

Plant Link

Global Strategy for Plant Conservation

*A review of the UK's
progress towards 2020*

Full report by Plant Link



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Introduction

This report has been compiled by the Plant Link (PLINK) networks to review progress towards the 16 targets of the Global Strategy for Plant Conservation (GSPC). This strategy, adopted by the Convention on Biological Diversity (CBD) in 2002, is the only species-themed global programme within the CBD. Endorsed by the world's governments, it seeks to halt the loss of plant diversity, recognising that:

“Without plants there is no life. The functioning of the planet and our survival depends on plants”

The CBD and many governments across the world consider the GSPC to be a great success, with a long record of raising the profile of plant diversity and inspiring numerous initiatives to conserve wild plants and fungi. The Strategy includes 16 clear targets grouped under 5 objectives. These broadly encompass knowledge, conservation action, sustainable use, raising awareness and building capacity.

Following a decade of work, an updated GSPC was endorsed by the world's governments at the CBD meeting in Nagoya in 2010, setting refreshed targets for 2020.

In 2014, the UK reported progress against the GSPC as part of the 5th National Report to the CBD. PLINK member organisations were key contributors to the report, providing much information and data as well as case studies.

The information supplied by PLINK members has been used to inform this more detailed UK progress report. It provides a more comprehensive narrative with up-to-date information, highlighting some of the key successes along the way and identifying the major challenges that remain. The information in this report is generally drawn from England, Scotland and Wales, but occasionally refers to data and issues for the United Kingdom as a whole.

The Plant Link Networks

Progress towards the GSPC targets in the UK relies on the enthusiasm, expertise and commitment of a wide range of people. The strength of the Plant Link (PLINK) networks lies in the 38 organisations across the UK that come together to share their experiences and agree collaborative action. Their combined expertise and insight is fundamental to delivering the GSPC and advancing the conservation of plants and fungi.

PLINK forums operate at both the UK and country levels, with PLINK UK, Plant Link Scotland (PLINKS), Plant Link Cymru (PLINC) and Plant Link England (PLINK England) chaired by Plantlife, the wild plant conservation charity. These PLINK networks bring together a wide range of organisations, agencies, specialist societies and individuals working towards the conservation of wild plants and fungi. Their work is framed by the GSPC but includes additional country-level strategies and other activities around delivery of national biodiversity targets and action.

In 2004, members of the PLINK networks contributed towards *Plant Diversity Challenge*, the UK's first response to the GSPC. This publication set the plant conservation agenda across the UK for the remainder of the decade. Following an amended and updated GSPC,

adopted by the world's governments at the CBD meeting in Nagoya in 2010, PLINK UK published a refreshed action plan *Wild Plant Horizons: Taking forward the Global Strategy for Plant Conservation 2011-2020*. This third PLINK report builds on both of these and identifies the actions required for the UK to achieve GSPC targets by 2020.

Algae, fungi and plants

Lichens, ferns, flowering plants, stoneworts, fungi, yeasts, seaweeds, mosses, conifers, rusts, plankton, liverworts, freshwater algae, quillworts, hornworts, horsetails, diatoms, smuts...

The GSPC at international levels is focused at plant groups, including algae, and acknowledges that fungi are a separate kingdom. All action to conserve plants and fungi can contribute towards delivery of GSPC targets at international level. In the UK, delivery of the GSPC includes all these taxon groups. However, there are additional UK and country strategies for the conservation of fungi, lichens and bryophytes.

The GSPC: 5 objectives, 16 targets

In the following sections, the 16 GSPC targets are grouped under the five objectives. The scope of each target is outlined and the current situation in the UK is described. The most recent key successes are then highlighted, followed by a look to the future where key challenges remain. These are where our main focus should be in order to achieve the targets by 2020.

Objective I: Plant diversity is well understood, documented and recognized

Target 1: An online flora of all known plants

Scope

This target seeks to achieve a widely accessible working checklist of UK plants and fungi to enhance conservation programmes. When integrated with other information, such as taxonomy, systematics, distribution, frequency, habitat details and ecosystem function, such checklists become very powerful tools for setting priorities for both conservation action and ecological research.

Current situation

The UK Species Inventory¹, managed by the Natural History Museum (NHM), provides standard reference names for all taxa of plants and fungi (and fauna) in the UK. It gathers together all taxonomic names from comprehensive and authoritative checklists compiled by government agencies, scientific experts and conservation organisations². The UK Species Inventory plays a crucial role in enabling species data to be made available electronically throughout the National Biodiversity Network (NBN).

A recent gap analysis by the NBN identified which major plant and fungi groups had complete taxonomic coverage online and those that remain incomplete. Using this information, Plant Link UK (PLINK) has identified a number of actions required to complete Target 1 for all taxonomic groups. In addition, all major taxon groups require regular updating in the light of ongoing taxonomic research.

Key successes

- Complete UK floras have been completed and published for vascular plants³, bryophytes⁴, lichens⁵ and freshwater algae⁶.
- The British Phycological Society (BPS) has produced a draft UK checklist for seaweeds. This information has been included in the UK Species Inventory, with field records collected on-line through the Seaweed Recording Site⁷.
- The Royal Botanic Gardens, Kew (RBG Kew) maintains the *Checklist of the British and Irish Basidiomycota*⁸. This list indicates in which UK country each species occurs.

¹ <http://www.nbn.org.uk/Tools-Resources/NBN-Dictionaries/Species-Dictionary.aspx>

² <http://www.nhm.ac.uk/research-curation/scientific-resources/biodiversity/uk-biodiversity/uk-species/about-the-species-inventory/index.html>

³ Stace, C. (2010). *New Flora of the British Isles*. Cambridge University Press, Cambridge.

⁴ Atherton, I., Bosanquet, S., Lawley, M. (2010). *Mosses and Liverworts of Britain and Ireland: a field guide*. British Bryological Society, Plymouth.

⁵ <http://www.britishtichensociety.org.uk/resources/lichen-taxon-database>

⁶ John, D.M., Whitton, B.A., Brook, A.J. (eds) (2011) *The Freshwater Algal Flora of the British Isles: An Identification Guide to Freshwater and Terrestrial Algae*. Cambridge University Press, Cambridge.

⁷ <http://www.bpsalgalrecords.com/>

⁸ <http://www.basidiochecklist.info/>

- The herbaria at RBG Kew and RBG Edinburgh house approximately ten million specimens from around the world. These collections are being made more accessible through an electronic Herbarium Catalogue, containing images of specimens and information derived from their collection labels⁹. In addition, RBG Kew has made available online basic data for ca. 195,000 specimens of UK fungi.

Looking to the future: key challenges

1. Secure the support and on-going commitment of UK country governments, statutory agencies and NGOs for the establishment, completion and regular updating of all relevant online floras and checklists for plants and fungi.
2. Comprehensive, detailed and reliable species records must be made readily available to inform conservation action.

⁹ <http://apps.RBG Kew.org/herbcat/navigator.do>

Target 2: An assessment of the conservation status of all known plant species, as far as possible, to guide conservation action

Scope

In order to prioritise conservation action effectively it is essential to assess the conservation status (i.e. the threat of extinction) facing each species. Internationally agreed criteria for assessing levels of threat are produced by IUCN and provide a consistent system, allowing comparisons between international and national assessments and changes over time. These are referred to as Red Lists¹⁰ and for most taxon groups these have been completed for Great Britain. They are increasingly also being produced for the devolved administrations. Such lists inform the selection of species as priorities for conservation, either for the UK as a whole (UK BAP) or as additional country priorities appearing on the Section 41 List (England), S42 List (Wales) or Scottish Biodiversity List¹¹.

Current situation

Red Lists, officially approved by the Joint Nature Conservation Committee (JNCC), have been published for the taxonomic groups shown in Table 1 below.

Taxon group	GB Red List	% threatened (CR, EN, VU)	Country Red List	% threatened (CR, EN, VU)
Algae	Yes (provisional) ¹²	11% ¹³		
Bryophytes	Yes	15.9% ¹⁴	Wales	17.1% ¹⁵
Fungi	For <i>Boletaceae</i> family only	19% ¹⁶		
Lichens	Yes	9.5% ¹⁷	Wales	15.8% ¹⁸
Vascular Plants	Yes	21.7% ¹⁹	Wales England	17.4% in Wales ²⁰ 19.9% in England ²¹

Table 1. Red List publications for GB and constituent countries.

¹⁰https://www.iucn.org/about/work/programmes/species/our_work/the_iucn_red_list/resources/iucn_red_list_categories_criteria/

¹¹ Based on the UK Biodiversity Action Plan (UK BAP) list and identified in the Natural Environment and Rural Communities (NERC) Act 2006 (England and Wales) and Nature Conservation (Scotland) Act 2004.

¹² A draft UK Conservation Assessment for red, green and brown seaweeds has been developed by the British Phycological Society (BPS) and NHM <http://www.nhm.ac.uk/resources-rx/files/draft-seaweed-list-132358.pdf>

¹³ Percentage for threatened red, green and brown seaweeds combined.

¹⁴ A revised red list of bryophytes in Great Britain (2011), N. Hodgetts

¹⁵ Bosanquet, S. & Dines, T.D. (2011). *A Bryophyte Red Data List for Wales*. Plantlife, Salisbury.

¹⁶ Note that 27% of species assessed were Data Deficient, reflecting the significant challenge with Red Listing fungi (cf. 3.8% of vascular plants are Data Deficient).

¹⁷ Woods, R.G. & Coppins, B. J. (2012). *Species Status 13: A Conservation Evaluation of British Lichens and Lichenicolous Fungi*. Joint Nature Conservation Committee, Peterborough.

¹⁸ Woods, R.G. (2010). *A Lichen Red Data List for Wales*. Plantlife, Salisbury.

¹⁹ Cheffings, C.M., Farrell (2005). *Species Status 7: The Vascular Plant Red Data List for Great Britain*. Joint Nature Conservation Committee, Peterborough. (Updated figures from Species Status Assessment Group).

²⁰ Dines, T.D. (2008). *A Vascular Plant Red Data List for Wales*. Plantlife, Salisbury.

²¹ Stroth, P.A., Leach, S.J., August, T.A., Walker, K.J., Pearman, D.A., Rumsey, F.J., Harrower, C.A., Fay, M.F., Martin, J.P., Pankhurst, T., Preston, C.D., Taylor, I. (2014). *A Vascular Plant Red Data List for England*. Botanical Society of Britain and Ireland, Bristol.

Continual and systematic assessment of species conservation status allows action to be prioritised and conservation programmes to be developed to counter the causes of threat. Red Listing for individual countries represents a major step forward and allows appropriate country-level responses to be developed using available opportunities and mechanisms.

Assessments of species' threat status are used to guide conservation action and inform the selection of species on country lists of '*Priority species of principal importance for the conservation of biodiversity*'. In England, 402 plants and fungi are identified on the Section 41²² list. In Scotland there are 1,414 plants and fungi species on the Scottish Biodiversity List²³ and in Wales there are 224 species²⁴, a number augmented with Welsh-specific priority species selected from the country Red Lists. Action to conserve all these species has been identified and work continues to ensure this action is delivered on the ground by Government and its partners (see Target 7).

Key successes

- JNCC has published the first official Red List for a group of non-lichen forming fungi in GB, covering the 68 taxa of the family *Boletaceae* (a group which includes the well known edible Penny Bun or Cep, *Boletus edulis*)²⁵. Molecular barcoding was employed to confirm species identification. The assessment found that 12% of taxa were threatened, but 27% were Data Deficient (where threat is suspected but there is insufficient data to make a full assessment), reflecting the significant challenges facing the Red Listing of fungi (cf. 3.8% of vascular plants are Data Deficient). The Red List was achieved through a collaboration between RBG Kew, Natural England (NE), British Mycological Society (BMS) and the Association of British Fungi Groups (ABFG).
- With the launch of the *A Vascular Plant Red List for England* (2014)²¹, four country-level Red Lists have now been produced. Wales has completed Red Data Lists for vascular plants²⁰, lichens¹⁸ and bryophytes¹⁵. The British Lichen Society (BLS) is currently producing a lichen Red List for England. The value of such lists lies in their ability to inform conservation priorities and action for individual countries.

Looking to the future: key challenges

1. Secure Government and agency commitment to a programme of Red Listing in all UK countries to inform priorities for plants and fungi. Priority should be given to developing a programme of GB Red Listing for non-lichen forming fungi (especially certain families with adequate data), freshwater algae and seaweeds.

²²<http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.asp>

x

²³<http://www.biodiversityscotland.gov.uk/advice-and-resources/scottish-biodiversity-list/>

²⁴<http://www.biodiversitywales.org.uk/49/en-GB/Section-42-Lists>

²⁵<http://jncc.defra.gov.uk/page-6497>.

Target 3: Information, research and associated outputs, and methods necessary to implement the Strategy developed and shared

Research is essential to underpin the conservation and sustainable use of plant and fungal diversity. Drawing on a long history of such research, a large volume of information and experience is available in the UK and Europe that can be used to support conservation programmes. This target acknowledges that 'best practice' methodologies, which draw on all available research and practical experience of management, are needed for the conservation of plants and fungi. Target 3 therefore seeks to provide the impetus for the development of such models, based on the sound application of scientific approaches. This target is cross-cutting, underlying the implementation of many of the other targets.

