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CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE
AND NATURAL HABITATS

Standing Committee
21st meeting

Strasbourg, 26-30 November 2001

A joint Council of Europe and Planta Europa European Plant Conservation Strategy

Draft for submission to the 7th meeting of the Subsidiary Body on Scientific, Technical and Technological Advice to the Convention on Biological Diversity
Montréal, 12-16 November 2001

The Standing Committee is invited to examine and take note of the joint draft "European Plant Conservation Strategy" developed by Planta Europa and the Council of Europe as a contribution to, and part of the Global Strategy for Plant Conservation discussed in the framework of the Convention on Biological Diversity.

Note

by Dr Jan Plesnik, Chairman of SBSTTA, Advisor to the Planta Europa Network and Deputy Director, Agency for Nature Conservation and Landscape Protection of the Czech Republic, Prague

The Conference of the Parties, at its sixth meeting, will consider the establishment of a global strategy for plant conservation (Decision V/10) to halt the current and continuing unacceptable loss of plant diversity.

The present document by Planta Europa and the Council of Europe has been developed as a contribution to, and part of, the proposed Global Strategy for Plant Conservation (submitted to SBSTTA-7; UNEP/CBD/SBSTTA/7/10). It was developed at the third Planta Europa European conference on the conservation of wild plants, held in June 2001 in Pruhonice, in the Czech Republic, and consists of long term policy directions and a set of medium term clear targets produced through a participatory process.

As one of the delegates at the conference I can testify that the 159 delegates from 38 European countries worked extremely hard to produce the targets.

I urge the Parties to CBD at SBSTTA to note that the targets produced are clear, realistic and measurable, and that in all cases the targets are assigned a Planta Europa partner who has pledged to implement them. The intention is that the Strategy would be implemented through, and avoid duplication with existing initiatives.

I thus commend to SBSTTA the draft European Plant Conservation Strategy.

Resolution from Planta Europa, the Third European Conference on Plant Conservation (23-28 June 2001) meeting in Pruhonice, Czech Republic, to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) meeting 12-16 November 2001; and to the CBD Conference of the Parties (COP) meeting in April 2002

Alarmed that as many as two thirds of the world's higher plant species may be in danger of extinction in nature during this century, and that a high proportion of the world's bryophytes, lichens, algae and fungi are also threatened;

Further alarmed that in Europe, 66 endemic plants are extinct in nature, and two-thirds of existing habitats in some countries are considered endangered, and that even this masks further loss through genetic erosion;

Converned that this threatens humankind's expectation of using plant diversity to build sustainable, healthy and better lives for the future;

Recognizing that the Convention on Biological Diversity is a leading international convention for the conservation and the sustainable use of biodiversity;

Recalling that the Planta Europa Network, consisting of both governmental and non-governmental organizations, was formed in response to the biodiversity crisis to work cohesively for plant conservation across Europe;

Recognizing that Planta Europa's mission is to conserve the wild plants, both higher and lower, as well as fungi, of Europe, and their habitats;

Noting the decision (UNEP/CBD/COP/5/10) by the COP to consider, at its sixth meeting, the establishment of a global strategy for plant conservation;

Further noting that the intention is that such a strategy would be implemented through, and avoid duplication with existing initiatives;

Aware that the third Planta Europa conference (with representatives from 38 European Countries) working jointly with the Council of Europe, has worked to produce a European Plant Conservation Strategy consisting of clear and measurable targets;

The Planta Europa conference, meeting in Pruhonice, Czech Republic, 22-28 June 2000:

1. Endorses the proposal contained in the Gran Canaria Declaration (UNEP/CBD/COP/5/INF/32), calling for the development of a Global Strategy for Plant Conservation;

2. Calls for the SBSTTA to recommend the establishment of a Global Strategy for Plant Conservation, and appropriate financial mechanism for its implementation.

3. Calls for the COP to establish a Global Strategy for Plant Conservation, and appropriate financial mechanism for its implementation.

4. Urges the Parties to recognize the European Plant Conservation Strategy as a contribution to the Global Strategy for Plant Conservation;

5. Commends to SBSTTA the draft European Plant Conservation Strategy; and to the COP the final published European Plant Conservation Strategy

Contents

Acknowledgements

This joint Council of Europe and Planta Europa European Plant Conservation Strategy contains both long term policy directions and a set of medium term clear targets selected through a participatory process. It was developed at the third Planta Europa European conference for the conservation of wild plants held on 23rd-28th June 2001 in Pruhonice in the Czech Republic. Special thanks go to the facilitators: Christoph Imboden (chief conference facilitator), Colin Bibby, Anne Harley, Martin Harper, Mira Mileva, Anna Kalinowska, Mike Scott, Susanne Schmidt, Liz Radford, Bert van den Wollenberg; and to all 159 delegates from 38 countries who participated in developing this Strategy.

The Strategy was edited by Christoph Imboden, Jane Smart and Martin Harper based upon contributions from the delegates at the third Planta Europa European conference.

The long-term objectives were written by Hugh Synge.

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PLANTLIFE

Planta Europa

Planta Europa is a developing network of organisations (Government and Non-Government) working for plant conservation in Europe. The ultimate mission of this network is to conserve European wild plants, both higher and lower, and their habitats. Plantlife hosts the Planta Europa Secretariat. Planta Europa is the European Programme of Plantlife International. Website: www.plantaeuropa.org

Council of Europe

The Council of Europe is an intergovernmental organisation which aims:

- to protect human rights, pluralist democracy and the rule of law;
- to promote awareness and encourage the development of Europe's cultural identity and diversity;
- to seek solutions to problems facing European society (discrimination against minorities, xenophobia, intolerance, environmental protection, human cloning, Aids, drugs, organised crime, etc.);
- to help consolidate democratic stability in Europe by backing political, legislative and constitutional reform.

Any European state can become a member of the Council of Europe provided it accepts the principle of the rule of law and guarantees human rights and fundamental freedoms to everyone under its jurisdiction. Website: www.coe.int.

Introduction

The draft European Plant Conservation Strategy

This joint Council of Europe and Planta Europa European Plant Conservation Strategy is the result of a partnership between the Council of Europe and Planta Europa. It forms a contribution to the Global Strategy for Plant Conservation being developed under the CBD (Decision V/10).

At the third Planta Europa conference, in Pruhonice, Czech Republic, June 2001, delegates from 38 countries drew up a set of 41 targets for Planta Europa and its partners to achieve in the next 6 years (to 2007).

The Strategy also contains long term policy objectives designed to complement the Planta Europa targets; these have been developed from a document presented to the Standing Committee of the Bern Convention. Whereas many of the targets tend to be more oriented for action by NGOs and technical agencies, the long-term policy objectives (termed in Part 1 as 'Action proposed') are mainly directed at governments.

A Vision, Goal and three objectives derived from the Goal were also developed at the conference and these are shown in Box 1.

Box 1. Vision, goal and objectives of European Conservation Strategy

Vision

A world in which wild plants are valued – now and for the future.

Goal

To halt the loss of wild plant diversity in Europe

Objectives

- to deliver and disseminate information on European plants and their habitats to improve their conservation and sustainable use;
- to influence law, policy, international conventions; management practices and take action on the ground; as well as peoples attitudes and behaviour impacting on plants and their habitats;
- to strengthen and coordinate human and technical resources, communication and knowledge management to take forward the conservation and sustainable use of plants and their habitats.

The strategy covers the conservation of wild plants in Europe. It does not cover the important issue of the environmental footprint of Europe in other parts of the world.

Rationale and scope

Although Europe was one of the first regions to address conservation of plants (the Council of Europe commissioned and published the first ever regional list of threatened plants in the 1970s) Europe's plant life continues to decline and its conservation is not yet receiving the attention it deserves. The scale of the problem is recognised in the Dobris Assessment of the European Environment Agency, which states that 'given the projected growth in economic activity, the rate of loss of biodiversity is far more likely to increase than stabilise'.

It is also recognised that plants have been neglected in nature conservation. The trend in conservation towards the biodiversity agenda, spearheaded by the Convention on Biological Diversity (CBD) has however been very beneficial to plants. Plants are universally recognised as a vital part of the world's biological diversity and an essential resource for the planet. As primary producers and the providers of habitat infrastructure for many ecosystems, the disappearance of so many of them sets one of the greatest challenges for the world community: to halt the destruction of plant diversity.

Europe differs from other regions of the world in the pivotal role played by the European Union (EU). Environment is one of the issues on which Member States have conceded sovereignty to the European Union level: in other words underlying policy on the environment is developed at EU rather than national level. This is unique.

The EU's Sixth Action Programme, approved by the EU's Council of Ministers in June 2001, has the ambitious goal that biodiversity loss shall be stemmed by 2010. This programme will include implementation of four sectoral Biodiversity Action Plans (one on conservation of natural resources, another on agriculture) published by the European Commission in March 2001; these respond to the European Community's commitments under the CBD, especially Article 6.

The proposed Global Strategy for Plant Conservation provides a framework to facilitate harmony between existing initiatives aimed at plant conservation. Within this framework a European dimension to this Strategy is important because:

- The European Union is a Party to the CBD
- The Council of Europe has signed a Memorandum of Co-operation with the CBD
- The Council of Europe's Bern Convention is a pioneering treaty on nature conservation
- 55 States have approved the Pan-European Biological and Landscape Diversity Strategy
- European Governments have offered some 13% of their territory to Natura 2000, sites to be established under the European Union's Birds, and Habitats and Species Directives where ecological considerations will take precedence over economic considerations
- It will encourage the development of a trans-national actions
- Collaboration between national and international plant conservation initiatives will be enhanced
- The Planta Europa network is emerging as a vital force for plant conservation within Europe

A pragmatic way forward

As with the Global Strategy it is envisaged that the European Plant Conservation Strategy could be integrated into programmes of work of the Convention. The targets in the Strategy are clear, realistic and measurable, and in all cases a Planta Europa partner has pledged to take the lead on implementation.

Long term policy objectives

1. Species conservation

Species are the basic building blocks of nature, the components on which all else rests. And their loss is irreversible, unlike many other forms of environmental damage, such as pollution, which can often be reversed.

Dividing conservation into that of species and habitats is of course an arbitrary division because the best way to conserve most species is to protect the habitats where they grow. But such a division does allow for a more structured approach to the proposals and information.

Europe has some 12,500 or more vascular plants (flowering plants, conifers, ferns and fern allies), 1700 bryophyte species, 2500 lichens and at least 8000 macrofungi. These figures may be small in comparison with tropical regions – Europe has some 5% of the world's vascular plants – but Europe does consist of over 50 countries, more than a quarter of the world total. And as elsewhere, species conservation depends on good information, especially on the taxonomy and distribution of plants; this is covered in Section 4.4.

1.1. **Threatened species** (implementing CBD Article 8(f) and (k))

Species threatened with extinction have been the first and main focus of most work on plant conservation in Europe so far. Until recently the work concentrated on vascular plants, but in the 1990s a growing number of threatened plant lists for lower plants have appeared.

The majority of threatened vascular plants at a European level are single-country endemics, mostly from Mediterranean countries. Thus the 1983 version of the European threatened plant list showed Greece with 411 rare and threatened endemics (out of 749) and mainland Spain with 295 (out of 497), whereas most northern and Central European countries have less than ten endemics each. The national Red list for Spain (2000) shows a substantial increase in rare endemics following a surge in taxonomic work, making the difference with northern countries even greater.

Most of the endemics have very small natural ranges, often a single mountain or area of sea cliff, and so are vulnerable to disturbance and change. Many of them are chasmophytes (plants adapted to growing on cliffs or steep rocky surfaces) or mountain plants, if not both. These habitats are not in general so urgently threatened as lowland habitats. This may explain the fact that relatively few species have become extinct so far.

If the lists of threatened endemics are longer for southern countries, it is arguable that the threats to plant diversity have, at least in the past, been just as severe if not more so in northern countries. Here, though, the great majority of species listed as threatened at national level are not threatened at European level, unlike the situation in Mediterranean countries. The species that are threatened at European level tend to be widespread ones, especially plants of wetlands such as the famous *Aldrovanda vesiculosa*, or plants vulnerable to collecting, such as the spectacular Lady's Slipper Orchid *Cypripedium calceolus*.

1.1.1. Listing of threatened species

Some 25 years after the Council of Europe published the first List of Threatened Plants of Europe, it is encouraging that most countries in Europe have up-to-date and well-researched lists of their threatened plants. Yet despite the inclusion of some 573 plant species on the Bern Convention (Appendix 1) and 484 on the Habitats Directive (Annex II), there is still not:

a. An up-to-date list of threatened vascular plants for Europe;
b. Threatened plant lists at European level for any lower plants except bryophytes;
c. Information on which of the listed threatened species have been or are being rescued.

A new threatened vascular plant list for Europe is about to be started, as a 3-year project funded by the European Union. Led by Prof. Dr Klaus Ammann, Botanical Garden of Bern, it will be part of the Euro+Med plant checklist and be implemented through Planta Europa, in collaboration with the IUCN-SSC global Red List Programme. It is also part of the Action Programme on Threatened Species that forms Action Theme 11 of PEBLDS.

