‘Statins and Greenspaces’: Health and the Urban Environment

Proceedings of a conference held by the UK-MAB Urban Forum
at University College London (UCL)

Edited by Gerald Dawe and Alison Millward

geralddawe@aol.com alison.millward@talk21.com

Jointly organised by:

www.ukmaburbanforum.org.uk

and

UCL Environment Institute

www.ucl.ac.uk/environment-institute

May 2008

With the support of:

Cyngor Cefn Gwlad Cymru
Countryside Council for Wales

NATURAL ENGLAND

Centre for Ecology & Hydrology

‘Statins and Greenspaces’

Statins are a class of drugs used to lower cholesterol levels in people at risk of heart disease.

They contrast usefully with the relatively ‘non-technical’ but nonetheless complex, notion of ‘green’ open spaces.

Executive Summary

This conference looked at the health-promoting potential of urban green open spaces from different perspectives, and included two panel sessions. It asked the question: 'why is greenspace not more readily prescribed by doctors, given the evidence that it is good for health?'. Topic areas included:

- ❏ Accessibility, privacy and security of open space in relation to lifestyle
- ❏ Psychological and mental health benefits of urban open space
- ❏ Health inequalities, environmental justice and open space
- ❏ The use of plants and animals in open spaces in relation to health
- ❏ Health and forested open spaces in urban and urban fringe areas
- ❏ A case-study of one open space and its psychological and mental health benefits from the users' point of view
- ❏ Interaction between green open spaces, health and medicine: the communication issues which needed dealing with, to make effective connections
- ❏ Quantitative relationships between greenspaces and community health: does one necessarily follow the other?
- ❏ Two other factors came to the fore: (1) contrasts between Western world and 'majority world' perspectives; and (2) the relative value of scientific evidence, in relation to socio-political concepts such as environmental justice, sustainability, and inspiration

Findings from the contributors were as follows:

- ❏ Individual lifestyle, personal values and the feeling for integration within the community were at the heart of accessing urban open space, explained Russell Jones. Whilst tools such as Geographical Information Systems (GIS) could reveal the apparent amount of open space, this was not accessible open space in reality. Some public open spaces were actually avoided by significant groups in society.

- ❏ Evidence for the psychological and mental health benefits of urban open space was considerable, though people could sometimes react negatively to exposure to nature, concluded Ian Douglas. The multi-functional nature of urban greenspace can secure positive health benefits for all, though it was impossible to provide a single plan for fostering nature for health, because of widely differing cultural and socio-economic situations.

- ❏ 'Majority world' perspectives showed that severe and high mortality rates in, e.g., Latin America, precluded green spaces simply being used for passive recreation. Here, political movements around environmental justice and practical sustainability were needed much more, as a means of achieving a more equitable distribution of urban greenspace, which in turn, might achieve better health connections. Carolyn Stephens made links between health, the nature of what was grown on urban open spaces, and macro-economics. She concluded that the notion of green spaces as 'peacemakers', or as agents of social cohesion, was something underappreciated from a Western perspective.

- ❏ The obvious and complete reliance of many people in the majority world on food crops grown on urban or peri-urban sites was described by Monique Simmonds. The notion of 'biodiversity', again viewed from the Western world viewpoint, tended to be far removed from the actual biological nature and valuable properties of the plants themselves.

The first panel discussion followed on from this and there was commentary on connections and disconnections from nature,

and of both how useful and how limited science was in being able to analyse 'health' and 'environment' connections holistically.

- Projects involving the Forestry Commission and links between health and urban greenspace were reviewed by Liz O'Brien. To ensure effective outputs strong links had been established, from the start, with regional Primary Care Trusts (PCTs). The variety and scale of individuals and groups which the Forestry Commission had been involved with was valuable and also, integral to the success of the work.

- The 'Meanwhile Gardens' site in London, about which a DVD has recently been made, and was shown to the conference, was reviewed by Ambra Burls. This, and work Ambra had carried out previously, showed how open spaces can not only grow plants, but can also help develop people, and improve their mental health. Some of the gardeners reported back on their growing sense of self-esteem as a result of being involved with the project.

- The challenges of placing health and greenspaces into a currency which policy-makers can understand was the important theme dealt with by William Bird and Huw Davies. A central part of this was, they argued, engaging both with PCTs and Public Service Agreements (PSA). The practical importance of using health statistics, and relating these to economic savings which could be achieved by getting patients to use green spaces, was also emphasised.

- Further insights using GIS, into how good health and the percentage of apparently accessible greenspace did not always coincide were given by Pete Dixon. One of his conclusions was that the 'health-environmental quality' concept can be used, with care, in helping to define 'Environmental Action Areas', and even 'Economic Growth Areas'.

The second panel session explored areas of 'biodiverse' open spaces, and the fact that there were many contradictions around accessing it for health reasons. Some people were receptive to nature, whilst others were —unfortunately— repelled by it.

Conclusions emerging from the papers emphasised the function of greenspaces as drivers for 'peace making' and community cohesion, as well as the personal benefits to individual mental health from participation in co-ordinated gardening work. These were in addition to more conventional gains to physical and mental health, as identified from previous papers. Aside from these benefits accruing from greenspaces, important messages emerged regarding the practicalities of i) how to communicate health benefits from involvement in greenspace, and ii) how to organise successful public involvement with greenspaces. The former requires speaking a language which doctors and PCT administrators can understand and combining it with the practicalities of medical cost-benefit analyses. The latter requires solid partnership working from the outset. One of the subtleties emphasised was that 'greenspace' involvement should not be 'prescribed' to 'patients', but rather, people need to find more positive ways of engaging with it, and also, with broader levels of nature and the environment.

Contents

Introduction

This meeting held on the 27th March 2007 had been planned by the Urban Forum for some time. This was an attempt to bring together practitioners from the two fields: 'health' and 'greenspace' into an arena where differences and connections could be easily discussed. The Forum felt that common ground between health professionals and greenspace managers had not yet been converted into action and, perhaps somewhat idealistically, into medical prescriptions for 'greenspace'.

Three questions have been frequently posed by members of the Forum:

(1) if green open space is, as all the evidence indicates, good for us, why is it not readily 'prescribed' by doctors as at least a partial solution for a wide range of ailments?
(2) what is the relationship between access to biodiversity and health?
(3) how do greenspace practitioners find common ground with health practitioners?

These questions were explored in for us by Professor Ian Douglas's reviews on both mental and psychological health (see pages 12-22), and physical health (forthcoming). The conference was a useful space in which complementary areas could be expanded on, and move a little towards being resolved.

There are a myriad series of interactions between green open spaces and human health (Sanesi et al., 2006), and the possibility of gaining health benefits is inevitably influenced by socio-economic status, or 'social capital' in both indirect and direct ways (Sooman and Macintyre, 1995, Sundquist and Yang, 2007, Winkler, Turrell and Patterson, 2006), together with gender and age. The relationship has been investigated for women (Krenichyn, 2006) and children with regard to open spaces and/or environment (Arneson, 2006).

Some of the benefits which may occur from contact with green open spaces are:

Aesethetic and visual pleasures:
These range from the pleasure of 'chaos' in nature (Gleick, 1993) which may, according to some, approximate to Immanuel Kant's *sublime* (Richards, 2001), to broader mental health and psychological benefits from green spaces (Guite, Clark and Ackrill, 2006). Subtleties of 'favourite natural places' may include their ability to induce positive mood changes and reduce negative feelings or stress (Korpela and Ylén, 2007).

Cementing community cohesion:
Open spaces can 'bring people together' (Armstrong, 2000), encourage social interaction and give people broader mental health and psychological benefits (Burls, 2007a, 2007b)

Relief from disease:
Here, benefits mainly mainly arise from physical exercise (per se, as well as in combination with open spaces) and the recovery or rehabilitation from diseases. These include heart disease (Taylor, 2000) and also, obesity (Nielsen and Hansen, 2007).

Longevity relationships:
A few studies have shown how physical contact with open spaces can actually encourage greater longevity (Takano, Nakamura and Watanabe, 2002, though see also criticism by Adams and White, 2003).

From a wider perspective, green spaces obviously can provide everything from economic well-being, food supplies, and other necessities of life, and thereby can, at minimum, be regarded as 'therapeutic landscapes' (Conradson, 2005, Gesler, 2005, Milligan, Gatrell and Bingley, 2004). Integration of both health, plus 'green infrastructure' and 'eco-therapy' concerns in such landscapes is now an increasingly common theme (Burls, 2007a, 2007b, Tzoulas et al., 2007).

There are also policy issues around the equitable distribution of open spaces for better health

(Timperio et al., 2007). As a consequence, environmental justice (Buzzelli and Veenstra, 2007) sustainability and related political areas (Richmond et al., 2005) are increasingly urgent concepts which determine, at least in part, peoples' access to green open spaces.

Gerald Dawe and Alison Millward

References

Adams, J. and White, M.(2003). Health benefits of green spaces not confirmed. *Journal of Epidemiology and Community Health,* **57,** 312.

Arneson, S.J.(2006). Environmental health information resources: healthy environments for healthy women and children. *Journal of Midwifery & Women's Health,* **51(1),** 35-38.

Armstrong, D.(2000). A survey of community gardens in upstate New York: implications for health promotion and community development. *Health & Place,* **6,** 319-327.

Burls, A.(2007a). People and green spaces: promoting public health and mental well-being through ecotherapy. *Journal of Public Mental Health,* **6(3),** 24-39.

Burls, A.(2007b). Ecotherapy: a therapeutic and educative model. *Journal of Mediterranean Ecology,* **8,** 19-25.

Buzzelli, M. and Veenstra, G.(2007). Editorial: New approaches to researching environmental justice: Combining critical theory, population health and geographical information science (GIS). *Health & Place,* **13**, 1–2.

Conradson, D.(2005). Landscape, care and the relational self: Therapeutic encounters in rural England. *Health & Place,* **11,** 337–348.

Gesler, W.(2005). Therapeutic landscapes: an evolving theme. *Health & Place,* **11,** 295–297.

Gleick, J.(1993). *Nature's Chaos*. Little Brown and Co., UK. ISBN 0-7474-0759-2. 125 pp.

Guite, H.F., Clark, C. and Ackrill, G.(2006). The impact of the physical and urban environment on mental well-being. *Public Health,* **120,** 1117–1126.

Korpela, K.M. and Ylén, M.(2007). Perceived health is associated with visiting natural favourite places in the vicinity. *Health & Place,* **13,** 138–151.

Krenichyn, K.(2006). 'The only place to go and be in the city': women talk about exercise, being outdoors, and the meanings of a large urban park. *Health & Place,* **12,** 631–643

Milligan, C., Gatrell, A. and Bingley, A.(2004). 'Cultivating health':therapeutic landscapes and older people in northern England. *Social Science & Medicine,* **58,** 1781–1793.

Nielsen, T.S. and Hansen, K.B.(2007). Do green areas affect health? Results from a Danish survey on the use of green areas and health indicators. *Health & Place*, **13(4),** 839-850.

Richards, R.(2001). A new aesthetic for environmental awareness: chaos theory, the beauty of nature, and our broader humanistic identity. *Journal of Humanistic Psychology*, **41(2),** 59-95.

Richmond, C., Elliott, S.J., Matthews, R. and Elliott, B.(2005). The political ecology of health: perceptions of environment, economy, health and well-being among 'Namgis First Nation. *Health & Place,* **11,** 349–365.

Sanesi, G., Lafortezza, R., Bonnes, M., Carrus, G.(2006). Comparison of two different approaches for assessing the psychological and social dimensions of green spaces. *Urban Forestry & Urban Greening,* **5,** 121–129.

Sooman, A. and Macintyre, S.(1995). Health and perceptions of the local environment in socially contrasting neighbourhoods in Glasgow. *Health & Place,* **1(1),** 15-26.

Sundquist, K. and Yang, M.(2007). Linking social capital and self-rated health: a multilevel analysis of 11,175 men and women in Sweden. *Health & Place,* **13,** 324–334.

Takano, T., Nakamura, K. and Watanabe, M.(2002). Urban residential environments and senior citizens' longevity in megacity areas: the importance of walkable green spaces. *Journal of Epidemiology and Community Health,* **56,** 913-918.

Taylor, A.(2000). The effects of exercise training on patients with chronic heart failure. *Coronary Health Care* **4**, 10–16.

Timperio, A., Ball, K., Salmon, J., Roberts, R. and Crawford, D.(2007). Is availability of public open space equitable across areas? *Health & Place,* 13, 335–340.

Tzoulas, K., Korpela, K., Venn, S., Yli-Pelkonen, V., Kaźmierczak, A., Niemela, J. and James, P.(2007). Promoting ecosystem and human health in urban areas using green infrastructure: a literature review. *Landscape and Urban Planning,* **81(3),** 167-178.

Winkler, E., Turrell, G. and Patterson, C.(2006). Does living in a disadvantaged area entail limited opportunities to purchase fresh fruit and vegetables in terms of price, availability, and variety? Findings from the Brisbane Food Study. *Health & Place,* **12,** 741–748.

Acknowledgements

Gratitude is due to all of our speakers and to Members of the UK-MAB Urban Forum, especially to the welcome encouragement of Pete Frost, Ian Douglas and David Goode, for helping inspire the meeting. Mark Maslin, the Director of UCL Environment Institute, also kindly hosted this inter-disciplinary meeting, and David Goode generously arranged the space for us at UCL.

On the administrative side, we also thank our Secretary, Nick Jackson for helping to achieve the smooth running of the conference. Finally, Dana Pridie-Sale, Manager of the UCL Environment Institute is also thanked for her help.

Note on Copyright

More than just a park: choice, individualism and risk perception in two contrasting areas of Glasgow by Russell Jones, Glasgow Centre for Population Health (GCPH) and Clyde Valley Greenspace Network

Glasgow Centre for Population Health, Level 6, 39 St Vincent Place, Glasgow G1 2ER.
Tel: 0141 221 9439 E-mail: russell.jones@drs.glasgow.gov.uk

Studies indicate that both the actual and perceived quality of certain characteristics of the local environment, e.g. housing, playgrounds, parks and transport, are linked with both physical and mental health. Evidence consistently shows that accessible and safe urban greenspaces have a positive influence on levels of physical activity, as well as enhancing individuals' sense of well-being by providing opportunities for engagement with nature and an opportunity for social interaction. Most studies, however, employ a single research method, the majority using either surveys or GIS mapping, with very few qualitative studies that explore the complex relationships between individuals and their neighbourhoods and subjective experiences of urban greenspace.

The FAB Greenspace study uses a mixed method approach to explore in-depth the facilitators and barriers to the use of greenspace in two contrasting areas of Glasgow. The methods include GIS mapping, quality assessment, analysis of survey data, and qualitative techniques such as in-depth interviews, participatory appraisal and participants' photographs of their local area. This presentation will first describe the study, then go on to present some of the findings from each method. The focus of the latter part of the presentation is on the qualitative results which looks at how park usage competes with other forms of leisure that are either perceived to offer less risk or are better suited to increasingly individualised lifestyles. The findings also support other evidence that the level of community integration can mediate perceptions of risk in public space.

Introduction

There is a lot of research on access to urban greenspace. Three of these centre on urban health including the GOAL (Glasgow Outcome, Activated protein C (APC) resistance and Lipid (GOAL) pregnancy) longitudinal study. However, in general they have mostly used Geographical Information Systems (GIS). There has been very little qualitative assessment. Therefore, the Glasgow Centre for Population Health (GCPH) developed the FAB (Facilitators And Barriers) approach.

The FAB Greenspace Study consists of the following partners:

- ❏ Glasgow Centre for Population Health
- ❏ NHS Greater Glasgow and Clyde
- ❏ MRC Social and Public Health Sciences Unit
- ❏ Glasgow City Council
- ❏ Glasgow and Clyde Valley (GCV) Structure Plan Team

Glasgow and the Clyde Valley has a very local and detailed level mapping of greenspace. The south Glasgow region is in general a more deprived area, and the north is more affluent. GIS does not really assess quality or whether greenspace is in public or private ownership, and cannot assess its quality in terms of biodiversity and / or public access or usage of the space.

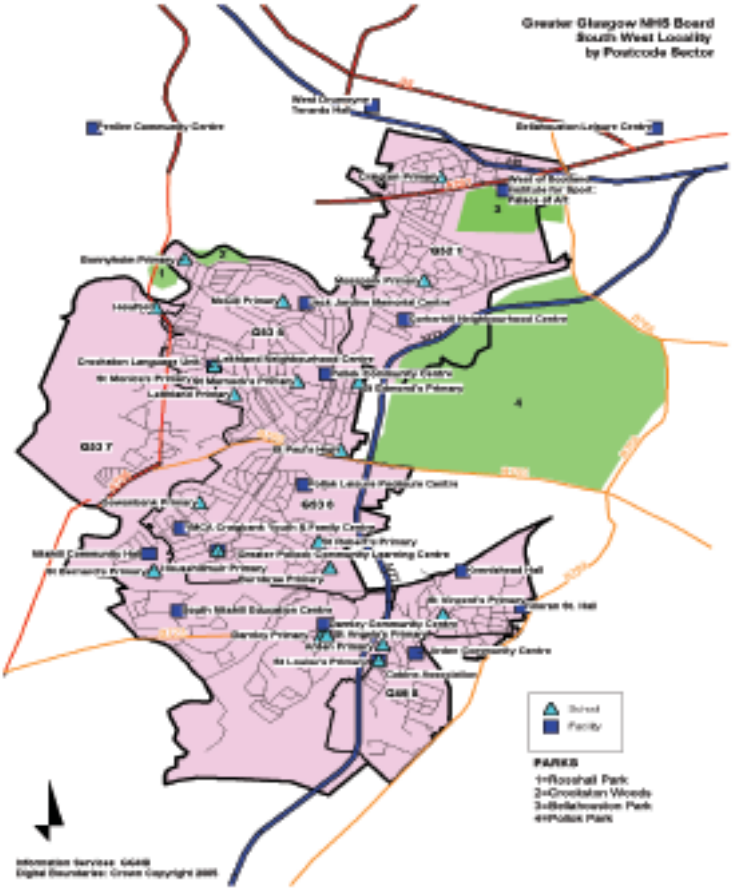
Aims and Methodology

The GCPH set out to do qualitative work on open space access in the north and south of the Glasgow region, by means of involving participative groups of individuals and interview work. The objectives were to see how greenspace was perceived by local people, how it was defined, and how it was used. Accessibility judged by using GIS alone would not have evaluated this.

