

**SCIENTIFIC ADVISORY COMMITTEE**

**INFORMATION PAPER**

# NatureScot’s Science and Evidence Leadership Programme

## Purpose

1. This paper provides an update on the work of the Science and Evidence Leadership Programme (SELP).

## Action

1. The SAC is invited to note progress and any areas of interest for future discussion.

## Preparation

1. The paper was written by Alex Mackay. It is sponsored by Eileen Stuart.

## Background

1. NatureScot’s Science and Evidence Leadership Programme was set up in 2022 to address recommendations from a staff focus group on science leadership. The work is managed by a programme board which meets quarterly and is made up of staff volunteers from across NatureScot, with a member from our People and Organisational Development team and Communications team. Professor Jane Reid sits on the board in role as a member of the SAC. Eileen Stuart is the Senior Responsible Officer.

There are three workstreams:

* Workstream 1 – Science Leadership, co-ordination and development
* Workstream 2 – External Engagement and Advocacy
* Workstream 3 - Skills Development.
1. The SELP has delivered a variety of pieces of work over the last two years in response to the original recommendations and additional areas of interest. A summary of the main areas of work can be found in Annex 1, but some of the headlines include:
	* Updating and creating guidance for science related areas of work
	* Updating registers of research projects, studentships and published papers
	* Gaining Public Sector Research Establishment (PSRE) Status
	* Running monthly science and evidence webinars on topics including conservation translocations, supervising masters students, social science and peatland restoration
	* The support of a successful Student Conference in April 2024
	* Creation of key messages for use in our external and internal communications
	* Implemented a stakeholder mapping exercise focussing on engagement with academic institutions
	* Development and launch of a Science and Evidence Learning Pack
	* Development of guidance for staff publishing their research and a mentoring support to help with publishing papers.
2. The main areas of work that we are currently working on are set out below, with several larger pieces of work due to be completed in the Autumn.

### Workstream 1 - Science Leadership, co-ordination and development

* Science and evidence needs document (see information paper)
* Guidance on public sector research establishment status
* Research commissioning process
* Internal genetics round-table.

### Workstream 2 - External Engagement and Advocacy

* Develop external engagement plans for academic bodies across a range of topics
* Develop a story around marine biodiversity evidence brief to help with engagement
* Implementation of recommendations from SAC paper on Enhancing Interactions with Scotland’s Higher Education Institutions (HEIs).

### Workstream 3 - Workstream 3 - Skills Development

* Promotion of Learning Pack including Mentoring Scheme and Science/Evidence and Policy Active Learning (SEPAL) Scheme
* Science and evidence internal webinar series:
	+ Sept – Animal Diseases
	+ Oct – Climate Science
	+ Nov – Data Science
	+ January – Farming with Nature Biodiversity Audit.
* Proposal for an induction pack for science-based roles.
1. During the last quarter we have been busy collating information about science and evidence outputs from across the organisation. Full details are in the Annexes 2-4, but the headlines are as follows:
* Research Reports (Annex 2)
* In 2023 we published 16 reports.
* So far in 2024 we have published 16 reports.
* Published Papers (Annex 3)
	+ In 2023, we were involved in 17 published papers.
	+ So far in 2024 we have been involved in 18 published papers.
* PhD Studentships and Master’s Projects (Annex 4)
	+ We have 24 active CASE and other PhD studentships.
	+ There are 14 PhD and other research programmes that we are actively supporting with staff time only and a number of UK Research and Innovation (UKRI) bids we have supported that will be announced in the Autumn. Two bids would involve NatureScot being a co-lead and therefore eligible to receive funding.
	+ We are currently updating our Master’s projects on the website but have seven new projects ranging from peatland vulnerability, impacts from construction on biodiversity, waders and forestry and a project on choughs.
1. SELP has been working closely with all parts of our Communications team to ensure science stories are promoted internally and externally. Jointly we have been encouraging staff to get in touch with the findings of their research and have shared information about how to capture video footage as well as using design and infographics to explain our work. Examples of some of our recent science stories can be found in Annex 5.
2. There is ongoing engagement internally to ensure that the work we are doing is reaching staff from across the organisation to ensure we maximise the impact of the programme. Information sessions have been offered to a number of Activity teams including our National Operations teams which have been met enthusiastically and will take place throughout the autumn.

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## Annex 1 – Summary of workstream activity

