



NatureScot

Nàdar Alba

Application Form for NatureScot PhD Internship Proposals

A. INFORMATION ABOUT THE PROPOSED INTERNSHIP

1. Proposed project title

Source-to-sea: taking stock of the coherence of policy and regulatory mechanisms, and the supporting scientific knowledge, to manage the downstream ecosystem consequences of activities on land and in freshwater.

2. Which area(s) of interest to NatureScot does the internship proposal address?

	Main area(s)	Secondary interest(s)
Marine planning and policy	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Coastal and marine climate change	<input type="checkbox"/>	<input type="checkbox"/>
Coastal and marine management advice	<input type="checkbox"/>	<input type="checkbox"/>
Marine Protected Areas and Priority Marine Features	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Marine research, survey and data management	<input type="checkbox"/>	<input type="checkbox"/>
Sea fisheries management	<input type="checkbox"/>	<input type="checkbox"/>
Ecosystem approach	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Land-sea interface	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Nature-based solutions	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3. Background and rationale of the internship project.

Efforts to improve the integration of marine and terrestrial planning systems have focussed on the immediate land-sea interface in relation to cable landings, ports and harbours and the resilience of coasts to climate change. **The Water Environment (Controlled Activities) (Scotland) Regulations 2011** cover freshwater, groundwater, estuaries and coastal waters. They control diffuse pollution, discharges, abstractions, and engineering works (inland). Specific coastal activities such as aquaculture are regulated by SEPA. There is already good evidence for bacterial contamination from land to Bathing Waters and Shellfish Waters. However, there is less understanding on cumulative impact of other pressures from land-based activity combined with marine activities on marine ecosystems. Water quality, sediment loss and carbon transport are relevant issues, for example. There is evidence that land management, such as restoring river woodlands, can also positively influence the health of marine ecosystems. However, planning of land and marine are often undertaken separately, so this research would help inform more integrated management of land and sea. This placement would focus on understanding the adequacy current policy and regulation to inform a joined-up approach to the protection and restoration of terrestrial, riparian and freshwater habitats for marine and coastal outcomes. It will include taking stock of our level of understanding, monitoring capabilities and policy tools to address downstream consequences for ecosystems/habitat/species and critical interrelationships between marine, freshwater and terrestrial ecosystems.

4. Outline of project proposal, including proposed tasks for candidate and relevant methods likely to be used.

This placement's primary aim is to review the coherence of policies / regulatory mechanisms across different strands of government policy, relating to the role of nature in terrestrial, riparian and freshwater habitats for supporting the ecological and ecosystem integrity of estuarine and coastal systems in Scotland. Emerging recommendations can help align and integrate both the development and implementation of marine and terrestrial environmental policy, such as helping put into practice [Planning Circular 1/2015: The relationship between the statutory land use planning system and marine planning and licensing \(www.gov.scot\)](#). Literature review, dialogue with experts and learning from reviews of data and indicators will inform this work.

There will be close collaboration with non-marine colleagues, including Natural Resource Management Activity. It will involve liaison with contacts in SEPA, and potentially [CREW](#) and academic contacts – this enables integrated consideration across NatureScot and SEPA remits.

Key tasks:

- Mapping of policies and regulatory mechanisms across marine, terrestrial and freshwater governance systems in Scotland, evaluating policy coherence and integration.
Recommendations will help align and integrate both the development and implementation of marine and terrestrial environmental policy.
- Learn from existing reviews of data (e.g. by JNCC/Defra) and indicators from monitoring and surveillance schemes to inform nature conservation or habitat restoration measures that could avoid or mitigate downstream impacts on estuarine and coastal ecosystems, or impact on ecosystem interconnectivity.
- Consider implications of timing of monitoring to understand the impact of specific events such as sediment transport.
- Literature review on the state of scientific knowledge, augmented with expert views on where there are key gaps in understanding about downstream consequences (to estuaries & coasts) of habitat damage, loss or restoration in terrestrial, riparian and freshwater systems.
- Deliver two workshops with relevant experts, one at the beginning to help focus the research, and another at the end to provide knowledge exchange.

Methods: Largely desk-based with much of the available information existing online. Liaison and discussion with NatureScot and SEPA colleagues and suitable external contacts (public sector and academic) will also be a core part of the work.

5. What impacts will this internship have, what deliverables or outcomes are likely, why is this work important to NatureScot?

The conclusions of the work should guide us on whether this area of work is deserving of greater attention, taking stock of the extent to which clearer attention to what happens on land and in freshwater could have benefits for ecosystem integrity in estuarine and coastal systems. Through the 'natural capital' lens it will inform how we 'value' and therefore invest in land-based and upstream actions and their downstream benefits.

Deliverables will include a review of the state of scientific knowledge, including any recommendations for priority science. This will inform the key output, mapping the policies and regulatory mechanisms across different parts of government, identifying strengths and weaknesses regarding coherence and coordination of diverse policy strands and their implementation. A

possible further deliverable may include short case studies identifying opportunities for greater policy coherence and connectivity between terrestrial interventions and downstream outcomes in estuarine and coastal ecosystems.

This work is important as a potentially neglected area of work, taking stock of issues at risk of falling between siloes of different policy frameworks, regulatory systems and organisational remits.

6. Does this proposal link to industry and/or policy and/or regulation?

Yes, taking stock of policy and regulatory issues is a core part of the proposal.

7. What is the proposed schedule or timetable for work during internship?

There are no specific time constraints for the proposed topic. The key tasks could be progressed in parallel if the successful candidates welcomes such diversity in a work schedule, or sequentially if that is their preference.

8. Does this internship have any dependencies? (i.e. ship time, fieldwork, specialist facilities or resources, software, high cost items, location dependency, etc)

This proposal has been developed in collaboration with SEPA, who have committed their support, which will add considerable value to the work.

Further benefits can be achieved if able to secure time for collaboration from CREW, academic contacts and from internal colleagues.

Please note, the funding is only available until end March 2022 so key deliverables should be achieved within this timeframe i.e. financial year 2022-23.

B. INFORMATION ABOUT THE NATURESCOT SUPERVISING STAFF MEMBERS

9. Name

Chris Leakey

10. Email address

chris.leakey@nature.scot

11. Any previous experience of supervising students (undergraduate/ postgraduate)

Yes: undergraduate and PhD students

Please duplicate Q.10-12 for any additional staff members involved in supervising the intern.

Phil Baarda (Natural Resource Management) tentatively identified as providing input

C. FUNDING

12. The National Minimum Doctoral Stipend for 2022/23 is £17,668. NatureScot will provide the equivalence of up to 3 months funding i.e. £4,417, payable to the intern. If the internship will incur additional costs, please detail these below and indicate the source of NatureScot or any additional funding.

There will likely be some low-level travel and subsistence expenses for meetings, to be covered by the Sustainable Coastal and Seas budget.

13. Please include any other relevant information about the internship not covered elsewhere.

It is preferable for the student to spend some time in either the Battleby (North of Perth) or Great Glen House (Inverness) NatureScot office so they have the opportunity to meet other staff and widen their internship experience. However, this can be discussed in terms of how frequent such office visits would be, accommodation options etc. We have flexible working arrangements, including the potential for home-working.

Please submit expressions of interest (using available template) and Curriculum Vitae to all the following contacts by close of play Tuesday 01 November 2022.

Carol Hume	Carol.Hume@nature.scot	01463 725017
	Marine and coastal student placements coordinator, NatureScot	
Chris Leakey	Chris.Leakey@nature.scot	
Emma Defew	ecd2@st-andrews.ac.uk	01334 467200

Thank you.