

## **Biodiversity Policy 2014 – 2020**

### **1. Ambition**

This is the second Biodiversity Policy and supports one of the University's four ambitions in the Strategy 2020:

***Ambition: Achieving resilience, sustainability and effectiveness***

*We aim to build on our existing position as a leading UK university in sustainability by striving for excellence in financial, environmental and social responsibility across all of our activities.*

Plymouth University is an intensely occupied compact urban campus, with dense development on one main site. Because of this the University campus is under biodiversity pressure since the past years have seen increased development on Greenfield spaces. This has happened since the late Professor Roland Levinsky began a policy of centralising its campus activities in Plymouth, thus seeing the development of the Roland Levinsky, Rolle, and Francis Drake Halls of Residence buildings.

### **2. Aim**

The aim for this Policy from the action point under Goal 1 'A sustainable university' in the Sustainability Strategy 2014:

- Maximise biodiversity on campus and find opportunities to create green environments.

### **3. Responsibility**

Responsibility for this policy rests with the Department of Procurement and Sustainability and the Centre for Sustainable Futures, reporting to the OVC Sustainability Executive and Advisory Group, Office of the Vice Chancellor, Chief Executive Group and Board of Governors.

Plymouth University recognises that biodiversity is of utmost importance in social, economic and environmental factors, but also wellbeing and understanding the value of nature. As the university has a focus on sustainable development, through research and education, biodiversity thus has to be fully incorporated into both the communities and student's learning and experience.

The action plan will be monitored at least termly within the Biodiversity Steering Group, who will also produce an annual report. The Sustainability Executive Group will review the annual report and the action plan on an annual basis.

#### **4. Objectives**

1. Measure and manage biodiversity levels and report on progress to the Sustainability Executive
2. Maximise biodiversity on campus wherever possible, and find opportunities to create green space
3. Maximise biodiversity education on campus, and utilise the outdoor space for formal and informal learning by students, staff and the community
4. Incorporate biodiversity practices into development strategies and materials purchasing to protect green spaces and biodiversity levels on campus

#### **5. Monitoring of the policy objectives**

To monitor the impact on biodiversity on campus species monitoring will need to be conducted. Although it is acknowledged this is a challenging task, this policy recommends it to take place on three levels:

1. Landscape level – trends in landscape diversity, habitat availability, landscape elements.
2. Community or ecosystem level – management actions or natural disturbances, functions, and level of protection of areas for species richness.
3. Species and population level – species trends, and the effect of management actions.

The monitoring should incorporate species richness, species evenness, disparity, rarity, and genetic variability. It should be mapped on Geographical Information Systems (GIS) software to be monitored against. GIS manages data relating to geographic areas, and can be used to digitally manipulate environments. It is recommended in the action plan that a survey is conducted every two years.

The most recent biodiversity survey was conducted in 2005, and this totalled 181 plant species, within Drakes Garden, the campus walls, and trees planted. There were also a further 55 species within the Student Village site (see Appendix A). However, since 2005, the campus has undergone a considerable amount of development, which results in these figures being inaccurate.

There are approximately 15 Tree Preservation Orders, all of which along Portland Villas, and under the responsibility of the Building Maintenance Manager, in E&F and Facilities Management (E&FM).

## 6. Recommendations

The Biodiversity Steering Group should consider the feasibility of implementing the following strategies and operations.

