

CARDIFF UNIVERSITY ECOSYSTEM RESILIENCE AND BIODIVERSITY ACTION PLAN (ERBAP) 2024-2026

The ERBAP Steering Group has recently reviewed and updated the university's Ecosystem Resilience and Biodiversity Action Plan. The plan sets how we are going to maintain and enhance biodiversity and promote ecosystem resilience across Cardiff University's campuses, in compliance with the Section 6 Duty of the Environment (Wales) Act 2016.

The ERBAP is based on assessing and improving the five attributes developed by Natural Resource Wales (NRW) for building ecosystem resilience: diversity, extent, condition, connectivity, and adaptability of ecosystems (DECCA). The plan also incorporates the five ways of working set out by the Well-Being of Future Generations Act: integration, collaboration, engagement, long-term and prevention.

The ERBAP was developed in collaboration with Cardiff Council to ensure that our joint actions achieve synergies in reaching our ecosystem resilience and biodiversity targets. The work is collaborative and draws upon the resources and expertise of all of Cardiff University's community: academic staff, professional services staff, postgraduate and undergraduate students.

The revised ERBAP sets out a series of targets to reach over the next three-year period between 2024 and 2026. We present here a summarised version of the plan, which includes the aims, priority species/species groups and habitats, and the species, habitats, engagement, and education targets. A full version is available upon request at hedgehogs@cardiff.ac.uk.

Aims

The ERBAP's central aims are:

1. Characterise the level and distribution of biological diversity, measured both within and among species and the status of biodiversity-related ecosystem services across the university's estate. These will be evaluated by intensive surveys and data analysis.
2. Using data collected in the categorisation phase, establish the most effective management strategies for maintenance, restoration, and enhancement of the university's green estate by mitigation.
3. Target any strategic habitats and functions identified to be in unsatisfactory conditions for restoration and/or enhancement, including the creation of a phased restoration plan around the university's estate focusing on enhancing biodiversity under the DECCA framework.
4. Continue to evaluate the university's green estate with an aim to enhance its biodiversity performance, regardless of its current status. Continue to restore and enhance the functionality and biodiversity of the university's green estate.
5. Implement a rolling monitoring program to evaluate changes and the impact of management practices on biodiversity and ecosystem services. Monitoring activities will be as inclusive as possible to create a 'living laboratory', thereby embedding the activities of the ERBAP within the university's day-to-day life and activities.
6. Continue to focus on the promotion of biodiversity and ecosystems services with staff and students, local authorities, and stakeholders. The university's green estate will be used as a focus for community interaction.

Cardiff University Priority Species

Table 1. Species and species groups identified to date as priorities for conservation action and management

Cardiff University Priority Species						
#	Common name	Species name	Species of Principal Importance for	Cardiff Local Biodiversity Action Plan	Cardiff University Wildlife & Wildflower Plan	Status at Cardiff University in 2020
1	Slow worm	<i>Anguis fragilis</i>	yes	yes	yes	Present at one site
2	Common pipistrelle	<i>Pipistrellus pipistrellus</i>	yes	yes	yes	Use at least three sites
3	Newts	<i>Lissotriton vulgaris</i> ; <i>L. helveticus</i> ; <i>Triturus cristatus</i>	yes	yes	yes	Not recorded
4	Black-headed gull	<i>Larus ridibundus</i>	yes	yes	no	Present at one site
5	Herring gull	<i>Larus argentatus</i> subsp. <i>argentatus</i>	yes	yes	no	Present at several sites
6	House sparrow	<i>Passer domesticus</i>	yes	no	no	Present at several sites
7	Cinnabar moth	<i>Tyria jacobeeae</i>	no	yes	no	Breeds at two sites
8	Hedgehog	<i>Erinaceus europaeus</i>	yes	no	yes	Uses at least three sites, may breed
9	Swift	<i>Apus apus</i>	no	no	yes	Breeds at one site
10	Tawny owl	<i>Strix aluco</i>	no	no	yes	Uses one site
11	Garden birds	Incl. <i>Prunella modularis</i> , <i>Turdus philomelos</i> , <i>Sturnus vulgaris</i>	yes	no	yes	Present at most sites
12	Pollinators	Incl. <i>Spilosoma lutea</i> , <i>Malacosoma neustria</i>	no	no	yes	Present at most sites
13	Bluebell	<i>Hyacinthoides non-scripta</i>	no	no	yes	Present at four sites
14	Welsh daffodil	<i>Narcissus pseudonarcissus</i>	no	no	yes	Not recorded
15	Soil fauna/flora	Incl. Acari, Trichoniscidae, various Coleoptera, Chilopoda, Fungi	no	no	no	Present at all sites
16	Veteran trees	Incl. <i>Quercus</i> spp., <i>Fagus sylvatica</i> , <i>Fraxinus excelsior</i>	yes	no	no	Present at several sites
17	Saproxylic fauna/flora	Incl. Lucanidae, Syrphidae, Fungi	no	no	no	Present at some sites
18	Moths	Var. Lepidoptera	no	no	no	Present at all sites