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| **Workstream 1 - Science Leadership, co-ordination and development** |
| Developed the Science and Evidence Viva Engage Community and a specialist work page on the intranet. |
| Run a monthly science and evidence event series with audiences of between 20 and 50 staff. |
| Achieved Public Sector Research Establishment (PSRE) Status. |
| Create a register of UKRI bids we’re supporting (majority staff-time only). |
| Reviewed the process and revised guidance for supervising Masters & PhD Projects. |
| Maintaining the register of PhD and CASE Studentships NatureScot is involved in. |
| Supported a successful Student Conference in April 2024. |
| Highlighted EU funding opportunities with support from Scotland Europa and ERRIN. |
| **Workstream 2 - External Engagement and Advocacy** |
| Created key messages for use in our external and internal communications. |
| Reviewed the need for a SAC newsletter and set up a process for a quarterly request for science stories from staff. |
| Ran webinars on communicating science and knowledge exchange. |
| Implemented a stakeholder mapping exercise focussing on engagement with academic institutions. |
| Investigated ways of communicating our science beyond research reports. |
| Revised web pages to provide updated messaging around our research. |
| Worked with Communications to encourage staff to send in video content. |
| **Workstream 3 - Skills Development** |
| Ran a staff survey around science issues in 2023 and asked two questions in the March 2024 Pulse survey. |
| Developed and launched a Science and Evidence Learning Pack. |
| Joined the SEPAL scheme with SG – work shadowing opportunities. |
| Ran two webinars with CIEEM and BES to talk about the benefits of Professional Membership. |
| Developed a mentoring scheme with the SAC. |
| Participated in the skills development work being led by People and OD. |
| Developed guidance for staff publishing their research and recruited mentors to help with publishing papers. |
| Ran a session for 10 staff with Exeter University on Policy Relevant Evidence Reviews. |
| Participated in the design of learning resources on social science for non-social scientists. |

## Annex 2 – NatureScot Research Reports published in 2023/24

**2024**

**NatureScot Research Report 1325 - Review of high-resolution remote sensing methods to monitor peatland restoration efficacy on actively eroding blanket bogs**

Year of publication: 2024 Authors: Burnham, B.S., Cousins, J., Burley, B., Campbell, D.,Cadman, D. (APEM Ltd.)

**NatureScot Research Report 1357 - NatureScot opinion survey2023**

Year of publication: 2024 Authors: McGregor, D. and Strachan, V. (Progressive Partnership)

**NatureScot Research Report 1145 - Distribution mapping and baseline monitoring survey of sea caves around Fair Isle**.

Year of publication: 2024 Authors: Harries, D.B., Purcell, A., Moore, C.G., Lyndon A.R., Porter,J.S., Saunders, G.R. and Hume, C.L

**NatureScot Research Report 1334 - Scottish Outdoor Access Code awareness monitoring, 2021-23**

Year of publication: 2024 Authors: Mitchell, D. (NatureScot) and Strachan, V. (Progressive)

**NatureScot Research Report 1354 - Deer Vehicle Collisions - a review of mitigation measures and their effectiveness**

Year of publication: 2024 Authors: Putman, R.J. and Langbein, J. (Langbein Wildlife Associates)

**NatureScot Research Report 1360 - Site Condition Monitoring of bottlenose dolphins within the Moray Firth Special Area of Conservation 2017-2022**

Year of publication: 2024 Authors: Cheney, B.J., Arso Civil, M., Hammond, P.S. and Thompson,P.M.

**NatureScot Research Report 1328 - The ecological value of Sustainable Drainage Systems (SuDSs) in maintaining genetic diversity in urban areas**

Year of publication: 2024 NatureScot Research Report 1328. The aim of the report was to use genetic markers to address the question whether common frogs (Rana temporaria) which breed in sustainable urban drainage system (SuDS) ponds suffer from an increased level of genetic erosion compared to populations in more rural areas.

**NatureScot Research Report 1359 - Natural capital assessments of urban nature-based solutions in Scotland**

Year of publication: 2024 Authors: Milagros Saloma Pacheco (NatureScot Graduate Placement,2021-2022)

**NatureScot Research Report 1316 - Guidance and recommendations for native oyster enhancement projects in Scotland**

Year of publication: 2024 Authors: David Donnan (NatureScot), Cass Bromley (NatureScot) andFlora Kent (Marine Directorate)

**NatureScot Research Report 1279 - Analysis of Basking Shark Watch Database 1987 to 2020**

Year of publication: 2024 Basking Shark Watch (BSW) is a public sightings scheme that has operated since 1987 and has been managed by both the Marine Conservation Society and the Shark Trust

**NatureScot Research Report 1345 - Investigating the role of badgers (Meles meles) in lamb predation on Scottish farms2022-23**

Year of publication: 2024 Authors: George, S.C., Campbell, S., Hale, C., Kaden, J., and Webster, L.I.M. (SASA, Wildlife Management Unit)

**NatureScot Research Report 1307 - Investigate the issue of herbicide usage in nature conservation and the potential impacts on biodiversity including adverse effects on non-target species - Phase 1 - Review and evidence screening**

Year of publication: 2024 Authors: Dr Sarah K Cook Cite as: Cook, S.K. 2024. Investigate the issue of herbicide usage

**NatureScot Research Report 1291 - Review of chough management between populations - a comparison of the biotic and abiotic factors influencing chough populations across the UK and Irish range**

Year of publication: 2024 Authors: David Norfolk and Gavin Siriwardena (British Trust for Ornithology) Cite as: Norfolk, D. and Siriwardena

**Naturescot Research Report 1327 – Creation of a grassland fungi mapping database for Scotland**

Year of publication: 2024 Authors: Mitchel, D.G. & O’Brien, K.

**NatureScot Research Report 1363 - Exploring engagement with Dundee Wee Forests and green spaces.**

Year of publication: 2024 Authors: Ward, K., Beresford-Dey, M., Frediani, K. and Lakin, E.

