Ecological Sciences Group

Chemical Ecologist/Phytochemist (Hutton-06-15)

Salary Circa £30, 000 per annum

We are seeking a postdoctoral level chemical ecologist or phytochemist to work at JHI, based in Aberdeen with Prof Glenn Iason in collaboration with senior colleagues from Forest Research and CEH. The project will investigate the resistance of Scots pine trees to invertebrate pests (Pine tree lappet moths, Pine Weevils) and fungal pathogens, and the relationships between defensive chemistry, climate and associated biodiversity in relation to the Scots pine's population of origin. The post is available for two years from early in 2015 to work on the PROTREE project funded by BBSRC as part of the LWEC-Tree Health and Plant Biosecurity Initiative.

The successful candidate will have expertise in organic analyses of the putative plant defences of pine, using GC with mass and flame ionisation detectors, HPLC and other methods as necessary. He or she will be responsible for day to day running of the research project, including coordination and assistance with field work, and sample collection from natural woodland study sites and from a series of common environment transplant experiments around Scotland.

Further information and a job specification is available from www.hutton.ac.uk/careers.

To apply please submit a covering letter and CV (including the names and addresses of three referees, one of which must be your current or most recent employer) by e-mail to vacancies@hutton.ac.uk or by post to HR Office Aberdeen, James Hutton Institute, Craigiebuckler, Aberdeen AB15 8QH by 9th March 2015. Please note that interviews will take place on 24th March 2015. Informal enquiries can be made to glenn.iason@hutton.ac.uk

Please quote reference number Hutton-06-15 in all correspondence.

The James Hutton Institute
Tel: 0844 928 5428

See next pages for further information

Chemical Ecologist/Phytochemist: PROTREE project

BACKGROUND

The phytochemical composition of the dominant components of vegetation communities provides a key connecting factor influencing processes at a range of levels in terrestrial ecosystems, and can have a defining influence on the biodiversity of organisms associated with them. Heathland and woodland communities are characterised by the predominance of woody perennial plants (both trees and shrubs) which are rich in plant secondary metabolites. There are considerable differences in phytochemical composition of different species as well variation among individuals within populations in eg. monoterpenes and phenolics. These, along with other plant secondary metabolites have a wide range of allelochemic activities, including influencing selection and digestion by vertebrate and invertebrate herbivores, protection against pathogenic organisms, degradation of plant material by microbes and effecting allelopathic relationships between higher plants. These ecological properties combined with their heritability mean that they provide mechanistic links between a range of biological levels from species and genotypic differences among plants, through soil-plant-herbivore processes at the very small scale, up to the ecosystem level.

The rise in the number of plant pests and pathogens, combined with restrictions on chemical control agents, has led to an acute need for more research into the extent, mechanisms and applied significance of natural variation in plant defense. This vacancy forms part of the BBRSC-funded project on Promoting resilience of UK tree species to novel pests and pathogens: ecological and evolutionary solutions (PROTREE). This post will form part of a large collaborative project investigating the resilience of UK tree species and involves CEH, Forest Research, Universities of Edinburgh and Aberdeen, SRUC amd RBGE .

For further information on the PROTREE project see:

http://www.ceh.ac.uk/science/promoting-resilience-of-uk-tree-species.html

JOB DESCRIPTION

The successful candidate will work with Prof Glenn Iason to conduct research in collaboration with senior colleagues from Forest Research and CEH, on the resistance of Scots pine trees to invertebrate pests (Pine tree lappet moths), and to investigate relationships between defensive chemistry, climate and associated biodiversity in relation to the family and population origin of UK Scots pine.

The James Hutton Institute has a strong international reputation in the field of chemical ecology. This is an exciting opportunity for an enthusiastic and imaginative chemical ecologist to investigate a range of topics related to defense of Scots pine trees against current, emerging and potential future threats. The main focus will be in quantifying variation within and between populations of Scots pine trees particularly in their composition of monoterpenes, and exploring the significance of these and other groups of compounds in ecological interactions, including as defenses against pest herbivores and pathogens. The appointee would have the opportunity to contribute to a range of other projects involving chemical ecology of ecological interactions, ecosystem function and environmental change.

The post will be available for two years in the first instance.

Main duties of postholder:

- To take a leading role in the coordination of the JHI component of the BBSCRC-funded PROTREE project.

- To undertake organic analyses of plant material relevant to the putative plant defences of pine, in conjunction with an assistant, using GC with mass and flame ionisation detectors and HPLC and other methods as necessary.
- To undertake day to day running of the research project, coordination and assistance with field work, organisation of plant sample processing and sample collection from natural woodland study sites and from a series of common garden experiments around Scotland.
- To interact with research team within the JHI and with external collaborators on the PROTREE and other projects, specifically providing phytochemical support to other aspects of the PROTREE project including resistance against fungal pathogens.

PERSON SPECIFICATION – ESSENTIAL REQUIREMENTS

Education qualification:

- PhD or equivalent practical experience of research on chemical ecology or phytochemistry.

Skills:

- Chemical analytical Expertise in organic chemical extraction purification and analysis techniques, using GC-MS, GC-FID.

Scientific Productivity:

- Track record of scientific publications preferably as lead author in these areas

Funding potential:

- Evidence of or aptitude for winning competitive grant funding

Other:

- Driving license UK valid driving license

PERSON SPEC – DESIRABLE ATTRIBUTES

- Experience at HPLC with DAD and UV detection, and other techniques as appropriate
- Experience and interest in variation in plant defense systems against insects pests and/or plant pathogens
- Collaborative nature with a strong team-working ethos
- Experience of lab health and safety systems
- Good organizational skills
- Experience of managing small numbers of staff
- Experience of field work under sometimes arduous outdoor conditions, at remote study sites

The post holder will supervise an assistant and may report on this person and one other.