Current situation

The current financial climate means that in general, insufficient resources are available to adequately support research into botanical and mycological conservation methods, or to sufficiently support the monitoring and surveillance of plants and fungi in the wild.

In spite these insufficiencies, the PLINK networks provide important fora for organisations to exchange knowledge, experience and best practice, as well as opportunities to work together to advance the conservation of wild plants and fungi. Without this cooperation little progress would have been made against Target 3 in the last few years. Members of the PLINK networks play crucial roles in developing sound evidence, identifying key conservation issues and translating these into action on the ground through coordinated conservation programmes.

Collectively the PLINK membership includes national specialists from across the academic, statutory and non-statutory sectors. Examples of their research work include:

- The Botanical Society of Britain and Ireland (BSBI) *Threatened Plants Project* (2008-2012) collected valuable ecological and population data for 50 widespread but declining priority species²⁶. The information will be used to understand the ecology, habitats and recent trends in these species, stimulating further surveys and research as well as informing conservation protection and management.
- Royal Botanic Gardens, Kew's *Seed Information Database* is a compilation of seed biological trait data from the Millennium Seed Bank Programme's own collections and from other published and unpublished sources. The data is periodically updated and made available online²⁷. Data are also shared with the *Ecological Flora of the British Isles*²⁸ and made available to researchers²⁹.
- RBG Edinburgh have hosted a best-practice workshop, aimed at translating fieldwork into data and examining integrated approaches to conservation, including *in situ* and *ex situ* protection, and education and outreach at all levels.

²⁶ <http://www.bsbi.org.uk/tpp.html>

²⁷ RBG Kew's Seed Information Database <http://data.RBGKew.org/sid/>

²⁸ ECOFLORA <http://www.ecoflora.co.uk/>

²⁹ <http://www.try-db.org/TryWeb/Home.php>

- The Natural History Museum is running several projects to mobilise and improve digital access to national and regional museum herbaria for UK vascular plants and marine algae, in partnership with various organisations including the Museums Association, BSBI and Herbaria@Home. In addition, Seaweed Collections Online, a project to place herbarium specimens from 13 seaweed collections online, has been completed with nearly 5,300 entries³⁰.
- Plantlife is collating information regarding the identification and management of a wide range priority species, including woodland lichens, arable plants, grassland waxcap fungi, juniper and heathland species. Resources being made available include leaflets, management toolkits, guides and on-line dossiers.
- A new National Plant Monitoring Scheme (NPMS) is being developed by PLINK members Plantlife, BSBI and JNCC, along with the Centre for Ecology and Hydrology (CEH). The scheme, to be launched in 2015, will provide robust annual data to inform changes in semi-natural habitats and species. Data will be gathered by a large network of volunteers and is a good example of the value of strong partnerships between PLINK members.

There is good representation of the PLINK networks on the UK BAP delivery groups established by the country administrations under the devolved arrangements for achieving UK Government biodiversity commitments. This ensures that the best available information is guiding delivery of national biodiversity strategies and best practice is shared across all the countries in the UK.

In Scotland, the GSPC targets are embedded within the Scottish Biodiversity Strategy and Plantlife's role as Chair of the Habitat and Species Group ensures more effective delivery of plant and fungal conservation through the strategy. In Wales PLINC members have input into an Evidence Gaps Register³¹. This identifies biodiversity and ecosystem research needs and promotes them to relevant research institutions to ensure that knowledge and information gaps, needed to help deliver the GSPC, are being addressed. In England, a number of research gaps have been identified by taxonomic groups and are being used to focus and prioritise action within research councils and Universities. This work is helping develop new collaborative approaches for plant conservation with multiple statutory and non-statutory partners.

Key successes

- The PLINK fora and their statutory and non-statutory members help drive the achievement of Target 3 by identifying and promoting key research needs as described above.
- PLINC has produced a series of site inventories for Section 42 priority species (covering vascular plants, bryophytes, lichens, fungi and stoneworts), providing detailed information on all currently-known sites in Wales. Such information is being provided to site owners and managers, county planners, conservation organisations and schemes where better targeting of resources towards known sites is needed, such as agri-environment schemes.
- Plantlife has produced a number of briefing leaflets on Section 41 and Section 42 plants and fungi which provide information on species identification and habitat management. Plantlife Scotland has published conservation management

³⁰ <http://seaweeds.myspecies.info/>

³¹ <http://www.biodiversitywales.org.uk/en-GB/WBP-Evidence-Gaps-Project>

frameworks for two priority habitats in Scotland: Atlantic woodland and pine woodland. Three more are in development for oceanic heath, coastal pasture and arctic alpine plant communities³².

- Conservation Evidence are developing a PlantSynopsis database which pulls together studies, articles and papers on plant conservation management. This aims to list all possible actions that can be taken to conserve a given species, species group or habitat, or to tackle a particular conservation issue. PLINK members have provided input into the database.

The development of DNA barcoding has been particularly useful in research around the identification and taxonomy of plants and fungi. Such work also benefits progress towards GSPC Targets 1 and 2. Some examples of recent projects are given below:

- DNA barcoding of 100% of Welsh vascular plant flora and 90% of the UK vascular plant flora has now been completed by the National Botanic Garden of Wales³³. Results have been published on the Barcode of Life website³⁴.
- RBG Kew are barcoding fungi to help confirm specimen identification. This will help improve fungal identification services at Kew, clarify inter- and intra-specific genetic diversity and species delimitations, and enhance the value of collections held in RBG Kew's fungarium³⁵.
- RBG Kew has published findings from its Defra-funded study '*Systematics, barcoding and ecology of fungi from waxcap grasslands*'³⁶. Aiming to improve species identification, it suggested that there could be 96 species of waxcaps in the UK, rather than the 51 currently recognised. Such findings are of direct relevance to the revision of SSSI guidelines for grassland fungi.
- RBG Edinburgh has published findings from its Defra-funded study '*DNA Barcoding of Bryophytes - A Powerful Tool for Taxonomy and Conservation*'³⁷. This aimed to more accurately delimit the boundaries of 30 UK priority bryophyte species, selected because of their taxonomic uncertainty. Of these, 16 were identified as 'good' species, including lesser smoothcap (*Atrichum angustatum*) and Freiberg's screw-moss (*Tortula freibergii*), greatly assisting in their conservation.

Looking to the future: key challenges

1. Support dissemination of existing evidence and encourage further research into the fundamental contribution they make to ecosystem services. This will highlight the importance of their role and encourage better integration of plant and fungi conservation into decision and policy making.
2. Ensure that land management practices and incentive schemes support and promote best practise plant and fungi conservation. Despite the increasing evidence base demonstrating the value of plants and fungi, their ecological requirements remain poorly integrated into policy and state funded agri-environment schemes.

³² www.plantlife.org.uk/scotland

³³ <http://www.gardenofwales.org.uk/science/barcode-wales/> and <http://www.barcodeoflife.org/>

³⁴ <http://www.boldsystems.org/>

³⁵ <http://www.kew.org/science-research-data/directory/projects/FungalDNABarcoding.htm>

³⁶ <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=17344&FromSearch=Y&Publisher=1&SearchText=waxcap&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description>

³⁷ <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=17342>

3. Recognise the significant role that individual species play in the delivery of ecosystem services and to ensure that ecosystem based approaches to conservation are not detrimental to species conservation.
4. Ensure that all UK countries gather detailed information on the total extent of all semi-natural habitats, the area of each under statutory protection and the conservation status and condition of such protected habitat in order to monitor progress towards Target 4.
5. Ensure that natural capital accounting procedures take full account of current and future values of plants and fungi and the roles they fulfil in ecosystems and ecosystem services.

Objective II: Plant diversity is urgently and effectively conserved

Target 4: At least 15% of each ecological region or vegetation type secured through effective management and/or restoration

Scope

This target seeks to conserve 15% of each of the world's ecological regions or vegetation type, including associated plant diversity. These are broad ecosystem types, for instance grasslands or coastal ecosystems. The results of Target 5 (which identify Important Plant Areas within all ecological regions) should help inform this assessment. In the UK, data are available at country level for broad terrestrial and freshwater vegetation types and this information is collated and presented here.

Current situation

Progress across the UK is variable. Each of the four countries has a series of designated sites including Sites of Special Scientific Interest (SSSIs) that represent a sample of characteristic habitats and species. Some sites are also classified as Special Areas of Conservation (SACs) under the European Habitats Directive. Collectively, SSSIs and SACs cover 9% of the UK's terrestrial area, 12% of Scotland, 9% of Wales and 7% of England.

The designated sites network is augmented with a larger protected area network, which includes the likes of National Parks, Areas of Outstanding Natural Beauty and National Scenic Areas. In total, 27.5% of the land area of the UK falls within such a protected area³⁸.

Important Plant Areas (IPAs), explored further under Target 5, often overlap with both SSSIs and SACs. While IPAs are not a statutory designation they do signify the presence on a site of one or more of the following: outstanding botanical richness, internationally threatened species and internationally threatened habitats. See Target 5 below for more information.

A more detailed analysis of the management and condition of habitats covered by protected sites and IPAs needs to be undertaken in order to assess progress towards this target; it may be that this target can be achieved solely through the protected site network. In the absence of absolute data for all countries, Table 2 illustrates what proportion of five broad habitat types are covered by the SSSI network in England and Wales, and what percentage of these habitats are in favourable condition across the UK SSSI network as a whole³⁹.

³⁸ <http://jncc.defra.gov.uk/page-4241>

³⁹ Figures for Northern Ireland and Scotland are not available at the time of writing.

Habitat	% of total semi-natural habitat within SSSIs		% of habitat in favourable condition on SSSIs	
Coastal	64	E+W	61	UK
Grassland	30	E+W	38	UK
Heathland	49	E+W	17	UK
Wetland	60	E+W	32	UK
Woodland	12	E+W	36	E+W+S

Table 2. The percentage of five broad habitats types covered by the SSSI network in England and Wales⁴⁰, and the percentage of habitat in favourable condition within the UK's SSSI network⁴¹.

The area of SSSI in 'favourable' condition in the UK has been declining since 2005⁴². However, a broad analysis shows that just over 50% of Areas of Special Scientific Interest (Northern Ireland) and SSSIs (England and Scotland) were in 'favourable' condition in March 2013, with a further 36% in 'unfavourable recovering'⁴³. Improvements in conservation status can be made when resources for effective management are put in place.

Another assessment of habitat condition is provided by the 3rd UK Habitats Directive Report (2013)⁴⁴. The Article 17 report on the conservation status of habitats of European importance found that, of 77 habitat types (including eight marine habitats) only two were found to be in 'favourable' conservation status. Overall, 18 habitats were in 'bad-declining' condition, 26 in 'bad-stable' condition, and 18 in 'bad-improving' condition. The condition of the remaining 13 habitats were inadequately known.

In England, the Government's ambition (as set out in *Biodiversity 2020: A strategy for England's wildlife and ecosystems services*⁴⁵) is for at least 17% of land and inland water, especially areas of particular importance for biodiversity, are conserved and that 15% of degraded ecosystems are restored. Whilst these ambitions are welcomed, further work is required to map out a clear route to achieving this ambition and securing improved environmental outcomes on the ground. For example, the SSSI network in England covers around 7% of the country. 38% of these SSSIs were identified as being in 'favourable' condition, 59% in 'unfavourable recovering' condition, 2% 'unfavourable no change' and 2% 'unfavourable declining'⁴⁶. Whilst there is no breakdown by habitat type the headline statistics show progress is needed to improve the current situation and meet this target. Natural England's Improvement Programme for England's Natura 2000 Sites (IPENS) project aims to improve those unfavourable SACs (and SPAs⁴⁷) through their Site Improvement Plans.

18% of Scotland's land area is covered by nature conservation sites and of these, 66% of natural features are in favourable condition⁴⁸. While Scotland's Protected Area mechanism is not fully functional for vascular plants, fungi, lichens and bryophytes, the Important

⁴⁰https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/253548/2a_priority_habitats2a_FINAL.pdf and Natural Resources Wales (data supplied by Terrestrial Habitats team).

⁴¹<http://jncc.defra.gov.uk/page-3526>

⁴²<http://jncc.defra.gov.uk/page-4241>

⁴³<http://jncc.defra.gov.uk/page-4241>

⁴⁴<http://jncc.defra.gov.uk/page-6565>

⁴⁵<https://www.gov.uk/government/publications/biodiversity-2020-a-strategy-for-england-s-wildlife-and-ecosystem-services>

⁴⁶<http://www.sssi.naturalengland.org.uk/special/sssi/reportAction.cfm?Report=sdrt15&Category=N&Reference=0>

⁴⁷ Special Protection Areas

⁴⁸<http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/site-condition-monitoring/>

Plant Area network should be used to highlight gaps. Scotland currently has no national habitat map, but the 2020 Challenge document⁴⁹ seeks to put one in place by 2019. The Scottish Native Woodland Survey, led by Forestry Commission Scotland and completed in 2013, shows that 22.5% of woodland in Scotland is native woodland, with 46% of it in satisfactory condition for biodiversity⁵⁰. Scottish peatlands were assessed through the IUCN peatland programme, which found that 20% was in a natural or near natural condition⁵¹. Of Scotland's freshwater habitats, Scottish Environment Protection Agency's Water Framework Directive monitoring shows that 56% of rivers and 63% of lochs are in a good ecological state⁵². Trends in habitat condition indicate that management for those features monitored is appropriate, as long as the trends continue to improve.