**NatureScot Research Report 1092 - Site Condition Monitoring of golden plover, dunlin and greenshank in Caithness and Sutherland Peatlands Special Protection Area in 2004, 2009, 2015 and 2023**

Year of Publication: 2024 Author: Ward, S

**2023**

**NatureScot Research Report 1335 - NatureScot Opinion Survey2022**

Year of publication: 2023 Authors: Stewart, D. and Eccleston, J. Cite as: Stewart, D. and Eccleston, J. 2023. NatureScot Opinion

**NatureScot Research Report 1318 - Nature’s contribution to people and community engagement: socio-cultural and economic perceptions of beaver presence in the environment**

Year of publication: 2023 Authors: Johnson, V., Martin, A., and Delugin, C. (Centre for Living Sustainability, UHI Inverness)

**NatureScot Research Report 1343 - Source to Sea - enabling coherent, efficient and synergistic outcomes**

Year of publication: 2023 This report explores the potential to build on existing good practices, to enable more effective, coherent management of land, freshwater and sea, and to target action to where we can achieve improved outcomes for the environment and society in Scotland.

**NatureScot Research Report 1337 - Stable isotope analysis of feathers taken from greylag geese on Orkney**

Year of publication: 2023 The purpose of this contract is to estimate the proportion of resident and Icelandic greylag geese that are shot on Orkney while both populations are present during the winter months.

**NatureScot Research Report 1259 - A risk-based approach to peatland restoration and peat instability**

Year of publication: 2023 This report describes a risk-based approach to assessing the potential impacts of peatland restoration groundworks on peat stability

**NatureScot Research Report 1338 - Valuing the health and well-being benefits of the NHS outdoor estate in Scotland**

Year of publication: 2023 Authors: Alison Holt 1 , Charles Cowap 2 , Natalie Johnson 1 and Rhiannon Tudor Edwards

**NatureScot Research Report 1309 - Understanding the Indirect Drivers of Biodiversity Loss in Scotland**

Year of publication: 2023 Authors: Robin J Pakeman 1 , Antonia Eastwood 1 , Dominic Duckett1 , Kerry A

**NatureScot Research Report 1331 - An analysis of Scottish Raptor Monitoring Scheme data to improve understanding of the impact of the 2022 Avian Influenza outbreak on raptors and raptor populations in Scotland**

Year of publication: 2023 Authors: Wilson, M.W., Wetherhill, A.S., and Wernham, C.V. (BritishTrust for Ornithology)

**NatureScot Research Report 1333 - Deer management skills and capacity - initial scoping report**

Year of publication: 2023 Authors: James Scott (JMS Environmental Ltd.)

**NatureScot Research Report 1329 - Deer Vehicle Collision analysis 2019-2021**

Year of publication: 2023 Authors: Lush, M.J. and Lush, C.E. (Exegesis, an Idox Company)

**NatureScot Research Report 1314 - Review of the bryological assessment for hydroelectric schemes scoring system in the light of new data on species status and ecology**

Year of publication:2023 The report examines the most recent data on the distribution and status of bryophytes in western Scotland, in order to review and update the scoring system that is part of an online planning tool to help developers explore opportunities for hydro-electric development in Scotland.

**NatureScot Research Report 1313 - Teaching, learning and play in the outdoors: a survey of provision in Scotland in 2022**

Year of publication: 2023 Authors: Mannion, G., Ramjan, C., McNicol, S., Sowerby, M. andLambert, P. (University of Stirling) Cite

**NatureScot Research Report 1213 - Exploring biological trait analysis and inter-habitat linkages in three seabed habitat PMFs in Scotland**

Year of publication: 2023 Authors: James, K., Kamphausen, L., Cunningham, S. & Kent, F. Citeas: James, K., Kamphausen, L

**NatureScot Research Report 1315 - Life in our Lochs - are there freshwater pearl mussel populations in our lochs as well as our rivers?**

Year of publication: 2023 This research project looked at whether unknown populations of freshwater pearl mussel are residing in some of Scotland’s freshwater lochs.

**NatureScot Research Report 1226 - Trapping feral pigs in corral traps and drop nets as possible population management tools -practical lessons and assessment of animal welfare in a pilot study**

Year of publication: 2023 Authors: Peter Green Cite as: Green, P. 2023. Trapping feral pigs in corral traps and drop

**NatureScot Research Report 1306 - Pilot study to find potential new sites for genetic conservation units for native trees in Scotland.**

Year of publication: 2023 Genetic diversity is one of the three strands of biodiversity recognised in the Convention on Biological Diversity, and is key to nature's resilience.

