine Science*, fsab091, <https://doi.org/10.1093/icesjms/fsab091>
  27. 26. Montgomery, D.W., Simpson, S.D., Davison, W, Goodrich, H.R., Engelhard, G.H., Birchenough, S.N.R., Wilson, R.W. (2021). Temperature and O<sub>2</sub>, but not CO<sub>2</sub>, interact to affect aerobic performance of European sea bass (*Dicentrarchus labrax*). doi: <https://doi.org/10.1101/2021.03.12.435078>
  28. 27. DA COSTA, M.R. AND BIRCHENOUGH, S.N.R (2020) RAISING AWARENESS OF CLIMATE CHANGE AND OCEAN ACIDIFICATION EFFECTS ON YOUNG CHILDREN’S DEVELOPMENT. [HTTPS://ARNEC.NET/STATIC/UPLOADS/WEB\\_ARNEC%20NEWS%20FLASH%20DECEMBER%202020\\_FINAL%20VERSION%20FOR%20RELEASE\\_DEC30\\_RFS.PDF](https://ARNEC.NET/STATIC/UPLOADS/WEB_ARNEC%20NEWS%20FLASH%20DECEMBER%202020_FINAL%20VERSION%20FOR%20RELEASE_DEC30_RFS.PDF)

29. 28. Susana Lincoln, Benjamin Cowburn, Ella Howes, Silvana Birchenough, John Pinnegar, Stephen Dye, Paul Buckley, Charles Sheppard, Colette Wabnitz, Leo Dutra, Jennifer Graham, Simeon Archer-Rand, Emily Hardman, Georg H. Engelhard, and Bryony L. Townhill (2021). Climate change impacts on the coral reefs of the Pitcairn Islands (equatorial South Pacific): overview and considerations for MPA management
30. 29. Townhill, B.L., Artioli, Y., Pinnegar, J.K. and Birchenough, S.N.R. (2022). Exposure of commercially exploited shellfish to changing pH levels: how to scale-up experimental evidence to regional impacts. *ICES Journal of Marine Science*, 79(9), pp.2362-2372.
31. 30. Birchenough, S.N. and Degraer, S. (2020). Science in support of ecologically sound decommissioning strategies for offshore man-made structures: taking stock of current knowledge and considering future challenges. *ICES Journal of Marine Science*, 77(3), pp.1075-1078.
32. Clare, D.S., Robinson, L.A., Birchenough S.N.R. (2020) A temperature-dependent relationship between benthic invertebrate biomass and trawling pressure, *ICES Journal of Marine Science*, fsaa191, <https://doi.org/10.1093/icesjms/fsaa191>
33. Lear, D., Herman, P., Van Hoey, G., Schepers, L., Tonné, N., Lipizer, M., Birchenough S.N.R. (2020). Supporting the essential-Recommendations for the development of accessible and interoperable marine biological data products. *Marine Policy* 117, 103958. <https://doi.org/10.1016/j.marpol.2020.103958>
33. Dannheim, J., Bergström, L., Birchenough, S.N., Brzana, R., Boon, A.R., Coolen, J.W., Dauvin, J.C., De Mesel, I., Derweduwen, J., Gill, A.B. and Hutchison, Z.L. (2020). Benthic effects of offshore renewables: identification of knowledge gaps and urgently needed research. *ICES Journal of Marine Science*, 77(3), pp.1092-1108.
34. Coolen, J.W.P., Boon, A.R., Crooijmans, R., Van Pelt, H., Kleissen, F., Gerla, D., Birchenough S.N.R. (2020). Marine stepping-stones: Connectivity of *Mytilus edulis* populations between offshore energy installations. *Molecular ecology* 29 (4), 686-703.
35. Greathead, C., P. Magni, J. Vanaverbeke, L. Buhl-Mortensen, U. Janas, M. Blomqvist, J. Craeymeersch, J. Dannheim, A. Darr, S. Degraer, N. Desroy, A. Donnay, Y. Griffiths, I. Guala, L. Guerin, H. Hinchén, C. Labruné, H. Reiss, G. Van Hoey, S.N.R. Birchenough (2020). A Generic Framework to Assess the Representation and Protection of Benthic Ecosystems in European Marine Protected Areas. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 30:1253-1275. Doi: 10.1002/aqc.3401.
36. Reiss, H., S. Birchenough, A. Borja, L. Buhl-Mortensen, J. Craeymeersch, J. Dannheim, A. Darr, I. Galparsoro, M. Gogina, H. Neumann, J. Populus, A.M. Rengstorf, M. Valle, G. Van Hoey, M.L. Zettler and S. Degraer (2015). Benthos distribution modelling and its relevance for marine ecosystem management. *ICES Journal of Marine Science*, 72: 297–315. doi:10.1093/icesjms/fsu107
37. Birchenough, S.N.R.\*, H. Reiss\*, S. Degraer\*, N. Mieszkowska, A. Borja, L. Buhl-Mortensen, U. Braeckman, J. Craeymeersch, I. De Mesel, F. Kerckhof, I. Kröncke, S. Parra, M. Rabaut, A. Schröder, C. Van Colen, G. Van Hoey, M. Vincx and K. Wätjen (2015). Climate change and marine benthos: a review of existing research and future directions in the North Atlantic. *WIREs Climate Change* 2015. doi: 10.1002/wcc.330. \*: shared first authorship.
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Further publication details are available in Research Gate: Silvana NR Birchenough (researchgate.net) and google scholar: Silvana Birchenough - Google Scholar