In Wales, an unpublished assessment of vegetation types by NRW indicates that 14.6% of the area of terrestrial semi-natural habitat is covered by SSSIs. The proportion varies by habitat, from tall herb and fen (73%) to grassland and marsh (3.6%) and arable (0.01%). In addition to the variability in SSSI coverage between these vegetation types, it's uncertain how effectively each of these is actually being conserved. Based on a 2006 Rapid Assessment of SSSI condition, NRW found that 71% of all SSSI habitat features are in unfavourable condition⁵³. The quality of vegetation in different habitat types varies, from 81% for supralittoral rock to just 7% of bogs in favourable condition, with 34% on average for 13 habitats and 22% for the most widespread habitat, acid grassland. Detailed and regular monitoring of habitat features on SSSIs needs to be improved. However, it is also essential that habitat management on both protected sites and landscape-scale projects are fully documented and address the needs of all vegetation types on site, taking into account requirements for both maintenance and restoration.

Key successes

- Two major UK wide projects are aiming to improve the condition of species rich grasslands. Magnificent Meadows⁵⁴ is working to save up to 75,000 acres of wildflower meadows and grasslands, 17% of the resource that remains. The project aims to deliver conservation in nine strategic landscapes across the UK to enhance habitat connectivity and enable grassland species to adapt successfully to environmental change, through the restoration of wildflower meadows and grasslands to increase species diversity and improve habitats. Coronation Meadows is a partnership project between Plantlife, the Wildlife Trusts and the Rare Breeds Survival Trust, aiming to identify flagship meadows in each county of the UK and use green hay and seed from these meadows to create new ones. At 29 Coronation Meadow sites across 22 counties in 2014, the restoration of 317 acres of wildflower meadow will start with the aim of reaching 741 acres over the subsequent two years.
- Restoration of plantations on ancient woodland sites (PAWS) is being undertaken by many woodland owners, including the Forestry Enterprise, the Woodland Trust and private owners. In England, 9,086 ha of PAWS has been restored since 2011, 73% of which is on the Public Forest Estate. In addition, 2,371 ha of open priority habitat

⁴⁹ <http://www.scotland.gov.uk/Resource/0042/00425276.pdf>

⁵⁰ <http://scotland.forestry.gov.uk/supporting/strategy-policy-guidance/native-woodland-survey-of-scotland-nwss>

⁵¹ <http://www.iucn-uk-peatlandprogramme.org/>

⁵² <http://www.environment.scotland.gov.uk/get-interactive/data/water-body-classification/>

⁵³ <http://www.ccqc.gov.uk/landscape--wildlife/protecting-our-landscape/special-landscapes--sites/protected-landscapes-and-sites/sssis/ssi--report/habitat-features.aspx>

⁵⁴ Plantlife is the lead organisation working with ten partner organisations: Ulster Wildlife Trust, RSPB Scotland, Scottish Wildlife Trust, Northumberland Wildlife Trust, National Trust in Wales, Cotswolds Conservation Board, Somerset Wildlife Trust, RSPB in Wiltshire, Wiltshire Wildlife Trust and the Medway Valley Countryside Partnership (Kent CC).

within woodland (such as heathland) has either been restored or approved for restoration in the same period, 20% of which is on the Public Forest Estate⁵⁵.

- The importance of flower rich habitats has attracted attention in part due to their role in providing pollen and nectar resources for pollinating invertebrates. Projects often aim to re-connect fragmented habitat at the landscape-scale. Plant Link UK and Invertebrate Link have produced joint guidance to ensure that such planting projects undertake good practice to maximise benefits for biodiversity. In particular, planting should not be used as a replacement for maintaining existing flower-rich habitats or for restoring species diversity through changes in management⁵⁶.

Looking to the future: key challenges

1. Ensure that each country's statutory obligations and national targets for protected site condition are met through adequate resourcing for management and monitoring, and that site management plans and action are delivering for plants, fungi and habitats.
2. Ensure that all Rural Development Programmes and agri-environment schemes deliver better outcomes for plants and fungi and that effective mechanisms to support land owner advice and management are put in place.

⁵⁵[http://www.forestry.gov.uk/pdf/FC-England-Indicators-Report-2014.pdf/\\$FILE/FC-England-Indicators-Report-2014.pdf](http://www.forestry.gov.uk/pdf/FC-England-Indicators-Report-2014.pdf/$FILE/FC-England-Indicators-Report-2014.pdf)

⁵⁶http://www.plantlife.org.uk/uploads/documents/Planting_For_Pollinators_Statement.pdf

Target 5: At least 75% of the most important areas for plant diversity of each ecological region protected with effective management in place for conserving plants and their genetic diversity

Scope

Target 5 seeks to conserve the most important areas for plant diversity (i.e. 'Important Plant Areas') by identifying, protecting and managing a network of such areas in each ecological region (as defined by Target 4). The identification of IPAs is based on three broad criteria involving the presence of globally threatened species, exceptional botanical richness and internationally threatened habitats. Work in the UK has focused on the selection of sites, the identification of IPA boundaries and the application of IPA criteria to different taxonomic groups and communities of plants, such as stoneworts, algae (including seaweeds) and arable plants.

Current situation

Application of the Important Plant Area (IPA) methodology⁵⁷ in the UK has led to the identification of 161 IPAs, covering 1,657,462ha or approximately 7% of the UK. Of these, 87 IPAs lie within England, covering 850,000 ha (7%) of the total area of England, and 35% of these overlap with SSSIs and SACs⁵⁸. The 47 IPAs in Scotland cover approximately 700,000 ha or 9% of the total area of Scotland, and 60% of them overlap with SSSIs and SACs. The 23 IPAs in Wales cover about 85,000 ha or 4% of the total area of Wales, and 44% of them overlap with SSSIs and SACs.

Grassland and woodland habitats are the most frequent habitats within UK IPAs, being dominant habitats in 77 and 68 IPAs respectively (48% and 42% of the IPA network). The majority of IPAs (129, or 80% of the network) have been identified, either wholly or in part, for their exceptional assemblages of vascular plants and non-vascular plants (lichens, bryophytes, mosses and liverworts), with species groups associated with broadleaved woodlands being represented on the largest number of IPAs (47, or 29% of the UK).

Of the 161 IPAs, 155 (96%) are offered some degree of protection under a statutory site protection mechanism, e.g. a SSSI or SAC, so in one respect the UK has far exceeded this target. However, whilst most of these sites have management plans in place, these do not necessarily guarantee the IPA interest will be conserved or enhanced, nor does protected site monitoring always include reporting of IPA interests. Further work is required to investigate the effectiveness of this protection. In addition, while management will aim to achieve favourable condition for notified SSSI features, there are many SSSIs where priority plants, fungi, bryophytes and lichens are not listed as notified features.

Work is being carried out at the country level to address these issues. PLINKS, for example, are working with the Scottish government and SNH to assess this issue, while Natural England are carrying out a review of the SSSI series and seeking input from PLINK England. In Wales, PLINC has compiled detailed inventories of sites where priority plant

⁵⁷http://www.plantlife.org.uk/publications/important_plant_areas_in_central_and_eastern_europe

⁵⁸ Low overlap values for IPA coverage can be attributed to the large IPAs that have been included within the network but have not as of yet been refined to smaller cores (this is especially true of England where IPA coverage is said to be 35% - this can directly be attributed to huge IPAs such as East Hants Hangers, North South Downs, The Cotswolds, The Chilterns etc. which do not have specific cores).

and fungi species occur and these are now being used to check representation in the protected sites network. The IPA programme continues to be important in supporting, informing and underpinning existing policies and structures conserving plants and fungi

Several projects are now underway to improve our knowledge of IPAs. Botanical hotspot mapping has been undertaken by Plantlife, for example, to improve selection of IPAs under Criterion B (species richness). While this led to the selection of new IPAs, additional mapping work needs to be carried out to refine boundaries for core areas of interest in some larger IPAs⁵⁹. In addition, analysis of data from Plantlife's Arable farm survey and monitoring projects has identified nine potential new arable IPAs in England. These will also be added to the IPA network, with boundary mapping work carried out in 2014-2015.

Plantlife has also undertaken an analysis of the threats facing IPAs. The main threats identified were abandonment or reduction in management (cited for 43% of IPAs), agricultural intensification (37% of IPAs), climate change and sea level rise (37% of IPAs) and invasive plant species (37% of IPAs). To help address agricultural-related threats, organisations within the PLINK network have been contributing to the design of rural development scheme measures through CAP reform to improve their ability to conserve IPA habitats and features of interest.

In September 2011, 127 Marine Conservation Zones (MCZ) were recommended for designation in order to create an ecologically coherent network around England and Wales. Some of these overlapped with the 83 Important Areas for Marine Algae that have been identified by the British Phycological Society (BPS)⁶⁰. Only three of the 83 Important Areas for Marine Algae (and three of the nine of European importance) have since been included within the initial 27 MCZ designation in England in November 2013⁶¹. In 2013, the Scottish Government consulted upon 33 Marine Protected Areas identified by JNCC and SNH, with a further four areas still to be assessed. Of these 33, three overlap with IPAs⁶². If all the proposed MPAs were taken forward for designation, the new MPAs would represent 11% of the area of Scotland's seas.

Key successes

- Plantlife lead the Important Plant Area programme in the UK. In 2007, following detailed identification work with a range of PLINK partners, Plantlife announced the establishment of 150 IPAs across the UK. Further identification work has seen this number increase to 161 IPAs⁶³.
- Plantlife has been actively raising awareness of these ecologically important sites and habitats and encouraging their long-term protection and restoration through the adoption of an 'ecosystem-based' conservation approach. Plantlife has worked with partners in numerous IPAs to ensure core IPA features are effectively managed. This involves working with land managers to plant-proof local conservation plans, advising on and undertaking habitat restoration, developing site management best practice 'toolkits' for sustaining wild plant conservation in the long term, and recruiting and training volunteers from local communities to

⁵⁹ The core area of an IPA is where species and habitats are of sufficient quality to qualify; some IPAs include a surrounding Zone of Opportunity (ZoO) where habitat restoration could potentially connect core areas allowing improved resilience and increase the quality and extent of qualifying features.

⁶⁰ http://www.plantlife.org.uk/publications/important_plant_areas_for_algae

⁶¹ They are Whiteness Cap in Kent (overlaps with Thanet Coast MCZ), Falmouth and Helford in Cornwall (overlaps with the Manacles MCZ), and Lundy Island Devon (overlap with Lundy MCZ).

⁶² IPA Lamash Bay Arran - MPA South Arran; IPA Loch Sween - MPA Loch Sween and IPA Loch Duich Head - MPA Lochs Duich Long and Alsh.

⁶³ http://www.plantlife.org.uk/wild_plants/important_plant_areas/

play an active part in the success of an IPA. This approach has delivered some significant outcomes for wild plants; see box below for three examples.

Case studies: IPA management in action

Brecklands IPA

The Brecklands IPA covers an area of roughly 1119 km², composed of a range of habitats from naturally-fluctuating mires, valley fens and chalk rivers to various types of woodland. Botanical interest lies mainly in the Breckland dry grass heaths with their distinctive and rare plants such as the endemic prostrate perennial knawel (*Scleranthus perennis* subsp. *prostratus*). Fifteen Red Data List species occur within the IPA, many of which are largely restricted to the area. The Brecklands IPA contains one of the most extensive areas of lowland heath remaining in Britain today and is of international importance. Plantlife has implemented a variety of experimental management techniques to promote the early-succession habitats required by 28 priority plant species that occur here. Following positive responses to management, Plantlife launched a new project in 2013 to restore one of the best known sites. This work allows demonstration of novel management techniques to other land managers and thereby catalyse action at other sites.

Kenfig IPA

At 7.8 km², Kenfig IPA covers one of Wales' largest sand-dune sites. It is of special interest for its extensive sand dune habitats and standing waters, together with a mixture of habitats including saltmarsh, intertidal areas, swamp, woodland and scrub. Like many other dunes, Kenfig has become stabilised and overgrown with coarse vegetation due to natural and human factors. Numbers of dune fen orchid (*Liparis loeselii*), found only at Kenfig, have dropped from ca. 21,000 to just 400 since 1990. Many other rarities are in also sharp decline. Plantlife, Natural Resources Wales and Bridgend County Borough Council are attempting a bold programme of dune restoration, excavating large areas to funnel south-westerly winds across newly exposed sand, kick-starting the natural processes of duneland erosion. In these and other excavated areas many rare species, including sea stock (*Matthiola incana*), petalwort (*Petalophyllum ralfsii*) and even fen orchid have returned, encouraging site managers to undertake similar work at other dune sites.

Ben Wyvis IPA

Lying at the head of the Cromarty Firth, Ben Wyvis is a major mountain massif in Easter Ross. It supports a mosaic of upland habitats including summit heath, lochs and bryophyte-rich snowbeds, along with montane and sub-montane dwarf-shrub heath. Ben Wyvis is home to ca. 50 nationally scarce species including alpine foxtail (*Alopecurus alpinus*), chestnut rush (*Juncus castaneus*) and alpine saxifrage (*Saxifraga nivalis*). The lower slopes support blanket bog habitats notable for the amount of dwarf birch (*Betula nana*) and alpine bearberry (*Arctostaphylos alpina*). Scottish Natural Heritage, who manage the NNR, have undertaken deer management following concerns over the impact of red deer grazing on the vegetation. Plantlife volunteers are monitoring the response of dwarf birch to see whether both male and female catkins manage to rise above the heather canopy and pollinate and set seed. Individual plants are being tracked in exclosures and the results will feed back into the ongoing deer management programme to ensure that the vegetation is in favourable condition.