Action proposed

a. Updating by each country of its national red list every 3-5 years, and preparation of national lists of threatened bryophytes, lichens and macrofungi. National lists to include to 1994 IUCN Red List categories (but may of course also include their own national systems for coding the degree of threat to individual species);

b. Bilateral action between neighbouring countries to harmonise their lists taxonomically and assist each other as appropriate;

c. External assistance may be needed for *a.* and *b.* in some Central and East European countries.

This will enable:

Planta Europa Target 2: European Red List for vascular plants, revised list for bryophytes, and preliminary Red Lists for lichens, macrofungi and other selected groups published.

Planta Europa Target 8: Single web address and list server for exchanging information on European Red List projects established and maintained.

A large press launch of the revised European list, with media events in every country in Europe, will help give the issue of threatened plants a higher profile.

1.1.2. Recovery and conservation of threatened species

Important though preparing the new European list is, a higher priority is to save those species already listed as threatened. Recovery plans provide an effective way of doing this.

Within the European Union, Member States are obliged to establish Special Areas of Conservation for the 484 listed threatened plant species on Annex II of the Habitats Directive, and to establish priorities to maintain or restore those species to a favourable conservation status. They are also obliged to prohibit the deliberate destruction of those and other species. (see Section 2.3.1.)

Progress is patchy, with few of the benefits of the Habitats Directive yet emerging on the ground. Stimulated by CBD, some countries, such has the UK, have set out rescue targets for many of their threatened species and are steadily working through recovery plans for them; others have infrastructure in place to rescue threatened plants, such as the Conservatoires Botaniques Nationaux in France. But these are the exception rather than the rule. In all countries, botanic gardens can play an important role in the recovery of threatened species, but their work must be effectively integrated into the overall strategy for each species.

Fortunately few species have become fully extinct in Europe in recent years, though a great many have massively reduced populations and ranges. Indeed, adding a species to a red list as extinct stimulates enthusiasts to try and refind the species, often with success. Unlike animals, many plants remain hidden for part of the year and others are hard to detect when they are not fruiting or flowering. Plants can persist in the seed bank of the soil, only to reappear when management of the vegetation changes. This is not a reason for complacency, but it does mean it is not too late to rescue virtually all of Europe's threatened flora. Moreover, most threatened plants have lost ground rather than increased in the last 25 years, making the need for comprehensive recovery action all the more urgent.

Action proposed

Preparation and implementation of recovery plans for threatened plant species, with priority to those on the Bern Convention and the Habitats Directive.

Planta Europa Target 15: To have promoted the development and implementation of recovery programmes in relevant countries for 50 priority plants across all taxa, their selection to be informed by European Red Lists and lists of rapidly declining but widely scattered species (see target 14) as these become available.

Planta Europa Target 16: Flagship trans-boundary partnership projects for the recovery of at least 5 priority species to have reached implementation stage.

Planta Europa Target 21: Inclusion of all relevant threatened vascular plants (including tree species), cryptogamic plants and fungi in relevant Bern Convention annexes promoted.

Planta Europa Target 22: Inclusion in the Habitats and Species Directive (and Emerald network) of all species listed in the Bern Convention promoted and formally supported by 3 national governments.

1.1.3. Monitoring of the recovery and conservation of threatened species

Threatened plant species and their habitats need effective monitoring, to make sure the conservation status of the listed species and habitats is being maintained or if need be restored. Monitoring of progress on the recovery of threatened plants is lacking at international level and is usually poorly performed if at all at national level.

Action proposed

a. Reports from each Bern Convention Party on the action being taken by the Party for the plants on the Convention in its territory;

b. Regular monitoring of the status of threatened plants on Annex II of the EU Habitats Direction (see section 2.3.1.). Under the Directive, Member States are obliged to report every six years on implementation. Threatened plants, however, can decline very quickly if their habitat changes, and a species could go from boom to bust in on year, let alone six. Some additional process may therefore be needed to cover the particular needs of threatened plants.

Planta Europa Target 3: Manual of tried and tested (species and habitat) monitoring protocols for scientists and naturalists made available on the web.

1.2. Widespread species

The rescue of threatened plant species may be the most urgent task facing plant conservation in Europe, but the reduction in the abundance and range of the many more numerous widespread ones may well prove the more serious problem in the long term. Virtually every wild plant in Europe other than a few ruderal weeds has lost ground since the end of World War II, and the trend has not abated.

Perhaps most acute has been the loss of plants in those specialized habitats, like heathlands in northern Europe and alpine pastures in Central Europe, that need traditional management to survive. Across Europe, traditional management of not very productive ecosystems is in sharp decline due to increased prosperity: olive groves are abandoned in the south of France, reedbeds return to birch scrub in Eastern England, maquis grows into evergreen oak forest in central Italy, alpine villages are deserted in parts of the Alps. While abandoning large areas of Europe to natural succession is welcome in conservation terms, especially in the very long term, it is disastrous for the many plants that depend on traditional management to survive.

Other rare habitats with specialist floras like sand dunes and salt marshes but do not need traditional management have also declined dramatically. Perhaps the most acute losses have been in wetland plants: indeed, much of Europe has become much drier due to agricultural drainage, which naturally affects surrounding land as well as the fields directly drained. Control of the water table is a vital part of plant conservation.

Moreover, with increasing prosperity, there has been a "tidying up" of much of the countryside, removing niche habitats in which the diversity of wild plants thrive. Old lawns rich in wildflowers are converted into green monocultures, small patches of woodland are cut and hedges removed, and ponds drained. Most of the traditional, plant-rich countryside across Europe has disappeared in the last 40 years, with only France, Switzerland, and countries of Central and Eastern Europe showing the countryside much as it was before 1950. The losses rarely show up in Red Data Books but they do emerge in maps of plant distributions by 10 km squares, or other similar units, where a sea of blobs for local extinctions of species after species makes the case in a powerful way. This is a strong reason for botanists to support and implement mapping schemes for their flora.

A key emerging issue is the use of local native seed and plants on a large scale in landscaping, whether to vegetate motorway verges, to create habitats or to landscape factories and buildings. This could benefit plant conservation but sadly available evidence suggests that practitioners do not always use native plants or where native plants are used, the source is far afield. Bird's-foot Trefoil and Kidney Vetch sown on roadside verges and in amenity plantings in northern Europe come from populations native to Alpine valleys and belonging to distinct varieties or subspecies. For practical and scientific purposes, the best source of plant material should be as local as possible, and certainly not plants of unknown or foreign provenance. Plants are often narrowly adapted to local conditions, and studies have revealed considerable variation in form, physiology and life history across the geographical distribution of widespread species. Plants of local origin will not only grow and survive best at a site, but can also support the full range of native fauna. Also, native plant distributions are

important for the study of plant geography, especially as scientists try to unravel the effects of climate change. They are also important elements in the evolution of landscapes and cultural differences between regions. In Britain, where habitat loss has encouraged much planting, a new organization called Flora Locale has been set up to combat this menace, and provides a good model for other countries.

A parallel issue is the encouragement of plant life in towns and cities, a topic that is increasingly important as plants decline in the countryside. Urban wildlife is important not so much for genetic conservation but as a link between town and country, and a way in which people in the towns can connect with nature. Urban farms and city nature reserves have a value far in excess of their size and species composition.

Action proposed

Remedies to the loss of widespread species are hard to find, as they strike at the root of our way of life. The first step is to convince society that there is a problem, as it is far from apparent to most citizens in our increasingly urban society. Awareness and education should encourage people to appreciate the diversity of wild plants and so not seek to "suburbanize" the countryside. Anecdotes like the losses of wild plants from hedgerows from one generation to another need constant repetition. This is clearly a task for the long term.

Reversing the decline will require many changes. Some of the most prominent are:

a. Change in agricultural and forestry policy - see Section 3;
b. Greatly reduced use of herbicides - literally "plant killers" - by farmers, foresters and gardeners, in the light of the damage done by herbicide drift;
c. Bolder and more innovative solutions to the vast extent of traditionally managed land that is becoming abandoned. Technology may be able to help, e.g. machines could be invented to mimic traditional management such as cutting a reed bed but at a far greater speed than human effort can do, as may new forms of marketing attuned to modern trends, e.g. sale of organic beef from grazed heathland.
d. Restoration of the natural habitats of rivers, reversing the "canalization" of rivers by reinstating meanders, water meadows and the like.
e. Restoration and if need be creation of plant-rich habitats on land where biodiversity conservation is compatible with the main use, such as road and motorway verges, railway embankments, village greens and river banks.

In each country, botanists, ideally working through their botanical society or national botanical institution, should work together to:

a. Compile atlases showing the decline of wild plants, ideally of all species but if this is not possible of a small range of plants selected to demonstrate the decline;
b. Consider the compilation of "Pink Books", showing the next tier of species below threatened status, as has been done in UK;
c. Promote and publicize the significance of local patterns of genetic variation for plant conservation and landscaping (the Flora Locale model).

Gardening organizations can also promote the use of wild flowers in gardens.

Planta Europa Target 14: National programmes to identify and monitor non-red listed rapidly declining species promoted in 15 European countries and species included in recovery programmes as appropriate (cf targets 15 and 16).
Planta Europa Target 18: Existing initiatives on enhancement of wild plant diversity in urban and peri-urban areas reviewed in at least 5 countries.

1.3. The special case of arable weeds

Arable weeds of farmland have declined spectacularly throughout Europe in recent decades, initially in northern Europe but now in the south as well. Many are immigrants from the Mediterranean region and the steppes of Anatolia and Eastern Europe, and are adapted to low-intensity, relatively low-nutrient agriculture. Modern means of seed-cleaning, herbicides and fertilizers have dramatically reduced these plants which were a common sight in farmland a generation ago and are part of the cultural heritage of the countryside, depicted in paintings such as Monet's poppies.

All arable weeds face two problems of survival. First, their habitat is unstable in space and time, and subject to periodic catastrophic episodes; and second they are an economic nuisance. Their conservation requires active intervention on their behalf in arable fields where purity and yield of the crop are the economic driving forces.

A recent conference (Cambridge, UK, July 2000) drew together expertise on this difficult topic, possibly for the first time. Conventional options for plant conservation are of little use, but instead recommended:

Action proposed

a. Wider use of agri-environment schemes whereby farmers receive subsidies to permit wild arable plants in field margins selected for their wild plant diversity;
b. Monitoring the presence of wild arable plants in arable land by volunteers;
c. More advice for farmers so they can minimize the use of herbicides consistent with good farm practice and follow other practices that will favour wild arable plants;
d. Extension of organic farming, as this is the best option to maintain wild arable plant communities in the long term.

1.4. Conservation of economic plants and their wild relatives

Europe has important resources of economic plants. First, its wild flora contains the relatives of a range of economic plants, especially in vegetables such as cabbages (*Brassica*), peas (*Pisum*), onions (*Allium*) and beets (*Beta*), and tree fruits such as cherry and plums (*Prunus*), apple (*Malus*) and pear (*Pyryus)*, as well as vine (*Vitis*). All these have rich wild gene pools native to Europe. These are important as a source of genetic variation for plant breeding of commercial crops, and are now receiving increased attention, notably in an international series of workshops on their conservation. There is also a rich diversity of forestry trees, such as oak (*Quercus*), beech (*Fagus*) and a range of conifers. Second, there is the diversity of traditional land-races of food crops, notably of cereals and olive, now greatly diminished due to replacement by modern, uniform cultivars. Also EU regulations that reduce the number of varieties of a crop that can be sold have proved very damaging to maintaining the diversity of major vegetable crops. And thirdly, there is the immense array of plants cultivated in Europe, notably in Britain, Netherlands and Germany. Much of this too is threatened, so much so that in Britain, the National Council for Conservation of Plants and Gardens (NCCPG) has been established to ensure that old garden cultivars do not die out.

Action proposed

An integrated plan for conservation of the plant genetic resources of Europe, wild and cultivated.

Planta Europa Target 17: Management plan for wild crop relatives initiated in at least one protected area in each of 5 or more European countries.

1.5. Sustainable use of wild plants (implementing CBD Articles 8(i) and 10)

Sustainable use of the components of biodiversity is one of the three over-arching objectives of CBD, but has received less attention in Europe than in other regions, where people tend to be more dependent on wild species for their livelihoods. Nevertheless, in Europe, many wild plants and fungi are collected, especially in Eastern and Central Europe where natural and semi-natural ecosystems are extensive, as well as of course large amounts of timber.

The main groups of wild plants collected are fungi for food, bulbs for the horticultural trade and plants for medicinal use. Studies have shown that Germany alone imports some 1560 different plant species from around the world for medicines, and that 70–90% of them are harvested from the wild. According to a 1996 report by TRAFFIC International, Europe is enjoying a "herbal renaissance" with use of medicinal plants in Western Europe doubling in a decade. As a result, populations of some 150 native European plants are threatened by over-collection in one or more countries of their range. The report estimates that some 1200-1300 native European plants are taken directly from the wild for medicinal use. Much of the trade is from east to west: Germany, France, Italy and Spain are among the world's top importers, whereas Bulgaria and Poland are among the world's top exporters. In most of Europe the harvest and trade remains largely unmonitored and unregulated. Only Bulgaria has a system to limit harvesting of some wild species.