## Peer Review Activities

- Associate Editor of the ICES Journal of Marine Science (JMS) (since 2015-present). I handle scientific papers across the areas of ecology, Marine Protected Areas (MPAs), climate change, ocean acidification, habitats, invasive species, decommissioning of man-made structures and offshore windfarms.

- ICES JMS active member of the mentor-mentee programme in its second year, helping to shape the next cohort of scientific editors.
- Reviewer for Frontiers in Marine Science.

## Research, Teaching Grants

### Commercial in confidence projects with industry:

**SSEN Spittal Peterhead MEA (September 2023 to January 2024) (Confidential).** This assessment was to support of a Marine Licence Application (MLA) to the Marine Directorate Licensing Operations Team (MD-LOT) by Scottish and Southern Electricity Networks Transmission (SSENT) for the installation and operation of a 525 kV High Voltage Direct Current (HVDC) transmission cable system between Spittal and Peterhead. I conducted the technical delivery of the marine mammals, ornithology, fish and shellfish chapters. I also authored the Habitats Regulatory Appraisal (HRA). The work was presented to the client and the regulators (Nature Scotland and JNCC). The work was praised and well received by the client and the regulators.

**Havbredey Offshore Windfarm Environmental Impact Assessment Report- EIAR (October 2023) (Confidential).** The EIAR was compiled with the details of an EIA methodology. The aim was to demonstrate the significance of the effects anticipated from the Offshore Project, considering both individual and cumulative impacts in relation to other relevant plans, projects, and activities in the proposed plans. My work was to Tech Qc the compilation of the briefing packs to support the stakeholder consultations for benthic ecology, Fish and shellfish and marine mammals.

**Baltyk II&III ESDD – offshore wind farm – Poland (Confidential).** I have been supporting and checking the technical documents as independent consultant to support Equinor needs. The work has to be based on the standards in accordance with the International Finance Cooperation (IFC) PS5 and to the European Bank for Reconstruction and Development (EBRD) PR 5 (livelihood restoration plans) IFC PS 6 / EBRD PR 6 (Biodiversity action plans).

**Baltica 2 Biodiversity Action Plan confidential- Poland (Confidential).** The project Baltica 2 is one of the largest offshore renewable projects. I have been advising PGE and Orsted on the key ecological receptors that will have to be monitoring onshore and offshore. I drafted the Biodiversity Action Plan (BAP) for this project, considering all stages of the project (e.g. construction, operation and decommissioning). The work conducted was compliant with IFC PS 6 / EBRD PR 6 standards to ensure biodiversity net gain (BNG) and no net loss (NNL). I presented the results from the BAP to the stakeholders during an open consultation event, organised in Gdansk, Poland on the 14-15th April. The stakeholder consultation helped to identify clear gaps and ongoing projects that could support the BAP.