Looking to the future: key challenges

1. Ensure that the protected area network fully contributes towards the conservation of plants, fungi and their habitats and that national targets for the condition of protected sites are met.
2. Ensure that IPA features of interest are used to inform the designation of protected sites.
3. Ensure that landscape-scale initiatives provide ecological resilience and coherence through habitat restoration within and around IPAs using the Zones of Opportunity model, thus facilitating processes that encourage the flow of genetic material between and within populations to improve genetic diversity.
4. Ensure that rural development scheme payments targeted at priority species and habitats help deliver IPA features of interest.

Target 6: At least 75% of production lands in each sector managed sustainably, consistent with the conservation of plant diversity

Scope

70% of the terrestrial area of the UK is agricultural production land⁶⁴. In order to conserve many species it is critical that this large area of the UK is managed in a sustainable way, consistently with the conservation plant and fungal diversity. Most of the UK's semi-natural habitats are a product of patterns of land management over many decades and their conservation depends entirely on this management continuing. In addition, the management of productive land can have direct and indirect impacts on adjacent natural or semi-natural habitats. By managing production lands for plant and fungal diversity, such negative impacts on ecosystems can also be reduced.

Current situation

Over one third (37%) of the British flora is considered to be threatened or rare and of these 580 species, 97% grow within the productive environment⁶⁴. A quarter of all arable plants and over a third of our upland flora are threatened with extinction in the UK, and since the 1990s there has been a decrease of between 9-19% in woodland plant richness⁶⁵. Thus, the majority of our rarest and most threatened plants are found in agricultural and forested landscapes.

In 1984 it was estimated that 97% of semi-natural grassland in lowland England and Wales had declined over the previous 50 years to approximately 0.2 million ha. Losses continued during the 1980s and 1990s, and since then have been recorded at 2-10% per annum in some parts of England⁶⁶. Only 5,000 ha of lowland hay meadows are left in England. Less than 40,000 ha of calcareous grassland, one of the richest habitats for wild flowers, remain and just 25,000 ha of acid grassland that supports rare flora.

There are 18.2 million hectares of productive land in UK and 56% of this land is in an agri-environment scheme (AES). Not all AES land can be considered as contributing towards this target though. Entry level type schemes, which are known to be less beneficial for priority plant species, account for 38% of the total AES area. Targetted higher level type schemes, which have good potential to deliver for priority plant and fungi species, account for just 18% of productive land⁶⁷.

With ongoing CAP reform, the extent to which production lands will be able to deliver the conservation of plants and fungi is uncertain. However, the most recent AES options largely failed to deliver for the majority of farmland plants. For example:

- In England, 40% of threatened vascular plants are found within lowland meadows and pastures, but entry level options failed to deliver benefits for 80% of these species. In addition, the options for upland meadows failed to provide benefits for 72% of threatened vascular plants. However, entry level options accounted for 90% of the area covered by AES⁶⁴ (which in 2012 accounted 68% of agricultural land in

⁶⁴ http://www.plantlife.org.uk/uploads/documents/Farmland_Eng_015_report_2013.pdf

⁶⁵ http://www.plantlife.org.uk/publications/the_ghost_orchid_declaration

⁶⁶ UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008

⁶⁷ <http://jncc.defra.gov.uk/page-4242>

England⁶⁸). By contrast, the higher level scheme was able deliver benefits for 99% of threatened meadow plants, but only covered 16% of England's agricultural land⁶⁴.

- Of 1,467 vascular plants in Wales, 302 (20.6%) species are considered to be threatened or near threatened. While 95% of these grow on productive farmland, just 18% of productive land in Wales is included in the current AES⁶⁹. Over 10% of threatened species in Wales are found on heathland and moors, yet just 2.9% of the 91,500 ha of lowland and upland heath are included in entry level AES.
- Arable land in England and Wales supports over 150 and 120 arable species respectively. Species such as corn marigold (*Glebionis segetum*), cornflower (*Centaurea cyanus*) and prickly poppy (*Papaver argemone*), flowers that often have cultural significance, belong to Britain's fastest declining suite of plants^{64,69}. AES has the potential to deliver benefits for arable plants across the UK. Unfortunately, the lack of awareness about their plight and the role they play in supporting other farmland wildlife, along with the low payments compared with current high crop revenues, has led to a very poor uptake of arable options. In Wales, the entry level AES options delivering the maximum benefits for arable plants in Wales has been adopted on just 5 ha of land, the equivalent of one small field⁶⁹.
- In 2012, Scotland spent just 18% of rural development programme funding on AES. Moreover, of that funding only 15% was approved for options that could benefit plants and fungi in enclosed production lands. With CAP reform influencing rural development schemes from 2014 onwards, there is an urgent need to ensure that schemes deliver for plants and fungi. In 2014, the Scottish government is leading an exercise to target Scottish Rural Development Programme options towards priority species and habitats. This process needs to deliver AES that support nature friendly land management, especially in High Nature Value Areas. Current proposals from the Scottish Government in 2014 do not look set to deliver for plants and fungi, which will make meeting this target difficult⁷⁰.

Key successes

- Members of the PLINK networks have worked with governments on CAP reform, proposing the redesign of AES options to make them fit-for-purpose, either solely or as packages of management options. In addition, Plantlife's series of farmland reports '*And on that farm he had...*', assessed the state of plants and fungi on farmland and whether AES were delivering action that would maintain their diversity^{64,69,70}. Both short- and long-term actions were recommended that would bring benefits to farmland wildlife.
- As highlighted under Target 4, two projects, Save Our Magnificent Meadows and Coronation Meadows, are aiming to save, restore and enhance close to 76,000 ha of wildflower meadows and grasslands on farmland (over 17% of what remains).

Looking to the future: key challenges

1. Ensure that agri-environment schemes include the right management options to deliver plant and fungi diversity, especially for priority species, and that the design of such options is ecologically sound and based on best-practise methodologies.

⁶⁸https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/252995/BIYP_2013.pdf

⁶⁹http://www.plantlife.org.uk/publications/and_on_that_farm_he_had_wales_farmland_report

⁷⁰http://www.plantlife.org.uk/uploads/documents/Farmland_Sco_014lores.pdf

2. Ensure that uptake of AES options for plant and fungi conservation are targeted to key areas to achieve large scale recovery of populations, using IPAs and similar models as a guide.
3. Monitor the effect that AES are having on priority plants, fungi and habitats to assess their effectiveness, value for money and contribution towards national biodiversity targets.
4. Undertake policy reform at the highest political level to address the issue of eutrophication and atmospheric nitrogen deposition.
5. Plant-proof all AES options, fully recognising the fundamental role that wild plants and fungi play in underpinning wildlife such as pollinators and farmland birds. All other ecological initiatives in productive landscapes, such as pollinator action plans and use of seed mixes for birds, must take a similar approach to improve delivery for wild plant and fungi biodiversity.

Target 7: At least 75% of known threatened plant species conserved *in situ*

Scope

Target 7 builds on the status assessment work of Target 2 and seeks to ensure that the future of our most threatened plants and fungi are secured, irrespective of the reasons why they became threatened. Crucially the target obliges action to ensure that threatened plants and fungi are protected *in situ*, i.e. the places where they live in the wild.

Current situation

The Joint Nature Conservation Committee (JNCC) lists 845 threatened vascular plants, bryophytes, stoneworts and lichens⁷¹, of which 66% (566) receive some level of statutory protection as 'priority species of principle concern for the conservation of biodiversity'. These species are listed as priorities on one or more country biodiversity lists. However this leaves 33% (279) that are not afforded any statutory protection and are unlikely to be receiving much focussed conservation management. Of these, 149 are either hybrids or apomictic microspecies.

Listing a species as a 'priority' does not necessarily guarantee conservation in the wild. Without regular and comprehensive UK monitoring, the success of conservation action is difficult to assess. In the absence of UK BAP reporting, an initial assessment of the current situation has been undertaken for priority species Wales (see box below).

Case study: conservation of threatened and priority species in Wales

In order to assess the effectiveness of conservation work in Wales, an initial analysis to examine the current population status of all threatened (Red List) and priority (S42) species has been undertaken by Plant Link Cymru (PLINC).

39% of threatened vascular plants, bryophytes and lichens in Wales are listed as priority 'species of principal importance for the conservation of biological diversity' on Section 42 of the NERC Act (2006), as shown in Table 3 below.

Group	Number of threatened species	Number on Section 42 list	Percentage conserved
Vascular plants	256	79	31%
Bryophytes	146	53	36%
Lichens	208	69	33%
Fungi	Unknown	27	-
Algae	Unknown	11	-
Total	610+	239	39%

Table 3. Inclusion of threatened species in Section 42 list, Wales.

In order to assess how effective conservation action has been, it is useful to examine the current status of populations of all threatened (Red List) and priority (Section 42) species

⁷¹ <http://jncc.defra.gov.uk/page-3408>

in Wales. Using best available expert opinion, this has been done for 867 taxa, assigning them to categories *increasing*, *stable*, *fluctuating*, *declining* or *unknown* (see Figure 1 below). Taking the *increasing*, *stable* and *fluctuating* categories as being measures of effective conservation action, 32.4% of threatened and Section 42 taxa can be considered as being effectively conserved. The level of success is not equal amongst taxon groups, however, and it is notable that while just over 60% of vascular plants and over 50% of bryophytes are being conserved effectively, the situation with lichens, fungi and algae is largely unknown.

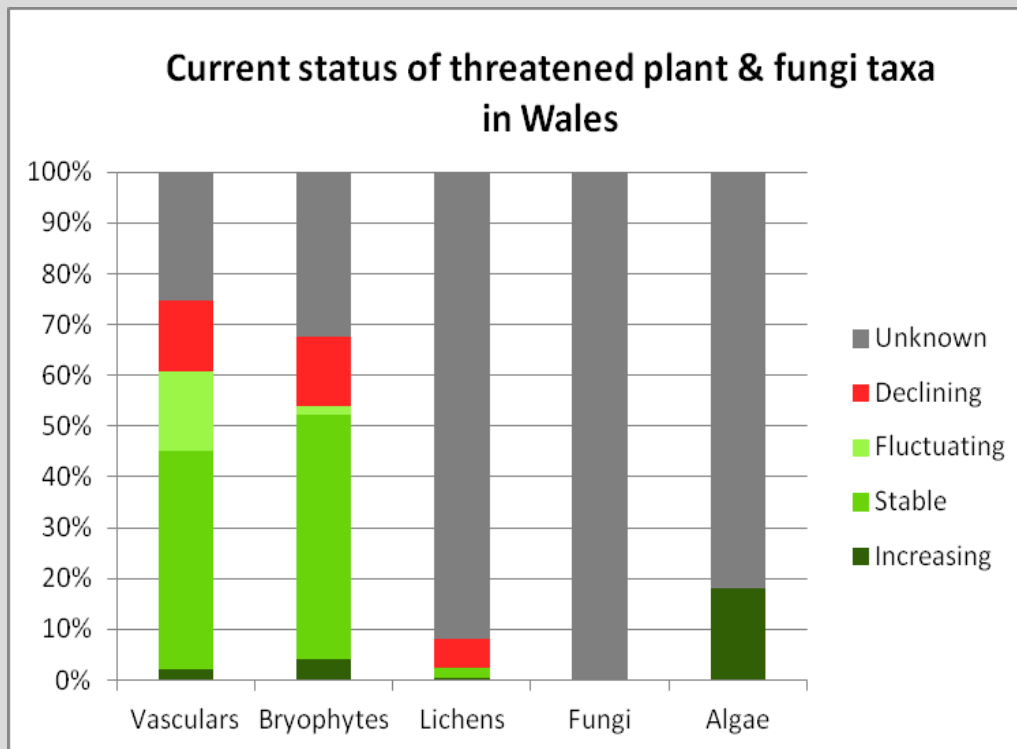


Figure 1: The number of threatened and Section 42 species whose population is either increasing, is stable, fluctuating, decline or unknown for the different taxon groups in Wales

In Scotland, 77% of the species on the Scottish Biodiversity List are plants and fungi. Of these threatened species however, it is not possible to say how many are the subject of conservation programmes in Scotland. The 2020 Challenge⁷² recognises a number of priorities that would work towards meeting Target 7. These include integrating species management to ensure better results for whole ecosystems.

A *Red Data List for vascular plants in England* has been published⁷³ which should allow a revision of priority species on the Section 41 list. In the meantime, 212 of the 402 Section 41 species have been identified as needing urgent action by the Taxon Groups for fungi, non vascular plants and vascular plants under the Terrestrial Biodiversity Group⁷⁴. Many of the actions identified in this process are considered to be deliverable through the management of protected sites.