Action proposed
Monitoring and where necessary regulation of the collection and trade in wild-collected plants and fungi with the objective of achieving sustainability.

Planta Europa Target 29: Best practices for the conservation and sustainable use of medicinal plants identified and promoted to relevant policy makers.
Planta Europa Target 30: Synthesis of literature on best practices for conservation and sustainable use of plants in heterogeneous land mosaics completed and promoted to relevant policy makers.

1.6. *Ex situ* conservation (implementing CBD Article 9(b))

In situ (on-site) conservation is the only long-term option to conserve European plants for future generations, but *ex situ* (off-site) conservation can make a useful contribution provided it does not divert resources or detract from *in situ* conservation. In particular it can provide:

- A last line of defence against extinction in the wild;
- Material for re-introduction and restocking;
- A source of material for education and research, avoiding the need for further depletion of wild sources.

For European plants, *ex situ* conservation is best done in seed banks, ideally national or even local in scope. CBD states that *ex situ* conservation should "preferably [be] in the country of origin". Seed banks of wild species require scientific management, so that seeds are periodically tested for germination. When germination drops, the stock is regrown in sterile conditions (a very expensive task) or new collections are made from the wild. In contrast to storage of the main agricultural crops in seed banks, ongoing research is needed to find the right conditions for each species involved. Where species cannot be stored in seed banks (termed recalcitrant seed), field gene banks should be used with the plants grown in rows. With both the seed bank and the field gene bank, the key requirement is to maintain as wide a selection as possible of the genetic diversity of the species.

The main agencies to provide *ex situ* conservation for wild plants in Europe are its 600 or so botanic gardens. As far as is known these gardens cultivate 308 of the 573 threatened plant species on the Bern Convention, but only 39% of the accessions are of wild origin and only 27 are the subject of current conservation projects; it is fair to assume therefore that most are just a specimen or two in the public collections, often of long standing and without records of their wild origin, neither used for practical conservation nor providing effective *ex situ* conservation. A more rigorous approach, with seed banks, is needed.

The two key organizations for *ex situ* conservation in Europe are the International Plant Genetic Resources Institute (IPGRI) and Botanic Gardens Conservation International (BGCI), whose active European section has prepared An Action Plan for Botanic Gardens in the European Union. The BGCI International Agenda for Botanic Gardens, which updates the 1989 Botanic Gardens Conservation Strategy, also provides useful guidance. The recently opened Millennium Seed Bank at the Royal Botanic Gardens, Kew, UK, has the capacity to provide training and guidance, and to develop methodology, for smaller seed banks in other parts of Europe. A meeting in 1999 provided guidance of *ex situ* conservation of cryptogams.

Action proposed
Effective *ex situ* conservation of all European threatened plants and genetic resources in the countries of origin, within a reasonable time period.

Planta Europa Targets 9 and 23-26:

- List of threatened European plant taxa in *ex situ* collections published on the web
- Spore-bank for pteridophytes established;
- 30% of wild crop relatives and other socio-economically and ethnobotanically important species stored in genebanks
- 50% of regionally and nationally threatened species stored in genebanks (prioritized by degree of threat)
- At least 12 priority species of bryophytes brought into ex-situ conservation
- Manual with guidelines and case studies of best practice for integrated (*in-situ* and *ex-situ*) plant conservation programmes made available on the web.
- Protocols for *ex situ* conservation for all groups of vascular plants, cryptogamic plants and fungi produced.

2. Conservation of plant areas (implementing CBD Article 8(a), (b) and (d))

The best way to conserve most plants is to protect the areas where they grow. Protected areas are therefore at the heart of any successful strategy for plant conservation. Small reserves will be the most important approach for conservation of threatened species (see 1.1), and will of course conserve other species as well, whereas large protected areas of key plant sites and plant-rich habitats ensure the maximum diversity of species are effectively conserved and have centres from which to migrate outwards. Above all, protected areas allow plants to exist in ecologically balanced communities, where they interact with their physical environment and other plant species, animals and micro-organisms. The plants are subject to natural selection, able for example to evolve resistance to pests and diseases. *Ex situ* conservation (1.6) can only be an adjunct to large-scale *in situ* conservation and can never be a substitute.

Europe has a rich legacy of protected areas and contrary to some predictions the rate of creation of protected areas has not slowed. Yet progress is uneven, and often skewed towards mountain areas, for which other competing land uses are few, away from lowland ecosystems, where human pressures are strong.

2.1. Important plant areas – a key approach for plants

Where one rare plant grows, there are usually other rare and unusual species too, as well as a wealth of more common species. This effect of clustering is more pronounced with plants than with animals for the simple reason that plants are not mobile. This was the reasoning behind IUCN's and WWF's global study, *Centres of Plant Diversity* (1994-97), and Conservation International's 2000 study identifying 25 biodiversity hotspots around the world based principally on plant diversity data. However, both these two studies are too broad on their own for use at European level, the latter seeing the whole Mediterranean basin as one hotspot.

Delegates at the first conference on conservation of wild plants in Europe (Planta Europa, Hyères, 1995) proposed that the single most effective way to conserve Europe's plant diversity would be to identify, rank and then protect what have been termed Important Plant Areas. The concept is being taken forward by Plantlife, the UK plant conservation NGO, following the very successful model of Important Bird Areas designed and promoted by BirdLife International. Guidelines for the selection of IPAs were launched at the third Planta Europa conference in 2001.

An IPA is defined as "a natural or semi-natural site exhibiting exceptional botanical richness and/or supporting an outstanding assemblage of rare, threatened and/or endemic plant species and/or vegetation of high botanic value". The criteria for selection of IPAs is based on:

a. The presence of globally and European threatened plant species;
b. Exceptional botanical richness; and
c. Habitat types of global or European importance.

The concept includes the idea of complementarity, so that the full network of selected sites would encompass the great majority of European plant species.

So far a number of preliminary studies have been completed, and attempts made to identify IPAs in a range of countries, including Belarus, Czech Republic, Greece, Slovenia, Sweden, Turkey and UK. A list of key bryophyte sites across Europe is also a vital input. The study for Turkey, carried out by the NGO Dogul Hayati Koruma Dernegi (DHKD), is particularly well advanced, and has shown that the approach is valid for very plant-rich countries as well as countries less well endowed botanically. So far some 200 sites have been identified, with a balance between endemic-rich mountainous areas and more threatened lowland habitats, such as coastal sand-dunes.

IPAs support and are complementary to other European efforts to select and establish conservation areas. In particular they complement the linked programmes of the European Union to establish Special Areas of Conservation (SAC) in the EU Member States and of the Council of Europe to build up the Emerald Network (see 2.3.1 and 2.3.2, below). IPAs are not intended as a new legal designation, but as a way of making sure that every important plant site is effectively protected, in whatever designation is most appropriate.

Within the European Union the IPAs programme will help fill gaps (and also show up habitats and species that should be added to the Habitats Directive annexes). It will be particularly valuable in identifying sites for lower plants, which are little covered in the Habitats Directive so far, and whose sites (e.g. old forest, parklands) are rarely those of greatest importance for higher plants. Outside the European Union, the IPAs programme will have a more central role in selection of new protected areas, working closely with the Emerald Network.

Action proposed

a. International assistance to the identification of Important Plant Areas, especially in Central and East European countries;

b. Conservation action on IPAs that are not already in protected area networks.

Planta Europa Target 4: First edition of European Important Plant Areas (IPA) Inventory completed.
Planta Europa Target 5: Research initiated to assess effectiveness of IPA approach.
Planta Europa Target 11: IPAs promoted for inclusion in the PEBLDS and National Biodiversity Action Plans, and promoted to support, inform and underpin international protected area networks (e.g., Emerald, Natura 2000, Pan-European Ecological Network, Ramsar etc.).

2.2. Protected areas policy – the vital underpinning

Effective area-based conservation requires adequate government policies on protected areas. Every country in Europe has a system of protected areas, many of long standing, but integration and harmonization of policies is relatively new.

Parks for Life (IUCN, 1994) sets out the first ever pan-European strategy for an adequate, effective and well-managed network of protected areas in Europe. This action plan, which was launched with press events in virtually every country in Europe, emphasizes the need for protected areas to be integrated into national life and regional planning, recommending that sustainable policies be followed in related areas such as agriculture, forestry, transport and tourism. Protected areas should form an integrated and interconnected network, with corridors and support for buffer zones, and prominent gaps in the network filled (such as by the identification of Important Plant Areas – see 2.1, above). These aims can be achieved by continuing to increase the coverage of protected areas and by upgrading the present reserve network; by effective laws, management and staff training; and by the support of local communities, general public and governments.

IUCN's World Commission on Protected Areas (WCPA) is coordinating the implementation of the *Parks for Life* Action Plan in close collaboration with the EUROPARC Federation (the long-standing federation of national and nature parks in Europe). The programme works through some 30 high-profile international Priority Projects, designed to fill the gaps and enhance the prospects for protected areas in Europe.

Action proposed

Consideration of the recommendations in the *Parks for Life* Action Plan in national programmes and policy-makers.

2.3. Protected area networks – the best way of implementation

Conservation areas should not be seen and managed in isolation, but as part of a vast web of inter-connections. In particular, protected areas need to be connected to each other, so as to encourage movement of species from one site to another. This may require habitat corridors between protected areas, it may involve habitat restoration in key places, it may need 'stepping stone' reserves between core areas and it certainly argues that core areas should be as large and intact as possible. In particular it seeks to reverse the fragmentation of habitats into small isolated islands surrounded by land almost devoid of wild plants. It is especially important for plants as it may help allow for plant migration in response to climate change.

In Europe connectivity has been strongly promoted by the EECONET (European Ecological Network) project, an initiative of the Government of The Netherlands and the Institute of European Environmental Policy (IEEP). The approach has now emerged in the concept of the Pan-European Ecological Network (PEEN), which is one section PEBLDS. In 1995, a 5-year Action Plan was agreed with a series of priority actions to ensure that PEEN is established by 2005. Covering the UN-ECE region, the proposal to establish PEEN was endorsed by ministers from 54 countries.

An even wider agenda of connections is emerging in protected area thinking: protected areas should be linked not only geographically but also socially and economically to the towns and cities whose water they supply, to the tourism industry that depends on them, to a range of other local beneficiaries and to society as a whole.

These ideas are now emerging in the concept of bioregional planning, that attempts to do all the above but also integrate protected areas into the wider landscape. Perhaps the leading attempt to make this happen is the ambitious Meso-American Biological Corridor project, agreed in principle by the Presidents of Central American countries in 1997. Thinking on the continent-wide scale has immense political and public appeal. European conservationists have not yet come up with a similar initiative.

Action proposed
Exploration of the possibility of one or more biological corridors across Europe.

There is now an increasing array of legal designations for protected area networks at European or global level. All of them will contribute substantially to the protection of the all-crucial Important Plant Areas. Each is outlined below, with proposals for increasing their effectiveness for plants.

2.3.1. Natura 2000

Under the European Union's 1992 Directive on the conservation of natural habitats and of wild fauna and flora (EEC/92/43, usually called the Habitats Directive), EU Member States are obliged to establish Special Areas of Conservation (SACs) to maintain, and if need be restore, the 198 habitats types (listed on Annex I) and the 484 threatened plant species (Annex II) at a favourable conservation status. SACs are genuine protected areas, but their protection, at least in European law, only extends to the species and/or habitat for which they have been nominated. They are not, therefore, general purpose nature reserves, though of course many will also be nature reserves in national legislation.

Member States propose sites for inclusion. These are termed Proposed Sites of Community Importance (pSCIs). By mid-2001 the 15 States had proposed over 12,000 such sites covering some 13% of the EU territory. After technical assessment, the Commission and Member States together select those sites for Natura 2000, which Member States are obliged to protect as SACs within six years of that date.

Under the earlier (1979) Birds Directive of the European Union, Member States establish Special Protection Areas (SPAs) which have similar but slightly different legal requirements. By April 2001, Member States had established nearly 3000 SPAs covering about half the area of the SACs. Together SACs and SPAs will form the Natura 2000 network, which the Habitats Directive requires to be established in full by 2004 but which is clearly now delayed.

The Directive is also part of the financial support system for Member States, who receive funds for the implementation of the Directive under the LIFE Regulation. LIFE III, from 2000 to 2004, has a total budget of 640 million Euros, of which 47% is allocated to LIFE-NATURE to support implementation of the Birds and Habitats Directives.

Progress is monitored by the European Topic Centre for Nature Conservation, an arm of the European Environment Agency. It analyses all proposals for pSCIs submitted by Member States and has databases to support its work, such as a review of Red Lists published in European countries and a species synonyms database for vascular plants.

Natura 2000 will be the dominant network for protection of species and habitats in the European Union, and will cover a large proportion of the EU territory. However, there is concern that the sites proposed so far by Member States mainly focus on the habitat types and to a lesser extent threatened

fauna, rather than flora. The European Environment Agency reports that of the c. 4700 sites proposed by mid-1998 under 300 had been proposed for flora conservation purposes and that most of these were from the Atlantic Islands. Clearly 300 sites cannot protect the 484 threatened plants on Annex II, although inevitably some will be in sites proposed primarily to conserve listed habitats.

