

---

*Ecosystem Services and Natural Capital*

---

Author: Dr C J Betts

In this article I have tried to explain why biodiversity and ecosystems are so important to us, and how they are in peril from human activity. But what do ecosystems actually do for us in accountable terms? Most of you will have heard the phrase “ecosystem services” and that we all depend on ecosystems functioning properly to be able to go about our daily lives and, indeed, for our very survival. But what are these “services”?

I hope the text and tabulated list below should help anyone confused by “eco-speak” to understand why healthy ecosystems at local, regional, national, international and global levels are so vital to us — why we must nurture them, not take them for granted or impoverish them. The existence of these ecosystem services forms a strong utilitarian argument for conserving nature, in other words for the preservation of our “natural capital<sup>1</sup>”.

Firstly, a definition: in a book bringing together papers about nature’s services in 1997, the editor, Gretchen Daily<sup>2</sup> noted that “Ecosystem Services are the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfil

---

<sup>1</sup> Further mention of Natural capital is made later in this paper, but it is a developing topic. Readers are referred to the European Commission’s work on this (with substantial contribution from the University of Western England), for example the November 2017 IN-DEPTH REPORT 16 *Taking stock: progress in natural capital accounting*. EC Science for Environment Policy.  
[http://ec.europa.eu/environment/integration/research/newsalert/pdf/natural\\_capital\\_accounting\\_taking\\_stock\\_IR16\\_en.pdf](http://ec.europa.eu/environment/integration/research/newsalert/pdf/natural_capital_accounting_taking_stock_IR16_en.pdf).

<sup>2</sup> **Daily, G.C. (1997).** *Nature’s Services — Societal Dependence on Natural Ecosystems*. Island Press, Washington DC, USA.

## **Biodiversity — what is it and how is it relevant to our public open spaces?**

human life.” These services maintain biodiversity and the production of ecosystem goods, which includes the basic materials that support human life. We, that is humans, are an integral part of ecosystems and interact strongly with them, sadly often to their detriment as I explained earlier.

Depending on context, natural ecosystems can, as well as benefits, also produce effects that are undesirable or harmful to us such as diseases, species that become invasive or natural disasters of one kind or another (although it must be said that our disturbance of natural ecosystems usually makes these issues much worse). The complexity of ecosystems means that managing them is not at all easy and negative outcomes cannot always be foreseen. Moreover, “one person’s meat is another’s poison” and people’s cultural perceptions vary greatly and often violently, especially when it comes to religious or political dogma. Rather less controversially, but often of acute local interest and as indeed we see on our own sites, where one group will want a flowery meadow, another will demand a football pitch. Although such a choice is ecologically a no-brainer, culturally choosing is more difficult and feelings run high. Finding the right balance is hard when space is as limited as it increasingly is in England.

In 2009 Roy Haines-Young and Marion Potschin of the University of Nottingham<sup>3</sup> found evidence to suggest that biodiversity and ecosystem functioning are closely linked in a number of ways:

- There are effects of particular combinations of species on the way they use resources. These can increase average productivity and the rates nutrients are retained;
- The species composition of an ecosystem influences the vulnerability of ecological communities to invasion by alien species – under similar environmental conditions, this vulnerability tends to increase as the number of species decreases;

---

<sup>3</sup> **Haines-Young, R. and Potschin, M. (2009).** *Methodologies for defining and assessing ecosystem services.*

Centre for Environmental Management, University of Nottingham, UK. This paper is a good source of background and references.

## Biodiversity — what is it and how is it relevant to our public open spaces?

- Disturbed ecosystems can be stabilised if they contain species with traits that enable them to respond differently to environmental changes.

In other words, and perhaps unsurprisingly, there are advantages for biodiversity, and therefore for us, when an ecosystem and the ecological processes within it function optimally, and they can recover from disturbance.

In 2011, the UK published a National Ecosystem Assessment which concluded that Earth’s ecosystems are important for human well-being and our economic prosperity, but that they are “consistently undervalued in conventional economic analyses and decision-making”<sup>4</sup>. This was an important study that provided “a comprehensive overview of the state of the natural environment in the UK and a new way of estimating our national wealth”. It demonstrated the under-valuing of our natural resources and how “valuing them properly will enable better decision making, more certain investment, new avenues to wealth creation and jobs, and greater human well-being in changing times ahead”.