## Annex 3 – Published Research involving NatureScot Staff 2023 & 2024

| **Title of paper** | **Year Published** | **Authors** | **References** | **Link to paper** |
| --- | --- | --- | --- | --- |
| Genetic monitoring for effective plant conservation: An example using the threatened Saxifraga hirculus L. in Scotland | 2023 | Aline Finger, **Iain Macdonald,** Peter M. Hollingsworth | Plants, People, Planet, 6(2), 381–398. | <https://nph.onlinelibrary.wiley.com/doi/10.1002/ppp3.10456> |
| Further declines of the Western Capercaillie *Tetrao Urogallus* in Scotland as shown by the 2021-2022 winter survey | 2023 | Nicholas I. Wilkinson, Molly Doubleday, **Andrew Douse,** Andy Ford, Leah A. Kelly, Kenny Kortland, Juli Titherington, Simon R.Wotton, Steven R.Ewing |   | <https://www.tandfonline.com/doi/abs/10.1080/00063657.2023.2286298> |
| Migration patterns and navigation cues of Atlantic salmon post-smolts migrating from 12 rivers through the coastal zones around the Irish Sea | 2023 | Jessie Lilly, Hannele H. Honkanen, Jessica R. Rodger, Diego del Villar, Patrick Boylan, Amy Green, Diego Pereiro, Lorna Wilkie, Richard Kennedy, Andrea Barkley, Robert Rosell, Niall Ó. Maoiléidigh, Ross O'Neill, Catherine Waters, Deirdre Cotter, David Bailey, William Roche, Ross McGill, James Barry, Samantha V. Beck, Jim Henderson, Debbie Parke, Frederick G. Whoriskey, Brian Shields, Philip Ramsden, Silas Walton, Melanie Fletcher, Ken Whelan, **Colin W. Bean,** Sophie Elliott, Adrian Bowman, Colin E. Adams |   | <https://onlinelibrary.wiley.com/doi/full/10.1111/jfb.15591#:~:text=Modeled%20water%20current%20data%20in,strong%20currents%20in%20other%20directions.> |
| Porpoises, by-catch and the ‘pinger’ conundrum | 2023 | **Pinn, E.H.** | Aquatic Conservation: Marine and Freshwater Ecosystems, 33, 1360–1368 | <https://doi.org/10.1002/aqc.4004> |
| Interpretation of the European legal framework for the microbiological classification of bivalve mollusc production areas | 2023 | **Pinn, E.H.** & Le Vay, L. | Marine Policy, 148, 105479 | <https://doi.org/10.1016/j.marpol.2023.105479> |
| Preliminary insight into the reproductive traits of the flapper skate (*Dipturus intermedius*) using in-field ultrasonography and circulating hormone concentrations  | 2023 | Thorburn, J.; Cole, G.; Naylor, A.; Garbett, A.; Wilson, K.; James, M.; **Dodd, J.**; Houghton, J.D.R.; Collins, P.C. | Endangered Species Research 52 (97-111). https://doi.org/10.3354/esr01264 | <https://www.int-res.com/articles/esr2023/52/n052p097.pdf> |
| The BioGeo Ecotile: Improving biodiversity on coastal defences using a multiscale, multispecies eco-engineering design | 2023 | E. Kosova, **K. James**, M. MacArthur, A. Vovides, J. Peters, D. Metcalfe, K. Roberts, L.A. Naylor | Ecological Engineering, 188: 106881 | <https://www.sciencedirect.com/science/article/pii/S0925857422003421> |
| Timing of deployment does not affect the biodiversity outcomes of ecological enhancement of coastal flood defences in northern Europe. | 2023 | L.A. Naylor, E. Kosova, **K. James**, A.G. Vovides, M. MacArthur, P. Nicholson | Nature-Based Solutions, 3: 100051 | [https://www.sciencedirect.com/science/article/pii/S2772411523000034#:~:text=In%20this%20environmental%20setting%2C%20our,succession%20after%20two%20settlement%20seasons](https://www.sciencedirect.com/science/article/pii/S2772411523000034#:~:text=In%20this%20environmental%20setting%2C%20our,succession%20after%20two%20settlement%20seasons )  |
| Beach crust in Lewis and Harris.  | 2023 | **Angus, S**. | Hebridean Naturalist,23,28-32.  |   |
| Urbanisation generates multiple trait syndromes for terrestrial animal taxa worldwide | 2023 | Amy Hahs, Bertrand Fournier, Myla Aronson, Charles Nilon, Adriana Herrera-Montes, Caragh Salisbury, Threlfall, **David O'Brien** et al. | Nature Communications | <https://www.nature.com/articles/s41467-023-39746-1> |
| Co-designing a toolkit for evidence-based decision making in conservation: Processes and lessons | 2023 | Rebecca K Smith, William H Morgan, Nida Al‐Fulaij, Tatsuya Amano, Andrew E Bowkett, Alec Christie, Harriet Downey, Winifred F Frick, **David O'Brien**, Nancy Ockendon, Steffen Oppel, Silviu O Petrovan, David Righton, Paul Tinsley‐Marshall, Thomas A Worthington, William J Sutherland | Ecological Solutions and Evidence | <https://besjournals.onlinelibrary.wiley.com/doi/full/10.1002/2688-8319.12269> |
| High Evolutionary Potential Maintained in Common Frog (Rana temporaria) Populations Inhabiting Urban Drainage Ponds | 2023 | Robert Jehle, **Jeanette Hall**, Samantha A Hook, Sarenta King, Kirsty MacArthur, Alexandre Miró, **Marcia Rae**, **David O’Brien** | Diversity | <https://www.mdpi.com/1424-2818/15/6/738> |
| Genetic diversity goals and targets have improved, but remain insufficient for clear implementation of the post-2020 global biodiversity framework | 2023 | Sean Hoban, Michael W Bruford, Jessica M da Silva, W Chris Funk, Richard Frankham, Michael J Gill, Catherine E Grueber, Myriam Heuertz, Margaret E Hunter, Francine Kershaw, Robert C Lacy, Caroline Lees, Margarida Lopes-Fernandes, Anna J MacDonald, Alicia Mastretta-Yanes, Philip JK McGowan, Mariah H Meek, Joachim Mergeay, Katie L Millette, Cinnamon S Mittan-Moreau, Laetitia M Navarro, **David O’Brien**, Rob Ogden, Gernot Segelbacher, Ivan Paz-Vinas, Cristiano Vernesi, Linda Laikre | Conservation genetics | <https://link.springer.com/article/10.1007/s10592-022-01492-0> |
