



## Opportunity for NERC and Environment Agency Policy Placements

### Policy Placement Fellowships (3 posts)

**Closing date: 14 October 2014 16:00**

The Natural Environment Research Council (NERC) and the Environment Agency (EA) are seeking to appoint a policy placement fellow in each of the following areas:

- Impact of atmospheric pollutants on the current and future status of protected habitats;
- Nitrate from agriculture: moving from uncertain data to operational responses;
- Predicting and mitigating environmental impacts from low head Hydropower schemes.

These opportunities are the first step towards developing a more strategic, longer-term partnership between NERC and the Environment Agency. Opportunities such as policy placements will sit under the partnership framework and be complemented by other collaborative activities and also by an interrelating framework with the Department of Environment, Food and Rural Affairs (Defra)<sup>1</sup>.

Applications are invited from early and mid-career researchers, with 2-5 years post-PhD experience in areas of relevance to the Environment Agency's remit and with a real interest in the science-policy interface. Ideally, successful applicants will be in place by December 2014.

The awards will be jointly funded by NERC and the Environment Agency for a period of one year, on a full-time basis (although part time working will be considered). The placement will be based at the Environment Agency's Bristol office (Horizon House, Deanery Road, BS1 5AH) or possibly an alternative EA office subject to agreement. The policy placement fellows will remain employed by their present employer and are expected to return to their posts upon completion of appointment. The awards will cover salary costs and arrangements will be made for reasonable travel and subsistence expenses on a case-by-case basis. The awards are managed under the [NERC KE Policy Placement Scheme](#) which aims to promote knowledge exchange between research organisations and public sector, provide partner organisations with research-informed evidence to develop and review policy and increase the uptake of NERC environmental science research in policy-making bodies.

### Policy Placement Fellowship Background, Objectives and Requirements

Specifications of each of the three policy placement fellowship including background and objectives of work and skills and expertise requirements are detailed in the Annexes.

[Annex A.](#) Impact of atmospheric pollutants on the current and future status of protected habitats;

[Annex B.](#) Nitrate from agriculture: moving from uncertain data to operational responses;

[Annex C.](#) Predicting and mitigating environmental impacts from low head Hydropower schemes.

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<sup>1</sup> For further information about these partnership activities, please contact NERC's innovation team: [innovation@nerc.ac.uk](mailto:innovation@nerc.ac.uk)

As part of the work specified in Annex A, B and C for the individual placements, all three projects must draw on any existing NERC research, expertise and networks wherever possible. Placements must also build in time for more strategic liaison between NERC and the Environment Agency to help inform longer term NERC-EA partnership strategy and activities.

The other UK and Irish environment agencies (Scottish Environmental Protection Agency, Natural Resources Wales, Northern Ireland Environment Agency and Irish Environmental protection Agency) are also interested in these fellowships and would like to be involved with this work to understand the potential impact across the UK and Ireland. Therefore, the fellow will spend some time engaging with these organisations and ensuring the outputs of this work are relevant to all of the UK and Ireland.

### **Eligibility**

The applicant must be a resident in the UK and be employed by an eligible UK Research Organisation (Higher Education Institution, Research Council Institute or a recognised Independent Research Organisation) as stated in the [NERC Research Grants Handbook](#).

### **Funding**

Up to £80k is available for each award. This will pay for

- Salary, NI/Superannuation at 100% cost
- Travel and Subsistence costs at 100% cost;
- 25% of [indirect cost](#) at 80% FEC

### **How to Apply**

Applications should be submitted through the [Joint electronic Submission \(Je-S\) system](#). Please read the [Guidance on Submitting Application](#) before completing application in the system. The specific policy placement work area being applied for should be clearly indicated on the project title section of the application form.

Attachments required:

1. CV of up to two pages A4 – the font size should be size 11 point (Arial or equivalent);
2. Details of two references (preferably one from academia and one with a user background);
3. Statement of approval from their employer agreeing to their release and accepting the conditions of the scheme;
4. Separate 'Justification of Resources' including Travel and Subsistence on one page of A4.