Although there are overlaps, the convention that I will broadly use here is to group ecosystem services into four categories<sup>5</sup>:

1. **Provisioning.** These are the products obtained from ecosystems.
2. **Regulating.** These are benefits from the regulation of ecosystem processes.
3. **Cultural.** This is a difficult category for a scientist because of its subjectivity — though many are real, these services are hard to identify, qualify or quantify objectively, and

---

<sup>4</sup> An archived synthesis of this report can be found [http://archive.defra.gov.uk/environment/natural/documents/UKNEA\\_SynthesisReport.pdf](http://archive.defra.gov.uk/environment/natural/documents/UKNEA_SynthesisReport.pdf) (but see *Ongoing and Further Work* below).

<sup>5</sup> This “functional grouping” is the most widely used although there are others. It is based on the work of **De Groot, R.S., Wilson, M.A. and Boumans, R.M.J. (2002)**. A typology for the classification, description and valuation of ecosystem functions, goods and services. *Ecological Economics*, **41**, 393–408.

## Biodiversity — what is it and how is it relevant to our public open spaces?

some are not biological at all<sup>6</sup>. There are authors who include perceived religious and spiritual benefits here, too, which I have omitted as there is really no place for religion in science.

4. **Supporting**. These are extended or indirect services needed in order to produce all other ecosystem services.

The Table below is an attempt to arrange a list of ecosystem services into the above four categories. It is indicative and not in any way exhaustive. A more detailed Table can be downloaded from the Common International Classification of Ecosystem Services site at <http://cices.eu/>.

FUNCTIONAL CATEGORY	ECOSYSTEM SERVICE
<b>PROVISIONING</b>	<b>Foodstuffs:</b> crops of all kinds, animals and their products (fish, shellfish, meat, dairy, honey, <i>etc.</i> ), wild plants/berries, mushrooms & fungi, algae/seaweed, fermentation supplies, <i>etc.</i> <b>Animal/pet feeds and grazing</b>

---

<sup>6</sup> See also Fisher, B., Turner, R. K. and Morling, P. (2009). Defining and classifying ecosystem services for decision making. *Ecological Economics*, 68(3): 643-653 and Fisher, B., Turner, R.K., Zylstra, M., Brouwer, R., de Groot, R., Farber, S., Ferraro, P., Green, R., Hadley, D., Harlow, J., Jefferiss, P., Kirkby, C., Morling, P., Mowatt, S., Naidoo, R., Paavola, J., Strassburg, B., Yu, D. and Balmford, A. (2008). Ecosystem services and economic theory: Integration for policy-relevant research. *Ecological Applications*, 18(8): 2050-2067. For these authors, and I concur, ecosystem services should be fundamentally ecological in character: aesthetic, cultural and recreation outputs may be better thought of as benefits to which ecosystems contribute. It is a difficult topic, though, so I have listed some of the cultural benefits that are obviously directly ecosystem derived.

## Biodiversity — what is it and how is it relevant to our public open spaces?

	<p><b>Water:</b> surface and ground waters for drinking; cleaning, cooling, paper making, <i>etc.</i></p> <p><b>Fibres:</b> (cotton, linen and many others)</p> <p><b>Fuels &amp; energy:</b> wood, energy crops, straw, utility animals, <i>etc.</i></p> <p><b>Oils, soaps, waxes, resins, etc.</b></p> <p><b>Manure &amp; organic fertilizers</b> — also organic pesticides such as pyrethrin.</p> <p><b>Genetic and biochemical resources:</b> animal, plant and fungal DNA — many foods, food additives, varieties with disease resistance and novel crops rely in wild species' genomic resources.</p> <p><b>Medicines and pharmaceuticals:</b> an almost endless array of secondary plant metabolites, for example, exists in nature.</p>
<b>REGULATING</b>	<p><b>Climate regulation:</b> greenhouse gas/carbon sequestration by terrestrial ecosystems, water columns &amp; sediments and their biota; transfer of carbon to oceans, <i>etc.</i>; moderating temperature, humidity, winds (<i>e.g.</i> storm attenuation by mangroves &amp; reefs), extreme weather and regional precipitation/temperature patterns.</p> <p><b>Air quality:</b> maintaining rural &amp; urban air quality (<i>e.g.</i> through vegetation).</p> <p><b>Water regulation and purification:</b> maintenance of chemistry of fresh and salt waters favourable to biota; pollution removal, attenuation and buffering/flood control.</p> <p><b>Decomposition:</b> catabolic waste and related decay processes, nutrient recycling.</p> <p><b>Disease control:</b> negative feedback mechanisms, genetic variability, predator—prey relationships, biological control resources, habitat changes encouraging</p>

