BIODIVERSITY AND NATURA 2000 IN URBAN AREAS

NATURE IN CITIES ACROSS EUROPE:

A review of key issues and experiences

STUDY DONE FOR :

Bruxelles Environnement-IBGE/Leefmilieu Brussel-BIM

UNDERTAKEN BY

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Biodiversity and Natura 2000 in urban areas

A review of issues and experiences of nature in cities across Europe for the Brussels Capital Region

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Purpose of this report

Most European cities host a surprisingly rich and diverse wildlife. As such, they have an important role to play in halting biodiversity loss in Europe. The Brussels Capital Region is a prime example of this. Brussels has recently designated 14% of the territory as Natura 2000 under the European Habitats Directive to help conserve rare species and habitats of EU importance.

Experience in Brussels and elsewhere illustrates that managing nature in urban areas is very different, and often more complex, than in rural areas. Yet, despite a wealth of literature on urban ecology, there is a general lack of good practice studies on managing nature in cities and on integrating biodiversity into urban policies. This prompted the Brussels Institute for the Management of the Environment - IBGE/BIM - who is the administration responsible for the environment in the Brussels Capital Region, to launch a small study reviewing how biodiversity is being tackled in different cities across Europe.

The results of this work are summarized in the present report:

- *Chapters 1- 5 present an overview of the issues, problems and opportunities facing nature in urban areas in general, and in the Brussels Capital Region and in Natura 2000 sites in particular;*
- *Chapters 6-10 look at the key management and policy issues in greater detail and illustrate how these have been tackled in different cities across Europe, through a series of 28 case studies;*
- *Chapter 11 draws some concluding remarks on the study's key findings and offers a series of recommendations for the Brussels Capital Region, in particular, as regards the management of its biodiversity assets.*

The role of nature in European cities

On a globalised scale Europe is a highly urbanized continent. Today, approximately 80% of Europeans live in cities. Historically cities grew as populations grew, rapidly becoming the main driving force behind Europe's economy. However, rapid expansion and poor planning has also brought with it many problems. These include, amongst others, a chronic lack of green spaces, high levels of crime and social problems and a generally polluted environment.

By the 1980s, the problems had became so bad that many urban administrations in Europe began to launch major urban renewal and regeneration programmes in order to improve both the economic performance and social quality of their cities.

Whilst these regeneration schemes have done much to 'breath life' back into the inner city, urban administrations are still faced with many challenges to make their cities sustainable – economically, socially and environmentally. Changing lifestyles and stronger demands for a higher standard of health and well being, has meant that the 'quality of life' in a city has become one of the main driving forces behind urban policy in Europe nowadays.

It is clear, therefore, that urban policymakers are increasingly recognizing the importance of green spaces in urban areas. The role of biodiversity is, however, less well known and is often overlooked. Yet, although the two are not synonymous and can sometimes end up competing against each other, they both offer valuable and much appreciated opportunities for exercise, social interaction, relaxation and peace and quiet, thus contributing significantly to people's quality of life in the city.

The value of nature in cities, however, extends well beyond its influence on the quality of life of city dwellers. For a start, it has its own intrinsic value. Urban areas are surprisingly rich in biodiversity, hosting a great variety of species and habitats, some of which are rare and threatened on a European scale.

Nature in cities also provides a unique opportunity for awareness raising and education. For city dwellers, the countryside and wildlife can seem far off and remote, and rather alienated from their daily lives. Their first encounter with nature tends to be in an urban environment. Here nature is 'up close and personal'.

This, in turn, creates many opportunities for people to learn about, and appreciate, wildlife. As a result, urban nature also has an important role to play in raising people's interest and concern for the loss of biodiversity across Europe. With 80% of Europeans living in cities, their support for nature conservation goals and actions is essential.

Finally, nature in urban areas provides a number of environmental functions too. They help absorb air pollution and noise from traffic. They create shade and ventilation corridors, which in turn help to reduce the 'heat island' effect. They also help absorb storm water and reduce surface run-offs.

The type of nature in cities

As part of this report, a survey was done of urban Natura 2000 sites in the 27 EU capitals and in cities with over half a million inhabitants. The results of the survey show that Natura 2000 sites exist in 32 major cities in Europe. 16 are capital cities, ie over half of Europe's capitals harbour one or more Natura 2000 sites.

Collectively, these ca 100 Natura 2000 sites harbour 40% of the threatened habitat types (mostly forests and semi natural grasslands), half the bird species and a quarter of the rare butterflies listed in the two EU Nature Directives.

Such a high level of biodiversity may seem surprising at first, but cities actually have a very heterogeneous structure which, in turn, gives rise to a highly diversified mosaic of different biotopes. As a result, many urban areas tend to support a relatively wide range of plants and animals compared to the surrounding countryside. Some species of bats, birds and insects, in particular, have also become well adapted to the urban environment.

Another important factor about biodiversity in the city is that it is not restricted to classical nature reserves and large open spaces. Habitat structure and quality is as important as size. Hence, urban biodiversity is also often found in rather more unconventional places, for instance along railway tracks and green verges, on brownfield sites, in allotments and private gardens, along river courses and in cemeteries and even on roofs, walls and tall buildings.

Major challenges (and opportunities) for nature and biodiversity in cities

The conservation and management of nature and biodiversity in urban areas is often very different, and more complex, than in rural areas. There are more people, stronger development pressures, less space, a greater diversity and intensity of competing interests, a multiplicity of administrations involved and a generally poor perception of nature in the city and why it needs to be conserved.

But nature in cities is not just about constraints and threats, it is also about opportunities. Because urban environments are constantly changing, opportunities abound for integrating biodiversity into new development plans and designs. If handled carefully, these could significantly enhance the biodiversity value of a city without incurring major additional costs. This in turn contributes to making the city a more attractive place to live and work, and increases people's quality of life.

Often, the key is for nature to be considered at the outset of the development process and not as an after-thought. It should be seen as part of the solution rather than part of the problem.

Key success factors

From our analysis of the different experiences of integrating and managing nature in large cities across Europe we have found that a number of common success factors keep re-appearing. These are summarized below.

However, it is also worth noting that we were not 'falling over' good examples during the study. It seems that, whilst we have no doubt missed some good practices, many cities still consider that nature conservation is simply not an issue for them. Where efforts are made, they are often ad hoc, dissipated and small scale. Indeed, we came across many more bad practice examples than good ones.

This would seem to indicate that there is still a need for a major recognition of the role of cities in promoting and maintaining biodiversity across Europe, and for its full integration into wider urban planning policies. The following success factors could help cities realise these goals:

- *A good information base: in order to integrate biodiversity concerns into urban policies it is essential to know what exists in terms of nature values (including potential nature values) in the town and to make this information readily accessible to others, be they developers, local authorities or planners…*

- *A policy vision and clear targets: Cities with the most advanced urban biodiversity policies have set themselves a clear vision of what they want in terms of nature in their city and have established objectives and measurable targets for achieving this vision. These have also been negotiated with, and consequently accepted by, all other urban administrations and stakeholders.*

- *Clear statutory powers and integration into urban development policies: Many of the more advanced cities have also fully integrated their biodiversity targets into their overall development policies and land use plans. As a consequence, there are clear statutory planning rules regarding biodiversity, which requires that all new developments and regeneration schemes pay regard to not only limiting (or compensating for) damages to nature but also actively enhancing biodiversity values within these new schemes.*

- *Practical tools, guidance and incentives: the effectiveness of the above policy measures is greatly influenced by whether the cities have also provided their various urban authorities and stakeholders with practical tools, policy guidance and incentives to help implement these measures.*

- *Biodiversity is seen as part of the solution: success is often down to how biodiversity and nature is perceived by the city planners and administrations – whether it is seen as irrelevant, merely a constraint or also as an opportunity. Those that treat it as an opportunity are better able to make a substantial contribution not just in enhancing biodiversity in the city but also in improving people's urban quality of life in general.*

- *Integrated approach: all of this calls for an integrated approach to urban development and a strong political will to consider all three aspects of sustainable development on an equal footing: economic, social and environmental. This integration must however happen at all levels, ie horizontally between different government departments and sectors, and vertically, between national, regional and local authorities, all of whom have a responsibility for how a city is managed.*

- *<u>A dedicated staff and right level of expertise:</u> despite having the political will to do something about nature and biodiversity in their city, many authorities still fail because they do not have the right level of conservation expertise and skills in their administration or a dedicated unit responsible for these issues. Yet, without this it is almost impossible for an authority to make any progress in this otherwise complex and specialized area.*

- *<u>Stakeholder engagement:</u> finally, for nature to be protected in a city, it needs the full support of all stakeholders. Not only does this ensure that the areas are effectively conserved and managed, but, as many case studies in this report have shown, it also encourages all parties to take an active part in enhancing biodiversity in their own city. Often, a little encouragement and incentive is needed from public administrations but if all stakeholders are involved, collectively they will be able to deliver much more for biodiversity than a city administration could ever hope to do acting on its own.*

Recommendations for the future

On the whole, the Brussels Capital Region comes out of this study as one of the better 'all rounders' when it comes to conserving urban nature and biodiversity. However this does not mean there is no room for improvement. In chapter 11, recommendations are made as to how Brussels Capital Region could further enhance its contributions to biodiversity in its Region.

As a final word, we hope that the findings of this study may also provide some food for thought to those involved in urban planning elsewhere, and act as a source of inspiration. In particular, we hope it will stimulate a further exchange of experiences and good practices between European cities on this important, but often neglected, subject.

Résumé exécutif

Objectif de ce rapport

La plupart des villes européennes abritent une vie sauvage étonnamment riche et variée. De ce fait, elles ont un rôle important à jouer pour enrayer la perte de la biodiversité en Europe. La Région de Bruxelles Capitale en est un excellent exemple. Bruxelles a récemment désigné 14% de son territoire en Natura 2000 au titre de la Directive européenne Habitats en vue de contribuer à la protection des espèces rares et des habitats d'importance communautaire.

L'expérience menée à Bruxelles et, ailleurs, illustre bien que gérer la nature en milieu urbain est une pratique très différente et, souvent plus complexe qu'en milieu rural. Toutefois, en dépit de l'abondante littérature existante en matière d'écologie urbaine, on relève une pénurie générale d'études de bonnes pratiques en matière de gestion de la nature urbaine et d'intégration de la biodiversité dans les politiques urbaines. D'où l'initiative de Bruxelles Environnement-IBGE - administration responsable pour l'environnement dans la région de Bruxelles Capitale - de lancer une étude concise examinant la manière dont la question est abordée dans les différentes villes d'Europe.

Les résultats de ce travail sont résumés dans le présent rapport :

- *Les Chapitres 1-5 présentent une vue d'ensemble des points soulevés, problèmes et opportunités que rencontre en général la nature en milieu urbain, et dans la région Bruxelles Capitale et sur les sites Natura 2000 en particulier ;*
- *Les chapitres 6-10 examinent de façon plus détaillée la méthode de gestion principale et les aspects fondamentaux de la politique urbaine et illustre, à travers une série de 28 études de cas, la manière dont ces questions ont été abordées dans les différentes villes européennes,*
- *Le chapitre 11 tire, en guise de conclusion, quelques remarques sur les résultats clés de l'étude et propose pour la région Bruxelles Capitale une série de recommandations sur la gestion des ses atouts en matière de biodiversité.*

Le rôle de la nature dans les villes européennes

D'un point de vue global, l'Europe est un continent hautement urbanisé. Aujourd'hui, environ 80% des européens vivent en milieu urbain. Tout au long de l'histoire, le développement des villes a jalonné la croissance démographique, devenant très rapidement la principale force motrice derrière l'économie. Toutefois, une expansion rapide et une planification médiocre n'ont pas été sans apporter de nombreux problèmes. Ceux-ci comprennent, entre autres, une insuffisance chronique d'espaces verts, un taux élevé de criminalité, des problèmes sociaux et un environnement pollué en général.

Dans les années 1980, les problèmes se sont tellement intensifiés que de nombreuses administrations urbaines en Europe se sont décidées à lancer de vastes programmes de rénovation et de réhabilitation afin d'améliorer à la fois les performances économiques et la qualité du cadre social de leurs villes.

Même si ces programmes de réhabilitation ont largement contribué à « redonner du souffle » aux centres urbains, les administrations urbaines doivent encore relever de nombreux défis afin de rendre leurs villes durables – sur le plan économique, social et environnemental. Des changements dans le mode de vie et de plus fortes attentes pour des normes plus élevées dans le domaine de la santé et du bien être, indiquent que la « qualité de vie » dans une ville est devenue aujourd'hui l'une des principales forces motrices derrière la politique urbaine en Europe.

Il devient de plus en plus clair qu'au niveau des politiques urbaines, les décideurs en matière d'urbanisme ont tendance à davantage reconnaître l'importance des espaces verts en milieu urbain. Le rôle de la biodiversité reste, toutefois, moins bien connu et souvent négligé. Bien que ces deux aspects ne sont pas synonymes et finissent parfois même par rivaliser, ils offrent tous deux des opportunités précieuses et très appréciées pour l'exercice physique, l'interaction sociale, la relaxation, la paix et la tranquillité, contribuant ainsi significativement à améliorer la qualité du cadre de vie des citadins.

La valeur de la nature urbaine, toutefois, va bien au-delà de sa simple influence sur la qualité de vie des habitants. Tout d'abord, elle a sa propre valeur intrinsèque. Les zones urbaines sont étonnamment riches en biodiversité, abritant une grande variété d'espèces et d'habitats, dont certains sont rares et menacés à l'échelle européenne.

La nature dans les villes fournit également une opportunité unique d'accroître la sensibilisation et l'éducation dans ce domaine. Pour les citadins, la campagne et la vie sauvage peuvent sembler lointaines et éloignées, et plutôt à l'écart de leur vie quotidienne. Leur première rencontre avec la nature se fait dans un environnement urbain. Ici la nature paraît « en gros plan et personnelle ».

Ceci, en échange, crée de nombreuses opportunités pour mieux connaître et apprécier la vie sauvage. En conséquence, la nature en milieu urbain a également un rôle important à jouer pour susciter l'intérêt des citoyens et l'inquiétude concernant la perte de la biodiversité en Europe. Avec 80% d'européens résidant dans les villes, compter sur leur soutien pour renforcer les objectifs et actions en faveur de la conservation de la nature est essentiel.

Pour finir, la nature urbaine dispense également un nombre de fonctions environnementales. Elle contribue à absorber la pollution atmosphérique et le bruit résultant du trafic. Elle crée des corridors d'ombre et de ventilation qui, à leur tour contribuent à réduire l'effet d'«îlot de chaleur ». Elle aide aussi à absorber les eaux résultant des orages et à réduire les écoulements de surface.

Le type de nature dans les villes

Dans le cadre de ce rapport, une étude a été élaborée sur les sites urbains Natura 2000 dans les 27 capitales de l'UE et dans des villes de plus d'un demi million d'habitants. Les résultats de l'étude indiquent que les sites Natura 2000 sont présents dans 32 des villes majeures d'Europe. Parmi ces dernières, 16 sont des capitales, c.a.d. que plus de la moitié des capitales européennes abritent un ou plusieurs sites Natura 2000.

Collectivement, environ une centaine de sites Natura 2000 abritent 40% des types d'habitats menacés (pour la plupart forêts et pelouses semi naturelles), la moitié des espèces d'oiseaux et un quart des papillons rares figurant sur la liste des deux Directives communautaires UE.

Un niveau aussi élevé de biodiversité peut sembler surprenant au départ, mais les villes sont dotées, en réalité, d'une structure très hétérogène qui, à son tour, induit une mosaïque de différents biotopes hautement diversifiés. En conséquence, de nombreuses zones urbaines ont tendance à abriter une diversité relativement variée de plantes et d'animaux en comparaison avec le milieu rural environnant qui les entourrent. Certaines espèces de chauves-souris, oiseaux et insectes se sont particulièrement bien adaptées à l'environnement urbain.

Un autre facteur important concernant la biodiversité urbaine réside dans le fait qu'elle ne se confine pas aux réserves naturelles classiques ni aux larges espaces ouverts. La structure de l'habitat et la qualité importe tout autant que la taille. C'est pourquoi, on découvre souvent la biodiversité urbaine dans des endroits peu conventionnels, par exemple le long des rails de chemin de fer et des accotements verdoyants, dans des

anciennes zones de construction abandonnée, dans des potagers et des jardins privés, le long des cours d'eau, dans les cimetières et même sur les toits, sur des murs et des bâtiments.

Principaux défis (et opportunités) pour la nature et la biodiversité dans les villes

La conservation et la gestion de la nature et de la biodiversité dans les zones urbaines est souvent très différente, et plus complexe, que dans les zones rurales. Il y a plus de gens, des pressions de développement plus fortes, moins d'espace, une grande diversité et intensité d'intérêts concurrentiels, une multiplicité d'administrations concernées et, en général, une perception pauvre de la nature urbaine et de la nécessité de la préserver.

Cependant, la nature dans les villes ne porte pas uniquement sur les contraintes et les menaces, mais aussi sur les opportunités. Les environnements urbains étant constamment en mouvance, les opportunités d'intégrer la biodiversité dans de nouveaux plans et initiatives de développement sont plus nombreuses que jamais. Une gestion attentive permet de renforcer de façon significative la valeur de la biodiversité d'une ville sans entraîner pour autant des coûts supplémentaires majeurs. Ceci en échange peut contribuer à faire de la ville un lieu plus attrayant pour y vivre et y travailler, et, accroître la qualité de vie des citadins.

Mieux vaut prendre en considération la nature au tout début du processus de développement plutôt que d'y réfléchir après. Elle doit être perçue comme faisant partie de la solution plutôt que partie du problème.

Les éléments clés du succès

Au travers de notre analyse des différentes expériences et pratiques en Europe sur l'intégration et la gestion de la biodiversité en milieu urbain nous avons relevé un certain nombre de points en commun qui influencent leur succès. Ceux-ci sont résumés ci-après vu leur intérêt éventuel pour les urbanistes et gestionnaires de la nature dans d'autres zones urbaines.

Toutefois, il convient de noter qu'au cours de cette étude, nous n'étions pas 'inondés' par les bons exemples. En effet, même si nous avons, sans doute, raté quelques exemples, il semble que de nombreuses villes considèrent encore la conservation de la nature comme ne faisant tout bonnement pas partie de leurs problèmes. Là où des efforts existent, ils sont souvent ad hoc, dispersés et à petite échelle. Assurément, nous avons rencontré beaucoup plus d'exemples de mauvaises pratiques que de bonnes pratiques.

Ceci indiquerait qu'il subsiste encore un net besoin pour une plus ample reconnaissance du rôle des villes dans la promotion et le maintien de la biodiversité en Europe, et pour sa pleine intégration dans un contexte élargi de développement des politiques urbaines. Les facteurs de succès suivants pourraient aider les villes à atteindre ces objectifs :

- *<u>Une bonne base d'information</u> : afin d'intégrer les préoccupations en matière de biodiversité dans des politiques urbaines, il est essentiel de bien connaître le patrimoine naturel de la ville (par ex. a travers des inventaires détaillées) et de rendre cette information accessible aux autres, qu'il s'agisse des responsables chargés du développement, des autorités locales ou des urbanistes….*

- *<u>Une vision politique et des objectifs clairs</u> : Les villes dotées des politiques les plus avancées en matière de biodiversité urbaine ont elles mêmes développé une vision claire de ce qu'elles souhaitaient en termes de nature dans leur ville et ont établi des objectifs et des paramètres mesurables pour répondre à cette vision. Ceux-ci ont également été négociés et acceptés par toutes les autres administrations en matière d'urbanisme et par les groupes d'usagers concernés.*

- *Des règlements clairs et intégration dans les politiques de développement urbain : les villes parmi les plus avancées ont également pleinement intégré leurs objectifs en matière de biodiversité dans leurs plans globaux d'affectation des sols. D'où, l'existence de règlements clairs en matière d'urbanisme relatifs à la biodiversité selon lesquels tous les nouveaux développements et schémas de réhabilitation doivent prendre en compte la conservation de la nature et la biodiversité.*

- *Outils pratiques, lignes directrices et incitations : l'efficacité des mesures de la politique décrite ci-dessus est largement influencée par la mise à disposition ou non par les villes d'outils pratiques (par ex guides méthodologiques), de lignes directrices et de moyens incitatifs auprès des autorités urbaines et des groupes d'usagers concernés leur permettant de mettre en œuvre ces mesures.*

- *La biodiversité perçue comme partie de la solution : le succès dépend également souvent de la manière dont la biodiversité et la nature est perçue par les urbanistes et les administrations – soit comme dénuée d'intérêt, purement et simplement comme une contrainte ou alors aussi comme une opportunité. Ceux qui la considèrent comme une opportunité sont davantage en mesure d'apporter une contribution substantielle non seulement pour renforcer la biodiversité dans la ville mais aussi pour améliorer la qualité du cadre de vie en général.*

- *Approche intégrée : tout ceci appelle une approche intégrée du développement urbain et une volonté politique forte permettant de considérer les trois aspects du développement durable sur un même pied d'égalité : économique, social et environnemental. Cette intégration doit cependant s'opérer sur trois niveaux, à savoir horizontalement entre les différents services gouvernementaux et secteurs et, verticalement, entre les autorités nationales, régionales et locales, toutes responsables du mode de gestion de la ville.*

- *Du personnel motivé et un bon niveau d'expertise : malgré la volonté politique de se mobiliser pour la nature et la biodiversité dans leur ville, de nombreuses autorités sont toujours en échec car elles ne disposent ni du niveau d'expertise nécessaire en matière de conservation ni des compétences au sein de leur administration ou d'une unité responsable qui se consacre à ces questions.*

- *L'implication du groupe d'usagers : enfin, pour assurer la protection de la nature en milieu urbain, il importe de disposer du soutien plein et entier de tous les acteurs locaux concernés. Non seulement ceci permet de garantir une conservation et gestion efficace des sites, mais, comme le montre de nombreuses études de cas dans ce rapport, cela encourage également toutes les parties à prendre une part active dans le renforcement de la biodiversité dans leur propre ville. Souvent, quelques encouragements et incitations sont nécessaires de la part des administrations publiques. Mais, lorsque tous les groupes d'usagers sont impliqués et se sentent concernés, ils sont collectivement à même de contribuer dans une plus large mesure à la biodiversité, plus que ce qu'aucune administration urbaine pourrait espérer faire en agissant à son propre compte.*

Recommandations pour l'avenir

Dans l'ensemble, la région Bruxelles Capitale ressort de cette étude comme étant l'un des milieux urbains les mieux placés en ce qui concerne la conservation de la nature et la biodiversité urbaine. Toutefois, ceci n'écarte pas pour autant la possibilité d'apporter quelques améliorations. Au chapitre 11, des recommandations ont été établies sur la manière dont la région Bruxelles Capitale pourrait renforcer sa contribution à la biodiversité urbaine.

En guise de conclusion, nous espérons que les résultats de cette étude permettront de nourrir la pensée de tous ceux en Europe qui se consacrent aussi à l'urbanisme, et, qu'ils seront également source d'inspiration. Plus particulièrement, nous espérons qu'il permettra de stimuler de nouveaux échanges d'expériences et de bonnes pratiques entre les villes d'Europe sur ce thème essentiel et pourtant si souvent négligé.

Samenvatting

Doel van dit rapport

De meeste Europese steden herbergen een rijke en diverse wilde fauna en flora en als dusdanig dragen deze steden in belangrijke mate bij tot het stopzetten van het biodiversiteitsverlies in Europa. Het Brussels Hoofdstedelijk Gewest is hier een goed voorbeeld van. Het Hoofdstedelijk Gewest duidde voor de uitvoering van de EU-Habitatrichtlijn 14% van zijn oppervlakte aan als Natura 2000 gebied om aldus Europees bedreigde soorten en biotopen te beschermen.

Ervaring leert dat zowel in het Brussels Hoofdstedelijk Gewest als in andere grote steden natuurbeheer erg verschilt en veel complexer is dan op het platteland. Ondanks de veelheid aan literatuur over stadsecologie, is er een gebrek aan studies die goede praktijkvoorbeelden over natuurbeheer in de stad en de integratie van biodiversiteitbeleid in het stadsbeleid illustreren. Dit noopte Leefmilieu Brussel-BIM, de milieu- en natuuradministratie van het Gewest, een kleine studieopdracht uit te besteden om na te gaan hoe andere Europese steden met biodiversiteit omgaan.

De resultaten van deze studie zijn in dit rapport samengevat.

- *Hoofdstukken 1 - 5 geven een overzicht van de typische aspecten van natuur in stedelijke omgeving, van de problemen en de kansen van natuur in de stad en beschrijven de situatie het Hoofdstedelijk Gewest en Natura 2000 gebieden;*
- *Hoofdstukken 6 – 10 beschrijven meer in detail belangrijke beheer- en beleidspunten en illustreren deze aan de hand van 28 case studies uit steden in Europa;*
- *Hoofdstuk 11 vat de besluiten samen van deze studie en stelt het Brussels Hoofdstedelijk Gewest een reeks aanbevelingen voor met betrekking tot het beheer van het natuurlijk patrimonium.*

Het belang van natuur in Europese steden

In vergelijking met andere werelddelen is Europa zeer verstedelijkt. Op dit ogenblik leven ongeveer 80% van de Europeanen in steden. Naarmate de economische ontwikkeling toenam, nam ook het belang van de steden toe. Nochtans bracht de snelle expansie van de steden gekoppeld aan een gebrek aan planning veel problemen met zich mee, zoals een tekort aan groene ruimten, toenemende criminaliteit, sociale problemen en een verontreinigde omgeving.