Action proposed

a. Continued implementation of and full adherence to the Habitats Directive, with an increased emphasis on protection of the flora species on Annex II.

b. Speeding up of the integration of the provisions of the Habitats Directive into national law where this has not been done. This will give conservation groups the ability to take cases of damage to pSCIs, to local courts as well as to the Commission and ultimately the European Court of Justice.

c. At an appropriate time, reconsideration of the plant species on Annex II, especially for inclusion of cryptogams. For practical reasons, this Annex does not yet include all the threatened plants that would qualify and problems have arisen, particularly in Scandinavia where States joined the EU after the initial list had been prepared. At present, the six accession countries (Czech Republic, Cyprus, Estonia, Hungary, Poland and Slovenia) are negotiating additions to the lists to cover the enlarged territory.

2.3.2. The Emerald Network

The Emerald Network covers Areas of Scientific Conservation Interest (ASCI) for Europe, and is closely linked to Natura 2000. In 1989 the Standing Committee of the Bern Convention proposed this network as part of the implementation of the Convention, but it was not until 1996 that the Standing Committee was able to resolve to set up the network. It would benefit from the "soft law" approach of Steering Committee recommendations and from the wide geographical reach of the Convention, now covering 50 States.

It was subsequently decided that for EU Member States the Natura 2000 sites would be Emerald Network sites and that the procedures established by the Birds and Habitats Directives would be the only rules to apply. After all, the Habitats Directive is technically the EU's implementation of the Bern Convention, and the two instruments have a complete coincidence of objectives. Since the work on creating the network in the European Union territory is in hand, the Standing Committee and their partners therefore decided to concentrate on building the Emerald Network in the non-EU States. It is intended that this will help States who wish to join the EU, whether sooner or later, with part of the preparatory work to comply with the Habitats Directive, and will take further than the borders of the European Union the philosophy of the Natura 2000 network. To achieve this, the Council of Europe, which services the Bern Convention, and the European Commission, which is responsible for the Directive, are working closely together. Pilot projects have been started in 11 countries of Central and Eastern Europe, plus Iceland.

The criteria for ASCIs are favourable to plants: they include sites, which would contribute substantially to the survival of threatened and endangered species; areas of high plant diversity; and areas of endangered or outstanding examples of habitat types. If made real on the ground, the Emerald Network could make a great contribution to plant conservation. The challenge is to move beyond recommendations towards real protection on the ground.

Action proposed

(Countries outside the European Union) Implementation of the Emerald Network as a priority, with external financial and technical support as appropriate.

2.3.3. World Heritage sites

Under the World Heritage Convention elements of the cultural and natural heritage of individual countries are accepted to be of such outstanding, universal value that their protection is the concern and responsibility of the international community. Sites are nominated by governments and following careful field inspection and evaluation, if accepted by the World Heritage Committee, are inscribed on the World Heritage List. Sites are divided into Natural Sites, Cultural Sites, Mixed Natural/Cultural Sites and the new category of Cultural Landscapes. Of the 28 sites from European countries so far inscribed on the list as Natural Sites and Mixed Natural/Cultural Sites, several are of the first importance for plant diversity, notably Beloveshskaya Pushcha/Bialowieza Forest in Belarus and Poland, and the Madeira laurissilva.

Possibilities for further European sites are limited, because of the tough interpretation of the "outstanding universal value" clause and because of the strict standards of protection on which the World Heritage Committee insists. However, there are undoubtedly more sites of botanical importance that would benefit from this most potent and respected of protected area designations. An additional benefit is the great press attention a World Heritage inscription attracts.

Action proposed

a. Completion of the *Parks for Life* project on potential new World Heritage sites for Europe ("Natural" and "Mixed" – see above), ensuring key plant sites are included;

b. Consideration of a serial natural site or set of natural sites for the Alpine region, following an expert meeting on this topic in collaboration by the World Heritage Centre at Hallstatt, Austria (June 2000), and attended by all the State Parties in the Alps.

2.3.4. Ramsar sites

The Ramsar (or Wetlands) Convention (1971) has as its mission, "The conservation and wise use of wetlands by national action and international cooperation". It was initially focused on migratory waterbirds but now covers the full range of wetland functions and values, and the need for an integrated approach to their management. One principal obligation is that Parties have to designate sites for the Ramsar List of Wetlands of International Importance. Sites on the list must be managed to avoid changes in their "ecological character". Of the over 1000 sites designated so far, many are from European countries, who have taken a lead in implementing the Convention.

Wetland plants have declined strongly in Europe and the Ramsar Convention already contributes to their conservation. Inland estuaries such as the Cota Doñana in Spain have a great variety in plant habitats, and often include sand-dunes, which are one of the most threatened plant-rich habitats in Europe. Similarly rivers and floodplains, such as the Biebrza Marshes in Poland, are also good for wetland and aquatic plants. But inland lakes and their accompanying reed beds, which are the staple of Ramsar sites, such as Lake Prespa in FYROM and Loch Lomond in Scotland, rarely have important flora. Far more important for plants are the marshes, saline pools, bogs and fens, especially raised peat bogs, which are poorly represented so far in Ramsar sites. Moreover, some very rare and threatened wetland plants grow in small ephemeral habitats, such as seasonal pools in farmland, that are more amenable to protection as micro-reserves (see 2.5, below) than under international agreements. Bryophytes are especially dependent on wetlands (e.g. in the rich fens of Central Europe) and so could receive more attention in this agreement. Also, international action on the control of invasive aquatic plants is also needed.

Action proposed

Consideration of how the Ramsar Convention could improve the conservation of wetlands and aquatic plants.

2.4. Diversity in the management of protected areas

Of course most protected areas will not have an international designation, and so national laws and systems for protected areas should not be neglected. Each country should have an adequate policy for protected areas and a system plan to fill the gaps (see 2.2). The system plan is particularly important for plant concerns, as it provides a mechanism whereby Important Plant Areas that are not yet protected can be considered for conservation.

IUCN categorizes protected areas by management category, with six categories showing a increase in intervention. In Categories I–III, strict protection is the rule and natural processes are paramount; Category II (most national parks) and Category III (termed natural monuments) combine this with allowing access to visitors. In Category IV, in effect the managed nature reserve, the manager intervenes to conserve or if need be restore one set of species or habitats. Category V, the protected landscape, is about conserving lived-in landscapes, where farms and other forms of human land use are permitted in part or all of the area. The new Category VI is the sustainable use reserve. The principal categories of protected areas used in Europe are outlined below

Action proposed
In each country use of the full range of protected areas in categories I-V.

Planta Europa Target 13: Programme designated and initiated to evaluate the effectiveness of current protected area management across selected of sites of European importance for plants and recommendations disseminated.

2.4.1. Category II national parks – more still needed with better protection

In 1998, there were 237 Category II national parks in Europe, covering 164,835 sq. km, an area almost the size of Greece but still only 1.22% of the land area of Europe. And more than half the area is in only two countries – Russia (34%) and Norway (18.5%). The geographical division is also very uneven, with 61 parks in the Circumboreal Forest Region (42% by area), which is not a high priority for plant conservation, while subcontinental deciduous forests, especially Atlantic oak woodlands and SubAtlantic beech forest habitats, are strongly under-represented. In the Mediterranean, home to most of Europe's plant diversity, coverage is also insufficient and is usually concentrated on mountain regions. The steppe zone is poorly represented.

Against many predictions, the growth in Category II national parks has not slowed in recent years: from 1990 to 1998 European countries created 90 new Category II national parks, the majority in Russia and other countries of Central and Eastern Europe. Opportunities for substantial Category II areas still occur in Western Europe: good examples that will certainly be IPAs include Javalambre (Spain), western Gran Canaria (Spain) and many forest areas in the Balkans.

It is remarkable that in many Category II areas, especially of forests, for the first time vegetation that has been used continuously by humans for thousands of years is being permitted to evolve under natural processes. The process of change may be slow, but undoubtedly many of the forests protected in the 20th Century will look very different several hundred years from now. This is particularly important for lower plants, many of which require very ancient forest to survive. The forest that looks like an even-aged conifer plantation with little ground flora today may emerge as a boggy, moss-rich wilderness with old trees in varying states of decay and covered in fungi and bryophytes. Indeed, many red-listed bryophytes, especially hepatics, depend on dead wood in moist habitats, and this is now one of the rarest habitats in boreal forests.

However, the encouraging statistics mask a deep concern over management standards. In most national parks of Central Europe, forestry operations still continue. Many parks are damaged by too many visitors. Well over 14% do not have management plans, a vital prerequisite, and for those that do, less that half have no time schedule for implementation. Conservationists face a long struggle to steadily upgrade the protection of Category II national parks in Europe to international standards.

Action proposed
a. Upgrading of the protection of site that aspire to Category II to IUCN standards, and with greater attention to plant diversity, especially of those lower plants that depends on undisturbed forest ecosystems.
b. More and larger Category II national parks as opportunities permit, taking advantage of the decline in pressure from extensive land-use in remote region (*Parks for Life* Priority Project No. 14).

2.4.2. The Category IV managed nature reserve – more active management required

The characteristic of the Category IV site is that it is managed to maintain a particular ecosystem or the habitats of one or more species. Most may be small, but they contribute to plant conservation far more than their size would imply. They are very important for plants, especially for rare and threatened species and for conserving plant-rich habitats. Category IV sites are the core of plant conservation; they are perhaps the one topic on which, at least in most European countries, botanists have been relatively successful in injecting plant concerns into conservation practice.

In lowland Europe, Category IV is the main form of protection for habitats vital to wild plants such as limestone grasslands, karst outcrops, ancient woodland, lakes and ponds. Often, as with peat bogs, most of the plants are unique to the habitat, and do not occur outside it. The danger is usually compounded by great losses in the past, so that only tiny fragments of once widespread habitats now remain. Such protection is especially important for coastal sites, notably coastal woodland, salt marshes and sand dunes, which will almost invariably otherwise be lost.

In northern Europe in particular, commercial interests exploit peatlands and limestone pavements for raw materials for the horticultural industry (moss peat and water-worn limestone) and for fuel (peat). In southern Europe, riverine forests and woodland communities such as gallery forest and outwash fens dominated by planes (*Platanus orientalis*) attract recreation and subsequent damage. In the Atlantic Islands, the once common laurel forest is reduced to tiny enclaves, except for the two World Heritage sites on Madeira and La Palma. Mountain grasslands, habitats that may already be at risk from climate change, are increasingly threatened by the expansion of winter sports facilities.

This form of protection is also very important for those habitats that need traditional management to maintain their plant diversity, such as heathland, fen and coppiced woodland. In some cases, such as heathlands in northern Europe, lack of traditional management is the main threat: nature reserves are no answer unless they provide that level of management.

However, all too often Category IV sites are not managed optimally for plants: a 1996 study in southern England showed that heathland plants had declined severely in protected areas, principally because the heath was not being harvested and grazed as it would have been in former times. Management after 1930 was passive not active. Fortunately the heathland study has a happy ending: in 2000 60% of the heathland reserves in Dorset, southern England, are being grazed after years of neglect and, thanks to a LIFE grant, all heathland Sites of Special Scientific Interest in England will be grazed in future.

Plant diversity needs a range of micro-habitats. The manager of a Category IV site has therefore to aim to maintain a range of habitats, which might include wet places, such as seasonal pools, and disturbed habitats, such as along paths. Many higher plants, at least in northern Europe, benefit from disturbance. The flower-rich oakwood is the one that has been regularly coppiced, and the botanically diverse heathland the one that has been cut and grazed. In such habitats, plant diversity often needs more active management than bird diversity. Managers will have to be more proactive and vigorous in management, especially in cutting, chopping, grazing and creating disturbance – not things managers are always trained to do – to arrest plant losses.

Action proposed
Continued emphasis on Managed Nature Reserves to protect rare plants and plant communities, and on their management.

2.4.3. The protected landscape – botanical input needed

The third form of protected area that has a large bearing on plant conservation is the protected landscape (Category V). A large suite of plants are dependent on traditional farm practices to survive, for example the plants of hay meadows across Europe, the wild flora of olive groves in the Mediterranean, and the alpine meadows of montane Europe. These plants will disappear and a less plant-rich ecosystem emerge if these practices disappear. The Category V site forms a good framework for this type of conservation, in which farmers and other land-users may have to be subsidised by the State in return for the environmental benefits they bring.

However in some Category V sites, the protection is mainly for the physical environment and land users are allowed to do what they wish; this has little added value for plant conservation. Other Category V sites are little more than attempts to drum up tourism.

Action proposed
a. A general upgrading in the standard of Category V sites across Europe to international standards;
b. Inclusion of the maintenance of plant diversity in the objectives of Category V sites and inclusion of botanists in the management teams.

2.5. Diversity in size of protected areas – the importance of micro-reserves

A strong size gradation is also needed, with small and large protected areas.