## Biodiversity — what is it and how is it relevant to our public open spaces?

	<p>mosquitoes and other pathogenic vectors, <i>etc.</i></p> <p><b>Life cycle, gene pool maintenance:</b> pollination, seed dispersal, habitats for plant &amp; animal nurseries/reproduction (<i>e.g.</i> sea-grasses, reefs, woodland/ grassland, micro—macro-scale habitat heterogeneity) especially migratory species.</p>
<b>CULTURAL</b>	<p><b>Recreation, exercise, entertainment, <i>etc.</i>:</b> bird watching, nature photography &amp; film, painting &amp; drawing, walking, hiking, climbing, running/various outdoor sports, boating, leisure fishing, wildlife tourism, crafts, inputs to fashion, inspiration and cognitive development, <i>etc.</i></p> <p><b>Education:</b> field trips, nature study/biology, ecological research, pond dipping, biological recording, <i>etc.</i></p> <p><b>Heritage:</b> historical/bio-archaeology (amber, peat, caves, coprolites, fossils, pollen record, tree rings, <i>etc.</i>), patrimonial preservation for future generations.</p> <p><b>Aesthetic/symbolic:</b> motifs, symbols, ornaments and emblems (English rose, poppy, natural sculptures, <i>etc.</i>), enjoyment of nature/ species/ wilderness — scenic drives, parks/reserves, <i>etc.</i>, <i>genius loci</i>.</p>
<b>SUPPORTING</b>	<p>Overlap with Regulation &amp; Maintenance above but considered here are on-going long-term processes such as photosynthesis/atmospheric oxygen production, ecological primary (plants) &amp; secondary production, soil formation (pedogenesis) &amp; erosion control, weathering processes, nitrogen fixation and other bio-geo-chemical processes, vegetative erosion suppression, nutrient cycling, water cycling, <i>etc.</i></p>

## Biodiversity — what is it and how is it relevant to our public open spaces?

### A note about pollinators — a vital Ecosystem Service



The following was issued in July 2014 by the UK Government ahead of a new Pollinator Strategy – now published and available at <http://bit.ly/2qWAJwZ> (the emphasis is mine):

*Whether people live in a town or in the countryside, they are being urged to help create or improve a habitat for pollinators in five simple ways:*

- 1. Grow more nectar- and pollen-rich flowers, shrubs and trees*
- 2. **Leave patches of land to grow wild***
- 3. **Cut grass less often***
- 4. Avoid disturbing or destroying nesting or hibernating insects*
- 5. Think carefully about whether to use pesticides*

## **Biodiversity — what is it and how is it relevant to our public open spaces?**

*The five simple actions were drawn up with experts from Natural England, the Food and Environment Research Agency, conservation charities and the research community.*

*There are at least 1500 species of insect pollinators in the UK. This includes 26 species of bumble bee, 260 solitary bees, 1 honey bee species and hundreds of types of hoverflies, butterflies and moths.*

*Defra will be publishing a national strategy for pollinators in the Autumn, following a public consultation earlier this year [2014].*

At Betts, we are already following this policy in our Management Plans for Biodiversity. I highly recommend this link:

<https://www.gov.uk/government/news/bees-needs-public-urged-to-support-pollinators>.