In de jaren tachtig waren de problemen zo groot dat veel stadsadministraties in Europa een campagne startten voor stadsvernieuwing, om zowel de stad economisch te stimuleren als de stedelijke omgeving voor de inwoners te verbeteren.

Hoewel deze initiatieven veel bijgedragen hebben tot de "levensvatbaarheid" van de binnenstad, worden administraties nog geconfronteerd met de vele en grote uitdagingen om de stad echt duurzaam te beheren, zowel economisch, sociaal als ecologisch. De veranderde levensstijl en de vraag naar hogere gezondsheidsnormen en meer "well-being", hebben ervoor gezorgd dat "levenskwaliteit" nu in Europese steden een van de belangrijkste drijfveren van het stedelijk beleid is.

Beleidsmakers erkennen meer en meer het belang van groene ruimten in stedelijke omgevingen. Het belang van wilde fauna en flora, de biodiversiteit, is echter minder gekend en wordt veelal vergeten. Echter, hoewel groene ruimten en biodiversiteit niet altijd synoniem zijn en soms met elkaar in competitie treden, bieden beiden waardevolle en geapprecieerde mogelijkheden voor ontspanning, sport en spel, sociale interactie, rust en vrede en dragen dus bij tot een betere kwaliteit van de stedelijke omgeving.

De natuur als dusdanig heeft echter een waarde die verder reikt dan de omgevingskwaliteit van stadbewoners. Om te beginnen heeft natuur een eigen intrinsieke waarde: stedelijke omgevingen hebben inderdaad een verrassend grote biodiversiteit, herbergen veel soorten, waaronder Europees zeldzame en/of bedreigde soorten.

Natuur in de stad biedt ook unieke mogelijkheden voor publieksinformatie en vorming. Voor de meeste inwoners is het platteland ver af en de meesten hebben geen band met hetgeen op het platteland gebeurt. Hun eerste contact met natuur is dan ook met stedelijke natuur – in hun buurt en dicht bij hun gekende omgeving.

Natuur in de stedelijke omgeving is ook de gelegenheid om wilde fauna en flora te ontdekken en te appreciëren. De aanwezigheid van natuur in de stad biedt dus ook de mogelijheid om in Europa interesse voor natuur en biodiversiteit te stimuleren. Met 80% van de Europeanen in steden is hun ondersteuning voor natuurbescherming essentiëel.

Tenslotte zorgt natuur ook een voor een aantal 'milieudiensten' zoals vermindering van luchtvervuiling, absorberen van geluid, een beter klimaat door het warmte-eiland-effect van de stad te verminderen of door als buffer te fungeren voor overvloedig oppervlaktewater.

De variatie aan natuur in steden

Een deel van dit rapport gaat over Natura 2000 gebieden in de 27 EU hoofdsteden en steden met meer dan een half miljoen inwoners. Ons onderzoek toonde aan dat meer dan 32 steden in Europa Natura 2000 gebieden hebben, waaronder 16 hoofdsteden. De helft van de Europese hoofdsteden hebben minstens één Natura 2000 gebied.

Samen vindt men in deze 100 Natura 2000 gebieden 40% van de bedreigde biotooptypen van de EU-Habitatrichtlijn (vooral bossen en halfnatuurlijke graslanden), de helft van het aantal vogels en een vierde van het aantal vlinders uit beide richtlijnen (Vogel- en Habitatrichtlijn).

Op het eerste gezicht verrast zo een hoge graad van biodiversiteit. Echter, stedelijke milieus zijn zeer heterogeen, hetgeen een zeer gediversifiëerde mozaïek geeft aan biotooptypen. Hierdoor komt het dat steden in vergelijking met het platteland een dergelijk rijke fauna en flora herbergen. Sommige vleermuizen, vogels en insecten hebben zich goed aangepast aan het stedelijk milieu.

Een bijkomende belangrijke factor voor de stedelijke biodiverisiteit is dat hier natuur niet beperkt is tot de klassieke natuurreservaten en grote open ruimten. Ook de specifieke morfologie en structuur van de stad zijn bepalend. Daarom vindt men natuur ook in eerder onconventionele plaatsen zoals spoorwegen, wegbermen, verlaten industriegebieden, moestuinen, tuinen, langs kanalen en waterwegen, kerkhoven, daken, muren en grote gebouwen.

Belangrijke uitdagingen (en kansen) voor natuur en biodoversiteit in steden

Natuurbescherming en -beheer zijn in stedelijke milieus anders en complexer dan op het platteland. Er wonen meer mensen, de druk van projectontwikkelaars is hoger, er is minder open ruimte, meer en intensere competie voor het gebruik van de open ruimte, en complexere administratieve structuren. Daarenboven is natuur in de stad over het algemeen onvoldoende erkend en beschermd.

Natuur in steden gaat echter niet enkel over problemen en beperkingen, het gaat ook over kansen. Omdat de stadsomgeving zeer dynamisch is, zijn er ook meer kansen om biodiveristeit te integreren in stedelijke ontwikkelings- of andere ruimtelijke plannen. Ervaring leert dat zorgvuldig plannen mogelijkheden biedt om natuur in de stad te

integreren en dat dit niet ten koste hoeft te gaan van belangrijke bijkomende financiële inspanningen. Op zijn beurt zorgt dit voor een stad met een betere levenskwaliteit, waar het aangenaam is om te werken en te wonen.

Bepalend hiervoor is dat de natuuraspecten vanaf het begin in de ruimtelijke planning of ingrepen worden opgenomen. Met andere woorden, natuur dient beschouwd te worden als deel van de oplossing en niet als deel van het probleem.

Sleutels tot succes

Onze analyse van een reeks ervaringen en praktijken doorheen Europa toont aan dat een aantal gemeenschappelijke succesfactoren terugkeren. Omdat we ze belangrijk vinden voor zowel stadsplanologen als verantwoordelijken voor natuur(gebieden) in steden worden ze op het einde van deze inleiding opgesomd.

Nochtans dient vermeld te worden dat we niet over zoveel goede praktijkvoorbeelden struikelden. De analyse toont aan dat – ondanks het feit dat we zeker een aantal goede voorbeelden gemist hebben – toch veel steden natuur niet als iets belangrijk beschouwen. Ook waar inspanningen gedaan worden, zijn deze vaak ad hoc, versnipperd en zeer kleinschalig. We stoten tijdens ons onderzoek meer op slechte dan op goede praktijkvoorbeelden.

Dit duidt er eerder op dat er nog nood is aan een betere erkenning van natuur in de stad om in Europese steden biodiversiteit beter te beheren en te promoten en er voor te zorgen dat natuur integraal in de stedelijke planning wordt opgenomen. De volgende factoren kunnen er voor zorgen dat dit alles gerealiseerd wordt:

- *<u>Een goede informatiebasis</u>: om natuurbescherming daadwerkelijk te integreren in stedelijke planning is het van belang te weten welke natuurwaarden (inclusief potentiële natuurwaarden) in een stad aanwezig zijn en er voor te zorgen dat deze informatie makkelijk toegankelijk is voor derden, zoals bouwpromotoren, lokale besturen, planologen, ...*

- *<u>Een beleidsvisie met duidelijke doelstellingen</u>: Steden met het beste natuurbeleid hebben ook een duidelijke visie welke natuur ze willen en hebben deze visie vertaald in meetbare doelstellingen. Deze doelstellingen zijn ook onderhandeld en aanvaard door de andere administraties en belanghebbenden.*

- *<u>Duidelijk statutaire bevoegdheden en integratie van bodiversiteit in stedelijke ontwikkeling</u>: de meest geavanceerde steden hebben hun biodiversiteits-doelstellingen volledig geïntegreerd in bodembestemmingsplannen en ontwikkelings-plannen. Daarenboven is er een duidelijke regelgeving over biodiversiteit en moeten nieuwe stedelijke ontwikkelingen en ingrepen in de stad met natuur en biodiverisiteit rekening houden.*

- *<u>Praktische handleidingen, ondersteuning en aanmoedigingen:</u> de efficiëntie van de hierboven vermelde maatregelen wordt in grote mate bevorderd wanneer steden ook de verschillende administraties en 'stakeholders' de nodige praktische handleidingen geven, ondersteuning bieden of aanmoedigen om natuurmaatregelen uit te voeren.*

- *<u>Biodiversiteit als deel van de oplossing:</u> het succes wordt in grote mate bepaald door de perceptie die planologen en administraties hebben van natuur en biodiversiteit – wordt dit als relevant beschouwd, als een beperking of ook als een kans. Diegenen die de kansen zien, slagen er beter in om een substantiële bijdrage te geven om niet alleen de biodiversiteit te verhogen, maar ook om de woonkwaliteit van de stedelijke omgeving te verbeteren.*

- *<u>Een geïntegreerde benadering:</u> dit pleit voor een geïntegreerde benadering van de stadsontwikkeling en de politieke wil om de drie pijlers van een duurzaam beheer, economische, sociale en ecologische aspecten, gelijkwaardig te behandelen. Deze integratie moet zowel horizontaal als verticaal gebeuren, met andere woorden tussen verschillende administraties van een overheid als tussen verschillende overheden (nationaal, regionaal, gemeentelijk) zodat alle bevoegden hierbij betrokken worden.*

- *<u>Een toegewijde administratie en het juiste expertiseniveau:</u> zelfs indien de politieke wil voorhanden is om iets te doen voor natuur en biodiversitei, hebben veel bevoegde overheden noch de kennis, noch de ervaring, noch een toegewijde administratie om zich met deze problemen bezig te houden. Zonder deze elementaire capaciteiten is het voor elke administratie onmogelijk om vooruitgang te boeken in deze zeer complexe en gespecialiseerde materie.*

- *<u>Betrokkenheid van alle actoren</u>: om tenslotte natuur in de stad te beschermen en te beheren is volledige ondersteuning en betrokkenheid van alle actoren ('stakeholder') nodig. Dit schept de nodige voorwaarden om alle gebieden te beheren en te beschermen, het stimuleert – zoals ons onderzoek aantoont – alle betrokkenen om de natuurwaarden van een stad te verhogen. Veelal zijn elementaire ondersteuning en aanmoediging vanuit de administratie nodig; wanneer echter alle 'stakeholders' betrokken zijn kan gezamelijk veel meer bereikt worden dan een administratie ooit hoopt te kunnen.*

Aanbevelingen voor de toekomst

Algemeen komt in deze studie het Brussels hoofdstedelijk Gewest naar voor als één van de betere stedelijke regio's in Europa met betrekking tot biodiversiteit (natuurbescherming en –beheer). Dit betekent echter niet dat er géén ruimte voor verbetering is. In hoofdstuk 11 worden een reeks aanbevelingen geformuleerd voor de biodiversiteit in het Gewest.

Afsluitend, hopen we dat de bevindingen van deze studie iedereen die met stadsontwikkeling begaan is tot nadenken stemmen en inspiratie geven. Meer in het bijzonder hopen we dat dit project leidt tot meer uitwisseling tussen steden om goede ervaringen te delen waardoor natuur en biodiversiteit geen miskende materie blijven.

1. PURPOSE OF THIS REPORT

1.1 Issues and objectives

Cities all over the world host a surprisingly rich and diverse range of species and habitats of conservation importance. The Brussels Capital Region is a prime example of this. Brussels has recently designated 14% of the city as Natura 2000 under the European Habitats Directive to help conserve rare species and habitats of EU importance, such as the stag beetle, several bat species and important forest and wetland biotopes.

Experience in Brussels and elsewhere demonstrates that managing nature in urban areas is very different, and often more complex, than in rural areas. Despite the extensive amount of literature available on urban ecology, there appears to be a lack of consolidated information on the management and planning issues facing urban nature, and on the implementation of the Habitats Directive in urban areas in particular.

This prompted the IBGE/BIM, who is the administration responsible for the management of the environment in the Brussels Capital Region, to launch a small study reviewing how these issues are being tackled in different cities across Europe.

The objectives of the study are twofold:

- To gather experiences of enhancing biodiversity, and managing Natura 2000 sites, in urban areas and to explore how this has been addressed in different cities across Europe;

- To draw from these experiences a number of common denominators and good practices which could be used by the Brussels Region to further improve the management of biodiversity and Natura 2000 sites in Brussels.

1.2 Methodology

The study was undertaken using a combination of methods. It started with a desktop research of existing information, studies and reports on policies and practices relating to various aspects of conserving biodiversity in an urban context. This was complemented by a review of Natura 2000 sites in major European cities, using statistics gathered from the European Commission's Natura 2000 database.

Thereafter, contacts were made with particular organizations, administrations and individuals actively involved in these issues in order to learn more about their experiences and activities. Online telephone interviews were conducted and, where possible, a handful of site visits were made.

1.3 The results

The results of this work are summarized in the present report which is structured as follows:

- Chapters 1- 5 present an overview of the issues, problems and opportunities facing nature in urban areas in general, and in the Brussels Capital Region and in Natura 2000 sites in particular;

- Chapters 6-10 look at the key management and policy issues in greater detail and illustrate how these have been tackled in different cities across Europe, through a series of 28 case studies;

- Chapter 11 draws some concluding remarks on the study's key findings and offers a series of recommendations for the Brussels Capital Region in particular as regards the management of its biodiversity assets.

Having completed the study, it is apparent that we have only just managed to scratch the surface of this complex issue and that, because of time and resource constraints, we will no doubt have missed out many good examples and initiatives at local, national and international level.

Nevertheless, we hope that these preliminary findings may provide some food for thought to those involved in urban planning in Brussels and elsewhere, and act as a source of inspiration. In particular, it is hoped it will stimulate a further exchange of experiences and good practices between European cities on this important, but often neglected, subject.

2. INTRODUCTION: BIODIVERSITY IN AN URBAN CONTEXT

2.1 The urban context

On a global scale Europe is a highly urbanized continent. Today, approximately 80% of Europeans live in urban areas. There are now over 100 cities in the EU-27 with more than 500,000 inhabitants, and a further 200 towns with populations of 200,000 or more. All the signs are that urban expansion is set to continue well into the future.

Historically, cities grew as populations grew, rapidly becoming the main driving force behind Europe's economy. They allowed for economies of scale, attracting high concentrations of skilled labour, jobs and facilities... They also became centers of cultural development, innovation and creativity.

Eventually, though, rapid expansion and poor planning caused many cities to loose their appeal. By the 1980s, a large number of inner cities across Europe had developed a reputation for a lack of green spaces, high levels of crime and social problems and a poor environment. People began turning their backs on the city and moving out towards the leafier suburbs where the quality of life was perceived to be better. This, in turn, increased the level of traffic and the use of private cars.

Meanwhile, inner cities worsened and social segregation intensified. Poorer income groups and immigrants, who could not escape, found themselves trapped in a spiral of high unemployment and poverty, poor housing, inadequate facilities and an increasingly degraded environment.

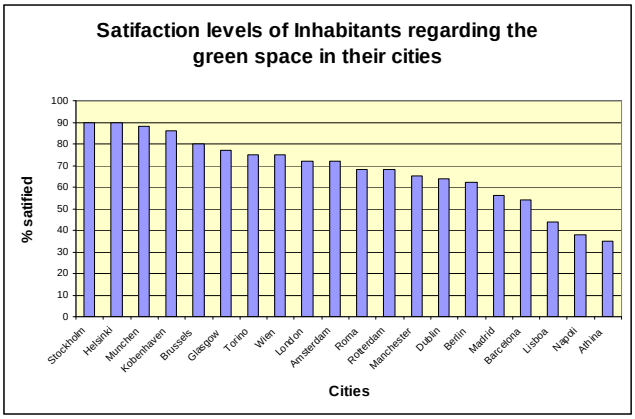
By the 1980s, the problems had became so bad that many urban administrations in Europe began to launch major urban renewal and regeneration programmes in order to improve both the economic performance and social quality of their cities.

2.2 Quality of life: a main driving force behind today's urban policies

Whilst these regeneration schemes have done much to 'breath life' back into the inner city, urban administrations are still faced with many challenges to make their cities sustainable – economically, socially and environmentally. Changing lifestyles and stronger demands for a higher standard of health and well being, has meant that the 'quality of life' in a city has become one of the main driving forces behind urban policy in Europe nowadays.

The provision of green spaces is an important part of this new drive. Studies have shown that city dwellers attach great importance to the amount of green space in their cities. Yet, many administrations still find it difficult to protect and maintain such green areas in the wake of relentless pressure for space and resources.

The lack of green space is also one of the contributing factors of urban sprawl, it drives people out towards the edge of the city in search of, amongst others, a greener healthier environment. In the ten year period from 1980-1990 the growth of urban areas throughout Europe consumed more than 8000 km² of land – an area the size of Luxembourg (EEA, 2006).



Source: Derived from Eurostat Urban audit perception survey results May 2006

2.3 Why focus on biodiversity in cities?

It is clear, therefore, that urban policymakers are increasingly recognizing the importance of green spaces in urban areas. The role of biodiversity is, however, less well known and is often overlooked. Yet, although the two are not synonymous and can sometimes end up competing against each other, they both offer valuable and much appreciated opportunities for exercise, social interaction, relaxation and peace and quiet, thus contributing significantly to people's quality of life in the city.

The value of nature in cities, however, extends well beyond its influence on the quality of life of city dwellers. For a start, it has its own intrinsic value. Urban areas are surprisingly rich in biodiversity, hosting a great variety of species and habitats, some of which are rare and threatened on a European scale.

The heterogeneous structure of the city gives rise to a highly diversified mosaic of dispersed biotopes. As a result, urban areas often support a relatively wide range of plants and animals compared to the surrounding countryside. Studies have found that, in several instances, more plant species are present in urban spaces than on equally large surfaces in surrounding areas. In parts of the UK, cities host 70-80% of the breeding birds found in the region as a whole.

Some species have become well adapted to the urban environment, such as the black redstart, stag beetle or various species of bats. Urban areas therefore have an important, but often under-recognised, role to play in maintaining Europe's biodiversity.

Nature in cities also provides a unique opportunity for awareness raising and education. For city dwellers, the countryside and wildlife can seem far off and remote, and rather alienated from their daily lives. Their first encounter with nature tends to be in an urban environment. Here nature is 'up close and personal' rather than distant or remote. This, in turn, creates many opportunities for people to learn about, and appreciate, wildlife.

The value of biodiversity in urban areas:

- *Contributes to quality of life in cities*
- *Plays an important role in maintaining biodiversity in Europe*
- *Provides opportunities for health, recreation, social interaction, relaxation*
- *Provides opportunities for education and discovery*
- *Provides a number of environmental functions*
- *Raises awareness and support for the plight of biodiversity and nature conservation generally*

Urban nature also has an important role to play in raising people's interest and concern for the loss of biodiversity across Europe. With 80% of Europeans living in cities, their support for nature conservation goals and actions is essential.

Finally, nature in urban areas provides a number of environmental functions too. They help absorb air pollution and noise from traffic (despite substantial progress 97% of Europe's urban citizens are still exposed to air pollution levels that exceed EU quality objectives for particulates). They create shade and ventilation corridors which in turn help reduce the 'heat island' effect (1 large tree is supposedly equivalent to 5 room air conditioners!). They also help absorb storm water and reduce surface run-offs. These ecosystems functions are not only valuable in improving the quality of life of cities but they also have important economic benefits.

Today, urban areas are dynamic and rapidly changing environments. The urban economy is still the main driving force behind these developments but changing lifestyles and a greater emphasis on quality of life have pushed the social and environmental parameters higher up the agenda. Nature and biodiversity is an integral part of this drive and should therefore be seen as part of the solution for sustainable urban planning, not merely a constraint or a problem.

2.4 What sort of nature is there in a city?

Talk of nature and people immediately think of nature reserves or large open areas, such as nature reserves, woods and parkland. These are clearly important refuges for wildlife. But they are not the only places. The heterogeneous nature of the city creates a highly diversified mosaic of suitable habitats where the structure and quality of the habitat is as important, if not more important, than its size.

Hence biodiversity in cities is also often found in rather more unconventional places, for instance along railway tracks and green verges, on brownfield sites, in allotments and private gardens, beside river courses and in cemeteries and even on roofs and buildings.

The peregrine falcon, one of the fastest and largest birds of prey in Europe normally found in tall sea cliffs and other upland areas, is now regularly seen on top of cathedrals and other tall buildings in cities like Florence, Brussels, London, Budapest….

Where to find nature in a city?

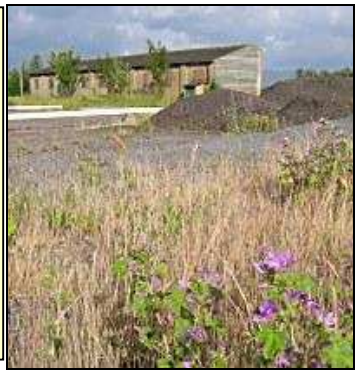
- *Nature reserves*
- *Parks*
- *Forests*
- *Heaths*
- *Tall grasslands*
- *Urban commons*
- *Railway banks*
- *Green verges and cycle paths*
- *Along rivers, streams and ponds*
- *Allotments*
- *Private gardens*
- *Royal estates*
- *Historical buildings*
- *Brownfield sites*
- *Post industrial sites*
- *Derelict, abandoned waste land*
- *Cemeteries*
- *City airports*
- *Roofs and rooftops*
- *High rise buildings*

Such a wide-ranging array of typical biodiversity 'hotspots' in cities presents both opportunities and threats. On the downside, it is that much harder to convince developers and urban planners that small patches of land, such as abandoned plots or railway embankments, are vital for biodiversity and should be preserved. Management also becomes much more complex when dealing with lots of small and highly diverse sites.

On a more positive note, the fact that urban areas are such dynamic and rapidly changing environments, means that there also are many opportunities for small planning 'gains' for biodiversity resulting from urban renewal and regeneration projects. These can play an important role in enhancing biodiversity in the city and improving people's quality of life in urban areas.

Brownfield sites:
patches of derelict land or wildlife havens?

In the UK a recent survey of brownfield sites found that they contained 12% of the nationally rare insects. This is more than in any other habitat, including ancient woodlands and chalk downland. High numbers of plants, especially Mediterranean species on the edge of their range, are also present, attracted to the warm dry microclimates and the open spaces which lack the tall vegetation that appears in later succession stages.



3. NATURA 2000 AND ITS PLACE IN MAJOR EUROPEAN CITIES

3.1 The EU Habitats and Birds Directives

The EU Habitats and Birds Directives form the cornerstones of Europe's legislation on nature conservation and biodiversity. Together, they are the main delivery mechanisms for meeting the target set by Europe's Heads of State and Governments at their Spring Summit in Gothenburg in 2001 to 'halt the loss of biodiversity by 2010'.

The two nature Directives set the standard for nature conservation across the European Union and enable all 27 Member States to work together within the same strong legislative framework, irrespective of administrative and political boundaries, in order to protect, maintain and restore Europe's most vulnerable species and habitat types across their natural range within the EU.

The Birds Directive was adopted in 1979 and aims to protect all wild birds and their most important habitats across the EU. The Directive also requires all Member States to classify Special Protection Areas (SPAs) for 194 particularly threatened species and all migratory birds, paying particular attention to wetlands of international importance.

N° species / habitat types requiring site protection	**Birds Directive**	**Habitats Directive**
Birds	194	
Other animals		ca 450
Plants		ca 500
Habitat types		ca 200

In 1992, the EU adopted the Habitats Directive. This introduces similar measures to the Birds Directive in order to protect Europe's wildlife but extends its coverage to a much wider range of rare, threatened or endemic species, including around 450 animals and 500 plants. Some 200 rare and characteristic habitat types are also, for the first time, targeted for conservation in their own right.

Together, these two European Directives represent the most ambitious, large-scale and coordinated initiative ever undertaken to conserve Europe's biodiversity in general, and its rare and threatened species and habitat types in particular.