Once you have submitted to Je-S, it is essential that you email [innovation@nerc.ac.uk](mailto:innovation@nerc.ac.uk) to alert NERC of your application. The closing date for applications is Tuesday, 14 October 2014 at 16:00. Please ensure that all guidance and links to supporting information are read in advance of making the application.

### **Reporting and monitoring**

As a condition of the award, NERC requires the submission of a 'Project Highlights and Impact form for Policy Placement' within a month of the grant finishing. The form can be downloaded from the Innovation funding webpage: <http://www.nerc.ac.uk/funding/available/schemes/> and should be submitted to [innovation@nerc.ac.uk](mailto:innovation@nerc.ac.uk). The award-holder may also be asked to provide information for NERC's needs; i.e. publications and websites, and to attend NERC events.

### **Interview and Assessment Process**

Applications will be processed within NERC and prepared for a selection panel. **Short-listed applicants will be invited for interview at the Environment Agency Bristol office on week commencing the 20<sup>th</sup> of October 2014.** Applicants will be assessed based on evidence of their experience and competencies, as described in this Announcement of Opportunity, and on their performance at interview.

### **Contacts**

For queries on NERC Policy Placement Scheme and application process: Maricon Alojado, Innovation Operations Manager, NERC. Email: [maloj@nerc.ac.uk](mailto:maloj@nerc.ac.uk), Tel +44 (0)1793 411579.

For further information on EA: Neil Millard, Evidence Partnerships, Environment Agency. Email: [neil.millard@environment-agency.gov.uk](mailto:neil.millard@environment-agency.gov.uk); Tel: +44 (0)117 934 4318.

For queries on the specification of posts and projects: see Annexes for contacts.

## **Annex A. Impact of atmospheric pollutants on the current and future status of protected habitats**

**Contact:** Rob Kinnersley, Environment Agency. Email: [rob.kinnersley@environment-agency.gov.uk](mailto:rob.kinnersley@environment-agency.gov.uk); Tel: 07795 283656

### **Fellowship background and objectives**

The Environment Agency has a statutory duty to ensure that neither our own operations nor the processes we regulate have an unacceptable impact on habitats and species protected under the EU Habitats Directive (1992) and the Conservation of Habitats and Species Regulations 2010 (commonly known as the 'Habitats Regulations') which transpose the Directive into English law.

The aim of this fellowship is to pull together the latest research on how atmospheric pollutants interact with protected habitats, and to explore how it might best be used to inform policy and regulatory practice.

Two categories of atmospheric pollutant are of particular concern to the Environment Agency with respect to habitat status – those causing eutrophication and those causing acidification (with some pollutants, such as ammonia, falling into both categories). Specific objectives under this fellowship might include, but are not restricted to working with the existing research community to further develop research on: quantifying the range of contributions made by atmospheric sources to the total burdens of these pollutants on habitats; quantifying indirect contributions to habitats from atmospheric inputs elsewhere in a catchment; dynamic modelling as a supplement to, or an alternative, to assessment via critical loads; methodologies for interpreting biomonitoring data, and exploring possible explanations when these show unexpected harm, or lack of harm.

Applicants are invited to make suggestions for research projects based on the above themes. In conducting the research the fellow will:

- review and consolidate current understanding through structured critical literature reviews and continued engagement with the research community,
- work with staff from the Environment Agency and other government authorities to understand their needs and how current knowledge might be applied to meet them,
- report on key evidence gaps, suggesting strategies that might address them.

The work has potential to have a significant impact beyond academia, but it should also be the source of at least one high impact academic paper exploring some aspect of air pollution/habitat interaction in England.