⁷² <http://www.scotland.gov.uk/Resource/0042/00425276.pdf>

⁷³ <http://www.bsbi.org.uk/england.html>

⁷⁴ The Vascular taxon group agreed a set of species, approximately 50 out of the 150 species which require urgent attention. The Bryophyte taxon group identified over 400 conservation actions for 77 Section 41 (S41) bryophyte species (21 liverworts and 56 mosses). The Lichen taxon group identified over 450 conservation actions for 97 S41 lichen species, including two lichenicolous fungi. Finally, the Fungi taxon group prioritised 61 S41 species and identified ongoing actions.

While focus has recently shifted towards the conservation and restoration of habitats at the site and landscape level, it remains essential that individual species are not lost from the equation. All SSSIs and protected landscapes must include conservation objectives to deliver for priority plants and fungi, and local-level delivery partnerships, including Local Biodiversity Action Plans, must include action for national priority plants and fungi. The strength of the Section 41 and 42 framework and Scottish Biodiversity List should not be diluted, and the links between species and habitat delivery must not be lost.

Key successes

- The conservation of threatened plants and fungi *in situ* is achieved through a wide range of methods and practices. In general, restoration and recovery programmes rely on a cycle of phases, each of which provides feedback as populations respond to management. These phases include research to assess the ecological needs of the species, translation of this research into management protocols, detailed monitoring and survey of existing populations, application of management protocols to sites and further monitoring to assess population response to management. Once a positive recovery is observed, a final phase is to disseminate management protocols to partner organisations, encouraging them to undertake similar management.
- A huge number of such projects are underway on a wide range of priority plants, bryophytes, lichens and fungi, involving many PLINK partners. It is not possible to list them all so the following gives three examples from Scotland, England and Wales to provide a flavour of the range of the work being undertaken.

Scotland:

- Plantlife Scotland provides site visits and advice on managing for wild plants and fungi. Visits focus on priority species but include grassland management, juniper (*Juniperus communis*) and woodland management. These are underpinned by demonstration days to promote management for native plants and fungi in priority habitats across Scotland: Atlantic woodland, pinewoods, trees of open habitat, coastal grasslands, arctic alpine communities and oceanic heath.
- National Trust for Scotland (NTS), Royal Botanic Garden Edinburgh and others continue to work in partnership on the conservation of Oblong Woodsia (*Woodsia ilvensis*). NTS are monitoring the largest remaining colony of this fern in the UK and are considering future reintroduction locations.
- Rare alpine willows are the focus of conservation work by NTS and RBG Edinburgh. These include work on Montane Willow (*Salix arbuscula*) at three sites and Woolly Willow (*Salix lanata*) in Meall na Samhna, Corrie Garbhach and Corrie Sharroch. Other willow species are also being planted in Corrie Sharroch. Initial monitoring has indicated that some of the reintroduced Woolly Willow will produce catkins in the spring.

Wales:

- Work by many partners including Plantlife, NRW, National Trust, the Highways Agency and several local authorities has led to a remarkable recovery in Three-lobed Water-crowfoot (*Ranunculus tripartitus*). Reintroduction of grazing management to heathland sites, movement of stock between sites and improved

monitoring and survey have contributed to an increase in known sites from 17 in 1999 to 48 in 2013.

- Improved management of Atlantic oak woodland within the Merioneth Oak Woodland IPA has resulted in early signs of a recovery in tree lungwort lichens. Young thalli of species such as Tree Lungwort (*Lobaria pulmonaria*) are beginning to appear and improved survey has led to the rediscovery of species such as Red-eyed Shingle Lichen (*Pannaria rubiginosa*), long thought to be extinct in Wales.
- Ditch management work at Malltraeth Marsh on Anglesey by RSPB to benefit Lapwing has provided perfect conditions for a wide range of wetland species. Pillwort (*Pilularia globulifera*) is now present at ten locations across the site, making one of the largest populations in Britain, and marsh stitchwort (*Stellaria palustris*) is also thriving.

England:

- Plantlife's work to restore open ground habitat through turf stripping at Cranwich Camp SSSI in Norfolk has resulted in successful recovery of spanish catchfly (*Silene otites*) from the native soil seed bank. Numbers of plants have risen from 0 in 2011 to in 2929 in 2014.
- NE and the National Trust have carried out surveys of wild asparagus (*Asparagus officinalis* subsp. *prostratus*) in Cornwall that have indicated that this species is doing better than had previously been known; meanwhile young plants grown from pollination of the single female plant left in Dorset with male material collected from Trust land in Cornwall flowered for the first time in 2013.
- Surveys of thatch moss (*Leptodontium gemmascens*) focussed on National Trust estates in the South West of England with known concentrations of thatched roofs have revealed several new populations of this species which is no longer found in semi-natural habitat in the UK. Staff responsible for the buildings have been provided with guidance that should ensure its conservation.

Looking to the future: key challenges

1. Ensure national priority species and habitats are effectively conserved through appropriate management and protected from inappropriate land use change, and that such management is a requirement for funding support, including rural development schemes.
2. Ensure at least 75% of threatened species are safeguarded within the protected site network and are supported by appropriate *in situ* land management practices.
3. Ensure each country's statutory obligations and national targets for threatened species are met through the protected site network.
4. Secure Government and agency commitment to implementing a monitoring programme of priority plants and fungi as part of their statutory obligations.
5. Develop new innovative mechanisms to support on-going *in situ* fungi and plant conservation.

Target 8: At least 75% of threatened plant species in *ex situ* collections, preferably in the country of origin, and at least 20% available for recovery and restoration programmes

Scope

This target seeks to underpin the conservation of threatened plant species through the maintenance of living collections, citing botanic gardens, seed banks and tissue culture collections as examples. Priority should be given to those threatened species listed as 'critically endangered', with a target of 90% of such species in *ex situ* conservation. In the UK, focus should include species listed in the Habitats Directive, and the GB and Irish Red Lists, in addition to those that are 'critically endangered' at a global level.

Current situation

The UK has achieved this target for vascular plants. Royal Botanic Gardens, Kew's Millennium Seed Bank Partnership⁷⁵ has stored seed collections from 77% of the UK's native seed producing plants⁷⁶ that have conservation designations (in total, 90% of the UK's flora is represented). This has been achieved through an annual coordinated programme of seed collecting, with assistance from BSBI, NGOs, agencies and individuals across the UK, many of whom are volunteers. Seed may be made available for recovery and restoration programmes where there are sufficient numbers in the collections. At least 40% of these UK collections have been made available for recovery and restoration programmes, mainly through the UK Native Seed Hub.

Species that do not set seed, e.g. bryophytes, are also held in *ex situ* conservation at RBG Kew. The majority of the 111 priority bryophytes have *ex situ* conservation identified as a priority action. 25 species are currently conserved in cryo-storage, with four additional species awaiting cryopreservation. For lichens, there are currently no appropriate *ex situ* methods.

In Scotland, the Royal Botanic Garden Edinburgh holds seed for 150 out of 170 species selected for conservation, resulting from a collecting programme organised with national agencies (e.g. SNH) and other organisations (e.g. BSBI). In addition, 143 species are now in cultivation at RBG Edinburgh, following intensive efforts to cultivate these species since 2005. Nine of the species are included within *in situ* recovery programmes.

The two main botanic gardens in Wales (the National Botanic Garden of Wales and Treborrh Botanic Garden) have living collections of threatened native plants. Of the 256 threatened vascular plants in Wales, 33 are being grown in these gardens and two species are currently being used in recovery and restoration programmes.

Key successes

- RBG Kew is investigating genetic diversity and connectivity in the landscape, in relation to the Lawton review and the Biodiversity 2020 Strategy. With

⁷⁵ <http://www.kew.org/science-conservation/millennium-seed-bank>

⁷⁶ Please note the exclusions made when calculating this percentage, including infraspecific taxa where a collection for the species has been made, extinct species (9), desiccation sensitive/recalcitrant species (2), species that have never been seen to fruit in UK (7) and hybrids (35).

Pasqueflower (*Pulsatilla vulgaris*) in the Chilterns, for example, it was feared that genetic isolation would make populations less fit for reintroduction. However, research has revealed that the species is suitable for this type of work.

- Several laboratories and organisations are involved with the *ex situ* conservation of bryophytes⁷⁷ aiming to establish living tissue collections, cryopreserved collections and spore collections at various sites within Europe. Five species of threatened Irish bryophytes collected from multiple locations by a team from Glasnevin Botanic Gardens, Dublin, are currently undergoing cryopreservation at RBG Kew, namely tufted fen-moss (*Paludella squarrosa*), Cornish path-moss (*Ditrichum cornubicum*), black golf-club moss (*Catascopium nigratum*), varnished hook-moss (*Hamatacaulis vernicosus*) and cernuous thread-moss (*Bryum uliginosum*).

Looking to the future: key challenges

1. Ensure that all *ex situ* conservation projects have an *in situ* conservation outcome, such as contributing to *in situ* management work and reintroduction projects.
2. Improve information flow to ensure that *ex situ* actions fully compliment *in situ* conservation needs and priorities at population, species and community levels.

⁷⁷ Rowntree, J.K., Pressel, S., Ramsay, M.M., Sabovljevic, A., Sabovljevic, M., (2011). In vitro conservation of European bryophytes. *In Vitro Cellular & Developmental Biology Plant* 47:55. (<http://www.ebesconet.org>).

Target 9: 70% of the genetic diversity of crops including their wild relatives and other socio-economically valuable plant species conserved, while respecting, preserving and maintaining associated indigenous and local knowledge

Scope

The conservation of plant diversity is a key component of the Global Plan of Action on the conservation and sustainable use of plant genetic resources for food and agriculture. Theory and practice demonstrate that, with an appropriate strategy, 70% of the genetic diversity of a crop can be contained in a relatively small sample (generally, less than 1,000 accessions).

Current situation

The University of Birmingham, with Natural England, Scottish Natural Heritage and Natural Resources Wales, have prepared a crop wild relative⁷⁸ (CWR) checklist and prioritised inventory for each devolved administration⁷⁹. Taxa were prioritised according to a range of criteria including their potential use (such as whether traits are easily transferred to their crop relatives), economic value and degree of threat. The taxa prioritised in each inventory have undergone a gap analysis to identify both *in situ* sites that have potential for the establishment of CWR genetic reserves and *ex situ* seed bank collections for these taxa.

As an example, the analysis identified 15 sites across the country that could conserve close to 100% of England's 148 priority CWR if established as a genetic reserve network. The top three sites alone (Purbeck in Dorset, the Lizard Peninsula in Cornwall and south Cambridgeshire) would be sufficient to conserve nearly 80% of these taxa. An analysis of genetic diversity in eight CWR taxa found on the Lizard Peninsula in Cornwall indicates that this site should be established as the first UK CWR genetic reserve. Further work is now underway to investigate the suitability of Purbeck as a site for the second UK CWR genetic reserve.

In terms of *ex situ* conservation, a number of gaps in current CWR collections have been identified as well as a number of taxa which are under-represented. Through the establishment of a genetic reserve network and systematic collection of CWR populations from each reserve it is hoped that CWR will be actively and systematically conserved in the long-term both *in situ* and *ex situ*.

The diversity of some UK landraces⁸⁰ is under threat, principally through the replacement of landraces by modern cultivars and a decline in living collections as curators retire. The completion of an inventory of vegetables and fruits is critical as it is likely that, in ten years time, such diversity could be lost entirely if action is not taken. There is urgent action for the conservation of landraces, both *in situ* on-farms and *ex situ*, primarily in seed collections.

⁷⁸ The definition of a CWR used is any wild species found in the same genus as a crop.

⁷⁹ <http://www.cwrdiversity.org/>

⁸⁰ A landrace is a variety of agricultural plant species which has developed over a long period of time and as a result has adapted to the local natural environment in which it lives. It was a widespread practice of farmers and vegetable growers to save seed from their crops annually for the following year's cultivation, resulting in locally adapted land races.

Many species and varieties of cultivated plants are being conserved through Plant Heritage's Threatened Plants Project⁸¹. Of the 12,917 cultivars identified as being threatened, 41% (9,539) are in National Plant Collections and 7% (2,583) are being actively conserved elsewhere.

Key successes

- The results of the genetic diversity assessment of eight CWR on the Lizard Peninsula, Cornwall, demonstrated that the site was not only a taxon diversity hotspot (as found in the England *in situ* gap analysis) but that it is also a hotspot of genetic diversity for these taxa. This gave sound justification for the establishment of the first UK CWR genetic reserve in this location. Written support for this work has come from Defra, while Natural England and the University of Birmingham have reviewed a set of minimum standards for this and future genetic reserves. Natural England have also taken significant steps forward in ensuring the site meets all these standards, including the collection of seed from key genetically diverse populations for long-term *ex situ* storage and use. As a direct response to this, stakeholders working in Dorset have met to discuss implementing the same steps to establish the second CWR genetic reserve in Purbeck, Dorset.

Looking to the future: key challenges

1. Ensure that socio-economically important crop wild relatives, cultivars and land races are fully recognised and represented in collections, preferably living collections in an agricultural or horticultural context, or in botanic gardens and seed banks.
2. Ensure the conservation of crop wild relatives through *in situ* programmes.
3. Secure Government and agency commitment to compile UK checklists for crop wild relatives, cultivars and land races in order to evaluate the resource that is currently conserved.

