Annex 1: Key trends and statistics for biodiversity in Wales

The UK National Ecosystem Assessment

The UK National Ecosystem Assessment (UK NEA) was the first analysis of the UK's natural environment in terms of the benefits it provides to society and continuing economic prosperity.

The need for the UK NEA arose from findings of the 2005 global Millennium Ecosystem Assessment (MA), which not only demonstrated the importance of ecosystem services to human well-being, but also showed that at global scales, many key services are being degraded and lost. As a result, in 2007 the House of Commons Environmental Audit recommended that the Government should conduct a full MA-type assessment for the UK to enable the identification and development of effective policy responses to ecosystem service degradation.

The UK NEA commenced in mid-2009 and reported in June 2011. It was an inclusive process involving government, academic, NGO and private sector institutions.

Chapter 20 of the UK National Ecosystem Assessment Technical Report (Status and Changes in Ecosystems and their Services to Society - Wales) (2011) lists some of the characteristics of Wales that provide the context for considering ecosystem services and biodiversity. The key findings of the study were:

- Biodiversity contributes to economic and social prosperity in Wales by underpinning valuable ecosystem services.
- Mountains, Moorlands and Heaths in Wales hold significant amounts of stored carbon, but many protected sites in this broad habitat type are in declining condition.
- The alteration of the composition of lowland Semi-natural Grasslands was one the most rapid and widespread vegetation changes to have taken place in Wales during the 20th Century.
- About 37.4% of Wales is Enclosed Farmland, consisting of 34% Improved Grassland and 3.4% Arable and Horticultural land.
- Woodland area in Wales has almost tripled since the early 1900s, and now covers 14% of the country's total land area.
- Welsh freshwater ecosystems still suffer from an industrial legacy, for example, point sources of metal pollution from mines, but there is evidence of improvement following remediation measures.
- Five per cent of Wales is classified as urban habitat. During the past 40 years, activities have taken place to improve the quality of human well-being in the urban environment by expanding green space and tree

planting, and increasing the numbers of local nature reserves close to urban centres.

- Sand Dunes, Saltmarsh and Sea Cliffs are the most extensive coastal habitats in Wales and are important for a range of regulating services, including coastal erosion protection.
- Wales is currently regarded as a net sink for carbon dioxide in the land use, land use change and forestry sector.
- Wales records some of the highest rainfall levels in the UK. There are large reserves of surface water in Wales that have long served as sources of supply for the UK more widely.
- Provisioning services from agriculture contributed some £418 million or 1.1% to the Welsh economy in 2003.
- Wales is renowned for its attractive landscapes, with three National Parks and five Areas of Outstanding Natural Beauty covering 24% of the country's land surface.
- A 2001 study estimated that the environment contributed £8.8 billion of goods and services annually to the Welsh economy, 9% of Welsh GDP and one in six Welsh jobs, mainly in the leisure and tourism, agriculture and forestry, water abstraction, conservation and waste management sectors. It also found that the environment is relatively more important to the Welsh economy than it is to the other UK nations.

The chapter also set out some of the trends pointing to an overall decline in the quantity and diversity of habitats and species in Wales, and the continuation of these trends. Overall, the chapter reported significant changes to biodiversity in Wales over the past 70 years, with some species thriving or recovering from earlier losses, while others have contracted in numbers.

Habitats

- In 2005, 59% of Biodiversity Action Plan habitats in Wales were in declining condition. However, this decline is slowing at many sites and 65% of BAP habitats in Wales can therefore be classed as improving, remaining stable or showing signs that decline is fluctuating or slowing
- Habitats within the Marine environment exhibit the greatest deterioration, with continued or accelerated decline across 60% of marine habitats compared to only 8% for terrestrial habitats and 33% for freshwater habitats.
- Priority habitats classed as stable or improving increased from 30% in 2002 to 36% in 2008.

- A rapid review in 2006 judged conservation features at 47% of Welsh Sites of Special Scientific Interest (SSSIs) to be in favourable condition, with 53% in unfavourable condition.

- 5% of Woodlands are SSSIs. However, just 9% of these are considered to be in favourable condition and 25% are classed as being in unfavourable but recovering condition.