### **Applying evidence from NERC science**

In the last two decades, NERC scientists have had highly influential roles in the national and international development of methodology for quantifying the impacts of pollutants on habitats. Their research has included the development of critical loads, critical levels and dynamic modelling for use within the UN Convention on Long-range Transboundary Air Pollution (LRTAP) and the European Commission, as well as development of mapping, ecosystem impacts and valuation methods for application within the UK at the request of Defra, the Devolved Administrations and Conservation Agencies

### **Skills/expertise required**

The fellow should have appropriate knowledge and background for the proposed work which may include:

- an understanding of air pollution sources, fates and impacts,
- an understanding of ecological responses to air pollution inputs,
- an understanding of the biogeochemical cycling of pollutants through catchments,
- a working knowledge of modelling methods, with GIS skills being advantageous,
- an interest in the interface of research and its use in policy and decision-making, and the knowledge exchange processes which enable this,
- an ability to communicate effectively at all levels from non-specialist to expert, verbally and in writing, and be comfortable engaging with both stakeholders and academics,
- the ability and desire to work effectively with individuals from across different disciplines. It would be advantageous to have experience in working in multi-disciplinary environments.

## Annex B. Nitrate from agriculture: moving from uncertain data to operational responses

Contact: Alwyn Hart, Environment Agency. Email: [alwyn.hart@environment-agency.gov.uk](mailto:alwyn.hart@environment-agency.gov.uk); Tel: +44 (0)121 712 9311.

### Fellowship background and objectives

The Nitrates Directive (91/676/EEC) is designed to protect waters against nitrate pollution from agricultural sources. It requires Member States to identify waters which are, or could become, polluted by nitrates and to designate as Nitrate Vulnerable Zones (NVZs) all land draining to those waters and contributing to the pollution. To meet these requirements, Defra have commissioned reviews that designated NVZs in 1993, 1998, 2002, 2008 and 2013. The designation methods used have evolved over this time and the last two reviews have used a similar approach of weighted risk models based on both monitored concentrations and loadings derived from agricultural practice (from census returns) and discharge consents. In each case, three separate methods are used for surface water, groundwater and eutrophic waters, respectively.

The methods have been developed with the close involvement of farming and water company representatives and with advice and guidance from a number of independent external technical experts. However, results are often considered controversial by individual affected farmers. Farmers in general are unfamiliar with modelling techniques, and expect sparse geographical monitoring data to be directly relevant to their individual farms. The Environment Agency will need to explain any new methods in accessible terms which both the farming community and the technical review group can accept. The new methods will also need to be compliant with EU reporting requirements.

The monitoring network and methods change frequently and methods need to be developed which are robust enough to cope with gaps in data, both geographical and temporal. The Environment Agency needs to demonstrate to Defra and to the wider community that we are using the most cost efficient and appropriate methods to designate NVZ areas for groundwater and surface water.

**This fellowship is aimed at investigating new approaches for identifying waters that are at risk of nitrate pollution and the land that drains to these.** A key constraint is that any methods must be applicable at national scales with existing data sources. We need to be able to make scientifically robust judgments.

Ideally, the work would provide comparison of different available options and advantages and risks of each. The work has potential to have a significant impact beyond academia by steering regulatory decision making across the country, but it should also be the source of high impact academic papers.

### Applying evidence from NERC research findings

It is expected that the fellowship will build on the outcomes of relevant NERC-funded research, and that the fellow will work with relevant experts within the Environment Agency, NERC Research Centres and HEIs to deliver the project. Completed NERC research programmes have previously established a large body of evidence supporting understanding of nitrate in the environment (e.g. [LOCAR](#), [LOIS](#)). Since then, a substantial and wide-ranging body of recently published science (last 5 years) and ongoing research is well placed to inform future refinement in approach to NVZ designation. Relevant work covers thematic programmes funded by NERC and research published directly by NERC scientists.