Methods included:

- ❏ GIS Mapping
- ❏ Quality assessment (audit) ('Assessing Space')
- ❏ Survey data analysis
- ❏ 6 discussion groups
- ❏ 26 in-depth interviews
- ❏ Photographs

Greater Glasgow NHS Board: North West locality



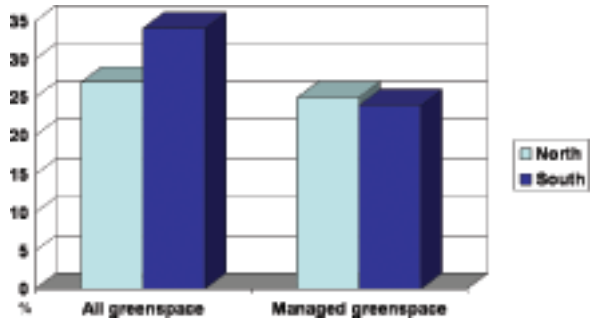
Greater Glasgow NHS Board: South West locality

Results and Case Studies

Quantitative studies

GIS mapping of the greenspaces within access of the two research populations revealed that the population in the south had slightly greater access, although this part of Glasgow would be considered to be more deprived than the north area.

Access to Greenspace
(300 metres from greenspace > 2 hectares)



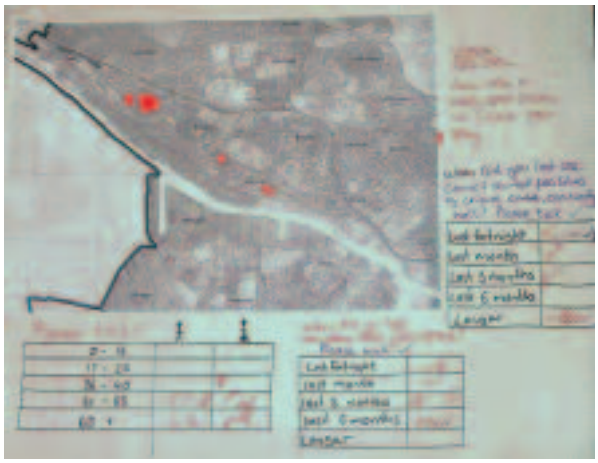
The Assessing Space audits that were undertaken by independent assessors as well as the greenspace users, revealed that there was:

- ❏ Wide variation in quality of green open spaces within both areas (North West and South West)
- ❏ Most would benefit from lighting, seating and increased maintenance
- ❏ Often there is a difference in quality inside and outside leisure facilities and community halls
- ❏ Many were not friendly, welcoming or sociable

Some preliminary findings from health survey information revealed that:

- ❏ More male obesity in North than South, but this pattern is reversed for females
- ❏ People in North are more likely to be physically active outside
- ❏ Outside physical activity is associated with perceived burglary levels

Qualitative studies



Some of the results of community input

Findings

- ❏ Facilitators and barriers – were not experienced universally
- ❏ "Fixing the park" approach may not attract everybody
- ❏ At the individual level a complex interplay of lifestyle factors, opportunities and values affects park usage

The lifestyle of individuals, the values they held, and the more integrated they felt within their community, were the most important predictors in how people would use greenspace. This is best illustrated by some case studies:

Case study 1: **Migrant mother with young family, South:** Here, a woman had experienced racism which put her off from using her local greenspace. So, instead of using the local park, she used a community café with a small garden area, with a clientele she felt more comfortable with and where her children could run about with ease and in safety. For this woman:

- ❏ Parks were perceived as providing a valuable resource for her children, but she experienced
- ❏ Poor access to all but the most local green spaces (low quality)
- ❏ She sought opportunities to talk to other parents
- ❏ Integration within her local community was low and she was fearful of anti-social behaviour or racism
- ❏ Facilitators and barriers conspired against park usage
- ❏ Alternative locations were sought - community café

Case study 2: Male Old Age Pensioner (OAP), North: An elderly man felt that young or adolescent people were a threat, and he felt much safer in a private bowling club. He:

- ❏ Sought opportunities to socialise and exercise with people his own age
- ❏ Felt vulnerable as an OAP who had been a victim of crime
- ❏ Felt at odds with society around him - lack of respect
- ❏ Facilitators and barriers conspired such that he opted to use a local private bowling club over local council facilities

Case study 3: Father, North. A 'middle-class' family. Here, a man was more confident, and he went to a skate park with his children. This gave him a different, more positive perspective on young people. He did not regard them as a problem, but simply as bored people, without an outlet for their activity. He:

- ❏ Valued variety and diversity in his community and was happy for parks to reflect this
- ❏ Valued being with child-centred and community-minded people but also liked to get away from the crowd
- ❏ Had a lifestyle that was time poor and with tastes outside the mainstream e.g. yoga
- ❏ Was stoical of anti-social behaviour and looked for the underlying reasons
- ❏ Used the park individually and as a family

The young people interviewed, who were frequently feared by other age groups, were also fearful of their contemporaries. This finding raised the notion of who exactly was fearful of who within a park and how different aged user groups could be encouraged to become more familiar with each other, perhaps through organized whole community based creative activities (e.g. fairs and community gardens), to reduce this barrier.

The people in the north of the city wanted to see physical changes to their parks primarily, whereas people from the south wanted to see action to tackle the anti-social behaviour and racism they encountered in their parks.

Conclusion

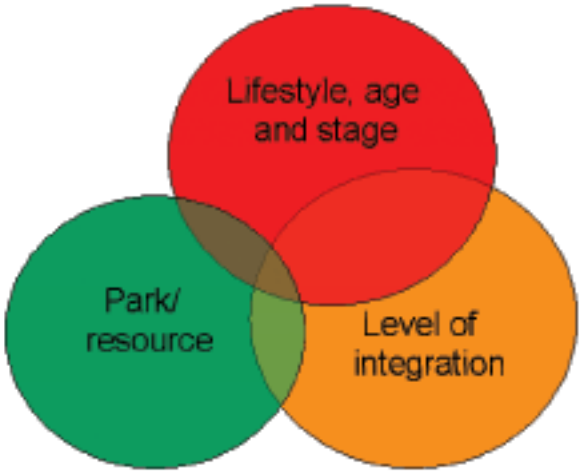
There is a complex interaction of factors that determine whether or not an individual will make use of a greenspace. These include:
Parks themselves

- ❏ Quality
- ❏ Safety
- ❏ Things to do
- ❏ Litter/cleanliness
- ❏ Litter/graffiti linked with safety

Lifestyle
- ❏ Structures, opportunity and access
- ❏ combination of choice and constraints

Values
- ❏ outdoor leisure versus shopping
- ❏ Integration within local community – fear of racism or anti-social behaviour
- ❏ Stoicism versus fear

The intersection of influential factors:



Factors interact to determine park usage

Access and use of greenspace is all to do with lifestyle as well as the quality of the greenspaces themselves. Significantly, quality parks and other publicly accessible greenspaces were not always used.

To sum up:

- ❏ It is just about quality of green space, it is about lifestyle, values, access and level of integration within the local community
- ❏ Quality green space is necessary, but not sufficient to encourage use
- ❏ People choose the ways they want to spend their free time within constraints and will decide whether the local park fits in with that
- ❏ Creative activities can encourage use
- ❏ Parks need to be well connected with the local community (socially and not just spatially)

Next, the results and conclusions of this work will be disseminated by:

- combining data from all sources into a written report
- Traditional dissemination via a report, executive summary, seminar and website
- Creative dissemination via Glasgow School of Art and the engagement of planners, park officials and communities

Psychological and mental health benefits from nature and urban greenspace by Ian Douglas, Emeritus Professor, University of Manchester

Geography, School of Environment and Development, The University of Manchester, Oxford Road, Manchester, M13 9PL, UK. Tel: 0161 275 3642. E-mail: ian.douglas@manchester.ac.uk.

There is good scientific evidence that contact with nature in urban areas can improve mental health and can help in the restoration of psychological well-being. This evidence is of four kinds: i) the outcomes of experiments in which subjects have been tested in contrasting situations; ii) the findings of studies that used photographs and videos of natural environments to test people's reactions; iii) the results of attitudinal surveys, both quantitative and qualitative, in which people are asked about their preferences and experiences; and iv) the use of national or regional health data sets. It is strong enough to make the case for the inclusion of areas of natural vegetation in both urban planning, particularly for the expansion of existing towns and the creation of new urban settlements, as planned in the Thames Gateway area of the United Kingdom. Such areas need to be strategically located to give accessibility to both the young and older people likely to use them and to provide for different types of enjoyment, from dog-walking and jogging to bird-watching and environmental education. Public participation in the planning and management of such areas, especially through interaction and consultation with local communities, will enhance their value and will help to reduce vandalism and other forms of misuse.

Nevertheless, the experimental, survey and quantitative scientific evidence is based on relatively few studies from a narrow range of countries. It indicates that there are cultural and social contrasts in attitudes to, and perceptions of, natural vegetation in urban areas. However, it is insufficient to indicate whether the observed contrasts apply more widely than in the specific socio-economic situations in which the surveys were conducted. To maximise the benefits from urban greenspace, local situations and needs should be studied carefully so that urban nature is managed to provide for the outdoor activities that the local community enjoys, while also providing opportunities for biodiversity and other multiple functions, such as storm water detention, CO_2 uptake, urban heat island intensity reduction and potential biofuel harvesting. No one single plan for maximising the mental health benefits of urban greenspace is advisable. Knowing the human society and the urban ecosystems in specific places is essential.

Introduction

> "Denying the relevance of nature to our deepest emotional needs is still the rule in mainstream therapy, as in the culture generally. It is apt to remain so until psychologists expand our paradigm of the self to include the natural habitat—as was always the case in indigenous cultures, whose methods of healing troubled souls included the trees and rivers, the sun and stars" (Theodore Roszak, 1996).

For urban people, the separation from nature is greater than in other forms of human settlement, but need not necessarily be so. Natural vegetation fulfils many ecosystem and human well-being functions in urban areas. One of the more important is alleged to be improvement in mental health, through recovery from, or alleviation of, mental illness and stress and through helping to raise a feeling of well-being among people using natural areas. Since 2000, urban greenspace, both quasi-natural and fully managed, has had a high profile in the planning, health and sustainable development agendas. *Planning Policy Guidance 17* (Office of the Deputy Prime Minister (ODPM), 2002) specifically mentions "promoting health and well-being" among the multiple functions of urban open spaces. The National Audit Office's Report on *Enhancing Urban Green Space* (Comptroller and Auditor General, 2006) points out that "access to green spaces improves people's quality of life, reducing stress, encouraging relaxation, and providing a sense of freedom". The Royal Commission on Environmental Pollution's Report on *The Urban Environment* (2007) states that there is "convincing evidence of the positive benefits to be gained from both active and passive involvement with natural areas in towns and cities".This paper examines the scientific evidence for such assumptions and asks whether the mental health benefits of urban greenspaces contribute to the arguments for their incorporation into planning for the creation or restoration of urban areas.

Relating environment to mental health is not made easy by a lack of clarity in the definitions of the concepts of mental health and of environment. Environment in the context of

greenspaces may be taken as the biophysical surroundings of individuals, families and communities. These surroundings affect the human psyche through their direct sensory impacts. Equally our surroundings may influence our thoughts and feelings by the way they inhibit or filter our experience of other things (buildings, for example, detach us from the external environment). In addition, our biophysical surroundings mediate or affect, inhibit or encourage our social and personal relationships. Mental health may be taken in its broadest sense of mental well-being or "peace of mind".

The commonly cited beliefs

Much of what is written about the importance of urban greenspace is related to people's biological needs as mammals for room for various activities. Direct relationships between these needs and health are unclear.

> **"**For a balanced urban habitat we must provide brood cover for small children; safe territory for youthful exploration; flocking, trysting and roosting habitat for young adults; and finally stable and well defined territories for older cohorts. The vacant lot in his block is of far more value to a five-year-old than is the park located three or four blocks away. Likewise, the elderly need readily accessible, comfortable, and quiet parks. With man, as with wildlife, scale and distribution of green areas are important" (Stearns, 1972, p.275).

The expansion of suburbs of semi-detached houses between 1920 and 1940 in Britain was seen as increasing the scope for improvements in physical health. "In contrast to the dirt and overcrowding of inner urban areas, suburban living offered space, low densities, gardens and access to the countryside. The emigrant from the city could rejoice in raising his family in clean and humane conditions" (Ineichen, 1993, p. 16).

But such benign biophysical surroundings do not always bring good mental health. The Oxhey estate near Watford, built soon after 1950 to house people from inner London, had a rate of mental illness higher than the national average, despite having a good layout, greenspace within the estate and good access to Oxhey Woods (Martin et al., 1957). Possibly this is an early example of the "suburban neurosis" that has been widely reported from Britain's New Towns (Ineichen, 1993).

Many emphasise that the psychological differences between different urban environments and between urban and rural life depend upon people's attitudes and life styles and cannot be related simply to the biophysical environment (Howarth, 1976). Many modern secondary schoolchildren express fears about natural areas or wildlands to which they may be taken as part of school or recreation centre activities (Wohlwill, 1983). Such negative perceptions are often linked to preferences for manicured path settings, urban environments and indoor social recreation activities (Bixler and Floyd, 1997). Neverthless, much of the literature refers to greenspace as offering a relief from stress. Modern urban living may involve both sensory deprivation and information overload. People can suffer from both. An excess of either one can be harmful. An adequate living environment balances sensory inputs and provides a mix that is both congenial and consistent with people's culturally conditioned needs (Hall, 1968). Areas of natural environment in towns and cities are theoretically seen as providing the setting for recovery and recuperation from the stress and strains of the built urban environment (Kaplan, 1984). Four themes emerge from the literature of the benefits of nature in the city (Knopf, 1987; Parry-Jones, 1990):

- ❏ Nature restores
- ❏ Nature facilitates competence building
- ❏ Nature carries symbols that affirm the culture or self
- ❏ Nature offers a pleasing diversion.

These general statements about the benefits of urban greenspace have been adopted by many UK local and regional authorities. Their comments emphasise biophysical environmental benefits. Good quality greenspaces encourage people to walk, run, cycle and play. Greenspaces

improve air quality and reduce noise, while trees and shrubbery help to filter out dust and pollutants. If paths and cycle networks are integrated to facilitate commuting, they can reduce transport needs and provide safe and healthy routes to school for children that avoid hazardous road crossings.

Stockport MBC stresses health and well-being aspects as well:

- Relaxation, contemplation and passive recreation is essential to stress management in today's busy world—recent evidence has brought to light the extraordinary role that good quality greenspace plays in relieving stress and promoting physical and mental health not only of individuals but the well being of the community—quality greenspace is often absent from problem neighbourhoods.
- Greenspace issues can unite the whole community and can be the focus of community development and local regeneration fostering a sense of community pride.

Stockport MBC has put these ideas into action. A pioneering development, based in Stockport, funded by the local authority, the Countryside Agency and the Health Authority, promotes and improves access to greenspace in urban areas for people with physical and mental needs. The Council creates and signs accessible paths through attractive greenspace close to areas of deprivation and ill-health. GP's and community nurses refer patients to the project for exercise and well-being. Local volunteers and community groups also work with the project, to create and maintain the pathways and to complete a borough-wide network of routes.

Elsewhere in the UK (Henwood, 2002) projects have been set up to increase the health benefits of activities in the outdoor environment through organised schemes to promote walking (eg the Thames Valley and Sonning Common Heath Walk schemes) and using conservation work to increase levels of physical activity –an approach known as 'green gyms' (Bird, 1999). A wider range of other schemes aim to promote health and wellbeing, but not necessarily or exclusively by promoting physical activity. In these schemes people are encouraged to enjoy the psychological benefits that can be afforded by 'green spaces', or communities enabled to thrive through projects that take a holistic rather than a medical approach to people and health by promoting participation in art and learning in ways that often focus on the value of local environmental amenities, spaces and landscapes (e.g. Rigler and Campbell, 1996).

Campaigning organisations, such as Greenroofs, use similar arguments about the mental health and well-being values of urban greenspace:

> "Many psychological studies have proven that the overall quality of life can be enhanced by the addition of natural green spaces. Distinct therapeutic links exist between moods, health, recuperation time and nature. It has been suggested that mental health and emotional stability are positively influenced by green spaces and with interaction of other elements of nature. Green spaces reflect the changing seasons and provide a psychological link with the countryside. Green roofs could certainly be part of a comprehensive therapeutic environment, especially when contrasted to viewing the more common ugly roof spaces from a hospital window" (http://www.greenroofs.com/psychological_advantages.htm).

A commentary on the London Greenspace plan argues that:

> "Access to green spaces also provides mental health benefits. Green spaces offer relaxation for stressed urban dwellers. Studies in the USA have shown that within three minutes of being in green space stress levels return to normal whereas recovery time in a built-up area is 25 minutes. One in five people will suffer from mental illness, including depression during the course of their lives. Regular moderate exercise is as effective as medication in alleviating mild to moderate depression. These

> benefits of green space represent significant savings for the health care budget which can be achieved by people having easy access to green spaces. There are particular benefits from green spaces for minority groups which have poorer than average health and limited access to the countryside".

Recreational parks and green areas provide opportunities for healthy physical activity and the relief of stress. Furthermore, the passive benefits to physical and mental health of an urban landscape with trees have been documented in industrialized countries (Ulrich, 1984); enjoyment of green areas may help people to relax or may give them fresh energy. Such findings broadly confirm the conclusions of others concerning contact with nature, reduction of stress and escape from dense urbanity (Ulrich, 1979; Greenbie, 1981; Nicholson-Lord, 1987; Kaplan and Kaplan, 1989; Bussey, 1996).

The grounds for these beliefs

The actual evidence for mental health benefits from urban greenspace may be less clear than these assertions imply. Undoubtedly, trees fulfil certain psychological, social and cultural needs of urban people. They play an important social role in easing tensions and improving psychological health. One study has demonstrated that hospital patients placed in rooms with windows facing trees heal faster and require shorter hospital stays (Ulrich, 1984). When appropriately selected and placed, trees are effective in screening out undesirable views and ensuring privacy, while permitting free visual access to the rest of the landscape.

Parks provide easily accessible recreational opportunities for people and offer opportunities for healthy physical activity. In one study (Hull and Harvey, 1989) people visiting parks expected to experience more please the more trees and the less undergrowth there were. The subjects' preference for parks increased linearly with increasing pleasure and arousal. The arousal-inducing characteristics were counter to the calming influence of parks expected by the researchers. The exhilaration and arousal often came from paths through thickets of undergrowth which may have induced an element of fear into some visitors. This study and others suggest that while feelings of calm and relaxation are major components of people's emotional reactions to nature, more animated responses such as being emotionally moved and uplifted are also important (Rohde and Kendle, 1994). Enjoyment of green areas may help people to relax or may give them fresh energy (Ulrich, 1990).

Mental health specialists have noted that the nineteenth century mental asylums often had farms. In the late twentieth century, the extensive grounds around asylums became gardens in which inmates continued to work. An almost universally accepted criticism of the closure of asylums and de-institutionalisation of mental illness is about the loss of these gardens, which implies a universal assumption that gardens are therapeutic to the mind. More recent evidence of this therapeutic value of gardening, comes from Brown and Jameton's observation (2000) that recreational gardening is a way to relax and release stress and Patterson and Chang's evidence (1999) of a link between physical activity such as gardening and reduced anxiety and depression.