**Project Erik (Confidential).** I have been assessing the Environmental and Social Due Diligence (ESDD) resulting from the ORE Hornsea 3 for Ørsted and Iberdrola. The work needed to draft plans to support the environmental aspects, and the livelihood restoration plans for the fisheries sector. The intention will be to work with the fisheries sector to develop new opportunities (e.g. nature restoration, monitoring or hatcheries).

**Project Elizabeth (Confidential).** I have been assessing the ESDD resulting from the nuclear power plant development for Sizewell C for EDF. The work is to draft plans to support the environmental aspects, and the livelihood restoration and compensations plans for the fisheries sector.

**Research and advice:**

**2020-2024 EU Future Mares.** This project examined the relationships between climate change, marine biodiversity and ecosystem services. The activities were designed around two Nature-based Solutions (NBS) and one Nature-inclusive Harvesting (NIH). My role was to develop a case study in Belize to assess fisheries opportunities for conch and lobster. This work included threats and challenges. I worked with colleagues at the national co-operative, Fisheries Department and CZMAI. A pestle approach was applied to support this case study. The work was to develop strategies. A summary report was produced entitled: "Sustainable Seafood Harvesting in the Belize EEZ". Contract value: £100,000.

**2022-2026 GES4SEAS.** This project combined expertise from relevant sectors, scientists and stakeholders. The aim is to develop an innovative, compliant, and flexible toolbox in the context of adaptive Ecosystem-Based Management. Stakeholders and key competent authorities were integrated in a Practitioner Advisory Board to co-create and validate the toolbox. A total of 11 Learning Sites were be used to test, validate, demonstrate and upscale the toolbox in four European regional seas (Atlantic, Mediterranean, Baltic and Black) as well as in the Caribbean Sea. My role was to apply the MSFD indicators for biodiversity needs in Belize. Contract value: £ 350,000

**2022-2026 Marine Sabres.** This is a research project that brings together 21 research partners to restore marine biodiversity and support a sustainable blue economy. The intention was to balance by increasing the uptake of ecosystem-based management in Europe. The adopted strategy to make ecosystem-based management more achievable and implementable, is based on the study and applications of marine social-ecological systems. Marine SABRES is therefore co-developing and testing a simple socio-ecological system in collaboration with local people in three European marine regions: the Arctic Northeast Atlantic, the Tuscan Archipelago, and Macaronesia. My role was to integrate the ecological, legislation and future challenges to generate realistic biodiversity scenarios. Contract value: £ 350,000

**2017-to 2023 EU Emodnet Biology.** Cefas was a project partner of this project. I led the Cefas' contribution under work package 2 (provision of long-term benthic data sets), contribution to work package 4 "production of outputs" and work package 5 "dissemination of outputs". The work created awareness of time-series to document changes in pH and likely effects on commercial species. The work was published in GitHub: (<https://github.com/EMODnet/EMODnet-Biology-Shellfish-Ocean-Acidification>). **Total value: £50,000.**

**2016-to 2022 Assessing the vulnerability of commercial species to ocean acidification in the Caribbean (Commonwealth Marine Economies Programme-CME.** The Caribbean SIDs often suffer from a suite of stressors. Understanding ocean acidification (OA) effects could aggravate the current global warming effects on coral reefs, potentially damaging reef conditions with ecological habitat modifications (e.g. changes in coral reefs may result in seaweed dominated habitats). The need to study these pH changes, helped to place into context specie's vulnerability and adaptive capacity (e.g. conch shell and lobsters) and habitats (e.g. coral reefs), helping the SIDs to adapt to OA and wider climate change effects. This work has been designed to monitor water quality, capturing pH measurements to assess variability. This information has helped to document pH baselines and variability. These parameters are important to safeguard species of commercial value. This research has been actively communicated to fishers, national co-operatives and Government Department and Ministries. **Total value: £150,00 per/annum.**