| Modelling harvest of Greenland barnacle geese and its implications in mitigating human–wildlife conflict | 2023 | Aimée LS McIntosh, Stuart Bearhop, Geoff M Hilton, **Jessica M Shaw**, Fred A Johnson | Journal of Applied Ecology | <https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/1365-2664.14369> |
| Incidence of lead ingestion in managed goose populations and the efficacy of imposed restrictions on the use of lead shot | 2023 | Aimée LS McIntosh, Luke Ozsanlav‐Harris, Mark A Taggart, **Jessica M Shaw**, Geoff M Hilton, Stuart Bearhop | Ibis | <https://onlinelibrary.wiley.com/doi/full/10.1111/ibi.13210> |
| Geosite condition monitoring in the UK 1999-2019 | 2023 | **R.M.L. Wignall**, M. Demoster, R. Roberts, H.C. Townley | Proceedings of the Geologists Association | <http://doi.org/10.1016/j.pgeola.2022.08.002> |
| Projected increases in extreme drought frequency and duration by 2040 affect specialist habitats and species in Scotland | 2023 | **Fairlie Kirkpatrick Baird**, Deborah Spray, **Jeanette Hall**, **Julia Stubbs Partridge** | Ecological Solutions and Evidence | <https://doi.org/10.1002/2688-8319.12256> |
| Exploring nonstationary limiting factors in species habitat relationships | 2024 | S.A. Cushman, K. Kilshaw, Z. Kaszta, R.D. Campbell, **M.Gaywood**, D.W. Macdonald  |   | <https://www.sciencedirect.com/science/article/pii/S0304380024000516?dgcid=rss_sd_all> |  |
| Genomic underpinnings of head and body shape in Arctic charr ecomorph pairs | 2024 | Sam Fenton, Arne Jacobs, **Colin W. Bean,** Colin E. Adams, Kathryn R. Elmer |   | <https://onlinelibrary.wiley.com/doi/full/10.1111/mec.17305> |
| Genetic Analysis of H5N1 High-Pathogenicity Avian Influenza Virus following a Mass Mortality Event in Wild Geese on the Solway Firth | 2024 |  Craig S. Ross , Alexander M. P. Byrne, Sahar Mahmood, Saumya Thomas, Scott Reid, Lorna Freath, Larry R. Griffin, Marco Falchier, Paul Holmes, **Nick Goldsmith, Jessica M. Shaw, Alastair MacGugan,** James Aegerter, Rowena Hansen, Ian H. Brown, Ashley C. Banyard  |  | <https://www.researchgate.net/publication/377518926_Genetic_Analysis_of_H5N1_High-Pathogenicity_Avian_Influenza_Virus_following_a_Mass_Mortality_Event_in_Wild_Geese_on_the_Solway_Firth> |
| A pragmatic approach for integrating molecular tools into biodiversity conservation | 2024 |  Laura D. Bertola, Anna Brüniche-Olsen, Francine Kershaw, Isa-Rita M. Russo, Anna J. MacDonald, Paul Sunnucks, Michael W. Bruford, Carlos Daniel Cadena, Kyle M. Ewart, Mark de Bruyn, Mark D. B. Eldridge, Richard Frankham, Juan M. Guayasamin, Catherine E. Grueber, Thierry B. Hoareau, Sean Hoban, Paul A. Hohenlohe, Margaret E. Hunter, Antoinette Kotze, Josiah Kuja, Robert C. Lacy, Linda Laikre, Nathan Lo, Mariah H. Meek, Joachim Mergeay, Cinnamon Mittan-Moreau, Linda E. Neaves, **David O'Brien,** Joel W. Ochieng, Rob Ogden, Pablo Orozco-terWengel, Mónica Páez-Vacas, Jennifer Pierson, Katherine Ralls, Robyn E. Shaw, Etotépé A. Sogbohossou, Adam Stow, Tammy Steeves, Cristiano Vernesi, Mrinalini Watsa, Gernot Segelbacher |  | <https://conbio.onlinelibrary.wiley.com/doi/full/10.1111/csp2.13053> |
| Using citizen science to better understand Risso’s dolphin (Grampus griseus) presence in northeast Scotland and the Northern Isles. | 2024 | Hodgins NK, Steel EM, Dyke K, Walters AEM, Dolman SJ, **Hall K**, Neave-Webb E, Evans PGH, Bird C, Robinson KP, Marwood EM, Foubister R, Harrop H, Knight A and Munro K | Front. Conserv. Sci. 5:1366064. doi: 10.3389/fcosc.2024.1366064 | <https://assets.ctfassets.net/xe1w9sqtia79/40D44VFTFZrnj91uo6eJYD/1f9663fe1ed4f88ed4af01f5a6eb5bc9/hodgins_etal_2024.pdf> |
| It's time to broaden what we consider a ‘blue carbon ecosystem’ | 2024 | **K. James**, P.I. Macreadie, H.L. Burdett, I. Davies, N.A. Kamenos | Global Change Biology, 30(5): e17261 | <https://onlinelibrary.wiley.com/doi/10.1111/gcb.17261> |
| An endangered population of harbour porpoise Phocoena phocoena hidden in plain sight: biology, ecology and conservation of the Iberian porpoise. | 2024 | Graham J. Pierce, Marie A.C. Petitguyot, Paula Gutierrez-Muñoz, Andrea Fariñas-Bermejo, Diego Fernández-Fernández, Sarah Dolman, Michael C. Fontaine, Alberto Hernández-González, Agatha Gil, Fiona L. Read, Jose Martínez-Cedeira, Pablo Covelo, Bruno Díaz López, Silvina Ivaylova, Angela Llavona, Alfredo López, Miguel López, Ana Marçalo, Séverine Methion, Paula Méndez-Fernandez, SineadMurphy, Begoña Pérez Fernández, Raquel Puig Lozano, **Eunice H. Pinn**, Camilo Saavedra, Gregory M. Verutes, Lucía Viñas, Caroline R. Weir | Oceanography and Marine Biology Annual Review, 62 | publication expected September 2024. <https://www.taylorfrancis.com/books/edit/10.1201/9781003477518/oceanography-marine-biology-todd-russell> |
| A comparison of the MPN and pour plate methods for estimating shellfish contamination by Escherichia coli. | 2024 | David M Cooper, Finn Mannion, Laurence Jones, **Eunice Pinn**, Rees Sorby, Shelagh K. Malham, Lewis Le Vay  | Journal of Applied Microbiology | accepted for publication |