Current research programmes: Two large projects funded under the [Macronutrients Cycles](#) are developing model-based assessment tools to quantify nutrient (including nitrate) fluxes at various temporal and spatial scales. A CEH-led network (UKLEON) is establishing inter-comparable lake

monitoring to provide high resolution information on lake functions, with emphasis on eutrophication (funded by the [Network of Sensors programme](#)).

Recent published research: A number of publications have arisen from BGS-funded research quantifying the impact of sub-surface processes on storage and response times in the saturated and unsaturated zone. These describe modelling studies conducted as both aquifer-specific and regional/national applications. Notably these identify the likelihood of whether peak concentrations have yet been reached; in this respect alongside these studies CEH have conducted aquifer-specific studies to link long-term chalk groundwater nitrate response to fertiliser inputs. CEH-led publications arising from a RELU-funded project (ChREAM) provide regional scale assessments (Humber basin) applying surface water models similar to those used in NVZ designation methodologies. The work focused on in-river processes moderating nitrate loads and integrated status assessments (NALTRACES model) with dynamic modelling at daily resolution. A number of other projects funded through the [RELU programme](#) also provide insights on nitrate response in agricultural environments. Concerning lakes, in recent years, insights on eutrophication have been derived from various waterbody-specific phytoplankton modelling studies using the CEH PROTECH model.

### **Skills/expertise required**

This work is complex and requires a (sometimes rare) appreciation of both surface and groundwater and the importance and inter-relation of both. Coupled with this, the candidate must have

- the willingness and technical capability to work with large and less than perfect datasets and coverage, both spatially and temporally, and develop appropriate methods to constrain the uncertainty in the data analysis,
- a good understanding of diffuse nitrate pollution and hydro(geo)logical responses to measures plus numerical analytical techniques. They will be expected to be familiar with the current methods for designating NVZs in England, and have an awareness of the political sensitivities of the designation process.

Knowledge of spatial analysis and GIS would be advantageous.

## **Annex C. Predicting and mitigating environmental impacts from low head Hydropower schemes**

**Contact:** Harriet Orr, Environment Agency. Email: [harriet.orr@environment-agency.gov.uk](mailto:harriet.orr@environment-agency.gov.uk); Tel: +44 (0)7900 650169.

### **Fellowship background and objectives**

Low head hydropower schemes can be an effective way of delivering renewable energy, but there may be impacts on freshwater ecosystems, migrating fish, fluvial geomorphology and the long-term sustainability of schemes may be affected by climate change. In addition, competing demands for the way we use and manage river habitats can lead to conflict between stakeholders who may take a different view on how precautionary an approach is justified.

The main objective of this fellowship will be to undertake research that has an impact on an area of interest to the Environment Agency. Areas of interest include, although not exclusively, the effectiveness of measures to mitigate hydropower impacts; the social, economic and environmental costs and benefits of hydropower development; impacts on ecosystems services, hydromorphology, weir pool form and function and flood risk.

Applicants are invited to make suggestions for research projects but in conducting the research the fellow will:

- Review current understanding, through engagement with practitioners and literature review,
- Assess existing monitoring to understand what it shows us and what we can learn from it,
- Draw on existing NERC research, expertise and programmes such as Living with Environmental Change (LWEC),
- Report on research and monitoring gaps.

The work has potential to have a significant impact beyond academia, but it should also be the source of at least one high impact academic paper exploring some aspect of low head hydropower schemes in England.

### **Skills/expertise required**

This work is multi-disciplinary, so that applicants may have a wide range of academic backgrounds including environmental science, engineering or social science.

The fellow should have appropriate knowledge and skills for the proposed work which may include:

- an understanding of hydrology and freshwater ecology,
- an understanding of ecological responses to changing river flows,
- a good understanding of catchment management,
- an interest in the interface of research and its use in policy and decision-making, and the knowledge exchange processes which enable this,
- excellent communication skills in engaging with both practitioners and academics and the ability and desire to work effectively with individuals from across different disciplines. It would be advantageous to have experience in working in multi-disciplinary environment.