**2019- 2023 (Interreg funded programme) Genetic tools for Ecosystem health Assessment in the North Sea region (GEANS).** This project aimed to implement DNA-based tools in routine monitoring programs in support of policy and decision-making concerning ecosystem health. Six work packages were delivered: i) project management, ii) communication, iii) development of a reliable DNA-reference library, iv) harmonisation of DNA-based protocols, v) application and implementation through pilot studies, and vi) integration into a management tool to facilitate implementation. I led the work in work package 6, helping to integrate the work across all disciplines. The translation of scientific outcomes into policy framework, helped to inform the stakeholders. At the start of the project a dedicated stakeholder mapping exercise was conducted to assess the main needs and key players. Following from this, a suite of tools (e.g. questionnaires, one-to one discussions, factsheets, protocols and online seminars) were produced to promote the work and effectively reach out to several audiences. Contract value £200,000

**2016-2025 The Blue Belt Programme-** Joint Leadership by Cefas and the MMO. The UK government's Blue Belt programme supports the UK Overseas Territories with the protection and sustainable management of their marine environments. Cefas leads the co-ordination of science and advice. The programme works across 5 overseas territories, successful helping to implement management, governance, and science developments. My role is the Programme Director and Science Leader. I regularly engaged in science to policy discussions. The work is regularly discussed with the UK representatives in support of their MPA management plan. My role is to ensure effective marine governance is in place across all levels to ensure the scientific work is aligned with the requirements of the five UKOTs. Contract value: £6M (divided between Cefas= £2M, MMO= £1.5, FCDO= £500,000 and Ots= £2M)

**2015-2018 INSITE phase I project: Understanding the influence of man-made structures on the ecosystem function of the North Sea (Undine).** This work used offshore wind farms as equivalents for man-made structures. The overall work was managed by AWI (Germany), Cefas (UK) working collaboratively with Belgium and the Netherlands. The work was focussed on assessing changes of structure and function of seabed systems with further implications for ecosystems. The result from this work will be useful for the UK oil and Gas sectors, particularly during the decommissioning of offshore platforms. The work has been synthesised into a Theme set ICES JMS to disseminate the science and science to policy messages across stakeholders, regulators and industry. Contract value: **£260,000.**

**INSITE phase II, 2020-2023 Ecosystem-level importance of Structures as Artificial Reefs (EcoSTAR)** is a collaborative project combining the expertise of marine ecologists from the Sea Mammal Research Unit (SMRU) at the University of St Andrews and the Centre for Environment, Fisheries and Aquaculture Science (Cefas). EcoSTAR aims to fill in the key knowledge gaps on the impact of MMS across the entire marine ecosystem. This ecosystem-wide approach is critical to fully understand the breadth of possible interactions between MMS and marine species. To achieve this, EcoSTAR will measure impacts of MMS from the bottom of the food chain (the benthic community) all the way to the top (marine mammals). My area of work was primarily to assess the effects of marine growth across platforms and what will be the likely consequences associated with decommissioning in these structures across seabed areas. Contract value: **£260,000.**

**2013-2018 Placing Ocean acidification into a fisheries context (PLACID).** A Defra funded programme. The primary aim of this project was to enhance the evidence-base the potential effects of ocean acidification for commercially important species (e.g. selected species were crabs, lobster, cockles and whelks), to support the UK Climate Change Risk Assessment in 2017. This information provided inputs to the UK Marine Climate Change Impacts Partnership (MCCIP) as well as picking up on many of the most pressing risks or opportunities identified in the October 2012 MACCAP report. Marine risks were often overlooked in national or international assessments (including the IPCC 4th Assessment). Maritime industries were

not covered at all in the 2006 'Stern Review on the Economics of Climate Change' funded by the UK Treasury. The PLACID project was a multidisciplinary team of experienced scientists ranging from experimental fish and invertebrate physiologists, ecologists, fisheries economists, and ecological modellers. Contract value: £500,000.

**2013-2016 Sediment Profile Imagery for Seabed Integrity Assessments (SPI-smart).** The primary aim of this project was to assist and optimise the cost and efficiency of benthic monitoring in relation to seabed integrity (D6). This project had two phases: i) the first phase will look at the existing SPI information in relation to other data sets and pressure layers to delineate high risks associated with co-location of activities and/or persistent activities that could affect the integrity of benthic systems; and ii) development of an SPI metric and data filling exercise for validation and testing. Contract value: £150,000.