Blanket mowing regimes do not comply with this pollinator strategy, nor with good biodiversity practice generally. Such treatment severely reduces the potential of a site to support pollinators and other wildlife.

### **Risks for Organisations and Businesses**

The problems and dangers for us as individuals and local human communities when things go wrong with the health of ecosystems are abundantly evident from the above. However, it is also worth noting that businesses and other organisations are also at risk, something which, from what we can observe in our present culture, they do not always realise or fail to take into account. A corporation's traditional environmental management system or due diligence are likely to focus on environmental impacts, not on dependence on ecosystem services.

## **Biodiversity — what is it and how is it relevant to our public open spaces?**

Some of these corporate risks are listed briefly below:

- Higher water and drainage costs. This is a topic where the concerns have been reasonably well recognised in Britain and the EU, as evidenced by the increase in sustainable drainage systems (SuDS), hydrobotanic waste water treatment (reed beds) and the publication of the EU Water Framework Directive.<sup>7</sup>
- Complaints about social responsibility and even legal actions may be brought against corporate bodies that cause loss of ecosystem services because of their activities.
- Anti-company campaigns or damage to an organisation's reputation because of policies that encourage use of unsustainable materials or processes that damage ecosystems (unethical investment, use of wood/products from unsustainable forestry/farming, excessive carbon footprint/"food miles", *etc.*).
- Loss of market as customers and stakeholders switch to other suppliers that are more environmentally friendly.
- Difficulties in obtaining financing and bank loans for organisations that do not toe an acceptable environmental line.

### **Natural Capital**

Environmental assets may be considered as Critical Natural Capital (CNC) which is irreplaceable if qualitative and quantitative environmental sustainability is to be achieved, and Constant Natural Assets (CNA) which are environmental features that may be exchanged in issues of land use modification but, if so, there must be no overall loss of resource, *i.e.* there must be direct and full ecological compensation. For convenience, Natural Capital is often used as an

---

<sup>7</sup> <http://ec.europa.eu/environment/water/water-framework/>.

## **Biodiversity — what is it and how is it relevant to our public open spaces?**

overarching term subsuming CNC and CNA as well as ecosystem services.

The UK government's advisory group, the Natural Capital Committee, made nine recommendations in 2016 on how to account for natural capital. These included the creating of a twenty-five-year plan for the environment (now published) to help to manage environmental risks and to inform a wide range of decisions. It was recognised that there are challenges to accounting for Natural Capital, including a lack of financial, environmental and social data and the UK's use of other countries' Natural Capital. The nine recommendations were:

1. The Government should develop a strategy to protect and improve natural capital and the benefits it provides.
2. The Government should assign institutional responsibility for monitoring the state of natural capital.
3. Organisations should create a register of natural capital for which they are responsible and use this to maintain its quality and quantity.
4. The Government should urgently step up action to ensure that the Office for National Statistics (ONS) and the Department for Environment, Food and Rural Affairs (Defra) meet the target of incorporating natural capital into the national accounts by 2020.
5. The National Infrastructure Plan should take account of the impact of NC on each of the main infrastructure sectors.
6. The Government should revise its economic appraisal guidance (HM Treasury Green Book).
7. The Government should drive a substantial, long term interdisciplinary research programme on natural capital to inform future iterations of the strategy.
8. The Government should determine how the plan to protect and improve natural capital is to be funded, drawing on a combination of public and private funding as proposed by the Committee.
9. The Government, working with business, NGOs and other parts of society, should fully develop a 25-year plan.

[It was published in January 2018:

[www.gov.uk/government/publications/25-year-environment-plan.](http://www.gov.uk/government/publications/25-year-environment-plan.)]

## **Biodiversity — what is it and how is it relevant to our public open spaces?**

The formal accounting of natural capital requires an agreed protocol and by the end of 2016 the basics, developed with the help of The Royal Society for the Protection of Birds (RSPB) and Pricewaterhouse Coopers (PwC), became available (see Houses of Parliament Parliamentary Office of Science & Technology POSTnote 542 of December 2016).