Cardiff University Priority Habitats

Table 2. Habitats identified to date as priorities for conservation action and management

Cardiff University Priority Habitats					
#	Common name	Habitat of Principal Importance for Biodiversity	Cardiff Local Biodiversity Action Plan	Cardiff University Wildlife & Wildflower Plan	Status at Cardiff University in 2020
1	Lowland neutral grassland meadow	yes	yes	yes	Currently c.2,475m ² across eight sites. All converted from improved grassland, but with some remnant and several colonising species.
2	Ponds	yes	yes	yes	Currently only one mini-pond across all sites, but another pond was historically present.
3	Lowland mixed deciduous woodland	yes	yes	yes	Around 9,000m ² across three sites.
4	Hedgerow	yes	yes	yes	Over 3km present across several sites.
5	Veteran trees	yes	no	no	At least three sites containing veteran trees.

Action Plan 2024-2026

Species Targets

Table 3. ERBAP 2024-2026 Surveys and Habitat Enhancement Targets for Priority Species and Species Groups

Priority Species/Species Groups	Species-Specific Survey and Habitat Enhancement Targets 2024-2026
Slow Worms	<ul style="list-style-type: none"> ▪ Determine if slow worm population still occurs on campus grounds ▪ Set up a cat-deterrent system ▪ Add warning and information signage ▪ Survey other areas for slow worms ▪ Place reptile hibernacula at key sites ▪ Set-up long-term monitoring programme for slow worms
Newts	<ul style="list-style-type: none"> ▪ Explore the creation of ponds on campus ▪ Explore the creation of compost heaps ▪ Build more log piles
Tawny owls	<ul style="list-style-type: none"> ▪ Add warning and information signage ▪ Create additional hedgerow and/or rough grassland to encourage small mammals and birds ▪ Set up dusk survey programme*