Large protected areas are vital to allow natural processes to continue, to provide a buffer against disturbance and to combat the effects of global change on plant and animal diversity. At present some key national parks for plant diversity are too small to cover the whole set of ecosystems and to provide such a buffer.

However, many rare and threatened plants occupy only tiny areas – one sea lavender in Spain is restricted to a small platform of some 80 sq. m on a low sea cliff and the moss *Thamnobryum angustifolium* only grows in one patch of c. 3 m on a rock face with about three smaller colonies nearby. As long as the use of the surrounding land is compatible, a small rather than a large reserve may be all that is needed.. Moreover, very often, especially in Mediterranean ecosystems, the rare and threatened plants are neither in a continuous pattern nor in large clusters, so to conserve all the rare plants of a region, the best solution is a network of many small protected areas rather than a few large ones.

The same is true of many plant habitats, especially in the heavily used landscapes of lowland Europe. These include small patches of ancient woodland, village ponds, karst or other rock outcrops, saline localities and sea cliffs. In addition, some types of habitats are always small, as natural conditions do not permit larger sizes, as in the case of temporary ponds or the petrifying springs with tufa formations – both of which are priority habitats in the EU's Habitats Directive.

Many countries have a plethora of small protected areas. By 1998, the Czech Republic had 1847 protected areas, 1686 of them under 100 ha. In most Central and East European countries, the designation of Natural Monument is widely used to protect isolated old trees, rocks and parks – in Ukraine 2827 of the 5,290 protected areas are Natural Monuments; and in Estonia 1460 out of 1680 protected areas. France has *reserves de biotopes*, declared by the local *préfet*. The Region of Valencia, Spain, has taken the idea a step further and developed the very important concept of the plant micro-reserve. Botanists found that 97% of the 350 endemic species are not in the pine and oak forests or the maquis formations that form the typical climatic vegetation of the region but in a plethora of specialized habitats, usually small and often isolated. Most of the best sites are no larger than 1–2 hectares. Traditional nature reserves would be too cumbersome an approach for so many small sites, so the regional Wildlife Service proposed the concept of micro-reserves. These are sites protected specifically for the plant or habitat concerned, and so do not include protection of animals, for example. Traditional activities that may help maintain the habitat, such as bee-keeping, may be permitted. Since 1994 plant micro-reserves have had a legal status and government funds are available for their management by landowners and if need be their purchase by NGOs. So far 150 micro-reserves have been established out of a projected 250–300 that would encompass all the rare and endemic plants of the region.

This innovative model of strategic plant conservation is appropriate for many parts of Europe, but especially for the conservation of the many Mediterranean endemic plants.

Action proposed

Consideration by other countries and regions of the micro-reserve approach. The Generalitat Valenciana (regional government) is commended and invited to continue to promote the micro-reserve concept to other parts of Europe.

Planta Europa Target 13: Practical micro-reserve programmes established and operational in least 2 regional pilot areas.

2.6. The special problem of invasive species (implementing CBD Article 8(h))

Introduced, invasive species of plants and animals are now seen worldwide as a major threat to species, second only to habitat loss. Although Europe has suffered from this problem far less than tropical islands like Hawaii and Mauritius, where virtually all lowland vegetation is of non-native species, and South Africa, where European pines threaten plant-rich maquis, Europe is affected too. On the North Atlantic fringe of Europe, scrub of *Rhododendron ponticum* threatens native oak woodlands, in central Europe sycamore invades native woodland, whereas large areas of the Mediterranean coast are taken over by the Hottentot Fig, *Carprobrotus edulis.*

Through the Bern Convention the Council of Europe is working on a European Strategy on invasive species, an initiative welcomed by SBSTTA. In Europe there has been a long tradition of plant introduction from other parts of the world, and a strategic approach is certainly needed, involving gardeners (often the source of the invasions), conservationists and land-managers, and putting emphasis on prevention and early eradication, before populations build up to unmanageable levels.

Action proposed
A holistic institutional, policy and legislative framework on invasive species.

Planta Europa Target 20: Above framework for invasive species control established in 25% of European countries.
Planta Europa Target 19: Up to date information on European invasive species made available to relevant target audiences.

3. Sectoral policy (implementing CBD Articles 6(b), 7(c), 8(l) and 10(a))

Plants cannot be conserved by nature conservation agencies alone. The success of plant conservation does not just depend on saving threatened species and Important Plant Areas in reserves of some kind. Even more it depends on having plant-friendly policies in key sectors of the economy, notably agriculture, forestry, industry, town and country planning, and transport. After all, most wild plants grow outside the enclaves of areas specially protected for them and so to be realistic any strategy for plant conservation must address policies in these important sectors.

Arguably the three most important sectors for plant conservation are agriculture (3.1), forestry (3.2), and town and country planning (3.3), which are outlined below. But also important are a host of other sectors: energy generation affects plants by its acid rain and global warming emissions –the European Commission's 2000 report on Europe's trees found that only one third were healthy and that defoliation of nearly all trees had got worse in Mediterranean countries in the last five years. Industry similarly generates air pollution but also effluents that destroy aquatic life in streams and rivers. New motorways and railways can also devastate scenic landscapes rich in plants. Considerations of plant conservation are needed in these sectors too.

Conservationists see agriculture and to a lesser extent forestry as threats to nature and this view is well justified on the basis of the experience of the second half of the 20th Century. The decline in plants was unprecedented, has been unrelenting and is far from over. But realisation is growing that it is possible to devise policies that will benefit the economy and people's livelihoods without devastating nature at the same time. At the beginning of a new millennium, it is perhaps time to focus also on the opportunities that are arising: the food surpluses that mean further intensification of agriculture will economically disastrous; the replacement of the old polluting steel and coal economy with the new information technologies that have far less environmental impact; and the growing prosperity across nearly all of Europe that makes it easier for politicians to take a long-term view.

The CBD gives much support to the need for considerations of conservation and sustainable use to be incorporated into the various sectors of the economy and national life. Article 7(c) requires Parties to identify processes and activities which do or could have an adverse effect on conservation and sustainable use, and where such an effect has been found, Article 8(l) requires the Party to "regulate or manage the relevant processes and categories of activities". Article 6(b) requires that conservation and sustainable use be incorporated into relevant sectoral or cross-sectoral plans, programmes or policies, and 10(a) that these be integrated into national decision-making. This holistic approach to conservation and sustainable use, integrating them into all sectors, is relatively new, but is vital to success.

3.1. Agriculture and rural development (implementing the EU Biodiversity Action Plan for Agriculture)

Agricultural policy and practice has a massive effect on wild plants. Farming accounts for 60% of the land surface of the European Union and of Central and Eastern Europe. At the same time, agricultural policy is the motor and the context for most rural development initiatives, driven by increasing concerns that especially in remote and agriculturally marginal regions, past ways of life are not sustainable economically and so new, more diverse approaches to making livelihoods are needed.

Most modern farming practices have proved deeply harmful to nature and landscape in general, and to plant diversity in particular. To raise output, numerous rare habitats have been destroyed, particularly by drainage of wetlands and irrigation of drylands. In places industrial-style practices have almost eradicated wild plants from vast areas. Intensive use of fertilizers, pesticides and herbicides not only damage the farms themselves but also their effects spill over to neighbouring land: fertilizer run-off eutrophies streams and rivers, devastating their aquatic floras; herbicide spray drifts in the wind and reduces plant diversity outside the fields for which it is intended.

Damage has been greatest in the northern part of the European Union and on collective and state farms of the former Communist bloc countries, although more recently the impact has been felt in southern Europe too, especially within the EU. In contrast, policies to retain small-scale farming as a way of life have been relatively successful in Austria, Switzerland and parts of Germany and France. Also, much of the former Communist bloc countries has been little touched by the ravages of modern farming.

Some farmland is of intrinsic conservation value as its flora, fauna and landscape depends on the continuation of low intensity, often traditional farming practices. Abandonment of this kind of farming is perhaps the cause of the greatest loss of hitherto common plants in Europe. Such farming systems include:

a. Low intensity, often long-established pastures and hay meadows in the mountains of central Europe, Iberia and Britain;
b. Non-irrigated extensive cereal cultivation in central and southern Europe; this 'pseudo-steppe' cultivation is low-yielding and is often associated with dry grasslands;
c. Permanent pasture and mixed landscapes of cereal cultivation with permanent pasture throughout northern Europe; includes 'bocage landscapes' of northern central Europe and small-scale farming in central and eastern Europe;
d. Perennial crops such as orchards in northern Europe, carob and olive groves in southern Europe, and grazed pasture woodlands such as the *dehesas* of Spain and cork oak *montados* of Portugal.
e. Undrained or poorly drained coastal meadows used for grazing or for seasonal cuts of hay.

In particular wild plants may flourish where herbicides are not used, where fertilizers are used in moderation or not at all, and where land is undrained. One of the greatest causes of loss of plants in many northern countries has been the massive efforts for land drainage in the last 50 years, efforts that have decimated populations of formerly abundant plants of wet places.

Public policy towards farming is changing. In the past the aim was to concentrate on raising output, often regardless of economic and environmental cost, but the advent of food surpluses, especially in the European Union, and pressure from trade liberalization and to control costs, has led to measures to reduce output – by cutting subsidies, encouraging 'set aside' and in other ways. Also the now restored trade links between East and West Europe are boosting food surpluses much further, since countries like Bulgaria, Hungary, Poland and Romania have much potential to raise their production for export. The need to cut output and increase environmental standards offers a vital opportunity not only to reduce the intensity of food production but also to take land out of production entirely, by creating, restoring and managing natural habitats.

The Common Agricultural Policy (CAP) of the European Union is of decisive importance within the EU and increasingly in the 11 accession states. EU policy also has a great effect on non-EU states through its effect on farm prices and through its assistance programmes, especially PHARE.

There is much pressure to reform the CAP – from the proposed enlargement of the EU and the need to meet commitments of the Uruguay GATT round to reduce subsides, as well as for economic and environmental reasons. In March 1999, EU Heads of Government agreed a reform package ("Agenda 2000"). It is generally accepted that this is far from the final answer, but the reforms do

provide an opportunity to integrate the environment into agricultural policy on a Europe-wide scale. Agri-environment measures offer the possibility of safeguarding traditional farming systems. Although it has some positive elements for the environment, it did not reduce production subsidies, nor did it increase funding for rural development and agri-environment schemes. On its own, it is unlikely that this reform will reverse the widespread decline in biodiversity on farmland in the EU.

Fundamental change in agricultural policy could bring great benefits to conservation of nature in general and plants in particular – and to society at large. This is not the place to go into a detailed evaluation of the many individuals measures of the CAP and of the changes agreed in the reform package. Instead, this strategy reiterates some key principles:

Action proposed

a. Continuation of the reform of the EU Common Agricultural Policy giving more emphasis to environmental needs.

b. More use at national level of the environmentally beneficial aspects of Agenda 2000 reforms, such as acreage payments, agri-environment measures, and policy for Less Favoured Areas. In particular, agri-environment measures should be piloted in botanically important areas.

c. Outside the EU and accession states, avoidance of further intensification and careful maintenance of environment-friendly agriculture where it exists.

d. More information from botanists on the decline of wild plants in farmland and a greater involvement by them in lobbies and fora on agricultural policy.

e. Direct liaison with individual farmers to help them reduce the damage to wild plants on their land within the constraints of present policy.

Planta Europa Target 31: Plant conservation benefits of effective Rural Development Plans (to include agri-environmental schemes) and other relevant environmental stewardship incentive measures promoted in selected European countries.

(The conservation of plants of arable land is covered in Section 1.3.)

3.2. Forestry

About 27% of Europe are forested but the proportion of forested land varies greatly from one country to another – from about 1% closed forest in Iceland and 5% in Ireland to 60% in Finland. Forest products are important to the economy of many countries: 10 of the 24 largest timber producers in the world are in Europe.

The extent of forest in Europe is increasing, by at least 50,000 sq. km since the 1960s. In France, for example, it is greater than at any time in the past 300 years. Across Europe, marginal land is being abandoned and is reverting to scrub and woodland. With the prospect of continuing agricultural surpluses, further extensions of forested land are likely in future. Moreover, there is now a great trend to plant trees rather than let trees regenerate naturally in the landscape as before. At first sight this might seem good for plant diversity but this is not necessarily so: the scrub that invades abandoned land usually has fewer plant species in it than the managed ecosystem it replaces; intensely managed plantation forests are of little value to plant diversity; and planted trees may not be the native variants or even the native species.

Out of this vast area of forest, only isolated fragments of truly natural forest survive, mostly in Fenno-Scandia and South East Europe, and these are of the greatest value for plants. Here one may see forests with their full panoply of fungi, often on the dead trees, mosses and lichens; indeed in natural forest, bryophytes, fungi and lichens may form 90% of all forest plant species. However, the great majority of European forests, including those in protected areas, have been used and managed for a wide range of uses for centuries, leading frequently to uniformity in age structure and diversity.

Much of the forest land is intensively managed, often for non-native species in plantations, and the homogenous crop of trees that results is of little value for flora. Lack of rotting dead wood in the forest removes the habitat for the great majority of forest fungi. Lack of transition zones to open habitats also removes the habitat for many vascular plants and ferns.