Gardens represent attempts at models for the environment as paradise. Should we question this basic idea of their therapeutic quality, we would have great difficulty explaining a large proportion of the world's poetry. Evidence continues to demonstrate the therapeutic value of gardening for many different social groups, whether the inmates of institutions, the elderly or the young (Milligan et al., 2003). Gardens and gardening imply social values of greenspaces and thus demonstrate the significance of the garden city suburban design concept that permeated twentieth century planning.

The scientific evidence

Broadly, the scientific evidence is of four kinds: i) the outcomes of experiments in which subjects have been tested in contrasting situations; ii) the findings of studies that used photographs and videos of natural environments to test people's

reactions; iii) the results of attitudinal surveys, both quantitative and qualitative, in which people are asked about their preferences and experiences; and iv) the use of national or regional health data sets. The therapeutic value of natural environments has only been tested in a few controlled experiments which have indicated that such surroundings aid recovery from surgery (Ulrich, 1984); enhance the ability to focus attention (Hartig et al., 1991); and improve emotional states (Ulrich, 1979; Hartig et al., 1996, 2003; Wells 2000; Evans et al., 2000). To these experiments may be added studies that used photographs and videos of natural environments to test people's reactions (Ulrich, 1990; Ulrich et al., 1991). More numerous are the attitudinal surveys that demonstrate that people develop particular attitudes to greenspaces, wild landscapes and natural vegetation (such as Bixler et al., 1994; Bixler and Floyd, 1997; Bulbeck, 1999; Milligan et al., 2003; Schroeder, 1982; Schroeder and Anderson, 1984; Westover, 1986). National or regional data sets are able to distinguish contrasts due more to location of residence and occupation rather than individual behaviour.

Controlled experiments. The controlled experiments include work that showed that views of natural scenes from hospital windows aided patients' recovery from gall bladder surgery (Ulrich, 1984) and that prisoners with views of nature reported sick less often (Moore, 1982); and suffered fewer stress-related physical symptoms (West 1985). These experiments suggest that mere visibility of nature may have powerful preventative and curative effects on people's health (Rohde and Kendle, 1994). Hartig et al. (1991) found that subjects' completion of a proof-reading exercise was improved following contact with nature through a hike in a wilderness area or a walk through a park close to the city. Such findings were considered to support the Kaplans' view (1984, 1995) of the restorative benefits of nature.

Hartig and co-workers (2003) have gone further by conducting experiments in urban and natural situations in two phases: indoor and outdoor. In the natural environment, the two phases were sitting in a room with tree views, and then walking in a nature reserve. In the urban environment, the two phases were sitting in a room without views, and then walking in an urban area. This careful experiment using students around 21 years old in attractive but not spectacular natural vegetation and in the City of Orange, California, revealed that in the initial 10 minutes of the environmental treatment, subject's diastolic blood pressure (DBP) declined among those seated in a room where trees could be seen through the windows, but increased in those in a room without views. After walking for 20 minutes, the difference in DBP of subjects in the natural and urban areas was significant. Self–reported overall happiness was also greater in the natural environment at this stage. However, after the walk had been completed, the differences in DBP between urban and natural walk subjects had disappeared. Emotional differences, however, remained. This Hartig et al. (2003) found converging evidence from different types of measures that natural settings contribute to positive outcomes. Nevertheless, they caution that the magnitude of the effects is not solely produced by the influence of natural vegetation and attractive landscapes. The negative effects of the windowless room and the urban settings also contribute to the differences.

In terms of the practical implications of their work, Hartig et al. (2003) conclude that regular access to restorative, natural environments can halt or slow processes that negatively affect mental and physical health in the short- and long-term, and that, for urban people in particular, easy pedestrian and visual access to natural settings can produce preventive benefits. Public health strategies that incorporate use of areas of natural vegetation in urban areas may have particular value in an era of rapid urban growth, rising health care costs, and deteriorating environmental quality.

Nancy Wells has examined the impact of transforming a barren asphalt space into a green garden within a nursing home environment and has studied the relationship between childhood exposure to nature and adult environmental attitudes (Evans et al., 2000; Wells 2000). A house

surrounded by nature helps to boost a child's attention capabilities. When children's cognitive functioning was compared before and after they moved from poor- to better-quality housing that had more green spaces around, profound differences emerged in their attention capacities, even when the effects of the improved housing were taken into account. The children studied who had the greatest gains in terms of "greenness" between their old and new homes also showed the greatest improvements in functioning. The results suggest that the natural environment may play a far more significant role in the well-being of children within a housing environment than has previously been recognised (Wells, 2000). A similar beneficial relationship was found in rural areas (Wells and Evans, 2003).

***Tests using slides and videos*.** Experiments by Ulrich and co-workers suggest that visual exposure to nature through slides or videos may improve subjects' moods. Three studies have shown a connection between trees and lower levels of violence (Mooney and Nicell, 1992; Rice and Remy, 1994, 1998). However, these studies involved prison inmates and Alzheimer's disease patients living in nursing homes. What about people who are not living in institutional settings? The role of urban greenspaces in promoting social interaction and well-being among the elderly is generally regarded as highly positive (Kweon et al., 1998). For older adults, social integration and the strength of social ties are profoundly important predictors of well-being and longevity. Biophysical environments probably can be designed to promote older adults social integration with their neighbours. Kweon and colleagues (1998) examined this possibility by testing the relationships between varying amounts of exposure to green outdoor communal areas and the strength of ties among neighbours.

Thus exposure to natural scenes reduces stress. However, this is unlikely to be the same for all people, all of the time. Bixler and Floyd (1997) used slides in classrooms in rural, suburban and urban schools in Texas to discover the reactions of 450 middle school students to examine reactions to insects, woodland environments, handling soil and pond water, encounters with snakes or severe storms, and similar outdoor experiences. Students reporting negative perceptions of wildland environments had lower preferences for such environments and activities with them and to some degree also had higher preferences for indoor environments and activities. Counter to popular assumptions about urban attitudes to the natural world, mostly rural and suburban students had these negative attitudes.

Attitudinal surveys. Partly because of important American findings and recommendations on the value of physical activity as part of healthy living (Pate et al., 1995; U.S. Department of Health and Human services, 1996), many countries have adopted new physical activity guidelines that indicate the value of moderate-intensity activity, such as brisk walking, to achieve health improvements. Often it is suggested that the surroundings in which the walking occurs add mental health benefits to the physical health gains (Ball et al., 2001). Theoretical social studies emphasise the importance of interactions between individual psychological, social and biophysical environmental variables (Sallis and Hovell, 1990; Sallis and Owen, 1997). In questionnaire surveys in the East Midlands of England, getting away from stress was associated with relaxation and nature- seeing it, being in natural places and learning about it, suggesting a role for natural greenspaces in stress reduction (Bell et al., 2004).
However, there can be associations between getting exercise and becoming de-stressed, as well as just being in a natural area. Telephone interviews with over 3000 Australian adults revealed positive associations of environmental aesthetics (a composite score based on Likert scale responses to questions about the friendliness of the neighbourhood, the attractiveness of the local area and the pleasantness of walking near home) with walking for exercise in the two weeks prior to the interview. Those reporting low environmental aesthetics were about 40% less likely to walk for exercise than those returning high scores (Ball et al., 2001). As a whole, this survey supported the case for environment-focused public policies and interventions to influence physical activity. Areas of natural

vegetation and wildlife habitat in urban areas could form a key part of the local facilities, parks, cycle paths and pleasant areas that may encourage more adults, including those with poorer mental health, to take exercise.

However, there is much to suggest that natural, or wild, areas are unattractive and induce negative reactions on the part of many people. Direct behavioural evidence of such negative reactions is limited because the use of wildlands for recreation is an activity chosen by individuals and thus those who dislike them avoid them. Behavioural surveys conducted among adult visitors in urban natural areas thus sample an already self-selected group likely to have positive attitudes to wildlife. Students attending compulsory field classes represent a broader range of attitudes. Bixler et al. (1994) collected examples of negative reactions by urban students on field trips observed by park naturalists and teachers of environmental science. Some of the attitudes found were generalised fears of the woods; of wildlife; and of insects and spiders; disgust reactions to the dirtiness of the environment; and discomfort from extreme weather conditions.

Vulnerability in natural greenspaces was a greater concern among women than men responding to a questionnaire about natural areas in the East Midlands of England (Bell et al., 2004). The concern was reinforced by statements made in focus groups in the same study and reflects findings of other research (Burgess, 1995b, Ward Thompson et al., 2004). Several surveys and focus group discussions led by Burgess and Harrison have demonstrated diverse attitudes to urban greenspaces in various communities, especially in Greater London (Burgess, 1995a, b; Burgess et al., 1988). Members of ethnic minorities in the East Midlands form a smaller proportion of visitors to greenspaces than their proportion of the population as a whole (Bell et al., 2004) In East Midlands focus group discussions, people from ethnic minorities spoke of being uncomfortable in natural areas, of finding them alien to the urban settings with which they are unfamiliar, and of not having enough information about green areas (Bell et al., 2004).

The extent and nature use of parks and peri-urban countryside for recreation to relieve stress are likely to differ widely among individuals and social groups. Probably most groups gain many well-being and emotional benefits from contact with nature in urban areas.

As reported by Kweon et al. (1998), the benefits of contact with natural landscapes seem particularly significant among the elderly. In focus group exercises and interviews with people over 65 in Carlisle, Milligan et al. (2003) found natural areas to be intimately linked to older people's social interactions in ways that can be central to relieving the stresses of everyday life. For many the aesthetics of a pleasing and tranquil landscape formed an important element of the therapeutic qualities of social encounters outdoors. Overall, the natural landscape was seen to contribute positively, in both active and passive ways, to the mental well-being of the interviewees.

Sullivan and Kuo (1996) found less violence in urban public housing where there were trees. The role of natural areas in helping to reduce anger, as confirmed by Hartig et al.'s experiments (2003) deserves special attention particularly as anger in urban settings often leads to violence which can affect many people other than the angry individual (see Kuo and Sullivan, 2001). Residents from buildings with trees report using more constructive, less violent ways of dealing with conflict in their homes. They report using reasoning more often in conflicts with their children, and they report significantly less use of severe violence. Also, in conflicts with their partners, they report less use of physical violence than do residents living in buildings without trees.

An important caveat is added by interviews in New York which examined the association between both the internal living environment and the external built environment and depression that showed that while most previous work had concentrated on the external environment, the influence of the conditions inside dwelling might be more important (Galea et al., 2005). This find parallels in other work on health and the urban environment, such as investigations of the link between air pollution and lung disease which

suggest that conditions inside the home may in many cases be much more important than conditions in the street and in urban open spaces. In examining the evidence, care is needed to see whether all the factors contributing to mental health are considered.

Synthesising ideas and findings on the physiological and psychological benefits of urban forests and nature, Schroeder and Lewis (1991) developed Kaplan and Kaplan's concept (1989) of fatigue directed attention (the result of constant externally generated demands for attention characteristic of the urban environment) and proposed several reasons why nature – "the green pause that refreshes" – might act to restore spent or flagging mental capacities. These include positive memories associated with nature; the way trees can off shelter; and deep-seated, culturally ingrained emotional or spiritual connections with nature. They also recognised negative impacts derived from feelings of fear induced by dense tree cover and feelings of annoyance due to the untidiness of nature. Perhaps there is a threshold for many people when positive influences of nature give way to fear and negative impulses. This threshold varies with people's perceptions and may alter as environmental conditions change, for example being positive on the beach when the sea is calm but negative when storm waves a crashing down on the sand and noisily shifting the mineral grains about the shore. In urban natural areas, reactions may cross thresholds, as implied by some of the work reported here, when well-spaced trees give way to totally shaded, dense thickets and undergrowth which may hide unexpected terrors.

National or regional data sets. A study using data from the Health and Lifestyle Survey, a population based community survey of England, Wales and Scotland in which psychiatric morbidity was assessed using the General Health Questionnaire found an association was found between urban residence and the prevalence of psychiatric morbidity (odds ratio 1.54, 95% CI 1.32-1.80) which persisted after adjustment for various confounding factors (odds ratio 1.34, 95% CI 1.13-1.58) (Lewis and Booth, 1994).

Implications of the scientific evidence

The scientific work reported here provides clear evidence that among many sectors of society there are positive benefits for mental health and well-being to be gained from both active and passive involvement with natural areas in towns and cities. Regular access to restorative, natural environments can halt or slow processes that negatively affect mental and physical health. Walking in natural areas provides opportunities for social interaction that are particularly beneficial for the elderly. Exposure to natural scenes reduces stress. Trees play an important social role in easing tensions and improving psychological health. People feel better living around trees. Houses surrounded by nature help to raise children's attention capabilities. Thus living in areas with trees helps to reduce anger and violence and improve the ability to concentrate and work effectively.

The scientific evidence broadly confirms the comments of others concerning contact with nature, reduction of stress and escape from dense urbanity (Ulrich, 1979; Greenbie, 1981; Nicholson-Lord, 1987; Kaplan and Kaplan, 1989; Bussey, 1996, Grahn, 1994, 1996). However, it also implies that for many the greatest value of urban woodlands and natural vegetation is as an escape or refuge away from urban life and probably human (urban) activity (Greenbie, 1981; Nicholson-Lord, 1987). To provide this refuge, areas of urban natural vegetation have to be accessible and allow the user to feel secure (Burgess, 1995a and Burgess, 1995b) and confident in their use (Coles and Bussey, 2000)

Nonetheless, the number of studies is limited and almost entirely confined to the USA, Europe and Australia. They sometimes embrace subjects of varying ethnic background and educational attainment, but are often restricted to certain age groups, such as students or elderly people. There may be some bias in the type of research questions due to the efforts in government-funded research on such topics as urban forestry and the health benefits of physical recreation. Notwithstanding these limitations, in countries like the United Kingdom, there are likely to be

considerable mental health gains from contact with nature in urban areas. Put together with the physical health, biodiversity, local climate modification, air pollution and greenhouse gas mitigation values of nature in urban areas, these gains warrant the inclusion of a variety of greenspaces in all urban design, from formal city squares to patches of natural vegetation and wildlife habitat. All such greenspaces will have multi-purpose benefits, particularly when integrated with protection of steep slopes, urban drainage design and floodplain management. However it is important to note the negative perceptions some people have of some areas of natural vegetation. Unlit footpaths through natural woodland are not suitable for commuter routes to railway or bus stations. Thus planning for natural landscapes in urban areas must involve public participation and close consultation with residents and local communities. There are no single, simple, off-the-shelf solutions that urban designers can incorporate unquestioningly. Both people and nature are complex. What works in one situation may not work in another either for cultural and social reasons, or for ecological, biogeochemical or climatic reasons. However, an abundance of existing good practice is available to help urban designers, planners and managers increase the use of natural areas and to work with those concerned with public health and mental well-being to create healthier cities with urban landscapes that offer positive incentives to take physical exercise in pleasant surroundings.

Conclusions

There is good scientific evidence that contact with nature in urban areas can improve mental health and can help in the restoration on psychological well-being. The evidence is strong enough to make the case for the inclusion of areas of natural vegetation in both urban planning, particularly for the expansion of existing towns and the creation of new urban settlements, as planned in the Thames Gateway area of the United Kingdom. Such areas need to be strategically located to give accessibility to both the young and older people likely to use them and to provide for different types of enjoyment, from dog-walking and jogging to bird-watching and environmental education. Public participation in the planning and management of such areas, especially through interaction and consultation with local communities, will enhance their value and will help to reduce vandalism and other forms of misuse.

New work to evaluate urban greenspace benefits is underway (e.g. De Ridder et al., 2004). It may help to clarify some of the complex, multi-faceted relationships between urban people's mental being and their relationships with urban nature. Nevertheless, the present experimental, survey and quantitative scientific evidence is based on relatively few studies from a narrow range of countries. It indicates that there are cultural and social contrasts in attitudes to, and perceptions of, natural vegetation in urban areas. However, it is insufficient to indicate whether the observed contrasts apply more widely than in the specific socio-economic situations in which the surveys were conducted. For example, would old people in Miami, Florida respond in the same way as old people in Carlisle, England did? Thus a good case could be made for international comparative studies, or even comparisons between countries and regions within the United Kingdom, to examine how different social groups in similar sized urban areas in around ten different regions or countries enjoy, use and react to urban nature.

References

Ball, K., Bauman, A., Leslie, E. and Owen, N.(2001). Perceived environmental aesthetics and convenience and company are associated with walking for exercise among Australian adults. *Preventive Medicine,* **33,** 434-440.

Bell, S., Morris, N., Findlay, C., Travlou, P., Montarzino, A., Gooch, D., Gregory, G. and Ward Thompson, C.(2004). *Nature for people: the importance of green spaces to East Midlands communities*. English Nature Research Reports, 567, English Nature, Peterborough.

Bird,W. (1999). The health benefits of forests close to people. *Community Forestry,* **50 (5).**

Bird, W. (2004). Natural Fit – Can Green Space and Biodiversity Increase Levels of Physical Activity? Report for the Royal Society for the Protection of Birds, Sandy, Bedfordshire

Bixler, R.D. and Floyd, M.F.(1997). Nature is scary, disgusting and uncomfortable. *Environment and Behaviour,* **29,** 443-456.

Bixler, R.D., Carlisle, C.L., Hammitt, W.E. and Floyd, M.F.(1994). Observed fears and discomforts among urban students on school field trips to wildland areas. *Journal of Environmental Education,* **26,** 24-35.

Brown, K.H. and Jameton, A.L.(2000). Public health implications of urban agriculture. *Journal of Public Health Policy,* **21,** 20-39.

Bulbeck, C.(1999). The 'nature dispositions' of visitors to animal encounter sites in Australia and New Zealand. *Journal of Sociology,* **35(2),** 129-151.

Burgess, J.(1995a). The ambiguity of woodland landscapes. In: Coles, R.W., Bussey, S.C., Heslegrave, W. (Eds.), *Community Forestry in an Urban Context*. Urban and Community Forestry Research Group, University of Central England, Birmingham, UK, pp. 39–43.

Burgess, J.(1995b). *Growing in Confidence: CCP 457*. Countryside Commission, Cheltenham, UK.

Burgess, J., Harrison, C.M. and Limb, M.(1988). People, parks and the urban green: a study of popular meanings and values for open spaces in the city. *Urban Studies,* **25,** 455-473.

Bussey, S.C.(1996). *Public use, perceptions and preferences for urban woodlands in Redditch*. Ph.D. Thesis. University of Central England, Birmingham, UK.

Coles, R.W. and Bussey, S.C.(2000). Urban forest landscapes in the UK — progressing the social agenda. *Landscape and Urban Planning,* 52, 181-188

Comptroller and Auditor General(2006). *Enhancing Urban Green Space*. The Stationery Office, London.