| Harbour porpoise bycatch: Determining spatial distribution of risk to inform management measures. | 2024 | Hope E. Irvine, **Eunice H. Pinn**, I. Philip Smith, William Lart | Aquatic Conservation: Marine and Freshwater Ecosystem | accepted subject to revision |
| Spatial management measures benefit the critically endangered flapper skate, Dipturus intermedius. | 2024 | Régnier, T., **Dodd, J.**, Benjamins, B., Gibb, F.M., Wright, P.J. | Aquatic Conservation: Marine and Freshwater Ecosystems 34(4). https://doi.org/10.1002/aqc.4150 |  <https://doi.org/10.1002/aqc.4150> |
| Records reveal the vast historical extent of European oyster reef ecosystems | 2024 | Ruth H. Thurstan, Hannah McCormick, Joanne Preston, Elizabeth C. Ashton, Floris P. Bennema, Ana Bratoš Cetinić, Janet H. Brown, Tom C. Cameron, Fiz da Costa, **David Donnan**, Christine Ewers, Tomaso Fortibuoni, Eve Galimany, Otello Giovanardi, Romain Grancher, Daniele Grech, Maria Hayden-Hughes, Luke Helmer, K. Thomas Jensen, José A. Juanes, Janie Latchford, Alec B. M. Moore, Dimitrios K. Moutopoulos, Pernille Nielsen, Henning von Nordheim, Bárbara Ondiviela, Corina Peter, Bernadette Pogoda, Bo Poulsen, Stéphane Pouvreau, Callum M. Roberts, Cordula Scherer, Aad C. Smaal, David Smyth, Åsa Strand, John A. Theodorou, Philine S. E. zu Ermgassen | Nature Sustainability |  <https://archimer.ifremer.fr/doc/00866/97806/106890.pdf> |
| Assessing the potential of acoustic telemetry to underpin the regional management of basking sharks (Cetorhinus maximus) | 2024 | James Thorburn, Patrick C Collins, Amy Garbett, Heather Vance, Natasha Phillips, Alan Drumm, Joseph Cooney, Catherine Waters, Niall Ó’Maoiléidigh, Emmett Johnston, Haley R Dolton, Simon Berrow, Graham Hall, Jackie Hall, Diego Delvillar, Ross McGill, Fred Whoriskey, Nann A Fangue, Alexandra G McInturf, Andrew L Rypel, Richard Kennedy, Jessie Lilly, Jessica R Rodger, Colin E Adam, Nienke C F van Geel, Denise Risch, Lorna Wilkie, **Suzanne Henderson,** Paul A Mayo, Paul J Mensink, Matthew J Witt, Lucy A Hawkes, A. Peter Klimley & Jonathan D R Houghton | Animal Biotelemetry |  <https://pureadmin.uhi.ac.uk/ws/portalfiles/portal/55392190/Assessing_the_potential_of_acoustic_telemetry_to_underpin_the_regional_management_of_basking_sharks_Cetorhinus_maximus_.pdf> |
| Extreme genetic depletion upon postglacial colonization hampers determining the provenance of introduced palmate newt populations | 2024 | Robin Elfering, Sophie Mannix, Steve Allain, Johanna Ambu, Pierre-André Crochet, Loïc van Doorn, Christophe Dufresnes, Robert Jehle, Angela Julian, **Fairlie Kirkpatrick Baird, David O’Brien**, Jean Secondi, Jeroen Speybroeck, Anagnostis Theodoropoulos, Tariq Stark, Ben Wielstra | Amphibia-Reptilia | <https://brill.com/view/journals/amre/aop/article-10.1163-15685381-bja10181/article-10.1163-15685381-bja10181.xml> |
| Too simple, too complex, or just right? Advantages, challenges, and guidance for indicators of genetic diversity | 2024 | Sean Hoban, Jessica M da Silva, Alice Hughes, Margaret E Hunter, Belma Kalamujić Stroil, Linda Laikre, Alicia Mastretta-Yanes, Katie Millette, Ivan Paz-Vinas, **David O'Brien**, Crstiano Vernesi | BioScience | <https://academic.oup.com/bioscience/article/74/4/269/7625302?login=true> |
| A pragmatic approach for integrating molecular tools into biodiversity conservation | 2024 | Laura D Bertola, Anna Brüniche‐Olsen, Francine Kershaw, Isa‐Rita M Russo, Anna J MacDonald, Paul Sunnucks, Michael W Bruford, Carlos Daniel Cadena, Kyle M Ewart, Mark de Bruyn, Mark DB Eldridge, Richard Frankham, Juan M Guayasamin, Catherine E Grueber, Thierry B Hoareau, Sean Hoban, Paul A Hohenlohe, Margaret E Hunter, Antoinette Kotze, Josiah Kuja, Robert C Lacy, Linda Laikre, Nathan Lo, Mariah H Meek, Joachim Mergeay, Cinnamon Mittan‐Moreau, Linda E Neaves, **David O'Brien**, Joel W Ochieng, Rob Ogden, Pablo Orozco‐terWengel, Mónica Páez‐Vacas, Jennifer Pierson, Katherine Ralls, Robyn E Shaw, Etotépé A Sogbohossou, Adam Stow, Tammy Steeves, Cristiano Vernesi, Mrinalini Watsa, Gernot Segelbacher | Conservation Science and Practice | <https://conbio.onlinelibrary.wiley.com/doi/full/10.1111/csp2.13053> |
| Flying without fear: Shooting disturbance has little effect on site preferences in a conflict goose species | 2024 | Aimée LS McIntosh, Liam P Langley, Geoff M Hilton, **Jessica M Shaw**, Stuart Bearhop | Journal of Applied Ecology | <https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/1365-2664.14672> |
| Amphibian assisted reproductive technologies and biobanking. Chapter 12 of IUCN Amphibian Conservation Action Plan | 2024 | Natalie E. Calatayud, Lachlan G. Howell, Rose Upton, Benjamin Tapley, Kevin Johnson, Robert Browne, Ruth Marcec-Greaves, Candace L. Williams, **David O’Brien**, Rebecca Hobbs, Vance L. Trudeau, Deborah S. Bower, Simon Clulow, John Clulow and Gina Della Togna | IUCN SSC Amphibian Specialist Group | <https://portals.iucn.org/library/sites/library/files/documents/SSC-OP-057-En.pdf> |
| The genome sequence of the European pine marten, Martes martes (Linnaeus, 1758). | 2024 | **David O'Brien**, Inez Januszczak | Wellcome Open Research | <https://wellcomeopenresearch.org/articles/9-325> |

