



Ysgoloriaethau Sgiliau Economi Gwybodaeth
Knowledge Economy Skills Scholarships



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Plants for Pollinators: developing and testing ‘pollinator-friendly’ seed mixes and planting schemes for gardens, amenity spaces and agricultural systems

Aberystwyth University, IBERS and the National Botanic Garden of Wales

Project ID: AU30010

Annual Stipend: £14,340

Application Deadline: 28th July 2017

Honeybees and wild pollinators provide a vital ecosystem role. Within the UK, the crop pollination service provided by insect pollinators contributes £440m to the economy. Honeybees also provide honey, wax and propolis, all high value products. There were 4,280 beekeepers in Wales in 2016 producing 307 tonnes of honey worth £3m (National Bee Unit data). Despite their importance, honeybees and wild pollinators are facing declines due to habitat loss; agricultural intensification, pests, disease and climate change. Among the multiple pressures facing pollinators, decreasing floral resources has been suggested as a key contributing factor.

Access to suitable plants for foraging is therefore a key consideration for pollinators. The conservation of suitable native habitats is of primary importance but these can be supplemented with plantings that aim to support pollinators. This can include within gardens, amenity spaces, on arable margins or as part of meadow creation and restoration projects. There are a number of schemes that provide lists of ‘pollinator-friendly’ plants to guide planting plans but these tend to be based on anecdotal information and generally lack a firm evidence base. ‘Planting for pollinator’ lists also tend to generalise across pollinator groups, whereas in reality different species and groups of pollinators will have more specific needs.

In order for seed mixes and planting schemes to be of maximum benefit to a range of pollinating insects, and the ecosystem services that they provide, a much more scientifically rigorous approach is required in their design and testing.

This project will create and test seed mixes and plants for their ability to attract pollinating insects concentrating on honeybees, bumblebees, solitary bees, hoverflies and Lepidoptera.

The following approaches will be taken.

1. Data will be collected from the scientific literature on plant-pollinator interactions in the UK and Europe. Data will also be obtained from National Botanic Garden of Wales led research that uses DNA metabarcoding to identify plants used by pollinators throughout the year. This



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will be combined with plant ecological and horticultural information to determine plants suitable for growing in gardens, amenity areas and agricultural habitats.

2. Experimental seed mixes will be developed and compared with commercially available seed mixes. Seed mixes will be created for annual and perennial plants covering specific pollinator groups. Different mixes will be tested for use in gardens, amenity areas and agricultural systems. Seed mixes will be tested at a range of field sites throughout Wales including the Botanic Garden, Waun Las NNR and Aberystwyth University sites.
3. Planting schemes will be developed for herbaceous and woody plants and tested against existing 'plants-for-pollinators' lists. This will concentrate on plants used within gardens and amenity areas and will be tested within trial sites at the Botanic Garden.
4. Seed mixes and planting schemes will be assessed for:
 - a) Attractiveness to insects by quantifying insect visitation to flowers.
 - b) Nutritional value by assessing pollen and nectar characteristics.
 - c) Length of flowering and phenological progression to assess for how long the floral resource is available.
 - d) Amenity value and horticultural merit using plant observations and public evaluation.

The National Botanic Garden of Wales is dedicated to the research and conservation of biodiversity, to sustainability, lifelong learning and the enjoyment of the visitor. It is a research institution and a visitor attraction, reliant on visitor numbers and other commercial activities to deliver its charitable objectives. Within the Botanic Garden's Science Programme a core focus is the conservation of pollinating insects through research, education and public engagement. The Botanic Garden also has a Plant Sales area which grows plants for sale to the public. Research into the best plants for pollinating insects will allow the production of specialised seed mixes and recommended plants that can be Botanic Garden endorsed and sold through its retail outlets. Research results will also be disseminated through the Botanic Gardens public engagement programme giving another reason for visitors to come to the Garden.

Knowledge Economy Skills Scholarships (KESS 2) is a pan-Wales higher level skills initiative led by Bangor University on behalf of the HE sector in Wales. It is part funded by the Welsh Government's European Social Fund (ESF) convergence programme for West Wales and the Valleys.

The successful candidate will need to be resident in the convergence area on registration, and must have the right to work in the region on qualification. The successful applicant should have a minimum of a 1st or good 2:1 in a relevant degree, and be available to take up the studentship by 1st October 2017. The project is part-funded by the European Social Fund (ESF) through the European Union's Convergence programme administered by the Welsh Government. KESS II PhD



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scholarships are collaborative awards with external partners. (Applicants need to only apply, they do not need to search for partners).

To apply, please submit the following to the Postgraduate Admissions Office (address below) by 28th July 2017.

1. A completed Research Programme Application Form, two references. Application and reference forms may be downloaded from <http://www.aber.ac.uk/en/postgrad/howtoapply/>
2. A completed KESS II Participant proposal form (put the reference number **AU30010** in the top right hand box of the application form) and an up-to-date CV. KESS II application forms are available to download at the link below.

<http://www.aber.ac.uk/en/rbi/staff-students/knowledge-economy-skills-scholarships/currentscholarshipvacanciesandapplicationforms/>

3. A PhD proposal of up to 1,000 words where you expand on your experience and interests and describe why you are a good candidate for this research studentship. Please refer to the Project Description.

Value of Award: A stipend of £14,340 (rising in accordance with inflation for the remaining two years). Each scholarship has an additional budget for travel, equipment/consumables and training to support your research. KESS II PhD Scholarship holders do not pay fees.

Length: Full-time for 3 years. (Theses must be submitted 6 months after the funded three year study period.)

Training: The achievement of a Postgraduate Skills Development Award (PSDA) is compulsory for each KESS II scholar (The PSDA is based on a 60 credit award, which is an additional award to the PhD).

Eligibility: To be eligible to apply for a KESS II award, you must be resident, upon starting the scholarship, in the Convergence Area of Wales and you must be able to take paid employment in the Convergence area on completion of the scholarship.

The Convergence Area means the following counties of Wales:

Isle of Anglesey
Gwynedd
Conwy
Denbighshire
Ceredigion
Carmarthenshire
Pembrokeshire



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Swansea
Neath Port Talbot
Bridgend
Rhondda Cynon Taff
Caerphilly
Torfaen

For further student eligibility criteria related to the individual projects, please view the details of the individual project above.

Informal enquiries should be made to Natasha de Vere at natasha.devere@gardenofwales.org.uk or Peter Dennis at pdd@aber.ac.uk or 01970 621629

Address for applications:

Postgraduate Admissions Office
Recruitment & Admissions
Student Welcome Centre
Aberystwyth University
Aberystwyth
SY23 3FB

Quote Reference **AU30010**

Closing date for applications **28th July 2017**