3.2 The Natura 2000 Network

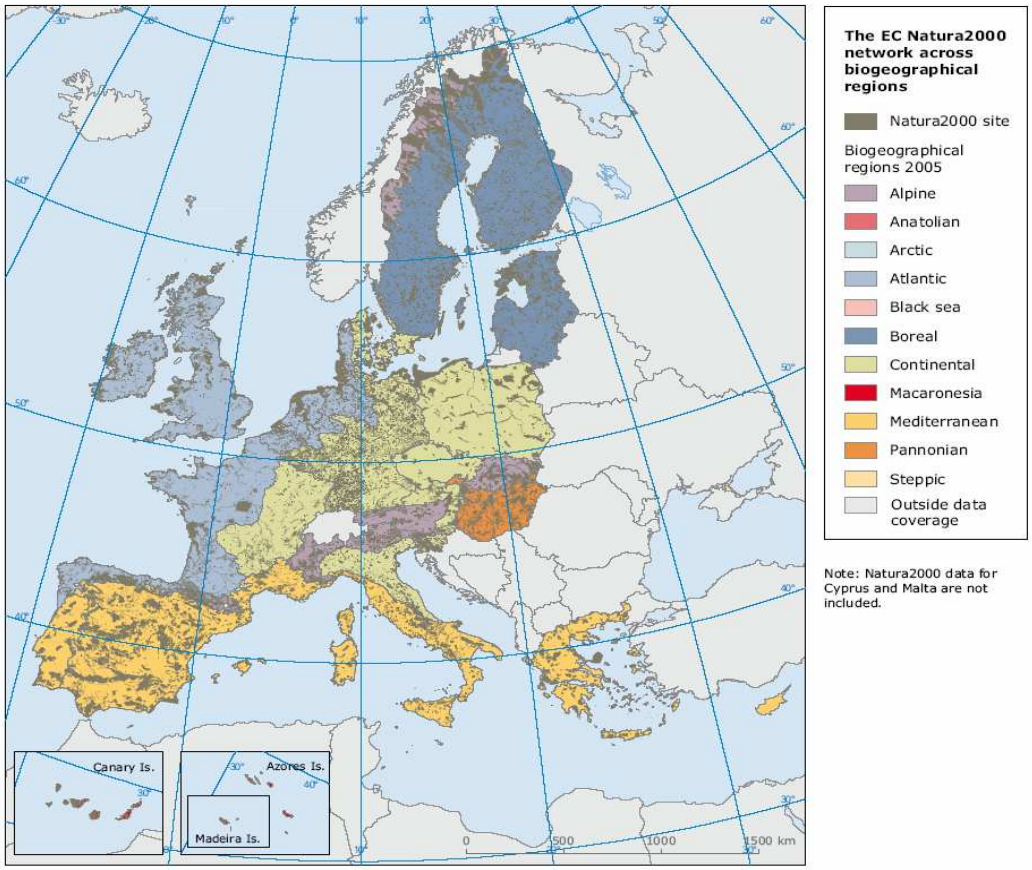
At the heart of both Nature Directives lies the creation of a Europe-wide ecological network of protected sites – called the Natura 2000 Network. This network is made up of areas designated under the Habitats Directive, known as Special Areas of Conservation (SACs), and sites classified as Special Protection Areas (SPAs) under the Birds Directive.

Every EU country has designated Natura 2000 sites to help conserve rare habitats and species present in their territory.

There are over 18,000 sites in the network so far. In total, they cover a substantial area: almost a fifth of Europe's land and water – equivalent to the size of Germany and Italy put together. The individual Natura 2000 sites range in size from less than 1 ha to over 5,000 km² depending on the species or habitats they aim to conserve, but the majority are around 100–1,000 ha.

Some Natura 2000 sites are located in remote areas but most form an integral part of our landscape. As a result, they also provide a safe haven for countless other animals, plants and wildlife features which, although more common, are an equally important part of our natural heritage.

Figure 2.9 The EU Natura2000 network of designated areas (both SPAs and SCIs) across biogeographic regions



Source: EEA-ETC/Biological Diversity, Natura2000 database, 2005.
Note: Natura2000 data for Cyprus and Malta are not included.

3.3 Identifying Natura 2000 in urban areas

Because the list of Natura 2000 sites is so new, there is little analysis of the type and distribution of different sites, in particular regarding sites in urban areas. For the purposes of this study, we have made a first attempt to gather data on the subject. This was possible thanks to the support of the European Commission's DG Environment who allowed us to have access to the Natura 2000 Database which is held, on the Commission's behalf, by the Spatial Applications Division (SADL) at the Katholieke Universiteit Leuven (K.U. Leuven).

The K.U. Leuven prepared for us a series of data sets on all Natura 2000 sites which are found in cities having 500,000 or more inhabitants and in all EU-25 capital cities. The threshold of 500,000 inhabitants was chosen:

a) to make this first data set manageable in the limited time available within the study and
b) to be of relevance and comparable to the Brussels Capital Region for whom this study is being undertaken (Brussels' population is around 1.2 million).

The data was however not straightforward to analyse. A number of assumptions were made during its collection phase that risked biasing the results. The main bias is in relation to the towns themselves. The information retrieved by K.U. Leuven on the cities came from the GISCO database. Whilst this contains information on population sizes within each European city, it only provides data on the location (point) of the cities and not their radius/coverage (polygons).

A mechanism had therefore to be devised to capture those Natura 2000 sites within a certain radius for each city. This was defined as follows:

$$R_{Buffer} = N_{Population} / 100\,000$$

Where:

R_{Buffer}: *Radius of the urban buffer [km]*
$N_{Population}$: *Population number of the city*

Once the radius was established, the city buffers were placed over a layer of Natura 2000 sites (fig 1) and both layers were subsequently intersected in order to select those Natura 2000 sites within the urban buffers (fig 2).

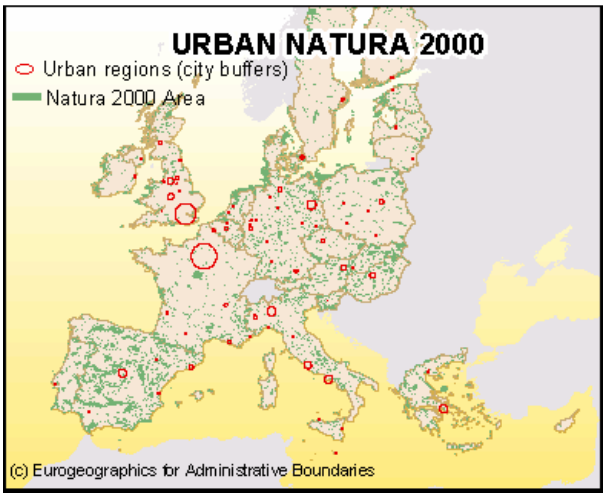


Fig 1. Overlay of urban buffers with Natura 2000 sites

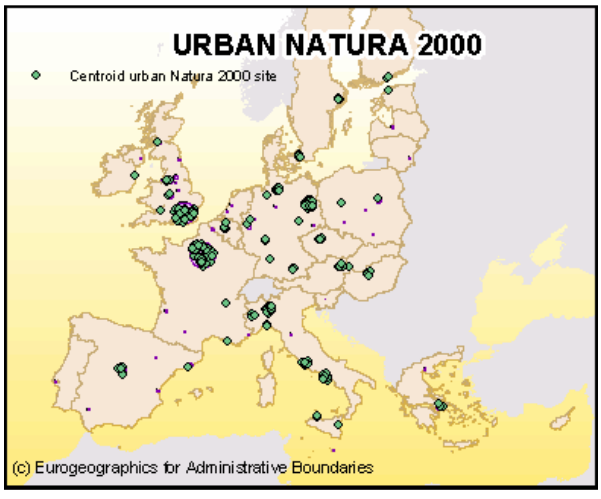


Fig 2. Intersect of urban buffers with Natura 2000 sites

The initial results identified over 300 Natura 2000 sites in 40 cities. However, on closer inspection it became clear that this was an over-estimation. Whilst the use of a radius calculation set an objective criterion for gathering information, it did not necessarily reflect the real size of the cities and the number of Natura 2000 sites that are in a truly urban environment, as opposed to 'close to a city'.

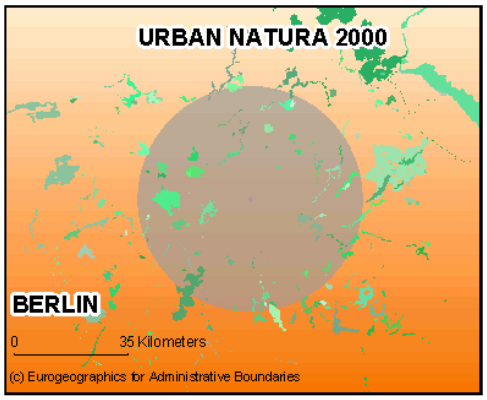


Fig 3. Urban buffer around Berlin (grey) and Natura 2000 sites (green)

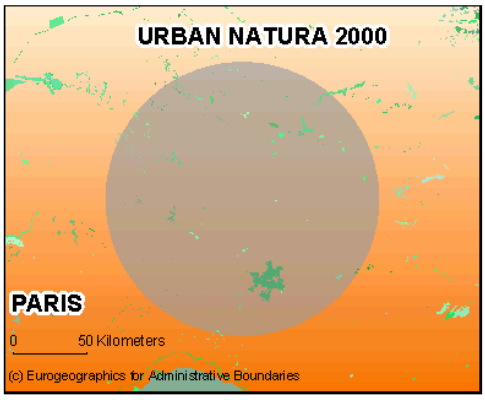


Fig 4. Urban buffer around Paris (grey) and Natura 2000 sites (green)

It was necessary therefore to 'ground truth' the data in order to identify, within these initial 300 sites, which ones were really within a city perimeter.

This was done by cross referencing each of the 300 Natura 2000 sites with the national Natura 2000 databases and GIS maps. Not all Member States, however, have the same level of detail on Natura 2000 available online. Sites in Italy, in particular, could not be verified to the same degree of accuracy.

Also, it has been difficult in certain cases to determine whether the site should be 'in' or 'out'. For instance, in the case of Ljubljana or Madrid, they each have a very large Natura 2000 area that starts almost exactly where the city ends. Like many nature areas abutting cities, the sites suffer from typical urban problems: high recreational pressures and increased demand on land for development. However, the sites themselves are more typical of a rural environment (eg farmland) and are not, strictly speaking, within an urban setting.

In such cases, we have taken the arbitrary decision of including those sites which start within the city perimeters (ie in built up areas) but end up in the surrounding countryside, whilst excluding those that only start where the city ends. Again, because of the lack of detailed information on these areas, it may be that some sites have been wrongly classified.

We therefore recommend that the findings presented in subsequent sections of this chapter are treated with a certain degree of caution. They are nevertheless sufficiently robust to be able to give us a broad overview of Natura 2000 in major European cities and to provide a basis for comparison with the Brussels Capital Region.

3.4 Presence of Natura 2000 areas in major European cities

The results of the survey show that Natura 2000 sites exist in 32 major cities in Europe. 16 are capital cities, ie over half of Europe's capitals harbour one or more Natura 2000 sites.

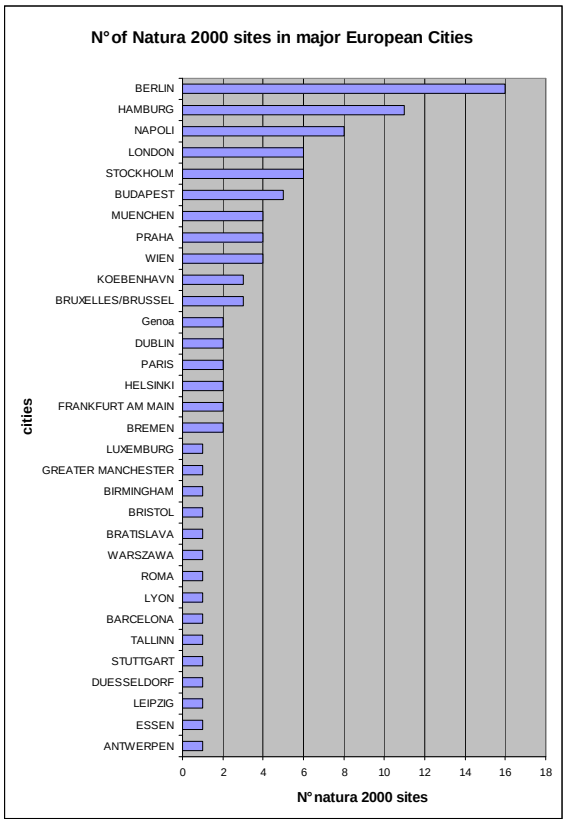
In total, 97 Natura 2000 sites have been identified within these 32 cities. Berlin has the most number of Natura 2000 sites (15 sites), but the majority of cities have just one or two sites.

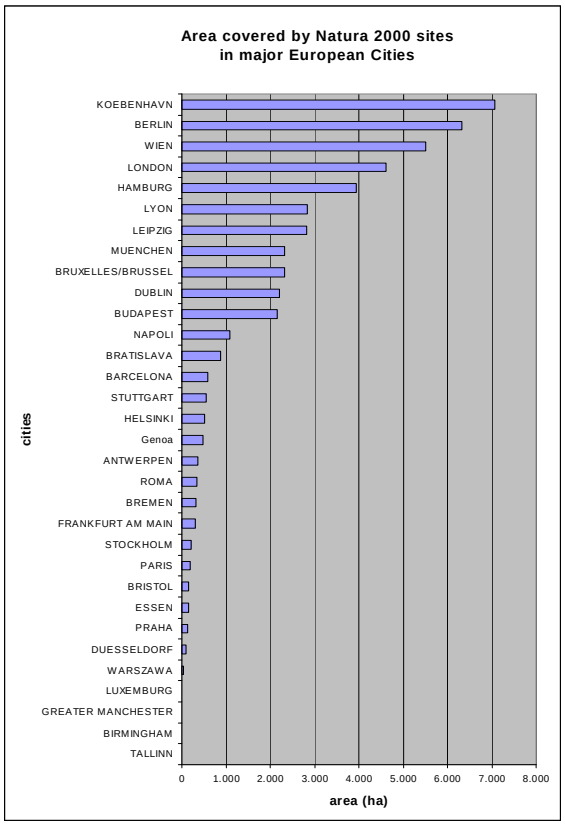
In terms of area, Copenhagen appears to have the largest surface area of Natura 2000 (7,000ha) although the majority of this is actually outside the city (in one site on the Vestamager peninsula).

Nevertheless, it is interesting to note that, like Brussels, several cities have large Natura 2000 sites (over 1,000ha) which are at least partly within city perimeters. The majority of sites are however around 150 ha or less. Some are no more than a couple of hectares.

Brussels figures in the top ten cities in terms of area covered by Natura 2000.

National urban planning policies and political pressures have no doubt influenced the extent to which Natura 2000 sites are present in major European cities. But historical, geographical and climatic factors also play an important role, particularly as regards the presence of certain rare and endangered species and habitat types listed in the two EU Directives.

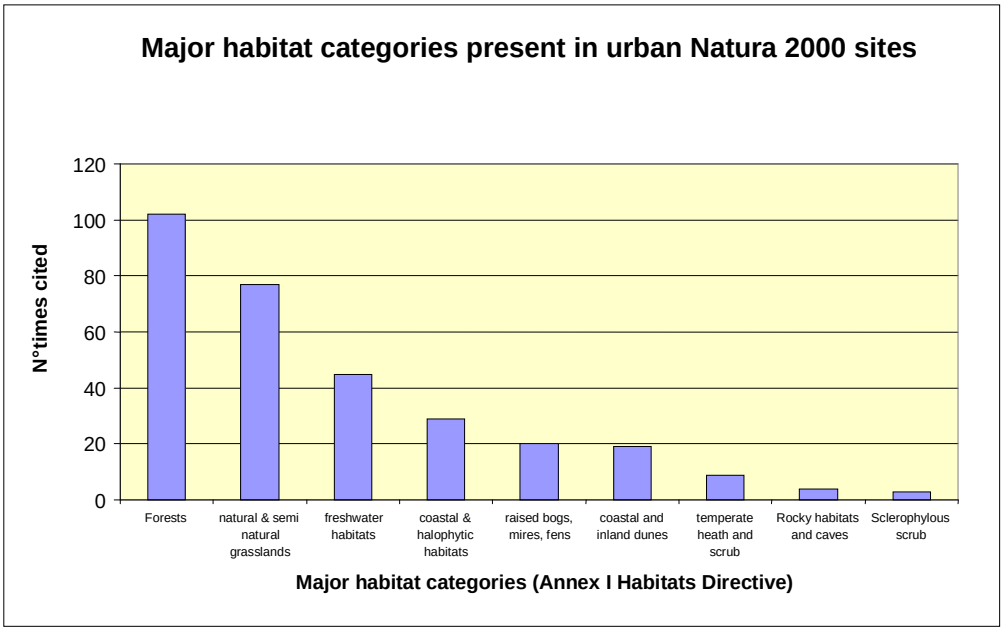


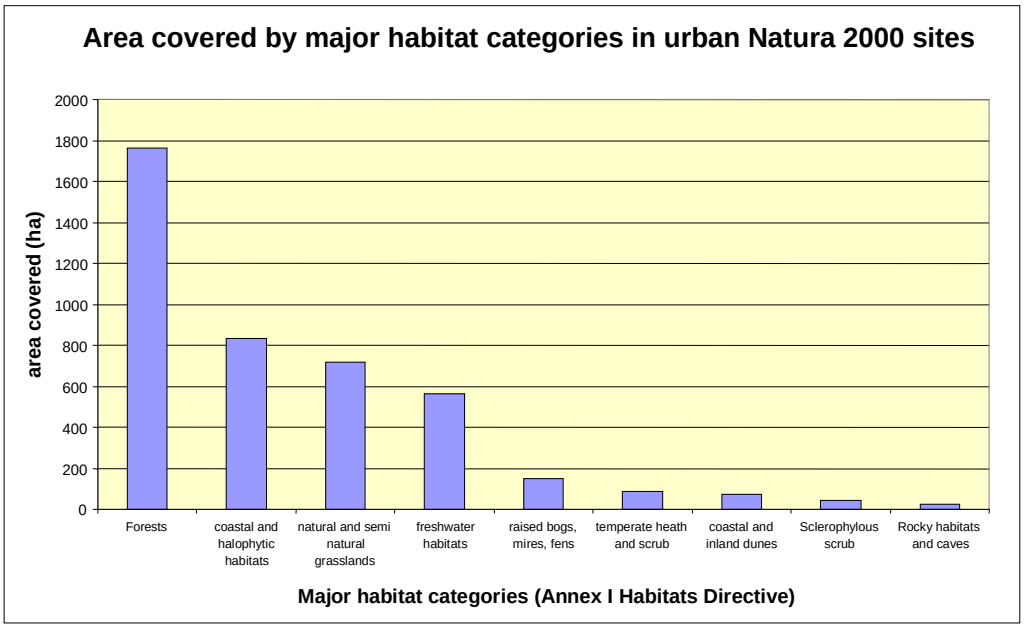


3.5 Main habitat types protected within urban Natura 2000 sites

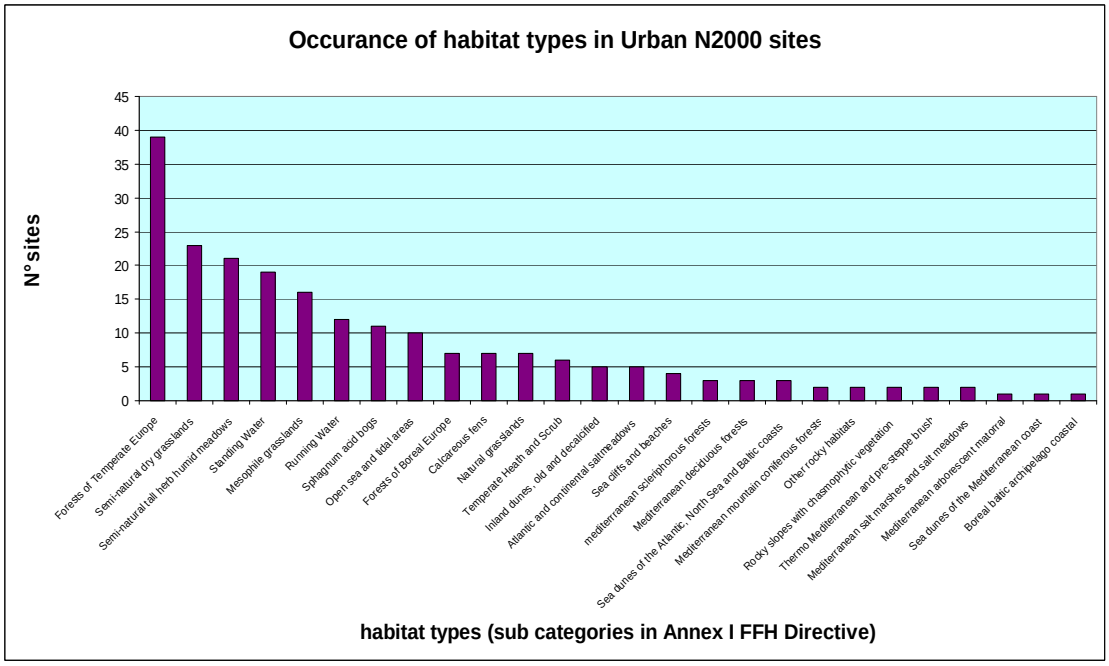
66 of the 97 Natura 2000 sites identified have been designated as SCIs because they harbour one or more of the habitat types listed in Annex I of the Habitats Directive[1]. The most frequent habitat categories are forests, and temperate forests in particular, followed by natural and semi- natural grasslands.

Freshwater habitats, such as rivers and lakes, are also frequently present. Coastal and halophytic habitats are listed in ten SCIs. These SCIs tend to be large and often extend well beyond the city boundaries into the sea, which may account for the high surface area in the second graph.

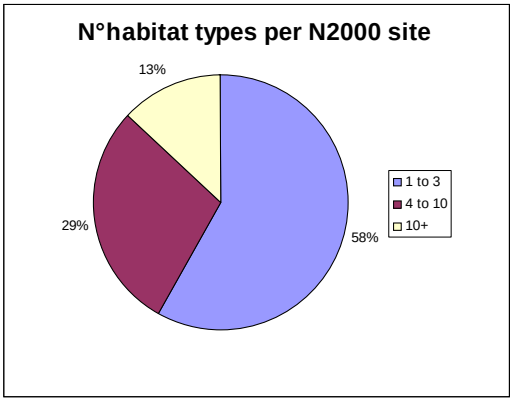




[1] *Annex I lists a total of around 200 rare and threatened habitat types, grouped into 9 major habitat categories.*



Collectively the 66 SCIs harbour over 40% of the habitat types listed in the Habitats Directive. This is high considering the small number of sites analysed and re-enforces the view that urban nature sites tend to have particularly diverse habitats, often in a mosaic pattern.



Although the majority of sites harbour only 1-3 different habitat types, over a quarter harbour 4-10 different habitats (like Brussels) and over 10% of the SCIs contain more than 10 different habitats.

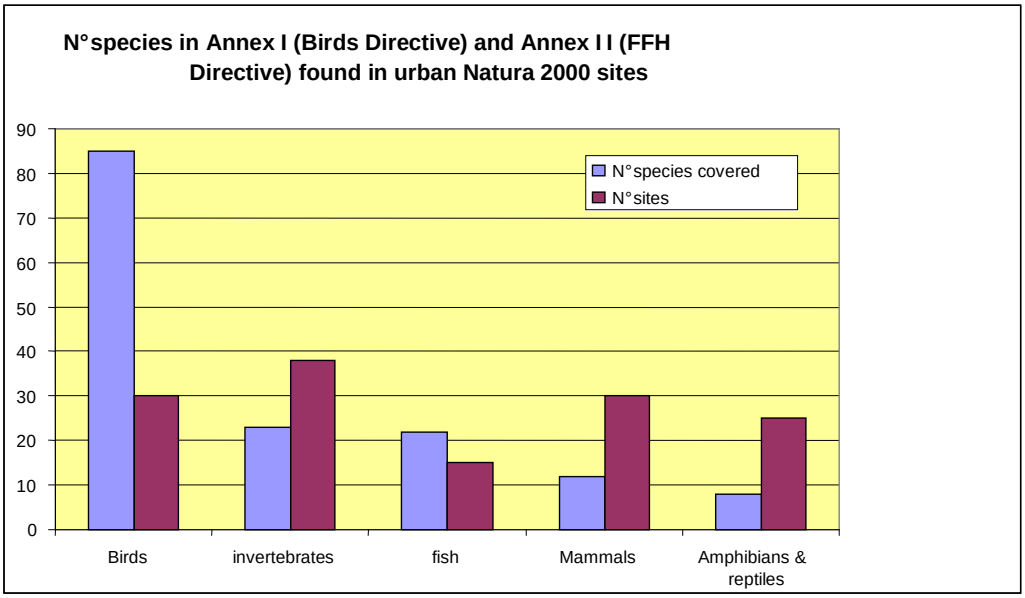
Looking in more detail at some cities, it is clear that geographical location is an important factor as regards the habitat types protected. Thus, cities like Copenhagen, Naples and Dublin which are located on the coast, unsurprisingly, contain rare coastal habitats such as estuaries and salt marshes. A number of cities that are traversed by rivers, such as Leipzig and Vienna, have protected their valuable riverine habitats.

Semi-natural grasslands are also a regular feature for many cities, especially in Germany, Austria and Hungary. This often reflects to close proximity of agricultural land around the cities, and the presence of 'urban farmers' and allotments.

Like Brussels, many cities have protected important areas of forests under Natura 2000 – eg Berlin, Budapest, Bratislava, London and Stockholm. Often the size of the SCIs is much greater than the coverage of the rare FFH habitats to ensure overall ecological coherence and to protect any rare species that may also be present.