In February 2018 a useful introductory guide was published in *British Wildlife*<sup>8</sup>. The authors state that the adoption of a Natural Capital approach has the potential better to inform economic decision-making. They argue that this should result in reduced pressure on, and improved management of, nature, especially in using the new Natural Capital accounting tools being developed. Indeed, the RSPB have evaluated the ecosystem services of its nature reserves in England on a financial accounting and Natural Capital accounting basis. I would say at this point, and the authors do seem to recognise this, that ecology, of which this is all a sub-rubric, is extraordinarily and inherently complex and famously counter-intuitive. It is helpful to try to place a monetary value on natural assets and processes, but it is also very dangerous because it necessarily involves the quantifying of things that are, to many of us, priceless. One can also argue that they are priceless to the economy because, without them, there would be no economy. Indeed, in the extreme, there would be no humans around to have an economy. This is surely playing with fire.

Nature freely provides its goods and services, but without them we cannot survive, so there is really no need to argue about any putative monetary value. They should never be squandered and every impact upon them should be considered in ecological science terms under an avoidance/ mitigation/ compensation hierarchy. Forget the money: if you can't avoid the adverse impact, fully mitigate it or wholly compensate for it, don't do it. That is the rule governments and administrations should follow. The rest tends to be prolix baggage.

---

<sup>8</sup> Bolt, K. & Ausden, M. (2018). Natural capital and nature conservation: an introductory guide. *British Wildlife*, **29** (3), 166–174.

## **Biodiversity — what is it and how is it relevant to our public open spaces?**

### Ongoing and Further Work

The next section is rather technical, but I have tried to summarise what is happening in this very active though complex field moving forwards.

The study of Ecosystems Services is still a relatively new topic and work continues in order to understand more fully the interface between humans and biosphere. As noted above, the 2011 UK National Ecosystem Assessment concluded that ecosystems are important to our economy and well-being. However, they are consistently being undervalued in several ways, notably in conventional analyses of economic performance, consequently leading to poor decision-making at significant levels.

UK National Ecosystem Assessment Follow-on<sup>9</sup> (UK NEAFO) was published in July 2014. This presented new information as well as tools “to help decision-makers across all sectors understand the wider value of our ecosystems and the services they offer us”. It confirmed the earlier work that “the ecosystem services derived from natural capital contribute to the economic performance of the nation by supporting economic sectors, regional and national wealth creation and employment”. However, this study recognised the complexity between ecosystems’ natural capital and the wider economy. The approach taken is to map the relationships between ecosystem services and major sectors of the economy in order better to understand how changes to ecosystem services impact them. The UK NEAFO sets out a Natural Capital Asset Check that “can be used to consider thresholds, trade-offs and the performance and resilience of our ecosystems” and “gain further insights into the properties of different ecosystem services and contribute to our understanding of how best to manage the natural world for the long-term benefit of

---

<sup>9</sup> See <http://bobblloomfield.files.wordpress.com/2014/07/ukneafo.pdf> for the full report.

## **Biodiversity — what is it and how is it relevant to our public open spaces?**

society”. Beware of what I say about monetising Natural Capital above!

The UK NEAFO has quantified the values of some ecosystem services and shows both that spatially-targeted policies deliver more economically efficient outcomes, and that full appraisal of the “widest possible range of policy options that take into consideration our natural capital stocks and flows” should occur before decisions are made.

Marine, coastal and cultural ecosystems services were given particular emphasis by the UK NEAFO. The latter “give rise to a range of material and non-material benefits to human well-being but are frequently overlooked in decision-making”. Interestingly, and of considerable significance to our Estates work, the report defines cultural ecosystem services as “the individual or shared benefits to human well-being that arise from the interactions between environmental spaces (*e.g.* gardens, parks, beaches and landscapes) and cultural practices (*e.g.* gardening, walking, painting and watching wildlife). Please see the main text above for more on this in relation to biodiversity.

The UK NEAFO considers that culture is not, of itself, a property of ecosystems but is “something co-created over time through interaction between people, their values and the environment” of which a further dimension (and a further complexity) is the value to society which is passed on through art, literature and the media.