**2013-2015 Developing a Pilot Monitoring Project for the North Sea and the Celtic Sea.** In support of the Marine Strategy Framework Directive (MSFD) EU Commission DG Environment requested a project that was centred across all MSFD GES descriptors. This work complemented OSPAR needs. This programme worked on the development of common indicators, monitoring programmes, and guidelines for monitoring and assessment. The geographic coverage of the project was the Greater North Sea, including the Kattegat, and the Celtic Sea. The approach and results of the project were shared with other (sub) regions within the North-East Atlantic Region through OSPAR and with other European regional seas, notably the Barcom and Helcom Convention areas. Regular updates, written and orally, were cascaded via OSPAR Committees and to EU MSFD groups. The final outcomes were disseminated via a workshop with all participants from other Regions. Contract value: £65,000.

**2010-2013 Application and development of Sediment Profile Imagery (SPI).** This work aimed to provide an integrated (biological and chemical) and rapid impact assessment tool for disposal site monitoring as requested by Defra. A combination of techniques (e.g. SPI alongside the use of DGT gels) in a disposal site, known as Souter point disposal site was tested to assess: i) the utility of these techniques, ii) the logistics of testing and employing the combinations.

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**2010-2011 Developing a biological framework to assess functional responses in dredged material disposal sites in the UK.** A Defra funded project, aimed to develop a trait-based framework to assess biological responses to the effects of dredged material disposal. Available monitoring data from 2006-2008 were selected for analysis. Five disposal sites (e.g. Souter Point, North Tyne, Tees, Rame Head and Roughs Tower) were included in this work, to enable a wider representation of the physical and biological components collected during disposal site monitoring. The selected disposal sites were chosen based on their sedimentary characteristics, metals and contaminants and the nature of the dredged material disposed. Contract value: £65,000.

**2006-2008 Data acquisition and marine mapping for Special Areas of Conservation (SACs) for Natural England/Defra, UK.** This work included the collection and analysis of potential SAC, namely Lizard Point and Cape Bank area of search. Ecological data sets were classified based on the Habitats Directive to be

considered for designation. Both areas were subsequently designated, which helped the UK to complete conservation targets. I managed the work from data to reporting on management boundaries. Total value: £450,000.

**2006-2009 Environmental indicators:** a structured approach to the evaluation of impacts arising from human activities at sea (contract code ME4118) funded by the Department of environment, Food and Rural affairs, (Defra, UK Government). I managed modules 1 and 3 concerned with the development of seabed indicators to assess benthic function and applied marine polychaetes responses to human impacts. Total value: £80,000.

**2005-2007 Mineral Wealth Seabed Health project.** To provide interpreted seabed and biodiversity data sets to disseminate the effects of aggregate extraction and seabed life to the general public funded by the Aggregate Levy Sustainability fund-ALSF. Several levels of marine education across industry, scientists and the general

## Awards and Recognitions

1. **1988 Shell Chile S.A. Award.** Award granted to the best graduate of the Marine Biology degree. Universidad Arturo Prat, Chile.
2. **2000-2003 Overseas Research Scheme Award.** This award was given to cover tuition fees during my doctoral degree at the University of Newcastle upon Tyne.
3. **2000-2003 Ridley Fellowship.** This award was awarded by the Duke of Northumberland. The award covered post-graduate maintenance expenses.
4. **2003-2004 British Women Federation Research Grant.** This award was providing economic support for female post-graduate students in their last academic to support the compilation of their final thesis.
5. **2007-2008 Winston Churchill Travel Fellowship.** This award was given to develop Science and Technology. The main activity was to learn image analysis and deployment of the Sediment Profile Image (SPI) technology. My visits included four Marine Institutes (U.S.A, Ireland, Sweden and Chile) to learn overall application of the SPI Camera to study marine seafloor systems.
6. **2017 Organisation for Economic Co-operation and Development (OECD) Fellowship.** This co-operative research Programme supported biological resource management for sustainable developments. This fellowship was granted to conduct applied research at Centro de Estudios Avanzados (CEAZA) in Coquimbo, Chile. Title of research: "Optimising science,

## University & Community Services

1. Member of the University of Khorffakan (UKF) Research Ethics and Integrity Committes (since March 2026).
2. Member of the Sharjah Marine science Research Centre (SMSRC) Research Ethics and Integrity Committes (since February 2026).