⁸¹ <http://www.nccpg.com/National-Collections.aspx>

Target 10: Effective management plans in place to prevent new biological invasions and to manage important areas for plant diversity that are invaded

Scope

Invasive Alien Species (IAS) are considered to be direct drivers of biodiversity loss across the globe⁸². Target 10 acknowledges the threats to plant diversity from invasive species and seeks to identify the necessary action to minimise this damage. It suggests that priorities should be set at a national level but action should be co-ordinated across the UK and internationally. The challenge is to identify those species that pose significant threats, to determine the nature of the response and to then co-ordinate action to alleviate problems on-the-ground. Management plans should specify the mechanisms necessary to prevent, eradicate or control problem species so that our biotopes and native flora can be conserved successfully.

Current situation

The GB Invasive Non-Native Species Framework Strategy was published in 2008 and reviewed in 2013, with recommendations to progress the strategy published in 2014. The Strategy puts an onus on preventative measures and on preventing the establishment of new invasive species through 'horizon scanning' to identify emerging threats.

Plantlife and the Freshwater Biological Association have undertaken horizon scanning for 599 non-native freshwater and terrestrial plants⁸³. In the assessment, 92 plants were ranked as 'critical', requiring a full detailed risk assessment as a matter of priority, and a further 55 species were ranked 'urgent', for which a full risk assessment was recommended. Following detailed risk assessment of individual species, a key part of the GB Strategy is the production of Invasive Species Actions Plans (ISAP); these have been produced for water primrose (*Ludwigia grandiflora*)⁸⁴ and a further four are in development.

In January 2015, the EU Invasive Alien Species Regulation will come into force. This requires better coordinated action between member states to prevent new IAS coming into the EU as well as better coordinated cross-border effort to either eradicate or manage and control IAS affecting regions of the EU. These will be underpinned by improved surveillance and management plans.

Many organisations (both within and outside the PLINK networks) are involved with the control of invasive species across the UK. The Non Native Species Secretariat (NNSS) list 55 Local Action Groups (LAGs) in Wales and England and 20 LAGs in Scotland that are helping to support INNS initiatives and removal programmes. Partnerships are also being developed to deliver INNS projects; the Landmark Trust, Natural England and the National Trust, for example, are on track to eradicate *Rhododendron* from Lundy Island by 2020. Such partnerships are increasingly important as 37% of Important Plant Areas are threatened by invasive species⁸⁵ and over 10,000 ha of SSSI in the UK are known to be affected by INNS⁸⁶. While members of the PLINK network are undertaking work to

⁸² <http://www.cbd.int/invasive/>

⁸³ http://www.plantlife.org.uk/publications/here_today_here_tomorrow

⁸⁴ <http://www.nonnativespecies.org/index.cfm?pageid=294>

⁸⁵ Invasive species are present on 53 of the 145 IPAs with threat data in the IPA database.

⁸⁶ <http://publications.naturalengland.org.uk/file/6532878091419648>

eradicate and control invasive species across these botanically important sites, a more strategic approach towards actions on the protected site and IPA networks is needed in order to maximise biodiversity benefits using the limited resources available.

In Scotland, coordination of action against INNS is directed through the government led Invasive Non Native Species Group. This group has produced a code of practice to aid implementation of the Wildlife and Natural Environment (WNE) (Scotland) Act 2011, which introduced the presumption against planting or allowing non native plants to grow outside of their native range. In 2014, the group set up a series of species assessments designed to identify the type of action required in terms of surveillance and monitoring, removal or control. This work is supported through the issuing of Species Control Orders as part of WNE 2011 Act. Forestry Commission Scotland is leading a strategic review of *Rhododendron* control with partners.

In Wales, the Wales Biodiversity Partnership Invasive Non-Native Species group has been developing management plans for key species and the inclusion of actions for SSSIs in the NRW Sites Actions database. This group also makes information on ongoing projects available through the Biodiversity Action Reporting System (BARS)⁸⁷. Plantlife Cymru and BSBI in Wales have also produced a list of around 50 sites where populations of priority Section 42 plant species are threatened by invasive non-native species. These "*Sites in Peril*" include Great Orme (non-native *Cotoneaster* species), St David's Heaths (New Zealand pigmyweed, *Crassula helmsii*), Stackpole (evergreen oak, *Quercus ilex*), Pembrey Burrows (sea-buckthorn, *Hippophae rhamnoides*) and Arthog (*Rhododendron*). The results of this report have been made available to the WBP Invasive Non-native Species Group.

Key successes

- Five invasive aquatic species have been banned from sale in England since April 2014, with Wales soon to follow suit. These include New Zealand pigmyweed (*Crassula helmsii*), floating pennywort (*Hydrocotyle ranunculoides*), parrot's-feather (*Myriophyllum aquaticum*), water primrose (*Ludwigia grandiflora*, *L. peploides* and *L. uruguayensis*) and water fern (*Azolla filiculoides*).
- The Invasive Alien Species Regulation was agreed and will be implemented January 2015 with list of invasive alien species to be agreed by 2016.

Looking to the future: key challenges

1. Ensure there is support and commitment to fulfil statutory obligations and existing policies to prevent the arrival, establishment and spread of new invasive species.
2. Implement effective management plans on the ground to control and or eradicate invasive non native species especially within the protected area network and IPAs and put in place effective early warning systems to prevent new invasions.
3. Improve and further research effective management techniques for INNS, including assessments of costs, and to make available best-practise guidance (link to Target 3).

⁸⁷ <http://ukbars.defra.gov.uk/project/show/27225>

Objective III: Plant diversity is used in a sustainable and equitable manner

Target 11: No species of wild flora endangered by international trade

Scope

Internationally, many plants are legitimately traded in a sustainable way. This target is directed at those species endangered or potentially endangered by international trade. It is linked to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). However, action is generally focussed on the impact of trade on the UK's flora, rather than the impact of UK consumers on plants abroad.

Current situation

The UK National Wildlife Crime Unit (NWCU) assists in the prevention and detection of wildlife crime, but their work is mainly focused on non-plant species⁸⁸. As the NWCU has limited capacity they are advised by the Wildlife Crime Conservation Advisory Group on the impact of crime on the conservation status of protected species⁸⁹; one of their priorities is the illegal trade in CITES timber.

The Royal Botanic Gardens, Kew acts as the UK CITES Scientific Authority for plants. RBG Kew is part of the Partnership for Action Against Wildlife Crime UK (PAW UK), which helps statutory and non-government organisations to work together to tackle wildlife crime. Between 2006 and 2011, RBG Kew advised on 20,000 applications to import, export, or hold species covered by the EU Wildlife Trade Regulations, which covered timber, live plants, traditional medicines, cosmetics and extracts. In addition, over 900 UK Police, Customs Officers and Wildlife Inspectors were trained on CITES implementation for plants⁹⁰.

Key successes

- RBG Kew acts as the UK CITES Scientific Authority for plants. In this role, between January 2011 to December 2013, training on CITES implementation was provided for 617 UK and international participants, including 297 UK enforcement officers. In addition, RBG Kew and international partners have developed CITES capacity building tools, including two editions of CITES User Guides on ramin and cacti⁹¹.
- An international market for tree lungwort (*Lobaria pulmonaria*), was identified that could have resulted in large volumes of the lichen being collected for the homeopathic medicine industry. Harvest at the quantities required was considered to be unsustainable so it was recommended that the species be added to Schedule 8 of the Wildlife and Countryside Act (1981). This has been implemented in England and Wales and is soon likely to be implemented in Scotland⁹².

⁸⁸ <http://www.nwcu.police.uk/what-are-priorities-and-intelligence-requirements/priorities/>

⁸⁹ <http://jncc.defra.gov.uk/page-4098>

⁹⁰ <http://www.kew.org/science-conservation/research-data/science-directory/projects/cites-uk-scientific-authority>

⁹¹ <http://www.cbd.int/doc/world/gb/gb-nr-05-en.pdf>

⁹² Schedule 8 the Wildlife and Countryside Act 1981 lists plant species that are protected, under Section 13, from being picked and or part or all of that plant being sold. Schedule 8 is updated with each Quinquennial Review (QQR). As part of

Looking to the future: key challenges

1. Ensure that RBG Kew continues to have the capacity to be able to fulfil their part in UK Government's obligations around CITES.
2. Ensure that no UK species is threatened by the importation of non-native species that pose an invasive risk or are highly likely to pose such a risk, including plant diseases.

the 5th QOR changes to the England and Wales to the Wildlife and Countryside Act were made in 2011 with two plants being added; Rock Nail *Calicium corynellum* and Tree Lungwort *Lobaria pulmonaria* (in respect of section 13(2) only). Scotland has not yet made a decision about the 5th QOR. The up to date list of Schedule 8 (and 5) species based on the 5th QOR are yet to be reflected in public lists. The 6th QOR is underway and submissions from various groups are being analysed with a view to a report being sent from JNCC to Defra, Scottish Government and Welsh Government in December 2013.

Target 12: All wild harvested plant-based products sourced sustainably

Scope

Plants and their derivatives provide us with a wide range of products, including amongst other things fuel, food, shelter, clothing and medicines. As well as environmental considerations, sustainable management of these goods relates to social issues, such as fair trade, equitable sharing of benefits and participation of local communities. Target 12 therefore should be considered alongside Targets 3, 6, 11 and 13 in terms of production lands, trade, ecological services and sustainable livelihoods.

Current situation

While aiming to encourage the use of plant and fungi products, the PLINK networks are seeking to improve awareness of the impacts of unsustainable use and collection of fungi, seaweeds and wild plants. Various Codes of Conduct have been published (see Key Successes below), but there is a need to bring these together in one source and publish overarching guidance outlining the principles of responsible levels of collection. In many areas, more research is needed to assess the impact of collection and to gather the data required to determine sustainable levels of collection.

There are examples of business that rely on the sustainable use of plant products. The Vera Bluebell Farm in Gwynedd, for example, sells native bluebell bulbs and seed collected under licence. As part of the licence agreement with NRW, experimental trials have been undertaken to determine the sustainable level of bluebell harvest, and the results are used to inform the annual quantities of bulbs that are harvested.

The impacts of the unsustainable use of plants and fungi are difficult to quantify. As well as the research indicated above, an additional approach would be to ensure that plants and fungi are fully considered in Natural Capital accounting procedures, including both known and unknown value. This would require a paradigm shift in how we currently value nature.

Key successes

- The British Mycological Society (BMS) have published *The Wild Mushroom Pickers' Code of Conduct*⁹³ while the Scottish Wild Mushroom Forum (a group with representatives from conservation organisations, landowners, mushroom buyers and pickers), have published the *Scottish Wild Mushroom Code*⁹⁴, updated in 2010. Visitor numbers to a website hosting the leaflet⁹⁵ indicates that there are annual peaks during the main fruiting and collecting season, with the webpage on identifying fungi to eat as the third most visited page on the site.
- The BSBI and JNCC published a *Code of Conduct for the conservation and enjoyment of wild plants*⁹⁶. This has been written for botanists, teachers and

⁹³ <http://www.britmycolsoc.org.uk/mycology/conservation/code-of-picking/>

⁹⁴ <http://www.forestharvest.org.uk/guidelines/Mushcode.htm>

⁹⁵ <https://sites.google.com/site/scottishfungi/home>

⁹⁶ http://www.bsbi.org.uk/Code_of_Conduct.pdf

people who wish simply to enjoy wild plants and aims to indicate where collecting and picking are acceptable and which wild plants should not be taken.

- Plantlife, SNH, Reforesting Scotland and independent collectors have also drawn up *The Scottish Moss Collection Code*⁹⁷ for mosses and *The Scottish Bulb Collection Code*⁹⁸. These are voluntary codes to which ethically minded businesses in Scotland have signed up. Whilst the guidance noted here has been developed within Scotland, the principles of sustainable collection are more widely applicable across the UK⁹⁹.
- In Northern Ireland, the Environment & Heritage Service (EHS) has published substantial guidance on the collection of seaweed, *Environmentally Sustainable Seaweed Harvesting*¹⁰⁰. Natural England has also published a Code of Conduct for seaweed harvesting in 2014.

Looking to the future: key challenges

1. Work is needed to understand the scale of collection of wild species across the UK in order to be able to raise awareness of unsustainable levels of collection and promote responsible practices.
2. Improve public awareness, where necessary, about the potential impacts of commercial collection of wild edible plant material and fungi for marketing through the restaurant trade and other outlets.
3. Provide guidance for appropriate levels of sustainable collection and, where these levels are unknown, undertake research required.

⁹⁷ <http://www.forestharvest.org.uk/guidelines/mosscode.htm>

⁹⁸ <http://www.forestharvest.org.uk/guidelines/bulbcode.htm>

⁹⁹ <http://www.forestharvest.org.uk/guidelines/harvestingguidelines.htm>

¹⁰⁰ <http://www.doeni.gov.uk/niea/seaweedharvestingniehspositionstatement.pdf>

Target 13: Indigenous and local knowledge innovations and practices associated with plant resources maintained or increased, as appropriate, to support customary use, sustainable livelihoods, local food security and health care

Scope

Target 13 focuses on the status of knowledge and practices that underpin the use of plants by local people. Such plant resources may be either domesticated or wild, and their products include the material (e.g. for food, medicines, firewood, ecological services), and the immaterial (e.g. aesthetic, cultural or spiritual). The link between local, rural people and local plants is reinforced by the target's reference to sustainable livelihoods - implying a right of access - and to the knowledge that helps underpin them. The target recognises the intricate relationship between biodiversity conservation and local sustainable use.