- **Bird and bat boxes** are technically feasible and selected sites should take place in proximity to natural flora, and close to food sources. Recommended areas include the trees along Portland Villas.
- **Small timber stacks** should be created by leaving dead wood in piles. This should be implemented wherever possible in sheltered regions, to increase small insect and animal life.
- **Insect boxes** should be constructed with bamboo tubes to provide habitats and be used for educational uses.
- **Planters** should be used to increase biodiversity on campus and should include native and threatened species within them. Recommended species for planters include *Agave Americana*, *Agave neomexicana*, *Phormium sp.*, *Chamaerops humilis*, *Astelia chathamica*, *Stipa temussima*, *Rubbekia hirta* and *Echinacea purpurea* as they can cope with drought and require little attention.
- **Hanging baskets** should be introduced to buildings and lampposts which are suitable for this. In other areas, hanging baskets from freestanding frames should be investigated.
- **Green roofs** should be encouraged wherever possible, and trialled with available grants. Although the majority of buildings on campus are not designed for roof gardens due to their stability and infrastructure, this should be considered for any future developments on campus. The University should thus investigate a feasibility study into the possibility of green roofs.
- **Vertical gardening** should be promoted through climber plants along building walls where the infrastructure is in place, or can be put in place. This has been identified to be along the east of Scott building, but can also be situated indoors, in well-lit areas such as in Portland Square. Climber plants generally require little formal maintenance to thrive and quickly cover areas.
- **Indoor plants** introduced in office and communal areas. They have a number of benefits, which include removing harmful contaminants from the air, controlling humidity, increasing positive feelings, and reducing anxiety anger and stress, as well as sound and carbon dioxide.
- **Onsite composting** should be investigated, with potential being identified in Drake's Place. Food waste from the kitchens and plant waste from campus is currently taken offsite as part of our waste contract.
- **Peat free compost** should be mandated and a viable alternative recommended.

- **Micro greenbelts** should be investigated ring fenced to prevent the loss of any more green space to campus development.

The following is guidance for species selection:

- **Perennials** are the favoured plant type when planting in new areas. These survive all year round, and live for longer periods of time, compared to annuals (which only live one year). They bloom over spring and summer, and contain a wide variety of species to enhance diversity. They are reliable in guaranteeing colour, and only require annual maintenance.
- **Microclimates** should be taken into consideration when selecting species to provide a rich and varied environment. Campus Map A shows microclimates caused by wind, sunshine, heat, and shade.
- **Tree plantation** is encouraged wherever possible, due to the environmental benefits of providing a large carbon sink. Interesting species for conservation and study, recommended from a previous biodiversity report on campus have been suggested.
- **Tree Preservation Orders** should be maintained and respected. The Building Maintenance Manager holds these within E&FM.
- **Flora which attracts small animal and bird life** should be included to further provide rich biodiversity, and thus cause a symbiotic relationship between plants and animal life.
- **Species able to be managed sustainably** should be selected, and should reflect Plymouth and the south west's biological links.
- **Chemical use** should be minimised, trialling of new chemicals should be adopted, which require longer periods before re-spraying. Also, research into more environmentally sustainable methods should be investigated, such as creating symbiotic relationships between a variety of flora and fauna.
- **No-mow areas** to increase species diversity should be continued along west bank and the reservoir. Wherever possible, further areas should be established, but still managed.
- **Materials sourcing** should continue to take environmental factors in to account.

The following is guidance for education:

- **Publicise species** through placards or similar near to, or on flora, using environmentally-friendly tags to provide information about the species and origin for students and wider community. Further information should be provided through digital media, such as a geo trail.
- **Education** should be further incorporated into campus biodiversity through promoting the use of the Physic Garden and Skardon Garden.

## 7. Biodiversity Action Plan 2014 – 2020

Objective	Action	Date	Responsibility
Measure and manage biodiversity levels and report on progress to the Sustainability Executive	<ul style="list-style-type: none"> <li>The number of animal and plant species to increase compared to 2011 data</li> </ul>	2015	E&F / Biodiversity Group
	<ul style="list-style-type: none"> <li>Freshwater ecology in the reservoir to increase compared to 2011 data</li> </ul>	2015	E&F / Biodiversity Group
	<ul style="list-style-type: none"> <li>No development shall take place on current areas of green space and the amount of green space is retained compared to 2011 data</li> </ul>	2015	E&F / Biodiversity Group
	Carry out a survey every two years to measure: <ul style="list-style-type: none"> <li>The number and species of plants and animals</li> <li>The amount of green space (m<sup>2</sup>)</li> <li>The levels of freshwater ecology in the reservoir</li> <li>Detail a full campus species list to be mapped on Geographical Information Systems (GIS) software</li> </ul>	2015	E&F
	<ul style="list-style-type: none"> <li>Establish a Biodiversity Committee with cross institutional representation including CSF, P&amp;S, academics, students and E&amp;F that reports key recommendations and points of action to the University's Sustainability Executive Group</li> </ul>	2014	CSF
	<ul style="list-style-type: none"> <li>Produce an annual biodiversity report and review at the Biodiversity Campus group and review with the Biodiversity Policy at the Sustainability Executive Group</li> </ul>	Annual	E&F / Biodiversity Group
Maximise biodiversity on campus wherever possible, and find opportunities to create green space	<ul style="list-style-type: none"> <li>Audit of space on campus to identify additional space for growing</li> </ul>	2015	E&F / Biodiversity Group
	<ul style="list-style-type: none"> <li>Select new plant species to attract small animal and bird life</li> </ul>	Ongoing	E&F / Plandscape
	<ul style="list-style-type: none"> <li>Increase numbers of planters and potentially hanging baskets and</li> </ul>	Ongoing	E&F /