	*with support from Ornithological Student Society, WildSoc, BIOSI
Gulls	<ul style="list-style-type: none"> ▪ Initial bird walks to confirm presence of gulls* ▪ Set up a gull survey programme to include four yearly visits to key sites, looking for any signs of disease and predation, and counting number of nests*
	*with support from Ornithological Student Society, WildSoc, BIOSI
Swifts	<ul style="list-style-type: none"> ▪ Determine if swift population still occurs on campus grounds ▪ Develop swift-friendly site policy ▪ Develop environmental assessment and mitigation protocol, to be followed if university needs to develop any environmentally sensitive areas ▪ Place swift boxes/bricks ▪ Add warning and information signage ▪ Set-up long-term monitoring programme for swifts*
	*with support from Ornithological Student Society, WildSoc, BIOSI
Garden birds	<ul style="list-style-type: none"> ▪ Initial desktop exercise (access to online databases) ▪ Bird walks to confirm what species occur in campus (breeding, resident, migrant species)* ▪ Set-up long-term monitoring programme for garden birds* ▪ Develop new guidance to reduce / eliminate the use of pesticides on campus ▪ Set new targets to reduce / eliminate the use of pesticides on campus
	*with support from Ornithological Society, WildSoc, BIOSI
Pollinators	<ul style="list-style-type: none"> ▪ Initial desktop exercise (online databases, Spot-a-Bee) ▪ Run regular nature walks and bioblitzes ▪ Encourage use of wildlife recording apps (e.g., LERC Wales, iRecord, Spot-a-Bee apps) ▪ Develop new guidance to reduce / eliminate the use of pesticides on campus ▪ Set new targets to reduce / eliminate the use of pesticides on campus
	*with help from Pharmabees, WildSoc, BIOSI, NGOs
Hedgehogs	<ul style="list-style-type: none"> ▪ Continue to survey new sites for hedgehogs* ▪ Repeat surveys yearly at key sites* ▪ Continue to enhance sites with hedgehog houses, log/leaf piles, water and feeding stations ▪ Achieve Gold and Platinum Hedgehog Friendly Campus accreditations ▪ Develop new guidance to reduce / eliminate the use of pesticides on campus ▪ Set new targets to reduce / eliminate the use of pesticides on campus
	*with support of Cardiff University Hedgehog Friendly Campus team and Biodiversity Hubs teams
Pipistrelles	<ul style="list-style-type: none"> ▪ Carry out initial characterisation study for pipistrelles using acoustic methods* ▪ Develop bat-friendly site policy ▪ Develop environmental assessment and mitigation protocol, to be followed if university needs to develop any environmentally sensitive areas ▪ Place bat boxes/bricks ▪ Add warning and information signage ▪ Set-up dusk survey programme for bats*

	*with support from local expert groups
Bluebells	<ul style="list-style-type: none"> ▪ Carry out initial characterisation study, including identification of any potential invasive species or hybrids* ▪ Where identified, remove Spanish bluebells ▪ Develop environmental assessment and mitigation protocol, to be followed if university needs to develop any environmentally sensitive areas ▪ Add warning and information signage
	*with support from Grounds team, NGOs, local expert groups
Welsh daffodils	<ul style="list-style-type: none"> ▪ Carry out initial characterisation study ▪ Develop environmental assessment and mitigation protocol, to be followed if university needs to develop any environmentally sensitive areas ▪ Add warning and information signage ▪ Ban the planting of horticultural daffodils and replace all horticultural daffodils by wild Welsh daffodils ▪ Plant wild Welsh daffodils at the Llanrumney Sports Fields
	*with support from Grounds team, NGOs, local expert groups
Soil fauna/flora/funga	<ul style="list-style-type: none"> ▪ Carry out initial characterisation study ▪ Develop new guidance to reduce / eliminate the use of pesticides on campus ▪ Set new targets to reduce / eliminate the use of pesticides on campus
	*with support from BIOSI, local expert groups
Veteran trees	<ul style="list-style-type: none"> ▪ Maintain old-growth trees as long as they are deemed structurally safe ▪ Existing trees will be allowed to mature. Thorough assessments will be carried out regarding the structural safety of trees, with trees affected by fungal decay, hollowing or even death not inherently resulting in their removal unless they pose a risk to human safety (policy already in place) ▪ When a need to fell a tree due to safety concerns is identified, endeavours should be made to allow logs to remain on site to function as wildlife habitats
Saproxylc fauna/funga	<ul style="list-style-type: none"> ▪ Carry out initial characterisation study* ▪ Develop new guidance to reduce / eliminate the use of pesticides on campus ▪ Set new targets to reduce / eliminate the use of pesticides on campus
	*with support from BIOSI, local expert groups
Moths	<ul style="list-style-type: none"> ▪ Desktop exercise (online databases) ▪ Run regular nature walks and bioblitzes to record moth caterpillars ▪ Set up dusk survey for moths ▪ Develop new guidance to reduce / eliminate the use of pesticides on campus ▪ Set new targets to reduce / eliminate the use of pesticides on campus
	*with support from WildSoc, BIOSI, NGOs

Habitat Targets

Table 4. ERBAP 2024-2026 Proposed Habitat Enhancement and Reduction of Threats to Wildlife Targets