In short, the UK NEAFO confirms that the sustainable delivery of ecosystem services is best addressed through a mixture of spatially targeted, statutory incentives, voluntary initiatives and increments in knowledge-exchange between all involved. It concludes that “embedding knowledge of our ecosystems and their services into project, programme and policy appraisals [that were] rarely considered explicitly in Government impact appraisals before 2013, is critical for decision-making.

## **Biodiversity — what is it and how is it relevant to our public open spaces?**

Against this background, the UK NEAFO formulated “Adaptive Management Principles” so that ecosystem services can be included in policy and in decision-making. Methods and “functional tools” are given that can be employed in a comprehensive implementation of the Ecosystem Approach. This advises on what is best for a particular situation, how the methods and tools should be used, and in what combination. The UK NEAFO lists the following overall summary of this:

- 1. An updated, overarching Ecosystem Services Conceptual Framework for the management of ecosystem services which reflects our deepened understanding of the roles of governance and institutions in the decision-making process, and the importance of built, human and social capital in transforming natural capital and the flow of ecosystem services into goods and benefits for people;*
- 2. Adaptive Management Principles, which offer flexible responses to inform policy- and decision-making as our knowledge grows;*
- 3. A Decision Support System (DSS) Toolbox which offers a set of tools by which decisions regarding ecosystems and their services may be supported. The toolbox is supported by an independently developed web-portal offering a way for decision-makers to navigate and access existing tools and methods (the National Ecosystem Approach Toolkit [NEAT Tree]); and a*
- 4. Balance Sheet Approach for interrogating and presenting evidence from appraisals that can be adapted according to the complexity and importance of the issue under consideration.*

It is heartening that the UK NEAFO sees that all the knowledge accrued would be able to deliver many wider societal benefits if they were taken into account at an early stage of policy-making. It is evident that this is still rarely the case which, the UK NEAFO pointedly remarked is “partly due to a failure to use the full set of principles of the Convention on Biological Diversity Ecosystem Approach.

## **Biodiversity — what is it and how is it relevant to our public open spaces?**

You can find more information about ecosystem services on many web sites, including:

[www.gov.uk/ecosystems-services](http://www.gov.uk/ecosystems-services)

[http://en.wikipedia.org/wiki/Ecosystem\\_services](http://en.wikipedia.org/wiki/Ecosystem_services)

[www.ecosystems-services.org.uk/ecoserv.htm](http://www.ecosystems-services.org.uk/ecoserv.htm)

<http://uknea.unep->

[wcmc.org/EcosystemAssessmentConcepts/EcosystemServices/tabid/103/Default.aspx](http://wcmc.org/EcosystemAssessmentConcepts/EcosystemServices/tabid/103/Default.aspx)

[www.naturalengland.org.uk/ourwork/evidence/ecosystemapproach.aspx](http://www.naturalengland.org.uk/ourwork/evidence/ecosystemapproach.aspx)

[www.unep.org/maweb/documents/document.300.aspx.pdf](http://www.unep.org/maweb/documents/document.300.aspx.pdf)

### **An amusing item to end — with a sting in the tail**

#### **SERENE GREEN GRASS OF HOME — ANON.**

John and Jean bought a new house on an estate with plenty of open green space and links to parks and countryside. Michael and Michelle purchased an almost identical house on another estate but where the properties were set in a hard, urban landscape with no appreciable areas of grass or trees and little access to anywhere without using a car or a bus. Fast forward three decades and J&J are in their prime — relaxed, fit, healthy and full of life. M&M, though, are overweight, hypertensive, stressed and glum. These are two simplistic extremes, of course, but there is ample circumstantial and observational evidence that homes set in a greener environment have huge health and social benefits.

In a frenzied world of noise, rush and various levels of panic, having somewhere near your home where nature rules and calm reigns is a priceless asset. In a recent survey [no source cited but confidently believed to be true], more than 90% of interviewees said that having green space near their homes was important. That is a very different view from the one held by a few less-enlightened land promoters who

## **Biodiversity — what is it and how is it relevant to our public open spaces?**

want to buy their way out of their projects' adverse ecological impacts, or be able to build without any green infrastructure, by “offsetting” elsewhere: people want nature and green spaces to be accessible on their doorsteps, not somewhere far away. Indeed, the whole concept of offsetting has, unsurprisingly, become a very contentious one. It is not unreasonable to suggest that, if a project cannot be designed to include adequate and connected green space, it should probably not be undertaken at all.