- Seven in every eight hectares of European designated Natura 2000 sites in Wales (0.5 million ha) are Marine areas, reflecting their high importance for conservation. However, 60% of these sites have been classified as being in 'continued or accelerated decline'.

Species

- Due to the large number of species which have unknown trends in Wales, it is difficult to compare progress in Wales to progress at the UK level

- Fifty-four per cent of Biodiversity Action Plan species were assessed as being in 'unfavourable condition' in 2008, but with considerable variation between species groups. Three species which are showing a continuing/ accelerating decline are lapwing, curlew and golden plover.

- 80% of marine mammals and birds were in favourable or recovering condition, while 80% of amphibians, butterflies and fish were recorded as being in unfavourable condition.

- Seven taxonomic groups (more than 50% of Section 42 species) show increasing, stable or fluctuating/slowing declines (lichens, mosses and liverworts, stoneworts, vascular plants, invertebrates, fish, amphibians and reptiles).

- The most notable negative trends are in the birds (34%) and invertebrates (19%).

- Based on longer-term data from the Breeding Bird Atlas, 43% of bird species have experienced range decreases between 1968 and 1972 and between 1988 and 1991, with just 17% having increased

- Key seabird species have increased during the past 30 years; numbers of wild plants, butterflies of specialist habitats and farmland birds have declined.

Source: UK National Ecosystem Assessment, (2011) **The UK National Ecosystem Assessment: Technical Report.** UNEP-WCMC, Cambridge. http://uknea.unep-wcmc.org/

The State of Nature Report

The State of Nature Report was produced in 2013 by a partnership of 25 of the UK's wildlife organisations, in order to communicate clear, consistent messages about how our wildlife is faring. The report provides an authoritative assessment by the partnership of the status and population trends of animals and plants in the United Kingdom and its Overseas Territories. It looks at how the patterns change between habitats and taxonomic groups and places those patterns of species change in the context of a changing environment, looking at both the key pressures faced and the conservation work being undertaken.

Full details and the main report can be found at:
http://www.rspb.org.uk/ourwork/projects/details/363867-the-state-of-nature-report

The following headline statistics were published in the State of Nature Report for Wales in 2013:

- Of the 25 butterfly species assessed, a similar number (13) have decreased in abundance in Wales compared to those that have increased.
- 57% of Wales's flowering plants are declining, while 43% are increasing – a similar story to the rest of the UK. The overall pattern of change is similar to that found in England, with species of open, nutrient-poor, basic or acidic areas declining, and those of shaded, nutrient-rich, neutral areas increasing.
- We can assess population trends for less than half of bird species in Wales. Of the bird species assessed, slightly more have increased than decreased. Wintering waterbirds are doing particularly well; however, many farmland species continue to decline rapidly.
- Between 1970 and 1990, twice as many bird species suffered contractions to their Welsh ranges, compared to species whose ranges increased.

Source: Source: Burns F, Eaton MA, Gregory RD, *et al*. (2013) **State of Nature report.** The State of Nature partnership.

The summary for Wales can be found at
http://www.wildlifetrusts.org/publications

Annex 2: The United Nations Convention on Biological Diversity

The objectives of the Convention are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

Further details of the Convention can be found at www.cbd.int

The ecosystem approach is the primary framework for action under the Convention.

The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. The following 12 principles of the ecosystem approach are complementary and interlinked:

Principle 1: The objectives of management of land, water and living resources are a matter of societal choices.

Different sectors of society view ecosystems in terms of their own economic, cultural and society needs. Indigenous peoples and other local communities living on the land are important stakeholders and their rights and interests should be recognized. Both cultural and biological diversity are central components of the ecosystem approach, and management should take this into account. Societal choices should be expressed as clearly as possible. Ecosystems should be managed for their intrinsic values and for the tangible or intangible benefits for humans, in a fair and equitable way.

Principle 2: Management should be decentralized to the lowest appropriate level.

Decentralized systems may lead to greater efficiency, effectiveness and equity. Management should involve all stakeholders and balance local interests with the wider public interest. The closer management is to the ecosystem, the greater the responsibility, ownership, accountability, participation, and use of local knowledge.

Principle 3: Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.

Management interventions in ecosystems often have unknown or unpredictable effects on other ecosystems; therefore, possible impacts need careful consideration and analysis. This may require new arrangements or ways of organization for institutions involved in decision-making to make, if necessary, appropriate compromises.