	vertical gardens on campus		Plandscape
	<ul style="list-style-type: none"> <li>Introduce rainwater butts on campus to water the planters</li> </ul>	2015	E&F / Plandscape/ E&F
	<ul style="list-style-type: none"> <li>Develop potential growing areas with Halls of residence</li> </ul>	2017	E&F / CSF / UPP
	<ul style="list-style-type: none"> <li>Fit insect boxes in shrub beds around campus and provide timber stacks and bird and bat boxes on campus</li> </ul>	2015	E&F / Plandscape
	<ul style="list-style-type: none"> <li>Plant perennials as a basis of display in raised planters and supplement with annual bedding to provide colour</li> </ul>	Ongoing	E&F / Plandscape
	<ul style="list-style-type: none"> <li>Select no-mow areas</li> </ul>	2016	E&F / P&S
	<ul style="list-style-type: none"> <li>Carry out a feasibility study and introduce recommendations on green walls/ green roof, vertical gardening and internal gardening with potential funding options and present the business case.</li> </ul>	2015	P&S / Biodiversity Group
	<ul style="list-style-type: none"> <li>Mandate the use of peat free compost</li> </ul>	2015	E&F / P&S
	<ul style="list-style-type: none"> <li>Investigate the feasibility onsite composting of garden waste</li> </ul>	2014	E&F / E&F
	<ul style="list-style-type: none"> <li>Investigate the feasibility of bee keeping on campus</li> </ul>	2015	E&F / E&F / CSF
Maximise biodiversity education on campus, and utilise the outdoor space for formal and informal learning by students, staff and the community	<ul style="list-style-type: none"> <li>Promote the sustainable education use of the Physic Garden, Drakes Place and other campus spaces for academic courses and informal learning by staff, students and community members</li> </ul>	Ongoing	ER / CSF
	<ul style="list-style-type: none"> <li>Provide a PU allotment and run allotment group – leased through PCC</li> </ul>	Ongoing	UPSU / CSF
	<ul style="list-style-type: none"> <li>Investigate feasibility of introducing allotment space for students on campus as part of student led group.</li> </ul>	2015	CSF / E&F / E&F / UPSU
	<ul style="list-style-type: none"> <li>Advertise Student Project Opportunities and recruit students to monitor species</li> </ul>	2015	CSF/UPSU
Incorporate biodiversity practices	<ul style="list-style-type: none"> <li>Research into more environmentally sustainable products and keep herbicides to a minimum, using only for weed control on hard</li> </ul>	2015	Biodiversity Group

into development strategies and materials purchasing to protect green spaces and biodiversity levels on campus	surfaces.		
	<ul style="list-style-type: none"> <li>Follow up on the above recommendations for campus use</li> </ul>		E&F / Plandscape
	<ul style="list-style-type: none"> <li>Products sourced in a sustainable manner with products purchased to have a sustainability kite mark such as FSC Timber</li> </ul>		E&F / Plandscape
	<ul style="list-style-type: none"> <li>Ensure grounds maintenance contract has an environmental assessment in place</li> </ul>		E&F / Plandscape
	<ul style="list-style-type: none"> <li>Achieve Green Flag status for Drake's Place</li> </ul>	2015	ER / E&F / UCSP