Current situation

Various companies across the UK make a livelihood from promoting traditional skills, such as foraging, bushcraft, natural navigation and survival skills. Interest has increased steadily year-on-year and there appears to be a concerted effort to ensure this knowledge is not lost from an increasingly urbanised society. It is important to use the knowledge that comes with indigenous skills but also to adapt and modify these to meet the modern day environment.

Promotion of information and knowledge is now widespread through many media, including internet forums, podcasts and videos as well as books written on foraging and bushcraft skills. One foraging website, for instance, is dedicated to finding foraging courses in any given local area¹⁰¹. In addition, there are many companies, societies and forums that promote and discuss the uses of wild and garden herbs for medicinal purposes, as well as for cosmetics and eating. The Herb Society, for example, runs courses and provides school education packs, as well as supplying links to other UK herb companies and societies¹⁰².

There are several other industries in the UK that are based on indigenous practices involving plants. Some have formed societies and forums to allow them to come together and share knowledge and information on their trade and practices. The National Hedgelaying Society, for example, is 'the only conservation organisation dedicated to maintaining the traditional skills of hedgerow management.'¹⁰³ Hedgelaying is an ancient skill which has been practiced for hundreds of years and has undergone something of a resurgence in recent years, with many training courses now on offer. The society provides membership and such training to keep this industry alive.

Traditional charcoal production using locally sourced wood is still undertaken on a small scale within the UK, using a variety of techniques including earth clamps and metal charcoal kilns. Other wood-based industries include the production of gates, styles,

¹⁰¹ <http://foodforagingcourses.co.uk/>

¹⁰² <http://www.herbsociety.org.uk/>

¹⁰³ <http://www.hedgelaying.org.uk/>

hurdles, joinery, cladding, cricket bats, clogs and garden furniture. Similarly, traditional handmade Sussex trugs are still being made. These wooden baskets, usually used for gardening, date back to the 1500s, and have a handle and rim of made of coppiced sweet chestnut (*Castanea sativa*) and a body made from five or seven thin boards of cricket bat willow (*Salix alba* var. *caerulea*).

Key successes

- The National Coppice Federation¹⁰⁴ was launched in 2013 and aims to bring regional coppice groups together. In addition to providing a unified voice for the industry it helps to provide a forum to share knowledge and information on best practice and promote coppicing as a form of woodland management. Plantlife's *Forestry Recommissioned* reports¹⁰⁵ highlight the role woodland management and coppicing can play at improving plant diversity in some English and Welsh woodlands.
- The *Powys Wild Food Project*¹⁰⁶ examined the current status and development potential of a very wide range of woodland and hedgerow products in Powys. Detailed assessments such as this indicate the possible value of plant-based sustainable livelihoods to local economies and should be undertaken more widely.

Looking to the future: key challenges

- Provide improved mechanisms to enable traditional knowledge and practises to be collected and shared, utilizing modern media where this encourages engagement.
- Encourage the development of modern farming methods that take a sustainable approach to resource management, drawing on lessons to be learnt from traditional farming practices (linked with Target 6).

¹⁰⁴ www.ncfed.org.uk

¹⁰⁵ http://www.plantlife.org.uk/uploads/documents/WR_web.pdf & http://www.plantlife.org.uk/uploads/documents/W_WR_Web.pdf

¹⁰⁶ www.glasu.org.uk/en/uploads/documents/report%20PowysWildFoodProject%20Report.pdf

Objective IV: Education and awareness about plant diversity, its role in sustainable livelihoods and importance to all life on earth is promoted

Target 14: The importance of plant diversity and the need for its conservation incorporated into communication, education and public awareness programmes

Scope

“People conserve what they love, they love what they understand and they understand what they are taught”. Target 14 seeks to implement this old Sri Lankan proverb and influence communication, awareness and education programmes to help deliver the Global Strategy.

Current situation

While this target is difficult to measure directly, examination of data such as volunteer time and visitor numbers can be used to indicate trends in levels of engagement with the public over time. The UK Biodiversity Indicator for 'awareness, understanding and support for conservation' shows that between 2000 and 2012 the amount of time contributed by volunteers across a wide range of conservation organisations increased by 27%, but between 2007 and 2012 it decreased by 6%¹⁰⁷. Bucking this latter trend though, recent data shows that the volunteer time within the Botanical Society of Britain and Ireland and Plantlife has actually increased slightly since 2007 (see Figure 2 below).

¹⁰⁷ <http://jncc.defra.gov.uk/page-4253>

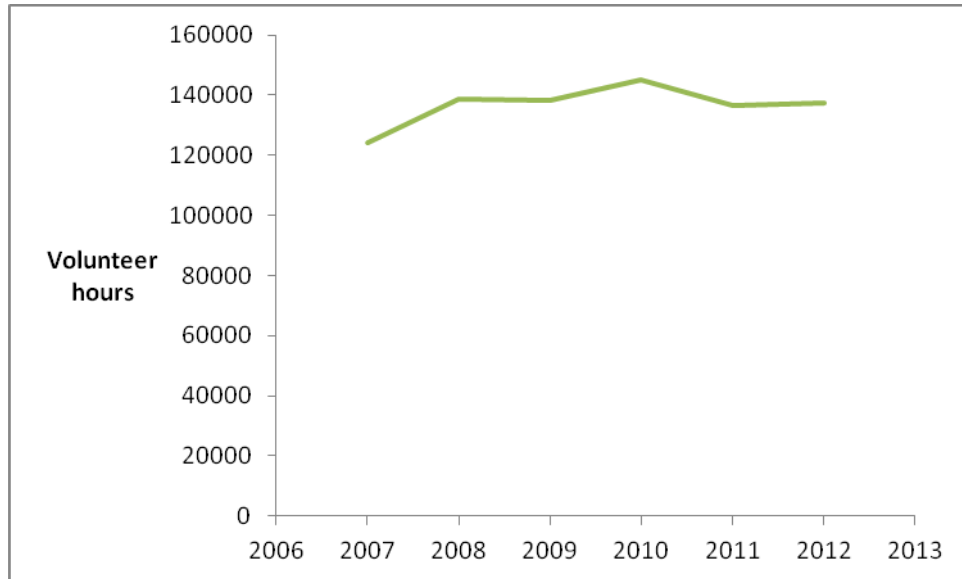


Figure 2: Total volunteer hours recorded by the Botanical Society for Britain and Ireland and Plantlife from 2007 to 2012.

Furthermore, visitor numbers to Royal Botanic Gardens, Kew and Royal Botanic Garden Edinburgh for the same period also show an increase since 2008 (see Figure 3 below). This is a small proportion of the total number of visitors to gardens and plant collections in the UK; Botanic Gardens Conservation International (BGCI) has records of over nine million visitors per annum to UK gardens¹⁰⁸.

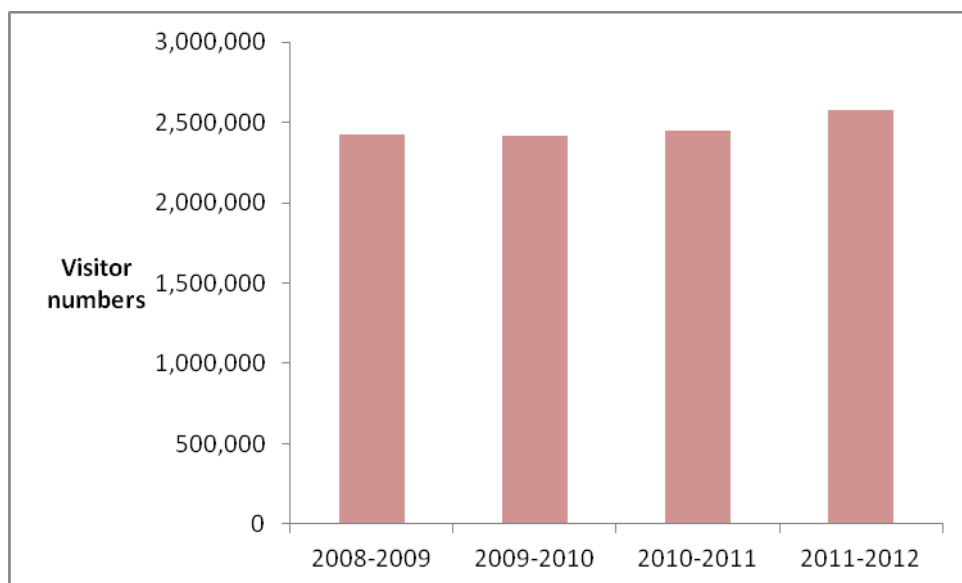


Figure 3: Visitor numbers for Royal Botanic Gardens, Kew and Royal Botanic Garden Edinburgh.

Most of the organisations within the PLINK network run a wide range of workshops, events, identification courses, conservation advice projects and outreach programmes that are aimed at raising awareness of the importance of plant and fungal diversity. There are

¹⁰⁸ <http://www.cbd.int/doc/world/gb/gb-nr-05-en.pdf>

currently five MSc course relating to plant conservation and taxonomy (at Bangor University, University of Kent, University of Sussex, University of Reading and Royal Botanic Garden Edinburgh), with the course at Bangor University starting in September 2014.

A Defra study examining people's engagement with biodiversity found that just under 80% of the population claim to worry about changes to the UK countryside and loss of native animals and plants. However, the same study found that 73% had given 'a little' to 'no' thought about biodiversity loss in the UK before the survey¹⁰⁹. The importance of conserving biodiversity is being communicated through educational programmes such as those highlighted in key successes below. Activity such as this should help to produce a positive change in behaviour.

Key successes

- Plantlife has been undertaking an extensive outreach programme since 2009. Over 100,000 children and people have been involved with the *Wild About Plants* programme¹¹⁰. This includes over 10,000 school children per year undertaking the *Bee Scene* survey¹¹¹ and over 1,000 teachers trained in developing botanical knowledge and identification skills. Through the *Make the Small Things Count*¹¹² project, 7,000 children and adults have learnt about lower plants in Atlantic woodlands inspiring monitoring and conservation action. Volunteer Flora Guardian groups are involved with the conservation of priority species and 70 individual Flora Guardians are now monitoring 20 species at 60 sites across Scotland. Plantlife Scotland has also developed the *Wild and Wonderful* guides to Scottish wild flowers, fungi, lichens, mosses and liverworts and seaweeds aimed at beginners¹¹³.
- On BBC Radio 4, *Plants: From Roots to Riches* presented the story of our changing relationship with plants over the past 250 years. Channel 4's popular *Wild Things* series looked at the changing plant life of Britain.
- Several touring exhibitions have brought aspects of plant and fungal diversity to a wide audience. *From Another Kingdom - The Amazing World of Fungi* was a major multimedia exhibition looking at the fascinating and diverse world of fungi, while Plantlife's *Patchwork Meadow*, a tapestry of 600 hand-sewn patches depicting plants and our relationship with them, has toured regional museums, galleries and botanic gardens across Great Britain.
- Scotland's Environment Web¹¹⁴ is designed to be a one-stop-shop for anyone wanting to find out about and participate in citizen science programmes for Scotland's wildlife. The Scottish Fungi website¹¹⁵ also collates activities and information about fungi in Scotland.
- As an example of a positive reaction to a biodiversity threat when communicated to the public, *Phytophthora austrocedrae* is species of blight from South America that is infecting native juniper (*Juniperus communis*). Following its discovery in Scotland in August 2013, Plantlife, Forestry Commission Scotland and Forest

¹⁰⁹ <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=18411&FromSearch=Y&Publisher=1&SearchText=WC1056&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description>

¹¹⁰ <http://www.wildaboutplants.org.uk/>

¹¹¹ <http://www.wildaboutplants.org.uk/beescene/>

¹¹² <http://www.wildaboutplants.org.uk/england/projects/make-the-small-things-count/>

¹¹³ http://www.plantlife.org.uk/publications/the_wild_and_wonderful_world_of_scottish_wild_flowers

¹¹⁴ <http://www.environment.scotland.gov.uk/>

¹¹⁵ <https://sites.google.com/site/scottishfungi/>

Research are coordinating a national survey to assess the health of juniper. Using Plantlife volunteers, more than 85 sites were surveyed in four months in 2014.

Looking to the future: key challenges

1. Secure commitments from UK country governments and statutory agencies to provide support to enable specialist societies and other organisations to provide opportunities that allow individuals to improve their field botanical and mycological skills.
2. Continue to provide readily accessible learning and recreational activities linked to plants and fungi for schools and community groups to use, to assist them in exploring and understanding their environment and encouraging local action to look after it.
3. Encourage and assist society as a whole to engage with nature, including plants and fungi by taking advantage of a wider and broader range of media, education and recreation opportunities, in order to demonstrate the role plants and fungi play in everyday life and the benefits that come from engaging with nature.

Objective V: The capacities and public engagement necessary to implement the Strategy have been developed

Target 15: The number of trained people working with appropriate facilities sufficient according to national needs, to achieve the targets of this Strategy

Scope

Target 15 aims to strengthen and co-ordinate human and technical resources, improving communication and knowledge management to advance the conservation and sustainable use of plants and their habitats. These goals will be achieved by prioritising research and training needs and by enhancing technical and scientific co-operation¹¹⁶.