Principle 4: Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should:

a. Reduce those market distortions that adversely affect biological diversity;

b. Align incentives to promote biodiversity conservation and sustainable use;

c. Internalize costs and benefits in the given ecosystem to the extent feasible.

The greatest threat to biological diversity lies in its replacement by alternative systems of land use. This often arises through market distortions, which undervalue natural systems and populations and provide perverse incentives and subsidies to favor the conversion of land to less diverse systems. Often those who benefit from conservation do not pay the costs associated with conservation and, similarly, those who generate environmental costs (e.g. pollution) escape responsibility. Alignment of incentives allows those who control the resource to benefit and ensures that those who generate environmental costs will pay.

Principle 5: Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.

Ecosystem functioning and resilience depends on a dynamic relationship within species, among species and between species and their abiotic environment, as well as the physical and chemical interactions within the environment. The conservation and, where appropriate, restoration of these interactions and processes is of greater significance for the long-term maintenance of biological diversity than simply protection of species.

Principle 6: Ecosystem must be managed within the limits of their functioning.

In considering the likelihood or ease of attaining the management objectives, attention should be given to the environmental conditions that limit natural productivity, ecosystem structure, functioning and diversity. The limits to ecosystem functioning may be affected to different degrees by temporary, unpredictable of artificially maintained conditions and, accordingly, management should be appropriately cautious.

Principle 7: The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.

The approach should be bounded by spatial and temporal scales that are appropriate to the objectives. Boundaries for management will be defined operationally by users, managers, scientists and indigenous and local peoples. Connectivity between areas should be promoted where necessary. The ecosystem approach is based upon the hierarchical nature of biological diversity characterized by the interaction and integration of genes, species and ecosystems.

Principle 8: Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.

Ecosystem processes are characterized by varying temporal scales and lag-effects. This inherently conflicts with the tendency of humans to favour short-term gains and immediate benefits over future ones.

Principle 9: Management must recognize the change is inevitable.

Ecosystems change, including species composition and population abundance. Hence, management should adapt to the changes. Apart from their inherent dynamics of change, ecosystems are beset by a complex of uncertainties and potential "surprises" in the human, biological and environmental realms. Traditional disturbance regimes may be important for ecosystem structure and functioning, and may need to be maintained or restored. The ecosystem approach must utilize adaptive management in order to anticipate and cater for such changes and events and should be cautious in making any decision that may foreclose options, but, at the same time, consider mitigating actions to cope with long-term changes such as climate change.

Principle 10: The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

Biological diversity is critical both for its intrinsic value and because of the key role it plays in providing the ecosystem and other services upon which we all ultimately depend. There has been a tendency in the past to manage components of biological diversity either as protected or non-protected. There is a need for a shift to more flexible situations, where conservation and use are seen in context and the full range of measures is applied in a continuum from strictly protected to human-made ecosystems.

Principle 11: The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.

Information from all sources is critical to arriving at effective ecosystem management strategies. A much better knowledge of ecosystem functions and the impact of human use is desirable. All relevant information from any concerned area should be shared with all stakeholders and actors, taking into account, inter alia, any decision to be taken under Article 8(j) of the Convention on Biological Diversity. Assumptions behind proposed management decisions should be made explicit and checked against available knowledge and views of stakeholders.

Principle 12: The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

Most problems of biological-diversity management are complex, with many interactions, side-effects and implications, and therefore should involve the necessary expertise and stakeholders at the local, national, regional and international level, as appropriate.

The full text of these principles can be found at:
http://www.cbd.int/ecosystem/principles.shtml

The Strategic Goals and Aichi Biodiversity Targets of the Strategic Plan for Biodiversity 2011 – 2020

Further details of the Strategic plan and the full text of the goals and targets can be found at http://www.cbd.int/sp/

Strategic goal A. Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society

Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

Target 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.

Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

Strategic goal B. Reduce the direct pressures on biodiversity and promote sustainable use

Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

Strategic goal C. Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

Target 11: By 2020, at least 17 per cent of terrestrial and inland water areas, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

Strategic goal D: Enhance the benefits to all from biodiversity and ecosystem services

Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.

Strategic goal E. Enhance implementation through participatory planning, knowledge management and capacity-building

Target 17: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.

Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.