De Ridder, K., Adamec, V., Banuelos, A., Bruse, M., Burger, M., Damsgaard, O., Dufek, J., Hirsch, J., Lefebre, F., Perez-Lacorzana, J.M., Thierry, A., and Weber, C.(2004). An integrated methodology to assess the benefits of urban green space. *Science of the Total Environment,* **334-335,** 489-497.

Evans, G.W., Wells, N.M., Chan, H.E. and Saltzman, H.(2000). Housing quality and mental health. *Journal of Consulting and Clinical Psychology,* **68(3),** 526-530.

Galea, S., Ahern, J., Rudenstine, S., Wallace, Z., and Vlahov, D.(2005). Urban built environment and depression: a multilevel analysis. *Journal of Epidemiology and Community Health,* **59,** 822–827.

Grahn, P.(1994). Green structures -the importance for health of nature areas and parks. *European Regional Planning,* 56, 89-112.

Grahn, P. 1996. Wild nature makes children healthy. *Journal of Swedish Building Research,* 16-18.

Greenbie, B.B.(1981). *Spaces — Dimensions of the Human Landscape*. Yale University Press, New Haven, CT.

Hall, E.T.(1968). Human needs and inhuman cities. In: *The fitness of man's environment, Smithsonian Annual, No.2,* Smithsonian Institution, Washington D.C. 163-172.

Hartig, T., Mang, M. and Evans, G. 1991 Restorative effects of natural environment experiences. *Environment and Behavior,* **23(1),** 3-26.

Hartig T., Böök, A., Garvill, J., Olson, T. and Garling, T.(1996). Environmental influences on psychological restoration. *Scandinavian Journal of Psychology,* **37,** 373-393.

Hartig T., Evans, G.W., Jamner, L.D., David, D.S. and Garling, T.(2003). Tracking restoration in natural and urban field settings. *Journal of Environmental Psychology,* **23,** 109-123.

Henwood, K.(2002). *Issues in health development: Environment and Health: Is there a role for environmental and countryside agencies in promoting benefits to health?* Health Development Agency, London.

Howarth, C.I.(1976). The psychology of urban life. In Harrison, G.A. and Gibson, J.B. (eds) *Man in urban environments*. Oxford University Press, Oxford, 286-303.

Hull, R.B. and Harvey, A. 1989 Exploring the emotions people experience in suburban parks. *Environment and Behaviour,* **21,** 323-345.

Ineichen, B.(1993). Homes and Health: how housing and health interact. Spon, London.

Kaplan, R.(1984). The impact of urban nature: a theoretical analysis. *Urban Ecology,* **8,** 189-197.

Kaplan, R., Kaplan, S.(1989*). The Experience of Nature: The Psychological Perspective*. Cambridge University Press, Cambridge.

Kaplan S. (1995) The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology,* **15,** 169-182.

Knopf, R.C.(1987). Human behaviour, cognition, and affect in the natural environment. In Stokols, D. and Altman, I. (eds) *Handbook of Environmental Psychology*. Wiley, New York, 783-825.

Kuo, F.E. and Sullivan, W.C.(2001). Aggression and violence in the inner city: impacts of environment via mental fatigue. *Environment and Behavior,* **33,** 543-571.

Kweon, B.S., Sullivan, W.C. and Wiley, A.R.(1998). Green common spaces and the social integration of inner-city older adults. *Environment and Behavior,* **30,** 832-858.

Lewis G. and Booth M.(1994). Are cities bad for your mental health? Psychological Medicine, **24(4),** 913-915.

Martin E.M. et al. (1957). Incidence of neurosis in a new housing estate. *British Journal of Preventive and Social Medicine,* **11,** 196-202.

Milligan, C., Gatrell, A. and Bingley, A.(2003). 'Cultivating health': therapeutic landscapes and older people in northern England. *Social Science & Medicine,* **58,** 1781-1793.

Mooney, P. and Nicell, P.L.(1992). The importance of exterior environment for Alzheimer residents: effective care and risk management. *Healthcare Management Forum,* **5(2)** (Summer), 23-29.

Moore, E.O.(1982). A prison environment's effect on health care service demands. *Journal of Environmental Systems,* **11(1),** 17-34.

Nicholson-Lord, D.(1987). *The Greening of the Cities*. Routledge & Kegan Paul, London.

Office of the Deputy Prime Minister (ODPM) (2002). *Planning Policy Guidance 17: Planning for open space, sport and recreation*. The Stationery Office, London.

Parry-Jones, W.L.(1990). Natural landscape, psychological well-being and mental health. *Landscape Research,* **15(2),** 7-11.

Pate, R.R., Pratt, M., Blair, S.N., Haskell, W.L., Macera, C.A. and Bouchard, C.(1995). Physical activity and health: a recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *Journal of the American Medical Association,* **273,** 402-407.

Patterson, I. and Chang, M.L.(1999). Participation in physical activities by older Australians: A review of the social psychological benefits and constraints. *Australian Journal on Aging,* **18,** 179-185.

Rice, J.S. and Remy, L.L.(1998). Impact of horticultural therapy on psychosocial functioning among urban jail inmates. *Journal of Offender Rehabilitation,* **26(3/4),** 169-191.

Rigler, M. and Campbell, J. (1996). *Withymoor Village Surgery: a health hive*. Dudley Priority Health NHS Trust, Stourbridge.

Rohde, C.L.E. and Kendle, A.D.(1994). *Human Well-being, Natural Landscapes and Wildlife in Urban Areas*. English Nature, Peterborough.

Roszak, T. 1996 The nature of sanity (mental health and the outdoors). *Psychology Today,* **29,** 22-26.

Royal Commission on Environmental Pollution (2007). *The Urban Environment. (Cm 7009)*. The Stationery Office, London.

Sallis, J.F. and Hovell, M.F.(1990). Determinants of exercise behaviour. In Holloszy, J.O. and Pandolf, K.B. (eds) *Exercise and Sport Sciences Reviews,* Willaims & Wilkins, Baltimore, 307-300.

Sallis, J.F. and Owen, N.(1997). Ecological models. In Glanz, K, Lewis F.M. and Rimer, B.K. (eds) *Health behaviour and health education: theory, research, and practice*. 2nd. Ed., Jossey-Bass, San Francisco, 403-424.

Schroeder, H.(1982). Preferred features of urban parks and forests. *Journal of Arboriculture,* **8,** 317-321.

Schroeder, H. and Anderson, L.(1984). Perception of personal safety in urban recreation sites. *Journal of Leisure Research,* **16,** 178-194.

Schroeder, H. and Lewis, C.(1991) in Robdell, P.D.(ed.) *Psychological Benefits and Costs of Urban Forests, Proceedings of the Fifth National Urban Forest Conference, Los Angeles, Nov. 15-19, 1991*.

Seymour, L.(2003). *Nature and psychological well-being. English nature research reports 533*. English, Nature, Peterborough.

Stearns, F.(1972). The city as habitat for wildlife and man. In Detwyler, T.R. and Marcus, M.G. (eds) *Urbanization and Environment: The physical geography of the city*, Duxbury, Belmont, 261-277.

Sullivan, W.C. and Kuo, F.E.(1996). *Do trees strengthen urban communities, reduce domestic violence? Technology Bulletin. R8-FR56*. US Department of Agriculture, ForestService, Southern Region, Southern Station and Northeastern Area, Atlanta, Georgia.

Ulrich, R.S.(1979). Visual landscapes and psychological well-being. *Landscape Research,* **4,** 17–23.

Ulrich, R.S.(1984). View through a window may influence recovery from surgery. *Science,* **224,** 420-421

Ulrich, R.S.(1990). The role of trees in well-being and health. In P.D. Rodbell. ed. *Proc. Fourth Urban Forestry Conference, St Louis, Missouri, 15-19 October 1990*.

Ulrich, R.S. Simons, R.F., Losito, B.D., Fiorito, E., Miles, M.A. and Zelson, M.(1991). Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology,* **11,** 201-230.

U.S. Department of Health and Human Services (1996). *Physical Activity and Health: a Report of the Surgeon-General. U.S. Department of Health and Human Services*. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Atlanta, Georgia.

Ward Thompson, C. Aspinall, P., Bell, S. and Findlay, C.(2004). *Local open space and social inclusion: case studies of use and abuse of woodlands in Central Scotland. OPENspace report to the Forestry Commission*. Forestry Commission, Edinburgh.

Wells, N.M.(2000). At home with nature: effects of "greenness" on children's cognitive functioning. *Environment and Behavior,* **32,** 775-795.

Wells, N. M. and Evans, G.W.(2003). Nearby Nature: A Buffer of Life Stress Among Rural Children. *Environment and Behavior,* **35,** 311-330.

West, M.J.(1985). *Landscape views and stress response in the prison environment*. Master's dissertation. University of Washington, Seattle, WA. (Unpublished.)

Westover, T.N.(1986). Park use and perceptions: gender differences. *Journal of Park and Recreation Administration,* **4,** 1-8.

Wohlwill, J.F. 1983 Concept of nature: a psychologist's view. In Altman, J. and Wohlwill, J.F. (eds) *Behaviour and the natural Environment: Human Behaviour and Environment: Advances in Theory and Research*. Plenum, New York, 5-35.

Health inequalities, the majority world and urban environmental justice by Carolyn Stephens, London School of Hygiene & Tropical Medicine

Senior Lecturer in Environment and Health Policy, Public and Environmental Health Research Unit, Department of Public Health and Policy, London School of Hygiene & Tropical Medicine, Keppel Street, London WC1E 7HT. Tel: 0207 9272308. E-mail: *carolyn.stephens@lshtm.ac.uk*
Profesora Titular, Universidad Nacional de Tucumán, Argentina

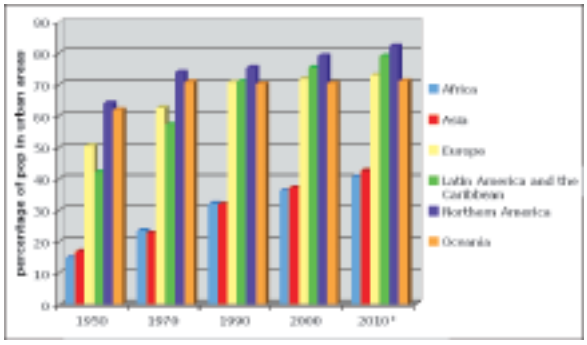
Unoma is nine years old. She lives in Asaba, Nigeria. Her home, next to the River Niger, is one small room in a low-income settlement shared with her unmarried aunt and five other girls. Four other families share the house. Unoma and her neighbours have no access to clean water and no toilets. She does not go to school. Unoma begins her 15-hour day at 6:00 a.m. cleaning the house. She then spends the day selling food she has prepared—carrying up to five kilos of *fufu* on her head all day. After selling for nine hours, she returns to collect water for the house and cook. She collects 300 liters of water from a borehole and finally goes to sleep at 9:00 p.m. She is always very tired and often gets ill. But Unoma still hopes to go to school one day (Ofili, 2006; Stephens and Stair, 2007).

For millions of young people just like Unoma all over the world, cities are places of hope and growth, but also despair and death. For a tiny minority, cities and towns are places of long life, health, and, for some, luxury. But for the majority, cities are places that they hope will give them and their children better opportunities—yet often they find only pollution, disease, and insecurity.
The future of our planet now seems irrevocably urban, and we need to be sure that this urban life is healthy, equitable, and sustainable. Charting a healthier course for cities will require a model of international and local development that promotes equity and sustainability. It requires a local governance model that is geared towards social and environmental justice, and a citizenry who show solidarity with each other and with future generations. This paper will reflect on the challenges of urban development and health in the context of major inequalities and injustice.

Introduction

The inequalities between countries and within countries are now more pronounced than they used to be.

Region	1960	1970	1990	2000	2010*
WORLD	732	1329	2271	2845	3475
High income nations	423	650	818	874	922
Low and middle income nations	309	678	1453	1971	2553
"Least developed nations"	15	41	110	166	247



Percentage of population in urban areas.
Source: David Satterthwaite 2007
based on UN 2006

URBAN CENTRE	COUNTRY	Population (thousands) c. 1800	c. 1900	1950	2000	Compound growth rate 1950-2000	Annual average increment in popn 1950-2000
Karaj	Iran (Islamic Republic of)			10	1,063	9.8	21
Brasília	Brazil			36	2,746	9.1	54
Monrovia	Liberia			15	776	8.2	15
Abidjan	Côte D'Ivoire			65	3,055	8.0	60
Dubayy (Dubai)	United Arab Emirates		10	20	938	8.0	18
Faridabad	India			22	1,018	8.0	20
Durg-Bhilainagar	India	0	0.1	20	905	7.9	18
Kaduna	Nigeria			28	1,220	7.8	24
Bhubaneswar	India			16	637	7.6	12
Conakry	Guinea		7	31	1,222	7.6	24
Las Vegas	United States of America			35	1,335	7.6	26
Yaoundé	Cameroon		0.1	32	1,192	7.5	23

The world's fastest growing large cities
1950-2000 according to population growth rates

Urban health in the Majority World towns and cities is characterized by:

- Massive Inequalities
- 'Double Burdens' (e.g. two hazards occurring at once)
- Urban Violence
- Green spaces, within this, seem somewhat marginal

A short characterisation of urbanisation in the majority world follows:

For small towns (< 1 m people) in the 'developing' or what is better referred to as the

'majority' world, there is distinct lack of data. Urban, for the majority world, means poor people. The author has been involved in investigating the 'double burden' of both infections and chronic diseases. As people move into cities they become much more dependent on the macro-economy.

In Nairobi there is a terrible mortality rate. It is much worse than in the Victorian cities of the UK. Calcutta is another city which repays investigation. Here there is an attempt to achieve sustainability in one of the most deprived cities in India.

Violence is another major and disturbing factor. If you do not deal with inequalities within cities, then they may explode into violence.

Greenspaces in developing world cities have been much more to do with urban agriculture or subsistence farming, rather than a leisure or health giving facility. In Dar es Salaam, 60% of the milk consumed in the city is produced from within the city. Some 70% of the national production of catfish comes from within the city of Bangok (Halweil and Nierenberg, 2007). They present a contrast, as the 'peace-builders' of the urban environment to offer refuge from violence and a place where people can come together to socialise and therefore integrate with each other.

Deprived communities may acquire access to schools and sanitation, but they will never "have access to green spaces" unless government behaves judiciously to protect greenspace and constrain the rising levels of car ownership and the pollution that arises from that.

Sao Paulo is a huge city, with one park. The way we have developed 'environmental justice' as a concept, will not be an option for many others. Cars are a great problem in diminishing environmental justice everywhere.

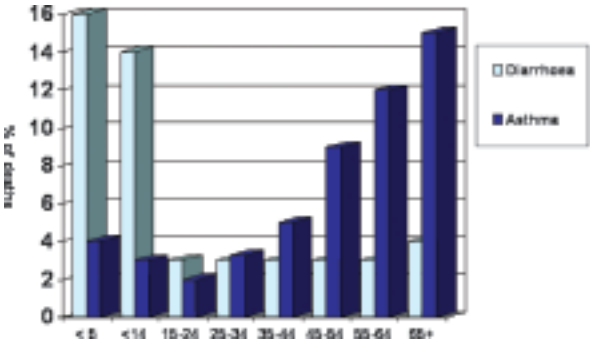
Examples of the problems follow

Metropolitan areas	Total Population	May 2001		May 2002		May 2003	
		% Under extreme poverty	% Under poverty line	% Under extreme poverty	% Under poverty line	% Under extreme poverty	% Under poverty line
Gran Buenos Aires	12,168,380	10.3	32.7	22.7	49.7	25.2	51.7
Gran Córdoba	1,408,756	10.2	34.0	26.9	55.7	22.2	54.7
Gran Rosario	1,313,380	14.6	35.8	28.0	56.2	32.6	61.0
Gran Mendoza	966,813	10.4	36.7	22.2	50.5	27.1	56.1

Urban inequality and its links to the macro economy (Martínez, 2004) http://www.gisdevelopment.net/proceedings/gisdeco/2004/paper/javierpf.htm

Location	Neonatal mortality rate	Post-neonatal mortality rate	Infant mortality	Under five mortality rate
Nairobi 'slums' (average)	30.4	60.9	91.3	150.6
Central	24.5	43.5	68.0	123.1
Makadara	34.1	52.2	86.3	142.7
Kasarani	19.2	58.2	77.4	124.5
Embakasi	111.1	52.5	163.6	254.1
Pumwani	16.3	56.3	72.6	134.6
Westlands	23.1	79.9	103.0	195.4
Dagoretti	0.0	35.0	35.0	100.3
Kibera	35.1	71.1	106.2	186.5
National*	28.4	45.3	73.7	111.5
Rural*	30.3	45.7	75.9	113.0
Nairobi*	21.8	16.9	38.7	61.5
Other urban*	16.9	39.8	56.6	83.9

Inequality in health outcomes in Nairobi



The double burden in the poorest cities: Kolkata

Calcutta Environment and Economic Strategy 1998

Green spaces in the urban majority world may be characterized by being for either:

- Urban Agriculture
- Urban Parks
- 'Lungs' of Cities

or

- Peace builders

Urban Agriculture

- Households involved
  - 50% in Dakar
  - 14% in Accra
- In Dar es Salaam 60% of milk sold is produced in the city
- Aquaculture around Bangkok generates approx $75 million per annum. Catfish farms produce 70% of Thailand's production of this fish Halweil and Nierenberg 2007

In conclusion, there are clear links, contradictions even, between green spaces and 'economic development' and built infrastructure.

> "With economic development lower-income groups get goods which once seemed inaccessible to them. But they will never have access to green spaces unless governments act judiciously."
>
> Former Mayor of Bogotá, Enrique Penalosa (in State of the World 2007)

Cars, Equity and Greenspace

> "As developing country cities become more economically developed, the automobile becomes the main source of deterioration of the quality of life." Cars become the least controllable air polluters. Wide, fast, and dangerous roads are "like fences…making the city less humane." And cars demand, "unlimited investments in road infrastructure, which devour scarce public funds [for] water and sewage supply, schools, parks, and meeting the other basic needs of the poor." Penalosa (2005 in Stephens and Stair, 2007)

References

Halweil, B. and Nierenberg, D.(2007). Farming the Cities. In: Sheehan, M. (Ed) *State of the World 2007: Our Urban Future. Worldwatch Institute*. W.W. Norton, New York and London. pp. 48-65.

Martínez, (2007). The Integration of GIS into Policy Making through Intra-Urban Indicators, Case Study Rosario (Argentina). http://www.gisdevelopment.net/proceedings/gisdeco/2004/paper/javierpf.htm

Ofili, C.(2006). Children's Experiences of Water and Health in Low Income Urban Settlements—A Case Study in Asaba, Nigeria, University of London PhD Thesis, London School of Hygiene & Tropical Medicine.