E&F	E&F and Facilities
CSF	Centre for Sustainable Futures
UPSU	University of Plymouth Students' Union
ER	External Relations
UCSP	University Commercial Services Plymouth



## Appendices

### Appendix A – List of Species on Campus (recorded in 2005)

#### A1 - Drakes Place and Reservoir

*Acer campestre*  
*Acer palmatum atropurpureum*  
*Acer palmatum ssp.*  
*Acer psuedoplatanus*  
*Achillea millefolium*  
*Aesculus hippocastanum*  
*Bellis perennis*  
*Bergenia purpurascens*  
*Betula sp.*  
*Buddleja davidii*  
*Carpinus betulus*  
*Centranthus ruber*  
*Cerastium fontanum*  
*Chenopodium album*  
*Conzya canadensis*  
*Corylus avellana*  
*Cotoneaster horizontalis*  
*Cotoneaster sp.*  
*Epilobium montanum*  
*Erica sp.*  
*Erythrosperma sp.*  
*Escallonia sp.*  
*Fagus sylvatica*  
*Fatsia japonica*  
*Fraxinus excelsior*  
*Fushia magellanica*  
*Geranium pratense*  
*Geranium robertianum*  
*Hebe recurva*  
*Hebe x franciscana*  
*Hosta siboldii*  
*Hydrangea anomala petiolaris*  
*Hypericum andrusaemum*  
*Iris sp.*  
*Juniperus sp.*  
*Linaria purpurea*  
*Mellisa officinarum*  
*Persicaria affinis*  
*Physospermum cornubiense*  
*Pieris echiodes*  
*Plantago lanceolata*  
*Plantago major*  
*Platanus x hispanica*  
*Poa annua*  
*Polygonum auiculare*  
*Polystichum setiferum*  
*Polystichum setiferum var. proliferum*  
*Privet*  
*Prunella vulgaris*  
*Prunus domestica*  
*Pyracantha coccinea*  
*Ranunculus bulbosus*  
*Ranunculus repens*  
*Rubus fruticosus agg.*  
*Rumex obtusifolius*

*Sagina procumbens*  
*Salix matsudana* "tortuosa"  
*Sasa palmata*  
*Scrophularia nodosa*  
*Senecio vulgaris*  
*Silene dioica*  
*Sonchus oleraceus*  
*Sorbus aucuparia*  
*Stachys byzantina*  
*Stachys sylvatica*

#### A2 - Halls of Residence (Student Village site)

*Acer pseudoplatanus* var.  
*Acer pseudoplatanus* var.  
*Acer* sp.  
*Alnus cordata*  
*Berberis dawinii*  
*Berberis* sp.  
*Berberis thunbergii*  
*Buxus sempervirens*  
*Callistemon citrimus*  
*Choisya ternata*  
*Conzuya canadensis*  
*Cotoneaster franchetii*  
*Cotoneaster horizontalis*  
*Cotoneaster salicifolius*  
*Cotoneaster* sp.  
*Cotoneaster* sp.  
*Elaeagnus* sp.  
*Epilobium* sp.  
*Equisetum arvense*

*Stellaria media*  
*Symbolaria muralis*  
*Taraxacum officinale*  
*Trifolium repens*  
*Urtica urens*  
*Viburnum* sp.  
*Vinca minor*  
*Viola riviniana*  
*Wisteria sinensis*  
*Yucca gloriosa*

*Escallonia* sp.  
*Escallonia* sp.  
*Geum Urbanum*  
*Hebe* var.  
*Hebe X franciscana* "varigata"  
*Hedera helix* var.  
*Holcus mollis* var. "albobariegatus"  
*Hypericum* sp.  
*Hypericum tetrapterum*  
*Ilex aquifolium*  
*Ilex aquifolium* "varigata"  
*Lonicera nitida*  
*Mahonia X media* var.  
*Oleaceae* sp.  
*Pastinaca sativa*  
*Peony officinalis*  
*Phormium tenax*  
*Phormium tenax* "Rainbow Warrior"  
*Phormium tenax purpurea*