Green spaces come in a myriad of shapes, sizes and characters. Many are based on grass, sadly often chemically hand-cuffed, municipal rye-grass rather than species-rich meads with drifts of wild flowers, but changing entrenched landscaping specifications and management takes time. Tall herbs, scrub, heath, hedgerows, individual trees, woods, ponds, ditches, streams, canals, lakes, rivers, beaches and marshes all constitute green space, whether open country, a park or a scrap of land around a small pond. If there are good paths — and the UK is particularly fortunate in its resource of public footpaths — and planted corridors giving connectivity between a network of green areas leading out to the wider countryside, that is the secret of good green infrastructure planning. Commons and village greens play a crucial role in this network, too, as do gardens of course. As Natural England say, *“Everyone should be able to enjoy the thrill of the outdoors, feeling the seasons change, seeing the flowers bloom, hearing the birds sing. It conjures memories of forgotten childhood adventures, offers rare moments of tranquillity and helps erase the stress of modern life. We need nature nearby. We know that greener places are better places to live — more relaxing, more enjoyable to come home to after a hard day at school or work ...”*

Besides offering serenity and health benefits at a very good price, green spaces have many other advantages, or “ecosystem services” as they are sometimes called:

- They fix carbon and help regulate extremes of temperature, reducing the impacts of climate change;
- They help to reduce flash flooding;
- They act to abate the impacts of gales and storms;
- They contribute to water purification and pollution control;

## **Biodiversity — what is it and how is it relevant to our public open spaces?**

- They attenuate noise;
- They improve the landscape and its beauty;
- They are havens for wildlife and help preserve and enhance biodiversity;
- In some cases (allotments, permaculture), they provide local produce and encourage local markets;
- They offer all kinds of opportunities for exercise, study and hobbies, and
- They increase the value of the properties near-by.

It follows that there are many rewarding pursuits associated with green spaces in which people can participate, either alone or with family and friends. For example, watching, photographing, painting and recording nature, so beloved by the Victorians, are all popular, and modern computer and information technologies allow people to identify species and share their observations quickly and easily. Several organisations appreciate having records of wildlife sent in to them: birds, butterflies and mammals remain ever the favourites, but increasingly people are becoming more ambitious by recording and photographing lesser known groups such as mosses, lichens and smaller invertebrates. Without green spaces on your doorstep, it is not so easy, and certainly a lot more expensive, to do this.

In a recent White Paper, the government noted, “*The challenge for the 21<sup>st</sup> century is to create and maintain high quality natural green spaces at the heart of where people live.*”

The above is also what Betts support when taking projects through the stages of planning application and approval, and we are meeting that challenge through the green spaces we adopt and manage on housing estates and commercial developments — it can be just as important for human wellbeing to have biodiverse green spaces around offices and factories as well as our dwellings. Enriching the nature of these areas will enrich our lives too, but sterile landscaping with manic mowing and is a road to ruin. So, when you think about where you live, or are going to live, and you want to be more like John or Jean than Michael or Michelle, it is wise to consider those green spaces around you where serenity can be yours whenever you wish.

# **Biodiversity — what is it and how is it relevant to our public open spaces?**

© Betts 2014, updated 2018

The author, Chris Betts, is a lifelong amateur naturalist who turned professional thirty years ago after spending two decades in heavy industry. He holds a first class honours degree in ecosystems & man, rural settlement & land-use, and human biology. He also has a doctorate in vegetation community science. Chris is a Chartered Biologist, Fellow of the British Naturalists' Association and a Member of various professional institutes. He has a particular focus on legally protected species and on wildlife legislation as it affects land-use, industry, planning and commerce.



Betts  
T: +44 (0)1886 888445  
E: [nature@betts.eu](mailto:nature@betts.eu)  
W: [www.betts.eu](http://www.betts.eu)