## Annex 4 – Register of PhDs that we are supporting. Mostly CASE studentships.

Future proofing Scotland's remote coastal areas NBS IAPETUS2 PHD CASE

IAPETUS - Pink salmon invasions in Scotland: origins and impacts

4DTP CASE - Resilience and acclimation of rainforest lichens

Understanding public opinion on conservation

Beavers and climate change mitigation in freshwater systems

Super-DTP for the PHD “Evaluating the landscape-scale benefits of Sustainable Urban Drainage Systems for freshwater biodiversity

Changes in upland aquatic plants in UK (Finish in 2024)

Orkney: wader breeding outcomes under differing agricultural land management and invasive mammalian predator control

PhD Studentship - Populations at the edge: range dynamics and conservation of the Great Crested Newt under global change

Optimising the long-term control of invasive American mink from catchment to coast: how many mink is too many?

E4 DTP -The consequences of an evolving HPAIV landscape on raptors

Raptor movement ecology and the influence of wind turbines: red kite, Milvus milvus, as a case study

Contribution to NERC CASE-award PhD studentship - Understanding the multiple roles of culture in valuing ecosystems and their services

IAPETUS2 - Scottish seagrass in a changing ocean; health, role and restoration potential

SuMMeR CASE - Exploring geovisualisations as place-based planning tools for collaborative marine and coastal management

SUPER2 - Inclusion of the 'youth voice for nature' in regional marine planning

SUPER32 - The interaction of waves with seaweed farms: wave attenuation and intra-farm hydrodynamics

IAPETUS2 - Understanding conservation conflicts: combining habitat-to-population framework and participatory approaches

SUPAR32 - Understanding conservation conflicts: combining habitat-to-population framework and participatory approaches

SUPAR29 - Using eDNA to assess how types of temperate and tropical marine habitat restoration (seagrass/mangroves) and protection (MPAs) provides essential fish habitat (EFH)

SUPER 26 - Linking predator and prey dynamics: spatio-temporal trends in seals, seabirds and fish around Shetland

Collaborative (33%) SUPER 26 - An oceanic species in coastal habitats: Risso’s dolphin distribution in Scottish waters and implications for conservation management

Collaborative (33%) SUPER28 - Climate change adaptation: Evaluating long-term resilience of the Scottish Marine Protected Area network

Supporting the collection of long time series vole data.