*Polystichum aculeatum*  
*Prunus sp.*  
*Rhus typhina*  
*Ribes sanguineum*  
*Rosmarinus officinalis*  
*Senecio cineraria*  
*Sorbus aria*  
*Sorbus sp.*  
*Synphorapcarpus albus*

#### A3 – Campus Walls

*Asplenium trichomanes*  
*Asplenium ruta-muraria*  
*Asplenium adiantum-nigrum*  
*Phyllitis scolopendrium*  
*Ceterach officinarum*  
*Bryum capillare*  
*Tortula muralis*  
*Fissidens adianthoides*  
*Ceratodon purpureus*  
*Anaptychia ciliaris*  
*Caloplaca flavescens*  
*Cladonia impexa*  
*Cladonia fimbriata*  
*Caloplaca marina*  
*Caloplaca saxicola*  
*Caloplaca thalincola*  
*Diploicia canescens*  
*Hypogymnia physodes*

#### A4 – Trees

*Tamarix ramosissima*  
*Tilia X europaea*  
*Viburnum davidii*  
*Viburnum sp.*  
*Viburnum tinus*  
*Vicia cracca*  
*Virginia Creeper*  
*Weigela florida var.*

*Lecanora calcarea*  
*Lecanora dispersa*  
*Ochrolechia parella*  
*Parmelia caperata*  
*Parmelia subrudecta*  
*Physcia adsendens*  
*Tephromela atra*  
*Umbilicaria polyphylla*  
*Usnea ceratina*  
*Xanthoria parietina*  
*Cymbalaria muralis*  
*Linaria purpurea*  
*Centranthus ruber*  
*Taraxacum officinale*  
*Umbilicus rupestris*  
*Hedera helix*  
*Campanula poscharskyana*  
*Geranium robertianum*

*Abies sp.*  
*Acer campestre*  
*Acer grosseri*  
*Acer griseum*  
*Acer palmatum var.*  
*Acer palmatum var.*  
*Acer platanoides*  
*Acer platanoides var.*  
*Acer pseudoplatanus*  
*Acer pseudoplatanus var. Variegata*  
*Acer saccharum*  
*Acer saccharum var.*  
*Aesculus hippocastanum*  
*Alnus cordata*  
*Alnus cordata var.*  
*Alnus glutinosa*  
*Betula pendula*  
*Betula pendula var.*  
*Betula pendula pendula*  
*Betula nigra*  
*Betula utilis var. 'Jacquemontii'*  
*Carpinus betulus*  
*Cedrus atlantica f. glauca*  
*Cordyline australis*  
*Cordyline australis var.*  
*Coryllis avellana*  
*Crataegus sp.*  
*Crataegus sp.*  
*Cupressocyparis leylandii*  
*Cupressocyparis leylandii var.*  
*"Naylor's Blue"*  
*Eucalyptus gunnii*

*Fagus sylvatica*  
*Fagus sylvatica var. (Fastigiata)*  
*Fagus sylvatica var. (Purpurea)*  
*Fraxinus excelsior*  
*Ginkgo biloba*  
*Griselinia littoralis*  
*Ilex aquifolium*  
*Laurus nobilis*  
*Ligustrum lucidum*  
*Magnolia sp.*  
*Magnolia sp.*  
*Malus domestica*  
*Pinus mugo*  
*Pittosporum tenuifolium*  
*Pittosporum tenuifolium var.*  
*Platanus x hispanica*  
*Prunus cerasifera var.*  
*Prunus domestica*  
*Prunus dulcis*  
*Prunus sp.*  
*Prunus sp.*  
*Prunus sp.*  
*Prunus subhirtella var.*  
*Quercus ilex*  
*Quercus palustris*  
*Quercus robur*  
*Rhus typhina*  
*Robinia pseudoacacia*  
*Taxus baccata*  
*Salix babylonica*  
*Salix tortuosa*  
*Sambucus nigra*

*Sorbus aria*  
*Sorbus aucuparia*  
*Sorbus sp.*  
*Tilia cordata*

*Tilia x europea*  
*Trachycarpus fortunei*  
*Viburnum sp.*