Forest management differs greatly across Europe. In the Atlantic seaboard countries with little remaining forest, afforestation on moorlands, heathlands, raised bogs and other valuable habitats has been a major threat to plant diversity. In Scandinavia and France, most natural and semi-natural woodlands have been converted to more intensive production forests. In the Mediterranean region,

forest fires and grazing continue to devastate many woodlands and forests. In Central and Eastern Europe, forests have suffered particularly from air pollution, as well as from conversion to monocultures.

However, there are some welcome trends. In Scandinavia, the forestry sector is shifting towards more conservation-minded practices. In the new forestry, as it is sometimes called, conservation is integrated into all forestry operations. At the smallest scale, this means leaving unusual tree species and large specimens; at the next level it involves saving groups of trees of biodiversity value, such as along streams, and retaining trees in clear-cuts. At a larger scale, sites of 0.5–5 ha rich in flora and fauna, including those with Red-listed species, are identified and left intact; in Sweden alone, there will be an estimated 70–80,000 such sites – 1% of the forest land. This is encouraging but it has to be remembered that the massive forests that cloak so much of Scandinavia bear little resemblance to natural ecosystems.

Other countries, especially in Central Europe, have long-standing traditions of ecologically beneficial forest management. Switzerland learnt the lesson of mountain deforestation centuries ago and has been practising ecologically beneficial forestry for many generations.

In Mediterranean forests a key conservation issue is fire. Fire is a natural factor in Mediterranean ecosystems, caused by summer thunderstorms and lightning strikes, as well as by volcanoes. Many native shrubs are adapted to fire, by thick corky bark (as with the famous Cork Oak) or by underground lignotubers from which they can regenerate afterwards. However, today fires can be much more damaging than before, wiping out large stands of forest, due to the even-aged nature of many Mediterranean forests. As country people desert the land and relinquish traditional practices of land management, woodland is regenerating across large swathes of the Mediterranean landscape. Extensive plantations of *Eucalyptus*, an introduced species, are also particularly prone to fire. Strong and expensive programmes of fire control delay the problem but make the fire more damaging when it does finally occur. Excessively dry summers as a result of global climate change also exacerbate the problem. The aim is to make the stands less uniform and less even-aged as far as possible, so when fire does happen it is not devastating to forests and settlements alike.

At international level a number of statements and initiatives favour conservation. The Statement of Forest Principles, adopted at the Earth Summit in Rio, emphasized that the forests in the North, including those in Europe, should be managed in a sustainable way and should benefit all interests, not just those of timber production. The Second Ministerial Conference on the Protection of Forests in Europe adopted similar principles (Helsinki, 1993), which is part of a continuing process of international cooperation in Europe to make forestry more ecologically sustainable. In 1998, in Lisbon, the Ministerial Conference on the same theme endorsed a Pan-European Work Programme on the Conservation and Enhancement of Biological and Landscape Diversity in Forest Ecosystems, 1997–2000.

Action proposed

Review of national forestry policies in the light of the calls from Rio, Helsinki and Lisbon to ensure sustainability. This is best achieved by multiple use policies and financial incentives, so that society gets the full benefit from all forests, in particular:

a. Continuation and if need be acceleration of the trend by forestry agencies and companies towards less intensive forest management, in particular:

i. In every forest certain areas left uncut with dead trees left standing (unless for overwhelming reas of pest and disease control);
ii. Use of native species as far as possible;
iii. To ensure that afforestation does not occur on land of high botanical value;
iv. Effective training and monitoring.

b. Protection of remaining old-growth, natural forests that are not yet protected, and of semi-natural forests such as areas that have never been clear-felled but have been managed by traditional methods, often for millennia, and are rich in plant diversity;

c. Elimination of commercial forestry in protected areas intended for Categories I–IV (see 2.4) and ensuring that it is sustainable and ecologically unharmful in Category V sites.

NGOs such as WWF have used certification as a powerful tool to drive the above agenda. The Forest Stewardship Council (FSC) through local agencies certifies forests so the timber produced can be marketed as from sustainable sources. The Planta Europa target on forests (below) builds on this through parallel indicators focused on biodiversity.

Planta Europa Target 7: Effectiveness of the "improved biodiversity indicators" for Sustainable Forest Management assessed in at least four biogeographical regions.

Botanists should identify important forest areas for lower plants and work with conservation agencies to ensure that the most important sites are effectively protected. To do this effectively, rapid enlargement in the cadre of people able to identify lower plants is required.

3.3. Town and country planning

Land-use planning is particularly important in Europe because of the great pressures on the land. Some countries have strong traditions of planning, resulting in a firm delineation between town and country, whereas others have a relaxed approach in which factories can be built almost anywhere in the landscape, often with devastating visual and ecological effect. Even where countries have effective land-use planning systems in place, implementation can be difficult and is often jeopardized by strong political and other pressures.

The impact of planning most effects plant conservation in the protection of Important Plant Areas and in its interaction with protected areas in general. The latter is discussed in some detail in *Parks for Life: Action for Protected Areas in Europe* (Chapter 2 and Box 6 in particular). Key principles are that the planning system:

a. Should be operated in the public interest;
b. Should be open to public scrutiny and comment;
c. Should respect the integrity of protected areas;
d. Should allow for support zones around protected areas and corridors between them;
e. Should include a capacity for environmental impact assessment.

Important Plant Areas should not be available for other land uses or for economic development purposes. Within the European Union inscription within Natura 2000 is the best approach (see 2.3.1).

A strong planning framework that respects a firm division of town and country is also beneficial to plant conservation, though, at least in northern Europe, the landscape of the affluent suburbs may more plant diversity than agricultural prairie or forestry plantation. What plants need are numerous small micro-habitats they can colonize, such as is provided in a traditional countryside. Time and stability are vital factors. Countries like France and Switzerland, which have maintained much of their traditional countryside, have far more abundant wildflowers than countries where the traditional countryside has mostly been lost. But this is not only a matter of town and country planning, it is also a matter of agricultural policy, economic circumstances and other factors.

In towns and cities, the planning framework can encourage a plant-rich environment by emphasizing the need for human settlements to be part of the balance of nature. The creation of parks with wild flowers rather than mown Rye Grass, the leaving of small patches of woodland and scrub, the preservation of old trees, the careful management of rivers to avoid canalisation – all are examples on the micro-scale where the planning system can benefit plants in the course of making a nicer neighbourhood for those who live there.

4. Capacity-building and delivery

Society's ability to deliver plant conservation depends principally on three factors – capacity, political will and awareness. (By capacity is meant capacity at all levels in society to deliver effective conservation of plants.)

The three are tightly inter-related: in a free society political will depends on public attitudes, which are determined by awareness on issues like conservation. Political will creates policy change and provides funding for building. And conservation cannot be delivered unless there is the capacity to do so.

The three are joined by a fourth essential factor: funding, which has also been in short supply for plant conservation.

4.1. Capacity

It has often been remarked that plant conservation suffers from a lack of plant conservers. Whereas a large number of people in the environmental and botanical community support and assist plant conservation, there are very few people whose jobs are defined in terms of conservation of plants. This is a major stumbling block.

Capacity is also uneven in the botanical world. Few universities now have botany departments, most having lost their traditional botany to be replaced by biotechnology-focused approaches. The former Communist countries often had large botanical infrastructures and supported traditional botany, but these departments are now deeply weakened by lack of resources and funds. This is a tragedy for biodiversity conservation as the expertise to identify and classify plants and animals is disappearing at precisely the time that governments are waking up to the vital importance of biodiversity conservation, which all acknowledge cannot be delivered without that expertise.

Plant conservation requires people with a wide range of skills, including:

- Conservation campaigners – to assist and persuade policy-makers to deliver laws and policies favourable to wild plants;
- Ecologists – to study plant populations, and provide the scientific expertise needed in plant reintroduction and habitat restoration.
- Field botanists – to identify plants in the field, combined with a willingness to work long hours out of doors, often in remote areas;
- Applied ethnobotanists – to work with local communities and other stakeholders in finding workable balances between conservation and use;
- Horticulturists – to propagate endangered species for later reintroduction;
- Legal experts – to advise on and develop effective laws for plant conservation;
- Planners and negotiators – to develop conservation programmes and negotiate conservation agreements with land-owners and other interested parties;
- Protected area planners and managers – to establish and manage protected areas;
- Publicists – to raise the profile of plants and conservation in the media;
- Religious leaders – to promote a respect for nature;
- Resource economists – to evaluate patterns of use of medicinal and other economic plants, and assess economic values of plants to society;
- Seed biologists – to manage seeds in seed banks;
- Taxonomists – to provide effective classifications of plants and to provide easy-to-use Floras and Field Guides;

Above all, it needs practitioners – people who will actually go out and achieve plant conservation, rather than just advise or assist in it. Of all aspects of the environmental protection, plant conservation seems to most lack an adequate cadre of "front-line troops".

4.1.1. Capacity audit

A first and urgent step is to find out the level of plant conservation expertise across the region.

Action proposed

One or more activities to assess capacity country by country, using the list above as a starting point. This will provide powerful arguments for additional resources. It should be used as a basis for building and sharing expertise from one country to another, and for funding applications, such as the EU-funded project to build capacity for plant conservation in the botanic gardens of Romania.

Planta Europa Target 34: Capacity for taxonomic expertise in Europe assessed and reported on by 2004.

4.1.2. Plant conservation institutions

There are relatively few institutions created specifically for plant conservation. Notable ones include:

- Plantlife: an NGO created in 1990 in the United Kingdom specifically for plant conservation and modelled on the very successful Royal Society for the Protection of Birds (RSPB). Already Plantlife has over 12,000 members, and a growing programme centred around recovery of selected plants, nature reserve creation, and political lobbying.
- The regional network of Conservatoires Botaniques Nationaux in France, organizations developed specifically for plant conservation and focusing on integrated *in situ/ ex situ* conservation of threatened plants.
- Planta Europa: covered in 4.1.4 below.

However, many conservation agencies include staff botanists and/or botanical teams, who are charged with providing a botanical input into all conservation activity. This has the advantage of integrating plant conservation with other functions but the disadvantage that plants may not always receive the attention they need.

Action proposed

a. Review of whether the official conservation agency/agencies in their country have sufficient botanical expertise and involvement in their work to make sure plants receive the attention they deserve.

b. In each country, consideration as to whether an NGO for plant conservation would be appropriate, either or both as a cost-effective delivery mechanism for government-funded conservation work and/or as a campaigning force.

4.1.3. The special case of botanic gardens

Botanic gardens can make a significant contribution to the conservation of Europe's flora, as centres of botanical and horticultural expertise, herbarium and library facilities, and public education (see 4.3). However, except in a few cases, their activities in plant conservation are in the nature of a supporting role to the work of the official conservation agencies. For this reason, the role of each garden in plant conservation can only be determined in the light of the local circumstances and in discussion with conservation agencies.

The main roles of botanic gardens in conservation are as:

a. Centres of botanical research, especially in taxonomy and plant identification;

b. Centres from which to do botanical fieldwork, such as assessment of plant-rich areas, botanical survey and studies of sustainable use;

c. Guardians of living collections of a wide range of plants, cultivated for the needs of research, educational and public enjoyment;

d. Centres for education and awareness-building on botany and the needs of plant conservation – acting in effect as the "shop windows" of botany (see 4.3);

e. Conservers of key plant sites, and/or assisting conservation agencies in this;

f. Centres for *ex situ* conservation of wild flora (see 1.6).

Part of the botanic garden fraternity have tended to overstate the importance of botanic gardens for long-term conservation of flora through *ex situ* conservation. *Ex situ* conservation, especially through seed banks (1.6), is an important function but far more important is the work of botanic gardens in research, field botany and education. Moreover, the experience of Eastern Europe in recent years has shown how shortfalls in funding can lead to serious deterioration of biological and conservation institutions, and to loss of morale and performance.

Apart from education and display collections, rare plants are best kept in botanic gardens only in the short-term, for the purposes of integrated conservation strategies. Propagating material is collected from the wild, multiplied up in the botanic garden, distributed as appropriate and reintroduced into the wild – all as part of an integrated programme focused on *in situ* conservation. For most rare plants, long-term garden cultivation has almost invariably led to genetic erosion through population bottlenecks or hybridization with related taxa caused by human error and environmental fluctuations in cultivation conditions.

The 600 or so botanic gardens in Europe have varied and multiple roles, but government funding often favours basic scientific research over practical conservation projects. In general it has been easier for newly created botanic gardens to take on an active conservation role. The issue is more difficult for long-established botanic gardens, many of whom are based in city centres, with historic buildings and ancient plant collections much loved by residents. Here education and research may be the key to the conservation role, taking advantage of the large urban and visiting publics on their doorsteps.

Good examples of conservation success by botanic gardens include:

a. The Conservatoire National de Brest, France, has focused on the threatened plants on the Bern Convention, helping to search them out in the wild, bring them into cultivation and reintroduce them to the wild. It has worked on 140 such species so far.

b. The Jardín Botánico "Viera y Clavijo", Spain, found itself in the unusual position of becoming the main conservation adviser to the island government (*Cabildo*) of Gran Canaria. It made the best of this opportunity, planning the nature reserve network for the island and advising on a possible national park on Gran Canaria, as well as building programmes of seed banking, educational outreach and botanical research.

c. The Royal Botanic Gardens, Kew, UK is carrying out a three-year pilot research programme on conservation of bryophytes, a topic that has been almost universally ignored in botanic gardens otherwise.