**PhDs and other programmes being supported by staff-time only**

Adaptive Marine Protected Area (MPA) designation and management: using marine megafauna to inform mobile MPAs

NATURESCAPES: NbS for Climate Resilient, Nature Positive and Socially Just Communities in Diverse Landscapes (Horizon, '23-27)

COEVOLVERS: Coevolutionary approach to unlock the transformative potential of NbS for more inclusive and resilient communities (Horizon, '22-26)

SUPER - Optimising marine image capture and analysis from autonomous underwater vehicles (MICA)

Towards improved conservation of the east coast of Scotland bottlenose dolphin population: quantifying and understanding a major range expansion into northeast England

Pollination ecosystem service support by sustainable urban drainage systems

ECOWILD CDT

Tree of Knowledge

Land Use for NET Zero

Transformative Research Actions for Resilient Coastal Communities – TRACC

Transitions in Energy for Coastal Communities over Time and Space – TRANSECTS

Climate Change and Health Centre

Moth population dynamics in mature oak woodland

Modelling pollination as an ecosystem service

**Master’s Projects**

All our masters opportunities are currently being updated - <https://www.nature.scot/about-naturescot/working-and-volunteering-us/potential-masters-projects>

## Annex 5 – Selection of science stories published recently

NatureScot area staff played a key role in coordinating a partnership survey of sticky catchfly, one of [Scotland’s rarest plants](https://www.nature.scot/rare-plant-thriving-ochils-crags), on Dumyat this year, with the results showing that numbers have more than trebled! [Read what our resident expert Stuart Bence had to say on this great news](https://www.nature.scot/rare-plant-thriving-ochils-crags).

A [long-term photography study](https://www.nature.scot/photography-study-reveals-nature-recovery) at our NNRs has revealed the scale of nature restoration at some of these special sites. Take a look at the [new Storymap](https://storymaps.arcgis.com/stories/6b645896d1d84e45a59adbcea693c994) developed by staff which presents the evidence in a visually striking way.

Our Marine Ornithology Adviser Paulo Bessa recently spent a week as part of a NatureScot team surveying seabird populations on the Shiant Isles. [Catch up on his blog](https://scotlandsnature.wordpress.com/2024/06/08/surveying-seabirds-on-the-shiant-isles/) explaining how population trends can provide critical insight into the state of marine ecosystems.

Over 370 assessments by [National Operations staff](https://snhgov.sharepoint.com/sites/IntranetNews/SitePages/Protected-areas.aspx?xsdata=MDV8MDJ8fDVkODFhNjI1ZTYzOTQzMGQ2YjE4MDhkY2I2ZDZiOTIzfDA3NDAyOGMwZTE2NTQ5OTk5OWFkMzE2MDNhZDczYmFjfDB8MHw2Mzg1ODYyODA1MjUxMzA1MjB8VW5rbm93bnxWR1ZoYlhOVFpXTjFjbWwwZVZObGNuWnBZMlY4ZXlKV0lqb2lNQzR3TGpBd01EQWlMQ0pRSWpvaVYybHVNeklpTENKQlRpSTZJazkwYUdWeUlpd2lWMVFpT2pFeGZRPT18MXxMMk5vWVhSekx6RTVPbUpoWmpWbVpUTTRMV1ZoTjJVdE5EYzVNUzA0TkdNeExUQm1aVEE0TnpVek16ZGxZbDlrTmpVeE1XUTBaUzAyTURWaExUUTRNVFl0T1RJd05DMDBNRGd3WldabE5qYzBaVEZBZFc1eExtZGliQzV6Y0dGalpYTXZiV1Z6YzJGblpYTXZNVGN5TXpBek1USTFNVFV5TUE9PXw0MzA4ZmUzM2UzNDQ0YTM5NmIxODA4ZGNiNmQ2YjkyM3xmMzJiZDFkNDE2MTI0NzA4ODg0MWEwN2VhODMxNjFlNA%3D%3D&sdata=MGtMYURDcnV5dWY5WkZmMk1ISFJqOWNSVGhFbnYwNFBSdjFQS3ExVDJIcz0%3D&ovuser=074028c0-e165-4999-99ad-31603ad73bac%2CCameron.Singh-Johnstone%40nature.scot) have revealed that 75.6% of features on SSSIs and Natura sites are in favourable or recovering condition.

Our Isle of May NNR team worked with the UK Centre for Ecology & Hydrology to complete a count of puffin burrows on the island this year, with [the results showing a fantastic 33% increase](https://www.nature.scot/puffin-numbers-increase-isle-may) in puffin numbers since 2017.

The Moray Firth Special Area of Conservation (SAC), designated in 2005, protects the only resident population of bottlenose dolphins in the North Sea. Rona Sinclair from our marine team and Barbara Cheney from the University of Aberdeen dive into the [latest monitoring results and research](https://scotlandsnature.wordpress.com/2024/04/26/how-is-scotlands-east-coast-bottlenose-dolphin-population-doing/) from this important habitat for this population along Scotland’s east coast.