Target	Steps	Timeline	Responsible
<p>Mapping of University Green Estate</p> <p>Map green spaces and create GIS data layers</p>	<ul style="list-style-type: none"> ▪ Map of green estate ▪ Map wildlife-friendly areas ▪ Map habitat enhancement structures (bird and bat boxes, hedgehog houses, log and leaf piles, hoverfly lagoons, etc.) ▪ Map habitat enhancement measures ('No Mow May', new mow regime, leave the leaves, etc.) 	By July 2024	ERBAP Steering Group
<p>Mowing and Trimming Regime</p> <p>Adopt new low mow management scheme across the estate on areas identified in 2022/2023 and extend number of areas where scheme is applied</p>	<ul style="list-style-type: none"> ▪ Adopt new mowing and trimming regime ▪ Map actions agreed for each area and develop an official guidance for site maintenance ▪ Add <i>It's for Them</i> signage to sites ▪ Add bilingual stickers to remind trimmers and mower users to check for wildlife (provided by HFC) ▪ Monitor annually changes in flora, fauna, and funga composition of low mow areas ▪ Update procedures as needed 	By December 2024	Estates Maintenance Manager / Grounds contractor
<p>Wildflowers, Hedge, and Tree Planting</p> <p>Plant more hedgehog/wildlife-friendly plants and trees*</p> <p>*plant species suggestions by Hedgehog Friendly Campus</p>	<ul style="list-style-type: none"> ▪ Supplement low mow areas with native wildflower seed mixes ▪ Plant native wildflowers and flowering plants with a nectar source (e.g., oxeye daisies, hostas, fennel, candytuft, yarrow, wild marjoram, and ornamental thistles) ▪ Identify areas to increase area covered by meadow habitat on university estate ▪ Finalise tree and hedge planting plan consultation phase with site managers ▪ Update proposed tree and hedge planting plans if needed ▪ Provide list and number of desired species to <i>Coed Caerdydd</i> ▪ Plant native hedgerows (particularly blackthorn and hawthorn) where hedgehogs can nest ▪ Where possible, plant native, deciduous trees with medium-sized leaves (e.g., hazel, oak, beech, hornbeam, and lime) so hedgehogs can use the fallen leaves as nesting material ▪ Where possible, plant fruit trees such as crab apple and wild cherry, 	Annually	Grounds contractor in consultation with ERBAP Steering Group

	<p>because fallen fruit encourages invertebrates</p> <ul style="list-style-type: none"> ▪ Where possible, allow brambles, nettles, ivy, etc. to grow with low maintenance ▪ Explore opportunities to create dead hedges on university green spaces 		
<p>Ponds, Water Butts, Water Stations, Bird Baths</p> <p>Develop specific guidance for Biodiversity Hubs</p>	<ul style="list-style-type: none"> ▪ Assess where these are needed ▪ Develop risk assessments ▪ Develop guidance document 	By December 2024	Biodiversity Officer / Biodiversity Hubs in consultation with Estates Maintenance Manager
<p>Sports and Garden Netting</p> <p>Develop specific guidance for Sports Fields</p>	<ul style="list-style-type: none"> ▪ Map where sports and garden netting are being used on campus ▪ Develop guidance document 	By September 2024	Biodiversity Officer / Sport Operations & Services Manager / Sports Fields Grounds Manager
<p>Reduce and eliminate use of pesticides, herbicides, and rodenticides</p>	<ul style="list-style-type: none"> ▪ Map where pesticides, herbicides, and rodenticides are being used in campus ▪ Research wildlife-friendly methods to achieve same results ▪ Consult with relevant external organisations (e.g., Stand for Nature, PAN UK) ▪ Set a new target for reducing and eliminating these products on campus 	By December 2024	Biodiversity Officer / Estates Maintenance Manager / Grounds contractor / Sport Operations & Services Manager / Sports Fields Grounds Manager
<p>Mapping of Invasive Species</p>	<ul style="list-style-type: none"> ▪ Map invasive species ▪ Develop guidance document 	By July 2026	Grounds contractor / ERBAP Steering Group

Engagement Targets

Table 5. ERBAP 2024-2026 Awareness Raising, Training, and Mobilisation Plan Targets