3.6 Main species protected within urban Natura 2000 sites

In total 85 bird species listed in Annex I of the Birds Directive and 65 other species listed in Annex II of the Habitats Directive occur within the 97 urban Natura 2000 sites identified in this survey. Apart from the birds, invertebrates and fish are particularly well represented within these sites.



3.6.1 Birds

Approximately half of the Annex I birds are present in urban Natura 2000 sites. This is a relatively high figure considering the small number of sites analysed (30 SPAs).

The diversity of bird species within each SPA is also notable. Whilst the majority of sites host 1-10 species, over a third harbour 10-50 species per sites and 10% have over 50 Annex I bird species per site.

Common name	*Species name*	*N°sites*
red backed shrike	*Lanius collurio*	*19*
kingfisher	*Alcedo atthis*	*14*
honey buzzard	*Pernis apivorus*	*13*
marsh harrier	*Circus aeruginosus*	*11*
black woodpecker	*Dryocopus martius*	*10*
bittern	*Botaurus stellaris*	*9*
middle spotted woodpecker	*Dendrocopos medius*	*9*
corncrake	*Crex crex*	*8*
black tern	*Chlidonias niger*	*7*
perigrine falcon	*Falco peregrinus*	*7*

Ten most commonly cited birds from annex I

The most commonly cited bird species include red backed shrike, *Lanius collurio*, kingfisher, *Alcedo atthis*, bittern, *Botaurus stellaris*, several species of woodpecker (eg black woodpecker, *Dryocopus martius*) and birds of prey (eg the honey buzzard, *Pernis apivorus*, marsh harrier, *Circus aeruginosus,* or peregrine falcon, *Falco peregrinus)*.

3.6.2 Mammals

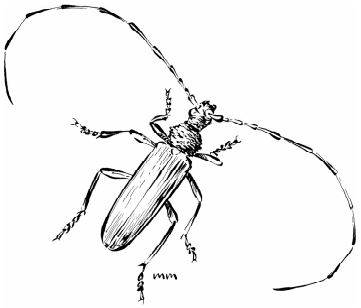
Twelve mammal species are present within the urban Natura 2000 sites studied. Eight of them are bat species. Bats are by far the most frequently cited. Nevertheless, some sites also harbour mammals associated with wetlands, like the otter and beaver. In eastern Europe a number of sites have been designed for small rodents, like the European souslik, *Spermophilus citellus* or the root vole, *Microtus oenonomus mehelyi.*

3.6.3 Amphibians

Amongst the amphibians, the newts, and the great crested newt, *Triturus cristatus* in particular, are the most frequently mentioned. Various species of frogs are also regularly cited, such as the fire bellied toad, *Bombina bombina* and the yellow bellied toad, *Bombina variegata*. In Southern Europe, several urban sites have been designated for the Mediterranean and European pond turtles, *Mauremys leprosa* and *Emys orbicularis*.

3.6.4 Invertebrates

Invertebrate species are particularly well represented in urban Natura 2000 sites. The most common are rare beetles associated with forest habitats such as the great Capricorn beetle *Cerambyx cerdo*, the stag beetle *Lucanus cervus* and the hermit beetle *Osmoderma eremita*.



Eight species of butterfly and moths are also cited, representing a quarter of all Lepidoptera listed in the Habitats Directive. These include flagship species like the large copper *Lycaena dispar*.

3.6.5 Fish

22 species of fish were identified within the urban Natura 2000 sites analysed. The most common are the weather loach *Misgurnus fossilis*, the bitterling *Rhodeus sericeus amarus* and a species of minnow *Aspius aspius.*

Mammals	Amphibians & reptiles	Invertebrates	Fish
Myotis myotis	*Triturus cristatus*	*Cerambyx cerdo*	*Misgurnus fossilis*
Barbastella barbastellus	*Bombina bombina*	*Lucanus cervus*	*Rhodeus sericeus amarus*
Myotis bechsteini	*Bombina variegata*	*Osmoderma eremita*	*Aspius aspius*
Rhinolophus hipposideros	*Triturus carnifex*	*Leucorrhinia pectoralis*	*Cottus gobio*
Rhinolophus ferrumequinum	*Elaphe quatuorlineata*	*Callimorpha quadripunctaria*	*Cobitis taenia*
Rhinolophus euryale	*Emys orbicularis*	*Coenagrion mercuriale*	*Petromyzon marinus*
Castor fiber	*Triturus dobrogicus*	*Lycaena dispar*	*Lampetra fluviatilis*
Lutra lutra	*Mauremys leprosa*	*Carabus hungaricus*	*Coregonus oxyrhynchus*
Myotis dasycneme	*Phyllodactylus europaeus*	*Vertigo moulinsiana*	*Alosa fallax*
Myotis emarginatus		*Dioszeghyana schmidtii*	*Salmo salar*

Table of the most frequently occurring species of Annex II Habitats Directive in urban Natura 2000 sites

4. KEY CHALLENGES FOR NATURE IN URBAN AREAS

4.1 An overview of key challenges

The conservation and management of nature and biodiversity in urban areas is often very different, and more complex, than in rural areas. There are more people, stronger development pressures, less space, a greater diversity and intensity of interests, and a generally poor understanding and perception of what is nature in a city and why it needs to be conserved.

The following lists some of the key challenges facing nature in urban areas:

1. *High development pressure*: the urban environment is a very dynamic and rapidly changing place. Open spaces are under constant pressure from development, both in inner cities and in suburban areas (leading to urban sprawl). The high demand for space coupled with strong economic incentives for development (constructing a new office building, apartments, shopping complex…) puts those areas that are not yet built upon (such as green areas) at a premium.

   This pressure is further exacerbated by the fact that nature areas are rarely able to demonstrate that they have their own intrinsic economic value to counter those of the developers. The benefits in terms of improving quality of life, providing environmental and educational services and in making cities more attractive places to live and work are rarely translated into monetary terms, even though it is clear that these all have important, if more indirect, economic benefits for the city in question.

2. *High population pressure*: the sheer number of people in urban areas and the limited amount of green space puts a massive strain on these limited resources. A high population density also leads to a greater diversity of interests, all competing for access to the same green spaces and nature areas. People's various, and sometimes conflicting, needs have to be dealt with equitably. Dog walkers, young parents with children, older or disabled people, sports enthusiasts, horse riders… all want to, and have a right to, use these public places for a variety of leisure activities and recreational pursuits.

   Green areas, including areas valuable for nature, must therefore play a multifunctional role. However, this often leads to compromises in terms of safeguarding the biodiversity of the sites. Overriding concerns for health and safety, crime reduction and amenity value mean that many green spaces are managed in a way that is not always sympathetic to biodiversity.

   Urban parks, for instance, tend to have tightly cropped lawns, well-tended flower beds (often planted with short-lived exotics), large areas without vegetation (eg paths and playgrounds) and almost no tall or dense vegetation, or 'natural debris' - such as broken branches and sticks, piles of leaves or fallen trees - where species can survive, away from the public. As a result, such highly managed, and largely artificial landscapes, rarely contain much biodiversity.

Even in nature reserves, any attempts to reduce human pressure through management and zoning must be very carefully handled if people are to be persuaded to restrict their activities for 'the sake of nature'.

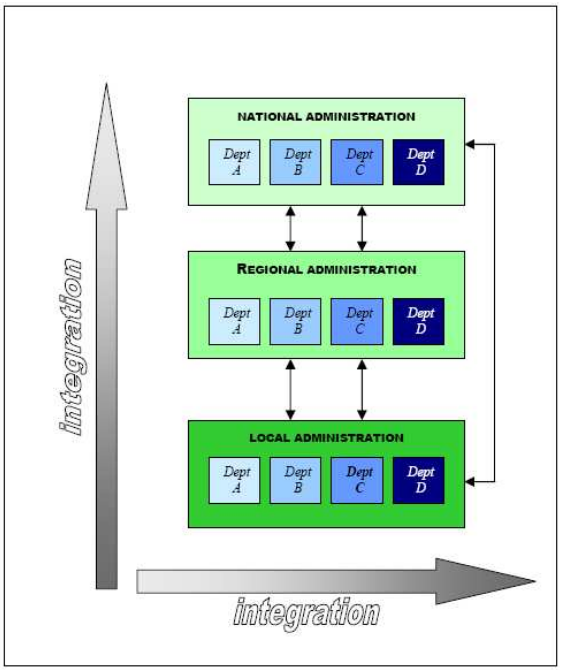
3. *A complex policy framework and lack of political support:* urban policy making is a necessarily complex process. The best performing cities have developed integrated approaches to urban management where daily decisions are guided by a strategic vision and clear objectives.

   In theory, biodiversity issues should also be considered in the wider policy context. However, in practice, the subject is all too often overlooked and left out of key strategy documents. Part of this may be down to the lack of perception and understanding of biodiversity values in cities. But equally important is the general lack of political will to push biodiversity up the political agenda. Already, it is difficult to get support for green spaces, so persuading policy makers to protect economically valuable land for the sake of people's quality of life and the environment is an even tougher challenge.

4. *Divided responsibilities and multiple administrations*: the complexity of urban management processes means that responsibilities are often split amongst a wide range of different government departments and public authorities. This split occurs not only at the horizontal level - between different government departments but also at the vertical level - between national, regional and local authorities, all of whom have responsibility for how a city is run.

   For issues like biodiversity to be taken into account there needs to be a concerted effort in communication, information sharing and cooperation amongst all these different public administrations which, in turn, calls for a certain degree of 'joined up' thinking and willingness to cooperate.

   In practice though, the low priority accorded to biodiversity means that the status and influence of the conservation services is greatly reduced in relation to other public service areas. This is often further exacerbated by the lack of clearly defined statutory powers and duties on nature and biodiversity.



   For instance, in some countries, nature conservation policy is the responsibility of a federal or national government, in others it is devolved to the regional level but rarely is it at the level of the local authorities within cities themselves (eg communes, boroughs, 'arrondissements' ….). Some cities, like London, have nevertheless made it a local priority in response to local political pressure, and this has delivered some interesting results not least because these authorities are closest to the issues on the ground and the local inhabitants concerned.

Clearly, all three levels have to be implicated in a coordinated way to deliver national policy targets and commitments but considering the multiplicity of administrations involved and the sometimes unclear statutory responsibilities this is much harder to apply in reality.

5. *Lack of resources and skills*: the low profile and status of administrations responsible for green spaces and biodiversity often also results in a lack of financial and human resources to manage these areas effectively. With only limited core funding, nature services need to look for alternative sources of funding, for instance, from partnerships, sponsorships, trusts, local taxes etc…. but few do as they do not have the time and staff to follow this up.

   There is also sometimes a lack of qualified staff and conservation expertise within urban administrations, at both the management and operational levels. Without this, administrations will find it much harder, if not impossible, to meet the challenges of protecting and managing nature areas and urban biodiversity hotspots effectively.

6. *Lack of stakeholder involvement:* because nature areas are so accessible, public involvement in nature conservation within a city is vital. On the one hand, it can help them feel a sense of responsibility and 'ownership' for these areas, which will, in turn, ensure that any restrictions imposed for conservation reasons are better accepted and respected. On the other, it can also encourage them to do their own bit for nature, for instance by gardening in an ecologically friendly way.

   Greater public involvement also ensures that the benefits nature can offer people in an urban environment are better realized. Education and discovery are two obvious examples, but there are numerous other socially orientated benefits worth exploring too. For instance, nature areas can stimulate greater interactions amongst urban communities through volunteer work or neighbourhood schemes, or they can create a more inclusive environment for the traditionally excluded sectors of society, (poor income families on housing estates, immigrants etc…).

   This social exclusion is often exacerbated by the lack of green space in which communities can relax, socialize and interact. Nature areas could create many new opportunities to help redress these balances.

   Other stakeholder groups that are often insufficiently implicated are urban architects and developers. Whilst economic issues are clearly their primary concern, there are often many opportunities for biodiversity to be integrated into development plans at the conceptual stage, without incurring significant additional expenses. However, for this to work the architects and developers themselves need to be aware of what they could do to benefit nature – for instance installing green roofs, designing green spaces with ecology in mind. This in turn calls for greater information dissemination and dialogue with this important stakeholder group.

   Finally, engaging different stakeholders is not only an integral part of good governance but it can also generate a greater interest and support for nature conservation issues in cities and, consequently, help push these issues higher up the political agenda.

7. *Poor perceptions and understanding*: many of the problems mentioned above are rooted in, or are compounded by, the lack of awareness and understanding of nature conservation concerns. There is generally a very poor perception (even amongst certain factions of the conservation movement) as to why nature in the city should be considered important and why valuable time, effort and money needs to be spent on this.

   People themselves also have a complex relationship with nature: whilst many are delighted to see wildlife in their surrounds (eg singing birds or colourful butterflies) some also tend to see nature areas as rather dangerous places. Part of this may be because open spaces are often subject to vandalism and are perceived to be a hot spot for criminal activities. But equally important is the fear of wildlife itself and of 'wild' places in general, especially amongst certain social groups and cultures that have had little interaction with, or appreciation for nature, beforehand.

8. *Specific conservation problems facing urban nature areas*: finally, conserving nature and wildlife in an urban environment throws up a number of management issues that are different to those in the surrounding countryside. Sites tend to be smaller, more fragmented and more isolated from each other, which makes it harder to maintain the necessary ecological processes and to secure some kind of overall ecological coherence and connectivity. The sites also have to deal with greater diversity and intensity of threats compared to many rural areas.

4.2 New opportunities for enhancing biodiversity and nature

The above summarises some of the challenges identified through the study. No doubt there will be others as not all cities are alike. Already from a purely nature management perspective we can see that cities in southern Europe face a number of different conservation problems from those in the North (eg, problems relating to droughts and limited water availability).

Cities in the new eastern Member States are likely to see a massive drive towards urban expansion and renewal over the coming years. This is a challenging prospect but it also creates new opportunities for developing a more sustainable city - economically, socially and environmentally.

Integrating biodiversity concerns at an early stage in the urban planning process will be much more effective and cost efficient than trying to bolt it on later when the process is already cast in stone and '*the train has left the station'*.

This raises another important point: nature in cities is not just about problems and constraints, it is also about opportunities. As said before, cities are very dynamic places and they are constantly evolving. New designs and developments, if handled carefully, could significantly enhance the biodiversity value of a city without incurring significant costs. This in turn contributes to making the city a more attractive place to live and work, and increases people's quality of life. What is more, nature areas also offer innovative solutions for tackling other social and economic problems facing major cities.

In the subsequent chapters, we explore numerous examples of how these different challenges and opportunities have been addressed in various cities across Europe. No one city has all the answers but collectively they provide a wealth of ideas and good practices.

4.3 Managing biodiversity and nature in cities

First, it may be useful to recap on the key conservation management issues that urban areas face, especially if they are protected as Natura 2000 sites. Managing and protecting nature and wildlife in an urban environment presents a number of management problems that are often very different from rural areas. Whilst the habitat types and species themselves require the same sort of management prescriptions, their conservation will be greatly influenced by the kind of pressures they are under.

Nature and wildlife in cities are usually subject to a greater diversity and intensity of threats. Most result from strong human pressure: eg development demands, recreational pressure, safety aspects … But, other factors also need to be addressed in an urban context, such as high levels of pollution (poor air quality, polluted water courses, light and noise pollution, dog fowling …), or increased competition from alien species (eg exotics introduced into private gardens …) and urban predators (domestic cats, foxes, crows, rats..).

Moreover, urban nature areas tend to be even smaller, more fragmented and more isolated from each other than in a rural context. This makes it even harder to maintain population sizes and to allow the functioning of ecological processes; it also makes it more difficult to maintain an overall ecological coherence across the sites and to ensure their interconnectivity.

4.4 Protecting Natura 2000 sites in urban areas

For cities that have Natura 2000 sites within their perimeters, the Habitats and Birds Directives provide a powerful legal framework for their protection. These legal provisions must be taken into account within the wider urban policy context. Not doing so could result in the city being taken to the European Court of Justice for non respect of European legislation. It is therefore worth looking at these legal provisions in greater detail. Not only are they legal requirements but they also illustrate some of the key issues that need to be addressed when protecting and managing nature areas in general.

- *Site protection measures*

The Article 6 of the Habitats Directive and Article 4 of the Birds Directive require Member States to ensure that, within Natura 2000 sites,:

- Damaging activities are avoided that could significantly disturb the species or deteriorate the habitats for which the site is designated.
- Positive conservation measures are taken, where necessary, to maintain and restore these habitats and species to a 'favourable conservation status' in their natural range

How this is achieved is up to the individual Member States to decide. Whatever method is used though, it must take account of the economic, social and cultural requirements and regional and local characteristics of the area concerned.

- *Management plans*

In this respect, Member States are encouraged to develop management plans for their Natura 2000 sites. Although not obligatory, such plans are a useful

management tool. They examine in detail the conservation needs and the socio-economic and cultural context of the area in question as well as any interactions with other land-uses. They also provide a forum for debate amongst all interest groups which in turn helps to build a consensus view on the long term management of the site. Finally, they establish a practical work programme of objectives, targets and management activities for the site over a period of time which in turn helps to raise their profile within the wider policy context.

- *Handling major development projects*

Article 6 of the Habitats Directive protects Natura 2000 sites from any potentially damaging development projects. All such development projects must follow a stepwise evaluation procedure before they can be approved. First, they must be assessed to determine whether the project is likely to have a significant effect on the site's nature values. If the effect is expected to be significant then alternative less damaging options must be fully explored and selected.

Only in exceptional cases can damaging projects still go ahead if they are considered *to be of overriding public interest and no viable alternatives exist.* In such cases, compensation measures need to be taken to ensure that the Natura 2000 Network is not compromised. Natura 2000 supports the principle of sustainable development. Its aim is not to stop economic activities altogether, but rather to set the parameters by which these can take place whilst safeguarding Europe's biodiversity.

The Strategic Environment Assessment (SEA) Directive and Natura 2000

The SEA Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment came into force in June 2001. Its purpose is the 'provide a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development'.

The Habitats Directive is specifically mentioned in the SEA Directive. It affords the Natura 2000 sites a strong level of protection from damaging developments as it provides an opportunity to correct any negative effects early on in the planning process at the level of programmes, and this before they are adopted. What is more, the SEA environmental assessment must be put out to consultation to environmental authorities and the general public so that they too can have a say on the programme's orientations. This could have important consequences for future urban development plans and programmes.

- *Corridors and stepping stones: ensuring coherence within wider countryside*

Outside Natura 2000 sites, and with a view to improving the ecological coherence of the Natura 2000 network, Member States are encouraged, under Article 10 of the Habitats Directive, to pay attention to the management of features of the landscape which are of major importance for wild fauna and flora. This includes features such as linear and continuous structures or 'stepping stones', which are essential for the migration, dispersal and genetic exchange of wild species.

- *Monitoring*

Finally, the Directive requires Member States to establish a robust system to monitor the favourable conservation status of the listed species and habitats that are present in their territory, and introduce, where necessary, corrective measures to secure their favourable conservation status (Article 11).

5. THE BRUSSELS CAPITAL REGION: KEY ISSUES AND PROBLEMS

5.1 The Brussels Capital Region: a historical overview

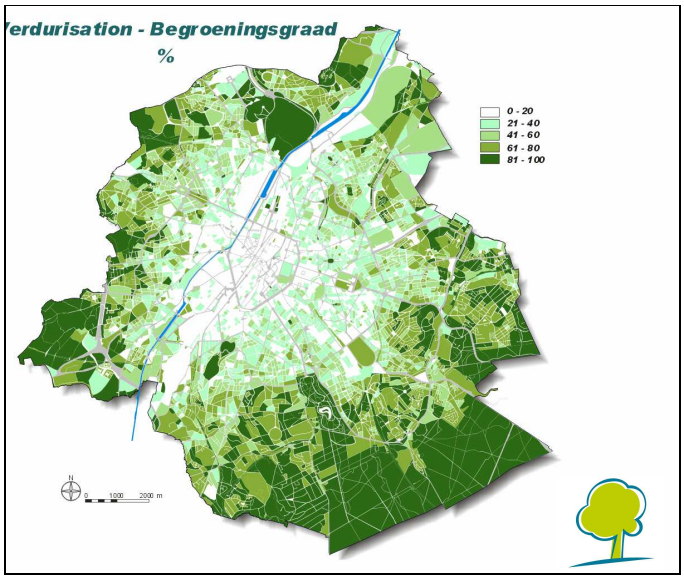
The Brussels-Capital Region is the smallest of the three regions in Belgium. Situated in the heart of country, Brussels has a population of around 1.2 million and extends over an area of 161.6 km².

Until the early 19th Century, most of the urban area was restricted to the municipality of Brussels. The surrounding Communes were still very rural and mostly made up of forest and agricultural land. Thereafter, the city began to expand in phases. The first wave came in the late 19th Century as a result of industrialization (steel, coal, the Congo…). The second phase occurred after the Second World War. By the time Belgium became a federalized state in the 1980s, the number of communes that had become urbanized round the Capital city had increased to 19 and collectively, they became part of the newly formed Brussels Capital Region.

Today, most of the open areas and green spaces are found in the outer suburbs and residential areas. By contrast, very little is left in the inner city. Nevertheless, compared to other capital cities across Europe, Brussels is still considered a relatively green city.

Brussels Capital Region can be roughly divided into four areas: the inner circle is mostly made up of high rises and commercial buildings with very few green areas. Immediately around this is an area dominated by 19th and early 20th century family houses with enclosed gardens and urban parks (Wovendaal, Josaphat, Duden,..). Nevertheless the proportion of office buildings is on the increase here too.

Further out, the areas have been more recently urbanized, especially along the main axes leading into town. These zones are generally made up of large apartment blocks and major office complexes, infrequently interspersed by larger family homes and open spaces. Finally, the outer rim is dominated, in the south, by the Sonian forest (ca 4300 ha) and, in the west, by a vast old industrial area stretching along the canal (Antwerp-Brussels-Charleroi).



Proportion of green, open spaces in Brussels Capital Region
Source : IBGE-BIM

5.2 Legal competence for nature conservation

Since June 1989, the Brussels Capital Region has been given an autonomous status, equivalent to that of the Flemish and Walloon Regions. This means that the Brussels Capital Region is solely competent for all legal issues pertaining to the environment, conservation of habitats and species, forest management, spatial planning, economic development, etc.

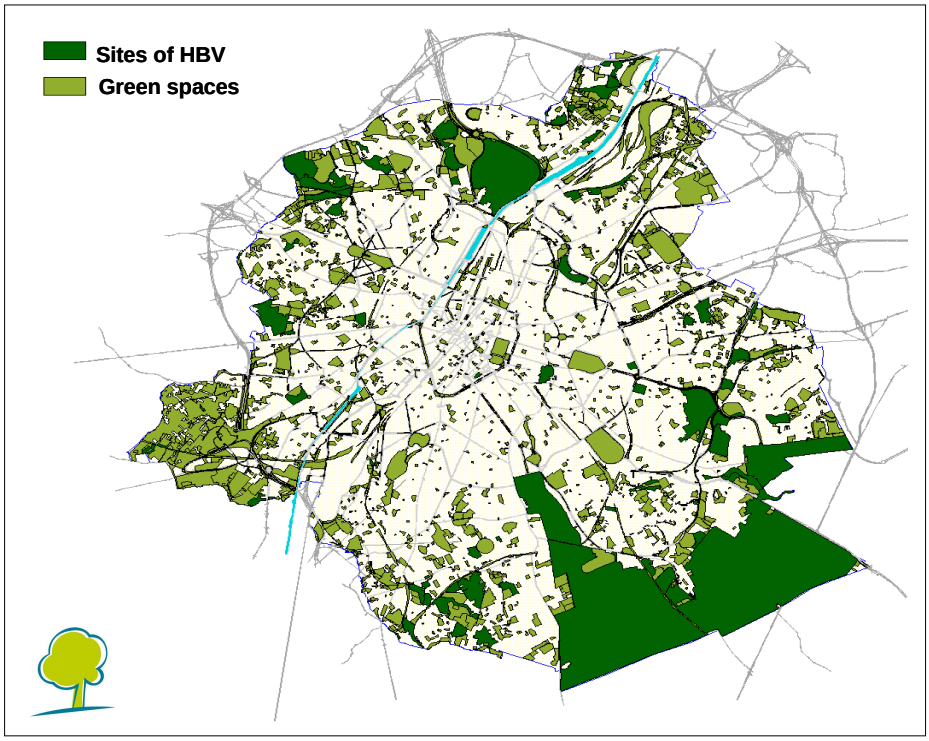
Environmental issues are handled by a dedicated Environment Minister for the Brussels Region, who is assisted by a public service Department - the Brussels Institute for management of the Environment and Energy of the Brussels Capital Region (IBGE/BIM) – whose job it is to implement the region's environmental policy. IBGE/BIM is also responsible for the implementation of the Habitats & Birds Directives and thus the Natura 2000 areas in the Brussels Capital Region.