As part of their conservation role, botanic gardens need to network more effectively, so as to promote the efficient gathering, distribution and use of plant germplasm and avoid unnecessary duplication. Several networks already exist, notably the European Section of Botanic Gardens Conservation International, the Ibero-Macaronesian Association of Botanic Gardens, and the EU Botanic Gardens Consortium.

Action proposed

a. Development of a role in plant conservation by each botanic garden, in collaboration and with the support of the relevant nature conservation agencies.

b. Implementation of the Action Plan for Botanic Gardens in the European Union, prepared by the BGCI/IABG European Botanic Gardens Consortium. (This applies just as well to botanic gardens in the rest of Europe.

c. The management and conservation by each botanic garden of at least one area of natural or semi-natural vegetation of botanical importance. Wherever a garden has done this, it has had a great effect on staff attitudes to conservation and helped counterbalance a sometimes over-exaggerated emphasis on collections and *ex situ* conservation.

4.1.4. Development of Planta Europa

One vital target that should not be forgotten is the development of Planta Europa so that it fulfils its ultimate mission of being the driving force for plant conservation in Europe. Indeed, the extent to which not just the Targets the organization has adopted but also the broader long-term policy objectives in this document are achieved will depend on how effectively Planta Europa develops as an organization – as the forum where those working on plant conservation can meet and exchange views and information; as the body that undertakes critical strategic projects like the Identification of Important Plant Areas; as the think-tank on new approaches to plant conservation; and as the lobbying group for policy change.

Action proposed

Support for and active involvement in the Planta Europa network by conservation bodies in Europe (governmental and non-governmental) and funding from governments and international bodies.

Planta Europa Target 39: Capacity of Planta Europa to achieve effective plant conservation enhanced.

Planta Europa Target 40: Starting from 2002, key conservation messages regularly disseminated to Planta Europa members.

Planta Europa Target 41: Mechanism established within Planta Europa network to provide support to other partners in the defence of threatened sites important for plant conservation by 2004.

4.2. Funding

Funding is a frequent stumbling block in plant conservation, which lacks the high profile and better political awareness of more prominent parts of the environmental agenda. Lack of funding has been particularly acute in developing international cooperation for plant conservation, such as in the development of Planta Europa.

Plant conservation will only succeed if new and enlarged sources of funding are found. These will have to come in two ways. First, from increased funding by existing donors and supporters, such as the funding provided by government to its conservation agencies. Political will, fuelled by public attitudes, is the main driving force here.

But funding will also have to come from new and innovative mechanisms, such as trust funds, charitable events, sale of produce and the like. In doing this successfully a high public profile is greatly desirable. Awareness about the needs of plant conservation is the crucial driving force here.

Action proposed
Creation of more and greater resources for funding of plant conservation, both nationally and internationally, including:
a. Innovative approaches to funding by plant conservation bodies in Europe;
b. Increase in subventions and grants from governments and international bodies for botany and plant conservation, accepting that these has done poorly in conservation funding.
c. More grant windows from the EU for international efforts in plant conservation, building on the encouraging enlargement of the LIFE Regulation.
d More aid from the European Union and its Member States for capacity-building in Central and Eastern Europe, through increased use of the PHARE and TACIS mechanisms.

4.3. Education and awareness (implementing CBD Article 13)

Plants are so ubiquitous in our lives and so loved by nearly all the population – who doesn't like plants? – and so it is perhaps rather a puzzle that the need and value of their conservation is appreciated so little. Indeed, lack of general awareness and understanding about the importance of not just plants but all biological diversity is a major constraint and will have to be overcome if conservation efforts are to succeed.

All major international conservation agreements and plans, including the CBD and Agenda 21, stress the imperative of education. There is a clear call for environmental education to train and promote environmentally responsible citizens. People need to understand ecological systems in order to make the best decision on natural resource use. Education and awareness could also become a valuable tool in forging a communal European identity.

A combination of formal and informal approaches is best to foster greater public understanding and appreciation of plant diversity. NGOs have learnt that it is not sufficient just to tell people about the problem, it is necessary to go further and encourage them to change their behaviour so as to benefit the environment.

Botanic gardens are exceptionally well placed to take up this challenge. Most botanic gardens now claim to regard education as important, but the status of education within botanic gardens still appears to be low. While over half botanic gardens in the EU countries say that they run education programmes, only a third employ a full-time education officer and only a fifth allocate funds for education – both a prerequisite for success. A particular target is to tell the public more about the life histories and conservation of cryptogams, a subject that has received very little attention in education and awareness programmes so far.

Action proposed
More and larger initiatives on education and awareness especially by botanic gardens and natural history museums, as part of a growing world-wide movement to make environmental education accessible to all

Planta Europa Target 32: By 2004: Proposal developed for a joint public promotion to articulate the case for wild plant conservation by Planta Europa members
Planta Europa Target 33: Report on the current status of plant conservation issues in the national curriculum (both higher and lower) of all European Countries produced together with recommendations for development.

4.4. Information (implementing CBD Article 17)

Information is the life-blood of conservation. Time after time, it has been information from scientists and naturalists that have alerted the public and decision-makers to environmental threats and loss of biodiversity.

Species conservation in particular depends on having a good taxonomic basis. Yet, as many leading botanists have stated, the science of taxonomy - the classification of plants - is in decline in much of Europe, especially western Europe, where botany departments have moved their emphasis from "whole plant biology" to molecular and chemical approaches.

Action proposed
Renewed efforts to ensure funding and institutional support to maintain a core of taxonomists and taxonomic institutions in each country.

Planta Europa Target 1: Working list of all known European plant species (including cryptogamic plants and fungi) produced.
To assess progress in protecting plants, it is vital to have coherent information of the protected areas in each country and the species they contain. The main collectors of such information
Planta Europa Target 6: Information about all designated areas important for plant conservation included in the Common Database on Designated Areas.
Botanists and plant conservationists need to be more effective in sharing information between themselves. Conservation agencies can greatly help by preparing information in easily readable form at a range of levels. Journals such as Plant Talk contribute by providing news, a forum for views, and case histories of successful plant conservation.
Planta Europa Target 37: Communication and information exchange between scientists and plant conservationists enhanced.
Planta Europa Target 38: Data and information exchange system for European plant conservation and the Planta Europa Network established by 2004.

4.5. International cooperation (implementing CBD Article 6(a))

In an increasingly interdependent world and in a region where more and more nations are agreeing action in a multilateral framework, international cooperation is of central and growing importance.

Botany has always been an international science, but cooperation on plant conservation, especially of plants in the wild, is relatively new. The first conference on wild plant conservation in Europe was only held in 1995, at Hyères, France, and led directly to the creation of the Planta Europa network. Similarly, Botanic Gardens Conservation International, which promotes and coordinates the role of botanic gardens in conservation, only emerged in the late 1980s.

At both governmental and non-governmental level, international cooperation has become ever more complicated and time-consuming, in part due to the complexity of the various policy initiatives and in part due to a splintering of organizations into smaller components. A process of integration is needed, to harmonize disparate policy instruments that have similar goals and to bring together as partners organizations that have common goals.

Planta Europa Target 10: European Plant Conservation Strategy included with the Global Plant Conservation Strategy of CBD.
Planta Europa Target 36: European Plant Conservation Strategy presented to leading international conservation and scientific research bodies active in Europe and, where appropriate, Memoranda of Understanding and joint programmes agreed.

Medium-term objectives and targets

1. Objectives and targets

Objective 1

- To deliver and disseminate information on European plants and their habitats to improve their conservation and sustainable use

NO	TARGET (to be achieved by 2007 unless otherwise stated)	LEAD ORGANISATION(S) *denotes proposed lead	CBD LINKAGE
	Identification and Monitoring		
1	Working list of all known European plant species (including cryptogamic plants and fungi) produced – By **2004**: Prioritised list of groups that require taxonomic revision produced	Euro+Med*, ECCB, ECCF, IAL Freshwater algae network?	Article 7a) 'Identify components of biological diversity important for its conservation and sustainable use'
2	European Red List for vascular plants, revised list for bryophytes, and preliminary Red Lists for lichens, macrofungi and other selected groups published	Euro +Med*, ECCF, ECCB, IAL	Article 7a) 'Identify components of biological diversity important for its conservation and sustainable use'
3	Manual of tried and tested (species and habitat) monitoring protocols for scientists and naturalists made available on the web. – By **2004**: Compile list of national monitoring programmes and make available on web	EEA*, ECCF, ECCB, IAL	Article 7b) 'Monitor, through sampling and other techniques, the components of biological diversity'
4	First edition of European Important Plant Areas (IPA) Inventory completed – By **2002**: Operational Secretariat and regional/local nodes established – By **2002**: National human and knowledge resource studies completed – From **2002**: newsletter published annually – By **2002**: Guided Web chat room launched – By **2003**: Provisional site selection manual drafted – By **2004**: first draft national lists compiled for all European countries – By **2004**: IPA Workshop at Planta Europa Conference IV – By **2004**: Site selection manual revised – By **2007**: Inventory completed for all European countries	Plantlife International*	Article 7a) 'Identify components of biological diversity important for its conservation and sustainable use'
5	Research initiated to assess effectiveness of IPA approach – By **2003**: IPAs Evaluation and Monitoring Manual produced – By **2003**: National overviews of threats to IPAs produced (with recommendations)	Plantlife International*	Article 7b) 'Monitor, through sampling and other techniques, the components of biological diversity'
6	Information about all designated areas important for plant conservation included in the Common Database on Designated Areas	ETC/NPB*	Article 7d) 'Maintain and organise, by any mechanism, data derived from identification and monitoring activities'

7	Effectiveness of the "improved biodiversity indicators" for Sustainable Forest Management assessed in at least four biogeographical regions	WWF- EPO*?	Article 7d) 'Maintain and organise, by any mechanism, data derived from identification and monitoring activities'
	Information Exchange		
8	Single web address and list server for exchanging information on European Red List projects established and maintained.	V.I.M.* , Euro+Med , Plant Talk?	Article 17 'Facilitate the exchange of information… relevant to the conservation and sustainable use of biological diversity'
9	List of threatened European plant taxa in *ex situ* collections published on the web	BCGI* and Eurogard	Article 17 'Facilitate the exchange of information… relevant to the conservation and sustainable use of biological diversity'

Objective 2

- To influence law, policy, international conventions; management practices and take action on the ground; as well as peoples attitudes and behaviour impacting on plants and their habitats

NO	TARGET	LEAD ORGANISATION	CBD LINKAGE
	General measures for conservation and sustainable use		
10	European Plant Conservation Strategy included within the Global Plant Conservation Strategy of CBD – By **2002**: Successfully lobbied at COP 6 – By **2004**: Common approach towards the development and implementation of the Global Plant Conservation Strategy agreed with key international networks (e.g., Ramsar Bureau, IUCN, Euro-MAB UNESCO, Council of Europe, FAO, IPGRI) achieved	Planta Europa Secretariat*	Article 6a) 'Develop… strategies, plans and programmes for the conservation and sustainable use of biological diversity'
	In-situ conservation		
11	IPAs promoted for inclusion in the PEBLDS and National Biodiversity Action Plans, and promoted to support, inform and underpin international protected area networks (e.g., Emerald, Natura 2000, Pan-European Ecological Network, Ramsar etc.)	Plantlife International*, national Planta Europa members	Article 8b) 'Develop… guidelines for the selection, establishment and management of protected areas'
12	Programme designed and initiated to evaluate the effectiveness of current protected area management across selected of sites of European importance for plants and recommendations disseminated	WCPA?*	Article 8c) Regulate or manage biological resources important for the conservation of biological diversity'
13	Practical micro-reserve programmes established and operational in least 2 regional pilot areas. By **2004** Benefits of micro-reserve programmes disseminated to target pilot areas.	Generalitat Valenciana* and national Planta Europa members	Article 8d) 'Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings'
14	National programmes to identify and monitor non-red listed rapidly declining species promoted in 15 European countries and species included in recovery programmes as appropriate (CF targets 15 and 16).	Euro+med* with national Planta Europa members	Article 8f) '… promote the recovery of threatened species… through the development and implementation of plans or other management strategies'