Target	Steps	Timeline	Responsible
Establish, link, and increase number of Biodiversity Hubs	<ul style="list-style-type: none"> ▪ Create forum for Hub leads to discuss and share ideas ▪ Leads to be invited to attend ERBAP meetings ▪ Create centralised storage system to deposit Hub documents and collate evidence needed for reporting purposes ▪ Annual event to celebrate the Hubs achievements 	Annually	Biodiversity Officer / Biodiversity Hubs
Produce a booklet of “ <i>The Wildlife and Wildflowers of</i> ”	<ul style="list-style-type: none"> ▪ Following from the characterisation phase, collate a list of the 100 most common wildlife and wildflowers species found in the different priority habitats of Cardiff University 	By July 2025	ERBAP Steering Group*

<i>Cardiff University</i>	<ul style="list-style-type: none"> ▪ Student projects to support the co-creation of booklet (encourage interdisciplinary work) 		*supported by student projects
Develop a nature trail (physical and digital components)	<ul style="list-style-type: none"> ▪ Use data from the characterisation phase to choose key species ▪ Co-create the nature trail with students from schools with relevant expertise ▪ Students from Welsh School of Architecture to design and create prototype for physical signage ▪ Computer science students to develop the digital components of the trail 	By July 2026	ERBAP Steering Group* *supported by student projects
Launch and establish seminar series focused on biodiversity (online)	<ul style="list-style-type: none"> ▪ Create initial draft with proposed themes ▪ Invite speakers ▪ Develop associated activities (e.g., bioblitz, nature walk) ▪ Advertise seminar series widely among students, staff, and local communities ▪ Centralise storage of recorded talks 	November 2023 - December 2024	Biodiversity Officer
ERBAP and HFC stall and activities presence at Fresher's Week, Sustainability Week, PHEW, etc.	<ul style="list-style-type: none"> ▪ Develop and deliver guided tours of the wildlife and wildflowers of Cardiff University during Fresher's week ▪ Organise biodiversity surveys during Sustainability Week ▪ Organise hedgehog surveys and litter pick events during PHEW fortnight 	Annually	Biodiversity Officer* / Biodiversity Hubs *supported by student volunteers
Delivery of <i>Greening Cathays</i> project	<ul style="list-style-type: none"> ▪ Support Pharmabees to deliver this project ▪ Planting Project next to Cathays Railway Station 	March 2025	Pharmabees* / ERBAP Steering Group *supported by student volunteers and local communities
Green Prescribing	<ul style="list-style-type: none"> ▪ Create opportunities and support staff, students, and local communities to connect with nature-based activities 	Annually	Pharmabees
Engagement with local communities and local primary and secondary schools	<ul style="list-style-type: none"> ▪ Continue to develop engagement sessions to incorporate a wider range of ERBAP activities ▪ Support local communities and schools to improve their green spaces for wildlife ▪ Create opportunities for local community groups and primary school pupils to participate in ERBAP activities on university green spaces (e.g., via Passport to the City / Children's University programmes) ▪ Run hedgehog surveys with local communities and primary schools 	Annually	Biodiversity Officer* *supported by student volunteers

ERBAP webpage	<ul style="list-style-type: none"> Design new webpage for the university website to centralise ERBAP-related information and documentation 	By September 2024	ERBAP Steering Group / Safety and Wellbeing team
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Education Targets

Table 6. ERBAP 2024-2026 Education Plan Targets

Target	Timeline	Responsible
Audit of ERBAP-relevant university courses with sustainability content - (associated with ESD Action Plan activity on Living Labs)	July 2026	Environmental Sustainability Sub-Committee
Facilitate co-creation of projects with students and implement on campus when viable (associated with ESD Action Plan activity on Living Labs)	Annually	ERBAP Steering Group
Implementing Knowledge Gap Prize	First prize to be awarded during Sustainability Week March 2025	Safety and Wellbeing team
Integrate ERBAP into Cardiff Award for Students (associated with ESD Action Plan activity on Living Labs)	July 2025	ERBAP Steering Group
Include ERBAP references into Induction for students (associated with ESD Action Plan activity on Living Labs)	July 2025	ERBAP Steering Group