Satterthwaite, D. and McGranaghan, G.(2007). Providing clean water and sanitation, in Sheehan, M. (ed) *State of the World 2007: Our Urban Future*. Worldwatch Institute. W.W. Norton, New York and London. pp. 26-47.

Sheehan, M. (editor) (2007). *State of the World 2007: Our Urban Future.* Worldwatch Institute. W.W. Norton, New York and London.

Stephens, C. and Stair, P.(2007) Charting a New Course for Urban Public Health, in Sheehan, M. (ed) *State of the World 2007: Our Urban Future*. Worldwatch Institute. W.W. Norton, New York and London. pp. 48-65.

Biodiversity and health by Monique Simmonds

Professor and Deputy Keeper, The Jodrell Laboratory and Head of Kew's Sustainable Uses Group, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB. Tel: 020 8332 5655. E-mail: m.simmonds@kew.org

Plant biodiversity can be linked to health in terms of the use we make of plants for medicinal or simply health-giving properties. This paper contrasts the very obvious and active use of plants in Africa, Asia and South America with their almost forgotten uses within the Western world.

Introduction: Biodiversity and Health

The primary focus of this paper is on community based projects and what we can we learn from others about how they use plants in:

- Africa
- Asia
- South America

It also addresses what we in the UK may have forgotten about using plants.

Famine Foods in Africa

The Africulture Centre provides:

- Sustainable source of medicinal plants
- Plants for cultural uses
- Fodder – building material – fuel

The showcase 'Garden Africa' exhibit at the Chelsea Show 2007, exemplified this approach.

The nutritional value of plants is key in Africa and Kew has supported this project by identifying the traditional food plants grown there, how to find them, conserve them, gather seed and make them available to communities in urban areas to grow again.

The Royal Botanic Gardens Kew discovered that in parts of Africa, allotments were being used to grow irrelevant western world plants such as cabbage, which had no medicinal value to Africans suffering from HIV. Land used for growing plants must have the right cultural values associated with it and must be blessed by the local holy person before people would feel able to make use of the crops. Often access to food is through illegal trade.

Plant diversity comparisons:

- Kenya = > 5,000 species
- South Africa = > 25,000 species
- UK = 1,600 species

Ethnomedica – UK Project about "remembered remedies"

www.kew.org/ethnomedica

This project has involved:

- Royal Botanic Gardens, Kew
- Eden Project
- Natural History Museum
- Chelsea Physic Gardens
- Herbalists
- Ethnobotanists

all collecting information about traditional medicinal uses of plants in England up until 1948, and partly from interviewing visitors and intergenerational groups.

Between 1900 and 1945 the most cited species commonly grown for remedies were:

- *Rumex* – dock
- *Allium cepa* – onion
- *Urtica dioica* – nettle
- *Tanacetum parthenium* – Feverfew
- *Allium sativum* – garlic
- *Sambucus nigra* – elder
- *Symphytum* – comfrey
- *Lavandula* – lavender
- *Brassica oleracea* – cabbage
- *Taraxacum* – dandelion

Wild Harvest Project – UK

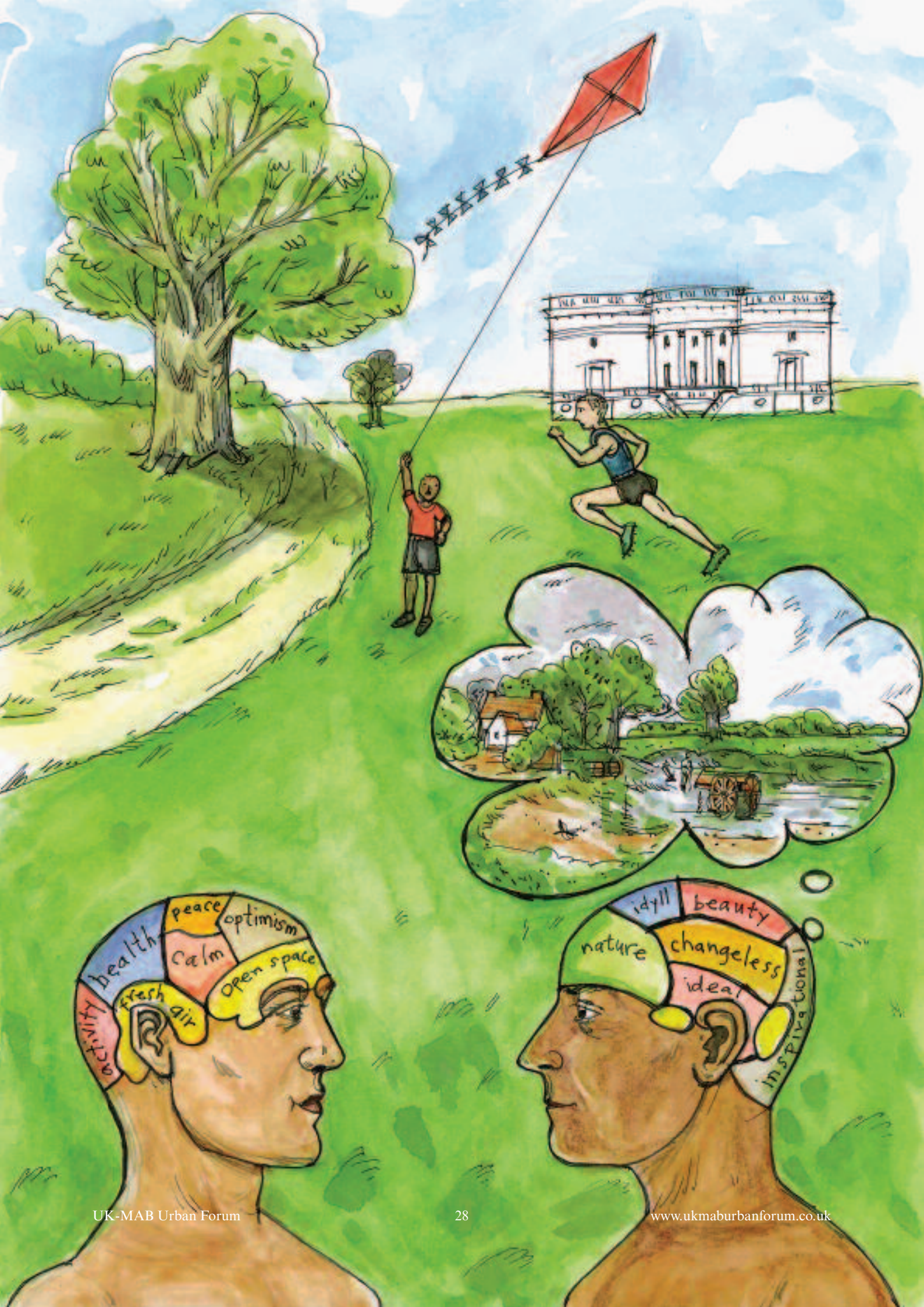
In the present day people were asked:

- Which plants do they eat?
- What else eats the plants?
- Cultural value of plants
- How do you grow the plants?
- Where do the plants come from?
- Food miles / energy miles /carbon use
- Plants in local market - supermarket
- Other uses of plants – biofuels, dyes, pesticides

This project aims to look at some of the plant biodiversity that we are losing in the UK.

Propagating projects have often been found to be very soothing. Kew has, for example, created links with hospitals to facilitate this.

Plant Culture is an organisation that has community-based projects around the UK, looking at the diversity of plants sold, the cultural significance of the plants and how we can maximise the diversity of plants grown in Bangladeshi and English allotments.


peace
optimism
health
calm
open space
activity
fresh air
idyll
beauty
nature
changeless
ideal
inspirational

PANEL SESSION ONE:

Chaired by Pete Frost, Countryside Council for Wales (CCW). Discussion and questions to Ian Douglas, Russell Jones, Monique Simmonds and Carolyn Stephens.

Q. What are the links to permaculture in what has been discussed, what are the links in with flora?

Carolyn: In the favelas of Latin America food was being shared with a crèche. They don't necessarily see seeds as a capitalist good. More like something given by God.

Q. Is there a correlation between biodiversity and increased access or public benefits?

Russell: Derelict land is good for biodiversity – but it is often where vandalism takes place. It is very difficult to find the balance between the two.

Ian: Carolyn's example of the favela is very good because it is about people not passively accessing biodiversity, but actually about people using it within urban areas as crops.

Regarding the issue of spontaneous biodiversity versus managed biodiversity, I can remember enjoying both.

Q. Where is all the scientific evidence of benefits to health of either engaging in urban agriculture, or in accessing urban greenspace, or correlations between urban biodiversity and health benefits?

Monique: Within Chinese work there is quite a lot.

Carolyn: It is a very problematic area in which to use epidemiology. Cartesian science is too reductionist, seeking to disprove hypotheses using randomised, controlled experiments. It might therefore be a dangerous route to go down, and be subject to a placebo effect anyway [the implication being that there would be no correlation between diversity of nature, public accessibility, and health benefits, or there might even turn out to be a 'negative' one.]

Russell: We haven't done work on correlating biodiversity with health in the GCPH research.

Q. What blocks public access to open spaces?

Russell: In general, older people tend to be afraid of young people 'hanging out', but this is what the young people desire – to see people like themselves.

Alison Millward: Young people are often afraid of who they meet. People may need affirmation of other people like themselves using the open spaces.

Russell: The level of integration is key. Barriers to people actually using open space are very different. Some want 'parkies' really, but not as people in authority, but people supervising and to connect with. The evidence is not prescriptive. Discussion within the community is vital as a one sized solution will not fit all greenspaces. Evidence is difficult to find. See the US and Australian research.

Q. Would it be correct to say that what marks Western society out from the majority world is its disconnection from nature?

Monique: Not necessarily. There is definitely more interest in connecting with and growing plants, although young people can be distracted by electronic games.

Ian: I would back this by saying why are there allotment waiting lists? However, it is true to say that many regard plants as a spectacle and not as part of place where you can be amongst plants.

Pete Frost: Kirstenbosch advertises itself as the 'safest park in Capetown' and offers many sculptures and a programme of activities for visitors to engage with.

Carolyn: Regarding reconnection, farms managed by the urban population have shifted from 2% to 70% of the population in Argentina because people's bank accounts disappeared. It would be great to see a similar shift in London. People want to see plants where they do not see them now.

Ian: Disconnection from nature takes many forms. Removal of big gardens and replacement with urban flats and car-parks is very different. In Kuala Lumpur 'nature as spectacle' is now key, rather than nature as the ecosystem in which you live.

Monique: There are now prominent sculptures in Kew Gardens. Perhaps Kew will one day get back the large animals that it had in its early days.

Carolyn: I have seen children, using the context of a storm drain, to draw flowers with furniture on top of houses. [This was a different appreciation of nature]

Q. What about the quality of open spaces and their accessibility?

Russell: Capital versus revenue is a continual problem in guaranteeing quality in urban open spaces.

Pete Frost: I agree with what has been said about the crude mapping of open space versus the actual connections of people with open spaces on the ground. In Dundee, they first mapped open space, then put a bridge over a busy road to improve access to greenspace.

Russell: Integrating health into planning is ideally what is needed. With GCPH we have laid out a framework for the chief planner who, incidentally, is originally a botanist by training. Health Impact Assessments (HIAs) can also help, as can Sustainable Urban Drainage Systems (SUDS) for the strategic planning of new developments. [It may also be necessary to utilise localised sources of decision-making and funding such as Local Area Agrements to customise the type of greenspace (and community) needs in a given locality]

Monique: We are getting a lot more enquiries from schools. But they often have no money. This can be a problem.

Carolyn: What is needed is participatory budgeting. People are, all of the time, prioritising (loosely) environmental goods. Formalising it could lead to (quite radical) environmental change.

Comment: [from person working for the Greater London Assembly] Areas of open space deficiency mapping is now very sophisticated and it often involves working with partners. Things are improving but then it is attempting to get multiple uses out of spaces, which is the greatest challenge.

Peter Shirley: Carolyn Harrison gets hot under the collar about the disconnection from nature: we have now become more voyeuristic about nature, rather than involved with nature. People seem content to watch television programmes about wildlife and gardening rather than garden, birdwatch or visit a greenspace.

Russell: Katherine Ward Thompson found that one of the key determinants of adult use of greenspace is whether they have experienced it when young. She found that young people liked dense vegetation, perhaps because they could hide in it. When lack of greenspace is mapped against mortality and morbidity there is a positive correlation. Greenspace provides protection against morbidity (see work of Rick Mitchell??0.

Monique: There are three gardening projects at Kew. 15-17 year olds want to engage with seed collecting.

Mathew Frith: Someone at the University of Newcastle suggested that we now have an environmentally illiterate population. We have the first generation of young parents who cannot identify birds, and this is part of an emerging social trend. The virtual reality idea is something that has implications. Soon environments will be created by young people on the computer in the home, which will be more exciting than a dull February in the UK. We must take account of this social trend.

Monique: Sometimes there can perhaps be a convergence. People at Kew Gardens take photos of plants when walking around the gardens and use these as the basis for plant identification later on.

Policy to practice: health and well-being projects in the Forestry Commission by Liz O'Brien, Social and Economic Research Group, Forest Research and Helen Townsend, Social and Community Programme Manager, Forestry Commission

Liz O'Brien, Social and Economic Research Group, Forest Research, Alice Holt Lodge, Farnham, Surrey GU10 4lH, Tel: 01420 526155. E-mail: liz.obrien@forestry.gsi.gov.uk http:www.forestresearch.gov.uk/peopleandtrees

Helen Townsend, Social and Community Programme Manager, Forestry Commission England. Tel: 0118 9833174 Mob: 07887 633776 E-mail: helen.townsend@forestry.gsi.gov.uk

In the first part of this presentation we discuss how the Forestry Commission is responding to the Government's health agenda. The Active Woods campaign and the Health Concordat were set up in 2005 to promote the use of woodlands and the outdoors for improving public health. The Forestry Commission also started a number of demonstration projects that focused on trying to improve people's health and well-being. The political focus of the Forestry Commission has turned to wider societal issues in recent years and health and well-being is now a key social policy area for the Commission. However, at present funding opportunities tend to be local and project based and it is difficult to access large-scale national funded programmes to create a wider impact.

In the second part of the presentation the focus will be on research and evaluation that has been carried out for some of the Forestry Commission projects that have been set up in recent years. These evaluations cover the West Midlands Woodland and Health project, the Chopwell Wood, Active England, Forestry for People and Route to health projects. Both qualitative and quantitative approaches have been used to evaluate these projects. Brief results will be presented. The need for pre and post evaluation is emphasised. Future work should include longitudinal research and evaluation for example to explore whether changes in physical activity rates last in the long term. Information will also be given on key literature reviews and Forest Research publications that highlight the importance of using woodlands and green spaces to improve health and well-being.

Introduction

The Forestry Commission (FC) has been interested in the contribution of woodlands to people's health and well-being for a number of years (O'Brien, 2004). As a major landholder and creator of new woodlands it can encourage the use of public woodlands for public benefits such as health and well-being. A number of reviews have outlined how woodlands and natural spaces can benefit people physically, psychologically and socially (see Key Reviews at the end of this section). To progress work in this area FC asked Forest Research (its research agency) to organise seminars in England, Scotland and Wales in 2002 to bring together health professionals and environmental professionals to discuss health and woodlands in terms of policy, practice, promotion and research. A publication was produced from the presentations and discussion held at these seminars (Tabbush and O'Brien, 2003). One of the recommendations was for the FC to set up health demonstration projects and they started the first project in 2003 with others following. FC developed its 'Active Woods – naturally good for you' campaign in 2005 which is a promotional campaign in partnership with other outdoor agencies to make an association in people's minds between woodlands and health. FC along with a number of other agencies such as the Countryside Agency and English Nature (now Natural England), Sport England and the Association of National Park Authorities signed a health concordat in 2005 which set out the commitments these agencies would undertake to promote the use of the natural outdoors for health and well-being.

Forest Research (FR) got involved in evaluating some of the FC demonstration projects to explore outputs and outcomes as well the processes by which the projects were run. In the following section some of these projects and brief results are outlined. FR also produced another health publication in 2005 called 'Nature's health service' that brought together information on FC and other projects (O'Brien, 2005).

Forestry Commission Health and Well-being Projects and Forest Research Evaluations and Studies

West Midlands Woodland and Health project
This was the first health project set up by the FC in 2003. FC used its woodland improvement grant for this project and organisations and landowners could bid for funding to create projects that linked woodlands and health. In the first year seven projects were funded. The funding contributed to improving infrastructure such as paths and creating interpretation and signage and other monies were allocated to publicity, events and developing walk programmes. In the Black Country Urban Forest (BCUF) 10,000 calendars were produced, these showed woodland walks in the BCUF and the number of calories people might burn if they went on these walks. A post project evaluation of the first year of grant funding was undertaken (Interface NRM, 2004). Forty seven interviews were carried out with those involved in the projects and researchers attended led health walks to talk to participants.

Interviews with a small number of health professionals in the region found that they did not really recognise the benefits of using woodlands for health purposes, this was partly because they were not aware of where local woodlands were and did not know whether they were accessible to the public. Participants on the health walks said that walk leaders were of key importance as they motivated people to get involved in the walks, they acted as a social point of contact for walkers enabling them to feel safe and they encouraged people to keep walking.

Walk participants stated that they joined the led health walks for a number of reasons particularly health concerns such as overweight or diabetes, also to meet people, as part of rehabilitation, or they were encouraged to join by the walk leader. The walkers also stated that what they enjoyed about the walks was that they felt fitter and it was good to get out into the fresh air (O'Brien et al. 2006). Due to the success of the project further funding was made available until 2007.

Chopwell Wood Health Project
This project which ran for fifteen months from 2005 was a partnership between two Primary Care Trusts: Gateshead and Derwentside, FC, FR and the Friends of Chopwell Wood (a voluntary organisation). Chopwell Wood is located near to Gateshead in the north east. The project had two key aspects:

1) A General Practitioner (GP) referral scheme in which local surgeries to Chopwell Wood could refer patients whom they felt would benefit from exercise to the wood. The activities available were led walks, cycle rides, tai chi or conservation work.
2) A series of four school visits each were made by four local schools to the wood to undertake physical activity sessions, a session on stress reduction and management and a session on nutrition and healthy eating.

An evaluation of the project was undertaken by the Primary Care Development Centre at Northumbria University (Snowdon, 2006). For the school visits teachers and pupils completed pre and post visit questionnaires. Focus groups were undertaken with teachers to get detailed information of how they felt the school visits had gone and what the benefits of them were for the children. A focus group was undertaken with a small number of those who were referred by their GP to the woodland. The Friends of Chopwell Wood undertook a questionnaire in the wood of users to find out who was using the woodland and whether they felt that they derived any health benefit from it.

For the GP referral part of the project 33 people who were referred for exercise chose to undertake it at Chopwell Wood and 30 completed the thirteen week programme of activities. Due to the project leader proactively publicising the project a further 128 people got involved in the activities, particularly the walking and cycling. Six people bought bicycles indicating a potential lifestyle change.