NO	TARGET	LEAD ORGANISATION	CBD LINKAGE
15	To have promoted the development and implementation of recovery programmes in relevant countries for 50 priority plants across all taxa, their selection to be informed by European Red Lists and lists of rapidly declining but widely scattered species (see target 14) as these become available – By **2004**: list of priority species appropriate for recovery programmes developed by 2004	Bern Convention; Euro+med; national Planta Europa members	Article 8f) '… promote the recovery of threatened species… through the development and implementation of plans or other management strategies'
16	Flagship trans-boundary partnership projects for the recovery of at least 5 priority species to have reached implementation stage.	English Nature?* and Plantlife	Article 8f) '… promote the recovery of threatened species… through the development and implementation of plans or other management strategies'
17	Management plan for wild crop relatives initiated in at least one protected area in each of 5 or more European countries – By **2003**: EU funding obtained	IPGRI*	Article 8f) '… promote the recovery of threatened species… through the development and implementation of plans or other management strategies'
18	Existing initiatives on enhancement of wild plant diversity in urban and peri-urban areas reviewed in at least 5 countries	MAB-UNESCO Urban group*	Article 8f) 'Rehabilitate and restore degraded ecosystems'
19	Up to date information on European invasive species made available to relevant target audiences – By **2004**: National lists of invasives compiled in at least 9-% of Planta Europa member countries and publicised as appropriate – By **2004**: All relevant information included in web database of the Global Invasive Species Programme – By **2006**: List of alien invasive species in Europe including their distribution and their negative ecological and economical effects published – By **2006**: Fact sheets on the biology including information about control measures of 100 of the worst invasive species published	IUCN SSC*, GISP, EU DGXII project Pruhonice Institute* IUCN* IUCN*	Article 8h) 'Prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species'
20	Holistic institutional, policy and legislative framework for invasive species control established in 25% of European countries	IUCN/SSC Specialist Group*	Article 8h) 'Prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species'
21	Inclusion of all relevant threatened vascular plants (including tree species), cryptogamic plants and fungi in relevant Bern Convention annexes promoted – By **2004**: data sheets of all eligible cryptogamic plants completed – By **2004:** data sheets of all vascular plant and fungi completed	Plant Experts Group Bern Convention*	Article 8k) 'Develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations'
22	Inclusion in the Habitats and Species Directive (and Emerald Network) of all species listed in the Bern Convention promoted and formally supported by 3 national governments	Standing Committee Bern Convention* and national Planta Europa members	Article 8k) 'Develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations'

	Ex-situ conservation		
23	Spore-bank for pteridophytes established – By **2004**: Necessary technical protocols developed	RBG Edinburgh* and RBG Kew	Article 9b) Establish and maintain facilities for *ex-situ* conservation of and research on plants'
24	30% of wild crop relatives and other socio-economically and ethnobotanically important species stored in genebanks – By **2004**: Inventory completed and gaps identified	IPGRI* and BGCI	Article 9b) Establish and maintain facilities for *ex-situ* conservation of and research on plants'
25	50% of regionally and nationally threatened species stored in genebanks (prioritized by degree of threat) – By **2004**: Inventory of taxa held in European germplasm collections and gaps for collection identified	BGCI* and IPGRI	Article 9b) Establish and maintain facilities for *ex-situ* conservation of and research on plants'
26	At least 12 priority species of bryophytes brought into ex-situ conservation	RBG Kew*	Article 9b) Establish and maintain facilities for *ex-situ* conservation of and research on plants'
27	Manual with guidelines and case studies of best practice for integrated (*in-situ* and *ex-situ*) plant conservation programmes made available on the web.	Conservatoire. Botanique, France*, IUCN SSC and Plantlife	Article 9c) 'Adopt measures for the recovery and rehabilitation of threatened species and for their reintroduction into their natural habitats under appropriate conditions'
28	Protocols for *ex situ* conservation for all groups of vascular plants, cryptogamic plants and fungi produced	BCGI* and IPGRI	Article 9d) 'Regulate and manage collection of biological resources from natural habitats for *ex-situ* programmes'
	Sustainable use of components of biological diversity		
29	Best practice for the conservation and sustainable use of medicinal plants identified and promoted to relevant policy makers – By **2004**: Evaluation of case-studies and other relevant information completed	WWF*, Plantlife, Traffic, FFI, and national Planta Europa members	Article 10b) Adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity'
30	Synthesis of literature on best practices for conservation and sustainable use of plants in heterogeneous land mosaics completed and promoted to relevant policy makers	?	Article 10c) 'Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements'
	Incentive measures		
31	Plant conservation benefits of effective Rural Development Plans (to include agri.-environmental schemes) and other relevant environmental stewardship incentive measures promoted in selected European countries – By **2003**: Comparative survey at European level on plant conservation benefits and shortcomings of agri.-environment schemes – By **2003**: Feasibility of development of effective indicators considered	IUCN ERO*	Article 11 'Adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biodiversity'

	Public education and awareness		
32	By 2004: Proposal developed for a joint public promotion to articulate the case for wild plant conservation by Planta Europa members - By **2004** information on 10 priority topics in plant conservation distributed ('Planta Europa Leaflets') - By **2004** Council of Europe fact sheets on the conservation biology of 500 threatened fast-declining taxa (see target 15) updated and published	Earth day Comm., Council of Europe*, Plant Talk and national Planta Europa	Article 13b) 'Cooperate… in developing educational and public awareness programmes'
33	Report on the current status of plant conservation issues in the national curriculum (both higher and lower) of all European Countries produced together with recommendations for development	Botanical Gardens European Consortium (BGCI and IABG)*, IUCN Education Group and Council of European Education	Article 13b) 'Cooperate… in developing educational and public awareness programmes'

Objective 3

- To strengthen and coordinate human and technical resources, communication and knowledge management to take forward the conservation and sustainable use of plants and their habitats

NO	TARGET	LEAD ORGANISATION	CBD LINKAGE
	Research and Training		
34	Capacity for taxonomic expertise in Europe assessed and reported on by 2004	NHM?* RBGE? Systematics forum? Euro + Med, ECCF, ECCB, IAL, freshwater network?	Article 12a) 'Establish and maintain programmes for scientific and technical education and training in measures for the identifcation and conservation and sustainable use of biological diversity'
35	Active partnership established with networks specialised in site management to promote training for landowners in sites important for plants	Eurosite*, EUROPARC, Planta Europa Secretariat	Article 12a) 'Establish and maintain programmes for scientific and technical education and training in measures for the identifcation and conservation and sustainable use of biological diversity'
	Technical and scientific co-operation		
36	European Plant Conservation Strategy presented to leading international conservation and scientific research bodies active in Europe and, where appropriate, 'Memorandum of Understanding', and joint programmes agreed	Planta Europa Secretariat*, national Planta Europa members	Article 18 'Promote international technical and scientific cooperation in the field of conservation and sustainable use of biological diversity'
37	Communication and information exchange between scientists and plant conservationists enhanced – By **2004**: Database of specialists in European plants developed and maintained – By **2004**: Database of projects and case studies for plant conservation developed and maintained	ETI*	Article 18 'Encourage and develop methods of cooperation'
38	Data and information exchange system for European plant conservation and the Planta Europa Network established by **2004**	National Biodiversity Network* and Plant Talk	Article 18 'Encourage and develop methods of cooperation'
39	Capacity of Planta Europa to achieve effective plant conservation enhanced – **By 2002**: Network of focal points in 75% European countries established	Planta Europa Secretariat*, national Planta Europa members	Article 18 'Encourage and develop methods of cooperation'

	– **2004**: Network of focal points in each country established – By **2004**: Assessment of capacity in each country completed and gaps identified – By **2007**: Collaborative projects which raise more than Euro 1 million facilitated		
40	Starting from 2002, key conservation messages regularly disseminated to Planta Europa members	Planta Europa Secretariat*, national Planta Europa members	Article 18 'Encourage and develop methods of cooperation'
41	Mechanism established within Planta Europa network to provide support to other partners in the defense of threatened sites important for plant conservation by **2004**	Planta Europa Secretariat*, Birdlife, WWF-EPO?, in junction with Bern Convention, and national Planta Europa members	Article 18 'Encourage and develop methods of cooperation'

2. Planta Europa Network operational principles

Ways of working

The Network should:

- be built on what already exists, especially existing organisations and networks.
- be task oriented with minimum bureaucracy.
- form a genuine partnership within the spirit of these guidelines.
- include a fair geographical representation wherever possible.
- be built on the principles of mutual support and the sharing of expertise for the common good.

Specific tasks to be implemented by network members will be determined by Planta Europa resolutions passed at the conferences. In general these should result in:

- a set of commonly agreed tasks designed to build the capacity of the network to achieve its mission.
- promotion of plant conservation at a European level.

Beyond that, all Planta Europa will be expected to contribute in whatever ways they can, particularly within their nation states, to achieving the overall objectives of the European Plant Conservation Strategy.

Definitions and principles

In the implementation of the European Plant Conservation Strategy/Planta Europa Strategic Plan, the following definitions and principles apply:

- Wild plant diversity is deemed to encompass diversity amongst plant taxa, as well as diversity in terms of vegetation (including plant associations), habitats and cultural landscapes, where these are of value to plant conservation.
- Wild plants include all native (or long established and non-invasive non-native) seed bearing plants, ferns, mosses, liverworts, lichens, fungi and algae.
- Europe is taken to include all members states of the Council of Europe, Belarus, Boznia-Herzogovina and the Federal Republic of Yugoslavia.
- European Biogeographic Regions are those recognised under the EU Habitats and Species Directive and its extension to Pan-Europe, as adopted by the Standing Committee to the Bern Convention for use in the Emerald Network (i.e. Alpine, Anatolian, Arctic, Atlantic, Black Sea, Boreal, Continental, Macaronesian, Pannonian, Steppic and Mediterranean).
- All ex situ targets are part of, or should contribute to, an integrated conservation strategy with in situ conservation as the ultimate goal.
- IUCN red list criteria should be used for all national and regional red lists.
- Red lists should be compiled as part of, and drawing on, full status lists.
- All recovery plans should include specific measures for appropriate research, advice, practical action, monitoring and partnerships.

- Approved lead organisations are responsible for implementation of targets in partnership with other relevant organisations All lead organisations should nominate a lead person to keep Planta Europa secretariat informed of progress.
- Planta Europa Secretariat will report to network on progress with implementation of Strategy.
- All activities designed to support implementation of the Strategy should acknowledge Planta Europa and use the Planta Europa logo in any publications or other outputs produced.

Financial considerations

In the spirit of partnership as set out above the following financial considerations will apply:

- Any designated lead organisation may raise resources in the name of Plant Europa provided that they have informed the secretariat of their intent and furnished the secretariat with a copy of the proposal and its target audiences.
- If possible the lead organisations should fairly cost any anticipated support from the secretariat in such proposals.
- The secretariat will endeavour to keep a register of all such proposals and targets so as to avoid overlaps and inefficiencies
- The secretariat will also, in the name of Planta Europa, endeavour to raise support for the tasks and the maintenance of Planta Europa itself

3. Lead organisation acronyms

AOPK CR	Agency for Nature Conservation and Landscape Protection of the Czech Republic
BGCI	Botanic Gardens Conservation International
BRC	Biological Records Centre (CEH, Monks Wood, UK)
CBD	Convention on Biological Diversity/Biodiversity Convention
CE	Council of Europe
CEH	Centre for Ecology and Hydrology, UK
DfID	Department for International Development, UK
DHKD	Society for the Protection of Nature (Turkey)
EEA	European Environment Agency
ECCB	European Committee for the Conservation of Bryophytes
ECCF	European Council for the Conservation of Fungi
EFNCP	European Forum on Nature Conservation and Pastoralism
EIONET	European Information and Observation Network
ETC/NPB	European Topic Centre on Nature Protection and Biodiversity (France)
EU	European Union
EUNIS	European Nature Information System
EURO+MED	Euro+Med Plantbase
EUROPLANT	European Plant Specialist Group of IUCN-SSC
FAO	Food and Agriculture Organisation
FFI	Fauna and Flora International
FoE	Friends of the Earth
FSC	Forest Stewardship Council
GEF	Global Environment Facility
GISP	Global Invasive Species Programme (IUCN)
GTI	Global Taxonomy Initiative of the Convention on Biological Diversity
IABG	Inernational Association of Botanic Gardens
IAL	International Association of Lichenology
IIED	International Institute for Environment and Development
IOPI	International Organisation for Plant Information
IPGRI	International Plant Genetic Resources Institute
ISTE	University of Istanbul Department of Pharmaceutical Botany
IUCN	*International Union for Conservation of Natural Resources known as The World Conservation Union*
JNCC	Joint Nature Conservation Committee
MSC	Marine Stewardship Council
NHM	Natural History Museum, UK
OPTIMA	Organization of Phyto-taxonomical Investigation of the Mediterranean Area
PIWC	Plantlife International
PWPCC	Plantlife-the Wild Plant Conservation Charity, UK

RDB( )	Red Data Book (followed by country)
RBG	Royal Botanic Gardens, Kew, UK
RBGE	Royal Botanic Gardens Edinburgh, UK
RSPB	Royal Society for the Protection of Birds, UK
SLU	Swedish University of Agricultural Sciences
SSC	Species Survival Commission (of IUCN)
TRAFFIC	Trade Records Analysis of Flora and Fauna in Commerce
UN-ECE	UN Economic Commission for Europe
UNEP	United Nations Environment Programme
WCMC	World Conservation Monitoring Centre (UNEP)
WCPA	World Commission on Protected Areas of IUCN
WRI	World Resources Institute
WSL	(Swiss Federal Research Institute)
WWF	World Wide Fund for Nature
WWF-EPO	World Wide Fund for Nature – European Policy Office