The Environment Minister is further advised by Conseil Environnement + a Regional High Council on Nature Conservation, composed of representatives from the competent authority (IBGE/BIM), scientists and civil society (mostly nature NGOs).

5.3 Green areas and high biodiversity value areas in Brussels

Despite high levels of urbanization, Brussels is, on the whole, still a relatively green city. In total, 15% of the Brussels Capital Region has been identified as being of high biological value (this excludes private gardens).

The Brussels Capital Region has 13 natural reserves and 2 forest reserves. The status of natural reserve allows for a better protection and management.



Areas of high biological value in Brussels Region (dark green)
Source : IBGE/BIM

The sites of high biological value are found in the following green areas within the city:

- Public parks: some are classic urban parks with highly artificial structures (eg Warande Park in the center), others are mostly landscape parks, often with forests remnants (eg Woluwe Park);
- Public forests, such as the large Forest of Soignes, Laarbeek, Poelbos, Dielegembos,
- Many private gardens
- Former railroad emplacements,
- Wastelands (brown fields) and derelict grasslands
- Playgrounds, cemeteries, woody lanes
- Some agricultural areas

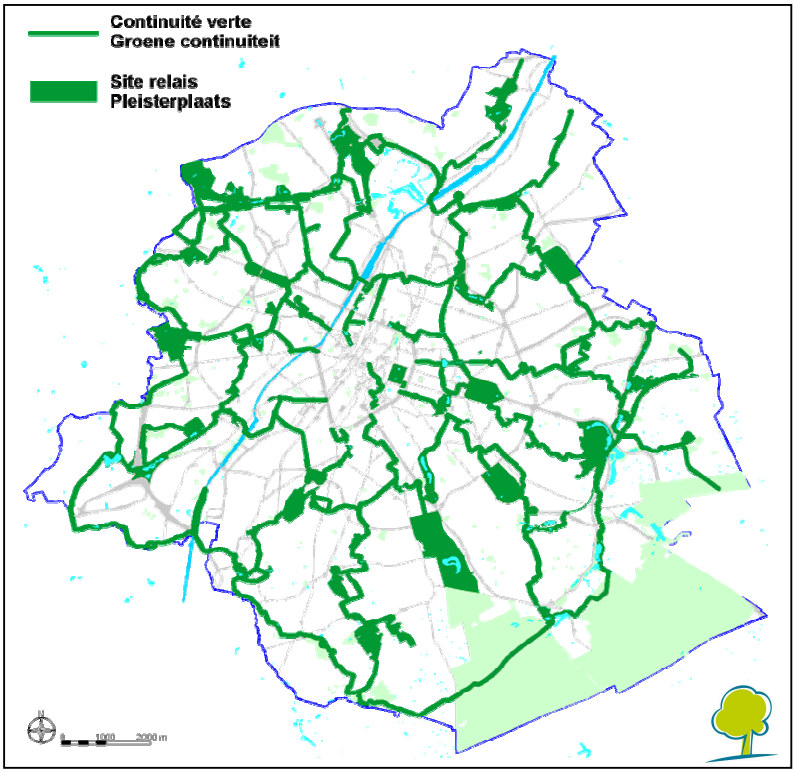
5.4 A green and blue network

In order to ensure a more even distribution of green nature areas and to strengthen the ecological corridors between these areas, a Regional Development Plan has been elaborated which foresees the gradual development of a green and blue ecological network around Brussels.

The Regional Development Plan (RDP) outlines the ideal scenario for Brussels in terms of green and blue areas, and, as such, has a strong influence on the proposed development of the Brussels Capital Region, focusing on the quality of the environment, its sustainable development, solidarity and the city's plural identity.

The RDP was approved in 2003, but it is not legally binding which is an important weak point. Only the Land-Use Plan or Plan Régional d'Affectation du SOL (PRAS) is legally binding but this does not reflect fully the ambitions of the RDP. Nevertheless, the RDP does offer a clear orientation as regards the future development of the region which can be considered by competent authorities when planning new development initiatives.

The Green network connects the green areas as a ring around the urban area, the blue network aims to improve the ecological conditions of the rivers and associated wetlands (ponds, marshland, …).

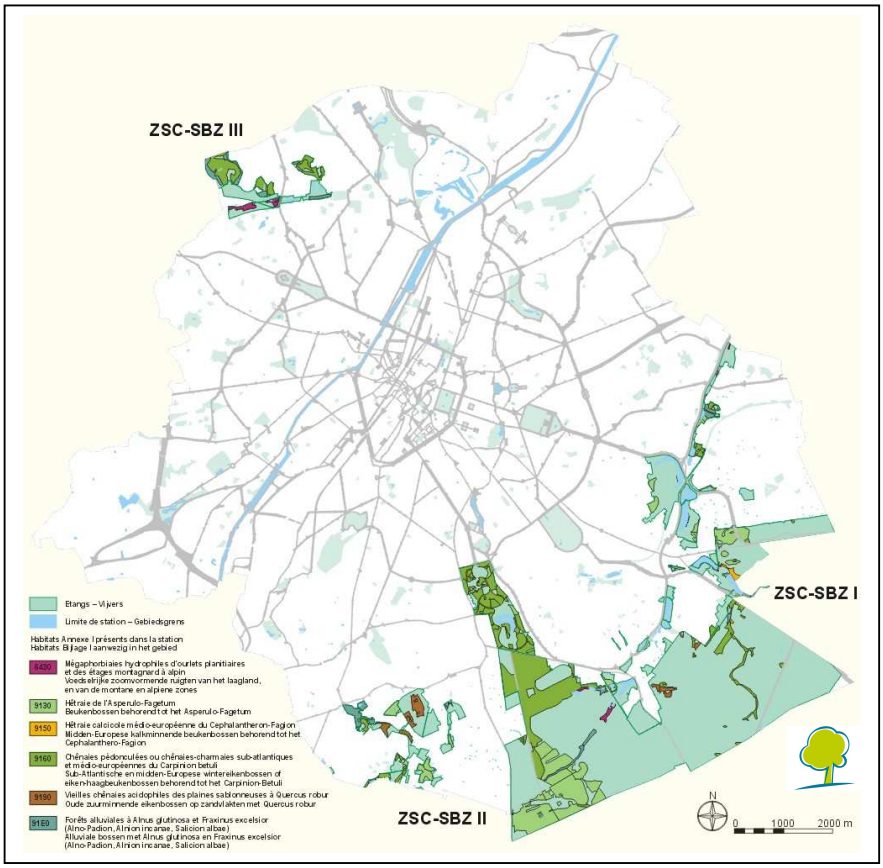


Green network proposed in the Regional Development Plan (2003)
Source : IBGE/BIM

5.5 Natura 2000 in Brussels

The Regional government of the Brussels Capital Region has designated three Special Areas of Conservation under the Habitats Directive, which together cover 2300 ha or 14% of the Region:

- The Sonian Forest with borders and neighbouring woods and the Woluwe Valley (2064 ha)
- Open and wooded areas in the south of the Brussels Region (140 ha)
- Wooded zones and wetlands in Molenbeek Valley in the north west of the Region (117 ha)



Map: Natura 2000 sites in Brussels Capital Region – Source : IBGE/BIM

These sites have been designated for 9 Annex I habitat types and 8 Annex II species:

- five bat species: the barbastelle bat (*Barbastella barbastellus*), Bechstein's bat (*Myotis bechsteini*), the pond bat (*M. dasycneme*), Geoffroy's bat (*M. emarginatus*) and the greater mouse-eared bat (*M. myotis*).
- the stag beetle (*Lucanus cervus*);
- the bitterling (*Rhodeus sericeus amarus*);
- and the Narrow-mouthed whorl snail (*Vertigo angustior*)

The three Special Areas of Conservation (SACs) consist of a number of core areas (37 in total), these are areas with important vegetations of Annex I habitat types. Within each of these SACs, there are also connecting areas (11 in total), such as valley, rivulets, important lanes, ….) that are important to link up core areas. Inventories and preliminary red lists have been prepared for most plant groups, amphibians, reptiles, birds and mammals.

Myotis bechsteinii

Rhodeus sericeus amarus

5.6 Management

The Brussels Institute for the Management of the Environment and Energy of the Brussels Capital Region (IBGE/BIM) is the authority competent for nature conservation issues within the Brussels Capital Region. It has a dedicated division for nature and forests within the Direction responsible for green spaces. The Institute manages most of the green areas of the region in a differentiated way and aims to combine ecological considerations with socio-economic ones (recreation, education…).

Detailed management plans have been developed for the largest forest complexes and several nature reserves (e.g. Zoniënwoud / Forest of Soignes, Laarbeek Forest, Rouge-Cloître / Rood Klooster). These plans include all the standard information concerning the past history of the site, the abiotic environment (climate, geology, topography, hydrology), the vegetation (forest types, non-forest biotopes), and flora and fauna present as well as its socio-economic uses and pressures. These concern in particular recreation (hikers, joggers, mountain bikers, equestrians, dog walkers, sport clubs, youth clubs, …) as well as traffic, air pollution, waste and fire.

The plans set out overall management objectives and a specific programme of activities for the management of the forest areas (felling regimes, what to do with dead wood, trunks, open areas in forest, artificial or natural regeneration, special trees, …) as well as prescriptions for land-users (recreation, dog owners, anglers, amateur botanists, …) or other associated problems (car parks, thefts, conflicts,…).

Whilst most areas are public, some areas are privately owned or are owned by federal institutions (railroad sites e.g.). Some of these are managed by NGO-volunteers, for example ‘Het Moerasken’ in Evere or ‘Vogelenzang’ (Anderlecht).

5.7 The Brussels Capital Region and Biodiversity : a SWOT analysis

The following SWOT analysis summarises the key Strengths, Weaknesses, Opportunities and Threats of Brussels Capital Region as regards the protection and management of nature and biodiversity in the city.

The SWOT analysis is a useful tool for summarizing the key issues and for developing appropriate management solutions in response to these.

STRENGTHS	***WEAKNESSES***
- A relatively high proportion of green space in the city already - 14% protected under Natura 2000 – ie under strong legal protection - Competence for nature is at regional level: Brussels Capital Region is a small region (16,000ha) – ie 'overseeable' and mainly urban orientated - Good baseline of knowledge and understanding of biodiversity values in the city - Many years of public work dedicated to conserving nature in the city already - A separate government department dedicated to nature within the public administration (dept is under the direction responsible for green spaces) - A highly skilled, qualified and committed staff in close contact with rangers and ground staff - A 'green' minister responsible for environment in Brussels Caoutal Region - A strategic plan for green and blue networks - Active nature NGOs & good scientific expertise outside government departments.	- No overall strategy document or policy 'vision' for nature and biodiversity in Brussels Capital Region - Biodiversity issues not well integrated into other urban policy issues (eg transport, urban planning, green space management at level of communes) - Poor perception and understanding of nature and biodiversity amongst many sectors: public and private - Scattered information sources on nature in urban areas and limited dissemination of information on nature outside protected areas - Limited coordinated involvement of public, stakeholders and NGOs - No management plans for Natura 2000 yet - Poor involvement of communes in nature and biodiversity policy and activities - Few opportunities for the general public to learn about nature in the city - Limited financial and human resources - Biodiversity and nature insufficiently represented in urban planning laws - Lack of guidelines, legal and administrative tools or financial incentives to better promote and integrate biodiversity in urban policy - Several natural areas are small, larger areas are often highly fragmented

OPPORTUNITIES	***THREATS***
- Possibilities within new urban development schemes for planning 'gains' in favour of biodiversity - Nature can play economically important ecosystems functions – eg reducing air pollution, heat island effects, ventilation corridors, storm water absorption - High proportion of nature means increased opportunities for health, recreation, social interaction - contributes significantly to a higher quality of life - Diversity of nature offers good possibilities for education and discovery and for raising awareness and support for nature conservation in general - Protection of rare species and habitats contributes to wider EU biodiversity objectives - Scale of nature resources and small size of Brussels Capital Region offers good prospects for integrated policies and 'joined up thinking' - Good potential for public-private partnerships and collaboration with other regional governments - Strong media interest in nature issues (bats are good flagship species and Forest de Soignes is considered a national treasure) - EU legislation important driver for nature conservation in the city	- High development pressures, especially on non protected areas and buffer zones - Very high recreational pressure on green areas and protected areas (forest de Soignes) - Lots of stakeholders/m² all with different interests and aspirations for green areas - High levels of disturbance within nature valuable sites with many negative side -effects - Air, water, soil and light pollution affecting nature areas and biodiversity - Significant pressure from alien species and urban predators - Complex management because of small size of nature areas and their strong isolation from each other - Vandalism and higher risk of crime in nature areas - General lack of awareness and understanding of nature in the city – something for rural areas only

6. GOOD PRACTICES IN STRATEGIC PLANNING AND POLICY INTEGRATION

6.1 Introduction

The following chapters 6 to 10 present a series of good practices, identified through this study, on initiatives to conserve nature and promote biodiversity in different cities across Europe. For convenience, these have been grouped into 4 main chapter headings to help distinguish between the different issues, for instance policy integration or practical management issues, stakeholder involvement or awareness raising.

The examples were actually rather difficult to find, and there is a notable lack of good practices from southern European countries. Overall, it appears that there is still relatively little being done to systematically promote nature and biodiversity in many cities across Europe. Whilst this is interesting in itself we have not wanted to 'point the finger' and have, instead, used these examples to draw up the list of key challenges facing nature in urban areas in chapter 4.

No city was the perfect model. But some cities were more 'enlightened' than others and so are mentioned more than once in the subsequent sections.

On the whole Brussels came out as one of the better 'all rounders' for nature and biodiversity conservation. This does not mean however that there is no room for improvement. The final chapter makes some recommendations on how this could be done based on experiences elsewhere and the results of the SWOT analysis in chapter 5.

This chapter focuses specifically on examples of how cities have gone about integrating nature and biodiversity into wider urban development policies and planning legislation.

Case 1: Malmö - integrating nature into a green vision

Malmö is often referred to as the city of parks but it actually has far less green space than most other Swedish cities. In response to public demand for more green space and a strong political interest, the authority developed a Green Plan for the city in 2003. Whilst not legally binding, this document sets out an agreed 'green' vision for the future spatial planning of this rapidly expanding city.

The Malmö Green Plan is based on a detailed habitat audit of the town's green areas and ecological values. The results of the audit have been mapped out on a city plan and targets were set to ensure that everyone had access to sufficient green space (eg > 35 ha of natural areas max 3 km from home). A deficiency analysis was then conducted to identify which parts of the city that lacked certain types of green areas.

Based on these detailed inventories, the Green Plan presents two main development proposals. One proposal describes the size, positioning and links between the green areas (a green network). The other describes the green areas' habitat content and structure.

More specifically, the Green Plan divides the city in 18 characteristic areas. For each area it recommends an increase in certain desired habitats in order to help reach the overall green targets and desired habitat structure set out in the Green Plan.

Thus, for characteristic areas along the coast and surrounding countryside, the plan recommends an emphasis on open habitats such as meadow, pasture and wetlands. For urban fringe areas it promotes semi-open habitats and for the inner city it recommends more closed habitats with larger trees and shrubs. Finally, in industrial areas it advocates the protection of valuable ruderal land. The overall aim is to ensure that there is a wide range of different habitat types across the entire city to maximize the overall level of biodiversity present.

The Plan also aims to minimise barriers and create a more homogenous structure within each characteristic area, thereby improving the potential for plants and animals to establish, spread and maintain viable populations.

Overall, the Green Plan proposes that an additional 19% of the city's land is secured and converted to green space. This would effectively double current levels. The Green Plan's proposal is based both on current and future needs. It recognizes that when the city expands it is important to make early decisions on earmarking land for the development of its green infrastructure so that the city is able to meet future green space demand.

The Plan is not legally binding but serves as a powerful guide in decision making. As such, it is able to influence and support physical planning and provides guidance in decisions regarding general maintenance and nature conservation issues, as well as in urban development and renewal. The proposals are longterm and can be implemented successively by different partners, whether from the public or private sector. The local authority, for its part, has powers to acquire land, designate nature reserves and negotiate agreements with landowners in order to ensure that land is secured for green uses and is given long term protection from development.

In conclusion, the simple inclusion of green space and biodiversity issues in powerful statutory spatial planning documents – even when not legally binding has not only helped raise the profile of these issues but also secured a consistent level of funding from the municipal budget. Nevertheless, its implementation does rely on the cooperation of key stakeholders and all authorities. Communicating effectively with stakeholders is therefore also an important part of the work.

Case 2: London - A Biodiversity Strategy for the city

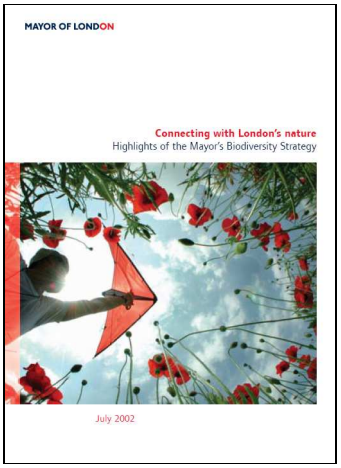
Detailed inventories on nature values

London has been working for 20 years to protect and enhance biodiversity within the city. By the early 1990s it had carried out an in-depth inventory of nature values across the city and developed a series of handbooks containing guidance and recommended policies on nature conservation for all London authorities, including the 32 London boroughs.

By 1995, this guidance system, which had been endorsed by the London Planning Advisory Committee, became the basis for nature conservation planning in most London boroughs, and had been successfully tested in a number of public inquiries. Although not legally binding, the guidance documents had a strong influence on the outcome of several planning enquiries and set precedents in favour of nature conservation. In many cases, it was the value of these places to local people that won the day, rather then the scientific arguments about rare habitats and species.

A Biodiversity Strategy for London

In 2000, a new Greater London Authority (GLA), headed by an elected Mayor, was established. It was decided, at this occasion, to go one step further and adopt a legally binding Biodiversity Strategy for the city, which would be on an equal footing with eight other strategies dealing with economic development, spatial planning and transport etc…. The Biodiversity Strategy was adopted in 2002. Entitled 'connecting with London's nature', it proposes an ambitious and far reaching policy for the Greater London area (1580km²) in order to protect existing values and further enhance biodiversity across the city. It sets out 14 main policies, with 72 proposals for their implementation, and identifies the main partners in each sphere of activity.



The new London government and associated bodies dealing with transport and economic development have a crucial role to play in implementing the strategy. So do the London Boroughs who have a statutory duty to develop their own Unitary Development Plans at the level of each Borough, and other public bodies such as English Nature (a statutory body in charge of nature in England), NGOs and private stakeholders. These different stakeholders have since formed a large consortium – the London Biodiversity Partnership – to help coordinate the implementation of the Strategy and to develop a more detailed Biodiversity action plan, designed to complement the overall strategy.

A system of protected sites

Going back to the Biodiversity Strategy itself, this protects around 1500 nature sites at three different levels:

⇒ The first level is made up of 136 sites of Metropolitan Importance for Nature Conservation and includes nationally and internationally protected sites (including Natura 2000 sites) as well as other sites that have been identified as being of major importance for the city and which together represent the full range of habitats and rare species present in London. New sites are being added all the time as more detailed surveys in different boroughs identify further areas that qualify for this highest level of protection. These Metropolitan sites have all now full statutory protection.

⇒ The second level is made up of a large number of sites which are of significance to individual London boroughs, in the same way as the Metropolitan sites are of importance to the whole of London. It includes the 75 Local Nature Reserves designated by the London Boroughs themselves. Because the individual boroughs are also local planning authorities, identifying sites of importance at this level is crucial as it requires the sites to be protected through the Local Development Plans of each borough.

⇒ The third category is for Sites of Local Importance, ie those that are important at the neighbourhood level and are valued by local residents, schools or community groups… these sites are also now protected under statutory planning laws.

The use of these three different levels is an attempt not only to protect the best sites in London but also to provide each area of London with accessible wildlife sites so that people are able to have access to nature within close proximity to them.

Measures to enhance biodiversity in London

The Biodiversity Strategy does not however stop at protecting existing sites of ecological value. It also encourages the enhancement and creation of new green space for biodiversity, particularly in those areas which have been identified as being deficient in wildlife sites, (ie where such sites are more than 1km away). Further, it seeks to ensure that opportunities are taken to 'green' the built environment within development proposals and to use open spaces in ecologically sensitive ways.

Finally, the general public is fully considered in the strategy which calls for greater efforts to promote public access and appreciation of nature, and to create opportunities for regular and direct contact with the natural world, through inter alia, education, training and participation for all ages and across all sectors of society..

Regular reviews and progress assessments

To ensure that the Biodiversity Strategy is meeting its objectives, a number of targets have been set against which its success will be measured. The first target is that there is to be no net loss of sites, the second is that the areas with a deficiency in assessable wildlife sites are reduced. The mayor produces an annual progress report on the implementation of the Strategy which is made public.

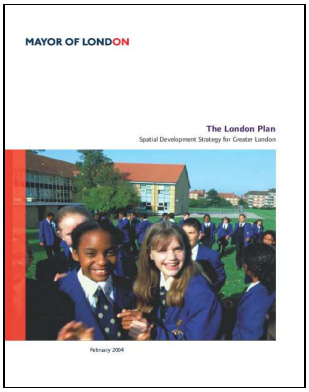
In conclusion, it is clear that the success of London's biodiversity strategy is dependent on a whole range of different factors: detailed ecological knowledge of the city, a systematic approach through the setting of clear overall objectives and methods, and a strong link to strategic planning. But equally important is the degree of public and political support, and the effectiveness of consultation and partnerships.

According to Professor Goode who was Head of Environment in the Greater London Authority until his retirement in 2004 and a main driving force behind these efforts:

'*Throughout the process there was a need to ensure effective integration of biodiversity objectives with the planning process. This required considerable consultation with professional planners on the development of ecological policies…Success was dependent on ensuring its acceptance as a normal part of statutory planning process. Compared to the early 1980s when the words ecology and nature conservation did not figure in London's strategic planning, there was a sea change in attitude of London boroughs and the level of professionalism has increased enormously…Further, effective consultation with a wide range of stakeholders at each stage in the process of developing the biodiversity strategy has helped to ensure that it has a broadly based sense of ownership"*

Case 2 continued: integrating biodiversity into the Spatial Development Strategy for Greater London

Whilst the Biodiversity Strategy is already a powerful policy instrument in its own right, biodiversity conservation can only really be completely effective if it is also integrated into the overall land use plan. This has been done in the case of London. The Greater London Authority is responsible for producing a Spatial Development Strategy for the future development of London. The so-called London Plan acts as the spatial framework integrating all other statutory plans, including the Biodiversity Strategy. As such the London Plan lays down clear statutory planning rules regarding biodiversity. The following is an extract of the London Plan.



Policy 3D.12 Biodiversity and nature conservation

The Mayor will work with partners to ensure a proactive approach to the protection, promotion and management of biodiversity in support of the Mayor's Biodiversity Strategy.

The planning of new development and regeneration should have regard to nature conservation and biodiversity, and opportunities should be taken to achieve positive gains for conservation through the form and design of development. Where appropriate, measures may include creating, enhancing and managing wildlife habitat and natural landscape. Priority for habitat creation should be given to sites which assist in achieving the targets in Biodiversity Action Plans (BAPs) and sites within or near to areas deficient in accessible wildlife sites.

Boroughs, in reviewing Unitary Development Plans (UDPs), and in considering proposals for development, should accord the highest protection to internationally designated and proposed sites (SACs, SPAs and Ramsar sites), and to nationally designated sites (SSSIs) in accordance with government guidance and the Habitat Regulations, 1994.

The Mayor will identify Sites of Metropolitan Importance for Nature Conservation (SMIs), which, in addition to internationally and nationally designated sites, includes land of strategic importance for nature conservation and biodiversity across London. Boroughs should give strong protection to these sites in their UDPs. Boroughs should use the procedures adopted by the Mayor in his Biodiversity Strategy to identify sites of Borough or Local Importance for nature conservation and should accord them a level of protection commensurate with their borough or local significance.

The Mayor will, and boroughs should, resist development that would have a significant adverse impact on the population or conservation status of protected species or priority species identified in the London Biodiversity Action Plan and borough BAPs. Appropriate policies for their protection and enhancement and to achieve the targets set out in BAPs, should be included in UDPs.

Where development is proposed which would affect a site of importance for nature conservation, the approach should be to seek to avoid adverse impact on the nature conservation value of the site, and if that is not possible, to minimise such impact and seek mitigation of any residual impacts. Where, exceptionally, development is to be permitted because the reasons for it are judged to outweigh significant harm to nature conservation, appropriate compensation should be sought.

Case 3: Berlin – integrating nature and ecological concepts into policy

The city of Berlin, which has the same level of autonomy as other Länder in Germany, is a good example of how urban planning and nature conservation can be integrated. This integration actually has strong historical roots: as far back as the 1870s Gustav Meyer had developed the concept of people parks (Volksparks), and by 1910 a first comprehensive strategic urban plan, known as the 'Jansen Plan', which respected the need for open areas, had been developed.

Later on, after the world wars, when Berlin was split in two and people were practically unable to travel, the need to protect open areas in the city was high on the political agenda and, ever since, environmental and nature conservation considerations have been increasingly mainstreamed into Berlin's urban development policy.

Legal policy instruments for nature

Today, three important legal instruments allow Berlin's policy makers and administrations to plan the city with respect to nature conservation. These are the Land-use Plan (Flachenützungsplan), the Landscape Programme and the Species Protection Programme. These three legal instruments form part of the Urban Development Plan which itself is based upon the Land-use Plan[2].

Together, the Landscape Programme and Species Protection Programme aim to assess the biodiversity and landscape quality of open areas, improve these qualities and integrate the value of these open areas in the wider development plans for the city. The programmes are reviewed every year. The most important areas covered by these programmes are forested areas (ca 15.000 ha), agricultural areas (ca 6.000 ha), open water areas (ca 2.800 ha) and public parks. In the last decade, this planning approach has resulted in the creation of new nature parks (for instance, the the "Naturpark Südgelande" in Bezirk Schonberg).

The Programmes not only look at nature issues in relation to landscapes, but also in relation to other environmental concerns such as soil protection, water resource management or air quality. For instance, there is a strong correlation between water resource management and nature conservation. Berlin is self-supporting in terms of water consumption and uses an integrated system of open water bodies, nature and green spaces to store water for consumption and to reduce the 'heat island' effect.

The integration of the Landscape Programme and the Species Protection Programme into the wider Land-use Plan (Flachenützungsplan) has also made it possible to plan for ecological corridors between the network of designated areas within the city (ca 30 Nature reserves and ca 50 landscape protection areas) and to connect these with the surrounding countryside.

The success of this integrated planning tool is down to a number of factors: first there is a strong political will to use these instruments; second, the nature conservation administration is fully integrated into the urban planning administration. Third, a series of practical tools accompany these programmes which help make their implementation more effective.

[2] *This is in contrast to many other urban areas where the land-use plan (Plan d'Affectation de sol) is legally binding, but does not necessarily form the basis of the urban development plans. As a consequence, the latter do not always have the legal strength or political support needed to be effective.*

Tools for the implementation of the policy instruments

One of these instruments concerns the use of compensation measures ("Ausgleichmassnahmen"). These compensation measures are legally binding and are destined to help build up a coherent network of open areas because they impose an obligation to compensate for any open areas that are lost through urban planning. This obligation is enshrined both in the nature conservation legislation and in the issuing of building permits.

To help select the most appropriate forms of compensation in each case, the authorities have inventoried all areas in the city, identified those that are deficient in certain types of nature /open spaces and, from this, drawn up a list of sites where compensations are desirable. This list has been extensively discussed amongst different city administrations and with the local 'civil society'. There is also an obligation to report regularly to the local parliament and general public on the effectiveness of these compensation measures.

Successful examples of these compensation measures include: the Falkenberger Krugwiesen: the extension of semi-natural grasslands around a lake border to compensate for the building of the high-way ring, and the Mauerpark which was created as a form of compensation for the high speed train Berlin-Hannover.

Mauerpark, Berlin

The list has also had other positive knock on effects for nature in the city. After the re-unification, prognoses were made about the increase in the number of inhabitants and office/infrastructure needs in Berlin. However, it turned out that these were exaggerated. As a result policy makers now turn to the 'nature conservation administrations' to develop these unused sites as nature areas; a quite unique position with respect to various other cities. However it seems that budgetary problems have so far not allowed these plans to be implemented.

Case 4: Amsterdam - tools designed to facilitate urban planning

The city of Amsterdam has in place a detailed planning tool called PLABERUM to help streamline the process of developing and implementing spatial development plans and to guide public authorities, developers and others through the procedures involved in gaining planning permission for urban development plans and projects. PLABERUM is constantly updated and is now recognized by developers and authorities alike as an effective planning tool.

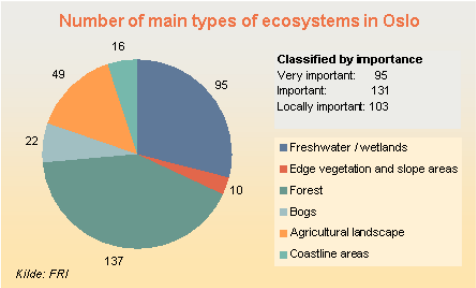
The PLABERUM includes a reference to Article 6 of the Habitats Directive and provides clear and detailed instructions on which nature values need to be inventoried and how the environmental effects of the proposed plans or projects should be assessed and taken into account during the planning process (including the consideration of alternatives …).

Because obtaining planning permission can be a time-consuming and expensive business, the Dutch government went one step further in 2005 and introduced a waiver system for both public and private bodies.

Organisations that sign up to a legally binding code of conduct that provides the same level of environmental safeguards as the normal permit procedure do not need to re-apply every time for planning permission. The codes of conduct are subject to public consultation and must be approved by the Ministry of Agriculture (LNV). Several large construction organizations such as Bouwend Nederland and NEPRON are currently preparing codes of conduct for approval by the government.

Case 5: Oslo - developing a sound knowledge base for planning

Almost two thirds of all species of plants, animals and fungi that have been registered in Norway can be found within Oslo's boundaries. There are several reasons why species diversity is so high here. Oslo has a favourable climate, and is situated in a region of Cambro-Silurian bedrock, which gives rise to calcareous soils. In addition, two-thirds of the area within the city boundaries is not built up, but consists mainly of forests and lakes with some open countryside.



Nevertheless, the city of Oslo is rapidly expanding and important biodiversity areas are increasingly under pressure from development. In 2000, The City of Oslo began a systematic survey of its ecosystems and biodiversity. The information was subsequently consolidated into a user friendly GIS database system called NATUR 2000 which has been officially endorsed by the City council. This contains an overview of the status of valuable natural habitats and biological diversity in Oslo, the threats that they face and existing legislation protecting them.

The database has turned out to be an effective management tool for all city administrative offices involved in land-use planning and management. It has helped to avoid conflicts between biodiversity concerns and development interests and to ensure that decisions are based on the most complete information possible.

The success of the database and the greater recognition of the important nature values within Oslo has led to the development of a policy statement regarding green structure planning and biodiversity – the urban Ecology Programme 2002-2014. This includes goals, indicators and time limits for biodiversity and green structure planning. Indicators are measured once every election period (every fourth year) in order to identify progress.

7. DESIGNING URBAN DEVELOPMENT WITH BIODIVERSITY IN MIND

7.1. Introduction

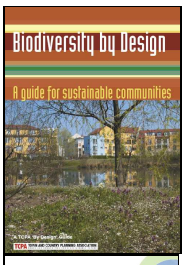
Because urban environments are constantly changing and people are attaching greater importance to the value of green space, there are more opportunities than ever before for integrating biodiversity into new development plans and designs. Clearly, the first priority is not to destroy existing nature areas. But it is not just about prevention and 'stopping' development. In cities, much of the development happens on areas with no ecological value, so with the right designs these projects can actually create new space for nature.

Urban planners themselves are also increasingly recognizing that nature can also be useful for them, bringing significant social and economic benefits for little or no extra cost (eg providing an attractive environment for social interaction, absorbing excess rainwater into surrounding wetland habitats, installing green roofs...). The key is for nature to be considered at the outset of the development proposal and not as an after-thought, this way it can become an integral part of the whole design process.

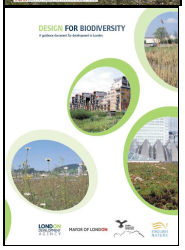
The type of methods and design approaches used for integrating biodiversity also depends very much on the scale and form of development being brought forward – whether it is a major urban expansion project, or the development of an individual housing complex or business park. The following cases illustrate some good practices that have been identified across this range from urban master plans to smaller scale ecological enhancement schemes.

First, however, it is useful to consider why biodiversity integration is not used more frequently. People will say it is because it adds to the cost of the project (which is not necessarily the case). But in reality the problem often lies in the lack of awareness and guidance on how to integrate these concerns into the design process. In the UK in particular, several authorities have started to develop guidance documents for planners and authorities alike on how to better integrate biodiversity into urban development initiatives. Two are mentioned here as they have been a very useful source for the case studies.

⇒ The Town and Country Planning Association in UK produced a guide entitled: 'Biodiversity by design: a guide for sustainable communities'. This provides information and guidance on what to consider when designing large and small scale initiatives and is illustrated by some 20 case studies. http://www.tcpa.org.uk/downloads/TCPA_biodiversity_guide_lowres.pdf



⇒ The London Development Agency has also produced a guidance document for development projects in London called 'design for biodiversity'. It includes, amongst others, a chapter on five key steps to incorporating biodiversity into sustainable development and a chapter on creating areas of value for biodiversity and people. http://www.lda.gov.uk/upload/pdf/Design_for__Biodiversity.pdf



Case 6: Malmö - creating small scale habitats

Bo01 is a new district of Malmö which has been constructed on reclaimed land in the city's western docks. The housing development comprises a mix of houses, flats and terraces, with green space mainly taking the form of communal courtyards, smaller private gardens and balconies. A 'Green Space Factor' introduced by the city administration requires that each property contains a series of measures to enhance biodiversity and manage rainwater.

The developer has to score a minimum of 10 out of 35 Green Points for their property. It can achieve this by selecting from the following menu of options:

⇒ At least 50 species of nature herbs in the courtyard
⇒ All walls covered with climbing plants
⇒ All roofs are green roofs
⇒ Bat boxes in the courtyard
⇒ A bird box for every flat
⇒ Food for birds all year round in the courtyard
⇒ Facades to have swallow nesting facilities
⇒ A habitat for specified insects in the courtyard
⇒ Courtyard vegetation selected to be high in nectar
⇒ A M² pond for every 5m² sealed area in the courtyard
⇒ Courtyard amphibian habitats with space for hibernation
⇒ The whole courtyard to consist of semi-natural biotopes
⇒ A selection of the courtyard to be left to natural succession.

Developers are also required to establish mechanisms for long term management and maintenance. Overall this has resulted in a mosaic of habitats, including green roofs and walls, wetland retention ponds and courtyard gardens, as well as a very attractive 'start of the art' place to live.

Case 7: Kirchsteigfeld, Potsdam - a sustainable Urban Drainage System

Sustainable Urban Drainage Systems (SUDs) are common practice for new German housing schemes. They help with flood alleviation, but also create buffer strips for new habitats. Whilst the width of the buffer may be constrained by land use pressure, integration into liner green space can allow for wider corridors. Kirchsteigfeld in Germany is a prime example of how such a system works in practice. Kirchsteigfeld is part of an urban extension project for Potsdam, near Berlin. Over 2,600 high density new homes have been constructed here within an area of 60ha. In line with current best practice, surface water is channelled into a SUDS.

The system starts with water draining from courtyards into swales where it either soaks away, evaporates or is retained within the system. It then flows along verges into minor streets where it is collected into a stream that forms part of a formal linear park. From here it flows into a retention basin before flowing into the drainage network in the surrounding rural area. Each element of the system creates a potential for wetland ecosystems, these are planted with carefully selected species to encourage both nature and the water retention/purification capacities (e.g. reedbeds).

Case 8: Deptford Creek, London - green roofs for rare birds

In the mid 1990s, Deptford Creek, in London's East End, consisted of a derelict warehouse, wharves, shipyards and gasworks. Rubbish and debris had also been dumped on the site. Nevertheless, the site has excellent redevelopment potential.

www.blackredstarts.ora.uk/

It also has a significant biodiversity value. Surveys showed the site had developed its own distinctive plant community associated with the dilapidated flood walls and adjacent to derelict land. These areas not only supported a variety of small animals, but had also become a prime habitat for a rare bird in the UK, the black redstart *Phoenicurus ochruros*. In 2000, only 66 breeding pairs remained in the UK, with the single largest population being in London, mostly on brownfield sites.

In order to accommodate the wildlife interest of the derelict land, any proposed development needed to be sympathetic. For example, there was an ideal opportunity to incorporate roof habitats and eco-friendly flood defences into the design at Deptford, thus attempting to replicate the habitats that would be lost. First attempts unfortunately failed: the developers could not be convinced to consider any such innovative schemes as part of the design process.

But, after further dialogue and a lot of persuasion on the part of organizations such as the London Wildlife Trust, English Nature, Environment Agency and British Trust for Ornithology, subsequent developers did change their attitudes. At present, there are approximately 1000m² of green roofing in place and a further 2000m² is being proposed for developments that are currently passing through local planning process.

The design of the 'green' roofs themselves is also noteworthy. On buildings such as the Laban Centre and the Creekside Educational Trust, a substrate of crushed brick and concrete graded from 50mm to dust, is used and laid on a flat or shallow surface. The roofs have a varied topography with shallow slopes and a diverse range of boulders, larger stones, and timber fenders that provide places for wind-blown and bird-sown seeds to germinate, and foraging habitat for black redstarts. New and refurbished flood walls have incorporated a variety of 'nooks and crannies' to speed up colonisation by plants and small animals. The habitats thus created had the potential to attract similar plant and insect species to those found on the derelict land lost to the development.

The developers have also benefited. The roofs slow the amount of rain water entering the drainage system, thereby reducing flash flood potential and, as the aggregate used in the construction of the roofs came from the site, disposal costs were saved. Also, from appropriate vantage points, the roofs and new flood wall add a splash of colour to the local highly developed environment.

The impact of the work in Deptford Creek on black redstarts has since lead to many other key development sites adopting innovative solutions for black redstart mitigation. What is more, sites near to black redstarts territories have also been encouraged adopt similar measures to help expand the species range.

Case 9: Berlin - the Biotope Area Factor

The knock-on environmental effects of high density constructions in cities are manifold. These relate to soil sealing, inadequate replenishment of the groundwater due to the rapid runoff of rainfall into the sewage system, lack of humidity and excess heat, and a loss of wildlife habitats. In order to reverse this trend Berlin has developed an innovative method to compensate these environmental deficits.

In 1994, Berlin introduced a strategy called the Biotope Area Factor (BAF). Its purpose is to help develop a strategic approach to maintaining and enhancing the city's green infrastructure. Plans of existing habitat networks have been prepared over the whole city and specific targets have been set for improving the green infrastructure according to zones:

- Central city (intense use and densely populated): to maintain densities whilst retaining or increasing areas available to nature;
- Transition areas (mixed uses including residential, industry and infrastructure): to provide habitats that can serve a wider area. Linkages are prioritised;
- Periphery of urban areas: landscape elements to ensure larger habitats with 'fingers' that penetrate into the urban area, to enhance the area's potential as a species reservoir.

The BAF strategy also recognises that the structure and vegetation in urban areas can have a major impact on other environmental factors. Having mapped the different climatic zones of the city (air temperature, humidity, soil moisture..) the strategy also seeks to use the green infrastructure to deliver benefits in terms of air conditioning, microclimate control and flood attenuation.

The BAF is calculated on the basis of how much land surface with habitat potential is being lost through urban land-use and acts as a yardstick to measure environmental impacts. Compensation is made by considering all suitable wall and roof surfaces as well as better use of ground level spaces. A tax on drainage from impermeable surfaces encourages the minimisation of sealed surfaces that contribute to run-off. Advice is given on the species to be planted, but this is not prescribed, funding is also available from the local authority.

At a local level, implementation takes on various forms. Most areas are greened either as they are built or as they are renovated. This allows measures such as the replacement of sealed surfaces. The design is always dependent on the prevalent conditions. However constant features include functional space (bike or bin sheds), trees and natural planting or, in smaller areas, climbing plants trained up wires, green roofs, paving only on main routes and the use of permeable surfaces.

The BAF is legally binding and covers all urban forms of use - residential, commercial, and infrastructural. It formulates ecological minimum standards for structural changes and new development. All potential green areas, such as courtyards, roofs, walls, and fire walls, are included in the BAF. Consequently, site-related standards can be established for projects requiring a building permit, in order to achieve the goals of the protection of nature and of landscape maintenance.

In Germany green roofs and walls and SUDs have been common practice for new constructions for many years now. There are estimated to be 13.5 million m² of green roofs across the country.

CASE 10: Emscher Park: Germany - An enlightened urban regeneration scheme for a post industrial area

The creation of the "International Building Exhibition (IBA) Emscher Park" started ten years ago. In a bid to give a strong impulse to the derelict Emscher area in the Rhurgebiet (Germany's industrial heartland), a major urban renewal and ecological enhancement programme was launched over 800 km² within a highly contaminated former industrial and coal mining area.

The programme began in 1989 and was successfully completed in 1999. The programme was developed in close co-operation with the 17 cities of the Emscher region which collectively represent over 2 million inhabitants in this densely populated area. The process was led by the "IBA Emscher Park Planning Company Ltd" who sought the active participation of public authorities, construction and development companies, architects, ecologists, historians and the general public.

By the end of the process, the IBA development programme had implemented around 120 projects in five working fields. Ecological concerns were included in the development process right from the outset and the improvement of the area's nature valuable areas was one of its key objectives. The most significant achievements in terms of ecology are:

- the ecological recovery of the Emscher river and its tributaries, combined with the development of a modern sewage and drainage system. At the start of the project the Emscher was a regulated man made canalised open sewer heavily contaminated by pollution from industrial run-offs;

- the establishment of a green corridor connecting all 17 cities using existing water-courses and green spaces (the Emscher Landscape Park). Part of the Emscher was changed back from straight canals to meandering streams and valuable nature areas were protected and conserved;

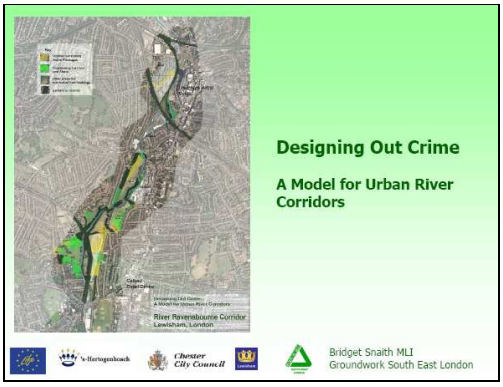
- the ecological upgrading of derelict urban-industrial sites through the development of an urban structure of high economic potential and high architectural quality, and which is complementary to the landscape planning,

Recognising the historical value of the old industrial buildings and mines, the programme was also able to turn these "handicaps" into assets. It restored and preserved the remaining relicts of the industrial era, and turned some of them into useful public space. Others were developed into an industrial heritage trails to attract visiting tourists.

One of the themed routes for this trail is 'industrial nature' which highlights the many rare and peculiar habitats and species that thrive on industrial sites. The most beautiful of these landscapes were combined into the Route of Industrial Nature, which has since become a popular route for locals and tourists alike.

Overall, this large-scale urban regeneration scheme has not only succeeded in turning a depressed industrial zone into an economically active region again, but, by building ecological concepts into the development process at the outset, it has also created a very attractive area in which to live and work. What is more, the new ecological landscape is starting to draw in tourism from elsewhere which is boosting the local economy further.

Case 11: London: designing out crime from urban rivers



Many people have a fear of nature areas in cities because they perceive these to be dangerous places for crime-related activities. This negative view not only undermines peoples' ability to enjoy their local nature spots but it also creates a negative perception of nature areas in general. An EU funded project has attempted to address this concern by designing out crime from urban river corridors.

QUERCUS - Quality Urban Environments for River Corridor Users and Stakeholders - is a project financed through the EU's LIFE fund. It is a partnership between the London Borough of Lewisham, Chester City Council in NW England and 's-Hertogenbosch in the Netherlands. Each city features a river corridor with similar problems but of varying size, environmental and social characteristics.

Flood prevention schemes and urban development have, in the past, led to rivers being enclosed in concrete, with a resulting loss in both their environmental/ ecological - and their social - value. All three partners in the project have experienced problems with crime, fear of crime and anti-social behaviour along river corridors. As a result, they have been reluctant to invest in their rivers, considering that any improvements made would soon be spoilt by dumped rubbish, vandalism and crime.

The QUERCUS project attempted to overcome these problems by turning each river corridor into an attractive and safe feature of the urban environment. To achieve this, it adapted modeling and spatial techniques usually used for designing out crime from housing estates and applied these instead to linear open spaces and river corridors.

The toolkit which was developed by the organisation Groundwork focuses on the fact that, for a crime to be committed, there must be a criminal to commit the crime, a target for the crime, and an opportunity for the crime to take place. Research has also shown that only 15% of crimes are pre-planned, with the remaining 85% being opportunistic.

Using careful planning and GIS models a land-use model was drawn up for each river that not only increased visibility, but also clarified the function of every part of the open space and encouraged greater usage and ownership of the area. Thus, opportunities for anti-social behaviour and criminal activity would be significantly reduced, and residents and users would feel safer. On top of that the environmental quality of the area would also be significantly improved.

The model has already been applied in Lewisham with great success. The re-naturalised river corridor is also now part of the Local Authority's environmental commitment to linking Green Networks, cycle routes, areas of biodiversity and recreational facilities. Commenting on the project, Martin Hyde, parks regeneration manager for Lewisham Council said: *"Groundwork have developed an excellent practical guide to designing out crime in green spaces along urban river corridors. The step by step model provides an interactive toolkit which will easily transfer to other urban river corridors."* ….and probably other green spaces too.

8. MANAGING NATURE IN AN URBAN ENVIRONMENT

8.1 Introduction

How urban nature areas are managed depends very much on the type of habitats and species present and their local context. But often they involve typical measures such as the development of management plans, restoration works and one off investments to bring the sites up to a good ecological standard. They also often involve regular management activities to maintain and enhance the areas' natural values which are carried out by either a dedicated staff or volunteers.

Most of the urban protected areas we looked at were generally well managed when they were in the hands of organizations (public or private) with the right conservation expertise and resources. In light of this and the fact that each site is different, we have tried, in this chapter, to focus on examples that are more innovative and strategic in their approach, especially when it comes to dealing with recreational pressure. The later case studies also present some interesting administrative and financial set ups for managing urban nature areas.

Case 12: Helsinki - Urban Natura 2000 management in the heart of the city

The Viikki nature reserve and Natura 2000 site is uniquely located in the middle of the Finnish capital, Helsinki. The reserve lies around Vanhankaupunginlahti Bay, a reed−fringed sea inlet, and consists of the mouth of the river Vantaa with its accompanying floodplain forests, alder marsh and coastal meadows. The site is particularly valued for its birdlife: 110 different species breed here and over 20,000 ruff *Philomachus pugnax* and wood sandpiper *Tringa glareolus* visit the site during their annual migration.

Its location in the middle of a city makes the site ideal for nature education but also represents its greatest threat. The surrounding suburbs are expanding fast and already have over 123,000 inhabitants. This is expected to increase rapidly in coming years which will, in turn, lead to increased visitor pressure and disturbance in the nature area.

The central aim of a recently completed project, which was co-financed by the EU under LIFE-Nature, was to reconcile human enjoyment of the site with its conservation value by implementing a series of habitat restoration works, recreational management measures and awareness raising schemes for local inhabitants.

The project helped speed up the implementation of the management plan for the site. All targets were achieved by the end of the project in 2000 – 3 years ahead of schedule. New ideas to improve the conservation status of the site were also studied, such as putting the electric power lines crossing the Natura 2000 site underground to reduce bird kills. The nature reserve was also expanded through the purchase of extra land. Underground pipes were laid in this area to improve water flow so that grazing could start. Grazing was subsequently re-introduced here and at other locations within the area to improve the meadows for the birds.

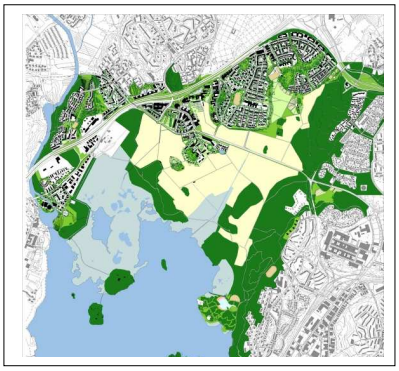
The project also channeled visitors away from sensitive areas by constructing nature trails, boardwalks, bird observation towers, bird hides and information panels which explained the various natural heritage features of the site. These measures proved to be very popular (they were designed also with disabled people in mind). The bird observation towers alone now attract over 100,000 visitors a year.

A nature guide/warden was hired for the summer months to interact with the visitors, offer guided tours and control illegal activities. By the end of the project vandalism had decreased significantly (although the local dog walkers were less easy to control). In addition a series of information brochures, videos and maps were produced and widely distributed.

The impacts of these actions are already notable. Bird populations have increased significantly and even the illusive Bittern *Botaurus stellaris* has returned to the area after over 15 years of absence.

Another important spin-off from the project is that local developers seem to be taking up the ecological challange. A new masterplan to build a further 1,700 homes in Vikki district contains a number of measures that are specifically designed to further enhance the residents enjoyment of nature. One such measure involves the creation of a new 34 ha district park to help take the pressure off the nature reserve.

The masterplan also includes provisions for introducing green corridors and planting them in an ecological way in order to bring nature into the housing area. A special ecology park for children and an environmental education centre will also be constructed which will be managed by residents. There will be a garden centre where advice and seed mixes can be bought to encourage more natural planting within private gardens. Finally, new allotments will also be created for use by residents.



Case 13: Basque Country - restoring an old industrial site

The Bidasoa estuary in the bay of Txingudi, is located on the boundary between Spain and France in a region of intense industrial and urban development. Despite this, the area still hosts some 280 migrating bird species, making it one of the most important bird sites in the Basque country.

Having been used as a dumping yard for construction material and other industrial waste for over 40 years, the site was further developed in the 1980s (football ground,etc..) These sporting facilities were however not popular. Regional government was then face with a dilemma: whether to endorse further development schemes for port and sports development, or to recognize the site's tremendous but degraded ecological value. It opted for the second scenario and designated the site under the Birds Directive.

At the same time it turned to Europe to help co-finance the ecological restoration of the site. It project was successful and enable the authority to undertake the following restoration measures:

- Old buildings (120) were removed, rubble was cleared away, and the dilapidated football pitch was dug over. Then the original coastal and lagoonal habitats were restored and trails and visitor facilities were constructed to draw people away from sensitive areas ;

- an information centre was also built on the periphery of the site and a major awareness raising campaign was launched;

- a long term management plan for the SPA was drawn up to manage present and future visitor pressures (it already attracts 50,000 – 100,000 people a year) and to encourage the return of traditional farming practices that are compatible with the nature of the site

The project was a success, the birds are coming back and the local inhabitants are very satisfied to have a recreational area with high ecological value within their city perimeters. Buoyed by these positive results, the regional administration intends to carry out further restoration work in the bay.

Case 14: Berlin – managing urban nature areas

17,000 ha (18%) of Berlin is covered in forests of which 4,000 ha has been designated as Natura 2000. To manage this extensive forest resource, both within and outside the city perimeter, Berlin has given its forest administration a special status as a 'nachgeordnete Bereich", which means that it is separate from the Land Berlin (the city region) and from the Bezirke (the local communes). Indeed, it is a, authority in its own right with its own legislation and responsibility for Berlin's public forests.

As in many other countries, these forests are multifunctional: producing timber, offering recreational space and protecting biodiversity.

The nature-friendly approach requires that there is no clear-cutting, and no application of fertilisers or pesticides. Instead, low-impact management techniques are used (e.g. use of horses) and native trees or scrubs are promoted to create mixed forest stands. The forests are also allowed to regenerate naturally through seed germination rather than through new plantings. To further protect the forests, some areas are closed off from visitors and many of the roads leading into the area are maintained as dirt tracks rather than asphalted, thus creating interesting habitats and reducing environmental impacts.

Trunk inhabited by Hermit Beetle in Pfaueninsel

Because recreation is one of the most important uses of Berlin's forests special regulations have been drawn up to control and manage visitor pressures. These are listed in the Berlin Forest Regulation (Landeswaldgesetz) and are rather strict: mountain biking (outside foreseen cycle tracks in the forests) is not allowed, dogs should be kept on the lead, except in certain areas; on the other hand, berries and mushrooms can be picked in small amounts and hunting is allowed so long as it follows strict management rules.

Similar ecologically orientated management practices apply to the non forested biotopes that are within the forest administration's jurisdiction. These include small raised bogs (Kegelmoore) in the Charlottenburg-Wilmendorfs area, dry grasslands that occur in open forest areas (these are kept open and are managed as grasslands), or former sand quarries, such as the 18 ha Sandgrube Grünewald, a refuge of species of open sandy areas or of oligrotrophic lakes.

Old railway lines protected too

In Berlin it is not just the large forest areas that are protected and managed effectively, derelict land next to railways have also recently been protected and turned into nature reserves. A good example this is the Schöneberger Südgelande, an 18 ha brownfield nature reserve, located between two heavily used railway lines that was once used as a train depot. The nature conservation values of the site include dry grasslands (that originated on the stony beds between the railway tracks) and a light canopy woodland that covers two thirds of the site. The meadows harbour a wide array of sun-loving bees (> 100 species), more than 30 breeding birds, 57 spider species, 350 plant species, etc.

The site had been disused for over 50 years but when plans were put forward the turn the site into a new ranger station for trains in the 1980s it was opposed by strong public protests. So instead, the city administration decided to protect it as a nature reserve in view of its high ecological value. The site was transferred from the Deutsche Bahn AG to the City administration and financial resources were found to restore the area. Financial resources came from the "Ausgleichmassnahmen", compensation for transport/infrastructure developments in the centre of the city.

The area has also been carefully designed to highlight the industrial archaeological value of the site and to provide ca 2 km hiking routes, a small museum of the site's history and plenty of resting space for visitors. Visitors are asked to pay a small fee to visit the site. The reserve is now very popular as a quiet retreat in the city centre and has successfully combined the needs of nature with that of the public.

Case 15: an International Urban woods project - sustainable management for people-friendly forests

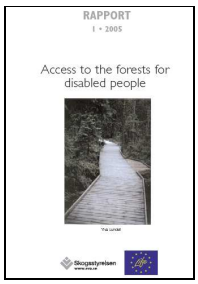
This three year EU funded project entitled "Urban Woods for People" – set out to demonstrate how, with proper planning and upkeep, urban woodlands can be made recreationally more attractive in an environmentally responsible manner. The project also aimed to build the capacity of forestry organisations and forest owners, and win their support for the project's goals.

Whilst the ecological management of the forests per se was not a specific focus of the project, we have included it as a case study because it offers some interesting good practices in managing recreational pressures (visitor surveys, forest zoning…) and in raising public support for the multi-use forests, especially amongst traditionally neglected groups (disabled people, immigrants).

The project, which finished in March 2005, was carried out by the Regional Forestry Board of Mälardalen (Sweden) and the French National Office of Forests, in partnership with the Swedish National Board of Forestry, the Royal Djurgarden Park, the Swedish Federation for Disabled Persons and two municipalities. Altogether, 40 activities were undertaken and pilot recreational areas were established in four urban forests around Stockholm and Paris (collectively attracting 850,000 visitors a year).

A number of different techniques were tested out in these forests and good practices were written up. Guides were hired to encourage people who are not normally accustomed to these areas to visit the forest. In the end more than 10,000 participants – twice the number expected – attended these guided tours to get to know their local woodlands better. It was discovered through visitor surveys etc that the range of people visiting the forests was much wider than those using other municipal recreational facilities such as swimming pools and ice rings – and costs to the municipality are significantly lower per visitor.

Particular attention was paid to improving access for groups like disabled persons, immigrants and elderly people. Based on the project's pilot actions, a detailed handbook was published 'on access to forests for disabled people'. It is probably one of the first of its kind. It was written in recognition of the fact that the vast majority of forests and woodlands remain inaccessible to disabled people, both physically and psychologically. Yet the pilot actions demonstrated that there were simple ways to accommodate disabled people. These access points also turned out to be popular with elderly people and families with children.



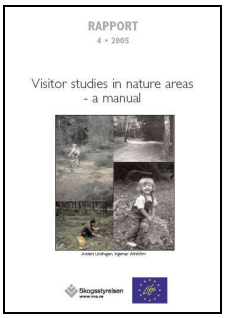
The project also produced a report on 'immigrants in nature close to urban settings'. Based on the experience of the project, the report gives suggestions on how immigrants can be given better access to the forests. It is accompanied by a brochure 'discover nature' which is intended to inspire people to visit urban nature. It has been translated into Arabic, Persian, Serbo-Croatian, English, Spanish and beginners Swedish.

Public participation and visitor management

Efforts were also made to encourage public participation in the management and protection of the forest. In Sénart, near Paris, the project brought together representatives from 14 municipalities and 150 organisations to agree on long-term objectives for the forest's development. After around 50 meetings there was agreement for a framework document regulating all activities within the forest. Although the process took two years, the municipality, forest managers, NGOs and the local community all now agree on the development objectives, management operations and recreational activities that would otherwise have caused conflict.

Detailed visitor surveys were also undertaken in the 4 pilot recreational areas to assess different types of usage and pressures, as well as people's interests and attitudes. These were used, together with detailed habitat maps, to develop multi use zoning maps for four forests which were owned by different organsations (municipality, private) or which were under different kind of pressure (eg high recreational pressure). One of the multiple use plans was drawn up using a stakeholder committee.

These zoning maps were partly put in practice with the creation or diversion of trails away from sensitive areas and towards features that the visitors wanted. The impact on visitors and the habitats continues to be recorded.



This, too, resulted in a series of handbooks and tools:

- visitor studies in nature areas – a manual
- examples of multiple use plans
- Our urban nature – a book on management
- Gérer les forêts peri-urbaines (in French)

Full details and copies of the report can be found on http://www.svo.se/urbanwoods

Case 16: Money for nature - the UK landfill tax credit scheme

The Landfill Tax Credit Scheme (LTCS) in the UK enables landfill operators to support a wide range of environmental projects by giving them a 90% tax credit against their donations to environmental bodies. So far over £1 billion has been generated this way.

The landfill operator chooses the projects it wishes to support, but these must be in line with the LTCS's criteria. For instance, the project should provide public amenities or help restore/ enhance parks within 10 miles of the landfill site, or it must deliver biodiversity conservation for UK species and habitats.

A significant number of projects have been funded this way to restore or regenerate natural areas in urban contexts. For instance, one project in Oxfordshire run by the British Trust for Conservation Volunteers funded the restoration of a neglected urban woodland for the benefit of wildlife and the public through woodland management work and the provision of footpaths, kissing gates, fencing, boardwalk and interpretation boards.

Case 17: Barcelona - an independent park authority in charge

The city of Barcelona is historically flanked to the east by the Collserola mountain range and to the north and south by two rivers, the Besos and the Llobregat. Within these natural boundaries lies a large urban forest, the Collserola Park which overlooks Barcelona city and acts as its green lung, extending over 8000ha. It is in fact one of the largest Metropolitan Parks in Europe and is of high conservation value. This value has been recognised by its recent designation in 2006 as a Natura 2000 site.

View from Collserola Park

Being on the edge of the city, the forest faces many development pressures typical of urban parks. It is under constant pressure from recreation and high visitor numbers (15. million visitors a year) and it is regularly under pressure from development schemes that want to erode away at the edges of the park.

These have, however, been kept at bay thanks to the fact that the site is not managed by the city or provincial authorities but by an independent park authority with full legal powers over the area and a strong conservation remit. To make clear its objectives and conservation goals to the outside world, the Park Authority has prepared a detailed management plan for the area in consultation with over 100 municipalities within the Barcelona region and the many different interest groups that use the park.

This plan seeks to conserve the natural resources and ecological balance, as well as develop the area as a leisure resource. Human activities have been regulated through zoning and planning regulations. These regulations and zoning schemes have been negotiated with different interest groups. For instance, the authorities worked closely with the Catalonian Bikers Federation to find workable solutions that meet the needs of both the mountain bikers and the wildlife conservation interests.

Thanks to the management plan, access to the park has been channelled through a series of entry points, two of which have visitor centres where people can pick up information about the park interest points and its various trails. The trails themselves are designed along a number of different themes and are intended to meet the needs of most walkers, offering short strolls as well as 3 hour hikes. Many of these trails are linked up with local public transport routes to encourage a greater use of public transport rather than private cars within and around the area.

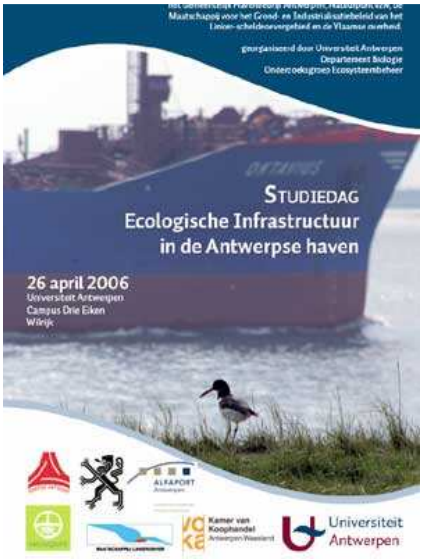
Parc de Collserola also has activities that combine leisure and environmental education. The park has four educational facilities which offer a variety of educational programmes for groups. The education programmes are designed to raise awareness not just of the park's ecological values but also of nature conservation in general.

Case 18: Antwerp - handing the management over to an NGO

NGOs can also be effective site managers for green areas in an urban context. Within the city perimeter of Antwerp, six nature reserves are managed by local volunteers of Natuurpunt (the most important nature conservation organisation in Flanders). The sites are between 15 and 215 ha; the smaller sites are relictual heathland, polder grasslands whilst the larger ones contain mostly brackish marshes along the river Scheldt. Local volunteers also collaborate with the city and railroad authorities to protect a former raiload shunting yard as nature area in the northern part of Antwerp.

Each of the sites has a site manager, who collaborates with local volunteers and staff members at Natuurpunt's headquarters to develop a site management plan. From the moment the plan is approved by the Flemish Environment Minister, the site manager can obtain core funding from the regional government to manage the site; this funding is enshrined in a Regional Decree, which provides support to a small number of recognised nature NGOs depending upon the type of habitat and management required.

The advantage of having an NGO run a nature area is not just because of its competence in habitat and species management but also because of their ability to engage with the general public and to raise awareness for nature conservation in the city.



Workshops for nature conservation in Port of Antwerp

9. ENGAGING STAKEHOLDERS AND THE LOCAL COMMUNITY

9.1 Introduction

If nature is to be protected in a city, it is clear that it will need the support of all stakeholders. Not only will this ensure that the areas are effectively conserved and managed, and the regulations concerning their use respected, but it will also encourage all parties to make their own contributions to biodiversity in the city.

There are a wide range of stakeholders to be considered: they include private businesses, architects and developers; politicians, other sectors of the public administration, public /private bodies and major landowners such as the water authorities, the railways, the police, scientists and scientific institutions ….and of course the public itself, whether individuals or representative groups of civil society (NGOs working with conservation, disabled groups, children….).

The type of methods that can be used for involving stakeholders and the general public in decisions about biodiversity in their city is also very wide ranging – it can go from simple information provision and awareness raising activities, to consultation and dialogue, to partnerships and active collaboration. Much will depend on what one wants to achieve, but it is important to choose the right approach in order to engage with each target group effectively and deliver good results in the most cost efficient way.

Benefits of communicating with different target groups	
Stakeholders	• *Develops an understanding of each others' interests* • *Encourages the sharing of experiences in managing the natural values under threat* • *Builds trust and confidence* • *Encourages a consensus approach to management* • *Creates a sense of pride and 'ownership' for the site* • *Creates new socio-economic opportunities and partnerships* • *Ensures continuity*
Policy developers and government bodies	• *Leads to better integration of Natura 2000 into other policies* • *Encourages a more coordinated approach to land use policies within the region* • *Highlights areas of mutual interest and helps to plan strategically*
General public	• *Addresses concerns over the loss of wildlife and nature* • *Raises the level of awareness of Europe's diverse natural heritage and the need to conserve it* • *Provides additional opportunities for learning, discovery, relaxation, recreation, health …..* • *Encourages responsible behaviour* • *Gives individuals a chance to get involved and make a contribution*
NGOs and other civil society groups	• *Holds much of the scientific and management expertise on nature* • *Campaign for and help raise the profile of Natura 2000* • *Raise funds for nature conservation* • *Implement conservation actions on the ground* • *Act as the 'eyes and ears' of society* • *Mobilises people through their membership*

Source: LIFE-Nature: good practices in communicating with stakeholders and the general public, 2004

Case 19: Edinburgh - working together through the Biodiversity Partnership

In line with the Convention on Biodiversity, the governments in the UK and Ireland have endorsed the development of Biodiversity Action Plans (BAPs) as a means of setting conservation objectives, measures and targets for biodiversity. Local BAPs are developed to help implement the national BAPs. A number of local urban authorities, including Edinburgh, Glasgow and Dublin have produced, or are in the process of producing, their own biodiversity action plans for their cities.

The key advantage of BAPs is that they advocate a very participatory approach, with a strong emphasis on public consultation and involvement. They provide a mechanism for bringing together all partners involved, or likely to be affected by, biodiversity issues in order that they may collectively work together in developing and/or approving a locally adapted strategy and work programme. This in turn ensures greater ownership and acceptance of the measures proposed. It also helps allocate specific responsibilities amongst partners for the implementation of the plan.

The city of Edinburgh, for instance, has established an Edinburgh Biodiversity Partnership. Set up in 1997, this coalition brings together over 50 organisations from local government, the private sector, voluntary groups and research. It includes such members as the British Airport Authority, Railtrack plc, the British Waterways, several city administrations, the Scottish Farmers Union, Forth Fisheries Foundation, and NGOs such as the RSPB, the Lothian bats group and others….

The Partnership has continued to meet since its inception, overseeing the implementation of the first Edinburgh Biodiversity Plan (2000-2004). Already, as a result of this first BAP, maintenance regimes of several urban green areas have improved. Training has also been provided for the Council's workforce on wildlife friendly management, and several new nature reserves have been created. For the last three years, money obtained from the landfill tax scheme has been used to fund around 50 practical conservation actions in line with the BAP.

The Edinburgh Biodiversity Partnership recently reviewed and updated the first plan, with the assistance of a dedicated biodiversity officer based at the Edinburgh City Council. The second BAP (2004-2009) builds on the experience of the first plan. It sets out 7 key objectives, and identifies 8 priority habitats and 15 species for targeted action plans. The urban habitat section alone lists 40 practical actions to be undertaken, together with names of the lead partner responsible for delivering on these actions.

The fact that the Partnership is still functioning actively, eight years since it started, and that the BAPs are being effectively implemented and monitored, illustrates that this participatory approach has done a lot to win acceptance and a sense of responsibility and ownership for the Plan.

An interesting spin off from this partnership has been the recent adoption by the British Airport Authority of its own biodiversity strategy for Edinburgh Airport. The strategy identifies biodiversity opportunities, both within and outside the airport boundary, which in turn allows BAA to engage in local partnerships and to increase employee involvement in nature conservation.

Case 20: Vienna: support for urban farmers

Today, green spaces cover 49 % of Vienna, and over 30% is protected by nature legislation in view of its ecological value. More than one third of the green space is forests, another third is farmland (arable land, horticultural land and vineyards) and 11 % are meadows (mainly on the Danube Island and in the Wienerwald). These meadows are not in intensive agricultural use, but are either recreation areas or used as community allotments and small scale organic farming.

Land use	Area (ha)	(%)
Forests	7457.06	36.8
Arable land	5218.31	25.8
Meadows	2293.97	11.3
Allotment gardens	1274.88	6.3
Parks	1084.67	5.4
Horticultural area	871.29	4.3
Vineyards	751.06	3.7
Sports fields	615.66	3.0
Cemeteries	533.51	2.6
Outdoor swimming facilities	140.93	0.7
Zoo	11.89	0.1
Campsites	11.25	0.1
Total green space	20264.47	100.0

Many of these extensive agricultural areas are not only ecologically valuable in their own right but they also protect the green areas around the periphery of Vienna from further urbanization. Recognising the role played by urban farmers in this process, the Viennese City Administration, who has its own competence for the agriculture policy, developed a specific agri-environmental support scheme for 'urban' farmers. By 2004, it has already made agreements with 18 farmers/landowners.

In Weinberg area for instance, agri-environmental support was used to protect and restore grasslands, orchards, walls, hedges and other linear landscape features that are characteristic of these vineyards.

Private farmers can also enter into voluntary contracts with the Municipal Department for Nature Conservation it they want to take their farmland out of cultivation altogether and convert it into nature conservation areas which would then be managed by appropriate management measures. The contract grants the farmer a compensation subsidy for choosing this option.

These popular schemes have enabled the city administration to stop the further intensification or urbanization of these agricultural lands and instead to create species-rich fallow-land and extensive grasslands on the urban fringe.

Case 21 – UK: getting nature policy and social policy to work together

Looking at the social housing initiatives over the last century, one can but notice that the quality of open spaces within and around the social house estates has declined dramatically. These areas are often located in parts of the town which have significantly less green space per inhabitant than others. As a result, residents have fewer opportunities for recreation, social interactions, peace and relaxation. This exacerbates the already strong sense of social exclusion within these areas.

A private-public partnership in London, between the Notting Hill Housing Group and the Peabody Trust (managing over 18.000 properties in London) is working towards the greening of social housing spaces and pushing for a sea change of attitude amongst social housing providers in general. Social housing in London equates to about 20% of the total housing stock and represents 5 million homes. The potential of making a difference is therefore very high, both from a social perspective as from an environmental one.

This initiative called 'Neighbourhoods Green' is part funded by the government and supported by two other public agencies English Nature and Cabe Space as well as the Children's Play Council. Its objectives are as follows :

- To evaluate the status and profile of green spaces within social housing providers in London
- To prepare a tool-kit, training and further guidance to aid social housing providers and residents in the design, management and safe use of their green spaces
- To establish and support a network of champions and expertise within the social housing sector to strengthen internal capacity and understanding
- To advocate for appropriate policies, incentives and resources to enhance green space quality under social housing providers

Through practical actions to improve open areas, the initiative has already helped to stop the spiral of decline in terms of environmental quality, falling property prices, the rise of insecurity and crime on some housing estates in London. Examples include the "Riverside Green" scheme in central London, and the renovation of some small parks in North Kensington.

Case 22: Sheffield - a practical example of greening social housing estates

Further afield, in Sheffield, a similar scheme was launched by the Sheffield Wildlife Trust (SWT) on Manor & Castle estate, which was once described as the 'worst housing estate in England'. The SWT established a Green Estate Programme in close partnership with the Manor & Castle Development Trust which has since been successfully delivering an integrated environmental regeneration programme on the estate, linking skills training, local employment, community participation, greenspace creation and restoration, social enterprise and sustainable environmental management.

Central to its success is widespread community and agency support, a good understanding of the local social, political, economic and environmental context, and a commitment to innovative solutions that will generate sustainable income streams to underpin the future operation of the Estate.

The Programme involved, amongst others, the following activities:

- *Training programme:* The enhancement of the Green Estate's open spaces is creating considerable opportunities for employment in environmental management, landscaping and horticulture, for which local people are not necessarily appropriately qualified. The Green Estate Programme is working to train a future workforce to meet its needs and those of other environmental and horticultural organisations in Sheffield. The Trust's training programme currently offers certificates in Environmental Conservation and Amenity Horticulture. Of 40 participants in the 2002 programme, 75% went on to gainful employment.

- *Pocket parks*: A number of small green spaces have been enhanced or created around the estate. These serve many purposes, such as providing a focus for communal events and activities, social interaction with other members of the local community, outside play and exercise areas, gardening, informal and formal horticultural and gardening skills training, etc. They have also helped to improve local environmental quality and ensured a greater overall ecological coherence and connectivity with the different nature areas.

- *Food and Health:* The programme involves the restoration of derelict allotments as a form of healthy outdoor active recreation for local residents. Building on the success of the scheme the SWT set up school farms; ran educational activities about the links between food, farming, health and environment; and established a food distribution network to address the problem of poor local access to fresh fruit and vegetables.

  The Trust now operates a fruit and vegetable distribution network, 'cook and eat' training sessions, school tuck shops, a healthy eating community café and a series of professional food and nutrition training courses aimed at public health and community development professionals. SWT's activities around food have even led to the establishment of a commercial urban dairy, linked to the Manor Lodge development, producing and selling 'Sheffield Brie', as a social enterprise (providing local employment, food hygiene training, etc).

- *Pictoral Meadows:* A local income-generating social enterprise was set up to develop innovative seed mixes and promote the necessary skills to plant and maintain these mixes. This has been used to develop and demonstrate an innovative approach to landscaping (developed with the University of Sheffield) which combines a variety of wildflowers to create flowerbeds with impressive floral displays, high resilience to trampling, and a long flowering season, whilst also bringing benefits to wildlife.

- *Deep Pits District Park:* A large area of semi-derelict greenspace that was once mined and built upon, is now being regenerated as a park. The site was restored using local community volunteers to complement the training, visitor and income-generating activities grouped around Sheffield Manor Lodge. The long term management of this Park will be part-funded through contributions from the residents in a new adjacent housing estate (through collection of annual ground rents), and the collection of water disposal charges for the maintenance of wetland features within the Park (as they will be serving a drainage function for the estate).

- *Productive land use:* A considerable area of brownfield land, ear-marked for future house-building, is now being managed as a temporary crop-area. Crops range from fields of wheat and barley to meadows of native cornfield wildflowers, and plantations of sunflowers. They are a low-cost way of improving the visual amenity of previously derelict sites, their creation and harvesting provides opportunities for landscaping skills training, the crops are saleable, and all the income from both landscaping contracts and crop sales goes back into the management of the Green Estate's greenspaces. Green waste is now disposed through a network of community composting sites, run semi-commercially with each site contracted to dispose of waste for a different client.

This example is taken from: Decent Homes – Decent spaces. Neighbourhoods Green http://www.neighbourhoodsgreen.org.uk/ng/_ui/dhds.pdf

Case 23: UK – Calling in the pond doctor to improve nature in private gardens

Private gardens are an important source of nature and wildlife refuges within city perimeters. Many cities, including Brussels, have developed initiatives to persuade people to encourage wildlife back into their gardens and to adopt more wildlife friendly planting and gardening techniques.

In London, one NGO, Froglife, has gone one step further and introduced 'the pond doctor'. Over the last 50 years ponds have been disappearing on a massive scale across Britain, in some areas by as much as 90%. Garden ponds, however, have increased. This is one of the most animal-attractive features that can be created in any wildlife garden. London has an estimated 150,000 ponds, a far higher pond concentration these days than in the surrounding countryside. It also has impressive amphibian populations to match. But their small size and urban locations can cause problems.

Seeing a desperate need for help, Froglife launched a project to get good advice directly to pond owners. Thus, the London 'pond doctor' was created, and for three years anyone who has a garden pond, or is thinking of creating one can receive a personal visit and a free pond check up. The scheme is already a success: the pond doctor is in great demand visiting on average more than 20 ponds a week.

Case 24: Paris – a shared gardens scheme by, and for, local residents

Since April 2005, the Mairie of Paris has been promoting a new scheme known as 'jardin partagés' to get local inhabitants to play an active role in managing local public spaces and, at the same time, promote local biodiversity. Recognising that few people have an opportunity to interact with their neighbours and that there is an increasing demand for nature and greenery in the city, the scheme encourages local inhabitants to form an association to collectively manage a public green space nearby (usually one that has been abandoned or vandalized) in an ecological way.

Once formed, these citizen's initiative groups can apply to the Mairie of Paris for financial and technical support. A special unit has been created within the administration to coordinate and support this work, known as the 'Cellule Main Vert'. Every project is discussed between the cellule, the association and the local authority responsible for the 'arondissement'.

The approved scheme is then implemented by the citizens themselves in close collaboration with other local groups and volunteers and in accordance with the Charte Main Verte. Throughout the process the Cellule Main Vert continues to provide support and technical advice to the associations on ecological gardening techniques.

So far some 30 shared gardens have been set up, and a further 40 projects are being assessed. Each garden is unique but together they form part of a network of sites known as 'les jardins dans toutes ces etats'. This network allows associations to share their experiences and pass on good practices amongst each other. It also creates a sense of partnership and solidarity over a wider area.

Recently, this networking has been re-enforced by the introduction of monthly Café-Jardin meetings where gardeners from different shared gardens schemes can discuss and exchange experiences in a convivial atmosphere.

The 'jardin partagé' in Paris has proven to be so successful that other cities in France are now introducing similar schemes in their cities. The basic premise remains the same: active local participation and a focus on ecological gardening. Together they form a powerful combination, as the Paris example illustrates.

Case 25: Newcastle - Enhancing the ecological function of an inner city park

Iris Brickfields is natural green space in the inner city of Newcastle. The park was re-developed in 1997 with the active input of the 'Friends of the Park' group. Ecological management techniques were successfully introduced in order to reduce overheads and make the area more attractive. Beforehand it had been managed as an amenity park with extensive areas of closely crop lawns.

Mowing was reduced to allow wildflower meadows to grow and wooded patches were underplanted with native shrubs and vegetation. The habitat potential of the pond and wetland was also enhanced and new willow trees and gorse shrubs were planted. The whole initiative was done with active community involvement. They participated not only in the development of management plan for the park but also volunteered to carry out the works on the ground.

The management is now self sustaining too. Recognising the need for professional support, the 'friends' regularly rent out the park's tea rooms in order to raise the money to buy in professional help from wildlife and gardening experts. The 'friends of the park' now also run a children's nature club for local children.

10. RAISING AWARENESS AND ENHANCING EDUCATION

10.1 Introduction

This last chapter in the good practice section deals with awareness raising and enhancing the educational benefits of having nature in a city.

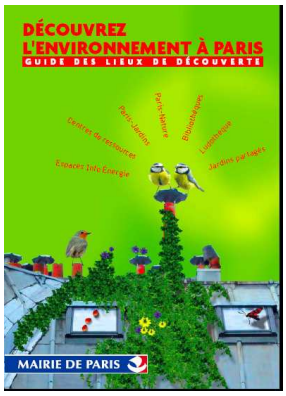
Only a few examples are given as these aspects are best addressed in context – ie according to the social, economic and environmental conditions of the city in question and the type of wildlife/nature areas present.

People remember:
- *10% of what they hear*
- *30% of what they read*
- *50% of what they see*
- *90% of what they do*

Source:Scottish Natural Heritage

It is clear through that greater awareness is the starting point for changing people's perceptions towards nature and for winning their support to protect nature in cities, and elsewhere. Good information sources, awareness raising tools and maps, brochures etc should therefore be an integral part of any 'biodiversity' strategy for a city.

Case 26 - Paris-Nature: a concerted education programme for young Parisians



Paris-Nature was launched in 1985, its aim is to make Parisians, and school children in particular, aware of their natural urban environment through a series of different initiatives focusing on nature and biodiversity as well as other environmental issues. Its educational philosophy is "connaitre pour aimer, aimer pour agir et proteger".

The programme is run in partnership with ADEME (Agence de L'Environnement et de la Maitrise de l'Energie) and employs around 100 people at its various focal points across Paris. Collectively they attract over half a million visitors a year.

The facilities are open to all, but are particularly focused on primary school children between the ages of 6 and 12. Using a variety of hands-on learning techniques to encourage active participation, the children are encouraged to explore, observe and create things relating to nature. So far around a third of all primary school children in Paris (40,000 kids) have benefited from the programme. Here is a selection of the facilities on offer:

- *Two nature buses* have been transformed into mobile educational units. They transport school children to key nature areas in the city. One bus is equipped with a huge library of nature videos. The other has a mobile laboratory so that the kids, having explored a particular nature area, can continue their observations on the way back to school.

- *A floral park:* Near the Chateau de Vincennes, a floral park has been developed to illustrate the biological diversity of the capital. It contains a wetland, a brownfield area, a “hotel for insects”, as well as nesting boxes for birds and bats amongst the floral pavilions. Regular guided walks and excursions are organized to further enhance people’s understanding and appreciation of the park.

- *A riverboat* has been restored on the Quai D’oise to illustrate various aspects of supplying drinking water to Paris and on improving the city’s riverine ecosystems. The ecology of the Seine is also described as are the needs to protect wetlands further upstream.

- *A house of 5 senses:* organizes workshops for children to learn about and stimulate their five senses using a variety of techniques. There is also a sensory garden to further enhance their experiences.

- *A butterfly garden:* was created to help discover all the species that are present in the department of Ile de France. Their natural habitats were recreated within the butterfly garden. A series of Green houses also enables people to follow the various stages of the species lifecycles up close;

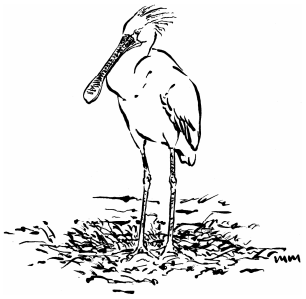
- *A ‘wilderness area’* north of Paris where nature has taken over. The area is now a species rich wetland. The area is only open to the public once a week in the summer in order not to damage its ecological value. Nature guides are on hand to help people identify wildlife and to understand how natural succession works. It also provides an opportunity to explain the value of preserving les ‘friches urbaines’.

- *Two ornithological reserves* in the Bois de Boulogne have been strictly protected to conserve the rare bird species present. One area is a ‘sous-bois’, the other is a prairie with a wetland area, both are managed for nature. They both have bird hides which contain information panels on what they can see in the Bois and on conservation in general. Nearby a house dedicated to the birds of Paris is currently being transformed in order to provide more information and educational facilities on the subject.

- *Information centre:* finally at its main building, Paris Nature has installed a nature library containing over 10,000 books and over 100 games on environment and nature. This centre is also the place to pick up a wealth of brochures, posters, guides etc that have been produced by the programme about nature in Paris. Amongst these are a series of self guided walking maps which have been produced for every one of Paris’ arondissements. They propose itineraries for people to follow in order to discover the type of nature that exists in their neighbourhood.

Case 27: Amsterdam - A walk through Natura 2000

In collaboration with two other zoos in the Netherlands, the Artis zoo of Amsterdam launched an innovative project to raise awareness for Natura 2000. Children as well as adults who visit the zoo, tend to know more about elephants, giraffes, and other high-profile species than about the Dutch or European fauna and their habitats.



Using well-known grassland birds that occur in the Netherlands as a starting point, the Zoo has developed a special route that visits various threatened European animals, which can only survive in the wild through the protection of their habitats, for instance through the Natura 2000 Network. The walk starts with species such as the Spoonbill or Avocet which are well known in the Netherlands and then moves onto more 'exotic' European species such as the European lynx, the wolf, bison, marine species, etc.

For each species, visitors are given information about its distribution, threats, ecology, habitat requirements as illustrated by a series of story lines about a number of Natura 2000 sites that have been protected for the species in question. Special packs have also been devised for school children as part of their school work.

Nearby in the town of Amstelveen a similar but less obvious awareness raising scheme has been in place for over 70 years. Amstelveen harbours a series of urban parks which are particularly rich in wildlife flowers and native semi-natural habitats. These were constructed as far back as 1939 as part of an urban extension scheme but remain to this day innovative examples of what a natural green park can be in an urban context.

Named after the Netherlands' most famous ecologist, Jac. P.Thijsse, this complex of parks and gardens was specifically designed to display native plant communities adapted to local soil conditions. Instead of lawns, mixed woodlands were established with herbaceous underplanting and adjacent wild flower meadows. An old mere is central to the layout, creating peaty conditions for planting typical low lying fen species.

The 24 hectare Jac.P.Thijssepark is a typical example of this urban park network. It forms a green corridor along the edge of Amstelveen. The layout is based on a combination of meandering stretches of water with open and closed planting. The footpaths progress through a series of distinct habitats, allowing it to be read like a book of nature.

Case 28 – Islington Gillespie Ecology centre:
An educational focal point for the local community

From unfavourable beginnings

The site of today's Gillispie Nature reserve was once a former British Rail goods yard which began operations in 1850 to bring coal to north London. These activities ceased in the 1960s and the site lay derelict until the 1980s when, following public consultation, the decision was taken to create a wildlife park. Islington Council took out a ten year lease and Gillespie Park was opened in April 1983. Almost immediately the park became very popular with local inhabitants.

So much so that when, in 1996, British Rail announced that they were intending to sell the site so that it could be developed for residential use, a local campaign group was formed to oppose the scheme. Islington Council entered into lengthy negotiations with the landowner. Eventually, an agreement was reached whereby 1.6ha of grassland and 0.4 hectares of existing site would be made available for housing development in return for the lease of the remaining area of the park, a further 1.2 hectares and a dedicated educational building.

The park now covers an area of 2.8 hectares supporting a variety of habitats including neutral grassland, scrub, hedgerows, woodland and wetland. Some habitats have evolved naturally whereas others have been created by careful landscaping. Over 500 species of plant, 94 species of bird, 12 species of dragonfly and damselfly, and 24 species of butterfly have been recorded. Because of this richness, the park has since been declared both a Local Nature Reserve and a Site of Metropolitan Importance for Nature Conservation.

The Gillespie Ecology Centre

The Gillespie Ecology Centre which was constructed as a result of the planning deal is now the focal point for the park. It is a very popular facility for both formal and informal education, providing a resource for a much larger area. The Council employs six people on site, including a Community and Educational Officer and is supported by the borough of Islington. It runs a diverse range of courses, workshops, activities and talks for schools, universities and the wider community.

The centre also has its own environmental library, classrooms and interactive displays and is visited every week by local schools. As many of the children in Islington are from immigrant families living on housing estates, this is often their first opportunity to experience and learn about nature close to them.

Community involvement

The Ecology Centre has also taken the lead in preparing the Local Biodiversity Action Plan for the whole borough of Islington. It has worked in close partnership with 25 organisations and the local community to prepare the BAP. Regular public consultation and information meetings were held at the centre, and questionnaires, leaflets etc.. were sent out to inform people of the objectives of the Plan and to solicit their views and inputs into how it should be developed.

This community led initiative has been very successful. Crime and vandalism around the ecology centre is almost non existent and many members of the local community are actively volunteering to help implement the BAP (eg many measures are aimed at private gardens, allotments, school grounds and communal areas, canals and waterways as well as railway banks). They also continue to want to be informed of progress.

Having a strong degree of local involvement and a focal point like the Ecology Centre has brought about a greater send of community spirit in the area as a whole and a sense of ownership and responsibility for nature in their borough in particular.

11. CONCLUDING REMARKS AND RECOMMENDATIONS FOR BRUSSELS CAPITAL REGION

11.1 Nature in cities: opportunities and threats

From the findings of this report it is clear that European cities have an important contribution to make in conserving nature and promoting biodiversity. Almost 100 Natura 2000 sites have been identified within 32 major towns with more than 500,000 inhabitants. Over half of the capital cities in Europe have designated parts of their city as Natura 2000 sites in view of their valuable natural assets. Collectively, these 100 sites harbour 40% of the threatened habitat types, half the bird species and a quarter of the rare butterflies listed in the two EU Nature Directives.

Such a high level of biodiversity may seem surprising at first, but cities actually have a very heterogeneous structure which, in turn, gives rise to a highly diversified mosaic of different biotopes. As a result, many urban areas tend to support a relatively wide range of plants and animals compared to the surrounding countryside. Some species, such as bats, birds and insects, have also become particularly well adapted to the urban environment.

Another important factor about biodiversity in the city is that it is not restricted to classical nature reserves and large open spaces. Habitat structure and quality is as important as size. Hence, urban biodiversity is also often found in rather more unconventional places, for instance along railway tracks and green verges, on brownfield sites, in allotments and private gardens, along river courses and in cemeteries and even on roofs, vertical walls and tall buildings.

The conservation and management of nature and biodiversity in cities is often very complex and rather different from rural areas. There are more people, stronger development pressures, less space, a greater diversity and intensity of competing interests, a multiplicity of administrations involved and a generally poor perception of nature in the city and why it needs to be conserved.

Nevertheless, policy makers are increasingly recognizing the value of green spaces and nature areas in their cities as a means to increase inhabitants' quality of life. Although the green spaces and nature areas are not synonymous and can sometimes compete against each other, they both offer valuable opportunities for exercise, social interaction, relaxation, sports, peace and quiet.

In short, nature in cities is not just about constraints and threats, it is also about opportunities. Because urban environments are constantly changing, there are more opportunities than ever for integrating biodiversity into new development plans and designs. Urban planners themselves are also increasingly recognizing that nature can be useful for them, bringing significant social and economic benefits for little or no extra cost.

The key is for nature to be considered at the outset of the development process and not as an after-thought. It should be seen as part of the solution rather than part of the problem.

11.2 Nature in cities: identifying key success factors

From our analysis of the different experiences and practices used to promote and integrate nature and biodiversity concerns in major EU cities across Europe we have found that a number of common success factors keep re-appearing. These are summarized below as they may be of interest for urban planners and conservation managers in other urban areas.

However, it is also worth noting that we were not 'falling over' good examples during the study. This in itself is very revealing. It seems that, whilst we have no doubt missed some good practices, many cities still consider that nature conservation is simply not an issue for them. Where efforts are made, they are often very ad hoc, dissipated and small scale. Indeed, we came across many more bad practice examples than good ones.

This would seem to indicate that there is still a need for a major recognition of the role of cities in promoting and maintaining biodiversity across Europe, and for its full integration into wider urban development policies.

This concern was recognized in the European Commission's recent Thematic Strategy on the Urban Environment[3], published in 2006. It notes that the best performing cities have developed integrated approaches to urban management where daily decisions are guided by a strategic vision and objectives.

As regards nature and biodiversity it calls for sustainable urban design and appropriate land use planning to help reduce urban sprawl and the loss of natural habitats and biodiversity. In this context, the European Commission intends to 'develop guidelines to help local authorities manage and promote biodiversity in urban areas'.

The following key success factors identified through this report:

- *A good information base:* in order to integrate biodiversity concerns into urban policies it is essential to know what exists in terms of nature values in the town. Cities like Malmo, Oslo, Stockholm, Paris, London and Berlin have all carried out comprehensive inventories of their biodiversity values and have recorded these on maps and in GIS databases that are accessible to others, be they developers, local authorities or planners…

- *A policy vision and clear targets:* Cities with the most advanced urban biodiversity policies have set themselves a clear vision of what they want in terms of nature in their city and have established objectives and targets for achieving this vision. London, for instance, has its own Biodiversity Strategy which sets measurable targets that are recognized and accepted by all other public administrations in the Greater London area and by key stakeholders.

- *Clear Statutory powers and integration into urban development policies:* Like many of the more advanced cities, London has also fully integrated its biodiversity targets into its overall land use plan. As a consequence, there are clear statutory planning rules regarding biodiversity and all new developments and regeneration schemes have to have regard to nature conservation and

[3] *Communication from the Commission to the Council and the European Parliament on Thematic Strategy on the Urban Environment COM (2005) 718 final 11.1.2006. + Communication 'towards a thematic strategy on the urban environment COM (2004) 60 final 11.2.04*

biodiversity. Berlin has adopted a similar approach by mainstreaming biodiversity into the city's overall Spatial Development Policy.

- *Practical tools, guidance and incentives:* the effectiveness of the above policy measures is greatly influenced by whether the cities have also provided their various urban authorities and stakeholders with practical tools, policy guidance and incentives to help implement these measures. For instance, in Malmö the Green Space Factor and, in Berlin, the Biotope Area Factor, both provide planners and developers with a legal framework and practical advice on how to integrate biodiversity into their day-to-day activities. These and other practical guides on how to design with biodiversity in mind help to ensure that such issues are taken into consideration at the outset of the planning process.

- *Biodiversity is seen as part of the solution:* success is also often down to how biodiversity and nature is perceived by the city planners and administrations – whether it is seen as irrelevant, merely a constraint or also as an opportunity. Those that treat it as an opportunity are better able to make a substantial contribution not just in enhancing biodiversity in the city but also in improving people's quality of life in general. They can also profit from the many benefits biodiversity can bring, for instance in tackling other important socio-economic issues that cities face, such as social exclusion, crime, pollution etc….

- *An integrated approach:* all of this calls for an integrated approach to urban development and a strong political will to consider all three aspects of sustainable development on an equal footing: economic, social and environmental. In this way, city dwellers' quality of life does not have to be systematically compromised at the expense of development initiatives that are only interested in economic gains. This integration must however happen at all levels, ie horizontally between different government departments and sectors, and vertically, between national, regional and local authorities, all of whom have a responsibility for how a city is managed.

- *A dedicated staff and right level of expertise:* despite having the political will to do something about nature and biodiversity in their city, many authorities still fail because they do not have the right level of conservation expertise and skills in their administration or a dedicated unit responsible for these issues. Yet, without this it is almost impossible for the authority to make any progress in this otherwise complex and specialized area.

- *Stakeholder engagement:* finally, for nature to be protected in a city, it needs the full support of all stakeholders, at all levels and across all sectors – whether public (eg local communes, railway authorities) or private (architects, the general public…). Not only does this ensure that the areas are effectively conserved and managed, but, as many case studies in this report have shown, it also encourages all parties to take an active part in enhancing biodiversity in their own city and to contribute where they can to improving the quality of life and the environment.

  Once the citizens and stakeholders are engaged and feel ownership of the process, real progress can be made. Often, a little encouragement and incentive is needed from public administrations (eg the jardin partagé in Paris, the Green flag awards in the UK etc..) but at the end of the day, if all stakeholders are involved, collectively they will be able to deliver much more for biodiversity than a city administration could ever hope to do acting on its own.

11.3 Recommendations for Brussels Capital Region

On the whole, the Brussels Capital Region comes out of this study as one of the better 'all rounders' when it comes to conserving urban nature and biodiversity. It has a good baseline knowledge on biodiversity values in the city, it has the legal competence for nature conservation, it has a separate department dedicated to nature within the public administration with a highly skilled and committed staff. It also has a green and blue network strategy to guide the ecological coherence of the city's green spaces and a high proportion of the land protected for nature (14% of territory is in Natura 2000) which is sensitively managed.

However, this does not mean that there is no room for improvement. The following lists our recommendations to the Brussels Capital Region on how to further enhance urban biodiversity in this city, based on good practice experiences elsewhere in Europe:

1. *A clear policy statement and strategy on the conservation of biodiversity in Brussels:* whilst a lot is already being done to maintain biodiversity in Brussels, there is no overall conservation strategy and policy statement to orientate these activities and anchor them in the wider urban policy context. Such a strategy would be very useful for many reasons: it would set clear objectives and targets (eg no net loss of biodiversity, enhance biodiversity in areas considered to be deficient in green/nature spaces…). These targets can then be monitored and assessed, and better integrated into other urban planning policies. The strategy would also provide a sound basis for discussion with stakeholders and other public authorities in order to win their support and encourage their active participation in delivering the objectives set.

2. *Stronger integration of biodiversity targets in statutory planning laws and spatial development plans,* such a strategy would also encourage a clearer link with statutory planning laws and overall spatial development plans. The existing green and blue network, whilst very useful, needs to be better integrated into the land use plan for Brussels and clearer provisions made as regards new development projects and the impacts, both positive and negative, on biodiversity.

3. *User friendly spatial data on nature in the city:* Brussels has already collected a lot of information - via inventories, studies, management plans and maps - on nature and biodiversity in the city. This information is however not always very accessible and user friendly. There needs to a 'one stop shop' for information (eg a dedicated website like in Oslo) where planners, authorities, developers, architects and others can go to find spatially related information on biodiversity in the city.

4. *Practical guidance for stakeholders:* This could be further complemented by a series of practical guides on 'designing with biodiversity in mind' for certain key stakeholder groups (eg railway authorities, communes, architects, developers, urban planners..). Such guidance documents would help ensure greater interest and ownership of the whole process and encourage stakeholders to take up biodiversity issues in their daily work. At present, most stakeholders are not aware of the possibilities, and those that are tend to give up quickly because of the difficulty in finding the right sort of information or the right people to advise them.

5. *Involvement of the Communes:* The same applies to local authorities. Whilst the regional government of the Brussels Region is clearly committed to nature conservation, there is little evidence that this commitment is being passed on to the level of the 19 local communes. A mechanism needs to be found (whether based on land use planning law or through incentives) to encourage a stronger commitment and involvement of individual communes to help deliver nature and biodiversity targets across the City.

6. *A communication strategy for the general public:* Brussels carries out many valuable activities for nature and biodiversity in the city, but little seems to be done to advertise this fact to its citizens. Also, there do not appear to be many initiatives destined for the general public on nature in Brussels.

   It is recommended that Brussels Capital Region develops a communication strategy alongside its nature conservation strategy to address this lack. The strategy would promote:

   - A better dissemination of information to its citizens on its activities to protect urban nature and biodiversity (eg better links with the media, a dedicated public internet site).
   - A programme of activities to enhance the general public's awareness, appreciation and enjoyment of nature in the city (eg better information panels, leaflets, guided walks, self guided walks. Events etc..)
   - A programme of activities to improve nature education – for instance through a concerted programme for schools or one or more focal centres for nature in the city, similar to the Ecology centre in London, or the different nature pavilions and nature centres that have been created in Paris.

   Providing one or more focal points (eg a dedicated building) in the capital to promote nature related activities and information would be particularly useful considering how much is already being done in Brussels on this subject and the wealth of natural values present. It would not only give a high profile to the issue but also provide a central venue for nature related events, be it for school children, local inhabitants, gardeners, etc…. Experience from other cities has shown that such places are very popular with the general public.

7. *Capacity building and incentives to encourage greater public involvement*: Linked to this is a need to improve the involvement, as well as the level of expertise and capacity of local citizens, NGOs and citizens groups in local initiatives to promote nature and biodiversity. Such incentives could be in the form of funding, free advice and training, practical support, exchange platforms etc… The Jardin Partagé scheme in Paris, for instance, is an interesting example of getting citizens involved: the local associations are responsible for the work but they are guided by the public administration.

   Other initiatives to encourage local groups to get involved and use nature as a source of inspiration for more socially orientated urban schemes would also be very useful, for instance, projects with disabled people, the elderly, allotment gardeners, private gardens, young offenders, immigrant groups etc….

8. *Greater networking with other EU cities*: finally, looking further afield, it is clear that nature and biodiversity is finally starting to get some sort of recognition amongst European cities and that a lot is to be gained from sharing experiences and good practices between cities across Europe on this rapidly evolving topic.

   Being one of the forerunners in this area, Brussels Capital Region would be very well placed to stimulate further exchanges in experiences good practices with other EU cities.

   In particular Brussels should consider:

   - Hosting a major European Conference on the subject of nature and biodiversity in European cities. This would be the first conference of its kind in Europe and it is clear from the discussions we had with different cities across Europe that there would be a very strong interest in this topic. Such a conference would fit very well with the objectives of the EU thematic strategy on the urban environment and the European biodiversity strategy and also therefore likely to solicit interest also from urban planners and the European Commission within the wider sustainable cities context.

   - Applying for EU funds to help establish a more permanent network on exchanging good practices on urban biodiversity in cites across Europe. The EU programming period 2007-2013 for regional and other EU funds attaches a great deal of importance to promoting sustainable cities and would no doubt offer opportunities to fund such a networking initiative.