229 children and a number of teachers made four visits each to the woodland. There was a significant percentage of children regarding the wood as a 'healthy place' after the visits from 74

per cent to 87 per cent. There was an increase in the number of visits to the wood by pupils and their families post project from 35 per cent to 42 per cent, suggesting that the children asked their parents to take them to Chopwell to show them the woodland at weekends and in the school holidays. In the on site survey 99 per cent of visitors felt that visiting Chopwell wood had a positive impact on their health and well-being (O'Brien and Snowdon, 2007).

Active England Project

This project runs from 2005 for three years and is funded by Sport England through the Big Lottery, with contributions from the FC. Five projects are taking place in woodlands with the aim of encouraging under represented groups in sport to become more physically active including black and minority ethnic groups, women and girls, under sixteen's, those with disabilities and those on low incomes.

The five sites where forest projects are taking place are:

- ❏ Haldon Forest (Devon)
- ❏ Bedgebury (Kent)
- ❏ Rosliston (National Forest)
- ❏ Great Western Community Forest (Wiltshire)
- ❏ Greenwood Community Forest (Nottinghamshire)

Work being undertaken includes infrastructure improvements such as new trails (walking and cycling), play areas for children, free ride areas for mountain bikers as well as the development of programmes of health walks, cycle rides and events. Outreach work is being undertaken to try and bring in under-represented groups and local communities. FR is involved in undertaking an evaluation of the projects, this includes on site questionnaires, profiling of the catchments surrounding the woodlands and qualitative action research with those that use and do not use the sites. Results to date highlight that the visitor profiles of forest users are changing at most of the sites. The work is due for completion in mid 2008. To find out more visit the following website: http://www.forestresearch.gov.uk/website/forestresearch.nsf/ByUnique/INFD-6W8KLM

Route to health Project

This project is taking place in Cannock Chase in the West Midlands. FC is working in partnership with Cannock Chase Primary Care Trust and Cannock Chase District Council. The aim of the initiative is to tackle health inequalities. Art works have been created with the help of local artists by a range of groups, such as pupils excluded from school, and people with mental health problems. The art works all have a health theme and are placed along a one mile community trail in Cannock Chase forest. Over 1000 people have been directly involved in the project by creating health themed artworks in a series of workshops. In the first year of the project counters recorded over 50,000 visits to the one mile trail. A survey undertaken of 189 trail users in 2005 found that 81 per cent felt that the themed artworks combined with supporting information was a successful way of getting information to people. 34 per cent of respondents agreed that the artworks had informed them about a health issue they would not normally think about. 63 per cent agreed that the artworks main purpose was to generate interest and provide a reason for walking the trail (Cannock Chase District Council, 2005).

Forestry for People Valuation

FR was asked by Forestry Commission Scotland to undertake a valuation of 'Forestry for People' in Scotland. After a scoping study five key themes were identified and included in the research:

- ❏ Health and well-being
- ❏ Livelihoods
- ❏ Learning and education
- ❏ Recreation, amenity and culture
- ❏ Community capacity

The research involves a number of surveys, literature reviews, GIS analysis, and case study work which is taking place in Loch Ness, and the Glasgow and Clyde Valley. The work is due for completion in mid 2008. A survey in 2006 of a representative sample of the Scottish population asked a number of questions related to health and well-being. Over 1,000 people were included in the sample, 87 per cent strongly agreed or agreed that woodlands are places to reduce stress

and anxiety. 82 per cent agreed that woodlands are places to exercise and keep fit. 9 per cent of respondents who had visited woodlands in the previous 12 months exercised in them on five or more days a week. For 21 per cent of those visiting woodlands in the previous 12 months, exercising in them was a significant part of their overall exercise regime. 45 per cent of respondents who did not live near woodland or did not feel safe visiting woodland stated that they would become more physically active if they had woods near to where they lived that they felt safe visiting. Lower socio-economic groups were significantly less likely to have woods within a 10 minute walk of where they lived compared to higher socio-economic groups. Women were more likely to feel unsafe visiting woodlands than men were (Hislop et al. 2006).

New pathways to health and well-being

This research focused on understanding the barriers to accessing woodlands in Scotland for health and well-being (Weldon et al. 2007). A case study action research approach was undertaken and targeted groups under-represented in woodland and green space use were identified, such as those on low incomes and young people. A literature review revealed that there is a range of barriers affecting access to woodlands and green space, and affecting people's physical activity rates. These barriers include:

- ❏ Lack of knowledge
- ❏ Negative perceptions, fears and safety concerns
- ❏ Lack of motivation
- ❏ Lack of time
- ❏ Physical accessibility
- ❏ Lack of physical fitness
- ❏ Feeling unwelcome
- ❏ Lack of reasonable facilities
- ❏ Conflicts of use

Five case studies were explored and groups interviewed and taken out into woodlands for a taster session activity such as walking or cycling. Overall the most important conclusion is that the barriers to access are less about single issues and more to do with wider factors. The findings indicate that complexity, local contingencies and life stage are equally if not more important in determining who will use a particular woodland and for what purposes.

Lessons learnt from the above projects: what seems to work

A number of lessons can be drawn from the projects and research outlined above that can inform future project creation and evaluation. However the funding streams available for many of these types of projects are short term and the enthusiasm and momentum generated by project leaders in local communities can be lost when the funding finishes and the project leader moves to a different job. A longer term approach is needed particularly when trying to involve hard to reach groups. The research project on the barriers to accessing woodlands highlights that there are complex reasons that might prevent people from being able to use woodlands in the first place, however projects targeted at hard to reach groups can help to overcome some of these barriers. A strategic approach to the running and evaluation of projects is needed to ensure that the impacts across projects are captured and lessons learnt and disseminated between projects and to others carrying out, or interested in similar work. Partnership working is of key importance in setting up and running projects. The following lists provide some ideas for the future based on our experiences to date:

Evaluation

- ❏ Ensure monitoring and evaluation is embedded into projects and interventions from the beginning.
- ❏ Pre and post project evaluation is needed - including a baseline in order to assess changes.
- ❏ Interdisciplinary research can provide a more holistic view of the outcomes of a project.
- ❏ Ensure the process of the project is explored e.g. how did the partners come together, does the project leader act as an effective link between the community and the woodland.
- ❏ Longitudinal research is needed in order to go back after the end of a project to see if activity and changes are maintained in the long term.

Projectslinitiatives

- ❏ Bring together partners at an early stage to develop projects that can meet the objectives of each organisation.
- ❏ Use creative solutions to enthuse people and change behaviour e.g. Route to health project and Chopwell Wood project.
- ❏ A project leader can act as a focus and motivator to get projects up and running and communities involved.
- ❏ Involve volunteers or train people to become volunteers in the project.
- ❏ Engage with local communities and involve them in the project from an early stage.
- ❏ Led activities and taster sessions can provide incentives for people to get involved.
- ❏ Ensure there is effective publicity and communication about the project.
- ❏ Provide good facilities and trails and ensure that woodlands and green spaces are welcoming to people.
- ❏ Free or inexpensive activities and opportunities are important when focusing on social inclusion.
- ❏ Publicise the project and its findings.

References:

Cannock Chase District Council (2005). *Route to health survey monitoring report*.

Hislop, M., Edwards, D., Elliott, A., Martin, S., Morris, J., O'Brien, E., Serrand, M., and Valatin, G. (2006). *A valuation of the economic and social contribution of Forestry for People in Scotland: Interim report to Forestry Commission Scotland*. http://www.forestresearch.gov.uk/fr/INFD-6S8CSP

Interface NRM (2004). *West Midlands Woodland and Health Pilot Evaluation. Report for Forestry Commission England*. http://www.forestresearch.gov.uk/fr/INFD-6HCF4N

O'Brien, E.(2004). Feeling good in the woods. *Green Places,* **Issue 07,** July/August, pp.22-24.

O'Brien, E.(2005). *Trees and woodlands: nature's health service*. Forest Research, Farnham.

O'Brien, E.(2006). 'Strengthens heart and mind': using woodlands to improve mental and physical well-being. *Unasylva,* **57,** 56-61.

O'Brien, E., Greenland, M. and Snowdon, H.(2006). Using woodlands and woodland grants to improve public health. *Scottish Forestry,* **60(2),** 18-24.

O'Brien, E and Snowdon, H.(2007). Health and well-being in woodlands: a case study of the Chopwell Wood Health Project. *Arboricultural Journal,* **30,** 45-60.

Snowdon, H.(2005). Evaluation of the Chopwell Wood Health Project. Northumbria University, Report for Forestry Commission England. www.forestresearch.gov.uk/chopwellhealth

Tabbush, P and O'Brien E.(2003). *Health and Well-being: Trees, Woodlands and Natural Spaces*. Forestry Commission, Edinburgh, pp. 46.

Weldon, S., Bailey, C and O'Brien, E.(2007). *New pathways to health and well-being in Scotland: research to understand and overcome barriers to accessing woodlands*. Report to Forestry Commission Scotland.

Key reviews: Links between nature and health

Bird W.(2004). *Natural Fit – Can Green Space and Biodiversity Increase Levels of Physical Activity? Report for the Royal Society for the Protection of Birds.*

Henwood, K.(2001). *Exploring the linkages between the environment and health: Is there a role for environmental and countryside agencies in promoting benefits to health? A report for the Forestry Commission.*

Pretty, J, Griffin, M, Peacock, J., Hine, R., Sellens, M. and South, N.(2005). *A countryside for Health and Well-Being: The Physical and Mental Health Benefits of Green Exercise Report for the Countryside Recreation Network*

Rhode, C. and Kendle A.(1994). *Human well-being, natural landscapes and wildlife in urban areas. A review English Nature Science, No 22.*

Meanwhile Wildlife Gardens, With Nature in Mind (DVD presentation)

by Ambra Burls, *Senior Lecturer, Anglia Ruskin University. 01245 493131*
E-mail: a.burls@btopenworld.com

This DVD is the culmination of a series of events at a public green space in Kensington and Chelsea, London, managed by MIND, the national mental health charitable organisation. In late 2002 the Meanwhile Wildlife Garden became the subject of doctoral research into ecotherapy. During the progression of the research it became very obvious to participants and researcher alike that this was a 'showcase' example of good practice at many levels. The success of the Garden as both a therapeutic and public space is owed to the dedication and firm beliefs of the local Mind staff, as well as the trainees who work there and the support of the local community. The DVD was a collaborative celebration of such success and was professionally filmed and produced by a small team of which the main creator was a sufferer of mental ill health. The real stories of the people who work here, weaved with the opinions of the public who use this green urban wildlife haven, denote the viability of the multifunctional aspects of this model of healthy public green space.

Introduction

The DVD "With Nature in Mind" was professionally filmed and produced by those who work and care for Meanwhile Wildlife Garden, managed by the national charity MIND.

Meanwhile Wildlife Garden, is found as one proceeds through to a wooden bridge, towards the end of this 12,000 m^2 of green corridor. The MIND project manages the 3.000 m^2 therapeutic garden, part of the larger public green space, located in a built up urban area, with the Grand Union Canal on one side and residential habitation and the high-rise Modernist listed building Trellick Towers on the other. This extensive 'corridor' of public park area was developed after long and difficult disputes between the local authorities and the community. The local citizens were however successful in campaigning to retain the whole area as a public park and it was restructured as such between the late seventies and more recently in the year 2000. Whilst the disputes were ongoing the area was nick named 'meanwhile'. This is the origin of the now established name of 'Meanwhile Gardens'.

Meanwhile Gardens offer a relaxing space amidst formality and the built environment

Meanwhile Gardens

Only a sign indicates its entrance as the Wildlife Garden, which is open to the public all the year round. This is managed as a purely 'wild' garden; there is a pond, natural hedging, some areas dedicated to culinary herbs, the arboreal and botanical collection of plants is mainly native or endemic. The plants are propagated in the roof-top and other small nursery in the garden. The roof top area is so utilised to maximise space and it is the roof of the ex double cargo container, reclaimed and used as office, training area, dining room and meeting room. The plants are then sold at the nearby Portobello market by the project participants. The management of the garden is particularly sensitive to creating local species habitat and it is noticeable whilst walking through from the previous green areas, how much more wildlife friendly this part has become and how it stands out in an otherwise traditional town park.

A 'showcase' example: (top) MIND Meanwhile Wildlife Garden, Office and rooftop nursery and (bottom) the signpost at the entry

The local fauna, now resident or regularly visiting consists of: mammals (squirrel, field mouse, fox), amphibians (frogs, toads, crested newts), insects (dragonflies, damselflies), birds (Robin, Great Tit, Blue Tit, Coal Tit, Goldcrest, Wren, Blackbird, various owls, and many more common and less common birds). Their visits are catalogued and recorded throughout the year and this information is provided to wildlife organisations for their population surveys.

This is a 'showcase project', which typifies the provision of services directed at developing and maintaining green spaces, creating habitats for wildlife, promoting biodiversity in inner city areas, thus it is coherent with the policies on biodiversity and the thrust on dealing with our ecological footprints. The project is also a showcase in terms of public health, ecological education and social capital. Its participants are not only the protagonists of stewardship of a natural resource, contributing in tackling the current global environmental challenges at the local level, but they also provide a 'natural health service' (Natural England, 2006) for their community by keeping this small space of wildlife healthy, accessible, recreational and educational.

This public and multifunctional green urban space provided the clear focus for *contemporary ecotherapy* in action.

The daily ecotherapeutic activities have been observed during a doctoral research study (Burls 2005, Burls 2007). The researcher was able to be a direct participant in the work carried out at the garden. As a participant observer for a period of over one year, she was able to extrapolate data from the group of service users and the practitioners at this project.
The activities carried out in this creative and defined natural space have pre-determined outcomes for both the persons involved and the natural space which is a therapeutic environment, but also an ecologically significant area.

The practice of ecotherapy has been described to focus on the therapeutic benefits for the individual (Clinebell 1999, Burns 1998), by means of nature as a venue for guided personal reflection. However, at Meanwhile there is a more 'action-based' approach, which is both self-healing and ecological. The trainees at Meanwhile are engaged in attaining a direct impact on ecological sustainability as a simultaneous aim with improving their own health and well-being, but they also learn new skills that are channelled into recognised qualifications, which lead them to employment. These activities undoubtedly augment the efforts of environmental and countryside agencies, but at the same time participants draw on their own efforts in terms of rehabilitation and social re-integration, thus benefiting directly from providing such ecological service, becoming socially included and re-integrated in a concrete way rather than just dealing with their own personal problems.

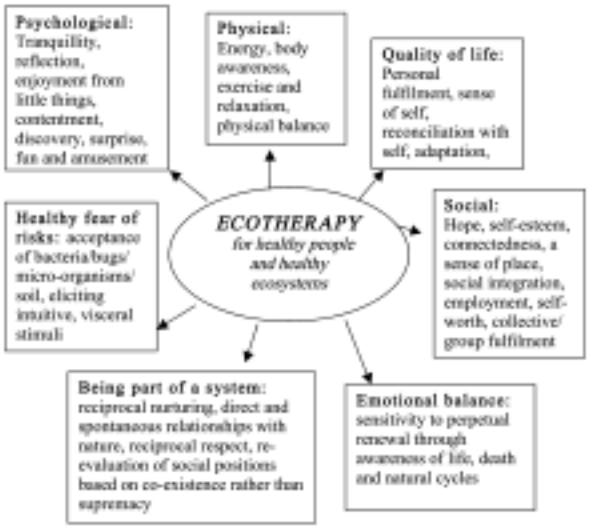
Participants at Meanwhile develop a sense of self and a sense of place by becoming involved, in a direct way, in providing this vital service to their

community. Meanwhile is a micro-environment in a borough of a city, which represents good practice for achieving healthy people, healthy green spaces, healthy neighbourhoods, healthy cities, healthy ecosystems, in a spirit of reciprocity of individuals with their community, man with nature. It promotes *diversity* in every sense and social facet of the word. What happens at Meanwhile is a series of phases of personal, group and environmental development, which goes outside the needs and wishes of the participants (be they trainees or practitioners) or the garden; it interacts with and draws in the general public, it interacts across the boundaries of built environment and wildlife and those of human and non-human.

It is this sense of place which led to the production of the DVD, which portrays some of the personal experiences, group activities and the philosophy of this Skills Development Service for Kensington and Chelsea MIND.

The protagonists explain how all that goes on at Meanwhile Gardens helps to change people's behaviour to be sympathetic to sustainability and to see connections with the wider ecosystem and develop a real relationship with nature.

It is striking how empathetic the Meanwhile trainees, who suffer with 'mental health difficulties', are to the ply of wildlife and to the conservation of biodiversity and how they are proud to be able to provide this space for their community. Far from feeling exploited in doing work that would generally be seen the remit of public agencies, participants feel a sense of civic engagement, ownership and personal agency, which raises their social profile and identity. The social and personal outcomes are even more persuasive as they learn to accept and adapt to their situation, taking stock from the daily reflective and experiential learning which takes place as part of the therapeutic programme. The metaphorical meanings provided by the natural canvas in which they work, serves to give them an understanding of internal and external forces which can be of example to them in their toil to recover from illness and rehabilitate themselves towards regaining a social 'place'. At Meanwhile there is a symbolism which comes from the sustainable model of activities, that seems to be reflected in the sustainable health recovery many of the participants have achieved. Further development of such community identity brings about the new concept of *embracement* (Burls and Caan 2004). This active and self-directed embracing of socio-political issues, leads some people to engage further and become agents of change in educative, public health and environmental spheres. Their stewardship of this public green space, gives them a sense of ownership about the place, but more than that: a sense of belonging to a greater whole, a wider space, a bigger system. With this comes a higher level of physical, psychological and social well-being, a certain level of quality of life, which includes emotional balance and a higher sense of positive sensitivity about the alleged risks which are believed to be around us in our environment (Burls 2005, Burls & Caan 2005). Outcomes reported by the participants are given in the figure below:



Research outcomes from Meanwhile participants

Anders says: "one has to be patient with oneself and not expect instant results". As someone who did suffer from schizophrenia, he explains that his favourite task is the managing of a Portobello Market stall, selling specialist wild plants grown at Meanwhile. He says: "Calling yourself a gardener (having gained an NVQ qualification whilst at Meanwhile) gives you a value". "Society values you." "If I hadn't been mentally ill I wouldn't have become a gardener".

The public is also involved in the DVD and a regular user of the garden says: "The fact that it is a bit more… 'wild' makes it more valued" – a comment about Meanwhile Gardens compared with nearby parks and managed public open spaces.

The future

Practitioners need to be supported in providing evidence of their work with an emphasis on outcome measures for individual citizens and communities. For this practitioners need to be recognised in their multi-skilled professional roles and as direct witnesses of the benefits drawn from multifunctional green spaces such as Meanwhile. Equally those immediately involved who directly benefit from ecotherapy in both health improvements and social inclusion, should be encouraged to make their experiences known to researchers, policy makers and health and social care providers. They are the greatest ambassadors towards strengthening the likelihood that funding bodies will begin to know and support ecotherapy and its potential. Professional training and recognition for practitioners is also likely to achieve the goal of promoting projects like Meanwhile, which should become more widespread and sustain 'health impact assessments' and 'sustainability impact statements'. These could in turn become a prime source of scientific data, that will go a long way to determine the success of ecotherapeutic activities.
With the data collected from Meanwhile and other sources it is hoped that professional training can be proposed, which would withstand scrutiny by a diverse range of stakeholders.
A multidisciplinary and multifunctional approach is necessary for this to succeed and to bring about a new and visible profile for ecotherapy.

Conclusion

The very nature of the activities and what is learnt from them on many different levels, in projects like Meanwhile, makes a robust source of sustainable outcomes consistent with wider social and environmental implications.

Participants (both service users and practitioners) whilst crafting this green space 'product', are also 'cultivating' well-being, renovating and repairing both self and the environment, giving sustenance to wildlife and biodiversity, but most of all connecting with the public and having a direct impact on public health.

References

Burls, A.(2005). New landscapes for mental health. *Mental Health Review* 10:26-9.

Burls, A.(2007) *With Nature in mind*. London, Mind Publications.

Burls, A., and Caan A. W. (2004). Social exclusion and embracement: a helpful concept? *Primary Health Care Research and Development* 5:191-2.

Burls, A. and Caan A. W. (2005). Editorial 'Human health and nature conservation'. *British Medical Journal,* **331,** 1221-1222. http://bmj.bmjjournals.com/cgi/reprint/331/7527/1221_

Burns G. W.(1998) *Nature-Guided Therapy -brief integrative strategies for health and wellbeing.* Brunner/Mazel.

Clinebell H.(1996) *Ecotherapy: Healing Ourselves, Healing the Earth*. Minneapolis, MN: Fortress Press

Natural England Health Campaign (2006) http://www.naturalengland.org.uk/campaigns/health/default.htm

The natural environment: our natural health service

By William Bird and Huw Davies, Natural England

Natural England, 1 East Parade, Sheffield, S1 2ET. Tel: 0114 241 8920. William Bird. Mobile: 07702 713390. E-mails: william.bird@naturalengland.org.uk; huw.davies@naturalengland.org.uk

Why, when presented with masses of evidence, does the health service not necessarily react? How do we lock the health agenda together with the greenspace agenda? All sorts of National Health Service (NHS) targets are relevant, and need to be: (1) carefully integrated with evidence for the benefits of greenspaces; and (2) communicated effectively, in language which both doctors and administrators of Primary Care Trusts (PCTs) will understand, and which can properly motivate patients.

Introduction

What we are trying to do is to place health and urban greenspaces into the currency which policy-makers can understand. One of the authors (William Bird) is also a GP which helps this process. How do we lock together the health agenda with the greenspace agenda: 'Statins and greenspaces' is an excellent conference title because it sums up the different orientations very well.

In Natural England's overall agenda there are five strategic outcomes. Number one is health and enjoyment. The Natural Environment is our Natural Health Service. Some 15% of the population visite their GP every two weeks, 70% get their health information from their GPs and 90% of people believe their GPs compared to only 2% who believe their MPs. So we must get the GPs on our side.

Health work in Natural England

Natural England inherited the Walking to Health Initiative which is delivered by 260 health work trainers. There is also cascade training. Therefore, trainers beget more trainers. Jules Pretty developed the green walking concept. Stepometers have been delivered to a wide range of Primary Care Trusts.

It is estimated that there are now 10,000 people engage in doing walks on 340 different schemes.

However, more evidence of health benefits is still needed. Liz O'Brien's work is key (pages 31-35).

Motivational work is also key. We need to know, what gets people engaged with the natural environment?

The evidence for health connections with greenspaces is good. We know that:

- ❏ Natural green space can increase physical activity levels. Regular activity halves the risk of heart disease
- ❏ Natural green space can reduce blood pressure and pulse rate. Being stressed is a proven risk factor for heart disease.
- ❏ To provide a natural diet rich in antioxidants will reduce cardiovascular disease

But, what motivates people to continue to participate in Health Walks? Can Green Space benefit the health of the Population?

We know that:

- ❏ Senior citizens lived longer with more space to walk and with nearby parks and tree lined streets near to where they live. See Tanaka et al. (1996).
- ❏ For every 10% increase in green space there was a reduction in health complaints equivalent to a reduction of five years of age. See De Vries (2001).
- ❏ Being within access to Green space can increase levels of physical activity. See Giles-Corti and Donovan (2003).
- ❏ The heart rate response lasted longer in for people doing Green Gym than those doing step aerobics, because of additional associated benefits relating to the satisfaction of

achieving environmental outcomes, enjoyment and social contact, as well as personal health outcomes.

- ❏ The Health Service is motivated by PSA targets including:
- ❏ To reduce overall emergency bed days by 5% by 2008, through improved care in primary care and community settings for people with long-term conditions. These conditions include:

Diabetes

- ❏ About 1.3 million people in the UK have diagnosed diabetes and a further 1 million have undiagnosed diabetes.
- ❏ Diabetes affect one in 20 people over the age of 65

Osteoarthritis

- ❏ Osteoarthritis affects 45% of people over 65 year olds.
- ❏ 36 million working days lost costing £3.2 billion in lost earnings.
- ❏ Risk factors are being overweight and inactive. This reduces the muscle strength.

Chronic Obstructive Pulmonary Disease (COPD)

- ❏ There are 1.5 million people with COPD
- ❏ COPD costs the NHS £1 billion a year mainly due to emergency admissions which can make up 12% of all emergency medical admissions.
- ❏ Regular walking in patients halves the risk of an emergency admission irrespective of the FEV1. Garcia-Aymerich et al.(2003).
- ❏ Simple Cost Benefit
- ❏ 100 patients with COPD
- ❏ 8 patients likely to be admitted in winter.
- ❏ A local park provides physical activity reduces stress and anxiety and increases confidence.
- ❏ From existing research this could reduce admissions by half.
- ❏ 4 admissions (£9000) could be saved.

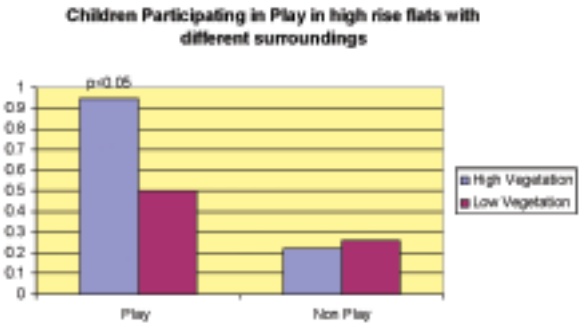
Cancer

- ❏ 2,500 colon cancer deaths per year attributable to inactivity. See Cabinet Office Strategy Unit (2002).
- ❏ Breast cancer claims 12,000 lives and is reduced by lifelong exercise. At least five a week. CMO report 2004 DH.

Public Service Agreement Target 1.3: Obesity

- ❏ To be achieved by halting the year-on-year rise in obesity among children under 11 by 2010 in the context of a broader strategy to tackle obesity in the population as a whole. (DH, DfES, DCMS)

Green Space has a role to play in increasing children's levels of activity and play



Children's physical activity levels are strongly related to the amount of time spent outdoors

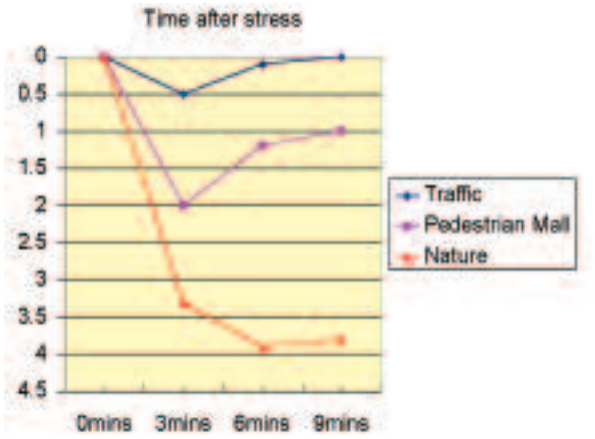
Mental Health

- ❏ around 300 people out of 1,000 will experience mental health problems every year in Britain;
- ❏ 230 of these will visit a GP;
- ❏ 102 of these will be diagnosed as having a mental health problem;
- ❏ 24 of these will be referred to a specialist psychiatric service;
- ❏ 6 will become inpatients in psychiatric hospitals.

Mental Health: How can the Natural Environment Help?

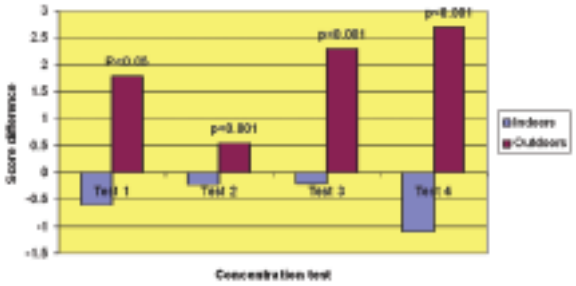
- ❏ Natural Green space can immediately reduce stress and improve coping.

❑ Reduction in blood pressure following a stress event - see below.



Reduction in blood pressure following a stress event

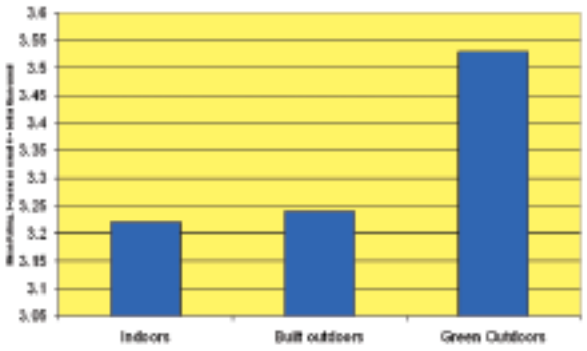
❑ Concentration of elderly people following 1 hour rest in a garden versus remaining in own room - see below.



Concentration of elderly people following 1 hour rest in a garden versus remaining in own room

Attention Deficit Hyperactivity Disorder (ADHD)

Relationship between ADHD symptoms and playing indoors, the built environment or in green space



Attention Deficit Hyperactivity Disorder (ADHD): alleviation of symptoms

Conclusion

The main health problem areas for England are

- Heart disease
- Stroke
- Obesity
- Long term conditions (e.g diabetes and osteoarthritis)
- Mental health

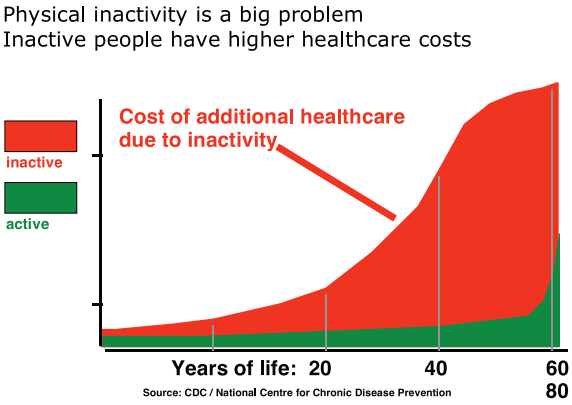
The natural environment can help with all these conditions.

To unlock the true health value of the natural environment Natural England can generate support from central government, NHS, Local authorities, industry and above all the volunteering public.

However, William Bird's past experience shows that even when the health service is presented with masses of evidence, they do not necessarily act. So: the language and the way we communicate with the NHS is absolutely critical.

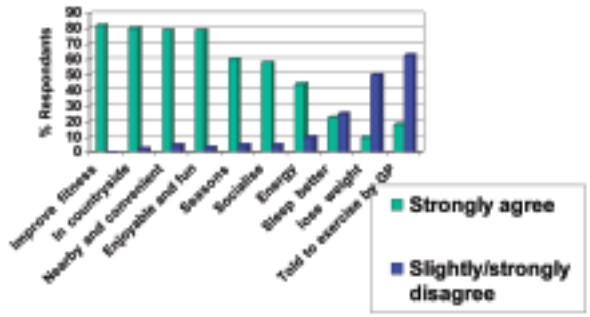
A Japanese experiment showed that alpha waves (indicative of relaxation) increased when looking at a plant pot.

Physical inactivity has been charted against additional healthcare costs by the Centres for Disease Control (CDC).



This is a critical graph. This showed the cost of additional healthcare due to inactivity. Not many health professionals will have seen this graph or know of it.

Comparison of heart-rate activity. Step-aerobics. All of the analysis is typically inward-looking e.g. Glutimus maximus and 'Green Gym' are all talked about. But, ideally, when trying to involve people with nature as a way of improving their health, it is best to avoid the term 'health'. This tends to put people off. See Bird, 2004.



What motivates people to continue to participate in Health Walks

A life can be saved every year through personal fitness. Brilliant chart for motivation. 60% of people disagreed that they walked after being 'told to exercise by GP'. Motivation came much more from "observing changing seasons", e.g. contact with nature.

All sorts of NHS targets are relevant. Reducing emergency bed admissions. Obesity: it is a linear graph. The more children are outside the less they will get obese. Physical activity is directly equivalent to taking anti-depressants. Gardens are very important for old people.

Attention deficit disorder is much less when greenspace is accessed.

Public Service Agreement (PSA) targets can be directly linked with benefits. Everything has to be reduced to £, shillings and pence, then it will work.

References

Bird, W.(2004). *Natural Fit*. RSPB.

Cabinet Office Strategy Unit(2002). *Health Economics Model for Game Plan.* Dec 2002.

De Vries, S. (2001). Nature and health; the importance of green space in the urban living environment. Proceedings of the symposium 'Open space functions under urban pressure'. Ghent: 19–21 September 2001.

Garcia-Aymerich, J, Farrero E, Felez MA, et al.(2003). Risk Factors of readmission to hospital for COPD exacerbation: A prospective study. *Thorax,* **58,**100-105.

Giles-Corti, B. and Donovan, R.J.(2003). Relative influence of individual, social environmental, and physical environmental correlates of walking. *American Journal of Public Health,* **93(9),** 1583–1589.

Tanaka, A., Takano, T., Nakamura K, et al.(1996). Health levels influence by urban residential conditions in a megacity — Tokyo.*Urban Studies,* **33,** 879–945.

Mapping community health in relation to urban greenspace by Pete Dixon

Senior Environmental Information Officer, TEP Environmental Consultancy, Genesis Centre, Birchwood Science Park, Warrington, WA3 7BH. Tel. 01925 844004. E-mail: PeteDixon@tep.uk.com

The findings of a study which examined the associations between community health and the abundance and availability of green infrastructure will be presented. The study was carried out in two areas in Northwest England, a metropolitan district of Greater Manchester and a rural / coastal town area of West Cumbria. The author will outline emerging thinking in the environmental world as to how provision of green infrastructure might contribute to better health particularly for vulnerable communities such as the young and ageing, and those in dense urban areas who may be affected by heat-island effects associated with climate change.

He will show how green infrastructure can be mapped in relation to community health and how priority areas for intervention in environmental improvement for health.

Introduction

This is an account of Geographic Information Systems (GIS)-intensive studies relating health and green infrastructure together.

The first project was in the North West of England. The spurs to it were from the Environment Agency 'Environmental Quality (EQ) and Social Deprivation' project.

Aims

1) Can 'Environmental Deficit' be measured, and mapped?
2) Is there a correlation between areas of Environmental Deficit and areas of social inequality – in particular health inequity
3) Where there is a correlation, what implications might this have for policy and intervention?

Methods

Bolton was typical of many areas in urban industrial decline. Copeland included Wastwater and parts of the Lake District, plus Whitehaven nearby.

Raw data was collected and then transformed to take account of woodlands etc. Raster modelling was used. Health data was based on Super Input / Output areas however, it is also grouped e.g. Health domain of the Index of Multiple Deprivation (IMD).

Then we looked at green infrastructure and health. Some areas were 'associated' and some 'disassociated'.

Some of the outcomes are intriguing. The audience might not think that there's a good degree of correlation. Wealthy people can buy their Green Infrastructure (GI) by flying off to green places, poorer people cannot. This needs to be borne in mind.

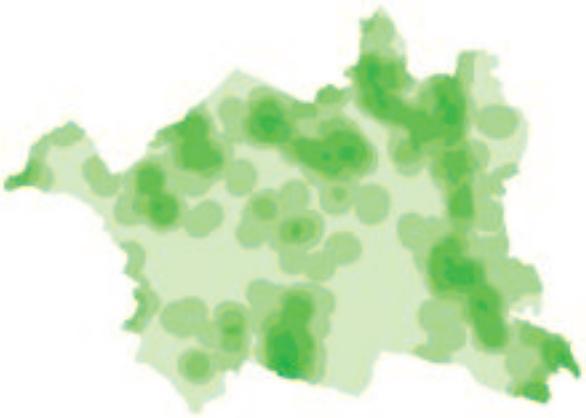
Results

A large number of datasets were used – Environment Agency, Forestry Commission, Bolton MBC, Copeland BC, Northwest Public Health Observatory, English Nature

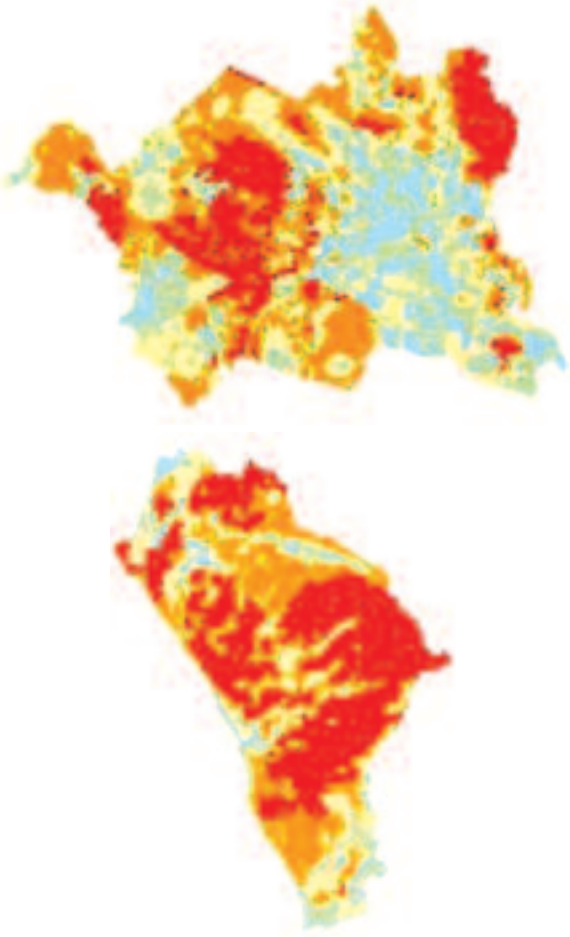
By using the 20m raster base, the greenspace and health datasets can be combined.

Raw data was 'banded' on a local authority basis to allow datasets to be combined

Raw



Banded

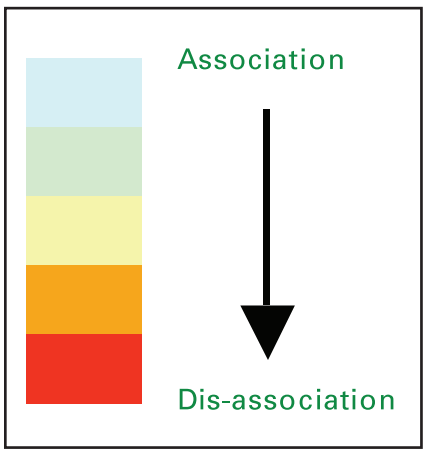


These maps show the state of the environment. But what does that mean for the community?

This study set out to examine

- how many people are affected by poor environmental quality or poor green infrastructure; and
- to see if these same people are affected by other aspects of deprivation, especially health.
- If so, is there an imperative for combined intervention to tackle environmental and health inequity?

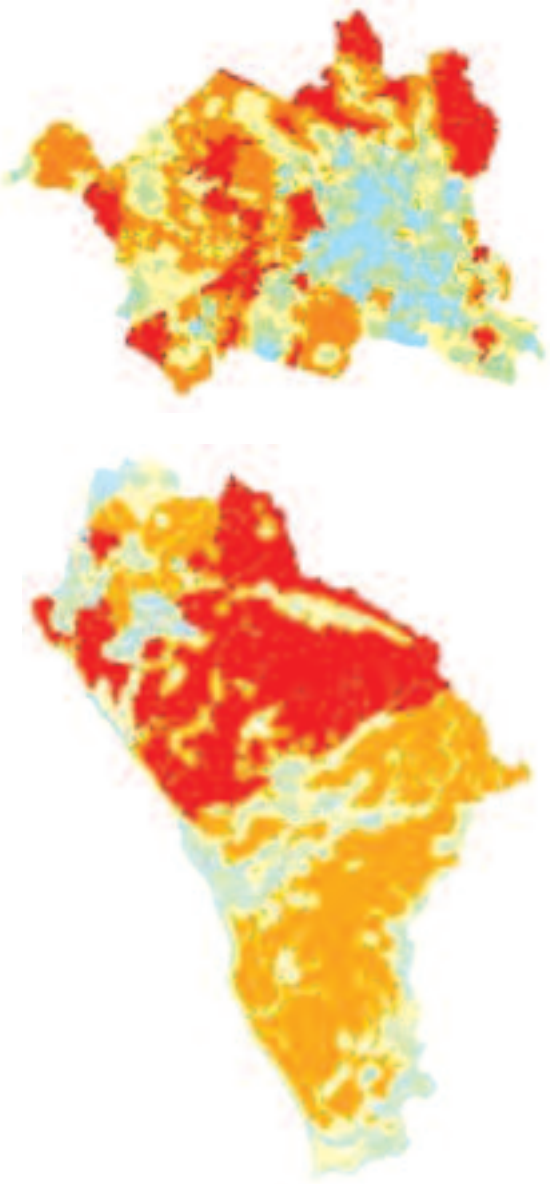
Association between health and green infrastructure



Policy Implications:

- There is, overall, an association between Green Infrastructure and health (and also between environmental quality and health)
- No areas with the greatest GI resource have relatively poor levels of health
- Some areas with poor GI or poor EQ have good health. In urban areas these anomalies are localised and can often be explained by income.
- In rural areas there seems less correlation between poor GI and health. Perhaps this is due to the proximity of other 'greenspace' such as private farmland not included in the Green Infrastructure dataset?

Association between deprivation and green infrastructure



We looked at the worst 10% of health deprivation and the worst 10% of GI. Altogether, 79,554 people (44%) were in this area. The Bolton and Copeland study can be downloaded. See www.nwph.net

A second study was undertaken in North East England and the East Midlands. This produced a chart of lesser multi-functionality versus greater multi-functionality.

Suzanne Gill, University of Manchester, now working for the Mersey Forest found that urban morphology types can be correlated with evapotranspiration. More vulnerable communities are located towards the more heavily urbanised regions.

Policy implications:

- ❏ environmental deficit can be described in terms of environmental quality and / or green infrastructure deficit
- ❏ environmental datasets can be used individually or in combination to model environmental deficit across a large area
- ❏ environmental deficit associates with social inequity, especially health inequity
- ❏ there is a need for environmental / health programmes to integrate better
- ❏ an imperative for environmental programmes to target public health where appropriate
  - a) an imperative for green infrastructure and environmental quality to be considered in economic growth strategies;
  - b) for enhancement where there is a combined environmental and health deficit

for protection where levels are good – but vulnerable

Can this method be used to define 'Environmental Action Areas'?

We looked at the areas of Bolton where population statistics suggested poorest health (worst 10%), and where Environmental Deficit was greatest:

Poor health and environmental quality

Poor health and green infrastructure m.c.t: 6.0.i.

Poor health and Generalised Land Use Database (GLUD) greenspace

Environmental Action Areas m.c.t: 6.0.i.

9,836 people (3.8% of Bolton's population) are covered by the areas

Environmental Action Areas with 280m walking buffer m.c.t: 6.0.i.

79,554 people (44% of Bolton's population) are covered by the areas

The functionality of green infrastructure in overall conclusion is broad:
Economic, education, recreation, biodiversity, food production etc.

Against this, the assessment of health indicators can potentially also be diverse:

- IMD Health Domain
- Limiting long-term illness
- Permanent sickness and disability
- Self-reported general health
- Standardised Mortality Ratio (SMR) (under 75)

Some trends between the two sets of factors are already becoming apparent, and some are perhaps surprisingly, less obvious.

PANEL SESSION TWO:

Chaired by Alison Millward, of Alison Millward Associates. Discussion and questions to William Bird, Liz O'Brien, Ambra Burls, Huw Davies and Pete Dixon.

Q: What are the biggest barriers to getting the NHS involved?

William: Sometimes things are done with nil evidence in the NHS. But perhaps more evidence is still needed in the 'health – urban greenspace' area. It is perhaps outside the comfort zone of GPs. It is outside the normal area of their work.

Liz: Local partnerships are really important to build up from day one. All projects I have mentioned have involved PCTs.

Alison: Volunteers in projects sometimes become mentors for others.

William: Each February PCTs have to publish their own targets. These link into the Local Area Agreements and therefore the planners. The local authority can be an equal partner with the PCT. We need some health economists to deal with this and produce cost-benefit analysis.

Q: Quality greenspace? What is it?

Liz: Have to take it on a local basis. There is a natural greenspace toolkit available now from Natural England /Countryside Council for Wales (CCW).

Mathew Frith: Natural space. All differs depending on your perception. I deal with mown grass surrounding social housing. It is greatly valued by the tenants – it is a canvass for them.

William: A small study showed that some people would find it very hostile to go into a biodiverse space. We don't necessarily need highly biodiverse spaces for people. People in the audience would be highly receptive to such areas, of course.

Pete: You have to remember that in the real world, people phone up and say the grass hasn't been cut for a week, what I am paying my council tax for.

Grant Luscombe: It's about what happens on peoples' doorsteps.

[Comment from Lanarkshire man] You could ask what wildflowers people would like included. With Countryside Rangers etc. going out and collaborating with people. Communication is key.

Pete: People might feel reluctant not to get pills, but to get exercise prescribed from their GPs.

Liz: At Chopwell, sometimes referrals happened via walking groups getting in touch with their patients.

Peter Cush: Biodiversity in urban gardens. Gardens are very biodiverse. The division of greenspace is beneficial.

Eilidh Johnston: We're in the middle of a contract looking at qualitative aspects of greenspace. It is a very difficult problem because it is to do with public need as well as maintenance standards.

[Commentary by a community greenspace worker from London] What about edible greenspace. A linear orchard was planted, and now the fruit trees are going to waste. The Forestry Commission doesn't generally think about planting fruit trees. It does do fungus forays, guided walks etc.

William: A lot of PCTs are funding schools growing things. BTCV have got to the last stage of the Big Lottery bid. This will involve growing food. A lot of this activity is sporadic.

Summing Up by Peter Shirley

The Royal Commission on Environmental Pollution's *The Urban Environment* (2007) makes puny efforts in the direction of health and greenspace. It is far too timid.

Russell Jones' and the Glasgow Centre for Population Health's work makes the point about less counting and more valuing being required as the basis for decision making. We must also accept that some people do not and will never like being in contact with nature.

Ian Douglas made the point that the evidence we use must be robust. Though this writer thinks that in many other fields it may be much weaker. Ian's other point was that too often our scientific evidence may be very narrowly based, but we must not be deflected by this

Carolyn Stephens gave us the clear insight that most of the world has an entirely different set of greenspace perspectives and problems to worry about relating to food and health. Environmental justice was mentioned. We have to keep this at the back of our minds.

Monique Simmonds also mentioned the use of gardens for growing food. Another key question to come out of her presentation was: are we disconnected from, or connected to, nature?

Throughout the day my mind oscillated.

Liz O'Brien impressed with mention of partnerships involving ten organisations. Networking is key to success in projects aiming to link greenspace with health.

Ambra Burls' presentation on Meanwhile Gardens in London was fascinating: people-growing as well as plant growing. This raised the issue of whether inspirational approaches persuade more than evidential approaches.

William Bird and Huw Davies reminded me of an old GP somewhere in the Midlands. He had pictures of walking and cycling on his walls. We need to find new ways of communicating the messages.

Pete Dixon's GIS presentation was very useful and reminded us that both quantitative and qualitative methods are useful.

Saving the NHS money may not necessarily be the best way forward, although it was advocated by some.

The truth is like a rabbit in a bramble patch. It is in there somewhere. I think I have seen the truth sometimes today. Maybe a picture is worth a thousand words, or references. We have to act on the best information available to us at this moment. It seems that if we do work that is good for wildlife it will be good for people too.

Conclusions and Next Steps

Values and 'benefits plus' synergy

Several common themes emerged from the wide range of papers presented to the conference, and delegates were frequently invited to challenge their perceptions of the value of greenspace to people's health by comparing the situations in developed and developing countries.

In developing countries city dwellers are using greenspace primarily to grow and harvest food to benefit their physical health (if not secure their very survival), though this greenspace is becoming increasingly vulnerable to development and in particular for road expansion, as car ownership rises.

In developed countries, studies continue to show that active use of greenspace benefits people's physical health and psychological well-being as well as yielding pure enjoyment in an hedonistic sense from contact with nature, intellectual benefits in the acquisition of new knowledge and skills. It may also catalyse social benefits from people being able to use greenspaces for family outings giving opportunities to meet up with friends and neighbours by chance and increasingly at organised events.

Some new benefits emerged from the papers which related to the function of greenspaces as a driver for 'peace making' and community cohesion – engaging people from different age groups and even opposing cultures, in enjoying, cultivating and managing shared space. These outcomes would in themselves yield psychological benefits as visitors got to know more about who else was using 'their' greenspace and might therefore begin to feel more secure and confident about going there. The need to facilitate this building of community cohesion, around the world, through outreach work, came out very strongly throughout the conference.

Perhaps even more significantly, synergistic benefits or the notion of 'benefit plus' arose from several examples. This seems to occur in two ways. Firstly there are the added benefits that derive from biodiversity, wealth from creation and climate mitigation when people take part in the practical cultivation and management of greenspace, even though their primary objective maybe to get fitter and meet new people.

The second occurs when people then choose to become leaders of 'green gyms', horticultural therapy or healthy walking groups themselves, and so pass on their enthusiasm and knowledge to others. This form of multiple benefit has the potential to become increasingly effective by orders of magnitude and may therefore prove to be much more successful than that which would be achieved from a doctor seeking to persuade patients one by one at individual consultations.

The new expanded list of the benefits to be derived from greenspace might therefore include:

- ❏ Utilitarian – for the production of food and medicines
- ❏ Community cohesion – as a location for different ages and cultures to engage with each other, in addition to the more well established list of
- ❏ Physical health
- ❏ Psychological well-being
- ❏ Intellectual, and inspirational and
- ❏ Social.

Several speakers emphasised the need to customise the approach taken to managing greenspace and engaging more people in deriving benefits from it, by selecting out which benefits from the list above might be most appropriate for the particular community living close to a given greenspace, and so better meet their needs. Most were agreed that people should be able to enjoy a greenspace in a multitude of ways.

Quality and quantity, scale, distribution and accessibility

Delegates emphasised that there had to be a minimum quantity of greenspace protected within urban areas to ensure that everyone could potentially have access to a greenspace of more than 2 ha in size within a walking distance of 300m from their homes and workplaces. Accessible greenspace is now becoming firmly tied to concepts of environmental justice, social equity and the precautionary principle (about which urban planners must be persuaded).

More than that it does seem that levels of physical activity are higher amongst those who live closest to greenspaces (and about which the health sector must be persuaded). It is time that environmental, health and planning professionals came together to create more integrated strategic plans aimed at both biodiversity and health outcomes. The world is becoming increasingly urbanised, but urban dwellers should still be able to enjoy a healthy, equitable and sustainable lifestyle. Access to greenspace is a key contributor to this aim.

Evidence that people are put off from visiting poor quality, poorly maintained greenspace continues to accrue, but it seems that people make their decision on whether or not to visit a greenspace on a far greater range of factors than we might have assumed to be the case in the past.

Lifestyle, connectedness to or integration within the local community, and access to transport, seem to be emerging as much stronger influences than the 'state' of the local park or their own health and degree of mobility. Lifestyle and access to transport are more of an issue for poorer people, so access to greenspace for them is particularly significant, and even more so in the towns and cities of developing countries.

People's past experience of a greenspace is also influential. If a crop fails, if you have been subject to anti-social behaviour, if you have been attacked or injured when using your local greenspace, you are more likely to stop using it. People's relationships with greenspaces can therefore be quite fragile and managers need to recognise this and invest more in helping users to feel more secure and supported.

Quality of the evidence

There was much discussion about the quality of evidence that would be needed to better persuade the health sector of the benefits of greenspace prescriptions.

Concerns were expressed about the small number of experimental studies upon which the environmental sector were seeking to prove a connection. The need to convert increased levels of physical activity in greenspaces into health budget savings from reducing the incidence of cardiac, respiratory, diabetic and mental health illness, within the population, was stressed by several speakers. The language the environmental sector uses to persuade and present the evidence, will therefore be key.

Beyond that many felt that we should still be trying to widen and deepen our understanding of the connections by continuing to collect a mix of scientific, economic, social, political and experiential evidence. Even though it would undoubtedly remain difficult to convince others of evidence derived from self-reported benefits, measured benefits that could have been caused by a variety of factors and beneficial outcomes that could only have occurred as a result of proven and sustained changes in physical activity levels are still needed.

The actions to achieving good quality urban greenspaces on the ground, in a sufficient abundance that diverse population groups can make use of them, are, in all likelihood, going to depend on a combination of scientific evidence being turned into practical policy, and through the 'environmental justice' route, i.e. grassroots actions of groups determined to defend such sites and to foster their abundance within cities.

Provisional next steps are as follows

- ❏ Expand our understanding of the barriers people must overcome to make use of greenspace on a regular basis and the type of projects and initiatives that can help overcome those barriers.
- ❏ Develop our understanding of the multiple-benefits of greenspace across the globe and within and between social groups at the national, regional and local levels, to help with the customisation of integrated health and greenspace projects.
- ❏ Identify environmental action areas where there appears to be poor health combined with poor access to greenspace.
- ❏ Promote the more active use of greenspace for growing, tending and exercising as well as the more passive activities of socialising and being in contact with nature – strut and stare, stop and stare.
- ❏ Adopt participatory budgeting where appropriate
- ❏ Develop national scale, integrated funding packages to effect change nationwide by improving greenspaces and access to them, in such a way as to improve health and well-being.
- ❏ Adopt multi-disciplinary planning, delivery and evaluation of national and local scale projects to improve greenspaces and access to them aimed at improving health and well-being.
- ❏ Support longitudinal studies to follow up studies of the past to see if behavioural change and mental health improvements linked to use of greenspaces are sustained.
- ❏ Deal with the central ethical problem of providing greenspaces in a 'built environment' (e.g. buildings, cars, roads) -dominated world, via: proper discussion of citizens rights and the environmental justice perspective. In other words, how can we move to a more 'green spaces' dominated urban environment? One of our purposes should be to make the arguments and obstacles involved plain for everyone to see.

Appendix:
Membership of UK-MAB Urban Forum

Penny Angold
Consultant at AMPA Associates Ltd
penny@ampa-associates.com

Ian Angus
Scottish Natural Heritage
ian.angus@snh.gov.uk

Ambra Burls
Education & Research Officer - Cultivations & Researcher - Anglia Ruskin University
a.burls@btopenworld.com

John Box
Atkins Environment
John.Box@atkinsglobal.com

Peter Cush
Environment & Heritage Service, Northern Ireland
peter.cush@doeni.gov.uk

Gerald Dawe (Chair)
Independent specialist
geralddawe@aol.com

Ian Douglas
School of Geography, University of Manchester
i.douglas@man.ac.uk

Mathew Frith
Landscape Regeneration Manager, Peabody Trust
mathew.frith@english-nature.org.uk

Peter Frost
Community Action Officer, CCW Headquarters
p.frost@ccw.gov.uk

David Goode
University College London
d.goode@ucl.ac.uk

Chris Gordon
Countryside Agency
christopher.gordon@countryside.gov.uk

John Handley
CURE, School of Planning & Landscape, University of Manchester
john.handley@man.ac.uk

Peter Jarvis
School of Applied Science, University of Wolverhampton
P.Jarvis@wlv.ac.uk

Eilidh Johnston* (see also Julie Proctor)
Greenspace Scotland
eilidh.johnston@greenspacescotland.org.uk

David Knight
Natural England
David.Knight@naturalengland.org.uk

Graham Leeks
Centre for Ecology & Hydrology
gjll@ceh.ac.uk

Grant Luscombe
Landlife, National Wildflower Centre
info@landlife.org.uk

Alison Millward
Independent Consultant
alison.millward@talk21.com

Peter Morgan* (see also Richard Sharland)
Groundwork UK
pmorgan@groundwork.org.uk

David Nicholson-Lord
Independent Consultant
katdab@aol.com

Julie Proctor* (see also Eilidh Johnston)
Greenspace Scotland
julieproctor@greenspacescotland.org.uk

Joe Ravetz
Manchester University
joe.ravetz@gmail.com

Alan Scott
Independent Consultant
asec@cix.co.uk

Richard Sharland* (see also Peter Morgan)
Groundwork UK

Judy Ling Wong
Black Environment Network
ukoffice@ben-network.org.uk

*One of these represents the organisation at each meeting of the Forum

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