Current situation

Botanical and mycological training workshops and projects, both field and laboratory-based, are delivered by many PLINK partners, especially the specialist societies. There are a large number of expert volunteers, active with identification and recording in the field, that contribute to the understanding of plants and fungi in the wild across the UK. The specialist societies also have a number of Recorders formally registered with them (see Table 4 below), from which validated records are accepted from either a certain area (e.g. Vice-county) or taxonomic group (e.g. Eyebrights, *Euphrasia*).

Society or group	Number of registered recorders
The Association of British Fungus Groups	<ul style="list-style-type: none">• 124 recorders• 30 ABFG field recording groups
British Mycological Society	<ul style="list-style-type: none">• 34 fungus groups (there is some overlap between the ABFG field recording groups and BMS fungus groups)• No register of BMS recorders
British Lichen Society	<ul style="list-style-type: none">• 60 active lichen recorders

¹¹⁶ 'Trained' people are defined as individuals possessing more than basic identification or other conservation-related skills; 'facilities' are any element of the infrastructure that aids those activities (not only analytical laboratories but also libraries and web-based tools); and 'conservation' is defined in a broad sense.

British Bryophyte Society	<ul style="list-style-type: none"> • 810 unique recorder codes since 2009 (some records might be duplicates)
Botanical Society of Britain and Ireland	<ul style="list-style-type: none"> • 152 Vice-county Recorders covering 119 Vice Counties in Britain and Ireland.
British Phycological Society	<ul style="list-style-type: none"> • No current official network of recorders

Table 4. The number of formal recorders registered with the specialist botanical and mycological societies.

The BSBI has developed the 'Botanical Skills Pyramid'¹¹⁷ to help assess botanical identification skills on a scale of 0 (no engagement with botany) to 7 (outstanding expertise). The pyramid indicates current levels of competency and offers guidance on how to progress to a higher level. BSBI also provide a Field Identification Skills Certificate (FISC) which is becoming established as the industry standard for assessing botanical survey skills. The test determines your botanical skill level on a scale from one (beginner) to five (professional) with six being awarded in exceptional cases¹¹⁸. Since the launch in 2007, 356 participants have taken FICs.

Plantlife's *Wildflower Count* is an annual, national, easy to do survey of common plants. It is in the process of being incorporated into the National Plant Monitoring Scheme (NPMS) that will provide additional, more robust, data on the condition of semi-natural habitats in the wider countryside. The survey is being designed in partnership with BSBI, CEH and JNCC with three skill levels, allowing volunteers of differing abilities to take part and move up through the levels as their identification skills improve.

While amateur recorders make significant contributions to monitoring and surveillance, professional recorders and experts continue to be lost, particularly for the more specialist taxonomic families; only one stonewort specialist is currently active in the UK for example. Since 1999 there has been a considerable decline in the number of professionally employed mycologists, lichenologists, and bryologists, especially in agencies, museums and botanic gardens. A particular problem arises as experts retire, with financial constraints leading to a closure of posts rather than opportunities for the next generation of specialists. A lack of funding generally is leading to a decline in expert jobs across government agencies, herbaria, museums and universities. This knowledge base will gradually be lost if the situation is not addressed.

Key successes

- Royal Botanic Garden Edinburgh has an active training programme, including an MSc in Biodiversity and Taxonomy of Plants and a Practical Certificate in Field Botany, both of which have excellent track records in translating enthusiasm into expertise.
- The Conservation Volunteer (TCV) body for Scotland's Natural Talent Apprentice scheme¹¹⁹ has provided apprenticeships (up to 18 months long) in key conservation fields, using Heritage Lottery funding. Since its launch in 2006, the scheme has trained ten apprentices in plant and fungi related areas (e.g. machair and peatland

¹¹⁷ http://www.bsbi.org.uk/Botanical_Skills_Pyramid.pdf

¹¹⁸ http://www.bsbi.org.uk/field_skills.html

¹¹⁹ <http://www.tcv.org.uk/scotland/learning/natural-talent-apprenticeships>

management, bryophytes, lichens, fungi, seaweeds, and wetland and saltmarsh habitats). The scheme focuses on areas where future expertise is required.

- A Lichen Apprenticeship Scheme was established in Wales in 2009. The scheme provides specialist training for field lichenologists through laboratory-based workshops and field meetings, along with the development of the *Lichens of Wales* website¹²⁰. While no government funding is available for the scheme, participants from agencies and organisations are encouraged to attend courses within their work time.
- A five-year project, *Lost and Found Fungi* started in 2014 and aims to improve recording of rarely seen fungi in the UK¹²¹. Hosted by RBG Kew and funded by the Esmée Fairbairn Foundation, the project will employ two people to be trained in working with species of conservation concern and provide further training for field recorders.
- Since 2009 the BMS have held 12 specific training events with 133 separate individuals attending (many attending multiple events). The BMS also hold week-long recording forays, attracting 265 individuals since 2009 (many attending other workshops and general events). While these events do not include official training, there are learning elements within the events for those that attend, e.g. discussion of species and help from others with more experience during discussions about changes in taxonomy. The next generation of professional mycologists could hopefully emerge from training events such as these.

Looking to the future: key challenges

- Develop and implement plant and fungi Apprenticeship Schemes and other similar training and skills development programs to ensure field-trained individuals are available to fulfil needs of survey, monitoring and provision of technical advice.
- Provide opportunities for trained apprentices to gain meaningful employment building and using newly acquired skills.
- Ensure UK governments supports Universities in improving training skills during undergraduate and post-graduate degrees.

¹²⁰ <http://www.wales-lichens.org.uk/content/lichen-apprentice-scheme-wales>

¹²¹ <http://fungi.myspecies.info/content/lost-found-fungi-project>

Target 16: Institutions, networks and partnerships for plant conservation established or strengthened at national, regional and international levels to achieve the targets of this Strategy

Scope

Implementation of the Global Strategy targets relies on the enthusiasm, expertise and commitment of a range of different people. The challenge is for these people, who work or volunteer for different organisations across the UK, to be able to come together to share experiences and expertise and agree collaborative action. Target 16 acknowledges that co-operative action is usually more effective than independent action. Emphasis is therefore placed on the development of networks to deliver plant conservation priorities.

Current situation

The Plant Link (PLINK) networks¹²² and other partnerships are working together to advance the conservation of wild plants and fungi and to take forward action to deliver the GSPC. PLINK networks form important fora for organisations to share information and work together on joint outcomes. PLINK networks include the specialist botanical and mycological societies and range of environmental NGOs and government bodies.

In addition, the PLINK networks work in partnership to ensure that other country-level strategies are delivered, especially the *Strategy for the conservation of lower plants and fungi in Scotland*¹²³ and *A strategy and action plan for the conservation of lower plants and fungi in Wales*¹²⁴.

There many other partnerships that contribute towards the delivery of the GSPC, both within the UK and globally:

- The Millennium Seed Bank Partnership is coordinated by the RBG Kew and aims to contribute towards to delivery of Target 8 of the GSPC in particular.
- RBG Edinburgh has active links across more than 40 countries, many of which are directly involved with local efforts in plant conservation.
- The Secretariat for Botanic Gardens Conservation International is based in the UK and also acts as the Secretariat for the Global Partnership for Plant Conservation (GPPC). The GPPC is a global network established to implement the GSPC. At least five UK institutions are currently GPPC partners.
- PlantNetwork¹²⁵ is a network of botanic gardens, arboreta and other documented plant collections in Britain and Ireland. PlantNetwork promotes botanical collections as a national resource for research, conservation and education. It also facilitates networking and training among holders of plant collections through a programme of conferences and workshops, a regular newsletter and a well-referenced website.

¹²² www.plantlife.org.uk/campaigns/plantlink/

¹²³ <http://www.plantlife.org.uk/uploads/documents/fungi-lower-plants-stategy-Scotland.pdf>

¹²⁴ <http://www.plantlife.org.uk/uploads/documents/Welsh%20lower%20plants%20strategy%20web.pdf>

¹²⁵ <http://plantnetwork.org/>

- The British Ecological Society (BES)¹²⁶ was established to promote and foster the study of ecology. Its core activities are the publication of results of research in ecology, the development of scientific meetings and the promotion of ecological awareness through education at all levels. The BES currently has around 4,500 members spread around the world.

Key successes

As well as the UK PLINK forum, PLINK networks have been established in England, Scotland and Wales.

Plant Link Scotland (PLINKS) works to implement GSPC, conserve plants, fungi and their habitats and to help bring about change by:

- a) identifying and engaging in legislative and other parliamentary opportunities for improving plant conservation in Scotland;
- b) maximising strategic opportunities for influencing the work of the Scottish Government as it impacts on plant conservation in Scotland;
- c) contributing to strategic opportunities in the Scottish Biodiversity Strategy in Scotland, by helping to influence the work of other key stakeholders including Scottish Natural Heritage, Forestry Commission Scotland, the Scottish Environment Protection Agency and the Scottish Government
- d) provide a means of ensuring that the best experience of plant conservation from a global and a UK perspective is applied effectively in Scotland;
- e) identify and use opportunities for ensuring that scientific research in Scotland is directed and applied in such a way as to encourage the protection and enhancement of plant species and habitats in Scotland;
- f) facilitate the exchange of information that would help to achieve objectives (a) to (e) above.

Plant Link England, formed in 2012, aims to advance the conservation of wild plants and fungi by:

- a) taking forward action to deliver the Global Strategy for Plant Conservation in England supporting the delivery of Biodiversity 2020 outcomes
- b) facilitating the exchange of information between organisations involved in delivering wild plant and fungus conservation in England
- c) undertaking joint initiatives to influence and advocate for policy and legislation to conserve wild plant and fungus diversity in England.

Plant Link Cymru (PLINC), established in 2007, frames its work around delivery of the GSPC in Wales, co-ordination of action on Section 42 Priority Species for plants and fungi, and responses to consultations. PLINC also facilitate the exchange of information and advocate for the policy changes needed to deliver the strategy in Wales. The groups remit is:

- a) to promote delivery of the Global Strategy for Plant Conservation within Wales, frame our work towards its targets and address any gaps in its implementation
- b) to act on a list of priority issues affecting the conservation of plants and fungi raised by members of the group
- c) to provide joint responses to consultations on any issues of botanical concern.

¹²⁶ <http://www.britishecologicalsociety.org/>

Looking to the future: key challenges

1. Ensure plant and fungi organisations achieve added value from governments by working together more effectively to deliver national and international targets for biodiversity
2. Ensure PLINK networks remain key fora and networks to identify, share and promulgate research and conservation methodologies to implement the Strategy effectively.
3. For governments and country agencies, through the recognition of the importance of the PLINK networks, to provide sufficient support of the PLINK networks in order to expand and improve their effectiveness at implementing the GSPC.
4. To co-ordinate environmental, conservation and educational programmes to achieve the GSPC targets.

Acronyms

AES	Agri-Environment Scheme
ABFG	Association of British Fungi Groups
BARS	Biodiversity Action Reporting System
BRC	Biological Records Centre
BBS	British Bryological Society
BES	British Ecological Society
BLS	British Lichen Society
BMS	British Mycological Society
BPS	British Phycological Society
BSBI	Botanical Society of Britain and Ireland
CEH	Centre for Ecology and Hydrology
CITES	Convention on International Trade in Endangered Species of Wild Fauna & Flora
GPPC	Global Partnership for Plant Conservation
GSPC	Global Strategy for Plant Conservation
FISC	Field Identification Skills Certificate
IPA	Important Plant Area
INNS	Invasive non-native species
IAS	Invasive alien species
JNCC	Joint Nature Conservation Committee
LAGs	Local Action Groups
NBGW	National Botanic Gardens Wales
NBN	National Biodiversity Network
NE	Natural England
NERC Act	Natural Environment and Rural Communities Act (NERC Act)
NHM	Natural History Museum
NRW	Natural Resources Wales
NNSS	Non-native Species Secretariat
MCZ	Marine Conservation Zone
PLINK	Plant Link UK
PLINK Eng	Plant Link England
PLINKS	Plant Link Scotland
PLINC	Plant Link Cymru
RBG Kew	Royal Botanic Gardens, Kew
RBG Edinburgh	Royal Botanic Gardens Edinburgh
RHS	Royal Horticultural Society
RSPB	Royal Society for the Protection of Birds
SNH	Scottish Natural Heritage
S41	Section 41 List (Priority Species of Principle Importance to the Conservation of Biological Diversity in Wales)
S42	Section 42 List (Priority Species of Principle Importance to the Conservation of Biological Diversity in England)
SSSI	Site of Special Scientific Interest
SAC	Special Area of Conservation
TCV	The Conservation Volunteer, Scotland
WBP	Wales Biodiversity Partnership
WFC	Wild Flowers Count
WNE	Wildlife and Natural Environment (Scotland) Act

PLINK supporting organisations

Progress towards the GSPC in the UK relies on the enthusiasm, expertise and commitment of a wide range of people. The Plant Link (PLINK) network of 38 organisations come together to share experiences and agree collaborative action. Their combined insight is fundamental to delivering the GSPC and advancing the conservation of plants and fungi.

This report has been collated and written by Plantlife, the secretariat to Plant Link. The views expressed in this report should not necessarily be attributed to all members of the PLINK network. This report is supported by:

